

**Proceedings of International Scientific
Conference on Sustainable Development Goals
24-25 November 2017, Baku, Azerbaijan**



2017



**Transforming our World: The role of Science to
foster the integration and the implementation of the
Sustainable Development Goals (SDGs)**

Jointly organized by:



Global Compact
Network Azerbaijan





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**Proceedings of International Scientific Conference on Sustainable Development Goals 24-25
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Editorial Managing: Khayala Mammadova

Scientific Coordinator: Ida Abhari

Editorial Coordinator: Savalan Suleymanli, Hamide Yusra Erilli

Editing: Halima Benzoukh

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67 Moscow Avenue, Baku AZ1012 Republic of Azerbaijan

Tel: (99412) 431 47 67

Website: www.ijhsdr.com



SUSTAINABLE DEVELOPMENT GOALS

17 GOALS TO TRANSFORM OUR WORLD

The Sustainable Development Goals (SDGs), officially known as "Transforming our world: the 2030 Agenda for Sustainable Development", is a set of 17 "Global Goals" with 169 targets among them. Spearheaded by the United Nations through a deliberative process involving its 193 Member States, as well as global civil society, the goals are contained in paragraph 54 United Nations Resolution A/RES/70/1 of 25 September 2015. The Resolution is a broader intergovernmental agreement that acts as the Post 2015 Development Agenda (successor to the Millennium Development Goals).

The 17 Sustainable Development Goals (SDGs) – part of a wider 2030 Agenda for Sustainable Development – build on the Millennium Development Goals (MDGs).

The SDGs build on the Principles agreed upon under Resolution A/RES/66/288, popularly known as "The Future We Want". It is a non-binding document released as a result of Rio+20 Conference held in 2012 in Rio de Janeiro, in Brazil.

The SDGs were in large measure informed by the perspective reflected in the often quoted assertion by Ban Ki-moon, the United Nations Secretary-General from 2007 to 2016, that "we don't have plan B because there is no planet B".

On 19 July 2014, the UN General Assembly's Open Working Group (OWG) on Sustainable Development Goals (SDGs) forwarded a proposal for the SDGs to the Assembly. The proposal contained 17 goals with 169 targets covering a broad range of sustainable development issues. These included ending poverty and hunger, improving health and education, making cities more sustainable, combating climate change, and protecting oceans and forests. On 5 December 2014, the UN General Assembly accepted the Secretary-General's Synthesis Report which stated that the agenda for the post-2015 SDG process would be based on the OWG proposals.

The Intergovernmental Negotiations on the Post 2015 Development Agenda (IGN) began in January 2015 and ended in August 2015. Following the negotiations, a final document was adopted at the UN Sustainable Development Summit September 25–27, 2015 in New York, USA.

The title of the agenda is "Transforming our world: the 2030 Agenda for Sustainable Development"



“Azerbaijan's goal is sustainable development”

Ilham Heydar oglu Aliyev
President of Azerbaijan Republic



Azerbaijan, along with 193 United Nations Member States, endorsed the 2030 Agenda at the UN Summit in September 2015, committing itself to taking the bold and transformative steps, which are urgently needed to shift the world onto a sustainable and resilient path, and, while embarking on this collective journey, pledging that no one will be left behind.

The National Coordination Council for Sustainable Development with its Secretariat in the Ministry of Economy was established according to the Decree of the President of the Republic of Azerbaijan.

President Ilham Aliyev signed a relevant decree on October 6, 2016.

Main objective of the newly-created institute is to work out national priorities in accordance with global targets, which possess importance for Azerbaijan, ensure the compliance of state programs and strategies covering the socio-economic spheres with the UN Sustainable Development Goals.

Deputy Prime Minister of Azerbaijan, Ali Ahmadov has been appointed as the Chairman, while Economy Minister Shahin Mustafavev as the deputy chairman of the newly created institute.

United Nations recommended the countries of the world to prepare Sustainable Development Programs by 2030. SDG's adopted by world leaders officially came into force on January 1, 2016. Azerbaijan has also moved on to a new development framework, the 2030 Agenda for Sustainable Development, to implement the 17 global goals, embracing the three dimensions of sustainability, including economic, social and environmental.

The goals that universally apply to all countries will mobilize efforts to end all forms of poverty, fight inequalities and tackle climate change, promote social welfare, ensuring that no one is left behind.

Each goal has specific targets to be achieved over the next 15 years. Global goals are based on the Millennium Development Goals, anti-poverty targets that the world was committed to achieve by 2015.

Azerbaijan has already met many of the MDGs, including halving extreme poverty and hunger (reached in 2008), achieving universal primary education (attained in 2008), eliminating gender disparities in primary and secondary education and reducing the spread of certain deceases.

The National Coordination Council for Sustainable Development (NCCSD) has full authority to perform its core functions formulated as follow:

- Ensure broad based and inclusive stakeholder participation;
- Translate global sustainable development goals, targets and indicators to the national context;
- Identify of national priorities and sustainable development gaps;
- Articulate inclusive and rights-based national strategies and policies;

- Coordinate and promote collaboration among various government agencies and ministries;
- Secure coherence among development partners to align with national priorities;
- Design national reporting and review framework, and links to regional and global reviews;
- Identify needs and opportunities for capacity development.

The Government of Azerbaijan considers the national SDG process as an opportunity to empower a broader range of national stakeholders, promote participative national dialogue and to streamline wider cooperation on the path to sustainable development. Driven by the principle of “leaving no one behind”, which is a core commitment of the SDGs, and determined to engage all stakeholders in achieving the SDGs, the National Coordination Council for Sustainable Development of Azerbaijan Republic partnered with the UN Office in Azerbaijan conducted a panel discussions on SDG implementation which brought together representatives of the different groups of society (academia, civil society, women, youth, parliament). The government, while acting as coordinator for the attainment of nationalized SDGs, will be facilitating and supporting SDG-focused initiatives of civil society institutions, academia, business and professional associations, other stakeholders and partners.

Success in the implementation of the 2030 Agenda would also require learning on the best international practices, particularly under the South-South Cooperation modality. Azerbaijan would remain committed for sharing its knowledge and experience in formulating and implementing of nationalized SDGs.



The Sustainable Development Goals (SDGs), otherwise known as the Global Goals, are a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity. These 17 Goals build on the successes of the Millennium Development Goals, while including new areas such as climate change, economic inequality, innovation, sustainable consumption, peace and justice, among other priorities. The goals are interconnected – often the key to success on one will involve tackling issues more commonly associated with another. The SDGs work in the spirit of partnership and pragmatism to make the right choices now to improve life, in a sustainable way, for future generations. They provide clear guidelines and targets for all countries to adopt in accordance with their own priorities and the environmental challenges of the world at large. The SDGs are an inclusive agenda. They tackle the root causes of poverty and unite us together to make a positive change for both people and planet.

Societies need a global transformation and a clear commitment towards sustainable development, the reduction of social inequalities and the improvement of living conditions at local and global level. Sustainable Development Goals (SDGs) are a response to this need: a universal, ambitious, sustainable development agenda involving education, health, environment, industry, justice, governance, cities among others. Challenges such as health and demographic change, food security, quality education for all, secure and clean water, green and efficient energy sources, climate change, and inclusive and secure communities need the engagement of the universities responding at global and local levels. On one hand, contributing to the global challenges of the world (summarized by the SDGs) and on the other hand, helping the economic, social and cultural development of its nation, region or society.

The International Scientific Conference on Sustainable Development Goals-2017 is a leading international meeting aiming to create a permanent and multidisciplinary knowledge network on implementation of SDGs, where all stakeholders will learn from each other: universities, governments, cities and public and social agencies.

Held in Baku, Azerbaijan from 24th to 25th November 2017, gathered multidisciplinary experts and high-level practitioners from around the world to exchange knowledge, ideas, experiences and expectations around the challenges involved with the SDGs. Through a combination of keynote presentations by renowned experts, round tables and parallel sessions, the conference wants to open a debate.

The International Scientific Conference on Sustainable Development 2017, is one of the activities organized by “Azersu” OJSC in the framework of UN Sustainable Development Goals. It aims to provide intellectual guidance and scientific evidences to the challenges of SDGs, with a humanist and critical thinking, promoting research and education to build a fair global community and more sustainable cities.



Head, International Conference Organizing Committee
Khayala Mammadova

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Creating a more Sustainable Future for All....



Transforming our World: The role of Science to foster the integration and the implementation of the Sustainable Development Goals (SDGs)

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Gorkhmaz Huseynov
Chairman, "AzerSu" Open Joint Stock Company

Dear Conference Participants,

It is a crucial issue that our international conference on "Transforming our World: The role of Science to foster the integration and the implementation of the Sustainable Development Goals (SDGs)" is held in Baku city within the framework of UN Sustainable development goals. This conference is of great importance from the point of discussion of important issues that make everybody think about them and help with the determining of prospective activity directions. I hope this conference will be held at a high level and end with productive results.

Azerbaijan participates in Millennium Development goals program declared in September 2000 actively. During the past years our country has made significant progress in reaching its goals including protection of people's health, environment protection, decreasing poverty, increasing the level and quality of education, and maintenance of gender equality.

Azerbaijan has joined Sustainable development goals in 2015. Economic, social and environmental aspects of sustainable development are based on Millennium Development Goals moving towards targeted goals and objective points of view helping with determining the next development directions.

Steady and qualified water supply which is one of the main challenges of Millennium is considered as one of the most important issues globally. Increase of threats regarding water shortage in global sphere necessitates the international partnership in the water sector. The rapid increase in water reserve usage due to population growth and development of economy is an undeniable fact and it is considered essential to take urgent measures for using the drinkable water sparingly.

Supplying qualified and sustainable drinkable water, as well as providing sewage services complying with environmental standards are parts of the social-economic development strategy which is successfully continued by Dear Mr. President Ilham Aliyev. Large scale projects are being conducted by "Azersu" Open Joint Stock Company in this direction.

Currently, the quality of the water is fully controlled through water treatment devices under usage. The available technological devices allow purifying the water at an international level of standards. In 2015, Jeyranbatan Ultra-filtration water purification facility complex with 6.6 cubic meter capacity for one day was put into use. The complex which is considered as one of the largest ultra-filtration facilities of the world was selected as one of the most important water projects in Abu Dhabi Global Summit.

Generally, projects held in the water sector in Azerbaijan have been evaluated to be high by international organizations. "Azersu" OJSC has been the active participant of many important international events within the country and abroad. "Azersu" OJSC has been granted the memberships of the most prestigious institutions such as World Water Council, International Water Association and has been actively represented in these organizations. It is the logical results of all of these facts that International Water Association has made a decision on holding 2021 World Water Congress in Baku. Hosting such a great event in Baku pleases us. Our company has been awarded the Golden Award in the field of Leadership, Quality, Innovation and Completeness.

The First Baku International Water Week held under the slogan of "Water is not only the source of life, life itself" on March 14-18, 2017 in Baku city has been a crucial historical event. This event has been of great importance for fostering a comprehensive discussion and seeking solutions for several current major problems in global sphere including: clean and sustainable water resources, removing the threats of water shortage, environmental and ecological conditions, as well as climate change and drought.

On the eve of water week being held for the 7th time in the world international scientific-practical conference dedicated to the 100th anniversary of "Shollar-Baku Water Plants Complex", 61st meeting of Board of Directors of World Water Council, 4th meeting of International Leading Committee of 8th World Water Forum have been held. At the end of the 1st Baku International Water week Baku declaration has been adopted. The declaration is a call for joint attempts for protection of environment, ecology, clean water and sanitary fields in global sphere.

Scientific researches and studies play a crucial role in the implementation of tasks arising from Sustainable Development Goals. I hope this international scientific conference on "Transforming our World: The role of Science to foster the integration and the implementation of the Sustainable Development Goals (SDGs)" will end in productive results.



Mr. Ghulam M. Isaczai

UN Resident Coordinator and UNDP Resident Representative in Azerbaijan

Ladies and gentlemen and distinguished guests,

It is my pleasure to join you today to discuss the role of science in achieving the Sustainable Development Goals. I would like to commend the efforts of the Conference Organizing Committee for organizing this international conference to discuss this important issue.

I can see from the programme that there will be a wide range of topics in relation to the SDGs, but for the purpose of this speech I will focus on the subject of science.

Science, like music, is a universal language that can transcend cultural and national borders. Throughout history, science has played a key role in advancing social and economic inclusion and promoting environmental sustainability and peace. Therefore, we need to take advantage of the unifying characteristic of science for promoting global public good.

As my colleague from the UN Global Compact has already said, after three years of inter-governmental negotiations and consultations, 193 UN Member States, including Azerbaijan, adopted the *2030 Agenda for Sustainable Development* on 25 September 2015.

In this regard, we applaud the proactive efforts of the Government of Azerbaijan in nationalizing the SDGs and aligning its plans and policies to SDGs targets and indicators. In these efforts, the UN system in Azerbaijan is providing concrete advice to the National Coordination Council for Sustainable Development under the leadership of the Deputy PM Mr. Ali Ahmadov. We probably hear more about the concrete steps Azerbaijan has taken towards localization of the SDGs from Mr. Hussain.

One thing that I would like to be clear about is that the SDGs is not a UN agenda, it is a global agenda and it requires Government leadership at the national level. Secondly, SDGs cannot be achieved by the efforts of the government alone. Its achievements require many different actors including the scientific community, the private sectors, and the civil society sectors to work together in an integrated manner by pooling financial resources, knowledge and expertise.

The key thing to realize about the SDGs is that they are universal and can be applied in every country. Unlike the Millennium Development Goals which preceded them, these goals do not just look at the issue of

poverty but also the issue of sustainability of economic growth, in relation to environmental and social issues.

For example, when developing a new technology which will increase food production, innovators should analyze, amongst many things, whether this will damage the environment and provide decent work for the local community. The 2030 Agenda is calling for a balanced approach to development which leads to a better future for all.

To this end, I would like to emphasize the importance of the participation of leading scientists, technology experts, and innovators in the discourse on SDGs. Science and innovation are crucial for overcoming obstacles on the way towards eradicating poverty and achieving sustainable development, and in finding new approaches which identify, define and confront global challenges.

Let me mention a few of the challenges that require the scientific community's collaboration towards the 2030 Agenda:

One of the main challenges the world is facing today is climate change, which is caused by many factors, but especially fossil-fuel use. It is also associated with natural disasters, sea level rise and ocean acidification.

Many studies have identified energy conservation and energy efficiency as essential, multi-beneficial, low-cost measures that will prevent the worsening of this issue.

Secondly, make up another major issue that needs to be resolved with the help of scientific research is access to clean water and nutrition which are among the basic needs of people.

Much research and innovation is needed in terms of achieving SDG #3- Well-being and access to healthcare for everyone. By 2030, HIV, malaria and tuberculosis need to be eliminated, along with a reduction in child mortality and ensuring universal access to sexual and reproductive health-care services.

As these examples show, scientific innovation and research can contribute significantly and directly to the achievement of all the SDGs.

I am sure that the discussions that take place over the next two days will help us to understand the role of science in fostering the integration and implementation of the SDGs and hope that this conference will lead towards maximizing the contribution of science, technology and innovation to the achievement of the SDGs in Azerbaijan.

I wish you every success in pursuing this objective!

Thank you.



Benedito Braga
President
World Water Council

Water as the key to Sustainable Development...

Water is more than a great ecological asset of humankind. It is the common thread connecting all aspects of social development and well-being. The inclusion of an exclusive chapter on water in the 2030 Agenda for Sustainable Development has given a new impetus to the role of water beyond its traditional environmental scope as an engine for economic and social development. This renewed mindset shows the way in which the principles underpinning sustainable development have evolved over the past decades.

The international water community is today deeply involved in implementing this global development agenda to place water security at the heart of action of the Sustainable Development Goals. The World Water Council is supporting the recognition of the integrated principle of water security to create the conditions for the long-term well-being of cities, economies, societies, environments, humanity and, indeed, the planet.

Today, water managers are asked to do risk management. Their responsibilities entail managing limited water supplies to meet rapidly changing and uncertain demands, while balancing ever-changing ecological priorities, compounded by economic and social values. This situation requires using water in a smarter way and complementing its availability through various means. For this reason, research and innovation must keep providing solutions in a rapidly changing environment.

In this perspective, the International Scientific Conference on Sustainable Development must build a public-political consensus by engaging with policy makers, economists, financiers, farmers, industry, banks and academics to implement the Sustainable Development Goals in an integrated fashion. I trust the capacity of our member, AZERSU, to bring this fruitful debate across sectors and to keep sharing its knowledge and experience to make water the key of the Sustainable Development Goals.



Vladimir Smakhtin

Director

Institute for Water Environment and Health, United Nations University

It is my pleasure to welcome you all to the International Scientific Conference on Sustainable Development in Azerbaijan. We live in very dynamic and interesting times. For the first time, the World united around challenging, but noble, comprehensive and feasible future to live to – Sustainable Development Goals (SDG). The goals cover all aspects of global development that can be achieved only through targeted local action. I hope that during this Conference you will be able to discuss, amongst others, the crucial role of water in the SDG process.

Water is a foundation of life and livelihoods, and is key to sustainable development. It has become a pressing global societal and geopolitical issue, and in many regions, it is already of critical national concern. Water can connect people and countries, but it also can and have led to conflict. The perception of water as a human right and a common public and environmental good is often opposed by the view of water as a commodity that needs to be priced to ensure efficient and sustainable use. Nations will need to align water perspectives to allow for peaceful and effective integrated water resource management and sustainable use.

Efficient water management will serve as a basis for the achievement of many of the 17 SDGs, as well as for the “water goal” itself - SDG 6 - which is to ‘Ensure availability and sustainable management of water and sanitation for all’. There are dynamic links between SDG6 targets and almost every other SDG. It is vital that the interlink ages are well understood and managed, and this Conference may shed light on such links. In order for Agenda 2030 to materialize, the targets under each SDG must be implemented in an integrated manner – ensuring that any potential conflict within and between Goals is managed and that the process achieves both -sustainable management of natural resources, such as water, and social and economic development.

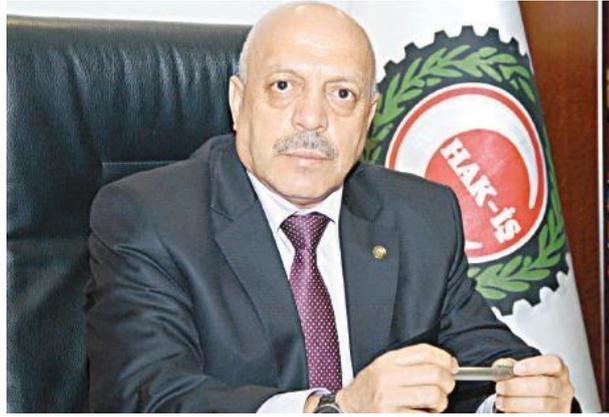
‘Business as usual’ in water management and in our attitude to water overall may mean that the world will miss water-related SDGs by a wide margin; up to 40% of the world’s population will be living in seriously water-stressed areas by 2035; the ability of ecosystems to provide fresh water supplies will become increasingly compromised, and economic damage from water-related natural disasters, such as

floods and droughts, the frequency and magnitude of which increases with climate change as we speak, will offset positive impacts targeted by international development aid.

We cannot let this happen. UN agencies, governments and civil societies have made clear that radical new approaches to water are needed to address global water challenges. Only by facing these challenges in an intelligent and cohesive way will water continue to support life, development and biodiversity for our children and our future.

I commend the Conference Organizers for their passion and drive in hosting this International Scientific Conference on Sustainable Development in Azerbaijan. I hope that this Conference will be a landmark in the Agenda 2030 process and that it will trigger more action on the road to SDGs.

I wish you every success in your deliberations, and achievement of the goals of the Conference.



Mahmut Arslan
President
Hak-Ish Trade Union Confederation, Turkey

I am pleased to send my greetings to you all and wish all gathered a successful conference.

As we know, the trade unions represent the voices and interests of hundreds of millions of workers from across the globe.

Our goal is to ensure that all people have access to a decent life in a healthy environment, access to quality public services such as water and sanitation, health, , and to quality education and skills training as a means to achieving a decent job. Decent jobs build the capacity of people to not only spend money in their commonwealth but also define the time and energy that people can put into building those communities. The trade unions play a considerable role in the development of the Sustainable Development Goals.

We are ready and waiting to partner with the organizations in working together towards achieving the Sustainable Development Goals by 2030 and creating a better future for everyone.

We are determined to organize and defend human rights and labour standards everywhere, and to promote the growth of trade unions for the benefit of all working men and women and their families.

The Hizmet-Ish Trade Union and HAK-Ish Confederation are committed to promote gender balance in its delegations, as well as encourage the involvement of young trade union leaders.

The Conference theme: Transforming our World: The role of Science to foster the integration and the Implementation of the Sustainable Development Goals (SDGs) through talks and study, promises to evoke much interest and perhaps answers much needed in today's world

We wish you a most successful conference on Sustainable Development Goals.



Asaf HAJIYEV

Secretary General of the Parliamentary Assembly of the Black Sea Economic Cooperation

“Sustainable development goals in digitalized world”

The sustainable development goals, which are continuation of Millennium Development Goals, are universal set of goals and targets that the states use to frame their policies with the aim to achieve sustainable development of the planet including eradication of poverty, promotion of education, strengthening of justice and environmental protection.

The announcement of SDGs has generated tremendous positive energy and countries around the world started to integrate these goals into their national strategy plans. The SDGs are connected and indivisible – linking development, security, peace and human rights – has given rise to a new set of thinking around how to solve them. Experts believe that by looking at the interlink ages between goals, the possibility exists to create a much greater impact than by tackling each one on its own.

The Sustainable Development Goals require good intentions and meaningful action through the participation of governments, businesses, private investment and society as a whole.

In the era of digitalization every single sphere across society and economy is impacted by digital technologies. Digital technologies play a predominant role in development of society and economy.

How to use digital technologies to improve management of sustainable challenges.

Digital technologies play a key role to accelerate access to knowledge, economic growth and job creation, equality and participation of different groups, institutions accountability, efficiency of science, and new opportunities for innovation in any societal sector.

Digital technologies also contribute to the fulfillment of most Sustainable Development Goals because they are a critical cross-sectorial issue underlying infrastructure or technology for specific development sectors.

The megatrends such as mobile internet, the internet of big data, digital innovations are creating development opportunities faster than ever. Digitalization is a crucial driver for growth and well-being, and

is having a profound impact across all sectors. The internet and digital technologies today boost economic, social and political development, including by vastly expanding the capacity of individuals.

The modern information societies have access to digital technologies, where everyone can create, access, utilize and share information of their choice. At the same time legal frameworks need to be put in place to protect security and privacy in the digital age and to avoid potential cyber intrusions and minimize abuses.

In the era of technical advancement, where everything revolves around the “e” world, digitalization has spread its wings over all the spheres of life. The immense use of digital devices and our growing dependency on them clearly states that digitalization has great potential to revolutionize the socioeconomic growth parameters thus, forming a symbiotic relationship with sustainable development.

Digitalization is important instrument which has simplified the functioning and processes in various areas like administration, regulation, planning and operations of the socio-economic domain by ultimately enriching the quality of life. This very feature of the digital age results in sustainable development as when the societies are digitally empowered, they are more conscious, connected, compliant, collaborative and content towards growth.

The Globalization of Digitalization has given a great boom to the corporate, financial and administrative sector which has exponentially widened the horizon of services being offered to the society like better technology to access everything at one click, improved facilities in the healthcare and hospitality department and good opportunities in educational sector for the less privileged.

The digital platform integrates the urban and the rural worlds together under a common sheath of Sustainable development keeping in close touch with all social aspect. With this holistic approach, nations would not only be able to offer inclusive growth but give an efficient sustainable and digital life to their people. This results in well aware, self-enabled and digitally equipped people who would be good learners, thinkers, reformers, participators and agents of change and growth marching ahead on the path of sustainable development.

Information has always been a vital element in the evolution of mankind. It harnesses growth and development. Digitalization helps to use digital technologies to access, share and harness information in a very cost effective and speedy manner. Through digitalization, Cell phones become ‘smart phones’ which ensures that everyone is globally connected at each moment with the handheld devices. More socialization has narrowed down the social gaps resulting social development. This transformation has made the world highly digital in all their actions and bridged the gap between the unaware and informed classes as the flow of information is now universal.

Digitization is a new game changer and has changed the ways of thinking and shaping up things. It has given a new dimension to the businesses to grow. Digitalization speaks about information flow of objects, visuals, sounds, through a fast, spontaneous channel of signals.

Digitization drove the creation of today’s e-Commerce world. We have all invested millions in creating digital copies of analog capabilities. We now have the physical store and an e-Store, physical payments and e-Payments, reality and e or virtual reality.

A definition based on value and revenue broadens the idea of digitization as it moves beyond managing information about things to creating new value based the properties of digital information itself. Rather than thinking about transactions and systems, think of the array of technologies that can be involved in the creation of value: mobile phones, telemetry, social preferences, big data, meta data, analytics, behavior,

expression, cloud infrastructure, etc. Each represents a part of an emerging digitized economy and sources of future value.

Due to cost efficiency and numerous growth opportunities digitalization leads to economic stability as well. Hence, this approach aims at overall growth and takes us closer to sustainable development. The next wave of Digitization reflects new ways of thinking where we look to create value by:

- Using information in its extensive sense to give people better/greater choice and independence to transform their experience.
- Developing new strategies based on the knowledge of people and their ability to know more and then applying it the best way to address their needs, wants and aspirations.
- Improving operations and performance through good coordination, better resource deployment, and improved, faster and deeper decisions
- Generating growth models by leveraging all capabilities through innovative ways.

New technologies are speeding up the pace of life, increasing efficiency and enabling more people to share more knowledge. Value chains are being redesigned.

The 2030 Agenda for Sustainable Development is the new pact on the world's future. Its implementation is one of the most important tasks for the world community. And the digitalization, digital platforms and digital possibilities give the opportunity to people everywhere to take part in implementation of these goals and make the world the better place for living.

The Parliamentary Assembly of the Black Sea Economic Cooperation has taken up the issue of sustainable development from various angles. Thus it has adopted the reports and recommendations on:

- Education and Science for Sustainable Development in the BSEC Member States
- The Role of New Technologies in the Development and Strengthening of the Information Society in the BSEC Member States
- The Role of public-private Partnership for Sustainable Development in the BSEC Member States
- E-Government in the BSEC Member States
- Cooperation in combating cyber security in the BSEC region.



Khayala Mammadova
Head, International Conference Organizing Committee
Contact Person, Global Compact Azerbaijan Network

On behalf of the International Conference Organizing Committee, warm and fraternal greetings to all the participants to the International Scientific Conference on Sustainable Development Goals 2017, “Transforming our World: The role of Science to foster the integration and the implementation of the Sustainable Development Goals (SDGs)”.

The Sustainable Development Goals (SDGs), otherwise known as the Global Goals, are a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity. These 17 Goals build on the successes of the Millennium Development Goals, while including new areas such as climate change, economic inequality, innovation, sustainable consumption, peace and justice, among other priorities. The goals are interconnected – often the key to success on one will involve tackling issues more commonly associated with another. The SDGs work in the spirit of partnership and pragmatism to make the right choices now to improve life, in a sustainable way, for future generations. They provide clear guidelines and targets for all countries to adopt in accordance with their own priorities and the environmental challenges of the world at large. The SDGs are an inclusive agenda. They tackle the root causes of poverty and unite us together to make a positive change for both people and planet.

In Azerbaijan, the Global Compact Network Azerbaijan is introducing the Sustainable Development Goals (SDGs) and the 10 Principles of the United Nations Global Compact.

The UN Global Compact, being the largest corporate sustainability initiative in the world, is a leadership platform that seeks to promote and implement ethical and sustainable practices in business and strategy domains.

The Global Compact Azerbaijan Network aimed to “mobilize businesses, civil society organizations, local authorities and to work together towards the United Nations Sustainable Development Goals (SDGs).”

United Nation’s 17 Sustainable Development Goals include quality education, climate action, gender equality, clean water and sanitation, good health and well-being, zero hunger, no poverty, affordable and clean energy, decent work and economic growth, and many more.

The International Scientific Conference on Sustainable Development Goals intend to be a leading international meeting for the analysis and debate between all national and International actors involved on Sustainable Development Goals (SDG), especially universities, governments, cities and public agencies.

Conference provides a forum for the sharing of ideas, presentation of research findings, and discussion of professional issues relevant to Sustainability Science.

The Conference theme is creating a unified foundation for the Sustainable Development: research, practice and education. This theme headlines the strong foundation that is provided by using research to inform our everyday practices, policies, and research approaches.

The general aim of the conference is to promote international collaboration in Sustainability Science and related disciplines.

On behalf of the Scientific Program Committee, I have great pleasure in presenting this important event of the Scientific Community.

The Conference topics are distributed in the range of the following streams within the ISCSDG 2017 program:

- Education for Sustainability,
- Gender & Sustainability,
- Economic Sustainability:
- Environmental Sustainability:
- Water Sustainability,
- Socio-Cultural Sustainability

All papers were reviewed by members of the ISCSDG-2017 Steering Committee for rating of paper quality and presentation content.

Selected papers are also published at the International Journal of Humanities and Social Development Research.

Further details in accordance with the instructions of the ISCSDG-2017 are provided on the Call for Papers page at: http://www.ijhsdr.com/Conference_CallforPapaer.aspx

I would like to thank you for your scientific contribution to the International Scientific Conference on Sustainable Development Goals - 2017, and look forward to having the opportunity to show case and disseminate your research.

Special thanks also to the International Conference Organizing Committee, and all the people that worked hard, to bring in light this considerable event. I'm sending you our warmest greetings and best wishes for an inspiring and fruitful conference.



Marina Vashukova,
Executive Director of the Association “National Network of the Global Compact”, Russia

The SDGs success depends largely on coherence of national, regional and international policies, on the priorities established, on connectivity and inclusiveness of sustainable development, on combined efforts of business, society and governments. Nobody can stay on the sidelines!

Our primary focus as a Local Network is to find concrete tools to engage the Global Compact participants in Russia in the SDGs achievement process and to elaborate success criteria for the companies involved, as well as to unite responsible business around the targets.

Together with our participants we have set up a pool of strategic projects of the Association for the years to come, including, first of all, support of the SDGs, development and promotion of responsible finance and investment principles, as well as of public non-financial reporting, business and human rights, and climate agenda, improvement of education and awareness on corporate social responsibility and sustainable development.

We are increasing our capabilities setting a high value on partnerships, joint activities and cooperation in each direction where the Global Compact can be used by our stakeholders as an essential platform or resource for their benefit.

Participation in the Global Compact helps business to shorten its way to international cooperation, internal growth in lines with the call of the times and making profit from their reputation. It also provides companies with opportunities to claim their points of view at the international level and to participate in global agenda, while acting effectively at national level and improving their skills and expertise.

The Global Compact Local Networks are bridges between concrete organizations and the SDGs. Each network should create its own atmosphere and space around it – clear, vivid and bright, reflecting its activities, targets and ways to accomplish them. Local Networks are frameworks for SDGs achievement which is in power of consolidated societies only.

We appreciate friendship and partnership relations with the Global Compact Local Networks and other colleagues all over the world in the field of sustainable development. We wish the Global Compact Network Azerbaijan success in the International Conference on Sustainable Development Goals and its other noble efforts. Look forward to further cooperation and good fellowship.



Aye Thiri Kyaw
Researcher and women rights activist, Myanmar

In 2014 - 2015, I served as a Gender Equity Analyst for “The Three Millennium Development Goal Fund” and worked to improve the Maternal & Child Health, HIV/TB/Malaria and Health Systems Strengthening. For many years, I have worked as a women rights activist, violence against women researcher, and Gender advisor for CSOs, UN and INGOs. My role currently contributes the Sustainable Development Goal (SDG) 5- Achieve gender equality and empower all women and girls in Myanmar.

Myanmar has recently produced a Sustainable Development Goal baseline indicator report to measure Myanmar’s starting point. The report is a first attempt at compiling the baseline data that currently exists on Myanmar for the SDGs. The current available data shows that 11.0% of ever-married women and girls (aged 15-49) were subjected to physical and/or sexual violence by any husband, in the last 12 months. This however still needs to account the substantial unreported cases which associated with shame and stigma around intimate partner violence. Myanmar currently do not have available data for whether or not legal frameworks are in place to promote, enforce and monitor equality and non-discrimination on the basis of sex. The country’s lack of anti-Violence Against Women Law is an obstacle for the women’s access to justice. In addition, national data on sexual violence is not available. There is still a long way to go to achieve goal 5 but Myanmar is committed to improve the gender equality and relevant indicators to achieve the goal.

Sustainable Development goals are the global agenda and contribute to the global challenges of the world.

I believe that the two-day International scientific conference will bring all the stakeholders together to discuss challenges and find the solutions through the role of science in Azerbaijan.

Therefore, I wish you best of luck on all your future endeavors in achieving these goals at both national level and global level.



Margarita Ducci Budge
Representative, Chilean Global Compact Network

Since 2015, the local network has been carrying out an adaptation process of its work plan and its aligned activities with the Sustainable Development Goals (SDGs). The local Chilean Network carries out a strategic planning process with priorities based on the selected SDGs by the participating companies. The work proposal for each objective is based on the observations of the companies and their needs and interests. In order to give priority to the most requested topics and within the functionality of available information.

In order to carry out this work, the Chilean Local Network has established partnerships to count on a group of Technical Organizations that support the design and development of the contents (primarily UN Representative Agencies and/or the Government). The information is defined according to the goals proposed by each SDG, giving priority to those that have more evident impact and relation to the business activity.

In order to articulate the contribution of the private sector to the Agenda 2030, around the 17 Sustainable Development Goals, eight groups of leading companies working on different SDGs have been formed among the adherent companies. The companies follow with the understanding that the goals are indivisible; however prioritize some of them for practical purposes of which include Human Rights and Business, SDG 3, SDG 5, SDG 8, SDG 9, SDG 12, SDG 13 and SDG 16. Each group has a leading company and at least one advisory body. Additionally, an analysis is conducted of the goals of the particular interest objective as well as a survey of company's initiatives.

The purpose is to generate partnerships (individual or groups) and alliances for joint projects.

The Chilean local Network participates actively in different initiatives by the government which are in relation to sustainability and the dissemination of the 17 SDGs and Human Rights. Chile highlighted partnerships consist of – Council of Social Responsibility for Sustainable Development, National Council for the implementation of the 2030 Agenda for Sustainable Development, International Institute for Sustainable Development (IISD), UNCAC (United Nations Convention against Corruption) Table, the OECD Reflection Committee and the Directorate of Human Rights of the Ministry of Foreign Affairs, among others.



Jose A. Puppim de Oliveira
Fundação Getulio Vargas (FGV)
São Paulo School of Management (EAESP), São Paulo – SP, Brazil

In 2015, the United Nations announced a new development framework encompassing economic development, environmental sustainability and social inclusion under the umbrella of the Sustainable Development Goals (SDGs) in a document known as ‘Transforming our World: the 2030 Agenda for Sustainable Development’.

Asia-Pacific plays an important role in the implementation of the 2030 Agenda, as the region comprises most of the world’s population and a growing weight in the world’s economy, as highlighted by the ESCAP-UNEP-UNU-IGES report “Transformations for Sustainable Development: Promoting Environmental Sustainability in Asia and the Pacific” (free in the link below):

<http://www.unescap.org/publications/transformation-for-sdg>

The International Scientific Conference on Sustainable Development 2017 aims to discuss the implications of this new framework for bringing science and public policies to support the achievement of the Sustainable Development Goals (SDGs) in the region and beyond. It is important to examine changes, reforms and innovations needed at all levels of governance, and analyze how these innovations can improve the incorporation of the best science into public policies in the pursuit of sustainable development. The discussions address best practices, success stories and experiences of both scholars and practitioners.

The conference is a platform for different state and other institutions to share experiences for building networks and partnerships for sustainable development. The results of the discussions can provide useful information to the implementation of the 2030 Agenda for Sustainable Development.



Kaizar Hossain
Director
Internal Quality Assurance Cell (IQAC)
PACE Institute of Technology and Sciences- Andhra Pradesh, India

I, Dr. Kaizar Hossain-India, Advisory Board Member of International Conference on Sustainable Development 2017, extends a hearty welcome to you all for the Transforming our World: The role of Science to foster the integration and the implementation of the Sustainable Development Goals (SDGs)- on November 24-25, 2017.

Sustainable development, especially since the 1992 United Nations Conference on Environment & Development at Rio de Janeiro, has become an increasingly important theme in local, national and world politics, and increasingly a central theme for the engineering professions around the world. The sustainable development concept requires of all of us – as engineers and citizens – to consider much more widely than before the impact of our own lives and of the infrastructure and products we produce, both geographically and temporally. This International Conference draws on field research and recommends expanding the solution space open to engineers. To facilitate this broader decision-making requirement, it provides a framework to assist engineers in arriving at a suitable solution.

One again I welcome you all and are looking for an enriching, enlightening and a thoroughly enjoyable experience for one and all!

With warm wishes and regards.



Mamed Musayev
President
National Confederation of Entrepreneurs (Employers) Organizations of
Azerbaijan Republic (ASK)

Dear participants,

It is great honour and pleasure for me to address to the participants of the International Scientific Conference on Sustainable Development 2017.

Overcoming challenges related sustainable development, poverty and employment issues and providing social protection of disabled people, children and older people are main goals for all the countries in the world. That's why on September 2015, all 193 Member States of the United Nations adopted a plan for achieving a better future for all — laying out a path over the next 15 years to end extreme poverty, fight inequality and injustice, and protect our planet. At the heart of “Agenda 2030” are the 17 Sustainable Development Goals (SDGs)

Being an umbrella organization, the National Confederation of Entrepreneurs (Employers) Organizations of Azerbaijan Republic (ASK) is a non-profit and self-governing public union aimed at social objectives which includes: promote business environment in Azerbaijan, coordinate on a voluntary basis activities of legal and physical entities undertaking entrepreneurial activity irrespective of their business entity type and property form (excluding state funded organizations), help them find new partners domestically and abroad, protect their legal and economic rights, and foster a healthy business climate.

Today development of non-oil and private sector are very critical for our country and this strategically approach creates new perspectives for business development and entrepreneurship in Azerbaijan. In the same time this situation means the government and private sector are also very interested in realization of SDGs via providing the necessary support. Assurance of decent standard of living of the population has been identified as the primary goal even in the Constitution of Azerbaijan Republic.

This once again shows the tenacity and social nature of the state. Azerbaijan business community also understands its responsibility in realization of SDGs and is making a number of efforts in this direction in order to contribute to development of prosperity and create new jobs etc.

Today entrepreneurs of Azerbaijan do not think only about their financial benefits, problems of society are also very important for us. That's why our business carries out a number of CSR projects, invests to education, culture, sport. They support local initiatives and invest for sustainable development.

The ASK collaborates with our members in the fields like implementation of labor standards, labor security. In the cooperation with state authorities Confederation is struggling with child labor, human traffic. Assurance of social rights of workers, business and human rights issues, attempts in the framework of sustainable development, transparency, corporate social responsibility of business, reduction of unemployment and poverty are main topics for us as well. We are ready to participate in the overcoming process of challenges faced our world.

Once again I wish a success to the conference and all participants in realization all the SDGs all over the world.



Monica Ganan
Global Challenges Institutes
London South Bank University, England

We have only one Earth.

Its capacity to support a flourishing diversity of species, humans included, is large but limited. We are using over 30% more resources than it can replenish each year. This same Earth is hosting acute poverty alongside extreme wealth, while famine co-exists with the highest obesity rates in history and many women and girls still deprived of equal opportunities.

The 17 goals and 169 targets that structure Sustainable Development Goals (SDGs) are fundamental to bringing about this necessary change and ensuring the future of our planet and its inhabitants. These issues, however, are too great to be combatted by one institution or organization alone. They require the pooling and sharing of knowledge and experience across disciplines, institutions, and countries; and they need the support of governments, the private sector, civil society and universities.

UNESCO has highlighted the role of universities in promoting SDGs and building the skilled workforce of the future by raising global citizens and change makers. Furthermore, universities have a pivotal role in achieving SDGs through helping to design SDG-based policies; conducting SDG-oriented research and development; and incubating new sustainable development businesses.

The process is mutually beneficial, as engaging with SDGs has the potential to benefit universities by helping them create and prove impact, build new multidisciplinary and international partnerships, access novel funding sources, and ultimately, contribute to a more sustainable future.

The challenges are vast and the road is long but we, together, are starting to make a difference that will transform our future for the better.



Anukrati Sharma
Research Awardee (UGC), University of Kota, India

Tourism plays a vital responsibility in safeguarding heritage, culture, wildlife and much more of a destination. It is much needed in present ear to create an attitude of responsible tourism to attain a sustainable society. For achieving the goals of responsible tourism which actually leads towards sustainable tourism it is important to produce and utilize/consume tourism products sensibly and responsibly. Government, Private players and service providers in tourism industry should endorse responsible utilization of tourism products especially natural products, water and food by local community, tourists and employees. Dealing with responsibility will not be only helpful to make a distinct identity of a particular destination it will also help in economic and social benefits.

It is also important to develop accessible tourism by creating accessible infrastructure. This can help in developing a feeling of equal opportunity to all in tourism sector. Science and Information Technology can work as backbone to develop accessible tourism. The problem between supply and demand is truly faced by persons with disability in tourism sector. For developing responsible and sustainable tourism it is required to train employees, create awareness among visitors and tourists of the importance of their responsible behavior on a destination.

I would like to give an example here of my country India which is known not only for its incredible tourism but also for its agriculture. It is sad to see situations are going drastic of farmers day by day. They are committing suicides because of debts and other reasons. Adaptation of Agri- tourism with some innovations can control the situation to some extent. By generate a flow of tourists towards farms farmers can create more economical benefits. For stopping water waste and over usages focus upon water management with strict policy on usages of water by hotels should be carried out.

I would like to congratulate the organizers of the International Scientific Conference on Sustainable Development 2017, “Transforming our World: The role of Science to foster the integration and the implementation of the Sustainable Development Goals (SDGs)” for selecting such a relevant theme of the conference.

I am sure this conference will be beneficial not only for academicians, industrialist but also to the society at large.



Muhammad Asif Noor
Director
Institute of Peace and Diplomatic Studies, Pakistan

The dynamics of the world is changing with emergence of the digital age, it has brought tremendous amount of the opportunities and challenges for the humanity to deal with. With advent of the 20th century and especially when humanity realized to set the goals to reach the optimum level of peace and stability for the entire world. Then in 1987 the United Nations Conference on Environment and Development used the term “Sustainable Development for the first time. In the pursuit of the Sustainable development initiatives, there have been several pillars that were identified. United Nations spearheaded in identifying the several goals which earlier termed as Millennium Development Goals and later in September 2015, they were taken as Sustainable Development Goals wherein 193 member states vowed to transform the world through these set goals and steps to transform and deal with the world’s most pressing challenges. The world leaders pledged to the new ‘2030 Agenda for Sustainable Development’, encompassing universal and transformative SDGs and the logic behind devising these goals was to work together in a collective manner to make significant progress towards the improving the lives of the humanity. This new agenda calls for the countries to accept the challenges and begin working on to take steps to achieve these goals for the next fifteen years through cooperative and collaborative efforts. Among other goals including dealing with the major challenges related to poverty, hunger, injustice, illiteracy, racism and prejudice, rising extremism, social inequality, corruption, education is one of the key goal in the effective and transformed implementation of the newly devised MDGs as a universal goal, target and indicator that the member states are expected to use to frame their political policies at the domestic. Education is considered as the key factor in reaching to all the MDGs.

Taking this opportunity, I would like to appreciate the organizer of the International Conference on “Transforming our World: The role of Science to foster the integration and the implementation of the Sustainable Development Goals (SDGs)” organized by the “Azersu” OJSC, Global Compact Network Azerbaijan and other collaborating organization is timely and required especially when this century is considered as the Asian century wherein the role of countries like Azerbaijan in the global arena is important. The conference will provide the ample intellectual and practical suggestion at the end of the proceedings in terms of papers to submit vision for the sustainable development for the world. I hope the conference will also help build new narratives and initiatives for the years to come by not only evaluating the past, building on the present and vision for the future.



Joash Moitui
*Economic Advisory and Portfolio Management,
International Fund for Agricultural Development, Italy*

Future view of SDGS. Indicators of Progress

Across the whole range of international concerns, from poverty and hunger through equality and climate action to peace and justice, we need good data to know where we are starting from, whether we're making progress and what we need to improve. Data allow governments to make evidence-based decisions, and citizens to hold governments to account. In short, good public policy requires good data.

The Millennium Development Goals (MDGs), in place between 2000 and 2015, can provide important lessons here. While they are widely perceived as a success story, and certainly mobilized increases in aid and other resources, tracking progress in the early years was hard. There were large data gaps, and not enough attention was paid at the outset to selecting indicators and making sure that reliable data would be available.

The SDGs are different: data are now recognized as central to achieving the 2030 Sustainable Development Agenda, and the UN Statistics Commission is already supervising work on an official set of SDG indicators. The commission in March 2016 decided on indicators to be used, and arrangements have also been agreed to govern follow-up and review in the years ahead.

Clearly, monitoring progress towards the SDGs will be even more challenging than it was for the MDGs. The new targets are universal—applying to all countries, and not just focused on development problems. Many of the new targets are complex and multifaceted, and they cover a much wider range of fields and sectors than the MDGs. The SDGs' emphasis on reducing inequalities will also require data articulated in multiple dimensions, such as gender, disability, and socio-economic status.

I believe the conference will achieve its set objectives but should focus on the ideal that SDGs should not be tackled in isolation given the many interactions and interdependencies across SDGs.



Saiful Anwar Matondang
Institute of Science & Technology Development, Indonesia

It is a great event for scholars from all over the world to share their knowledge and experiences to give as many as possible alternative solutions for the people, nations, and governments in facing uncertainty challenges to sustain the nature ecology and inequality of humanity for better future.

Here today in Republic of Azerbaijan the invited scholars and participants have been thinking smart and do hard to create global transformation for sustainable development and the improvement of living conditions. Many topics presented to open the different problems of sustainability that need to overcome either in a short program or long term. Transforming the world, of course, needs the advanced sciences, technology, and strategies that have been validated by scholars in universities and centers of excellence.

We dream of the effective programs for the food, health, education, wealth, social justice, urban environment, fresh air and water, democracy and gender equality. The scholars invented and testified the better programs and strategies to overcome the scarce of food resources, health and education services for the poor. The usage of modern technology and invention with less pollution should be transformed to the low income groups and developing countries.

Additionally, modern technology as the instrument to save the rest of people should touch the difficulties of the low income groups. Furthermore, all of applicable programs not only give benefits for scientists, but the most important thing is for humanity. The last but not least, the humanity is the central of sustainable development which invites the sciences and advanced technology that cope the low level of living conditions. The scholars again play an important role in mapping out the suitable tools, and in applying them to save the nature, people, nations, and countries from devastated disaster dues to the ignorance of massive industries, greedy capitalism and Leviathan. It is a great moment for all the presenters and participants to disseminate their contributions the improvement of human life in the next decade.



Gerasimos T. Soldatos
American University of Athens, Greece
Ecology Economics: Green Industrial Policy vs. Green Agenda

One of the tasks of ecological economics has been the incorporation of the environment into the production function as a factor of production additional to labor and capital. Land, which is part of the environment, had already been treated by classical economists as a third, distinct factor, which came later to be disregarded by neoclassical economics. Nevertheless, economic growth has been attained thus far at an overexploitation of natural resources that may soon trigger irreversible environmental damage: It is time to reconsider the developmental mode of “what-how-for whom to produce” that is behind this growth, especially after the tremendous national and international wealth inequality prompted by globalization. Ecological or environmental economics acknowledges this need to redefine development (rather than just growth) explicitly, seeking to make it sustainable. Green technology innovations and institutions making producers internalize their natural-resource stock feedback on production are needed to part development and welfare from resource depletion and pollution. Much remain to be done towards this direction. But, it is clear that what is sought policy-wise is an environmentally conscious industrial policy rather than the satisfaction of some “green agenda” that prioritizes the environmental over the socioeconomic element. Sustainable development is meant to balance these elements, being at stake with extreme proposals advanced by left-wing environmentalists like calls for zero-growth and/or green cities and communities. To sustain growth, growth for all, is why the environmental element has been addressed in the first place while privileged jurisdictions for the few are what green cities can mean if they do not come as a “natural” consequence of socioeconomic development.



Nino Pruidze
East European University, Georgia

The Role of ICT in the Sustainable Development Goals

The Agenda 2030 intends to Transform Our World for the benefit of everyone. SDG implementation is a mean for achieving this ambitious and aspiring aim.

Though successful implementation of SDGs is a guarantee for a better future, their successful implementation is not guaranteed, itself.

It is challenging to identify a silver bullet, however, several critical factors - necessarily needed for SDG realization – stand out and ICT is one of them. In particular, (a) via ICT no one is left behind – an ethical imperative of the Agenda 2030; (b) ICT promotes transparency and accountability –a key factor of Good Governance; (c) ICT enhances innovative and multi-stakeholders’ partnerships – a critical issue for SDG implementation.

There exist synergies between ICTs and SDGs. Based on the empirical evidence, e-tools developed in the field of health, agriculture, education, governance, production and infrastructure etc. advance realization of the goals.

As far as ICT are catalysts for SDG implementation, there is a crucial need for multi-stakeholder engagement and collaboration in order to adopt additional tools and transform our world for the benefit of all.



Pyrene Tumaliuan Quilang
University of Saint Louis, Philippines

Greetings and welcome to the 2017 International Scientific Conference on Sustainable Development!

With the theme, “Transforming our World: The role of Science to foster the Integration and the Implementation of the Sustainable Development Goals (SDGs),” the conference lay down that various researches on the 17 goals of sustainable development should take. The Philippines, a developing country in South East Asia is active and committed in the promotion of the Sustainable Development Goals especially along social, economic, and environmental agenda. In fact, the Philippines is part of the member states of the United Nations in adopting the Sustainable Development Agenda at the United Nations Headquarters in New York in September 2015. With this, the Philippines pledged to make the Agenda a reality and to leave no one behind. Further, as result, the Philippines include migration, vulnerabilities, collective action for conservation, and inequality of opportunities as part of its agenda. In order to realize this herculean goals, we need partners like you in order to create initiatives and scientific undertakings that will be great factors to increase productivity and development among nations. Hence, this conference is a great opportunity for various stakeholders such as Higher Education Institutions, government and non-government organizations, industries, and other partners for mutual collaboration and research partnerships that will eventually lead to interests and that will create a positive ripple towards global competitiveness and will definitely lead to the realizations of these vital sustainable goals.

As I humbly represent the whole Filipino community, I would like to congratulate the men and women behind this endeavor and also to all the research presenters and participants of the conference. Thank you for making a very huge step in the promotion and realization of this important goals for advancement and development of the humanity!

Maraming Salamat at Mabuhay tayong lahat.

Part II

Conference Book:

“Transforming our World: The role of Science to foster the integration and the implementation of the Sustainable Development Goals (SDGs)”

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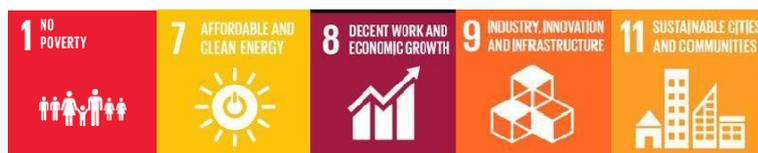


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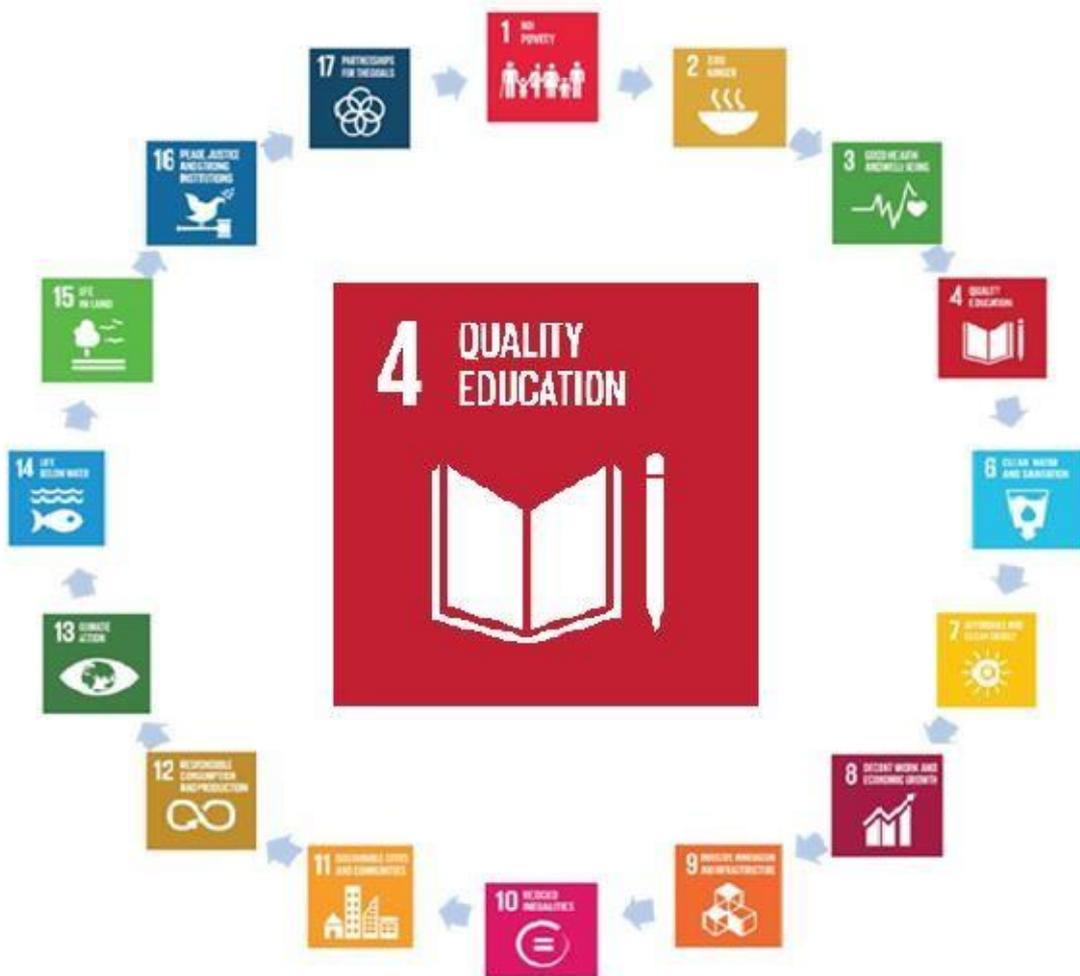
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Ellada Hacıyeva

Azerbaijan Technical University, Azerbaijan

The second half of the 20th century has been labeled the 'era of development'. In this century, economic growth has resulted in substantial improvements in education, medicine and the quality of life for many people. Overcoming the global crisis requires a new ideology and modern innovative approaches to education.

At the 70th Session of the United Nations General Assembly in September 2015, 193 of the United Nations' Member States formally adopted a new global development agenda - Transforming our world: the 2030 Agenda for Sustainable Development composed of 17 goals and 169 targets to wipe out poverty, fight inequality and tackle climate change over the next 15 years. The Sustainable Development Goals (SDGs), otherwise known as the Global Goals, are a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity. For the goals to be reached, everyone needs to do their part: governments, the private sector, civil society and every human being across the world. Governments are expected to take ownership and establish national frameworks, policies and measures for the implementation of the 2030 Agenda. The Sustainable development's ultimate goal includes the elimination or mitigation of poverty, unemployment, and other social inequities.

The 17 Sustainable Development Goals (SDGs) are as follows:

1. No Poverty – End poverty in all its forms everywhere
2. Zero Hunger – End hunger, achieve food security and improved nutrition and promote sustainable agriculture
3. Good Health and Well-Being – Ensure healthy lives and promote well-being for all at all ages
4. Quality Education – Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
5. Gender Equality – Achieve gender equality and empower all women and girls
6. Clean Water and Sanitation – Ensure availability and sustainable management of water and sanitation for all
7. Affordable and Clean Energy – Ensure access to affordable, reliable, sustainable and clean energy for all
8. Decent Work and Economic Growth – Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
9. Industry, Innovation and Infrastructure – Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
10. Reduced Inequalities – Reduce inequality within and among countries
11. Sustainable Cities and Communities – Make cities and human settlements inclusive, safe, resilient and sustainable
12. Responsible Consumption and Production – Ensure sustainable consumption and production patterns
13. Climate Action – Take urgent action to combat climate change and its impacts
14. Life below Water – Conserve and sustainably use the oceans, seas and marine resources for sustainable development
15. Life on Land – Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably

- manage forests, combat desertification, and halt and reverse land degradation and halt
16. biodiversity loss
 17. Peace, Justice and Strong Institutions – Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
 18. Partnerships for the Goals – Strengthen the means of implementation and revitalize the global partnership for sustainable development

The universal, transformational and inclusive SDGs describe major development challenges for humanity. It addresses the needs of both the present and future generations in terms of environmental resources. The SDGs work in the spirit of partnership and pragmatism to make the right choices now to improve life, in a sustainable way, for future generations. They provide clear guidelines and targets for all countries to adopt in accordance with their own priorities and the environmental challenges of the world at large.

Education is an essential tool for achieving the SDGs and for training human resources to optimize productivity by encouraging technical progress and by promoting cultural conditions conducive to social and economic changes. At all levels, it can be a powerful tool in promoting sustainable development.

The role of any university and institution is helping students to understand the concept of SD. Universities and institutions are very good places for the start of any awareness program. Since SD is a word that carries too much meaning and interpretation, universities and institutions are also responsible to conduct research on this particular field. It leads to actualization of conservation knowledge and skills which in turn helps in broadening people's knowledge about conservation, thus making them functional members of the society.

The objectives of higher education are to discover new tools to deal with big problems such as global warming, pollution, climate change, biodiversity, energy, environment conservation etc as well as to develop new methods and new approaches to explain the sustainability to everyone. Sustainability is a superb issue to bring together several different disciplines.

As Universities and other institutes play a vital role in the implementation of sustainable development, it should be part of their curriculum to spread the awareness and importance of SD to students and through students to their community. Therefore, universities and institutes should be integrated and collaborated for sustainable development of our world.

Even though sustainable development might not be part of the curriculum of most universities in the world, at least everyone has an idea of what the environment is, how it is being degraded day in day out and ways of sustaining it. Sustainable development can therefore be prioritised in the various universities as a course or as an integral part of a course related to ecology. The concept of sustainability is easy to understand but difficult to implement. The role of the universities must therefore be equipping students with hands-on experiences about SD and effective ways of disseminating information related to SD to the general public.

Sustainable Development programme helps Azerbaijan achieve improvements in people's lives by providing access to the necessary skills and resources for the unemployed, engaging with the private sector for continued growth, improving environmental management and mitigating climate change effects. As part of this programme, UNDP also broadens the perspectives of young people on development issues by teaching Human Development courses at universities.

The primary role of universities is to inform professionals at all levels about new technologies, research results and impacts for the survival of human beings in this Planet. To do this, new courses and teaching approaches should be implemented.

2005-2014 is the decade for Education for Sustainable Development (DESD). The United Nations gives the following description of education for sustainable development:

Education for sustainable development has three key areas: social environment, natural environment and economy. It must be recognized that these three areas are interconnected.

Education for sustainable development reflects the need for high quality education:

- Education for sustainable development should permeate all curriculum plans and should not constitute a separate subject
- The education should help establish the values and principles underpinning sustainable development
- The education should stimulate critical thinking and problem solving
- The education should be based on methodological diversity to promote the learning process
- Students and pupils should themselves participate actively in decisions about the methods to be used

The education should address local as well as global topics. The education for sustainable development empowers students and provides the direction for their mindset and aware for a sustainable future. Education for sustainable development is a significant aspect of quality of education and it forms foundation of sustainable development and highlights the difficulties and interrelation of society, environment and economy of the country. Environmental education for sustainable development in higher educational institutes is very helpful to prepare a cadre of environmentalists who can promote it further by post graduate and research scholars and finally output may be useful for the government. There should be an interrelationship between technology and economic development. Moreover, the research in higher educational institutes should be field-based. Besides, workshops, seminars and training programmes on sustainable development should be organized for college and university faculties and also for students to prepare a group of experts.

Achieving the SDGs requires the partnership of governments, private sector, civil society and citizens alike to make sure we leave a better planet for future generations.

Education for sustainable development develops and strengthens the capacity of individuals, groups, communities, organizations and countries to make judgements and choices in favour of sustainable development. It can promote a shift in people's mindsets and in so doing enable them to make our world safer, healthier and more prosperous, thereby improving the quality of life. Education for sustainable development can provide critical reflection and greater awareness and empowerment so that new visions and concepts can be explored and new methods and tools developed. Education shall make the people more competent and confident and increase their opportunities for acting for a healthy and productive life in harmony with nature and with concern for social values, gender equity and cultural diversity."

The UNECE Strategy on Education for Sustainable Development and Environmental Education:

The aims of the UNECE-strategy are:

- To ensure that policy, regulatory and operational frameworks support ESD.
- To promote ES through formal, non-formal and informal learning.
- To equip educators with the competence to include sustainable development in their teaching.
- To ensure that adequate tools and materials for ESD are accessible.
- To promote research on and development of ESD.
- To strengthen cooperation on ESD at all levels within the UNECE-region.

"Our Common Future", 1987 Report from the World Commission on Environment and Development.

Both peace and environmental educators have a common goal of stopping violence, but in human communities there will always be conflicts. The challenge is to learn to resolve conflicts nonviolently, to share limited resources equitably, and to live within the limits of sustainability. This has become increasingly important as the Twenty-First Century unfolds with increasing human populations all seeking a better life. Peace will require both Education and Sustainable Development and Education and Sustainable Development will require Peace. The important thing is that human beings, in their individuality, should be educated to "live together", to analyse, to reflect on their uniqueness and become capable of being enriched by diversity. "...The world is not a market but a village." We are all proud to belong to that village.

Mahatma Gandhi once said: “We assess the value of education in the same manner as we assess the value of land or of shares in the stock-exchange market. We want to provide only such education as would enable the student to earn more. We hardly give any thought to the improvement of the character of the educated.” The role of education in the 21st Century is acting together to learn to live together, in a context of respect for cultures and languages. A firm realization of the importance of better understanding and friendship among all the nationals of the world is what we all need today. Education is an essential tool for achieving the SDGs.

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Summary

The role of higher education institutions in promoting Sustainable Development

Ellada Hacıyeva

Azerbaijan Technical University, Azerbaijan

Sustainable development based research and education are the chief support of any nation. Education for Sustainable Development involves a comprehensive approach to educational reform. The ever increasing population, the rapid growth of urbanization and changing lifestyles make the environmental problems more critical. As environmental sustainability is becoming an increasingly important issue for the world, higher educational institutions can play a crucial role in sustainable development of any nation and requires strong methodological support and international cooperation. Universities are the apex bodies in higher education system and can provide environmental education through their curricular design, research and collaborative efforts. In the area of higher education, the research programme should be influenced by striving for sustainability.

Key words: *Role of higher education institutions, environmental protection, sustainable development goals (SDGs)*

MAIN PRIORITIES AND PROBLEMS OF MODERN EDUCATION

Gultekin Ismailova

Azerbaijan National Academy of Sciences, Azerbaijan

Quality education always plays a very important role in the development of any society. The need of people for studying, acquisition of knowledge and abilities exists throughout all their life - since childhood till an extreme old age. Education as the first step to success, gives self-confidence and tomorrow, an incentive to development, also one of indicators of the social status of the person and change of social structure of society. [1] Education plays an important role in the development of society as a social institute, preservation of cultural heritage of mankind, further improvement of the intellectual level of development of the individual. It is rather an independent system submitting to the laws which main goal to transfer from generation to generation cultural wealth. Recognition of education as a universal value at anybody doesn't raise today doubts. It is confirmed by the human right affirmed in the Constitution on education in the majority of the countries. Problems and gaps in an education system have always existed.

As education multistage process, him as Jan Komensky noted, it is necessary to divide into the levels corresponding to age. The main way of education – process and result of training, i.e. mastering knowledge, abilities, development of personal qualities, including abilities to self-training. Training and education -the parties of uniform process of education. At the same time, training assumes assimilation of knowledge, the skills allowing the one who trains, and to the one who studies to speak one language of objective values of elements of culture. Education assumes assimilation of moral values and standards of public and professional behavior. But such assimilation is impossible without training.

The educational party of education exerts impact on moral shape of the personality, outlook formation, not accidentally joins in the concept "education" as well education of the personality. But it should be noted that the volume of the first and second concept coincides partially, education can be carried out in all spheres of life. Concept volume education is much wider. [2] The versatility of education is accurately traced in model of formation of Ancient Greece. Distribution of the Greek culture in the huge territory has noticeably influenced education and training. Before education became public business, the special part has been assigned to the teacher. Introduction of systematic curricula has begun, the best pupils were awarded. Also training methods have changed; use of writing-materials and practice of record of lectures have begun. Creation of textbooks and rules of terminology falls on this time.

Holidays, days of memories of outstanding events, excursions to places of outstanding events had educational value. That is, the ideal image of the person developing in himself was brought up: intelligence, physical force necessary for health and longevity. [3] Didn't forget also and about the spiritual sphere, i.e. Education of a moral image of the responsible citizen understanding an essence and sense of the life. Such systematization can be demanded and today. The education system is much more difficult any other, more rigidly determined — technical, economic, etc. The education system is the open system capable to self-knowledge, quantitative and high-quality enrichment owing to those changes which continuously happen

both in macro-society, and in the system. The valuable characteristic of education represents three interconnected blocks: education as value state, education as social value, and education as value personal.

Problems of education can be classified by sources of problems. Most often not change of all system in general, and improvement already existing is meant. The main sources of problems it is the difficulties going from an education system from pupils and from teachers.

In the first case, a part of problems of the modern teacher is connected with bureaucratization of an education system and also with unsuccessful reforms, not touching and not solving problems: Problems of material and economic providing (shortage of textbooks, grants, small opportunity for practical and

laboratory works). Here it is possible to refer also lack of shots that results in additional load of teachers. Reloading, work on a limit - alienate people from a profession and these are system defects. In the second case, it is problems of social character and a problem with parents. The main problem for the teacher is the identity of pupils. Without knowledge of psychology it is difficult to teacher to work today. Accounting of specific features of the pupil - temperament, character, type of thinking and abilities, features of attention, memory results in the best results. And in the third case it is the problems connected with the busy and stressful schedule of the teacher, especially at a lack of experience that affects his health. One more problem of education is its excessive theoretical orientation. Having received good theoretical preparation very few people can put knowledge into practice. Therefore, having got a job, new employees endure the serious adaptation connected with impossibility to apply the knowledge in practical activities.

Clearly to imagine problem depth, it is necessary to reveal on what of the following stages they begin to arise: 1. The first stage of education — the general education which gives the main knowledge. It consists of the preschool, primary general education and the secondary general education which is the problem period of training for the teacher. If in the primary general education the foundation for the personality is laid, then during this period the intelligence can correspond to age or be ahead of him, but at the same time emotional growing can be slowed down. Sometimes emotional and intellectual growing takes place according to biological age, but physical development advances age, and there are some pedagogical problems which require the solution. There is a secondary general education further — if the previous stages form formation of the personality, this stage is necessary for understanding of as persons. And at last, the vocational education directed to obtaining professional knowledge.

In Azerbaijan, the law “About Education” has come into force in 1992. [5] State standards of secondary education have been for the first time defined; the basic plan of education has been developed and accepted. For youth conditions that it could use knowledge applied in the most developed states, to get acquainted with advanced technology as the future of the republic and the people be assigned to her have been created. In this law the basic principles of state policy in the educational sphere, such as have been defined: humanity, democratic character, national and secular nature of education and also quality, efficiency, continuity. [5 p.6]

Education in our republic is intended to bring up students in the spirit of free thinking, for protection of national and universal values and for the purpose of harmonization of national educational system with world educational system. Besides, state standards in education are prepared on the basis of the scientific and pedagogical principles according to needs of the personality, society and state and reflect uniform state requirements of the modern period. According to the law, the state educational standards are established taking into account the advanced international criteria, national and universal values approved in the educational sphere. [5 .p.9] It leads to the fact that at assessment of activity of educational institution, education level the corresponding state educational standards are taken as a basis. Even concerning education of persons with limited opportunities of health special state standards are established. The special general education programs providing education, treatment, social adaptation and integration into public life of such persons with limited opportunities of health needing long-term treatment are periodically carried out. The quality of education defines competitiveness in national and international labor market, their role in social and economic development of the country, and the requirements connected with social and political, social and economic, scientific and cultural development at each historical stage are without fail considered. [5, p.9]

The general requirements to the organization of education are formation of ability to adapt to modern requirements, to adjust communication in information society, and to be able to take the responsibility. Knowledge helps to be guided with information stream and in the competitive environment. The fact that besides the standard forms of education (initial, average, the highest, special), conditions for receiving additional education as it provides an opportunity to the person to get an education continuously are created is important, and develops human potential.

It raises and improves intellectual level according to constantly changing and renewed working conditions, also provides active participation of elderly citizens in social, economic, political and cultural life of the country. It usually occurs in the form of professional development, retraining and a training of

shots, education of elderly people. [6] For example, the principle of equality provides the rights of citizens for education on equal terms, and the principle of continuity and constancy creates an opportunity to get an education at several levels with his consecutive continuation throughout all human life. Promoting opening up of the educational sphere and educational activity speaks about education liberalization. And, of course, the end result of modern methods of training — its efficiency. The law on education in our republic considers the interests of the personality, society and state. Each citizen of our republic obtains the state guarantee of the right for education that is confirmed in the law.

Cognitive purposeful activity of people on obtaining abilities and knowledge is the main driving force of scientific and technical progress. It is known that the success of any kind of activity depends on competent systematization which allows estimating the general condition of system, to exclude obsolete rules and to define the directions of his development. Systematization of knowledge helps to estimate achievements and progress of students, to define ways of improvement of knowledge for their follow-up vigorous creative activity. Formation of self-checking and mutually control, i.e. education of responsibility for the performed work, self-training also belongs to the priority purposes of systematization. Systematization carries out the controlling, training diagnostic, predictive, developing, focusing and bringing up functions.

Knowledge of moral requirements, norms of communication, and rules of decency is a basis of good breeding, i.e. all that is necessary for civilized cohabitation of people. However, the good breeding is implemented not in knowledge, and in behavior. The principles of training have been proved in the book by the great Czech teacher Y. A. Komensky “Great didactics”. The didactic principles — the main ideas, standard requirements to the organization and carrying out educational process. The principles are conditionally subdivided on classical and modern. Treats the first: principle of consciousness and activity, i.e. intelligent knowledge (judgment, search of the decision). The principle of presentation of training means that the learning efficiency depends on expedient attraction of sense organs to processing of a training material, i.e. in training the mediated methods — tables, models, a photo and videos are used. The principle of systematicity and the sequence assumes teaching and assimilation of knowledge in a certain order, demands logical creation of process of training and also ensuring continuity of material, with rational alternation of loadings and rest. The principle of availability and individualization dictates the organization of educational process taking into account individual traits (character, temperament, interests) and age of pupils, i.e. accounting of their opportunities in order to avoid intellectual, moral, physical overworks. The principle of durability and progressing is constructed on a triad - knowledge, abilities and skills which quickly and precisely are reproduced, remain in memory, and are skillfully put into practice. One of essential in training is the principle of dynamism: gradual, but steady increase in requirements. [4] Here the important value is allocated social psychologically for a factor since interest as one of motivational forces of activity of the person, strongly depends on success. If no positive changes happen, interest dies away therefore relevant requirements are recommended to be raised. And forms of increase in requirements: rectilinear (on each occupation or through several occupations loading increases), step (through a certain interval loading increases), wavy (a combination of gradual increase in loading s to their noticeable increase) the last, wavy form is the most progressive since she allows providing adaptation of an organism to the performed work. Thus, the content of education is formed and continuously is replenished from cultural heritage of various states and the people, from different branches of constantly developing science, from life and practice of society. The practical and symbolical value has education. The practical value of education is reflected in concrete knowledge, skills and abilities, symbolical — in public prestige of education, his influence on processes of changes. So, education is the function of society providing development of the society and the systems of his activity. Education is a way of entry of the person into the world of science and culture.

It is necessary to consider that education always functions within a certain culture, it is entered in this or that system of culture. If earlier education generally was associated only with a school desk and a board, then today it is continuous process of knowledge during all life. Full development of the nation requires acceptance of a number of measures in education. The state has to aspire that education conformed to the international standards and completely met the needs of the country in qualified specialists and highly

educated citizens. The educated person is not only the one who has well graduated from school, educational institution and has a highly paid work in the specialty. This image is extraordinary many-sided, includes culture of behavior, intelligence and good breeding. Life dictates the terms and creates prerequisites in order that people could get a good education. Anywhere and everywhere experts with the higher education are required, because education is the future of our society and the whole country in general.

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Summary

Main priorities and problems of Modern Education

Gultekin Ismailova

Azerbaijan National Academy of Sciences, Azerbaijan

Quality education always played very important role in development of society. Need of people for study, acquisition of knowledge and abilities exists throughout all their life - since childhood till an extreme old age. Education as the first step to success, gives self-confidence and tomorrow, an incentive to development, also one of indicators of the social status of the person and change of social structure of society. Education has always been a special area of public life. As a social phenomenon education is a social system, the duty of which is the training and education of members of society, dissemination of knowledge, ideological and moral values and norms of behavior. Education is a sensitive indicator of developments in society. In General, the priority of education is the very essence of education, its orientation to produce Autonomous, critically thinking citizen, striving to improve the society in which he lives.

Key words: *education, learning, parenting, priority, problem, dissemination of knowledge*

SCIENCE AND EDUCATION IN MODERN SOCIETY

Humay Isayeva

Azerbaijan National Academy of Sciences, Azerbaijan

Sustainable development has emerged as a new goal for international development in the wake of a host of changing environmental, social, and economic conditions.

Science is "a form of spiritual activity of people aimed at the production of knowledge about nature, society and knowledge, with the immediate goal of the attainment of truth and the discovery of the objective laws on the basis of generalization of actual facts in their relationship". [1]

Science is a creative activity aimed at achieving its main goal and the main result: preparation, justification and systematization of new knowledge (concepts, laws, theories) about nature, society and mankind. Education is considered to be a specific human activity, aimed at systematic acquisition of attitudes, skills and ideas in specific areas.

The role of science and technology in SD is viewed in a new way as well, with an emphasis on technologies for empowerment (e.g., education, information, communication) and environmental sustainability (e.g., sustainable agriculture, renewable energy, improved resource efficiency) and a focus on whole systems.

In the modern world, education is the foundation of human development. But modern education cannot be limited only to the process of studying at school or university. For full development and knowledge of the world requires self-education.

XX century was the century of the victorious scientific revolution. STP (Science and Technology Park) has accelerated in all developed countries. By the middle of XX century the factory mode of production became dominant. In the second half of the XX century, widespread automation appeared. By the end of the XX century high technology has developed, and has continued the transition to the information economy. All this happened thanks to the development of science and technology. This had several consequences. First, this increased demands on employees who need to have a great knowledge and understanding of new processes. Second, the proportion of knowledge workers or research workers is required; people whose work requires deep scientific knowledge. Third, the STP is caused by the growth of welfare and the solution of many urgent problems of the society gave rise to the belief of the masses in the ability of science to solve human problems and enhance the quality of life. This new belief is reflected in many areas of culture and social thought. Such achievements as space exploration, the creation of nuclear energy, the first success in the field of robotics gave rise to the belief in the inevitability of scientific-technical and social progress has caused hope for a quick solution, and such problems as hunger, diseases, etc.

The need for sustainable development initiatives to mobilize appropriate science and technology has long been recognized. Early research on sustainable yield management of renewable resources provided the foundation for the International Union for the Conservation of Nature's seminal *World Conservation Strategy*, published in 1980.

The case for making appropriate research and development (R&D) an integral component of sustainable development strategies was broadened by a number of international scientific organizations during the mid-1980s, promoted by the Brundtland Commission's report *Our Common Future* in 1987, and enshrined in the Agenda 21 action plan that emerged from the United Nations Conference on Environment and Development in 1992.

And today we can say that science in modern society plays an important role in many industries and areas of people's lives. Undoubtedly, the level of development of science can serve as one of the main

indicators of development of society, and this is certainly an indicator of the economic, cultural, civilized, educated, modern development of the state.[2]

Education becomes the most important factor for the dynamic updating of the society. It significantly affects the global structural changes taking place in Azerbaijan in all policy areas (politics, economy, social sphere, etc.) its development and intensive integration of educational space of our country and the world educational space. Integration of Azerbaijan education into the global educational system requires a comprehensive study of various areas of science, including the sociology of education. Science-based approach to integration of educational spaces of Azerbaijan and the world, allows you to target the increasing influence of Azerbaijan culture in the development process of human civilization and contribute to the preservation of the national mentality.

The education system is currently undergoing important changes: it gradually implemented the philosophy of open education, which will largely be based on technology, distance learning, external studies, etc. These technologies and types of training are characterized by low interactivity, low regulation of the actions of the student and require extra effort for persistent and systematic lessons. The application of these technologies and types of training will contribute to creative pedagogy. Unlike traditional prop it is done on an independent search ways of solving the problem. Creative pedagogy teaches learners to learn creatively; they become creators of themselves and creators of their future. After all, the main asset of the present and the future will be not technology, but creative thinking and intelligence.

Science is a special form of social consciousness reflecting the world around us in a specific form of scientific ideas, concepts, theoretical systems, and also one of the spheres of human activity aimed at production of new knowledge about nature, society and man.

Science includes all the terms of this production, the scientists with their qualifications, academic institutions with research equipment, a system of exchange of scientific information, methods of scientific work (paradigm).[3]

Natural sciences study natural phenomena of the surrounding world. Such Sciences are primarily physics, chemistry, botany, biology, astronomy... etc.

Humanities study man and his place in society (psychology, anthropology, philosophy, etc.);

Public: - studying society and its development (cultural studies, history, sociology, economics, political science, ethnology);

Legal Sciences study the legal sphere of society (the theory of state and law, history of state and law, etc.).

Science was a natural consequence of the social division of labor and emerged on the stage, when companies appeared able to contain people engaged in a purely scientific activity. Science grew out of the historical situation, when mankind is to survive and move forward, faced with the necessity of knowledge not only to the outside interests of people phenomena, but knowledge of their essence.

Science has two basic functions:

Cognitive function: For a long time scientists explored and explained the world and broaden the mental horizons of all mankind.

Effective function: With the development of large-scale machine production, there were preconditions for the transformation of science into a productive force. First, the science could not have a significant influence on the development of production, it usually went along with the production, summarizing the experience, and produced technical innovations In present time, science is not only involved in the improvement of industrial relations, but also affects people-laborers, on their mental attitude, values, attitudes (e.g., social psychology and sociology of work). In this regard, a great importance is the education system as a necessary means of reproduction of the modern man. [4]

Summing up, we note that the new century becomes a century of great intellectual battle. One of the main tasks of the educational system is preparing young people for life in the XXI century, to ensure that they could control the forces of globalization, the rapidly progressing development of new technologies, demographic and social shifts that have become the realities of today.

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Summary

Science and Education in Modern society

Humay Isayeva

Azerbaijan National Academy of Sciences, Azerbaijan

Throughout the history of human civilization, people have developed several ways of knowing and mastering the world around them. One of the most important ways is science. Science- the sphere of research activities- aims at the production of new knowledge about nature, society and thinking and including all terms and aspects of this production. It reflects the world in the form of concepts, hypotheses, theories, and different kinds of exercises.

This article deals with the problem of the role of science in modern society which plays an important role in many industries and areas of people's lives. The level of development of science is one of the main indicators of development of society, as well as an indicator of the level of development of the state. The inclusion of a person's culture, values, human society, and knowledge of the world, accumulated by previous generations, starts with education.

Key words: Education, learning, parenting, priority, problem, experience

ON SUSTAINABLE DEVELOPMENT GOALS AND THE ROLE OF INSTITUTIONS OF HIGHER EDUCATION

Khalisa Huseynova

*Academy of the Public Administration under the
President of the Republic of Azerbaijan, Azerbaijan*

In 2002, the United Nations declared 2005-14 as the Decade of Education for Sustainable Development, with the objective of integrating the principles and practices of sustainable development into all aspects of education and learning, and appointed UNESCO as the lead implementing agency, however, what is 'sustainable development' and what is the proper role of higher education in promoting it?

Sustainable development, though not a new concept, is complex and difficult to define. In 1987, the Brundtland report from the World Commission on Environment and Development defined it as "meeting the needs of the present without compromising the ability of future generations to meet their own needs." This remains the most quoted definition, although there has since been continuous evolution in the way sustainable development is operationalized.

The International Association of Universities, or IAU, has been active in encouraging universities to promote sustainable development since the 1990s and, in 1993, adopted a policy statement known as the Kyoto Declaration on Sustainable Development. Although this declaration dates back over two decades, it is remarkably comprehensive and outlines all the fundamental issues concerning the role of universities in promoting sustainable development. The opening clause urges universities to seek, establish and disseminate a clearer understanding of sustainable development. The IAU has continued to maintain sustainable development as one of its key action areas and has developed an online portal on Higher Education for Sustainable Development in order to encourage higher education institutions around the world to network and showcase their activities through the portal.

Global Action

In 2014, after broad consultations with and inputs from a wide range of stakeholders, UNESCO came up with the post-Decade of Education for Sustainable Development Global Action Programme, or GAP on education for sustainable development, and a roadmap for implementing it. The GAP is generic in nature and applies to all levels of education. It identifies five priority action areas:

- 1) Mainstreaming education for sustainable development in both education and sustainable development policies;
- 2) Transforming learning and training institutions by integrating sustainable development principles in daily activities;
- 3) Building capacities in educators and trainers;
- 4) Empowering and mobilising youth;
- 5) Accelerating the implementation of sustainable solutions at local and community levels

In order to mark the final year of the Decade of Education for Sustainable Development, two major

back-to-back conferences on education for sustainable development were organised in Aichi-Nagoya in Japan in November 2014. The first was the International Conference on Higher Education for Sustainable Development, hosted by Nagoya University and organised by the United Nations University with the support of the government of Japan and various organisations, including UNESCO, UNEP and IAU.

The conference felt that there was a need for higher education institutions to adopt a ‘whole-institution approach,’ including transformative leadership, encouraging capacity development and undertaking an assessment of the institution for sustainability. The conference also proposed that institutions engage with different types of knowledge and work with critical community groups such as youth and the private sector and engage with policy issues. In the ensuing Nagoya Declaration on Higher Education for Sustainable Development, participants renewed their commitment to support activities towards sustainable development, including implementation of the Global Action Programme and called on world leaders to recognise the essential role and responsibility of higher education institutions towards creating sustainable societies. Immediately following the International Conference on Higher Education for Sustainable Development came the World Conference on Education for Sustainable Development, a major event organised by UNESCO and the government of Japan and attended by nearly 1,000 participants.

Although the conference covered the whole range of education and learning, most of the workshops and sessions were directly or indirectly relevant to higher education, such as teacher education, lifelong learning and information and communications technology. Similarly, in the sessions dealing with global sustainable development challenges such as water security, renewable energy, biodiversity, urbanisation, etc, it was clear that the involvement of higher education institutions would be crucial.

A declaration on Education for Sustainable Development was adopted at the end of the conference, calling for the commitment to education for sustainable development of all stakeholders and inviting governments to allocate substantial resources to enable the implementation of the GAP priority actions.

Strengthening research

How can universities use the SDGs to support the delivery as well as develop and grow within themselves? Firstly, universities need to look at the systems that support research in their institutions. Universities have to improve the way research is conducted as well as managed. How are systems within institutions structured around data collection, methodologies, and collaborations and funding? What support is given to early career researchers to ensure they understand what it takes to be a globally recognised? Further to this, it is essential that more training is provided to communicating research to a non-scientific, more general audience (including for funding opportunities) as well as conveying complex ideas in a way that can be easily understood.

The SDGs have also provided a platform to showcase local, regional and national research on a wider scale. The Goals and Targets provide universities with a greater opportunity to engage in community-based research; gaining traction and visibility for small scale research. Universities need to actively engage more with their communities and show they are still a key instrument in delivering on the social agenda.

Building a skilled workforce

Universities play a vital role in building the skilled workforce of the future, inspiring the next generation of job creators through entrepreneurship as well as creating global citizens and change makers. Employers and investors are looking for graduates with analytical skills, integrated capabilities, social responsibility

and values. Universities are only one of a handful of places where multi-disciplinary exchange of ideas can coalesce in a safe space and learning together is encouraged and celebrated. Professor Goolam Mohamedbhai states that university graduates' "future employability requires that they have skills that are appropriate to market contexts and can be seen to be addressing developmental challenges." Universities must promote positive, engaged citizenship amongst their students to make them better entrepreneurs, leaders and global citizens.

The future success of higher education relies on commitment and investment. What is needed is a dedicated focus from national ministries and governments to strengthen higher education systems – as well as championing the developmental role of higher education with donors and partners – as an essential strategic component to meeting targets across the SDG framework.

The SDGs not only provide an opportunity for universities to engage in world changing research, but they also offer the opportunity for reflection on the future of higher education institutions. Why do the goals matter for higher education? They provide opportunity for institutions to better their research infrastructures, provide direction and the potential for international exposure to local, regional and national research, can create curricula aimed at tackling global issues, allow universities to create effective partnerships, and shape the next generation of problem solvers, knowledge creators and leaders.

The global adaptation of the SDGs is not just a way for the sector to contribute to the grand scheme of human development, but more importantly for it to be used as a catalyst for change from within. It is only then that there will be great progress for these goals and society.

Collaboration within and without

The interconnected nature of the SDGs presents universities with the opportunity to be more deliberate in integrated teaching and learning areas that address the global challenges. All universities should be committed to delivering curriculum that critically evaluates their disciplines contribution in delivering the SDGs as well as create curricula that encourage cross-collaborative efforts; more reflective of problem solving challenges in the real world. The popular saying "We can't solve tomorrow's challenges with the same thinking that got us into this mess in the first place" applies to a sustainability framework as well.

Not only is it important for universities to work collaboratively internally, universities need to strengthen their organisational effectiveness by encouraging more effective external partnerships. More than just providing evidence to support the goals, universities need to be committed to creating equal partnerships with civil society and business and push for sustainable economic policies which support university research and the knowledge it generates to better inform and support public policy and practice. In an era of growing internationalisation, there is a greater need to increase research collaboration, not only north/south, but also south/south and inter-regional engagement.

Brain drain

The goal of the SDGs is to take the most talented away from their struggling countries and send them to study abroad. While this is going to be a good opportunity for the selected individuals (as well as a considerable income boost for host universities), it will not do anything to help rebuild higher education capacity in the struggling countries.

Many of those who get scholarships to study in the developed countries through the SDG initiatives, as well as in developing countries such as South Africa, are likely to remain in these countries instead of going back to assist in rebuilding higher education and other institutions in their home countries.

Most developed countries have policies in place that openly aim to 'poach' international students upon graduation through offers of work permits and permanent residence. Even when recipients of scholarships go back home after they graduate, they will go back to dysfunctional higher education systems and institutions as nothing was done to (re)build and strengthen them through SDG projects and programmes. In addition, while the SDG Goal Four focuses primarily on pre-primary, primary and secondary education, as well as gender equality, none of this can be achieved without quality higher education institutions in the developing world.

The questions remain: How to develop 26 million teachers needed to provide primary education for all in the developing world without quality post-secondary education in the countries facing the acute shortages of qualified teachers? How to achieve gender equality and equal access for the vulnerable people to all levels of education if post-secondary education is not supported in countries that require support and assistance?

The SDGs claim that the proposed plans and actions will ensure that no one is left behind in the world by 2030. However, many countries and their populations will be left behind through the continued neglect of higher education. The SDGs do not even consider the poor state of higher education systems and institutions in many developing countries, nor do they offer any kind of support to (re)build and strengthen the systems and institutions, which are prerequisites for sustainable development.

Struggling low-income countries need to be supported in the process of developing, rebuilding and strengthening universities and other institutions of higher learning in order to be able to deliver quality education to their populations. Capacity building through international collaboration in higher education should have been one of the targets, a driver of all capacity-building efforts. Scholarships for studying abroad are important and in many cases necessary but this should have been a minor aspect of a broader plan.

Despite the neglect of higher education in the SDGs, universities and higher education networks from around the world need to find ways to engage with low-income countries and their institutions and assist them in order for them not to be left too far behind by 2030.

Specifically, higher education is education provided by universities, colleges, and other institutions that award academic degrees. Higher education includes both the undergraduate (i.e., college) and the graduate (or postgraduate) levels. Higher education includes most professional education and is strongly vocationally or professionally oriented. Higher education differs from other forms of post-secondary (after high school) education such as vocational education. Vocational education is a form of secondary or postsecondary education but is considered non-academic as compared to higher education. The figure below is an attempt to visually show these levels of education and just where higher education fits in.

Why do we need it?

Given that we have a basic definition of higher education, why do you need it? According to many sources I've studied, higher education offers graduates more jobs to choose from than are open to those who don't pursue education beyond high school, and graduates typically earn more than non-graduates. Specifically, the US Census Bureau reported in 2004 that, on average, a college graduate earns \$54,704, significantly more than the \$30,056 earned annually by someone with a high school diploma, or the \$22,100 earned by a high school dropout. Another way of looking at these numbers is that, according to the Postsecondary Education Opportunity Research Letter (PEORL), the lifetime income of families headed by individuals with a bachelor's degree will be about \$1.6 million more than the incomes of families headed by those with a high school diploma. The PEORL goes on to state that every dollar spent on a college education produces \$34.85 in increased lifetime income--not a bad return on an investment.

Higher education improves an individual's quality of life. Studies show that, compared to high school graduates, college graduates have longer life spans, better access to health care, better dietary and health practices, greater economic stability and security, more prestigious employment and greater job satisfaction, less dependency on government assistance, greater knowledge of government, greater community service and leadership, more volunteer work, more self-confidence, and less criminal activity and incarceration. In addition, college graduates supposedly have greater use of seatbelts, more continuing education, greater Internet access, greater attendance at live performances, greater participation in leisure and artistic activities, more book purchases, and higher voting rates. As an aside, I have to admit that I was amazed at some of these items--not that I found them, but that someone actually researched this stuff and thought some of the items were enviable.

Higher education, theoretically, will also enable individuals to expand their knowledge and skills, express their thoughts clearly in speech and in writing, grasp abstract concepts and theories, and increase their understanding of the world and their community.

Conclusion

First, homeschoolers are more likely to attend college. A survey of more than 7,300 adults who were homeschooled, conducted by the National Home Education Research Institute (NHERI) showed that of homeschool graduates aged 18 to 24, 74% had taken college courses, compared with 46% among the general population in that same age group. Further, about 12% of those surveyed homeschoolers had received bachelor's degrees, compared with 8% of the general population. And 50% of homeschoolers had some college but no degree, compared with 34% of the general population. Almost 9% of homeschoolers had two-year associate degrees, compared with 4% of the general population. How should you, as a homeschooler, begin approaching higher education?

As a homeschooler beginning to approach higher education, be sure to start early. Think about your interests and goals, and identify what level of education you'll need to pursue those interests and goals.

If higher education is required, read web sites, books, and periodicals to learn about colleges and universities. Find which schools will meet your specific needs and then find out about their policies concerning homeschooled students. Start mapping out your strategies for how to best target the schools selected.

Second, keep organized, keep records, and determine the best format (e.g., transcript or portfolio) for those records. Keep this information complete and updated. Don't rely on memory. Write down, with dates, anything and everything that you feel might be useful during the application process. Keep track of specific demonstrations of leadership qualities. Start compiling a list of individuals who might be appropriate for writing letters of recommendation.

Third, map out a timeline of what needs to be done when. Include specific courses that might be required and when they should be taken, what tests (e.g., PSAT, SAT, ACT, SAT II) have to be taken, and application dates. You can also think about enrollment in community college classes, taking classes via distance learning, taking Advanced Placement (AP) tests and taking College Level Examination Program (CLEP) tests. These are all things that should be planned into the timeline.

Fourth, look for avenues for funding, such as scholarships. Often money is available and goes untouched because of lack of awareness. Look for those opportunities to defray the costs of higher education.

And fifth but probably not last, consider college at home. There is the possibility, through distance learning programs, to continue your education from home at a significantly reduced cost. There are even ways to tackle lab courses and meet research requirements through distance learning. Don't discount the possibility before researching. All of these things are offered as catalysts to get you thinking and researching.

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- <http://www.hrmars.com/admin/pics/1018.pdf>
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- www.TheHomeschoolMagazine.com

Summary

On Sustainable Development Goals and the role of institutions of Higher Education

Khalisa Huseynova

*Academy of the Public Administration under the President of the
Republic of Azerbaijan, Azerbaijan*

Education brings about a change in the individual which promotes greater productivity and work efficiency. It remains a major component in the development of human resources and it accounts for much improvements in population quality and environmental resource management; hence, sustainable development. The article deals the idea of sustainable development is conceived to help create healthy societies and can sustain the present generation as well as those that follow through the judicious use of economic, environmental and cultural resources.

Improvement of human resources is not limited to the inculcation of skills and knowledge, but includes having values, positive attitudes and motives consistent with the goals and methods of development plan that will benefit the future generations. The present paper also gives an overview regarding the role of research and higher education in the development of a country in sustainable manner. The effect of SDGs pressures on education, the socio-economic and inequalities that constitute justice and human rights are also examined. The paper concludes by reassessing the impact of SDGs on education reform in the world.

Key words: *Education, human resources, sustainable development, skills and knowledge, higher education.*

THE CHALLENGES OF EDUCATION AND SUSTAINABLE DEVELOPMENT IN GLOBAL AREA

Sabina Muradova
Azerbaijan University of Languages, Azerbaijan

Globalisation, as an economic, political and cultural phenomenon, has fundamental implications for the process of development and the role of education in that process. This is not only because it changes the nature of world markets and what it takes to be competitive in these markets, but also because it changes the nature of the national state and the relations between states and other levels of governance. Globalisation changes the terms under which states and their economic actors engage in the global economy and thus the possible paths of development. These changes invariably imply different demands in terms of skills and knowledge and different possibilities for producing them. However, how we understand these changes, and their implications for the role of education in development, will depend crucially on how we understand the process of globalisation.

Globalisation can be simply defined as the rapid acceleration of cross-border movements of capital, labour, goods, knowledge and ideas. The flows of each have increased exponentially in volume and also in speed, leading to what the social geographer David Harvey (1989) has called 'time/space compression'. As the salience of physical distance decreases, different places, on different times, can be simultaneously experienced in one place and many places. As Carnoy puts it: 'A global economy is one whose strategic, core activities, including innovation, finance and corporate management, function on a planetary scale in real time. The current wave of globalisation, which most commentators date from the early 1970s, has been driven primarily by technological and scientific advances, which have made transport and communications faster and cheaper, and also by the general political movement towards trade liberalisation and market deregulation which has gathered pace since abandonment of the Bretton Woods policies in the early 1970s. Globalisation clearly has political and cultural dimensions but it is economic globalisation which is generally considered to be at the heart of the process. As Martin Wolf defines it, globalisation is the 'integration of economic activities through markets' and the 'driving forces are technological and policy changes – falling costs of transport and communications and greater reliance on market forces'. The literature on globalisation has mushroomed in the past two decades – not least within the disciplines of sociology, economics, political science, social geography and cultural studies – and now displays quite diverse theoretical orientations. Whilst there is considerable agreement on some core assumptions of globalisation theory – that the current, post 1970 wave of globalisation is new and historically distinct; that transnational corporations play an increasingly important role in the global economy; that both technology and markets are key drivers of the process – there are also many issues which are still in dispute.

Opinions vary considerably on whether the process is primarily determined by technology or politics; on whether it is linear and irreversible or uneven and contingent; on whether it leads to the weakening or even demise of states; and on whether the outcome of globalisation is likely to be the increasing convergence of national economies, cultures and societies. Underlying the different perspectives, of course, are typically more normative assumptions about whether globalisation is generally a 'good thing.'

It is customary in academic reviews to distinguish between three main camps in the globalisation debate, typically referred to as 'hyperglobalists', 'sceptics' and 'transformationalists.' This classification inevitably simplifies the picture and far from exhausts the variety of theoretical standpoints.

However, it provides a useful point of departure. Hyperglobalists are those writers who anticipate the most far reaching consequences of globalisation, predicting the end of national economies, the demise of the nation state as a primary political unit and the erosion of distinctive national cultures. Oriented to the

'post-national', they tend to believe that globalisation brings rapid convergence across the world in economic and political organisation and in culture. At the extreme, they believe we are heading for a 'borderless world' with a single global market, new forms of global governance and an increasingly homogenised global consumer culture. Globalisation is seen as chiefly governed by technological advances which point in a linear direction towards a largely pre-determined future. For some, though not all, hyperglobalists the worldwide dissemination of an Anglo-American style of 'free market' economy is both inevitable and desirable, and in this sense their writings can be construed as highly normative in orientation. Ulrich Beck (2000) has noted that such viewpoints are primarily ideological and refers to the advocates collectively as 'globalists'. 'While some of the writings of the hyper globalist school may be dismissed as ideological and fantastical, there is a solid core to the economic arguments of leading writers in the field.

All that will remain rooted within national borders are the people who comprise the nation. Each nation's primary assets will be its citizens' skills and insights. Sceptics have, perhaps not surprisingly, reacted against some of the more inflated claims and over-blown conclusions of the hyperglobalist school. They have pointed out that the nation state still remains the primary unit of political organisation across the world and shows little sign of disappearing (Hirst and Thompson, 1992). On the contrary some 100 new nation states emerged in the half century after World War 2 (WW2) and in excess of 20 since 1991, in the wake of break-up of the former Yugoslavia and the Eastern block (Davies, 1993; Smith 1995: 105). Moreover, national borders are frequently reinforced, not least in Europe, and strong national identities persist in many parts of the world (Green, 1997; Smith, 1995).

If politics becomes increasingly globalised through the burgeoning of international organisations, nation states remain the building blocks of international governance (Hirst and Thompson, 1992). Hirst and Thompson, who for many years led the sceptical pack, also argue that the claims about the end of the national economy are overstated. National economies persisted during previous waves of internationalisation, as before World War One (WW1), when levels of globalisation of capital and labour reached levels only recently surpassed. Even today the transnational corporations remain firmly rooted in their home economies, which provide the majority of their investors, and often their primary markets. As Hutton (1995) and Porter (1990) argue, consistently with Hirst and Thompson, the success of leading companies in many countries remains heavily dependent on the local infrastructures, including the quality of education and training provision, the stability of supplier chains, the vitality of research and development networks, the work culture, and the loyalty and commitment of financial institutions.

The proliferation of communitarian or identity-based groupings narrows the ambit of social connectedness, undercutting the universalistic ideals of republican and other historic models of citizenship. Identity and citizenship, as Gerard Delanty (2000) has put it, are increasingly parting company in the modern world. For Touraine, as for Delanty and Castells, this radically undermines traditional sources of social cohesion. Castells provides what is possibly the most extended account of this view. He argues that the instrumental capacity of the state is being eroded by the globalisation of core economic activities, media and electronic communications and crime.

Education programmes can improve the health and nutritional status of the population in general, and of women and children in particular. Women with better education are more aware of the importance of adequate diets and can secure access to better-paying jobs. Several studies have shown that women with higher income and greater bargaining power within the family exert a more positive influence on child nutrition, health and education outcomes. In developed countries, it has been observed that poorly educated women are 2-3 times more likely to be overweight than those with high levels of education. Although the link between education, knowledge and dietary intake is not clear, the impact of education and knowledge is most evident when those at highest risk are considered (Food and Agriculture Organization of the United Nations, 2013).

Inculcating basic knowledge of good nutrition, including family nutrition practices, in primary and secondary schools, can help individuals make informed dietary choices. Nutrition education could be included in the school curriculum and offered in community centres targeting adults. Recent evaluations of various school-based nutrition education programmes in Italy and Portugal showed that those programmes had positive impacts in terms of both attitudes and consumption and health outcomes (ibid.). In particular, nutritional education for women has a positive impact in terms of dietary intake and malnutrition. Yet, in many developing countries, gender discrimination preventing school enrolment of girls is still a challenge, which ultimately has negative impacts on nutrition outcomes.

In addition to education, information and nutrition advocacy can also have positive impacts on population conditions related to nutrition. Strategies aimed at influencing consumer choice based on enhanced consumer awareness and knowledge should also be considered, as they may lead to a change in consumption habits. Dietary guidelines constitute one example of the public information tools used in many countries which should be encouraged. Information and communications measures are particularly relevant to preventing obesity. However, nutrition-related messages must be appropriate in order to be effective. They should be delivered by health professionals, among others, through a variety of channels and over an extended period of time.

This right to education is denied to 58 million girls, and a further 45 million boys, even at the primary school level.⁶ More than 75 countries are likely to miss the 2005 MDG target for gender parity in primary and secondary enrolments.⁷ One-third of these countries are in sub-Saharan Africa. On current trends, more than 40 per cent of all countries with data are at risk of not achieving gender parity at primary, secondary or both levels of education even by 2015.

Within communities, girls have to overcome many obstacles before they can realise their right to an education. DFID's recent partnership with UNICEF to support the federal government of Nigeria will help overcome many of the problems girls have in gaining access to school and remaining there. Before girls can attend school and benefit fully from their education, a number of major social constraints have to be addressed.

Girls often have limited control over their futures. Early marriage is a reality for many, where families wish for the social and economic benefits this brings. In Bangladesh and Afghanistan, more than 50 per cent of girls are married by age 18.¹⁶ Adolescent pregnancy almost always results in girls halting their education. Girls are also more likely to drop out of school because of their domestic responsibilities, and are often discriminated against in terms of the quality of the schools they are sent to, and the costs parents are willing to pay for their education.

Despite the progress being made, gender equality is likely to take generations to achieve. The UK's own history illustrates the relationship between women's position in society and the demands for better education for girls. One reinforces the other, but change comes slowly.

Education and education policy can be argued to have contributed to economic growth, income equality and national unity variously over time. Economic growth has been facilitated by widespread access to basic education since the beginning of the twentieth century and by the expansion of secondary and tertiary levels thereafter. Fee-free vernacular education from the early twentieth century, fee-free.

English medium education from the 1940s and the creation of a so-called 'national' system of education from the early 1960s fuelled popular aspirations for participation in the modernising economy. Selection for jobs in the modernising economy was underpinned by strong orientations to public examinations by both job seekers and employers.

Since the 1990s, the expansion of the public and private (domestic and foreign) TEVT sector has contributed to the skills needed by the export-led economy. Income equality and equality more generally have been well served by fee-free education policies and by a range of subsidies for households, from free school uniforms, meals, textbooks to free transport to school. Government commitment to provision of education for all communities in rural as well as urban areas has led to remarkably equal access to primary, secondary and tertiary levels of education, though with decreasing equality with each higher level of education. Additional allowances are allocated to schools in disadvantaged areas and quotas are applied to

university admissions for students studying in disadvantaged districts. The bar on private school education since the 1960s may be argued to have had the effect of maintaining equalities of access to education and thence incomes. Popular resistance to the privatisation of university education has had much of the same effect. In both cases however, those who can afford to pay have found ways around the restriction – through access to international schools on the one hand and to study abroad and to courses leading to degrees of foreign universities on the other.

‘To be educated means... I will not only be able to help myself, but also my family, my country, my people. The benefits will be many.’

MEDA WAGTOLE, SCHOOLGIRL, ETHIOPIA

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Summary

The challenges of Education and Sustainable Development in Global Area

Sabina Muradova

Azerbaijan University of Languages, Azerbaijan

The world is faced with challenges in all three dimensions of sustainable development—economic, social and environmental. More than one billion people are still living in extreme poverty, and income inequality within and among many countries has been rising; at the same time, unsustainable consumption and production patterns have resulted in huge economic and social costs and may endanger life on the planet. Achieving sustainable development will require global actions to deliver on the legitimate aspiration towards further economic and social progress, requiring growth and employment, and at the same time strengthening environmental protection.

Aims towards contributing to the deliberations on sustainable development with a focus on three important cross-sectoral issues: sustainable cities, food security and energy transformation.

Key words: *Classification, responsibilities, equalities, education, contribution, resurgence*

SCIENCE FOR PEACE AND CONFLICT RESOLUTION: THE ROLE OF SCIENCE IN ENSURING PEACE FOR SUSTAINABLE DEVELOPMENT

Sabuhi Abbasov

*Academy of Public Administration under the President of the
Republic of Azerbaijan, Azerbaijan*

On September 25th 2015, countries adopted 17 goals to end poverty, protect the planet, and ensure prosperity for all as part of a new sustainable development agenda. 169 targets were determined in order to achieve those goals. Each goal has specific targets to be achieved over the next 15 years. For the goals to be reached, everyone needs to do their part: governments, the private sector, civil society and people like us.

Sustainable development goals cover three aspects: economic development, social development and environmental issues. But the development of these three areas is also linked to international peace and security and conflict resolution. It is not accidental that goal 16 of the Sustainable Development Goals is dedicated to the promotion of peaceful and inclusive societies for sustainable development, the provision of access to justice for all, and building effective, accountable institutions at all levels. Peace, justice and effective, accountable and inclusive institutions are at the core of sustainable development. Several regions have enjoyed increased and sustained levels of peace and security in recent decades. But many countries still face protracted armed conflict and violence, and far too many people struggle as a result of weak institutions and the lack of access to justice, information and other fundamental freedoms [1]. It would be inappropriate to speak of other developments without public order. Instable and conflict atmosphere prevents economic development and social progress, and also harms the environment. Especially the people's bitter experience living in the areas where armed conflicts are taking place is proof of it. Armed violence and insecurity have a destructive impact on a country's development, affecting economic growth and often resulting in long-standing grievances among communities. Violence, in all its forms, has a pervasive impact on societies. Violence affects children's health, development and well-being, and their ability to thrive. It causes trauma and weakens social inclusion.

Violent conflicts have increased in recent years, while homicides have declined slowly and more citizens around the world have better access to justice. A few high-intensity armed conflicts are causing large numbers of civilian casualties. Progress promoting peace and justice, together with effective, accountable and inclusive institutions, remains uneven across and within regions [2].

When we rise in the morning and listen to the radio or read the newspaper, we are confronted with the same sad news: violence, crime, wars and disasters. I cannot remember a single day without a report of something terrible happening somewhere in the world. Even in these modern times it is clear that one's precious life is not safe in conflict zones.

No former generation has had to experience so much bad news as we face today; this constant awareness of fear and tension should make any sensitive and compassionate person question seriously the progress of our modern world.

It is ironic that the more serious problems emanate from the more industrially advanced societies. Science and technology have worked wonders in many fields, but the basic human problems remain. There is unprecedented literacy, yet this universal education does not seem to have fostered goodness, but only mental restlessness and discontent instead.

There is no doubt about the increase in our material progress and technology, but somehow this is not sufficient, as we have not yet succeeded in bringing about peace and happiness or in overcoming suffering.

One of the main challenges threatening development is the unresolved conflicts. Unfortunately today, we are witnessing that there are at least about 28 conflicts around the world. These conflicts can be divided into different types depending on their scope, causes and other characteristics. Conflicts can be classified according to their characteristics as civil war, criminal violence, interstate, political instability, sectarian, territorial dispute, transnational terrorism and unconventional conflicts [3]. Let's not forget, however, the current situation in international relations does not exclude the increase number of conflicts. This is a direct threat to sustainable development goals.

But the main question is whether science can provide peace for sustainable development. We think that it is theoretically possible, but why only theoretically? Because there are many things that can prevent science from working for peace in practice. The main reason is the incompatibility of the interests of the parties and actors of conflicts. How science can reconcile these interests? Let's face it one more question: Can new challenges arise from the development of science be prevented?

While technology offers solutions to many sustainable development challenges, it has also continuously added new challenges. In particular, technology change can be a source of conflict or a tool for social inclusion and greater cooperation, and all technologies consume resources, and may use land and pollute air, water and the atmosphere, albeit to varying degrees. Examples of relatively new technologies considered in the report that illustrate this dual feature include digital automation, nanotechnology, biotechnology and genomics, and synthetic biology. These technologies are becoming driving forces for science, research and increasingly for economic activity. All hold great promises in terms of improving well-being and solving development challenges, but all of them present possible challenges.

For example, technology gaps exist in all sectors, and their nature and severity in terms of being a constraint to development differ greatly. New gaps often emerge with the application of new technologies, such as big data, the Internet of Things, 3D printing, massive online open courses and digital automation. All these could have wide-ranging implications that increase, rather than decrease, existing inequalities.

Science develops and will. The main issue here is that science must serve to peace for sustainable development. According to some researchers, science can provide peace alone. As an example, we can mark a scientific initiative of the Global Union of Scientists for Peace (GUSP). The Global Union of Scientists for Peace (GUSP) arose from the ashes of the failed Nuclear Non-Proliferation Treaty (NPT) Review Conference in 2005. This diplomatic breakdown underscored the political world's dangerous addiction to weapons of enormous destructive power—weapons that threaten the existence of the human race and other planetary species.

Alarmed and frustrated by the NPT stalemate, many conference participants, including foremost scientists and leaders most cognizant of the true consequences of nuclear weapons, converged to launch the Global Union of Scientists for Peace—a global counter initiative to stop the spread of nuclear weapons and to support alternative, peaceful means of conflict resolution[4].

The Global Union of Scientists for Peace is dynamically implementing this *Brain-Based Approach to Peace* on a national, regional, and global scale, and is conducting large-scale research on its global effects—together with the deep physical, neurophysiological, and sociological mechanisms that underlie these effects. For this approach violent behavior is rooted in the brain. The most direct—and ultimately only—way to transform violent and criminal behavior is to restore balanced brain functioning. The *Brain-Based Approach to Peace* restores balanced neurological functioning, and thereby promotes balanced, harmonious behavior on the individual and societal scale. The unique effectiveness of the *Brain-Based Approach to Peace* in preventing social violence, terrorism, and war has been confirmed by more than 50 demonstrations and 23 scientific studies.

This research has been carefully scrutinized by independent scholars and accepted for publication in leading, peer-reviewed academic journals. In every case, this approach produced marked reductions of crime, social violence, terrorism, and war, and increased peace and positivity in society [5].

In 2015, in an open letter to President Hollande, President Obama, President Putin, the leaders of all nations, and the philanthropic peace-loving citizens of the world by the Global Union of Scientists for Peace titled "A Scientific Solution to Terrorism and Conflict". In this letter stated that scientifically confirmed solution to regional and global conflict is available, it should be implemented immediately-ideally by establishing one permanent group of 16,000 peace-creating professionals to create a sufficiently powerful influence of coherence to neutralize the buildup of social stress on global scale. The cost to train and maintain such a group is infinitesimal compared to the cost of war. The Syrian conflict alone is costing outside countries at least \$10 million per day, or \$3.6 billion per year. In contrast, the cost of maintaining a group of 16,000 peace-creating professionals is less than that of a single stealthbomber [6].

According to the conclusion of the Global Union of Scientists for Peace even a few individuals utilizing peace-creating technologies of consciousness can create a profound positive influence for their community, nation and world. As we can see, science is turning to a person's psyche in order to provide peace in the world. This shows that science should reach peace by influencing human psyche by overcoming individual interests of states in the world. However, science cannot carry out this initiative in our modern world, simply saying that it is theoretically possible. It is well-known that, anger plays no small role in current conflicts such as those in the Middle East, Southeast Asia, the North-South problem, and so forth. These conflicts arise from a failure to understand one another's humanness. The answer is not the development and use of greater military force, nor an arms race. Nor is it purely political or purely technological. Basically it is spiritual, in the sense that what is required is a sensitive understanding of our common human situation. Hatred and fighting cannot bring happiness to anyone, even to the winners of battles. Violence always produces misery and thus is essentially counter-productive. It is, therefore, time for world leaders to learn to transcend the differences of race, culture, and ideology and to regard one another through eyes that see the common human situation. To do so would benefit individuals, communities, nations, and the world at large.

We can only conclude that there must be something seriously wrong with our sustainable development and if we do not check it and apply integrated approaches in time, there could be disastrous consequences for the future of humanity. We do not at all against science and technology-they have contributed immensely to the overall experience of humankind; to our material comfort and well-being and to our greater understanding of the world we live in. But if we give too much emphasis to science and technology, we are in danger of losing touch with those aspects of human knowledge and understanding that aspire towards honesty.

No one can deny the unprecedented material benefit of science and technology, but our basic human problems remain; we are still faced with the same, if not more, suffering, fear and tension. Thus it is only logical to try to strike a balance between material development on the one hand and the development of spiritual, human values on the other. In order to bring about this great adjustment, we need to revive our humanitarian values.

We are sure that many people share our concern about the present worldwide moral crisis and share this concern to help make our societies more compassionate, just and equitable. We do not speak as a Muslim or even as an Azerbaijani. Rather, we speak simply as a human being, as an upholder of the humanitarian values that are the bedrock not only of Islam civilization but of all the great world religions and civilizations.

Since the creation of the United Nations, the world's peoples have aspired to making progress on the great global issues of peace and security, freedom, development, and environment. These issues remain prominent aspirations today. Political leaders and scientists alike have long acknowledged that these issues are closely inter-linked and require integrated approaches.⁷⁰ High-level panels and commissions, major documents, and United Nations global conferences and summits have made a case for such integrated perspectives [7].

From this perspective we offer our approach: universal humanitarianism is essential to solve global problems along with science; compassion and mutual respect is the pillar of world peace; all world religions support world peace in this way, as are all humanitarians of whatever ideology; each individual has a universal responsibility to achieve goals of sustainable development and to shape institutions to serve human needs.

Joint steps should be taken to address many common problems, such as natural disasters that we encounter today. Others, however, are of our own making, created by misunderstanding, and can be corrected. One such type arises from the conflict of ideologies, political or religious, when people fight each other for petty ends, losing sight of the basic humanity that binds us all together as a single human family. We must remember that the different religious, ideologies and political systems of the world are meant for human beings to achieve happiness. We must not lose sight of this fundamental goal and at no time should we place means above ends; the supremacy of humanity over matter and ideology must always be maintained.

Despite the end of the Cold War, the threat of nuclear destruction, regional conflicts continues to be a great danger facing humankind-in fact, to all living beings on our planet. We know that in the event of a nuclear war there will be no victors because there will be no survivors. Is it not frightening even to contemplate such inhuman and heartless destruction? And, is it not logical that we should remove the cause for our own destruction when we know the cause and have both time and means to do so? Often we cannot overcome our problems because we either do not know the cause or, if we understand it, do not have the means to remove it. This is not the case with the nuclear threat. Whether they belong to more evolved species like humans or to simpler ones such as animals, all beings primarily seek peace, comfort and security. Life is as dear to the mute animal as it is to any human being; even the insect strives for protection from dangers that threaten its life. Just as each one of us wants to live and does not wish to die, so it is with all other creatures in the universe, though their power to affect this is a different matter.

Broadly speaking, there are two types of happiness and suffering- spiritual and material-and of the two we believe that spiritual suffering and happiness are the more acute. Although science can provide material happiness, it has not been able to succeed in achieving spiritual happiness. Hence, we stress the training of the mind to endure suffering and attain a more lasting state of happiness. However, we also have a more general and concrete idea of happiness: a combination of inner peace, economic development and, above all, world peace. To achieve such goals, we feel it is necessary to develop a sense of universal responsibility for sustainable development goals, a deep concern for all irrespective of creed, colour, sex or nationality.

The premise behind this idea of universal responsibility is the simple fact that, in general terms, all others' desires are the same as ours. Every being wants happiness and does not want suffering. If we, as intelligent human beings, do not accept this fact, there will be more and more suffering on this planet. If we adopt a self-centred approach to life and constantly try to use others for our own self-interest, we may gain temporary benefits, but in the long run we will not succeed in achieving even personal happiness, and world peace will be completely out of the question.

In their quest of happiness, humans have used different methods, which all too often have been cruel and repellent. Behaving in ways utterly unbecoming to their status as humans, they inflict suffering upon fellow humans and other living beings for their own selfish gains. In the end, such short-sighted actions bring suffering to oneself as well as to others. To be born a human being is a rare event in itself, and it is wise to use this opportunity as effectively and skillfully as possible. We must have the proper perspective of that universal life process, so the happiness or glory of one person or group is not sought at the expense of others.

All this calls for a new approach to global problems and conflicts. It is difficult to achieve sustainable development without finding such approaches. The world is becoming smaller and smaller and more and more interdependent as a result of rapid technological advances and international trade as well as increasing transnational relations. We now depend very much on each other. In ancient times problems were mostly family size, and they were naturally tackled at the family level, but the situation has changed.

Today we are so interdependent, so closely interconnected with each other, that without a sense of universal responsibility, a feeling of universal human values, and an understanding and belief that we really are a part of one big human family, we cannot hope to overcome the dangers to our very existence let alone bring about peace and happiness and to speak about sustainable development.

It is obvious that one nation's problems can no longer be satisfactorily solved by itself alone; too much depends on the interest, attitude and cooperation of other nations. A universal humanitarian approach to world problems seems the only sound basis for world peace. What does this mean? We begin from the recognition mentioned previously that all beings cherish happiness and do not want suffering. It then becomes both morally wrong and pragmatically unwise to pursue only one's own happiness oblivious to the feelings and aspirations of all others.

Conclusion

Although the increasing interdependence among nations might be expected to generate more sympathetic cooperation, it is difficult to achieve a spirit of genuine cooperation, as long as people remain indifferent to the feelings and happiness of others.

When people are motivated mostly by greed and jealousy, it is not possible for them to live in harmony and to resolve conflicts. Let's also note that a spiritual approach may not solve all the political problems that have been caused by the existing self centred approach, but in the long run it will overcome the very basis of the problems that we face today.

On the other hand, if humankind continues to approach its problems considering only temporary expediency, future generations will have to face tremendous difficulties. The global population is increasing, and our resources are being rapidly depleted. We don't know exactly what adverse effects massive deforestation will have on the climate, the soil and global ecology as a whole. We are facing problems because people are concentrating only on their short term, selfish interests, not thinking of the entire human family. They are not thinking of the earth and the long term effects on the universal life as a whole. If we of the present generation do not think about these, about the achieving sustainable development goals now, future generations may not be able to cope with them. To achieve this, we need to achieve the unity of science and humanity in order to overcome barriers to sustainable development and solving all problems, including conflict resolution!

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Summary

Science for Peace and Conflict resolution: The role of science in ensuring peace for Sustainable Development

Sabuhi Abbasov

Academy of Public Administration under the President of the Republic of Azerbaijan, Azerbaijan

It is ironic that the more serious problems emanate from the more industrially advanced societies. Science and technology have worked wonders in many fields, but the basic human problems remain. There is unprecedented literacy, yet this universal education does not seem to have fostered goodness, but only mental restlessness and discontent instead. There is no doubt about the increase in our material progress and technology, but somehow this is not sufficient, as we have not yet succeeded in bringing about peace and happiness or in overcoming suffering. Sustainable development goals cover three aspects: economic development, social development and environmental issues. But the development of these three areas is also linked to peace and conflict resolution. Thus, this article is devoted to the role of science in securing peace for sustainable development.

Key words: *Science, peace, sustainable development, conflict resolution, education*

SCIENCE, ENVIRONMENT AND SUSTAINABLE DEVELOPMENT

Sona Primova

Azerbaijan State University of Economics, Azerbaijan

Science - during the scientific-technical progress, the pace of development of the society and its economic development are directly dependent on science. "What is science?" is an old question.

- Science is the product of a creative, intelligent, and healthy mind to properly perceive the true nature of existence.
- Science is a process for producing knowledge.
- Science is both the mental outlook and the moral superiority of human. Human beings can only differ from others by science. It is for this reason that every person should be constantly searching, getting acquainted with innovations, and getting new knowledge.
- Science is impartial and impersonal. Science is not involved with morality.
- Science is a human endeavor to discover the truth about the world around us.

Science may sometimes seem like a collection of isolated and static facts listed in a textbook, but that's only a small part of the story. Science as a collective institution aims to produce more accurate natural explanations of how the natural world works, what its components are, and how the world got to be the way it is now. The science process depends on both on making careful observations of phenomena and on inventing theories for making sense out of those observations. There is no rule that you can mindlessly follow. "Reality," "truth," and "understanding" are actually only best approximations.

For early scientists and philosophers, science was defined as knowledge. Scientists and philosophers are not the only intellectuals trying to define science. In this century economists have developed a scientific definition of science, centered on information. This conception of science had essential consequences for government policies. Sociologists looked at science from an institutional and professional point of view.

Scientists are curious. They seek out answers through observation and experimentation and ask the question "why." They want to know why things work the way they do and nothing less than the truth will do for an answer. Their goal is to minimize the mysteries in the universe by obtaining knowledge through direct observation of particular aspects of the universe.

In some circumstances, scientists can control conditions deliberately and precisely to obtain their evidence. They may, for instance, control the temperature, change the concentration of chemicals, or choose which organisms mate with which others.

The world looks so different after learning science. Science helps us describe how the world is, but it cannot make any judgments about whether that state of affairs is right, wrong, good, or bad. Another of the qualities of science is that it teaches the value of rational thought as well as the necessity of freedom of thought.

Science is powerful. It has generated the knowledge that allows us to call a friend halfway around the world with a cell phone, vaccinate a baby against polio, build a skyscraper, and drive a car.

And science helps us answer important questions like which areas might be hit by a tsunami after an earthquake, how did the hole in the ozone layer form, how can we protect our crops from pests, and who were our evolutionary ancestors? With such breadth, the reach of science might seem to be endless, but it is not. Science has definite limits.

Science is useful. The knowledge generated by science is powerful and reliable. It can be used to develop new technologies, treat diseases, and deal with many other sorts of problems.

Ideas that we fully accept today may be rejected or modified in light of new evidence discovered tomorrow. Despite the fact that they are subject to change, scientific ideas are reliable. The ideas that have gained scientific acceptance have done so because they are supported by many lines of evidence. These scientific discoveries allow us to understand the world's problems and solve them. For example, scientific understandings of motion and gases allow us to build airplanes that reliably get us from one airport to the next. We have good reasons to trust scientific ideas: they work!

Science is ongoing. Science is continually refining and expanding our knowledge of the universe, and as it does, it leads to new questions for future investigation. Science will never be "finished."

Environment- People in different fields of knowledge (like history, geography or biology) use the word environment differently. For instance, Electromagnetic environment is radio waves and other electromagnetic radiation and magnetic fields. The galactic environment refers to conditions between the stars. In psychology and medicine a person's environment is the people, physical things and places. The environment affects the growth and development of the person. It affects the person's behavior, body, mind and heart. Environment encompasses the interaction of all living species, climate, weather, and natural resources.

The concept of the natural environment can be distinguished as components:

- Complete ecological units that function as natural systems without massive civilized human intervention, including all vegetation, microorganisms, soil, rocks, atmosphere, and natural phenomena that occur within their borders and their nature.
- Universal natural resources and physical phenomena that lack clear-cut boundaries, such as air, water, and climate, as well as energy, radiation, electric charge, and magnetism.

A vital problem of the 21st century is world pollution and environmental protection. Currently the environment is so contaminated that urgent measures should be taken. A single individual cannot be blamed for the world pollution, however every person should take care of his or her habitat.

Environmental pollution refers to the introduction of harmful pollutants into the environment. It has a hazardous effect on the natural world and on the activities of living beings. The major types of environmental pollution are air pollution, water pollution, noise pollution, thermal pollution, soil pollution and light pollution. During the last 10 years, the world has witnessed severe rise in environmental pollution. The most polluted areas of the economy are chemical, petrochemical, black and non-ferrous metallurgy, TES, construction materials.

The environmental pollution is not caused by the nuclear tests or industries alone. The smoke left behind the automobiles and other vehicular traffic, the increasing use of synthetic detergents, nitrogen fertilizers contaminate both air and water.

- The water we drink, the vegetables are all contaminated to-day. As a result of this contamination our world is afflicted with a quite a number of incurable diseases.
- Environmental pollution affects water sources which mean that there is less fresh water available for drinking, washing, cooking and irrigating crops.
- The factories are mostly built in populated areas and the smoke-emitting vehicles ply through the congested areas.
- Air-pollution may cause severe lungs-diseases, asthma, brain-disorder diseases, etc.
- Soil-pollution may have negative effect on farm output ratio. It can also contaminate the ground water.
- Noise-pollution have negative effects on hearing or auditory sense organs. It can also cause deafness, tiredness, and mental losses.

- The heat generated by industries and vehicles causes thermal pollution by raising the environmental temperature of the nearby areas.
- Many scientists believe that we are living in an era of mass extinction, due to human made environmental pollution.

The reason for the excessive environmental pollution is the speed of modern production. Summary of modern scientific and technical data shows that the main source of environmental pollution is "classic" energy (45%) and agriculture (40%), while remaining pollution is industrial and communal household waste (15%). The major types of waste are smoke-based gases (50%) and fecal (24%) wastes. At the same time, through the achievements of modern scientific and technical progress, opportunities for removing these harmful effects are also expanding.

Oil pollution is a major source of danger for the World Ocean. According to estimations, every year 3 million.10 million tons per tonne. Tons of oil and oil products pour into the ocean. Overseas seas along the coast and within the coasts are highly contaminated with waste and wastewater. They include the Mediterranean, the North Sea, the Baltic Sea, the Black Sea, the Japanese Sea, the Caribbean Sea, Guinea, Iran, Mexico, and Biskay Bay. Radioactive contamination caused by the atomic energy and the discharge of atomic wastes into deep oceanic wastes of the world ocean pose a great threat to these watersheds.

Environmental protection is a practice of protecting the natural environment on individual, organisation controlled or governmental levels, for the benefit of both the environment and humans. Due to the pressures of overconsumption , population and technology, the biophysical environment is being degraded, sometimes permanently. This has been recognized, and governments have begun placing restraints on activities that cause environmental degradation. Since the 1960s, activity of environmental movements has created awareness of the various environmental problems.

Many of the earth's resources are especially vulnerable because they are influenced by human impacts across many countries. As a result of this, many attempts are made by countries to develop agreements that are signed by multiple governments to prevent damage or manage the impacts of human activity on natural resources. This can include agreements that impact factors such as climate, oceans, rivers and air pollution. These agreements have a long history with some multinational agreements being in place from as early as 1910 in Europe, America and Africa. Some of the most well-known international agreements include the Kyoto Protocol and others.

There are several ways to solve environmental problems in most parts of the world. These ways can be combined into 3 large groups.

1. The first group includes construction of various treatment facilities, disposal and disposal of landfills, and land recultivation.
2. The second group deals with the nature protection, in particular the development and implementation of new technologies, the transition to the less waste production areas, processing the waste, and switching to the circular water supply system.
3. In order to protect the natural environment of people, to protect their health, it is important to move them from large cities and away from areas where the population is concentrated.

Discussion concerning environmental protection often focuses on the role of government, legislation, and law enforcement. However, in its broadest sense, environmental protection may be seen to be the responsibility of all the people and not simply that of government.

Economically developed countries are already pursuing an environmental policy aimed at protecting the environment. Recently, such policies have been developed in some developing countries. The UN works in the field of nature protection in some parts of the world.

An organization for the efficient use of natural resources and the protection of the environment (UNEP) was established to regulate this area. In the field of nature protection, the "World Charter on Conservation of Nature" has been adopted. The most important work in this area is the specially protected natural areas. At the start of the new era, their number was more than 11.5 million in the world, and totaled 12 million. km² area.

Until the early 1970s, international efforts to address environmental issues had targeted specific environmental problems, with scant regard for the interplay between the environment and economic and social development.

It was not until the United Nations Conference on the Human Environment in Stockholm in 1972 that an attempt was made to address environmental issues in a wide-ranging, comprehensive manner.

The United Nations Environment and Development Conference (UNCED) (Rio de Janeiro, Brazil, 1992) has created a turning point in the world of environmental relations. This represented mutual relations of countries with each other and citizens' interaction with their governments.

The celebration of the 5th of June "World Environment Day" was announced on December 16, 1972 at the 27th session of the United Nations General Assembly. Also, at this session of the General Assembly, a new organization in the UN system - the United Nations Environment Program (UNEP) was established. Every year this organization hosts the World Environment Day. The reason for the day was the May 11, 1971 address to the UN Secretary-General by the signature of 2200 scholars and cultural figures from 23 countries of the world. They have warned humanity about environmental pollution, saying, "We either get rid of pollution or pollute us". In its resolution on the celebration of the day, the General Assembly urges the UN member states and organizations to carry out activities aimed at protecting and improving the environment each year. Every year, the United Nations Environment Program (UNEP) announces the headquarters of European countries to celebrate the World Environment Day in the European region.

The initiatives for the settlement of mutual relations between human beings and the environment are as follows:

1. The UN Conference on Human Environment was convened to study the profound changes in the relationship between man and his environment in the wake of modern scientific and technological developments.

2. The World Health Organization also set up an international network for the monitoring and study of air pollution on a global scale and for devising possible remedies.

How can we solve environmental problems? Surely there cannot be any radical solution, for the existing factories cannot be bodily lifted to a place far from the populated zone. However, the following attempts can be made to solve the problem of environmental pollution:

- The Government can at least see that future factories are set up at a distant place, an industrial complex far away from the township.
- Researcher may find out how to avoid harmful smoke from running vehicles.
- Deforestation should be stopped and Forestry should be developed.
- Discharge of Factory wastes in rivers should be banned so as to make the river-water free from pollution.
- Recycle the sewage or in all events it can be disposed of in such a way as to prevent it from polluting the environment.
- Reducing the amount that we buy, reusing and repairing items wherever possible, and recycling as much as we can will all help to reduce the amount of waste dumped in the environment. When we do need to throw away waste we should do so responsibly.
- Organic farming could be one solution for reducing environmental pollution levels.
- Waste sorting and recycling in enterprises and households.

Sustainable Development - The Concept of Sustainable Development emerged as the most important social, ecological and philosophical concept of the 21st century, from the second half of the 20th century to the study of the tension and social-ecological problems in nature-society relations. This concept provides the most progressive, humanist and new development in the history of mankind. The prevention of the negative consequences of scientific-technical progress and revolution in the nature-society relations, the ways of solving global environmental problems and future prospects of human development are for the first time reasonably and seriously in the speech of the Roman club created by the Italian businessman and scientist A. Peccei in 1968 began to be investigated.

Sustainable development means that development is understood to be in line with the demands of today's generations, but does not jeopardize the payment of future generations. The concept of sustainable development in modern terms and its theories have been published in the late 20th century. The need to prepare a sustainable development concept was driven by the depletion of natural resources, particularly some of the non-renewable resources and environmental pollution, in the background of increasing the number of world population. At the same time, sustainable development is based on the creation of a favorable economic and social environment for the human being and the wellbeing of the people.

One of the major challenges facing the modern world of globalization is the provision of sustainable economic development. For this reason, in most economic literature, the concept of "sustainable development", "sustainable economic development" is widely discussed. While there are various approaches to the term sustainable development, there is a common point in all approaches that the timely adoption of economic, social and environmental crises in the world and in some countries depends on the sustainability of economic growth. At the same time, the general idea of the essence of sustainable development is that the main purpose of the sustainable development concept in all approaches is to combat poverty and the main goal of the concept is to meet the minimum requirements for resources to meet the standard of living of people and an equitable distribution among the population of the world.

Sustainable development is also meant for human development. For this reason, sustainable development should also be understood as a "sustainable human development". It should be noted that sustained development requires the full satisfaction of all people at the same level.

Scheme 1. Schematic description of the Sustainable Development Concept:

Sustainable development	
<ul style="list-style-type: none"> • Natural Capital 	<ul style="list-style-type: none"> • Intergenerational Equality
<ul style="list-style-type: none"> • Social Goals Poverty Reduction Culture and Tradition 	<ul style="list-style-type: none"> • Economic Goals Efficiency Increase Equilibrium
<ul style="list-style-type: none"> • Internationalization Of Ecological Problems 	<ul style="list-style-type: none"> • Environmental Goals Biological diversity. Self-explanatory Self-development

At the "RIO + 20" conference held in 2012, sustainable and human development issues were discussed. Particular attention was paid to the development of human potential in poverty alleviation. The results of the conference are reflected in the document "The Future We Want".

The concept of sustainable development is based on five key principles:

1. Humanity can really be characterized by sustainability and long-term existence. Thus it responds to the needs of the existing generation and at the same time, the opportunity to meet the needs of future generations can be preserved.
2. Restrictions on the use of natural resources are relative. They are related to the modern level of technology and social organization, as well as the ability of the biosphere to eliminate the consequences of human activity.
3. It is necessary to meet the common needs of all people and to create conditions for the realization of the hope of a better future for all. Without this, long-term and sustainable development is simply impossible.
4. The lifestyle of those who have large means (capital and material) should be reconciled with the ecological possibilities of the planet, especially with energy consumption.
5. The dynamic nature of sustainable development should be specifically mentioned. In general, the approach to the concept of sustainable development starts from the era of the birth of the Roman club (1968). The concept of "dynamic growth" concept of "organic growth" concept and "dynamic balance" are important in the work of the Roman club.

One of the key directions of the Sustainable Development Strategy is to ensure the environmental safety of the environment, to improve and restore the ecological situation, the equilibrium in the nature-society system. Because sustainable ecological situation is one of the leading indicators of sustainable human development. This idea, in the second half of the 20th century, has appeared as a modern problem of nature and society's interaction.

Main ideas for environmental and sustainable development:

- People have the right to live interactively with nature in a healthy and productive life.
- Today's development should not be accomplished as a result of future generations.
- Environmental sustainability should be an integral part of the development process and should not be considered separately in order to ensure sustainable development.
- Poverty eradication and the elimination of living standards in different parts of the globe to ensure sustainable development and meet the demands of the population.
- States should cooperate to protect, protect and restore the Earth's ecosystems.
- States should limit and eliminate non-viable models of production, and must protect the appropriate demographic policy.
- States should cooperate in establishing an open international economic system leading to economic growth and sustainable development.
- People who pollute the environment should be fined.
- Continuous development requires a deeper understanding of the problem.
- All-round development of women is essential for sustainable development. Participation of creative forces of the youth is necessary.

It is too early to state that the work on the concept of sustainable development is over. Until now, the concept of sustainable development has not been finished by all. Particularly, the complexity of practical application of sustainable development concept is highlighted. Even though the majority of the world's sustainable development programs are in progress, work is continuing in this area.

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Summary

Science, Environment and Sustainable Development

Sona Primova

Azerbaijan State University of Economics, Azerbaijan

The development of the science sector in the modern times is of particular importance. In general, the role of science in increasing the competition in the socio-economic fields, as well as the gradual depletion of natural resources. In this sense, it is necessary to develop science in accordance with the requirements of the globalizing world and to carry out reforms in order to achieve sustainable development in this area. The environment is an important issue even when society is faced with economic crises, wars, and unending social problems. It matters because Earth is the only home that humans have, and it provides air, food, and other needs. The essence of sustainable development is a stable relationship between human activities and the natural world, which does not diminish the prospects for future generations to enjoy a quality of life at least as good as our own. Environmentally sustainable economic growth refers to economic development that meets the needs of all without leaving future generations with fewer natural resources than those we enjoy today

Key words: *Science, environment, environmental protection, environmental pollution, sustainable development*

THE ROLE OF MODERN EDUCATION IN FORMATION OF LEADERSHIP SKILLS OF STUDENTS

Tunzalya Musayeva

Azerbaijan National Academy of Sciences , Azerbaijan

In modern conditions of social and economic development, connected with the dynamic and yet contradictory processes occurring all over the world, when the volume and quality of knowledge necessary for a specialist quickly and steadily increases, it has become increasingly essential to acquire the ability to navigate in the growing flow of scientific, cultural and industrial information. Modern day realities require from a person not only a quick reaction and the ability to organize their own activities, but also of the social group, to initiate new undertakings that can succeed in a competitive environment. Modern society experiences an acute ideological, political, economic and social crisis. There is a greater need for individuals who are able to see, predict and solve the problems that arise. Today's students are tomorrow's politicians, economists and other specialists who will occupy leading positions in the society and will become leaders in different spheres of life. With the changes happening in the living conditions, the requirements for the leaders have changed. Their actions will affect the management of various social groups such as office staff, army personnel, and governments. The modern youth are not always able to actively participate in solving complex problems, take responsibility, and show initiative. Any country today needs people with highly developed intellectual and communicative abilities, organizational skills capable of leading in the conditions of tough market competition, ready to achieve the set goals and yet taking into account the needs, interests and opportunities of each member of their teams.

Education in life of society is the priority sphere and plays an important role in formation and development of the person. "Education is purposeful process and result of acquisition of the systematized knowledge, skills and abilities, a product of formation of mind, character and feelings, outlook and spirituality of the person. According to pedagogical sources, education is constantly adjustable public process of transfer of socially acceptable experience from the senior generation to the younger generation" [1]. Education – a part of process of formation of the personality. By means of this process society imparts knowledge, skills from one person another. If in modern psychology the personality usually is meant as social human face which provides it "image" and inclusiveness in these or those social relations, then in education the personality is the alloy of some qualities providing socialization and self-determination. Respectively, the personality is more developed, the she is more successful in the plan of social adaptation and finding of own place in life as well as on the contrary.

In the course of education formation one of the most important factors is creation of psychological basis of pedagogical activity which influences development of the identity of the student. Basic elements of structure of management can be considered as process of pedagogical activity which is necessary for studying of the interpersonal relations. Methods of training and education and a problem of pedagogical communication in training are same omit. Opposition of these methods in education process formation and separation of education and training from communicative activity won't give the expected result. From the pedagogical point of view, it is difficult to see this system in a gap from processes of interaction of training and education. In the organizations of the activity entering into structure of pedagogical education, great importance is of verbal interaction and types of communication. Verbal interaction of teachers with students, the correct understanding of dialogue between them effectively influences educational activity. [1]

Important aspect in the basis and formation of education, his role in development of the identity of students is the correct statement of productive pedagogical activity, the choice of methods of education according to a situation and an education system. Here the main feature is that this problem can be useful

to training and didactic, to development of the personality. For education of the personality, useful to modern society, it is necessary to take care of his self-realization. In the course of self-realization the personality reveals in herself possibilities of the hidden potential and expedient uses it in practical activities.

It is well known that education is one of the main factors of sustainable development of society, competitiveness, preservation of the cultural heritage of humankind and national security of the state. It is a relatively independent system that obeys its own laws, and its main purpose is to transfer cultural and spiritual values from generation to generation. Education is part of the process of socialization of the individual, representing a formalized purposeful transfer of accumulated experience, knowledge to subsequent generations, which is carried out within the framework of the relevant social institutions. The problem of leadership is one of the most pressing problems in psychological science. This problem has become especially urgent nowadays, when the task of a higher educational institution is to provide students with many opportunities for self-realization. Involvement in extracurricular activities influences the inner world of students and enables to develop values such as honesty, civic consciousness, compassion, the value of cultural diversity, resistance to environmental influences, through cooperation with other people. All these abilities and values, developing in the process of training at university, help an individual become a real leader, corresponding to the spirit of the modern era. [1]. Modern students experience a contradictory impact of transitional socio-economic realities, which inevitably entails socio-psychological changes in the structure and characteristics of student groups. In recent years, the motivational basis for studying at a university has changed significantly and the effectiveness of managing the organization of student groups has largely become dependent on how far the departments and administrative bodies can influence the formation of interpersonal and group relationships among students. Thus, the detection of leaders within each student body, the possibility to work with them is one of the most important conditions for the effective management of them by the Academies, faculties, and the departments of the university in our country.

Education in Azerbaijan is secular and continuous and is a priority area of strategic importance reflecting the interests of the citizens, society and the state. The Law of the Republic of Azerbaijan on Education establishes the basic principles of state policy to ensure the right of citizens to education, enshrined in the Constitution of our Republic. The law is given the main role in the adoption of relevant laws on individual levels of education.

Education in the Republic of Azerbaijan is based on international conventions on human rights and other international treaties, and it keeps developing on the basis of the priority of the national, spiritual and universal values through integration into the world educational system. This Education Law of the Republic of Azerbaijan states that, (Art 4. The main goal of education), the main goal of education in the Republic of Azerbaijan is(4.0.1.) to educate those who are aware of their responsibility to the Azerbaijani state, respecting the national traditions of the people and democratic principles, human rights and freedoms, true to the ideals of patriotism and Azerbaijanism, an independent and creative citizen and a person.[2] Also, the law provides for the preparation of competitive and modern thinking professionals with a broad worldview that are able to take the initiative. That is, the education is aimed at assimilating systematized knowledge, skills and skills and constantly improving the skills in order to prepare students for public life and effective work activities. Theoretical and practical knowledge helps in the development of spiritual and universal values, ensuring the protection of national interests.

Education is the main aspect essential in the education of leaders. A leader is a member of a group, and this group gives its leader the advantages in status and the right to make decisions in situations that are significant to it. It is important that the phenomenon of leadership is determined by a number of variables, the main ones being the psychological characteristics of the personality of the leaders themselves, the socio-psychological characteristics of the group, the nature of the tasks being solved, and the particular situation in which the group is. The important task of the leader is to build strong working relationships with other people [3]. Student leaders who take an active life position, who manifest themselves in public life of the university, can become successful managers in the future.

Undoubtedly, the successful influence of the student body on the process of forming the leadership qualities of an individual is due to the combination of its individual-psychological characteristics. In a team that ignores the student's personality and does not take into account his psychology, conflicts are inevitable. The atmosphere of misunderstanding and non-acceptance has a strong impact on a person who experiences disharmony in relations with peers, does not find conditions for his or her creative growth, does not find trust, support and assistance in implementing personal plans. In this case, the student body cannot have a positive impact on the formation and development of leadership qualities, suppressing the activity, initiative and aspirations of the individuals to express themselves. As a result, a student with sufficient leadership potential is not able to realize his intentions to become a leader of the group and, therefore, cannot influence the formation of leadership qualities of other students and transfer to them models of leadership behavior. [5] Studies in psychology have shown that if there is a person with a corresponding social and psychological attitude to action in a team, but his norms and values do not coincide with the norms and values of the members of the group, he or she will not be chosen as a leader. The leadership skills of students which are shown in activity of bodies of student government were defined by complex kachestkvenny assessment of level of their formation in the course of observation. It happens during training in higher education institution and participation in activity of bodies student's a samoupravleknia. Because of difficulty of estimation of leadership skills (as they can be use only in vigorous public work) as criteria of their assessment the following is chosen: cognitive (acceptance of a role of the leader), statusnokkompetentostny (acceptance by group of the leader), emotional (influence on the vekdomykh), activity (a contribution to group activity). Leadership of the personality in student's collective is formed on the basis of superiority of personal qualities of certain subjects of activity and interaction in group, also at psychological readiness of the personality to solve a group problem in a practical field of activity. "The leader is a member of the group who spontaneously moves forward group for a role of the informal head in the conditions of certain specific and, as a rule, rather significant situation to give the organization joint in collective activity of people for fast and successful achievement of a common goal of this group" [4]. Today's student can omit be a head on division of the enterprise, the organization, etc. tomorrow. Therefore, an important task is to teach young people to combine successfully the future formal position, a role of the formal leader, with qualities of the leader informal. System approaches to training of leaders are for this purpose necessary: development of the training programs, social projects. The student's environment is that resource in which formation of leaders (i.e. representatives of different elite groups of society) is best for age and the level of knowledge: this group only enters active life, nevertheless, she already has certain knowledge. The main thing – at this group is vital ambitions without which leadership is also impossible, as well as without knowledge. Despite essential increase in students in absolute and relative numbers in comparison with the Soviet period, the competition at entering higher education institutions is notable: not all persons interested become students. Therefore the youth passes through the system of tough "choice" at entering a higher education institution where qualities of future leader can help to be "accepted". It is represented that in the course of selection there is already an opportunity to prove that to young people who have leadership skills. A task of higher education institution is to show them on the first year of training and to help to develop leader potential. Further – at a job placement – to provide a possibility of implementation of the gained knowledge and the acquired skills.

In formation and development of leadership skills in students in the system of the higher education the body of student government is of particular importance. As the important place in realization of all directions of educational activity is allocated to student government, he needs to be considered as the initiative activity of students directed to the solution of important questions in various spheres of student's life. But, first it is one of forms of educational work in higher education institution. "Student government" is the active form of the organization of activity of students contributing to the development of their independence in decision-making and responsibility for the received results on achievement socially and personally significant purposes [3].

Development of leadership skills is a purposeful process of creative interaction of students with each other, with teachers, social partners, the qualities of the personality connected with the leader status, to gain the experience of leader behavior allowing to develop. Apparently, the most part of specific abilities can be developed through participation in the student's organizations and public work, especially in activity of student government. Thus, the model of development of leadership skills of students in activity of student government represents a complex of the interconnected dynamically developing blocks of open type. They are built - in a context of inquiries of labor market and the state on training of the competitive university graduates ready to manifestation of the leadership skills, at the solution of non-standard problems of professional and personal activity.

Thus, at present, professional education faces the challenge of creating opportunities for professional growth and personal development. Including the development of personalities with pronounced leadership qualities. Nevertheless, educational organizations pay more attention to the development of knowledge, skills and skills in specific disciplines, rather than professional and personal growth of students. The development of leadership qualities is an essential process on the path of personal development, and being an orderly not spontaneous process, it gives a comprehensive approach to the solution of the problem.

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Summary

The role of modern education in formation of Leadership skills of students

Tunzalya Musayeva

Azerbaijan National Academy of Sciences , Azerbaijan

With the development of modern information technologies and application of interactive and distant learning methods of training in educational processes, there is an opportunity to develop some qualities in the personality of students directly. Training of the future leaders is a strategic task not only for higher education institutions, but also for the state in general. The solution of this problem is connected with providing the corresponding psychological, pedagogical and organizational conditions for development of the leader potential within teaching and educational process. The growth of leadership skills in the next generation leaders is determined by their mental abilities, positive impact on the people, an active and responsible attitude to society and socially significant activities.

Key words: *leadership, leadership skills, student, education, development*



WATER AND ITS ROLE IN THE ORGANISM

Aflatun Hasanov

Ecological Department, State Oil Company of Azerbaijan Republic, Azerbaijan

Water is a molecule which is composed of two hydrogen atoms and one oxygen atom, (substance). Water is solid, liquid and gaseous (vapour) in nature. Recently, plasma case of the water is widely spoken.

It should be noted that surprisingly, very few of the globe, including the 2-3 % of fresh water on the planet, is evenly distributed. Basically, freshwater is located in the north, in the Arctic glaciers. The another part consists of gruff and salt water. Therefore, saving of drinkable water and its efficient use is always relevant. In the introduction we have talked about actual problems of drinking water. Now I would like to talk about the miracles of water and the role in human organism. There is water in the human organism which is distinguished from each other (for mechanical, physical, chemical, physicochemical characteristics). The important thing is that water in the blood is structured.

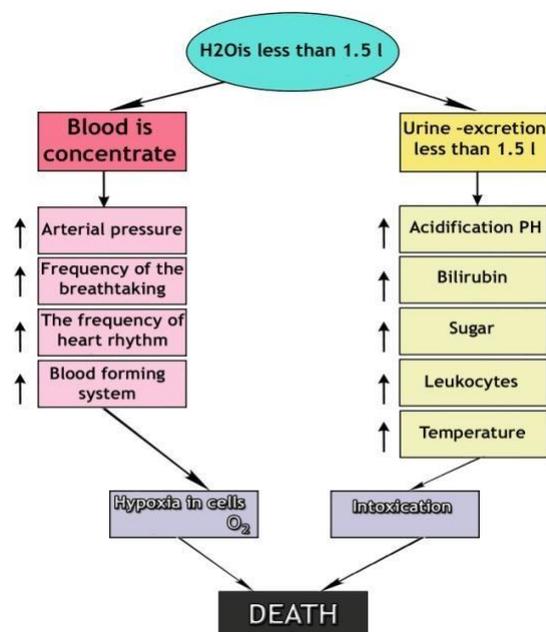
The type of water will be acceptable for human organism in the nature. In other words, it is necessary to understand what kind of water this biological machine human) uses. For this, we need to clarify a few issues. First of all, the water should be completely safe and helpful for the human organism. The safe water means that there should not be microorganisms, germs, bacteria, viruses, chemicals, mechanical suspended substances, which can cause damage to the human organism.



According to the requirements of the WHO, concentration (quantity) of suspended substances - salt and minerals in drinking water, should be 150mg/l (ppm) and oxidation reduction potential (Redox-ratio) should be from + 60mV to 200mV. According to the standards, if the water is 50 ppm, you can drink such water only after boiling.



It is noxious to drink water which is up to 100-200 ppm, but you may use it in agriculture or to wash clothes. The water, amount of the suspended substances in it being more than 200 ppm, can be the sewage water, waste water and considered to be very dangerous. Unfortunately, the concentration of the suspended substances in the flowing water of our houses is higher than normal. Water should be useful means that there should be essential microelements-minerals, especially alkaline earth elements (Na, K, Ca, Mg) and iodine in the water, for the human organism. The human gets 90 % of the minerals and vitamins for the organism from foods during a day. But, the human gets 10 % of the minerals and vitamins from drinking water. Water is the strongest and universal crucial in nature, therefore, you need to drink 30 ml water per kilogram of weight throughout the day. Drinks- as tea, coffee, various kind of juice, mineral water, soft drinks, Pepsi cola, coca cola do not replace water and they are harmful to human organism and oxidize it. This leads to the emergence of many diseases, respectively, in the future. In the world, the most potable water is considered to be water flowing with noise from springs in silent places, mineralized snowy water running from the mountains that passing through dolomite, the water of fruits and vegetables, not only biologically active but also structured water. This kind of water is natural for the human organism and is considered satisfactory. In order to avoid toxins in the organism and the insufficiency of oxygen (hypoxia), each person should drink at least two litres of water during the day. If you drink 1.5 litre or a small quantities water during the day, this means that metabolism will be disrupted in cell level and this will lead to the accumulation of harmful toxins in the organism and intoxication. Hypoxia symptoms will occur when insufficient dissolved oxygen in the blood and water (oxygen deficiency). This will lead to the creation of carbon dioxide and brew gases inside of the cell. As a result, inside the cell premature decomposition occurs. As we know, the human organism is organised from more 4.5 than trillion cells. The premature collapse of the cell will lead to problems in organs and pathology. Therefore, considering importance and necessity of the fact, I deliberately, repeatedly mentioned that each person on an individual basis must drink 30 ml water to kilogram according to own weight throughout the day.



Drinking minimum 1.5 litres of water during a day is necessary for you.. Along with the quantity of water indicators, its quality is also important. Drinking water is the solution, which must be necessary minerals and trace elements for the organism inside its, but in my opinion, the water oxidation reduction potential (Redox-coefficient) and pH-the amount of hydrogen ions in the water are also important. By the way, quality water is the best solvent and antioxidant. Need to discuss these three characteristics wide range, as the other parameters of water.

So, organism's health, health constants are directly and indirectly dependent on the three factors- coefficient of surface tension, oxidation reduction potential, pH. Perhaps, pH is the starting point of the road leading to health. We have talked above average concentration (quantity) of water in the human organism. If we go into detail: 90% of the blood and 95% of the head is water, so when human is exposure to radiation from mobile phones, computers as well as from other sources, first of all, headache, nausea and later other complications occur. Because there is more water in the head and water is one of the best environment to swallow electromagnetic radiation. In other organs- 22% in bones, 75% in flesh, 86% in lungs, 83% in kidneys, etc.- in these environments metabolism occurs. Sometimes, with looking at people, its thirst can be seen from face, eyes and hands. To understand thirst, it is enough to look at the baby body. So, after the birth of a child, water in his intercellular surroundings is less than inside cells. For example, the ratio of 11/8. In other words, there are 11 in cells, 8 in intercellular surroundings when human become older he does not drink water or instead of water eliminates thirst with tea, mineral water, carbonated waters, alcoholic beverages, coffee and watery meals.



In fact, we drink these drinks when we are thirsty and as a result, we create a problem for skin which is the largest organ. Thus skin loses freshness, wrinkles appear and we create conditions to be ill. An example for comparison: when washing dirty dishes after eating, we use alkaline soap, washing means and soda because oil and various food residues are not cleared from dishes.



Such is in the human organism, in order to be healthy and to clean and to remove accumulated fats on the walls of the intestines and digestive system, absolutely need to drink water which is alkalinity higher than

7.5 pH. In other words, we need to drink monomolecular, structuralized, biologically active water. We shall touch upon once again to the role of water in organism and blood in next discussions. But, now, before talking about the role of water in human organism and blood we would like to understand: What does it mean alkaline water and how health is linked to pH balance?

Need to cite a quotation of the All-Russian Paediatric Congress which is held in 2005: The new species of foods and a bad quality water leads to oxidation of the human organism, it also creates chronic diseases.

So let's first clarify what is a sour and alkaline environment. Let's imagine for a moment. If the egg cell contains 90%, the new-born has 85-90%, the middle-aged person has 70-75% water, then in a person of 80 years, it remains 45-50%. If, you will pay attention to the skin of the new-born baby which contains 85-90% water then you will feel the nice smell. In contrast, the 80-90-year-old, older human has specific smell and odour because of oxidation of organism and having less water in its organism. I want to note that, pH in the skin of a baby is 7, but in the skin of an old person is 5.5, and it is related to age, wrong way of life and especially non-drinking of water. You can see for yourself if you stay alone for a long time with an old person. Let's clarify the issues what determine the acidic, alkaline environment.

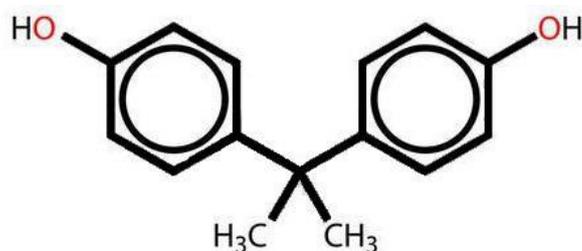
What is pH? For the first time pH was created from "pondus hydrogen" phases words in Denmark and it means hydrogen power. In other words, pH shows the concentration of hydrogen ions in solution. if you have noticed that, pH 5.5 is written on the soaps. So it complies with pH of a human skin. The organism is set up such that, for example when the temperature in the skin is 36.60 C but inside it is 37.70 C.

I.e. in the case of blood pH 7.36, 7.43 then the skin pH wakes up 5.2-5.5, which leads to metabolic processes and the release of toxins from the inside out in other words, it allows energy flow and drift temperature to move from places with high values to low temperatures, this in its turn creates conditions for the release of accumulated toxins from the organism by help of the skin.

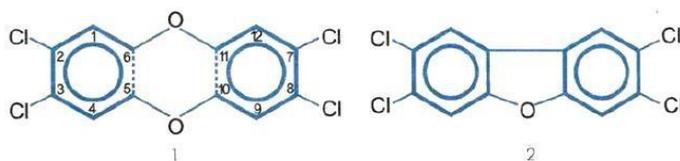
At the last moment, it is neutralized by washing with water from the skin. For information, I would say that if pH is 7.1 in blood then the human may die. Therefore, pH regularly is 7.36, 7.43. If for any reason, the pH of the blood is lowered then in the organism's blood begin to suck Ca and Mg from the bones and muscle to alkalize itself which in turn leads to disease of the axes and muscles. We must eat products which contain 80% alkaline and 20% acidic. In reality, it is not so. When we pay attention to the markets, we see that 90% of the sold products create an acidic environment. These are proteins and carbohydrates, meat and meat products, sausages, canned foods, different mineral waters, lemonades, carbonated, sugar, flour and flour products, and so on. The fruits and vegetables are alkaline products that we also eat less. Therefore, we oxidize our organism. The organism must be alkalized if the human wants to feel himself healthy and happy. Human must give preference to vegetable and fruit and should drink the water that pH is more than 7.5, oxidation reduction potential of Redox coefficient is R - 100 mV; - 150 mV and surface tension coefficient is 43 in / cm².

As we mentioned above the human who weighs 70 kg must drink water no less than 2 litres throughout the day. Let's not forget that the above-mentioned drinks, tea, lemonade, natural juices, coffee and so on are not considered as water. They are considered food with calories. If you drink them instead of water, then it leads to thirst and dryness of the skin and loses of the freshness and oxidation of the organism. The oxidation leads to many diseases. For example, prostatitis, Osteoporosis, osteochondrosis, cardiovascular or kidney diseases. According to specialists, now the ideally healthy child is not born. Therefore, when the child is in the womb, mother poisons her organism by various acidic foods and the child is born with as problematic. Later, we give to the children carbonated water, lemonades, mineral waters and a variety of desserts made by amortizator. These foods lead our children to capture chronic diseases in the future. It causes an incurable disease in people of the middle and old age, and, thus, it shortens our lives. Therefore, the average age limit was 60-65 in the former Soviet Union countries, but the average age limit was 80-85 in Japan, in South Korea. Because their people drink biologically active water. At this moment, to draw attention to an interesting fact related to water as presented water to people in public places in plastic bottles, not glass bottles and equipment (dishes) which is called the cooler. The business leaders which are engaged with water say that there is not any threat of using water from plastic bottles and coolers. But let us remember such a phrase. "Water polish the stone." In this case, if the water polishes the stone,

measure the water molecule to be 0.28 Nano, they at any time reacting with bisphenol-A and the dioxins contained in the plastic will be able to solve it.



As seen bisphenol-A consists of 4 radicals: Bisphenol - An as enough dangerous substance, decreases testosterone in and increases estrogen in the organism, changes the hormonal background and brings severe consequences. Dioxin exists in a plastic bottle and can pass to the water.

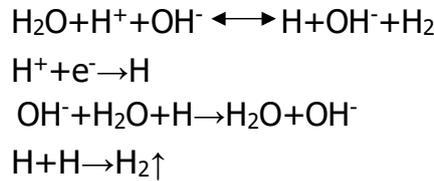


For information, must mention that dioxin is used for making the chemical weapons in the military industry. Thus, you should drink water only from glass bottles and keep in a glass bottle. The water in the glass bottle is considered to be useful and potable water - with the oxidation reduction potential $R - 100 \text{ mV} - 150 \text{ mV}$ and $\text{pH } 7.5$. The surface tension coefficient became 43 dn/sm^2 . By the way, the coefficient of the surface tension of the flowing water in the apartments is $70-80 \text{ dn/cm}^2$. A young organism loses a lot of energy in accordance with this type of water for passage inside the cell. This issue is a little difficult for average and older generation: sometimes, it is impossible. The oxidation reduction potential (Redox ratio) of blood is -100 mV . When blood leaves the organ that the oxidation reduction potential decrease from 100 mV to 7 mV - and gives its own energy to the organ. The oxidation reduction potential shows the chemical activity of the liquid. As above-mentioned, pH also shows the concentration of hydrogen ions in the liquid. Let's look at the simple chemistry of water to clarify this issues. In such a way, so everyone knows that water is H_2O . If we note otherwise if we take into account that the electronic form:

Normally, water divided $\text{H}^+ + \text{OH}^-$ ions and is unstable substance. Accordingly, if H^+ is more in the water it means that the water is sour. If, OH^- is more in the water it means that the water is alkaline and have energy.



In order to neutralize H⁺ ions in water, the study using ordinary electrolysis method the semipermeable membrane between the electrodes and passing the post current through the electrodes to complete the separation of alkaline and acidic water following the following reaction:



Thus, in the bowl, which is filled with water, alkaline H₂O+ OH⁻ and H₂ the lightest alkali volatile hydrogen gas are created. We talked about a method. There are other methods for the acquisition of alkaline and acidic water.

Your health does not depend on the President of your country or markets which are in the city. It is in your own hands. If you do not drink ionized biologically active water, then your blood will thicken and even, medicine will not be effective.

Believe that, in those countries in which biologically active water is drinking, people are living longer and healthier life.



Water, as a unique solvent, accounts for 98% of the newly formed cell. the water must be biologically active, surface tension must be low, and must be in mono form to pass into the cell. We have to increase culture and importance of drinking water in people. Let's not forget that the absolute guarantee of our health can be completely safe, useful and high-quality water. If you have a disease of different nature, you can get out of the situation by drinking water which is in high-quality and biologically active. if you do not drink water then the blood will thicken and lose the effectiveness of the medicine. Even, a healthy way to lose weight is to consume enough water. I think it is appropriate to give some interesting advice. Drink 250-300 ml water before eating. Drink water that digestive process to complete successfully. we must engage in prophylactic and recovery for being healthy. If so, we will be healthier and happier.

It is important to attract your attention to an interesting fact. Why is 85-87 the average age of the Japanese? Therefore, the Government of Japan accepts the federal law about ionized, biologically active, oxygen-enriched water related with the reconstruction of the water line in 1998.

There is the Word Lake in France which its water is generally alkaline. People drink water from the same lake and find healing, particularly, set free from gastrointestinal diseases. This type of water in nature is found in the Caucasus Mountains, in the Himalayas, in Pakistan.

Therefore, for the people who live there, the age of 100 is a normal age.

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Summary

Water and its role in the Organism

Aflatun Hasanov

Ecological Department, State Oil Company of Azerbaijan Republic, Azerbaijan

The water's role in organism and miracles are mentioned in the article. The surface tensile coefficient, concentrations of suspended compounds, salts, minerals (TDS), oxidation and reduction potential (Redox coefficient), ORP and PH (concentration of ions in water) of water are explained in detail among water's 12 organoleptic characteristics. The attention is drawn to condition of body's dehydration. The occurrence of hypoxia and intoxication in cell level are mentioned schematically if body drinks less water during the day. The importance of weak alkaline, molecular, structured water in the body are explained skillfully.

Keywords: *molecular, ionized and structured water, hypoxia and intoxication, water organoleptic characteristic, ORP, PH, TDS, surface tensile coefficient of water*

FACTORS DETERMINING THE SUSTAINABLE PRACTICES IN TOURISM AND HOSPITALITY WITHIN THE BUILT ENVIRONMENT OF SAMARKAND, UZBEKISTAN

Safarov Anvar Normatovich

South East University Nanjing, Jiangsu Province, China

Salisu Gidado Dalibi

South East University Nanjing, Jiangsu Province, China

Abubakar Tafawa Balewa University (A.T.B.U.) Bau+chi, Nigeria

Isah Ibrahim Danja

South East University Nanjing, Jiangsu Province, China

Sadiq Gumi Abubakar

South East University Nanjing, Jiangsu Province, China

Bello Sani Bello

South East University Nanjing, Jiangsu Province, China

Introduction

1.1 Background to the study

Since the 1950s, the tourism industry has been growing almost constantly. As such, the World Tourism Organization(WTO) has estimated at 5% (up to 10% in some countries) this industry's share of the world's GDP[1]. For instance, theInternational Hotels & Restaurants Association numbered 300 000 hotels and eight million restaurants in 2009, generating economic benefits of 950 billion US dollars [2]. In satisfying the growing needs of tourists, there are however many negative impacts such as the degradation of the biosphere, the destruction of coastal and mountain areas by the construction of hotel, parking and entertainment sites [3], non-compliance with fundamental labor standards, and the growth of prostitution [4]. Therefore, a sustainable development (SD) orientation is a strategy for organizations in tourism to minimize the negative impacts of their activities on natural, cultural and social environments [5], [6], and thus counter this industry's self-harming activities [7].

Tourists from various countries in the world have various reasons for visiting or touring countries. These maybe due to sighting of historical sites, religious sites, beautiful sceneries, shopping, climate, live experiences with regards cuisine, cultural traditions and customs etc.

Among these destinations in central Asia is Uzbekistan, a country with potential for an expanded tourism industry. Many of its cities were main points of trade on the Silk Road, linking Eastern and Western civilizations. Today the museums of Uzbekistan store over two million artifacts, evidence of the unique historical, cultural and spiritual life of the Central Asian peoples that have lived in the region[8].

As Uzbekistan's second city, Samarkand is home to some of the world's finest Islamic architecture, some of its most exotic bazaars and many of its friendliest people. It's a city of blue domes, slender minarets and intoxicating smells. It's just the kind of place where a seasoned traveler will get happily lost in and spend the rest of her life wishing to return to [9].

Samarkand is a city in modern-day Uzbekistan with history going back to 8th and 7th centuries BC. Today's Samarkand is divided into two parts: ancient and modern city. The modern part of the city mostly comprise of administrative buildings, including industrial and cultural centers, and educational institutions. Ancient Samarkand is comprised of historical monuments, shops, workshops, and old private houses.

This division of the city attracts tourists from all over the world as tourists may feel like going back through time as they traveled from the modern part of the city to the ancient part.

Tourism and hospitality are the world's major industries, which are in large part responsible for much economic growth, balance of payments, employment and regional balance in their countries. They are also important socially, culturally and environmentally - for those who become tourists and for their hosts. The future of tourism and hospitality is of interest to many businesses and other organizations, as well as governments [10]. The tour capacities of Samarkand serve as an important factor in driving the city's economy into progress and providing the local population with jobs [11]. The city is littered with monuments that span a thousand years of history, and that is all within the city center [12]. The city's four principal monuments are all within close proximity and walking distance to each other [13]. Few enterprises in the tourism sector, including the hospitality industry, have adopted a SD orientation that also integrates the economic and social dimensions. In comparison to what has been learned on environmental management systems in the hospitality industry, there is still little knowledge on the integration of the three dimensions of SD (economic-environmental-social) into a hotel's business strategy and on the impact of such practices on hotel customer satisfaction [14].

1.2 Research Problem

Tourism in Central Asian countries such as Uzbekistan has its potentials and Challenges in terms of history, culture, policy, and technology. Currently only a handful of authors can be found to analyze the evolution of tourism in developing countries of Asia [15],[16]. According to Sacco (2016), some authors considered the merit of focusing on Central Asia, a geographical area that has received little attention in academic literature. [17] Considering the size of each country's area and population, especially Uzbekistan in terms of its strengths, weaknesses, opportunities and threats such as:

- The strengths (heritage, authenticity, cultural and natural beauty).
- The weaknesses (underdeveloped infrastructure, weak networking among stakeholders, low information and communication technology adoption in tourism businesses).
- The opportunities (relatively high centrality in the current geopolitical arena).
- The threats (bureaucratic red tape such as visa requirements) that the country faces in tourism development.
- Historic buildings in Samarkand are experiencing some challenges such as rising saline ground water and traffic vibration [18].
- In Samarkand the major problem is the effect of smoky exhaust fumes [18].

It is also noted that human activities have severe impacts on the built environment some these impacts include high energy consumption, solid waste generation, rising greenhouse gas (GHG) emissions, pollution, environmental damage and resource depletion spanning the design, construction and operational phases of a project [19],[20], [21]. There are also the problems inadequate on-site interpreters and translators at the ancient sites which reduce the quality of experience of the visitors of the sites thus reducing the influx of visitors.

1.3 Research Aim

The aim of this study is to identify, and discuss the factors affecting the sustainable practices in tourism and hospitality of Samarkand with a view of determining the impact of such factors on the sustainable practices of the built environment in Samarkand Uzbekistan.

1.4 Research Scope

The particular area of interest of this research work is limited to sustainable practices used in tourism and hospitality within the built environment of Samarkand Uzbekistan.

Literature review

2.1 Sustainable Practices in Tourism and Hospitality of Samarkand

Policies and practice that support sustainable development have become more widespread following concerns over the extent of man's activities on the natural environment. The Rio Earth Summit in 1992 and the preparation of the Agenda 21 by the United Nations [22] brought to a global audience the need to address the earth's deteriorating environmental conditions. One aspect of development recognized as a major contributor to global environmental degradation is the built environment. Tackling the environmental impacts of the built environment, therefore, has the potential to bring about important sustainability benefits for the world as a whole.[23].

The Government of Uzbekistan has identified tourism as a priority sector for deployment. With the support of global organizations, it decided to seek UNWTO's technical assistance in the formulation of a long term National Strategy for the Sustainable Development of Tourism in Silk Road tourism destination. The Strategy was approved in April 2011 and formally launched in September that year. On this way, nature based tourism facilities have derived as a main facility source on tour packages of country [24].

According to Khamidov Obidjon [25], sustainability principles refer to the environmental, economic, and socio-cultural aspects of tourism development, and a suitable balance must be established among these three dimensions to guarantee long-term sustainability. Hence, sustainable tourism should:

- i. Efficient use of environmental resources that constitute a key element in tourism development, maintaining essential ecological processes and helping to conserve natural heritage and biodiversity.
- ii. Respect the socio-cultural authenticity of host communities, conserve their built and living cultural heritage and traditional values, and contribute to intercultural understanding and tolerance.
- iii. Ensure viable, long-term economic operations, providing socioeconomic benefits to all stakeholders that are fairly distributed, including stable employment and income-earning opportunities and social services to host communities, and contributing to poverty alleviation [25]. However in Samarkand, Immense efforts have been spearheaded by the government to restore its original historical appearance and boost its economic capacities. These include erection of dozens of social and public facilities, education institutions and sports complexes, medical centers and hotels, highways, gardens and squares which allows for the creation of a proper environment for the residents and guests of Samarkand and thus afforded it a more magnificent appearance [11].

The travel and tourism industries contribute extensively to economies across the globe. According to the World Travel and Tourism Council [26] travel and tourism industries generated approximately US\$7.2 trillion and approximately 284 million jobs for the global economy in 2015. Furthermore, investment in travel and tourism equates to approximately 5% of total global investment or approximately US\$814.4 billion [27]. A similar story can be narrated in relation to the growth and contribution to the world's economy by the property industry. It is estimated that 50% of the world's assets are comprised of real estate [28], or approximately US\$217 trillion [29]. The fact that "the value of global real estate exceeds by almost one-third the total value of all globally traded equities and securities debt instruments highlights the important role it plays in economies worldwide"[29].

Much of this property value is focused on the Western world, due to the maturity of these markets; however the Asia Pacific region has been a major recipient of cross border flows of capital in the last 10 years. In recent years, the Asia Pacific region has become a major generator of travel and tourism product with direct contributions of US\$636 billion to gross domestic product (GDP), 65.2 million jobs and US\$296.5 billion of total investment [26]. Forecasts indicate that travel and tourism's economic contribution to world gross domestic product and global investment will continue to grow through until 2025 [30], [27], [26].

According to Airey and Shackley [21], Uzbekistan's efforts to promote tourism are based strongly on its 7500 historic sites and 10 major towns, many of which are associated with the ancient Silk Road. A 'milk run' has developed for international visitors between the cities of Tashkent, Samarkand, Bukhara and (sometimes) Khiva with extensions to the Fergana valley. The heritage tourism industry has been helped by strong presidential interest in the conservation of Uzbekistan's heritage plus financial aid from the European Union (EU), GTZ and Arab League. Advisers from the UN and UNESCO have initiated conservation schemes since Uzbekistan achieved independence and a liaison between Uzbek-tourism and the Ministry of Culture has been helpful in promoting the image of the country as the centre of the ancient Silk Road.

The ancient city of Samarkand, central Asia's premier tourist attraction, the city is more than 2500 years old, captured by Alexander the Great in 329 BC and Genghis Khan 900 years later. It acquired semi-mythic status from the 2nd century BC as a centre of the Silk Road system which connected China with Europe, and it remained a cross-road of international trade until sea routes were established in the 16th century. Today's Samarkand is a modern industrial city peppered by world famous monuments. Some of the notable monuments are:

- The Registan square, which is arguably the most spectacular architectural ensemble in central Asia, consisting of three huge turquoise-domed former madrassas flanking a central square and all are built between 1417-1659.
- The Bibi Khanym mosque now partially ruined but probably intended by its builder Tamerlane to be the central feature of his Samarkand-based empire.
- The Gur-Emir, where the Tamerlane's tombstone can also be seen, and the world's largest slab of jade.
- The Shah-i-Zinda necropolis, which is of great interest to the Muslims pilgrims, it also includes the probable 7th century tomb of Qasim ibn Abbas, a cousin of the prophet Muhammed.
- The Ulugbeg observatory, which is located outside the city centre, is the remains of the 15th century observatory, constructed by an astronomer grandson of Tamerlane, date from a time when Samarkand formed the centre of the scientific world [21].

2.2 Factors affecting the Sustainable Practices in Tourism and Hospitality of Samarkand

Achieving sustainable practices in tourism and hospitality is a tough challenge for all the countries in the world especially the developing countries. No country in the world has excelled in achieving it at hundred percent, however in Samarkand, Uzbekistan sustainable tourism and hospitality is affected by some certain factors which include but not limited to:

- Infrastructure such as unplanned infrastructural development, multi-layered nature of the unsatisfactory state of tourism infrastructure [31],[32];
- Funding and investments such as lack of attractiveness of tourism industry for foreign investment, low volume of attracted investments in tourism and unstable rates of their growth [32];
- Marketability such as lack of good promotion and advertisement in international tourists' markets and data bases, inadequate marketing efforts from stakeholders;
- Awareness such as lack of awareness for sustainable tourism, insufficient financial resources allocated for the promotion of domestic tourism industries ;

- Government policies such as lack of adequate political and administrative support for the development of the tourism industry, the non-recognition of tourist activity as a priority by the local government [32];
- Technical know-how such as lack of on-site information for visitors, with the exception of that provided verbally by guides, Little interpretative signage exists and no waymarked trails have been constructed, Some written information is available in different languages but there is ample scope for improvement [21];
- Weather and climate such as lack of commitment by the tourism and hospitality industry to mitigate the effect of climate change [33], lack of systematically implemented and scientifically assessed sustainability schemes to tackle the issues of climate change [34];
- Socio-cultural factors such as congestion and overcrowding in the tourist sites within the city, erosion of local culture and dialects, conflicts may rise between tourists and hosts due to incompatible demands leading to worsening of the hosts attitude towards the tourists [35];
- Environmental impacts such as disposal of wastes, disturbance of natural regeneration [31], the city is currently under construction which leads to air pollution;
- Local content such as a little aggressive salesmanship or pressure to buy goods by local merchants [21];

Thus the factors affecting the sustainable practices in tourism and hospitality of Samarkand are: Government policies, Infrastructure, Funding and investments, Marketability, Awareness, Technical know-how, Weather and climate, Socio-cultural factors, Environmental impacts, and Local content.

Research methodology

The main sources of data were journals, workshop papers, text books, newspapers, magazines and the internet sources etc., which were used to review literatures in the field of sustainable practices in tourism and hospitality and also help in identifying and narrowing some factors affecting the sustainable practices in tourism and hospitality of Samarkand, Uzbekistan.

These factors were examined and the factors impeding their sustainable practices in tourism and hospitality of the built environment within the Samarkand, Uzbekistan where identified and discussed in relation to the global context.

Discussion, conclusion and recommendations

This research work discusses the sustainable practices in tourism and hospitality of the built environment of Samarkand, Uzbekistan. Some of the factors affecting sustainable practices are identified within the context of tourism and hospitality and the impacts of such factors on the built environment are also determined. The study concludes that the sustainable tourism and hospitality in Samarkand, Uzbekistan is affected by some certain factors which include but not limited to infrastructure; funding and investments; marketability; awareness; government policies; technical know-how; weather and climate; socio-cultural factors; environmental impacts; and local content. However further research work is required to determine possible solutions to the above identified factors and there is need for more research work in the field of sustainable practices of tourism and hospitality in Samarkand.

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Summary

Factors determining the Sustainable practices in Tourism and hospitality within the built environment of Samarkand, Uzbekistan

Safarov Anvar Normatovich

South East University Nanjing, Jiangsu Province, China

Salisu Gidado Dalibi

*South East University Nanjing, Jiangsu Province, China
Abubakar Tafawa Balewa University (A.T.B.U.) Bauchi, Nigeria*

Isah Ibrahim Danja

South East University Nanjing, Jiangsu Province, China

Sadiq Gumi Abubakar

South East University Nanjing, Jiangsu Province, China

Bello Sani Bello

South East University Nanjing, Jiangsu Province, China

Tourism and hospitality are the world's major industries, they are also important socially, culturally and environmentally - for those who become tourists and for their hosts. Among these destinations in central Asia is Samarkand city in Uzbekistan. Samarkand is home to some of the world's finest Islamic architecture, some of its most exotic bazaars and many of its friendliest people. However, human activities have severe impacts on the built environment. The aim of this study is to identify, and discuss the factors affecting the sustainable practices in tourism and hospitality of Samarkand. The secondary sources of data were used to review literatures in the field of sustainable practices in tourism and hospitality. This research work discusses the sustainable practices in tourism and hospitality of the built environment of Samarkand, Uzbekistan. Some of the factors affecting sustainable practices are identified within the context of tourism and hospitality and the impacts of such factors on the built environment of Samarkand in Uzbekistan.

Key words: *Built Environment, Hospitality, Samarkand, Sustainable Practices and Tourism*

MODEL OF ENVIRONMENTALLY PURE TOURISTIC ZONE ON THE BASIS OF INNOVATIVE TECHNOLOGIES

Aydan Gurbanova

Karoly Robert University, Gyongyos, Hungary

Introduction

Deteriorating ecological situation on planet, climate change, increasing anthropogenic impact on environment, depletion of energy and water resources, violation of water cycle, etc. make scientists immediately look for new methods and approaches in order to positively change the situation and provide long-term sustainable development. In this regard, United Nations constantly organize and conduct high-level meetings and discussions with experts, businesses, representatives of scientific communities and politicians to develop the concept of the environmental improvement and urgent implementation of the taken decisions. Timely implementation of the positive solutions will ensure sustainable environmental situation on planet and development of environmentally friendly technologies that will be aimed to maintain healthy life and further prosperity of flora and fauna. As it is known, air and water are basic factors of healthy life. The provision of clean air (without industrial emissions into atmosphere) and water which is very urgent and topical task is possible by introduction of the environmentally friendly technologies into production cycles. There are works of many authors which are focused on the similar studies concerning the development of innovative technologies [1-7]. This article is devoted to the revision of the latest technologies and the possible complex application of these technologies in proposed model of the ecologically clean touristic area with the intention to ensure its long-term development.

Research part

Any area which is suitable for the development of tourism business can be chosen as a research object. Depending on its location and availability of the existing infrastructure, the specific task of modeling and setting energy-efficient and environmentally friendly technologies at the relevant destinations could be assigned. Designing the selected area, it is necessary to take into account available energy resources, structures (surface and underground water sources, agricultural lands, production sites, purification facilities, etc.), which require the use of energy-efficient and environmentally friendly technologies that are able to maintain the ecology of the given area after anthropogenic interference. Thus, it is necessary to design a model of the future environmentally friendly touristic area.

In the proposed model, the territory with fairly rich forest area, located far away from urban zone and surrounded by mountain peaks has been chosen as a touristic zone. Alongside with forest land, clean mountain air, spring water and water from underground sources can contribute to the development of the ecologically clean touristic zone. However, despite this, it is necessary to take measures in advance in order to stabilize ecological situation in this region after massive influx of people and ensure the long-term development of this area. In figure 1 it is possible to observe the image of the above mentioned touristic zone, located at distance of 200 km from the capital of Azerbaijan, Baku.



Figure 1. Model of the touristic zone

The improved model of the given area with use of the most innovative energy-saving technologies in all of its components, including the housing complex (5-star hotel) and adjacent infrastructure facilities (station, pumping station, sports complex, flower gallery, mini cattle-breeding complex, site for production of dairy products and fruit drinks) is proposed as a pilot project in the article.

All of the currently examining technologies are energy-efficient, energy-saving and belong to the class of green technologies without the use of toxic chemical reagents and conservants. These technologies, in comparison with many existing for today energy-intensive technologies used in various technological processes, are distinguished by the simplicity of design, ecological purity and insignificant losses during the physical processes.

A full review of the technologies which are available to date and used in various sectors of national economy and industry was realized in this research. Among them both energy-efficient and energy-intensive technologies can be found. We analyzed whole range of the technologies that could be used in tourism conditions, depending on existing infrastructure. Energy-efficient electro technologies based on the use of high voltage, strong electric fields and discharges [8-12], as well as alternative renewable energy sources using solar radiation have been chosen among all the technologies.

As a backup source of lighting considered in our model of residential complex (5-star hotel), a module of solar batteries is installed on the roof of building or in another area conserved particularly for this purpose. Before designing the capacity of solar source, it is necessary to take into account specific location of the given area and monthly insolation factor (sunny days). At the same time, it is necessary to calculate the power of load cells and devices used in complex. To ensure more efficient accumulation of radiation throughout the day, panels can rotate according to the angle of incidence of sun rays. In addition, for street lighting and charging of electric cars, there is a proposal of the construction of module of solar batteries, which is also considered as a carriageway for tourists bicycle rides. In this case, due to presence of large charge areas, possibility of additional accumulation of solar radiation for various needs is provided.

As it has been mentioned earlier, environmentally friendly water and air play an important role in healthy life of all living organisms. In mountainous areas, in case of absence of production areas, air is usually clean, without presence of any harmful impurities. In case of harmful industrial processes, at certain stage of the technological process it is necessary to introduce electro technologies which ensure ecological purity of the production. First of all, this concerns the production cycles, where raw toxic products are thrown into environment and which must be cleaned. For these purposes, low-power energy-saving electro technologies are proposed, and they are actually based on pulsed crown discharge with extended electrode systems in which a complex of high-speed physical processes occurs in treated medium due to the action of strong electric fields and discharges, resulting in complete neutralization of toxic gas emissions and cleaning of polluted air [1]. At the same time, processed air mixture enters an electric discharge reactor in which electronic treatment of medium and formation of active discharge products (atomic oxygen, ozone) take place, and these active discharge products split the contaminated air molecules and neutralizing them. Simultaneously, high-frequency ultraviolet and visible radiation is generated in volume of contaminated medium, which contribute to the death of harmful microorganisms which are contained in the air.

In the model of touristic zone, inside of sport complex, in order to disinfect air from various bacteria and viruses, it is proposed to construct various types (depending on treatment volume) of ozonators -devices that generate active oxygen and ozone into environment and thereby contribute to the death of all microorganisms there. Ozone, as it is known, is a powerful oxidizer, which leads to the death of harmful microorganisms which are contained in the air [2, 3]. These devices are of low power due to very low currents while electric discharge is excited. According to the size and energy saving and environmental friendliness these devices can be used in creation of the refreshing and useful microclimate in training halls of sport complex. In turn, to disinfect swimming pool from pathogenic microorganisms contained there, low-power ultraviolet lamps can be used. As it is known, ultraviolet radiation is high-frequency optical radiation, appearing as a result from ionization of gas under influence of high voltage and course of discharge processes. This radiation is short-wave and therefore can penetrate into the structure of cell of microorganisms and affect them, suspending their further development. Appropriate technology can successfully replace the method of water disinfection by chemicals harmful for the health (chlorine).

Chlorine, as it is known, is strong oxidant, negatively affecting the vital activity of microorganisms contained in medium. And, on the other hand, chlorine is very harmful for the health and in combination with organic compounds causes formation of organ chlorine compounds that lead to various pathological diseases [11]. Therefore, replacement of the chemical method of treating water in swimming pools with ultraviolet disinfection, both according to ecological purity and material costs, is very useful and beneficial. Water, as already indicated, is one of the most important resources that all people use in their daily life.

Therefore, ensuring supply of uninterrupted and environmentally clean drinking water that meets international standards is very urgent and priority task. In resort conditions, where every holiday-maker wants to be rehabilitated from various diseases and negative loads, issue of providing high-quality drinking water is especially acute due to the lack (depending on chosen location) of centralized purification systems of drinking water. Depending on the water source (surface water, underground, spring) its pollution degree is different.

The most polluted are open water sources (streams, lakes, seas, oceans), and in some occasions the deliberate release of various sewage to water sources can be observed. Therefore, depending on choice of the drinking water source, which future resort area will be provided by, and its pollution degree, some cleaning method is going to be chosen. After analyzing existing technologies for water treatment, ion exchange technology with using of Na-cationization devices has been chosen as the best one. In figure 2 it is possible to observe the scheme of drinking water treatment process for offered model of touristic zone.

To provide entire touristic zone with the clean drinking water, an underground water source has been chosen. As it is known, well waters contain ions of alkaline-earth metals Ca^{2+} and Mg^{2+} in big quantities, which give rigidity to the water. This is a reason why to use ion exchange method is the most optimal method to solve this problem. Further, for conditioning and disinfection of the drinking water, ozonation method described above is proposed to be implemented. As a result, consumer will receive a high-quality fresh drinking water [8, 9].

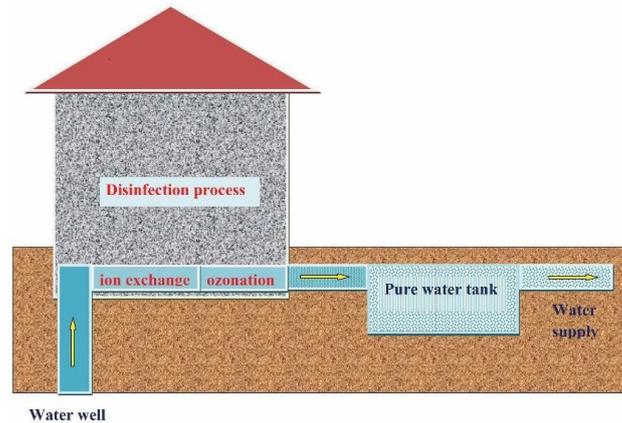


Figure 2. Scheme of drinking water preparation for tourist complex

Alongside with the treatment of drinking water, it is necessary to determine cleaning method for domestic sewage, which is drained through sewer systems into large containers. At the same time with cleaning, it is necessary to think about environmentally friendly and energy-efficient method of utilizing or using treated wastewater for designated purpose. Among existing various technologies for waste water treatment and utilization, the most recent and corresponding to our needs, electric pulse technology of electronic treatment of domestic sewage by high frequency pulse discharges has been chosen. In figure 3 it is shown a scheme of our proposed technology for wastewater treatment of touristic zone [12].

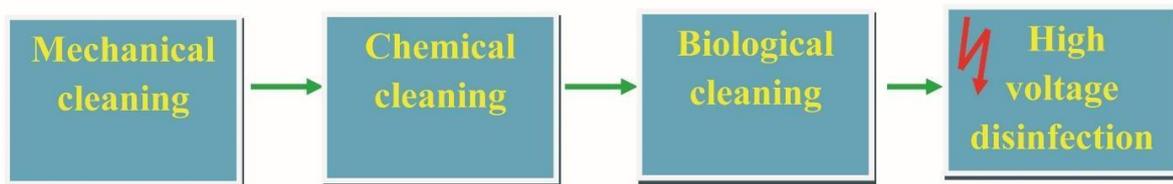


Figure 3. Scheme of wastewater treatment of touristic zone.

The point of the method is the fact that under effect of high-voltage pulse on water-containing medium, electro-hydraulic effect arises in discharge reactor with formation of strong mechanical waves. At the same time, complex of high-speed physical, chemical and mechanical processes takes place there, which positively influence the splitting process of organic substances into sewage and formation of fine-dispersed structure in effluents. During action of strong electric fields and discharges in wastewater, violent ionization processes occur with generation of high-frequency ultraviolet and visible radiation, formation of active discharge products (atomic oxygen, ozone), high energy electrons that actively participate in disinfection process. Thus, need to use harmful chemical method of chlorine disinfection, harmful to life and ecology, for these purposes disappears. Bacteriological analyzes of electro impulse treatment of domestic wastewater confirm effectiveness of this method, both in terms of energy consumption and disinfection degree. Maximum disinfection degree of treated medium is reached ($\sim 10^{10}$) [4, 5]. Due to the fact that after electro impulse treatment a fine dispersion of sewage is formed and maximum disinfection degree from pathogenic microorganisms is reached, it is possible to use them successfully as fertilizers in agriculture.

Minerals in these fertilizers are easily assimilated from plant sprouts, and this stimulates their healthy growth. Disinfected wastewater after electro impulse treatment can be ready for reuse, in particular during watering and caring of plants and various plantations.

As it has been stated earlier, touristic area has its own flower garden (gallery) and agricultural land, where ecologically clean flowers, vegetables and fruits are grown. As fertilizers, effluents treated by above-mentioned electro pulse technology in dispersed state are used. To enrich the soil with active radicals and to improve vegetables quality, watering can be done by secondary water, disinfected and enriched with ozone during effluents treatment. In order to accelerate growth and improve vegetables and fruits quality, their seeds are also treated in reactor with low-temperature electric discharges for disinfecting their outer layers from various pathogenic microorganisms and enriching vitamins contained in them with chemically active discharge products (atomic oxygen, ozone). It is pertinent to mention that structure of grown seeds consists of several membrane layers with nutrients inside. In case of the treatment by the strong electric fields and discharges, in addition to disinfection of their outer layers, active radicals enrich nutrients that in turn enter the seed's nucleus and ensure their further growth and rapid maturation. By this treatment, there is no need to use various chemical reagents (pesticides) to protect seeds from negative effects of various bacteria and viruses contained in soil. On the other hand, ripened vegetables and fruits with treated seeds are characterized by pleasant taste qualities and have quite same dimensions and are impressively attractive. It is important to notice that in winter, farmland and flower gallery (garden) are protected by light-transparent roof for protection from adverse weather conditions. In order to create refreshing microclimate within such structures, the previously mentioned low-power ozonators that supply oxygen and ozone and, consequently, have quite acceptable bactericidal action are proposed for usage. It should be noted that such devices can also be used in warehouses where grown vegetables and fruits are stored in order to extend their storage and conserve taste qualities.

The given model of touristic zone includes also, as it has been noticed earlier, own animal and poultry farm. In order to ensure rapid and proportionate growth of cattle and hen, an environmentally friendly method for feed activation by high voltage electro pulse treatment could be proposed. As a result of processing the feed, it is enriched with chemically active products of the discharge (oxygen, ozone), which facilitate easy digestion of animals. This, in turn, leads to acceleration of metabolic processes and rapid growth of animals and hen. On the other hand, cattle-breeding drains can also be decontaminated, as well as domestic wastewater from human life, by high-frequency electro pulse fields and discharges from pathogenic microorganisms, and brought to dispersed state and successfully used as a good soil fertilizer. Thus, in proposed model of touristic zone, the reuse of different mediums by using of energy-efficient and environmentally friendly technologies with strong electric fields and discharges is proposed.

During the designing process of the touristic zone, I tried to cover main issues, solution of which will contribute to the realization of normal environmentally friendly recreation for holiday-makers. Proposed model represents the most innovative approaches to date in order to solve many current problems, ranging from energy saving and energy efficiency to ensuring ecological purity.

In addition to environmentally friendly methods for growing of vegetables and fruits, I also reviewed the usage of innovative and ecologically pure technologies, their disinfection from pathogenic microorganisms in the production process of various goods (fruit juices, beverages, various dairy products) in order to provide safety of consumed food and prolong their storage [4, 5, 10]. As it is known, in many existing technological cycles, various conservants are used as decontaminating agents, which can be harmful for human life. An alternative method is thermal pasteurization of food products, which is very energy intensive and inefficient with regard to energy consumption.

On the other hand, heating of treated products excessively leads to deterioration of their attributes and loss of biological value. Therefore, I have tried to propose environmentally friendly and energy efficient technologies in the production process of the above mentioned products.

The figure 4 shows the scheme of electrical impulse treatment of food products by usage of high voltage and electrical discharges.

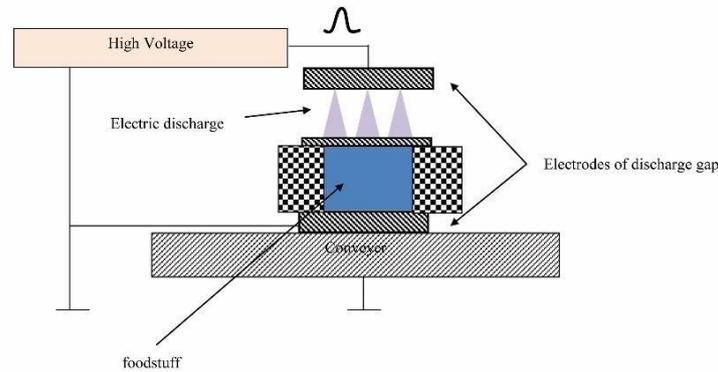


Figure 4. Scheme of electro pulse treatment of food products

As can be seen from the figure, product in dielectric package comes through conveyor to electric discharge zone, where it is processed by means of strong electric fields and discharges, and then sent to consumer. Such method destroys existing pathogenic microorganisms in product and promotes prolongation of their storage term for a long time without application of harmful conservants. This is environmental friendliness of that technology. On the other hand, for deepest inactivation of microorganisms, impulses with very short duration have to be used in treatment process. This allows strong electric fields to penetrate directly into cell's nucleus of microorganism and destroy it, suspending its further development. Use of such short-wave pulses also ensures energy efficiency of treatment process and total application of discharge energy for decontamination processes. Developers of this technology argue that high-frequency ultraviolet and visible radiation that arise during such processing also have negative effect on pathogenic microorganisms contained in product. At the same time, physicochemical analyzes of treated samples show improvement in taste qualities of these products. It should be also noticed that after the electro pulse treatment, the physical and chemical properties of the given products do not change.

All the considered technologies with the usage of high voltage are introduced in technological processes in compliance with necessary safety standards and do not have any harmful effect on service staff. These installations can function smoothly throughout the working day. Each of these technologies works in on-line mode and the process data is displayed on monitor. All of the obtained results correspond to international requirements for food products.

Conclusions

Thus, the presented article illustrates the model of modern touristic zone based on introduction into different sectors of the innovative, energy-saving and energy-efficient technologies which provide high ecological compatibility and energy efficiency. Brief description of each of these technologies is presented. Their distinctive features and advantages are shown.

So, alternative backup energy sources from solar batteries of various capacities are offered for back-lighting of the main touristic area (hotel complex, sports complex, auxiliary premises and street lighting).

As a result of review and analysis of existing innovative methods and technologies used in various sectors of national economy and industry, list of high voltage electrical technologies has been proposed, which could be successfully applied for various purposes in touristic zone. So, in case of presence of any production sites which produce harmful gas emissions as a result of their activities, purification technologies based on influence of strong electric fields and discharges are provided.

For treatment of drinking and wastewater, cattle-breeding drains and poultry farm, reuse of sewage for irrigation purposes and as soil fertilizers, disinfection of food products from pathogenic microorganisms contained in them in order to extend their storage time, etc., electro technologies are provided on the basis of impact of the strong electro pulse fields and discharges and ozone technologies.

Advantages of all these technologies and devices are their environmental friendliness and energy efficiency. Ecological compatibility is achieved due to the lack of chemical agents and conservants which are harmful for vital activity of bio organisms, which can form dangerous compounds in reactions with organic substances, causing various pathological diseases. Energy efficiency is achieved through the usage of the low-power devices based on strong electric fields and discharges. Energy consumption of these devices is much less in comparison with energy-intensive technologies, such as thermal pasteurization, etc. In addition, biological value of food products is going to be preserved without any change in their physico-chemical properties.

It is shown that in order to prevent the release of harmful gases in production plants, it is advisable to use innovative energy-efficient technology based on pulsed crown discharge with extended electrode system. Due to the selected parameters of energy source, reactor design and large volume of treated medium, it is possible to generate chemically active substances (atomic oxygen, ozone) in large quantities, neutralize toxic gases and purify polluted air on industrial scale in accordance with the international standards.

It is shown that ion exchange technology can be used for softening and purification of drinking water from underground sources. In disinfection of sewage and waste from cattle-breeding complex (poultry farm), reuse of purified water for irrigation purposes, advanced electro technology based on strong electro pulse fields and discharges at high voltage is proposed. It is shown that, when pulsed fields and discharges are exposed to water-containing medium, the complex of high-speed physical, chemical and mechanical processes that adversely affect the vital activity and development of pathogenic microorganisms takes place. It is established that under action of high voltage in water medium, electro-hydraulic effect occurs as a result of the violent ionization processes in discharge gap and formation of powerful mechanical waves. Simultaneously, generation of powerful ultraviolet and visible radiation is observed, which has negative effect on survival of microorganisms. On the other hand, all these processes lead to splitting of the organic substances in water medium and formation of finely dispersed structure, which can easily be assimilated by plants during their growth. Expediency of using such treated structures as soil fertilizers is shown. The treated wastewater in repetitive cycle can be used as watering for various plantations.

In article the technique of preliminary treatment of seeds before their planting by strong electric fields and discharges is offered. This technology is necessary for disinfection of the seeds outer layers from pathogenic microorganisms and activation by active oxygen of the nutrients in their inner layers. Such activation promotes better mineral uptake by cell nucleus and rapid growth of plantation. It has been established that, with such treatment, taste and appearance of the grown products become much improved in comparison with untreated ones.

In order to produce environmentally friendly food products and ensure safety of their consumption, innovative technology for disinfection of the food products by strong electric pulse fields and discharges is offered instead of conservants and energy-intensive technologies (thermal pasteurization).

It is shown that the use of short duration pulses promotes the most profound inactivation of microorganisms in food products due to penetration of force lines directly into nucleus of cell, destroying it and suspending its further development. It has been established that such effect improves taste of products, while preserving their physicochemical composition and prolonging their shelf life.

Thus, the article proposes a pilot project of ecologically clean touristic zone with the infrastructure built on basis of innovative energy-saving, energy-efficient and environmentally friendly technologies, which could be successfully implemented and contribute to the sustainable development of tourism business.

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Summary

Model of environmentally pure Touristic Zone on the basis of Innovative Technologies

Aydan Gurbanova

Karoly Robert University, Gyongyos, Hungary

The article proposes a model of an ecologically clean touristic zone with the infrastructure based on applying of the latest achievements in science and technology. Various technological processes based on the usage of the alternative renewable energy sources and high-voltage electrical technologies which ensure ecological pureness and energy efficiency and implemented in the territory of tourist complex were carefully examined. Article encompasses a wide range of issues: purification of harmful gas emissions, drinking water and sewage, cattle breeding drains, reuse of treated wastewater in irrigation and sewage as soil fertilizers, disinfection of food, etc. All these measures are aimed to ensure the cleanliness of environment and consumed resources, and food safety, which in total have beneficial effect on health and leisure of tourists. Article shows that the right choice of technology in accordance with the specific task can lead to the achievement of the maximum environmental friendliness of the production processes and their energy efficiency.

Key words: *tourist zone, model, sustainable development, innovative, environmentally friendly, electro technology, energy-efficient*

AUGUST 12 - THE INTERNATIONAL CASPIAN DAY

Aygun Ismailova
Baku State University, Azerbaijan

Extreme acuity in recent years has acquired the problem of preserving the ecological health of a unique natural object, such as the Caspian Sea. August 12 is the Day of the Caspian Sea. The "Framework Convention for the Protection of the Marine Environment of the Caspian Sea" is a historical long-term document. In 2003, it was signed by Russia, Azerbaijan, Iran, Kazakhstan and Turkmenistan. This legal agreement affects legal relations between the states of the "Caspian Five" in relation to the Caspian Sea. The Convention states that when polluting the sea, the polluter is financed by the polluter. The document describes the norms of using the biological resources of the sea, which determine the steps to preserve the integrity of the ecosystem. When drafting the document, the commission relied on the research of specialists and the results of eco-monitoring. Eight years of the negotiation process were accompanied by actions: regularly raising and reviewing the Caspian problems, the governments of the participating countries of the Document conducted public events and attracted scientists to research. The Caspian Environment Program was supported by the UN. The Convention was named "Tehran" and it was launched on August 12, 2006. This memorable date is "The Day of the Caspian Sea". The Day of the Caspian Sea is a day of active actions to protect the sea, the diversity of its flora and fauna. Each inhabitant of the region is obliged to make a fair share, not clogging the sea and shore with garbage, decrying poaching, resting in designated places.

The Caspian is valuable not only for the colossal deposits of oil and gas and for bioresources, it plays the role of an important transport artery, the sea artery, and, as it known, sea transport is the cheapest of all existing ones. Currently, the Caspian has become one of the most well-studied reservoirs, but the intensive exploitation of minerals and sea resources, leading to its pollution, pose new problems and tasks that need to be resolved. The problems of the Caspian Sea include: excessive fishing; contamination of the water area with industrial and domestic wastes; threat from the oil and gas, chemical, metallurgical, energy, agricultural complex of the economy. In the neutral waters of the Caspian Sea, there is a convention on the facilitation of international maritime traffic. Within the framework of this convention, regions are defined where it is prohibited to dump any waste. Among these regions are the Northern, Black and Mediterranean Seas. But, the Caspian Sea is not included in this list, which gives the right to all shipping companies within the neutral waters to pollute the Caspian. All these factors of influence have led to the fact that the Caspian Sea has lost the possibility of full self-regulation and self-purification.

American scientists from the Center for Space Studies at the University of Texas have determined the speed with which the Caspian has evaporated over the past 20 years. Due to global warming, the water level drops by seven centimeters per year. Another meter - and the historical minimum of the 1970s will be reached, when the Caspian Sea has dried up to 29 meters below the average sea level. Today, everyone understands that ignoring the ecological aspect can lead to serious consequences Caspian Sea. If activity of ecologists, scientists of world organizations on nature protection, aimed at preserving the ecology of the sea is not activated, the Caspian Sea may lose its fish productivity and become a reservoir with dirty, waste water.

The Caspian is the world's largest inland body of water, of oceanic origin. Among the seas - this is a real relic, the heritage of all mankind, which has preserved to this day the richest world of flora and fauna, which has an endemic animal and plant world.

More than 500 plant species and 850 species of animals, including rare and endemic species listed in the Red Book of the International Union for Conservation of Nature, inhabit marine depths and coastal habitats in the Caspian.

The Caspian Sea is the world's largest intercontinental reservoir, unrelated to the world's oceans, with an area of more than 371,000 km². The Caspian occupies a huge inland area and a deep continental depression, is the remnant of the ancient Tethys ocean, which at one time lost its connection with the world's oceans.

The Caspian Sea is located at the junction of the two parts of the Eurasian continent - Europe and Asia. The length of the Caspian Sea from north to south is about 1200 kilometers from west to east, on average 300 kilometers, maximum depth of 1025 meters. The Caspian Sea is conditionally divided into three parts - the Northern, Middle and Southern Caspian, according to physico-geographical conditions. The Caspian Sea belongs to partially freezing water bodies. In winter, only the Northern Caspian freezes. Ice lasts from November to March, the thickness of the ice at the same time is 60-90 cm. It is located in the interior of Eurasia, and is an amazing creation of nature. While on the north shore fierce frosts and snowstorms are raging, magnolias and apricot trees blossom on the southern shore. The Caspian Sea has a climate-forming significance. The Caspian Sea is washed by the coasts of five coastal states: Azerbaijan - the length of the coastline is 955 kilometers; Russia - the length of the coastline of 695 km of Kazakhstan - the length of the coastline is 2,320 kilometers; Turkmenistan - the length of the coastline is 1200 kilometers; Iran - 724 kilometers. 130 rivers flow into the Caspian Sea, of which 9 have a delta-type mouth. The largest rivers are the Volga, Terek, Sulak, Ural, Kura, Elba, Samur, Atrek and Sefidrud. All these rivers are subjected to anthropogenic influence quite intensively. Large rivers, flowing through densely populated and industrially developed areas, bring a huge amount of harmful substances and contaminants to the Caspian. In a closed reservoir of the Caspian Sea, harmful substances gradually accumulate, worsening the ecological situation. The Volga River provides about 80% of the total river flow. The ecological state of the Caspian is determined by the inflow of rivers, annually, up to 12 billion cubic meters of untreated sewage are discharged here. This poses a serious threat to the conservation of biodiversity and the destruction of the ecosystem.

According to scientists, the sea is oversaturated with heavy metals, which are no less dangerous for human health than hydrocarbons: every year 34 tons of lead and 304 tons of cadmium enter the Caspian region from the outside, as well as zinc, iron and copper. For this reason, industrial effluents entering the sea containing heavy metal salts are currently the main sources of accumulation of toxicants in benthos, plankton, and fish. For example, the predominant metals in each of the fish samples studied were zinc, copper, barium, iron: for example, in the liver of fish, iron, zinc, and copper are concentrated; and barium, chromium nickel and lead were found in all types of samples. Trace amounts of mercury were found both in the liver and in tissues, but were not found in the caviar. Therefore, it is necessary to monitor and monitor the pollution of heavy and transition metals of components of hydrocenoses of the Caspian Sea, including sturgeons.

Samples of water and sediments from the bottom of the Caspian Sea show that the water area is polluted with phenols - these are hydroxyl derivatives of aromatic hydrocarbons. They are common pollutants entering natural waters with wastewater from oil refineries and other enterprises. The maximum allowable concentration of phenols in drinking water and water of fishery reservoirs is 1 µg / l.

It was found that the average content of phenols in the water of the Northern Caspian reaches 60 µg / l, and the average value for the waters of this region is 3 µg / l. In the survey of the northeastern part of the Caspian Sea in 1996, no cases of exceeding the phenol level of 20.0 µg / l were recorded.

In the marine environment of the Caspian, along with hydrocarbons, pollutants are high concentrations of heavy and transition metals - introduced as components of industrial wastes with river flow. Metals as trace elements are of great importance in the life of fish and other hydrobionts. They are part of the enzymes, vitamins, hormones, participate in biochemical processes occurring in fish organisms. But being in water in large quantities, they denature proteins, block thiol groups, exert antibiotic influence on the manifestation of life processes and cause genetic changes.

Sediment

The accumulation of transitional and heavy metals in the bottom sediments of the Caspian Sea is characterized by a number of specific features. The weak solubility of lead determines its flow with river runoff in the starfish. The process of sorption and precipitation of complex compounds with organic matter in the Caspian Sea leads to the formation of significant concentrations of copper. Low nickel content marked in sand and shellfish, elevated - in fine-silty and clayey mud. In the deposition and accumulation of nickel, hydrobionts also participate. Comparison of data on the content of chemical elements in the bottom silts of the Caspian Sea with other regions of the world shows higher values of heavy and transition metals.

Chemical contamination

Harmful chemicals enter the sea in a variety of ways - from the drains of cities and agricultural lands, industrial plants and dumps, as a result of oil spills, from waste generated during the operation of drilling rigs, mining. Chemicals can affect animals as directly - getting into the body from water or food, and indirectly through the degradation of habitats. Some of the most dangerous compounds are organic pollutants, such as DDT and other pesticides, and industrial chemicals, including polychlorinated biphenyl (PCB). These substances accumulate in the tissues of small invertebrate animals (plankton and benthos) and concentrate as they move up the food chain, so that in the tissues of marine mammals, which represent the highest link in marine ecosystems, their concentration is particularly high. In animals with a high concentration of chemical contaminants in tissues, immunity and reproductive function is reduced, the cubs die more often, and survivors receive even larger portions of chemicals with milk from the mother. The concentration of harmful chemical compounds in meat of some species is so high that it is not recommended for human consumption.



Figure 1. Clear water of the Caspian Sea can be a strong factor for the visit of a large number of tourists in the summer season to the beaches of the Absheron peninsula.

The composition of biological resources includes organisms: 1) producers of organic mass - phytoplankton –these are small marine plant organisms, unicellular algae living in the layer of sea water; 2) consumers, processing the living organic mass (these are zooplankton, benthos and nekton); 3) decomposers, providing decomposition of dead organic matter to mineral substances (bacteria, fungi).

Phytoplankton is the basis of fish riches. Most of the inhabitants of the sea feed on it. About 450 species of phytoplankton, 120 species and forms of zooplankton, 380 species of macrozoo-benthos and 126 species and subspecies of fish are recorded throughout the Caspian Sea. The Caspian is unique in that it reported relict flora and fauna, including the world's largest herd of sturgeon (75% of the world's stock). Oil pollution leads to the death of phytoplankton, which play an important role in the nutrition of fish. The Caspian Sea is dominated by diatoms (292 species), green (139 species) and blue-green (203 species). The remaining types of algae are represented by a significantly smaller number of species. The death of phytoplankton leads to the death of other organisms in the food chain, as well as to the reduction of oxygen on the planet. Anthropogenic eutrophication of the Caspian Sea. The Caspian Sea is one of the most highly productive lakes of the planet. The annual production of phytoplankton in the Caspian Sea averages 175 million tons, which is almost 4-5 times higher than in the Black Sea. A noticeable increase in phytoplankton production began in the first half of the 1960s of the Northern Caspian in connection with the entry of biogenic elements with the runoff of the Volga; the beginning of anthropogenic eutrophication of the sea was recorded by the beginning of 1990 "blooming"



Figure 2. In the second half of the summer, the "flowering" of water is caused by blue-green algae. Almost 60% of the water area is subject to anthropogenic eutrophication in the Northern, least deep part of the Caspian Sea. Eutrophication is accompanied here by the formation of oxygen deficiency in the bottom layers, which is retained for most of the summer-autumn period. Algal blossoms, which capture a significant water area, are also observed in the deep-sea Central and Southern Caspian, and they are increasingly recorded on satellite images.

The fauna of the Caspian Sea is represented by a large number of endemic species, and their number is 31, among which 7 species of sturgeon fish are of particular world value. Unfortunately, for the last 20 years the catch of fish in the Caspian Sea has decreased more than 5 times. At the same time, the production of juveniles in the Caspian Sea decreased to 5 million fingerlings per year. One species of lamprey lives in the Caspian Sea. This species is endemic and belongs to the endemic genus.

Ecological disaster for the Caspian Sea was the mass reproduction of the ctenophore *Mnemiopsis*, which fell into the Caspian from the Black Sea. Ctenophore feeds in zooplankton, consuming daily food approximately 40% of its own weight, thus destroying the food base of Caspian fish. Rapid reproduction and the absence of natural enemies place it beyond competition with other consumers of plankton.

When eating planktonic forms of benthic organisms, the comb jelly also poses a threat to the most valuable fish, for example, such as sturgeon. That leads to a decrease in the food base, and their possible destruction.

The Caspian Sea is the main migration route and the habitat of waterfowl and coastal birds. In most cases, birds die from thermoregulation disorders, since they are no longer isolated from the aquatic environment due to oil pollution by the air cushion created by the plumage. In addition, the feathers stick together, as a result of which the bird can not fly.

Caspian seal - the only marine mammal of the Caspian Sea that feeds on small fish, is the endemic species of the Caspian Sea. Throughout life, the Caspian seal migrates from the freezing North Caspian in winter to the Southern Caspian in summer and back to the north for the birth of cubs on ice. It is unclear how many seals were left in the Caspian. From a population estimated at 1 million or more in the early 20th century, there are now 110 left. In 2000, a massive seizure of seals (caused by a canine plague virus (VCh), resulted in tens of thousands of deaths (in Azerbaijan, Kazakhstan, Russia and Turkmenistan), it was shown that pollution causes a high level of infertility in females (70%), which also threatens the population size of seals.

The main polluter of the sea is oil. Oil film prevents the penetration of light into the sea, which is necessary for the life of microorganisms, resulting in a decrease in the initial food link in the sea. That is, oil pollution suppresses the development of phytobenthos and phytoplankton of the Caspian Sea, represented by blue-green and diatom algae, and reduces the production of oxygen. Increase in pollution has a negative impact on the heat, gas, moisture exchange between the water surface and the atmosphere. Due to the spread of the oil film on significant areas, the rate of evaporation decreases several times. Studies show that oil contamination settles on the seabed and forms a layer of oil sludge, one and a half meters high. Such areas are called dead zones. There nothing lives, plants do not grow, sea animals die. Therefore, if before the bottom of the Caspian Sea was covered with beautiful marine plants, today some parts of the Caspian are completely lifeless.

Sea trade and movement of ships along the canal, the release of millions of liters of ballast water together with the flora of free seas destroyed the potential for self-cleaning of the Caspian Sea. The introduction of pollution into the marine environment leads to the rupture of food chains, to the destruction of ecological balance, as a result of which the fishing of bioresources can be violated. The pollution of the Caspian Sea leads to the death of a huge number of rare fish and other living organisms. Most clearly, the impact of oil pollution can be seen on waterfowl. Sturgeon stocks are steadily declining. This ecosystem is changing because of the influence of both nature and man. Previously, the reservoir was rich in fish resources, but now some species of fish have been threatened with destruction.

Nature has a natural way of self-purification, but nature has its limits of possibilities. And such a closed environment as the Caspian Sea is very vulnerable to agricultural, industrial and oil pollution .

Since the dawn of time, the Caspian Sea has been carrying out a variety of scientific and research works. Scientists of the Institute of Geography of the National Academy of Sciences of Azerbaijan and Russia jointly explore environmental problems and fluctuations in the water level of the Caspian Sea. During the research, issues of Caspian pollution during oil production, problems that arose during the laying of underwater oil and gas pipelines, hydrometeorology of the Caspian Sea and others will be studied. The study will be conducted in the Azerbaijani and Russian sectors of the Caspian Sea in accordance with an agreement signed between the geographic societies of Azerbaijan and Russia, and will prepare joint proposals to prevent such problems.

The Ministry of Ecology and Natural Resources of Azerbaijan is organizing the Center for Immediate Response to Unauthorized Emissions of Oil Wastes and Other Pollution. The Center will have specific response areas, including immediate actions to clean up the sea surface and the shoreline in the event of spills and other pollution, especially those associated with drains from ballast water vessels.

Violate-whether from now on will be held accountable. Specific measures are being taken to resolve issues arising from the decision "On some measures to protect the Caspian Sea from pollution" signed by the President of the Republic of Azerbaijan on June 20, 2007.

In accordance with the decree, a unit for the purification of local wastewater has been installed on the Caspian coast. These plants consist of equipment manufactured in the USA, Germany, Taiwan, Turkey, France. If we take into account the oil-retaining equipment, these facilities have the ability to daily treat sewage in a volume of 4070 m³. Part of the facilities are located in the villages of Buzovna, Bilgah, Mardakanand Absheron peninsula. Five stations of the environmental protection system of the Caspian Sea are already functioning. Due to this, wastewater is purified from the negative effects on human health and on the environment of the ingredients (including from 2.3 million E. coli bacteria in each liter, and also exceeding their norm by almost 100 time's organic pollutants) and merge into the sea at a depth of up to 250-300 meters. In 2010, an investment of 1 billion manat was spent on the creation of infrastructure for cleaning sewage discharged into the Caspian Sea. There are works on wastewater treatment in Sumgait. These measures will be implemented in the following years, which will lead to an even greater purification of the Caspian Sea.

BP and SOCAR have been sparing methods of drilling oil at sea for 25 years and have ecological laboratories to monitor the quality of water and living organisms in the Caspian. The company "VR-Azerbaijan" received the official permission of the Ministry of Ecology for the utilization of drill cuttings. "BP" intends to dispose of drill cuttings both by bioremediation and by thermal treatment.

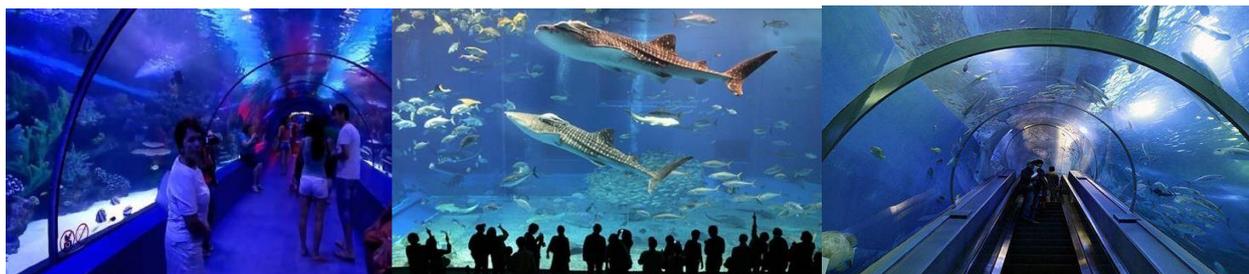
The absence of reliable methods of economic assessment of biodiversity and the ecological state of the sea leads to the fact that the Caspian countries give preference to the development of extractive industries to the detriment of the sustainable development of the Caspian region.

The Caspian remains a common ecological object of the region. The crisis in one of its parts will result in a common, inseparable ecological catastrophe, which, ultimately, will affect the personal plans of each state and its development prospects. The Caspian Sea is surrounded by several states, therefore, the solution of the ecological problems of the reservoir should be the common cause of these countries. If you do not take care of the safety of the ecosystem of the Caspian Sea, as a result, not only valuable water resources will be lost, but also many kinds of marine plants and animals.

So, considering all of the above, we can see that the Caspian is a common ecological object of the Caspian region and the crisis in one of its parts will result in a common, inseparable ecological catastrophe that will ultimately affect the personal plans of each state and its development prospects. That effective environmental control over oil operations and the general situation in the Caspian is possible only with joint control of the Caspian states. Such control can be carried out through an interstate environmental body established by the Caspian littoral states and endowed with the appropriate powers to develop and implement joint environmental programs.

The protection of the Caspian Sea should not be carried out just by only specialized structures of the government. Explanatory works with children and schoolchildren are of great importance. For example, there are zoos where children get acquainted with the animal world and they show a keen interest in them. The Caspian is an aquatic environment and we can not see the inland inhabitants - as they are under water, in the water column. It would be very informative for children to create a large aquarium, where all the living world of the Caspian would be shown to young generation. Throughout the world, with the help of advanced technology, giant aquariums are created that allow admiring the inimitable beauty of the underwater world in a few centimeters from its enchanting inhabitants.

So, Turkish aquariums are huge tunnels with water, which are as close as possible to the natural habitat of aquatic organisms. In Istanbul is the largest aquarium in Europe, which allows you to explore the mysterious underwater world in artificial reservoirs of Turkey. The Sea Life aquarium was opened in 2009 in the Forum Istanbul shopping center. It has an eighty-three-meter underwater tunnel that provides a panoramic view of two hundred and seventy degrees, twenty-one theme areas with more than fifteen thousand sea creatures. The aquarium is located just five kilometers from Ataturk Airport and is close to the railway and motorway transport systems.



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Summary

August 12–the International Caspian Day

Aygun Ismailova

Baku State University, Azerbaijan

The Caspian Sea was historically formed and then separated from the ancient world ocean millions of years ago and, like Australia, became an isolated geographic object. The isolated nature of the Caspian Sea is a habitat for unique animals and plants. A significant part of the hydrobionts is relict. For example, sturgeon is considered a rare species of fish that exist 200 million years when there were dinosaurs. Today, various factors threaten the Caspian environment. Mankind is only a small part of the history of the Caspian, but is the most hard threat to the ecosystem of Caspian sea. Nature can protect itself from a specific amount of pollution, but when a people raises the level of pollution and thereby hinders the natural process of self-cleaning the environment, and as a result environmental catastrophe is brewing. The oil and industrial activity, the drainage of the city sewerage into the sea, the discharge of toxic waste and sewage from ships are considered as the threats to the ecology of the Caspian.

Key words: *Caspian Sea, pollution of the sea, protection of bioresources, modern aquariums of hydrobionts*

ORGANIC AGRICULTURE AND SUSTAINABLE DEVELOPMENT

Gulten Hajiyeva

Baku Engineering University, Azerbaijan

Introduction

Organic agriculture - the market for organic products – at local and international level – has tremendous growth prospects and offers creative producers and exporters in the South excellent opportunities to improve their income and living conditions. Establishing whether organic agriculture is a viable alternative for a particular holding needs to be carried out on a case-by-case basis. What potential does organic agriculture have for solving the problems of hunger and poverty? What can organic agriculture contribute to achieving socially and ecologically sustainable development in poor countries? Central to organic agriculture are promotion of soil fertility, biodiversity conservation (e.g. native flora and fauna), production methods adapted to the locality and avoidance of chemical inputs. These methods, together with cultivation of a diverse range of crops, stabilize the delicate ecosystems in the tropics and reduce drought sensitivity and pest infestation. Organic agriculture reduces the risk of yield failure, stabilizes returns and improves the quality of life of small farmers' families.

The concept of organic agriculture builds on the efficient use of locally available resources, and on the use of adapted technologies (e.g. soil fertility management, closing of nutrient cycles, control of pests and diseases by means of natural antagonists). This concept opens up new ways of achieving sustainable development in the South and has therefore developed dynamically over the past decade (Willer and Yussefi 2006).

Organic agriculture has the potential (Kilcher 2005):

- 1. to improve soil fertility, biodiversity and sustainability of agricultural production;*
- 2. to conserve natural resources;*
- 3. to improve agronomic and economic performance; to make yields more stable, especially in risk-prone tropical ecosystems; to achieve better food quality and food security;*
- 4. to provide access to attractive markets through certified products;*
- 5. to create new partnerships within the whole value chain as well as to strengthen self-confidence and autonomy of the farmers.*

Organic farming is the subject of extensive research in northern countries, especially in Europe. A wide range of studies (Mäder et al. 2002, Offermann and Nieberg 2000, Stolze et al. 2000) have demonstrated the advantageous aspects of this system in terms of ecosystem functioning, soil fertility conservation and economic impact.

NGOs and farmers' groups are increasingly adopting organic techniques as a method of improving productivity and food security in these systems. However, no systematic attempt has hitherto been made to track the extent to which these approaches are being employed, or their effectiveness compared to other approaches, in meeting economic, social and environmental objectives (Parrott and Kalibwani, in: Willer and Yussefi 2006).

Organic agriculture is sustainable and diverse. Humid tropical conditions such as hot temperatures, high annual rainfall and poor soil properties require appropriate agricultural practices. The tropical rain forest as an original ecosystem with its closed nutrient cycles and biodiversity serves as an ideal model concerning nutrient management and cropping patterns. The diversity of the production system is therefore of special importance in the tropics: simplified systems and monocropping harm soil fertility and the ecological balance to a much greater extent than in temperate climates because soil oxidation and pest population dynamics run permanently and more rapidly in the tropics. Heavy rainfall and high temperatures accelerate mineralisation of the nutrients and retard accumulation of soil organic matter. Tropical farming can only be sustainable if the primary rules of this natural system are respected. Central to organic agriculture are promotion of soil fertility, conservation of biodiversity (e.g. native flora and fauna), production methods that are adapted to the locality and avoidance of chemical inputs. Use of such methods and cultivation of a diverse range of crops stabilize the delicate ecosystems in the tropics and reduce drought sensitivity and pest infestations. Organic production reduces the risk of yield failure, stabilizes returns and therefore enhances food security for small farmers' families. Organic farmers do not fight against the natural dynamics; on the contrary, they use them to their advantage.

The perennial vegetation in the tropics offers excellent alternatives to simplified production systems:

1. Agroforestry: agricultural production in forestry systems and under shade trees.
2. Intercropping: a combination of two or more crops on the same plot and at the same time.
3. Rotation: one crop is followed by another crop, preferably from a different botanical family.

Methodology

During this research necessary literature was reviewed about organic agriculture, and sustainable development. Organic agriculture was explored in around the world. After reading some information, online research has been done.

Result

Market development, land, and regulations on organic agriculture be an indication that organic agriculture is growing rapidly. The initial goal of organic agriculture movement is building a relationship of harmony between man and man and between man and nature. Increased public awareness of the dangers of synthetic chemicals to health, the risk of environmental damage to the livelihood of the future, and injustice with such issues have prompted increased demand for organic agricultural products. According to Saragih (2010) at least, there is some concern interrelated with each other when looking at the development of organic agriculture today, namely: whether the organic agriculture movement could develop in accordance with the principles and values when the initial organic agriculture schema into the government policy, whether the increasing market demand means it does not encourage the industrialization of organic agriculture production and commercialization of organic agricultural products, whether the inequality organic farming, namely: providing products that are healthy, safe and friendly environment to promote organic agriculture, needed a good planning and implementation simultaneously. Planning and implementation are also carried out jointly between the civil society, government, and businessmen. Social change involves targets of change, change agents, and change goals. Changes can occur on various levels of social organization-individual, small groups, organizational, or societal. The process of changing the culture of an organic agriculture to organic farming culture can be started from small groups in the community.

The process of social change is indispensable in advancing organic agriculture because it required the existence of a new paradigm shift in agriculture in the midst of the community. Public awareness of the dangers posed by the way – the way modern farming (inorganic farming) should continue to be built. Currently in the midst of society has grown awarnes of about go organic; this is a driving factor towards the development of organic agriculture). This momentum must continue to be maintained and developmentin a process of social change.

Discussion

Sustainability is about ecosystem integrity, social well-being, economic resilience, and good governance. According to the current state of knowledge and development, how does organic agriculture contribute to each of these sustainability dimensions? Sustainability has first been equated with environmental soundness in order to ensure the continued provision of goods and services to present and future generations. Organic agriculture, as defined by the Codex Alimentarius Commission, "is a holistic production management system that avoids use of synthetic fertilizers, pesticides and genetically-modified organisms, minimizes pollution of air, soil and water, and optimizes the health and productivity of interdependent communities of plants, animals and people." In organic agriculture, limiting external inputs necessitates adaptation to local conditions in order to harness ecosystem services and increase production efficiency. To this end, the main organic strategies include: rotations, diversification and integration of crop, livestock, tree, and fish to the extent possible in order tooptimize nutrient cycling; use of local varieties and breeds in order to increase the system resilience to stress; use of biological pest control to enhance preda.

Concept of organic agriculture

A large number of terms are used as an alternative to organic farming. These are: biological agriculture, ecological agriculture, bio-dynamic, organic-biological agriculture and natural agriculture. According to the National Organic Standards Board of the US Department of Agriculture (USDA) the word ‘Organic’ has the following official definition: “An ecological production management system that promotes and enhances biodiversity, biological cycles and soil biological activity. It is based on the minimal use of off-farm inputs and on management practices that restore, maintain and enhance ecological harmony.” (Lieberhardt, 2003) According to the CodexAlimentarius Commission (FAO, 2001), “organic agriculture is a holisticproduction management system that avoids use of synthetic fertilizers, pesticides and genetically modified organisms, minimizes pollution of air, soil and water, and optimizes the health and productivityof interdependent communities of plants, animals and people”.

Organic agriculture and sustainable development

When the World Commission on Environment and Development presented their 1987 report, Our Common Future, they sought toaddress the problem of conflicts between environment and development goals by formulating a definition of sustainable development: Sustainable development is development which meets the needs of the present without compromising the abilityof future generations to meet their own needs(WCED, 1987).

An environmentally sustainable system must maintain a stable resource base, avoiding over exploitation of renewable resource systems or environmental sink functions, and depleting non-renewable resources only to the extent that investment is made in adequate substitutes.

This includes maintenance of biodiversity, atmospheric stability, and other ecosystem functions not ordinarily classed as economic resources (Harris, 2000). The United Nations report stated: 'All case studies which focused on food production in this research where data have been reported have shown increases in per hectare productivity of food crops, which challenges the popular myth that organic agriculture cannot increase agricultural productivity.' (UNEP-UNCTAD, 2008)

Comparison of organic and conventional agricultural system (Table 1)

The study carried out in the Central Valley of California shown that tomato yields were quite similar in organic and conventional farms. However, significant differences were found in soil health indicators such as nitrogen mineralization potential and microbial abundance and diversity which were higher in the organic farms. Nitrogen mineralization potential was three times greater in organic compared to conventional fields. The organic fields also had 28% more organic carbon (Drinkwater et al., 1995). One of the longest running agricultural trials on record (more than 150 years) are the Broadbalk Experiment at the Rothamsted Experimental Station in the United Kingdom. The trials compare a manure based fertilizer farming system (but not certified organic) to a synthetic chemical fertilizer farming system. Wheat yields are shown to be on average slightly higher in the organically fertilized plots (3.45 tones / hectare) than the plots receiving chemical fertilizers (3.40 tones / hectare). More importantly though, soil fertility, measured as soil organic matter and nitrogen levels, increased by 120% in the organic plots, compared with only 20% increase in chemically fertilized plots (Leigh and Johnston, 1997). Another trial's result from Sustainable Agriculture Farming Systems project (SFAS) at University of California, Davis shown the organic and low-input systems had yields comparable to the conventional systems in all crops which were tested - tomato, safflower, corn and bean, and in some instances yielding higher than conventional systems. Initially tomato yields in the organic system were lower in the first three years, but reached the levels of the conventional tomatoes in the subsequent years and had a higher yield during the last year of the experiment (Clark et al., 1999) (80 t/ha in the organic compared to 68 t/ha in the conventional). In one such study at South Dakota in Midwestern United States shows the higher average yields of soybeans (3.5%) and wheat (4.8%) in the organic compared to conventional farming system (Welsh, 1999). 21 year study compared plots of cropland grown according to both organic and conventional methods at Institute of Organic Agriculture and the Swiss Federal Research Station for Agroecology and Agriculture found that Organic yields were less by about 20% but Fertilizer, Energy and Pesticide use were less by 34%, 53% and 97% respectively as compared to conventional (Maeder et al, 2002). Also organic soils housed a larger and more diverse community of organisms. The study at Iowa State University assessed (Delate and Cambardella, 2004) the agro ecosystem performance of farms which found initially the yield was slightly lower (Organic corn & soybean yield averaged 91.8% & 99.6% of conventional respectively) in organic plots but in fourth year organic yield exceeded conventional for both corn and soybean crops (Delate et al, 2002). 30 Years Farming System Trial (FST) at Rodale Institute were shown organic corn yields 31% higher than conventional in years of drought (Pimentel et al, 2005). These drought yields are remarkable when compared to genetically engineered "drought tolerant" varieties which saw increases of only 6.7% to 13.3% over conventional (nondrought resistant) varieties. Corn and soybean crops in the organic systems tolerated much higher levels of weed competition than their conventional counterparts, while producing equivalent yields.

This is especially significant given the rise of herbicide-resistant weeds in conventional systems, and speaks to the increased health and productivity of the organic soil (supporting both weeds and crop yield). The study conducted by ETC Organic Cotton Programme in the district of Karimnagar, Andhra Pradesh India shown organic cotton yielded on par at 232 Kg seed cotton /acre vs. conventional cotton at 105 Kg/acre.

The pest control expenses was observed about Rs. 220 and Rs. 1624 per acre for organic and in conventional cotton respectively (Daniel et al, 2005).

Study at Washington State University compared yields, economics, soil quality, and other factors resulting from apples grown using organic, conventional, and integrated methods. After combining all of the sustainability indicators, the organic system ranked first (Reganold, 2006) in overall sustainability, the integrated second, and the conventional last.

A survey conducted by Indian Institute of Soil Science on certified organic farms to evaluate the real benefits and feasibility of organic farming revealed that, on an average, the productivity of crops in organic farming was lower by 9.2% compared to conventional farming. But there was a reduction in the average cost of cultivation in organic farming by 11.7% compared to conventional farming. The average net profit of 22.0% higher in organic farming was observed where 20-40% premium provided. Besides this, overall improvement in soil quality was observed indicated an enhanced soil health and sustainability of crop production in organic farming systems (Ramesh et al, 2010).

Table 1: (Comparative studies illustrating difference between organically and conventionally managed agricultural field)

Author & Institute of Study	Length of Trial	Crops Grown	Findings
Drinkwater et al (1995) Central Valley of California	---	Tomato	<ul style="list-style-type: none"> • Yields were similar, • Higher microbial abundance and diversity, • Three times greater nitrogen mineralization potential, • 28% more organic carbon, • Crop more resistant to corky root disease
Leigh R. A., (1997) Othamsted Experimental Station, UK	150yrs	Wheat	<ul style="list-style-type: none"> • Organic yields higher than conventional, • Soil fertility (in terms of soil organic matter and nitrogen levels) increased by 150% as compared to

			20% increase in conventional
Clark S., et al (1999), SFAS Project, University of California, Davis	8yrs	Tomato, Safflower, Corn and Bean	Tomatoyields were lower in initial three years but exceeds later on, • Corn yield shown high variability
Welsh R. (1999), South Dakota in the Midwestern United States	6yrs	Soybean, Wheat	• Average organicyields of soybeans and wheat were 3.5% & 4.8% higher respectively than conventional
Maeder et al(2002), Institute of OrganicAgriculture and Swiss Federal Research Station for Agroecologyand Agriculture	21yrs	Potatoes, Barley, Winter Wheat, Beet, and Grass Clover	• Organic yields were less byabout 20%, Fertilizer use was less by 34% in organic as compared to conventional, • Energy use was less by 53% in organicas compared to conventional, • Pesticide use was less by 97% in organic as compared to conventional, • Organic soils housed a larger and more diverse community of organisms
Delate K. et al (2004), Iowa State University	4 yrs	Corn and Soybean	• Initially both (corn & soybean) yields were slightly lower than conventional, • In fourth year organic yield exceeded conventional
Pimentel, et al(2005), Rodale Institute	22 yrs	Corn and Soybean	• Yields for corn and soy were the same between organic&conventional • Organic used 30% less energy, and less water • Organic resulted in less groundwater pollution & less erosion
Daniel, et al (2005), ETCOrganicCotton Programme, India	1 yr	Cotton	• Organic cotton yielded on par at 232 Kg seed cotton /acre vs. conventional cotton at 105 Kg/acre, • Pest control expenses in conventional were 8 times higher than organic, • organic more profitable
Reganold J. (2006), Washington State University	6 yrs	Apple	• Tree growth was identical for all systems, • Cumulative yield showed no statistical difference, • organic system ranked first in overall sustainability
Ramesh P. et al (2010), Indian Institute of Soil Science	1 yr	All crops	• Productivity of crops in organic farming is lower by 9.2% compared to conventional farming, •

			Average net profit was 22.0% higher in organic compared to the conventional farming due to reduced cultivation (by 11.7%) cost and premium available (20- 40%).
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Conclusion

A comprehensive review of a number of comparison studies on agricultural yields shows that in all of these studies organic production is equivalent to, and in many cases better than conventional farming practices. In some, overall lower yield also reported but the economy still better than the conventional agriculture practices due to the lower external inputs. Besides the yield comparisons, organic practices shows higher organic matter in soil, lower energy consumption, lower use of external inputs, better food quality, and also potential to address the global issues like climate change.

These facts show that whenever organic agriculture attempts to turn into a more socioeconomic sustainable direction, it faces many obstacles due to the existing socio-economic structure and therefore resembles more and more conventional farming's structures. This conventionalization phenomena works ubiquitously and is more or less an inevitable process of incorporation of organics into the mainstream of capitalist accumulation.

We need to understand that an alternative form of agriculture is a component of a broader social movement that challenges the dominant agro-industrial complex and thus the fundamental dynamics of capitalist agriculture. As a community of critical agrifood scholars, we must embrace praxis and volunteer in service of this movement. As Constance (2008) said "we must commit to praxis of public social science that moves beyond the comfortable, conservative confines of the academy."

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Summary

Organic agriculture and Sustainable Development

Gulten Hajiyeva

Baku Engineering University, Azerbaijan

Organic agriculture can contribute to meaningful socio-economic and ecologically sustainable development, especially in poorer countries. This is due on the one hand to the application of organic principles, which means efficient management of local resources (e.g. local seed varieties, manure, etc.) and therefore cost effectiveness. The article presents discussion based on experience gained in practice and encompasses the following hypotheses:

Organic agriculture is sustainable and diverse;

Organic farmers produce more, better-quality products and achieve higher incomes;

Organic products provide market access and create added value;

Organic agriculture increases self-confidence and mobilizes new partnerships.

Key words: *Organic farming, organic agriculture, sustainable development, ecology, socio-economic*

GREEN BUILDINGS AND ENVIRONMENTAL SUSTAINABILITY ISSUES IN THE NIGERIA'S BUILT ENVIRONMENT

Salisu Gidado Dalibi

*Abubakar Tafawa Balewa University (A.T.B.U.) Bauchi, Bauchi State of Nigeria
Hohai University, Nanjing, Jiangsu Province, China*

Sadiq Gumi Abubakar

Hohai University, Nanjing, Jiangsu Province, China

Bello Sani Bello

Hohai University, Nanjing, Jiangsu Province, China

Isah IbrahimDanja

South East University, Nanjing, Jiangsu Province, China

Safarov Anvar Normatovich

South East University, Nanjing, Jiangsu Province, China

M.B. Modibbo

Gombe state ministry of Justice, Gombe, Nigeria.

1. Introduction

1.1 Background to the study

As the world's population continues to expand, implementation of resource-efficient measures in all areas of human activity is imperative. These have led to calls for sustainable approaches and measures in every area of human endeavour. Though each and every industry view sustainability from its perception due to variation of activities, resource consumption and challenges. The built environment (BE) to which the construction industry belongs is not an exception to this.

The BE is one clear example of the impact of human activity on resources. Buildings have a significant impact on the environment, accounting for one-sixth of the world's freshwater withdrawals, one-quarter of its wood harvest, and two-fifths of its material and energy flows.

Structures also impact areas beyond their immediate location, affecting the watersheds, air quality, and transportation patterns of communities [1]. The building industry worldwide consumes up to 40% primary energy requirements and also a considerable amount of overall water requirements [2]. It also consumes 30-60% of wood between construction, renovation and furnishings etc.

These clearly shows that the BE have a strong influence on the envisioned energy and water requirements for the next three quarters of a century up to a century and half (75 - 150 years). As such; there is strong need for the construction industry to embrace other alternatives such as sustainable features in design, construction and facility operations of buildings since the lifespan of the buildings reaches into the future and they considerably influence the amount of power to be generated, water and other resource consumption [3].

The friendliest way to handle the environment is not to build. However, without construction, life can be miserable and threatening [4], [5]. Shelter is needed amongst other things, for protection against the inclement weather and for healthy living. What is needed is a dynamic equilibrium; in other words, production process that is friendly to the ecosystem, yet competitive and possess no any form of threat especially to the environment [6]. The combination of these challenges gave birth to a new concept in design, construction, renovation, operation and maintenance of buildings in conformity with "sustainable

practices for buildings” known as Green Buildings [7]. Green building is the foundation of sustainable construction and building development [8]. GBs refers to a structure that uses all processes that are environmentally responsible and resource-efficient throughout a building's life-cycle from Siting to Design, Construction, Operation, Maintenance, Renovation, and Demolition. This practice expands and complements the classical building design concerns of economy, utility, durability, and comfort [9]. GBs are those sensitive to the “Environment, Resource and energy consumption, Impact on people, Financial impact and the world at large [10]. “Green Building” is environmentally friendly practices from building design to the landscaping choices. It also encompasses energy use, water use, and storm-water and wastewater re-use [11]. GBs are described as buildings designed constructed using Sustainable Materials and resources; operated sustainably to provide optimum performance of the building with positive impact to the occupants and the environment by combining energy and water efficiency systems, Day Lighting strategies, Indoor Environmental Quality (IEQ) systems and efficient Building Envelope system [3].

Sustainability in construction is all about following suitable practices in terms of choice of materials, their sources, construction methodologies, as well as design philosophy so as to be able to improve performance, decrease the environmental burden of the project, minimize waste and be ecologically friendlier [12]. GB is a holistic approach to programming, planning, designing, and constructing (or renovating) buildings. It is part of the larger concept of sustainable development as it enhances the environment against the negative side effect of construction activities [5]. It has been described as a clear answer to health, economic and environmental challenges [13]. “GBs are buildings that, throughout their lifecycle, maximize the resource savings (including energy, land, water, and materials saving), protect the environment, reduce pollution, provide people with healthy, comfortable and high efficient space, and exist harmoniously with nature” [14], [15], [16]. The term “green building”, or “more sustainable building”, does not have an exact definition, but, nevertheless, these terms have been used frequently [17].

Thus, the GB elements and features considered in this work based on [3], [8], [9], [10], [11], [12], [13], [14], [15], [16] include the following:

5. Indoor Environmental Quality (IEQ) systems,

These clearly indicate that GB is a major response to ensure environmental sustainability (ES) globally within the construction industry. However, countries like Canada, China, Germany, USA, UK, Japan, Korea, Singapore and other developed nations have embraced the concept fully; while countries like Nigeria are prioritizing which of the GB features to incorporate in to their buildings; whereas other countries are ignoring or slowly embracing the concept due to some reasons. These may be due to socio-economic, techno-economic and or legal issues within the built environment.

1.2 The Research Problem

Nigeria as a developing country is faced with the growth of residential housing sector accompanied by huge power, water, natural and processed material consumptions etc. which were due to the population growth, increased households and the increased levels of urbanization. At the same time, the increasing urbanization would be associated with loss of arable land, material and water crisis, and serious environmental problems like air pollution, noise pollution and waste generated from buildings [18], [19]. The construction industry is guilty of many practices and it responded with a concept called GBs to ensure and promote environmental sustainability.

Despite all these glaring challenges and drastic measures, GB developments and sustainable practices are embraced very slowly and practiced at slow pace in the Nigeria’s construction industry.[20] This is worrisome and is due to some factors hindering such pace. This may be due to some factors affecting the sustainable practices within its built environment. Such factors may also be attributed to project stakeholders or the concept itself etc. [21].

Such problems of sustainable practices in Nigeria's BE have different human and practical dimensions such as:

- Challenges from The clients and developers;
- Challenges from The end-users;
- Challenges and availability of experienced project professionals on sustainable BE;
- How each stakeholder view the success and hindrances of GB as means of achieving environmental sustainability in the built environment.

1.3 Research Aim

The aim of this paper is to identify and discuss Green building as a concept and means of achieving environmental sustainability in Nigeria's built environment with a view exposing the Hindrances, the Drivers and Success Factors of GB concept and their impacts on the Nigeria's BE.

1.4 The Research Methodology

Secondary sources of data from journals, conference / seminar / workshop papers, text books, newspapers, magazines and internet sources etc. were used to review literatures on the GB field, which helps in identifying and narrowing the various factors that hindered, drive and make a GB development to be successful. These were central to the discussions in this work.

2. Literature review

2.1 Hindrances to GB Developments

Construction of GB entails tailoring a building and the site to the local climate, site conditions, cultural and community in order to reduce resource consumption, augment resource supply, and enhance the quality and diversity of life, while optimizing all these in an integrated design [5]. It ensures the achievement of synergistic design through interdisciplinary teamwork [5]; it is a building philosophy in which natural and resource efficient features are incorporated in a building[13]. To achieve synergy in GB, all the professionals that would be involved in the planning, design and construction of such building from Site Analysis, Environmental Impact Assessments and construction etc. [5]. This requires some knowledge of the future climate and the resources available to maintain the operations, in particular the energy consumption, of buildings" [22].

GB practices is a new trend in developing countries like Nigeria [21], and suffers from insufficient data about the costs and building performance data [23], [24], [25]. It is characterized by the problem of lack of shared perception and agreement on the objectives and success/failure of the green building projects by stakeholders [26]; also Different Set of Criteria for success/failure for the project [27] etc. As such, each stakeholder perceives the success according to a hierarchy of dimensions, which comply with their personal agenda. Many housing estates developments in (the Abuja FCT) Nigeria do not reflect the desired housing needs of the end-users, due to absence of GB features. [28].

Most Industry professionals, in both the design and construction disciplines, are generally slow to change, tend to be risk-adverse, lack sound knowledge, experience, and understanding of how to apply ecology to construction design; moreover, environmental or economic benefit of some green building approaches has not been scientifically quantified [29]. Other questions arose from comparisons with conventional buildings in terms of initial costs and additional costs of incorporating GB features [30], [31], [32]. The general awareness of green building impact on the environment by the general public in Nigeria will form the market-driven power for such developments especially in the urban areas which will gradually become a reference point to other semi urban centers and smaller towns.

The initial emphasis of sustainability was on Technical issues such as materials, building components, construction methodologies and energy related design concept [8], [9]. However, recognition of (soft issues) Economic and Social sustainability concerns as well as Cultural heritage of the built environment as being equally important [12]; Sustainable world progress is dependent upon continued Economic, Social, Cultural, and Technological progress [33]. They have a significant effect towards adopting Green Building Technology [34].

Building materials have been playing an important role in the construction industry, no field of engineering is conceivable without their use [35], [36]. this is the major setback witnessed in housing efforts in Nigeria due to the high cost of imported materials used for construction [37], [38], [39]; they have significant input in project development especially in GBs such as solar panels, Switchable glazing, water conserving appliances and grey water systems etc. [40], [41].

Dalibi et al., 2017; concluded that the negative attitude of developers towards adopting and or incorporating GB features in residential developments; Divergent and Incompatibility of interests and views of success factors and success criteria of GB developments among stakeholders; Lack of Sufficient information regarding GB costs and performances were the major significant hindrances to GBs in Nigeria. [21]

2.2 Success factors of GB Developments

Project success or failure is strongly related to the perceptions of each individual project stakeholder and their willingness and ability to act either for or against the project. Therefore, failure could be supporter's perceptions of expectations not met, or promises not delivered, or the belief that the support (resources) could be applied elsewhere. [26]. These perceptions are not necessarily based on logic, but often on the quality of the relationships between the project and its stakeholders. [42]

Green building projects differs from conventional building projects in terms of siting, design, construction, operation and maintenance, efficiencies (Energy, Water, Lighting, IEQ, Envelope etc.) and impact on the built environment etc. [7], [8], [9], [10], [11]. As such, Stakeholders' input, participation, roles and responsibility in Green buildings projects must be of high cognizance than conventional building projects because of the divergent stakeholders' interests, views on environmental sustainability, requirements, and successful delivery of such projects. [26].

Dalibi et al., (2016), observed that the Clients, the End-users and the various project professional disagreed on a uniform set of Success criteria for green buildings. Though, all shared the same success criterion which is "Green building Project Impact" which is attributable to the Environmental sustainability issues, Health and comfort of the end-users. These led to their conclusion that the three major success factors were Convergent interests and views of success factors and success criteria of GB developments among stakeholders; End result achieved as envisioned by Meeting GB project goals, technical performance and functionality specification; GB Technical Know How, Innovation and efforts among the Built Environment Professionals in design and construction. [20], [26]

2.1 GB Developments: Drivers

The major drivers of GB developments are its major project stakeholders which includes the Clients / Developers, the End-users and The Project Professionals. Incorporating GB features from the design to construction is at the Clients / Developers disposal [26], because they bear the initial costs of the project from inception to completion. Incorporating green features into renovation or proposed projects which has direct impact on the total development cost which in turn affects end-users / occupants in terms of Rental value, Sales value, Envisaged savings due to green elements, Future asset value of the green building etc. [28].

However, the suitability of such features, the renting cost / property sales value and worth should be checked with the end-users who will make use of the project [20], [26], [28].

This will require unified interest in the GB project success factors and criteria in terms of meeting the taste and demands of the end-users as well as the environment. These can only be realistic if there is the requisite GB Technical Know How, Innovation and efforts among the Built Environment Professionals in design and construction. [20], [21]. These GB technical know-how among Built Environment Professionals will provide the Clients / Developers a wide range of choices for their decisions making but it is lacking in Nigeria due to limited number of GB initiated projects.

3. Discussions and conclusions

GB is new in Nigeria's construction trend. The awareness of the concept and its positive impact on environmental sustainability is well known among the stakeholders. However, the perception that it is a costly endeavor is really hindering the pace at which it is initiated by the Clients / Developers, especially in residential estate development projects. The general awareness of GB and the rate at which it is embraced by the general public in Nigeria will impact the environment and will form the market-driven power for such developments especially in the urban areas which will gradually become a reference point to other semi urban centers and smaller towns. The perception of the concept as being successful / failure differs among the stakeholders. However, a unified perception of the stakeholders on the success factors and criteria of Green buildings projects will be of high relevance due to its impact in achieving a sustainable built environment; health and also the comfort of the occupants.

GB design, construction and operation is the major approach in: reducing carbon emissions; intelligent choice and use of construction materials; recycling of construction materials; a concept that considers the health and also the comfort of the occupants; sustainable practice that ensures sustainability of the built environment which ultimately goes in line with the United Nations' outlined *Sustainable Development Goals* (Good Health and Well-being; Clean Water and Sanitation; Affordable and Clean Energy; Decent Work and Economic Growth; Industry, Innovation and Infrastructure; Sustainable Cities and Communities; Responsible Consumption and Production; Climate Action; Life on Land; Peace, Justice and Strong Institutions; Partnerships for the Goals).

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Summary

Green buildings and environmental sustainability issues in the Nigeria's built environment

Salisu Gidado Dalibi

*Abubakar Tafawa Balewa University (A.T.B.U.) Bauchi, Bauchi State of Nigeria
Hohai University, Nanjing, Jiangsu Province, China*

Sadiq Gumi Abubakar

Hohai University, Nanjing, Jiangsu Province, China

Bello Sani Bello

Hohai University, Nanjing, Jiangsu Province, China

Isah Ibrahim Danja

South East University, Nanjing, Jiangsu Province, China

Safarov Anvar Normatovich

South East University, Nanjing, Jiangsu Province, China

M.B. Modibbo

Gombe state ministry of Justice, Gombe, Nigeria

As the world's population continues to expand, implementation of resource-efficient measures in all areas of human activity is imperative. The built environment (BE) to which the construction industry belongs is not an exception to this. The BE is one clear example of the impact of human activity on resources. These gave rise to Green Buildings (GB). GB is the foundation of sustainable construction and building development. These clearly indicate that GB is a major response to ensure environmental sustainability. Despite all these glaring challenges and drastic measures, GB developments and sustainable practices are embraced very slowly and practiced at slow pace in the Nigeria's construction industry. This is worrisome and is due to some factors affecting such pace. The aim of this paper is to identify and discuss Green building as a concept and means of achieving environmental sustainability in Nigeria's built environment with a view exposing the Hindrances, the Drivers and Success Factors of GB concept and their impacts on the Nigeria's BE. Secondary sources of data were used to review literatures on the GB field, which helps in identifying and narrowing the various factors that hindered, drive and make a GB development to be successful. These were central to the discussions in this work. The research concluded that, GB design, construction and operation is the major approach to ensure sustainable practice that ensures sustainability of the built environment which ultimately goes in line with the United Nations' outlined *Sustainable Development Goals*.

Keywords: *Built Environment, Drivers, Green building, Hindrances and Sustainability*

SUSTAINABLE MANAGEMENT OF NATURAL DISASTERS IN BAKU

Valida Hasanova

Baku Engineering University, Azerbaijan

Disaster Risk Reduction is a part of sustainable development, so it must involve every part of society, government, non-governmental organizations and the professional and private sector.

Disaster-risk Management is the application of disaster risk reduction policies and strategies, to prevent new disaster risks, reduce existing disaster risks, and manage residual risks, contributing to the strengthening of resilience and reduction of losses. Disaster risk management actions can be categorized into; prospective disaster risk management, corrective disaster risk management and compensatory disaster risk management. Disaster risk management plans set out the goals and specific objectives for reducing disaster risks together with related actions to accomplish these objectives. National-level plans need to be specific to each level of administrative responsibility and adapted to the different social and geographical circumstances that are present. The time frame and responsibilities for implementation and the sources of funding should be specified in the plan. Linkages to sustainable development and climate change adaptation plans should be made where possible.

There is no such thing as a natural disaster, but disasters often follow natural hazards. The losses and impacts that characterize disasters usually have much to do with the exposure and vulnerability of people and places as they do with the severity of the hazard event. Disaster risk has many characteristics. In order to understand disaster risk, it is essential to understand that it is:

- **Forward looking** the likelihood of loss of life, destruction and damage in a given period of time
- **Dynamic:** it can increase or decrease according to our ability to reduce vulnerability
- **Invisible:** it is comprised of not only the threat of high-impact events, but also the frequent, low-impact events that are often hidden
- **Unevenly distributed around the earth:** hazards affect different areas, but the pattern of disaster risk reflects the social construction of exposure and vulnerability in different countries
- **Emergent and complex:** many processes, including climate change and globalized economic development, are creating new, interconnected risks.

A natural disaster can be defined as an uncontrollable extreme disruption which causes ecological and financial damage and victims of vulnerable population. Sometimes the events can be predicted by special meteorological warning systems and they often happen in the same geographical area because they are related to climate and physical characteristics of the region.

Disaster risk reduction and disaster relief should be addressed through a renewed sense of urgency in the context of sustainable development and poverty eradication, and, if necessary, integrate into policies, plans, programs and budgets at all levels within relevant framework frameworks. We must ensure that the development strategies and programs prioritize the sustainability of people and societies that protect against shocks. Investing in strength and risk reduction reduces the value and durability of our development efforts.

Natural disasters can be a serious obstacle to poverty reduction and can have the most impact on poor and vulnerable people and their effects are rising. We now need effective adaptation strategies that help manage risk of disaster, and offer long-term development benefits and reduce vulnerability for a long time.

We recognize the value of Disaster Risk Management tools and strategies to better prevent disasters, protect the population and prevent assets and manage their economic impacts financially. Disaster risk reduction is essential to integrating sustainable development strategies - risk assessment, prevention of disaster and strengthening humanitarian responses, and the protection of developmental gains, especially among those who are in deprivation. Disaster risk reduction approach cannot be sustainable unless developmental planning and investment are fully integrated. Investment development, which does not deal with the risk of disaster, will lead to more risk accumulation. We should not call such events as a natural disaster. Disasters are never natural. They are the intersection of other non-physical factors. These are the accumulation of continuous disruption of economic, social and environmental borders.

Increased exposure, increased levels of inequality, rapid urban development and environmental degradation will increase the risk of disaster risks to dangerous levels if growing global graphic patterns. As the past few decades of research suggests, the disaster is exposed to particularly poor and marginalized people, which affects vulnerabilities and social inequalities and economic growth. Disaster risk, income level and risk management are closely linked. While some countries have successfully reduced their flood and tropical cyclones deaths, evidence shows that the number of deaths from extreme risks has increased. An increase in disaster and loss of disaster is an indication of the failure or risk of disaster risk, sustainable economic and social processes, and inadequate communities. In many economies, 70-85% of the total investment is received by the private sector and generally does not take into account the risk of disaster risk in the risk portfolio. The concentration of high value assets in the risk areas has risen all over the world. However, when disaster losses are understood relative to the country's income, low and middle income countries are exposed to the greatest damages. The risk of disaster is therefore a problem for people, businesses and governments.

How do we measure disaster risk?

Identifying, assessing and understanding disaster risk is critical to reducing it. We can measure disaster risk by analyzing trends of, for instance, previous disaster losses. These trends can help us to gauge whether disaster risk reduction is being effective. We can also estimate future losses by conducting a risk assessment. A comprehensive risk assessment considers the full range of potential disaster events and their underlying drivers and uncertainties. It can start with the analysis of historical events as well as incorporating forward-looking perspectives, integrating the anticipated impacts of phenomena that are altering historical trends, such as climate change. In addition, risk assessment may consider rare events that lie outside projections of future hazards but that, based on scientific knowledge, could occur. Anticipating rare events requires a range of information and interdisciplinary findings, along with scenario building and simulations, which can be supplemented by expertise from a wide range of disciplines.

Data on hazards, exposures, vulnerabilities and losses enhance the accuracy of risk assessment, contributing to more effective measures to prevent, prepare for and financially manage disaster risk.

Hazard - a dangerous event that may cause loss of life, injury or other health impacts, as well as damage and loss to property, infrastructure, livelihoods and services, social and economic disruption and, or environmental damage is known as a hazard.

Hazards are often categorized by whether they are natural (sometimes termed physical) or technological (sometimes called man-made or human-induced). The term 'peril' is sometimes used instead of hazard, particularly in the insurance industry.

Effective disaster risk reduction requires the consideration of not just what has occurred but of what could occur. Most disasters that could happen have not yet happened.

Natural (or physical) events are only termed hazards when they have the potential to harm people or cause property damage, social and economic disruption. The location of natural hazards primarily depends on natural processes, including the movement of tectonic plates, the influence of weather systems, and the existence of waterways and slopes (e.g. that might generate landslides).

But processes such as urbanization, environmental degradation and climate change can also influence the location, occurrence (frequency) and intensity of natural hazards. These processes are known as risk drivers.

We cannot prevent natural events from occurring, but we can put measures in place to lessen or limit (mitigate) their adverse impacts. Mitigation measures include engineering techniques and hazard-resistant construction as well as improved environmental policies and public awareness. Improving our knowledge of hazards and conducting hazard assessments can help us to locate and, in the case of some hazards, anticipate over different time-periods when these might occur. Anticipation ranges from probabilistic analysis of long-term hazard occurrence, to the monthly, daily or even hourly detection and monitoring of hazards, in order to inform early warning systems. Warning systems must be accompanied by strategies for disaster risk reduction in order to reduce vulnerability and enhance people's capacity to respond and recover from a disaster. In the case of slow-onset hazards, if early indicators of a potential crisis are detected then warning can be a key tool for building resilience, as exemplified by food security early warning systems.

Exposure - the presence and number of people, property, livelihoods, systems or other elements in hazard areas (and so thereby subject to potential losses) is known as exposure.

Economic exposure in high-hazard areas is trending upwards. If we do not reverse this trend, disaster risk is set to increase. We need to act now to reduce exposure and build capacity and resilience in these areas of growing exposure. When it is not possible to avoid exposure to events, land use planning and location decisions must be accompanied by other structural or non-structural methods for preventing or mitigating risk.

The structure of the landscape, climate and infrastructure makes the Republic of Azerbaijan vulnerable to emergencies as a result of a number of natural disasters like earthquakes, seasonal floods and landslides, and man-made disasters like industrial disasters and transport accidents. Every year floods and landslides in particular cause significant damage, and there is the ever-present risk of earthquakes as Azerbaijan lies in a region with moderate to very high seismic activity.

Vulnerability is the human dimension of disasters and is the result of the range of economic, social, cultural, institutional, political and psychological factors that shape people's lives and the environment that they live in. Vulnerability can be a difficult concept to understand, different things for different people, and are used on different terms, including "frequent", "sensitivity", "weakness," "deficiency," or "lack of ability." Some of the vulnerabilities include exposure to damage sensitivity. However, it is now understood that the vulnerability is separate from the 'susceptibility' element, since it is now exposed to exposure to natural hazards. Despite some disagreements over the meaning of sensitivity, most experts are far more likely than to analyze the direct impact of the hazard. Sensitivity also refers to broader environmental and social conditions that restrict people and communities to combat the effects of the threat.

Since we cannot reduce the occurrence and severity of natural hazards, reducing vulnerability is one of the main opportunities for reducing disaster risk. Vulnerability changes over time because many of the processes that influence vulnerability are dynamic, including rapid urbanization, environmental degradation, market conditions and demographic change. Many of these factors are rooted in changing local conditions, but the picture is incomplete without acknowledging the national and global socio-economic and political structures that constrain local development opportunities. This means that a coherent fight against vulnerability needs to take place at three scales: the local, national and international.

Earthquakes

An earthquake happens when tectonic plates of the earth move and they make the area shake violently.

The 2000 Baku earthquake occurred on November 25 at 22:09 (18:09 GMT) local time and measured 6.8 on the moment magnitude scale. It was followed three minutes later by a quake measuring 5.9. It was the strongest for almost 160 years, since 1842 in the Baku suburbs and in addition to the capital affected Sumgayit, Shamakhi and neighboring cities. According to the United States Geological Survey, the

epicentre was in the Caspian Sea, 25 km to the south-southeast of Baku. According to the Azerbaijani government, 26 people died as a primary result, but only three people in collapsing buildings. A total of 412 people were either hospitalized or sought medical assistance.

Tsunamis

Earthquakes on the ocean floor may cause catastrophic tidal waves (*tsunamis*) on faraway shores. Waves caused by the seismic event crest at less than a meter in open seas, but they are travel several hundred kilometers per hour, so when they reach shallow waters, they can be 10 meters high. Damage on the coast can be extensive. Usually, the number of survivors presenting severe injuries is small in proportion to the number of deaths.

Volcanic eruption

A mud volcano that erupted in the suburb of Baku on February 6 was the OtmanBozdag volcano, one of the world's largest mud volcanoes. The Azerbaijan National Academy of Sciences (ANAS) announced that two eruptions were recorded in the territory of the Sangachal settlement, Garadagh district on February 6. "The first eruption was recorded at 12:20 and the second at 14:18 local time in 31 km north from the Shirvan seismic station of the Republican Seismological Service Center at the ANAS. The first eruption lasted for 3 minutes 23 seconds, and the second eruption lasted 6 minutes. The ANAS reported that the second eruption was of the OtmanBozdag volcano, which last erupted 13 years ago, in 2004. This is the 9th eruption of this mud volcano. "Mud volcanoes," also known as "sedimentary volcanoes" or "gas - oil volcanoes," are close cousins to magmatic volcanoes. These volcanoes can erupt powerfully and hurl flames to great heights, which can reach even several hundred of meters. They spew out millions of cubic meters of hydrocarbon gases and tons of mud, and immediately ignite. Mud volcanoes also exist on the floor of the sea and can form islands and banks that alter the topography and shape of the coastline and even trigger earthquakes. Over a thousand mud volcanoes are known to exist in the world. Fortunately mud volcanoes occur away from populated centers and don't usually result in disastrous consequences. The lava, mud, and liquid spewed by mud volcanoes are used as raw materials for chemical and construction industries, as well as pharmacology.

Azerbaijan is a world leader, not only for the number but also for the activity of its volcanoes. Roughly 350 out of over 1000 mud volcanoes in the world are located here. Azerbaijan's mud volcanoes definitely should be part of any tourist's itinerary.

Most are located on Absheron, around Baku. There are 100 near the Gobustan Reserve alone. There are another 200 on the islands of the Baku archipelago and in Shamakhi and Shirvan regions, two hours' drive from Baku.

Mud volcanoes are one of the visible signs of the presence of oil and gas reserves hidden deep beneath land and sea in the Caspian region. Azerbaijan's rich fields of oil and gas condensate such as Lokbatan, Garadagh, Oil Rocks, and Mishovdag were discovered near mud volcanoes.

Climatic Disasters

Many communities and health services have learned to live with seasonal floods of moderate intensity. Periodically, the magnitude of the phenomenon exceeds the local coping capacity and overwhelms the resources of the health systems. The health burden associated with seasonal floods is well known locally: increased incidence of diarrheal diseases, respiratory infections, dermatitis, and snake bites. The actual risk of compromised water supplies depends on the level of contamination of the community's water supply before the disaster, compared with contamination after the flooding. Saline contamination is a long-term issue following sea surges and tsunamis. Prolonged flooding endangers local agriculture and occasionally requires food assistance on a large scale. The primary factors of morbidity remain overcrowded living conditions and poor water and sanitation in temporary settlements and other areas where water and sanitation services have deteriorated or are suspended.

Climate Change and Natural Disasters sends three messages: human-made factors exert a growing influence on climate-related disasters; because of the link to anthropogenic factors, there is a pressing need for climate mitigation; and prevention, including climate adaptation, ought not to be viewed as a cost to

economic growth but as an investment. Ultimately, attention to climate-related disasters, arguably the most tangible manifestation of global warming, may help mobilize broader climate action. It can also be instrumental in transitioning to a path of low-carbon, green growth, improving disaster resilience, improving natural resource use, and caring for the urban environment.

Result

If a country ignores disaster risk and allows risk to accumulate, it is in effect undermining its own future potential for social and economic development. However, if a country invests in disaster risk reduction, over time it can reduce the potential losses it faces, thus freeing up critical resources for development. Hazards do not have to turn into disasters. A catastrophic disaster is not the inevitable consequence of a hazard event, and much can be done to reduce the exposure and vulnerability of populations living in areas where natural hazards occur, whether frequently or infrequently. We can prevent future risk, reduce existing risk and support the resilience and societies in the face of risk that cannot be effectively reduced. Disaster risk reduction can provide a mechanism to reduce poverty, safeguard development and adapt to climate change, with beneficial effects on broader global stability and sustainability. Disaster risk is a shared risk, and businesses, the public sector and civil society all participate in its construction; consequently, disaster risk reduction (DRR) must be considered a shared value.

Conclusion

Natural hazards are not likely to decrease in the foreseeable future. Though geological events may occur independently of any human control, available data suggest that mankind plays a role in global climate. Technological hazards may also increase rapidly as a result of the unregulated development of industries in most countries and possibly the use of weapons-grade hazardous substances against civilian populations. An increase in the number of hazards should not mean that the resulting health burden will also increase. A sustained effort is needed to minimize risk, both by reducing vulnerability through prevention and mitigation and by increasing capacity through preparedness measures.

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Summary

Sustainable management of natural disasters in Baku

Valida Hasanova

Baku Engineering University, Azerbaijan

Disaster-management systems have not been very successful. A large part of the problem stems from the tendency for a community's preparedness for the next disaster to decline over time after the previous event; the tendency for newcomers to deny the problem; and the likelihood that the effectiveness of the disaster management system will deteriorate quite rapidly because of the rapid turnover of keystaff in the various agencies making up the disaster-management system. For a disaster-management system to be sustainable, therefore, it should be designed not only to convey the message to the members of the disaster prone community that they are in control, but also that the system is actually under their control.

Key words: *developing countries, disaster, disaster management, hazards, natural disasters, risk, sustainability, sustainable development.*

CASPIAN SEA SUSTAINABILITY

Zibeyda Malikova

Baku Engineering University, Azerbaijan

The particular features of past development strategies of many countries have left their mark on environment. As a result, many problems such as natural resource depletion, climate change, environment pollution, ocean acidification, deforestation, soil erosion and others have occurred.

In order to reduce the destructive effect of globalization sustainable development principles should be implemented. According to Brundtland Commission in its 1987 report “Our Common Future”, “Sustainable development is development that meets the needs of the present, without compromising the ability of future generations to meet their own needs.” There are two main points in sustainable development. First is the realization that to solve the world’s problems the economic, social and environmental aspects have to be interconnected. Focusing only on one margin leads to social and environmental damages that cost society in the long run. Next, the interconnected nature of sustainable development calls for going beyond borders, whether they be geographical or institutional, to co-ordinate strategies and make good decisions. Problems are rarely contained within one government agency or country, and intelligent solutions require co-operation as part of the decision-making process.

The basic principles of sustainable development provide a general type of guidance for determining the Strategy’s priorities, more specifically defined goals and tasks, the frameworks and means of implementation, in a coordinated and harmonized way. Some most relevant principles formulated, clarified, and adopted at the highest levels by the relevant bodies of both the UN and the EU are:

- The principle of holistic approach. Things must be viewed as a system of inter-related elements, the elements themselves also being systems interacting with one another.
- Principle of intra-generational and inter-generational solidarity. The interests of sustainable development are focused on human needs.
- The principle of sustainable management of resources. Use of natural resources in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations
- The principle of utilizing local resources. To enable sustainable development and to make a higher quality of life possible, to change unsustainable patterns of production and consumption.

To eliminate poverty, starvation, illiteracy and health problems 193 countries had agreed to a set of development goals.

The 17 Sustainable Development Goals (SDGs) – part of a wider 2030 Agenda for Sustainable Development – build on the Millennium Development Goals (MDGs).

- End poverty in all its forms everywhere
- End hunger, achieve food security and improved nutrition, and promote sustainable agriculture
- Ensure healthy lives and promote well-being for all at all ages
- Ensure inclusive and equitable quality education and promote life-long learning opportunities for all
- Achieve gender equality and empower all women and girls

- Ensure availability and sustainable management of water and sanitation for all
- Ensure access to affordable, reliable, sustainable, and modern energy for all
- Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
- Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
- Reduce inequality within and among countries
- Make cities and human settlements inclusive, safe, resilient and sustainable
- Ensure sustainable consumption and production patterns
- Take urgent action to combat climate change and its impacts
- Conserve and sustainably use the oceans, seas and marine resources for sustainable development
- Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
- Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
- Strengthen the means of implementation and revitalize the global partnership for sustainable development.

The Caspian Sea is one of the most unique ecosystems in the world. Having been affected by centuries of human activities including fishing, management of the feeder rivers and hydrocarbons extraction, it currently suffers significant environmental pollution and deterioration. The main aspects of the current environmental problems are oil and heavy metals pollution, decrease in biodiversity, flooding and water level fluctuations. Urgent measures need to be taken immediately by all littoral states to end the current degradation of the Caspian Sea and rehabilitate its flora and fauna. The ecology of the Caspian Sea mainly depends on the state of the environment in its water catchment area. That area in turn abounds in environmental problems which are the result of the economic orientation of each region in the Caspian basin—of the sea itself, of the coastal territories and of the rivers that flow into the sea. Among these problems are: the quantitative and qualitative depletion of natural resources (including bio-resources) involved in economic cycles; the degradation of natural and man-made ecosystems; the deteriorating living conditions and health of the population; pollution of the marine environment; and the degradation of water ecosystems. This last is one of the key environmental issues.

The Caspian Environment Programme (CEP) performed a Caspian Transboundary Diagnostic Analysis (TDA). A TDA is a scientific and technical assessment of the water-related environmental issues and problems, their causes, and impacts, both environmental and economic, at national, regional and global levels, taking into account the social-economic, political and institutional systems within each riparian country.

According to The transboundary Diagnosis Analysis (TDA) which was performed in the frame of Caspian Environment Programme the Caspian Sea major environmental issues include:

- Decline in certain commercial fish stocks, including sturgeon.
- Degradation of coast al landscapes damage to coastal habitats
- Threats to biodiversity
- Overall decline in environmental quality
- Decline in human health
- Damage to coastal infrastructure and amenities
- Contamination from offshore oil and gas activities

- Introduced species

One of the major problems of Caspian Sea is pollution. It has been contaminated for a long period. The sources of the pollution are:

- the river flow,
- onshore industrial and municipal waste water,
- chemical pollution,
- offshore and onshore oil extraction, etc.

To prevent the Caspian Sea contamination which in turns leads to other mentioned problems, significant measures have to be taken. In this case the population has to be aware of the significance of the damage caused by human activities as well as companies should take more responsibilities in order to reduce environmental risks. Environmental education here plays a crucial role. As people have to be informed how to decrease impacts on environment and how to deal with exist problems. On the other hand industrial companies should efficiently use resources and develop their strategies with the aim of avoid environment damages. For this purposes better equipment should be used. Industrial companies ought to consider wastes management principles, avoid any leakages of chemicals and other contaminants, reduce emissions and treat the used water before drainage it into the sea. It is known that oil and gas industry has its big impact on environment, polluting the Caspian Sea water, thus affecting it fauna and flora. Apart of contamination overfishing is also one of the main causes of species extinction.

The Caspian Sea is prominent because of it's major fishery reservoir, where 95% of the world sturgeon stocks were produced annually. Extensive spawning-places in the rivers flowing into the sea, and high food provision have contributed to the largest world sturgeon concentration in the Caspian Sea. There are around 50 other fish species in the river delta and coastal parts of the Caspian Sea. However, the last years contamination of the Ural river and the Caspian Sea by increased petroleum and industrial wastes resulted in decrease of natural spawning-places. Combined with large fisheries and continuous growth of mass poaching caused a critical fisheries situation in the Ural-Caspian basin. As a result of human activities many species in the sea became extinct. Nowadays about 850 animal species and more than five hundred different species of plants are represented in the Caspian. This number of species is relatively low for a body of water of this size. Many species are unique to the Caspian. Blue-green algae (cyanobacteria and diatoms) constitute the greatest biomass concentrations, and there are several species of red and brown algae. Animal life includes fish species such as sturgeon, herring, pike, perch, and sprat; several species of mollusks; and a range of other marine organisms including sponges. Mammals include fifteen species of Arctic seal, and Mediterranean seals. The Caspian seal (*Phocacaspica*, *Pusacaspica* in some sources), is one of very few seal species, is endemic to the Caspian Sea. In recent centuries, crabs, barnacles, and clams, have entered the Caspian on sea vessels, and gray mullets have been intentionally introduced by humans. Toxic substances flowing into the Caspian Sea interact with all elements of the marine ecosystem, and destroy it.

Different industries as a result works done throw heavy metals into the sea. Heavy metals have one property in common: they can be biologically active. Because of this, getting as a result of anthropogenic activities in the natural environment, they begin to migrate, implementing into the biological cycle, and make toxic effects on living organisms.

For example, this kind of changes in the Caspian Sea ecosystem had negative impact on the conditions of existence of it's the only marine mammal-seal. In order to safe marine heritage we should conserve and sustainably use the seas and marine resources for sustainable development.

According to the main publication from the 1992 Earth Summit in Rio de Janeiro, Brazil, water is essential for a variety of activities: drinking, sanitation, agriculture, inland fisheries, industry, transportation, hydroelectricity generation, urban development, recreation, and other endeavors.

The year 2025 was set as a realistic target date to water issues. Various approaches will be required, including:

- protection of the integrity of aquatic ecosystems by anticipating, preventing, and attacking causes of environmental degradation;
- effective water pollution and prevention policies and programs;
- mandatory environmental assessment of proposed water projects; and
- full-cost pricing, after ensuring that basic human needs are satisfied.

Overall it is seen that to tackle all the problems in the Caspian, to reduce contamination rate all the governmental and private organizations should cooperate. All the institutions should work for one purpose considering all the impacts of their works. Environmental risks should seriously be taken into the consideration. Companies have to apply waste management and sustainable development principles into their work. Thus we will save the natural resources for the further generations and meet their needs.

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Summary

Caspian Sea sustainability

Zibeyda Malikova
Baku Engineering University, Azerbaijan

It is an unavoidable fact that human life-support activities generate various environmental problems, more than that human action may render ecosystems unable to deliver ecosystem services such as freshwater, productive soil and many others. It is clearly seen that the rapid anthropogenic environmental changes lead to many environmental problems. This paper covers several environmental issues in Caspian Sea caused by human activities, and outlines the different approach for resources use. It pays particular attention to implementation of sustainable development principles in the Caspian Sea environment. The paper helps in finding solutions to many environmental problems. Concerned with the impacts of rapid development, it is aimed to find ways for achieving sustainability in all human activities.

Key words: *Sustainability, environmental problems, sustainable development, sustainability science*

EFFECT OF DEEP TUBE WELL WATER USE ON CHILDHOOD DIARRHEA: A CASE-CONTROL STUDY AT KUMUDINI WOMEN'S MEDICAL COLLEGE AND HOSPITAL, MIRZAPUR, BANGLADESH

Yasmin Jahan

Hiroshima University, Japan

SM Atiqur Rahman

University of New England, Australia

Abu Sayeed Chowdhury

Hiroshima University, Japan

Md Moshir Rahman

Hiroshima University, Japan

Motivation for the study

Diarrheal disease is the second leading cause of death in children under five years old and more than one in ten child deaths – about 800 000 each year – is due to diarrhea. Globally, there are nearly 1.7 billion cases of diarrheal disease every year. Causes of diarrhea in areas of endemicity include a wide variety of bacteria, viruses, and protozoa. Poor food hygiene, water, and sanitation are common in communities with high levels of diarrheal disease. Underlying conditions, such as malnutrition which modify the risk of contracting diarrhea. Children who are malnourished or have impaired immunity are most at risk of life-threatening diarrhea.

Diarrhea caused by enteric bacterial infections is very important worldwide, especially in tropical and developing countries, and is a serious problem among infants and under five children. The range of causative microorganisms is very large; they include mainly *E. coli*, *Rota virus*, *Shigella*, *Campylobacter*.

[20] Moderate to severe diarrhea also related to some socio- demographic factors like nutritional status, personal hygiene, drinking habit, housing condition etc.

[21]

A very few studies were conducted about under five diarrheal disease using tube well water in rural Bangladesh. There was some study conducted related to improvements in hygiene and sanitation, the shift from drinking surface water to drinking groundwater is suggested to have influenced the decline in diarrhea-induced deaths observed in Bangladesh. Among them, mainly arsenic related study showed the development of childhood diarrhea related to incidence, etiology, socio-demographic factors like personal hygiene, drinking habit, housing condition, sanitation, etc. But there was no study conducted about effect of deep tube well uses on developing childhood diarrhea in Bangladesh.

Therefore, in this study we wanted to identify the effect of deep tube well water on developing diarrheal diseases among under five children aged 0-59 months in rural Mirzapur, Bangladesh.

This study is important because this study is expected to provide the present status related to some socio-demographic factors like nutritional status, personal hygiene, drinking habit, housing condition etc. and outcomes of diarrhea among under five children on the basis of drinking tube well water in rural Mirzapur. It is presumed that this study about the present status of under-five diarrheal disease using tube well water in rural Bangladesh would offer the best hope to find the current status, determinants and access of the problems and reducing the mortality and morbidity of under-five diarrheal disease.

Objectives:

General objective

To assess the effect of deep tube well water use on childhood diarrhea.

Specific objectives

1. To describe the age (0-11m,12-23m,24-59m) has a significant effect on childhood diarrhea.
2. To identify whether hand wash has a relationship with on childhood diarrhea.
3. To assess the breast-feeding practice has a significant effect on childhood diarrhea.

What was done:

Study Design:

A case-control study is conducted at Kumudini Women's Medical College and Hospital in Mirzapur, Bangladesh.

Study Site and Area:

This study site is conducted in Mirzapur which is a rural sub-district of Bangladesh that covers 374 km² in Tangail district and is located about 60 km north-west of the capital city of Dhaka.

Study Period:

The duration of this study is December 01, 2007- March 03, 2011.

Study Subjects:

The study population is the children aged 0-59 months residing in censused populations in rural Mirzapur, Bangladesh. It has a total of 58,300 households and a population of 238,463 according to a 2007 census and among them under five children is 9-10% of the DSS (Demographic Surveillance System) area of Mirzapur, Bangladesh. The study population is 1394 under five children that refers the study inclusion criteria.

The Global Enteric Multicenter study (GEMS), a 3 year, prospective, age-stratified, matched case-control study of diarrheal children aged 0-59 months (0-11m,12-23 m,24-59 m) of age belonging to a censused population. The study is conducted in kumudini women's medical college and hospital, Mirzapur. This study supplied clinical, epidemiologic and anthropometric data for identification and characterization of potential pathogens. In this study, we will try to find out the effect of deep tube well water on developing diarrheal diseases among under five children which is mostly followed through secondary data from the GEMS study.

How it was done and validated

Children aged 0–59 months is randomly selected from each updated DSS dataset and parents/primary caretakers were asked whether their child had experienced diarrhea during the previous 14 days.

At enrolment, parents or primary caretakers of children underwent standardized interviews to solicit demo-graphic, socio-economical, epidemiological and clinical information. Enrolled children interviews took place at the SHC and every household. Demographic information collected about the child's household (defined as a group of people who share a cooking fire) included maternal education and household size (including the number of children <5 years old). Questions addressed hand washing practices and main source, access and availability of water and sanitation facilities, animals on the premises, water treatment, sharing sanitation facilities, and disposal of the child's feces. As we were working with secondary data between 2007 to 2011, so we need to validation of data. So that we had taken 10 cases and 10 controls for checking the data validation according to the GEMS study guideline.

Major results

This case-control study was conducted with a view to see the effects of deep tube well water among under five diarrheal children. A total 1394 children were interviewed using an interviewer administered structured questionnaire. The relevant findings are presented below:

By multivariate regression analysis, 256 children aged 24-59 months were using deep tube well water than shallow tube well and among those children they were less chance of developing childhood diarrhea (OR 1.01; 95% CI 0.77-1.31; $p < 0.000$) who were using deep tube well water as their main source of drinking water. A total 397 boys had less chance to develop diarrhea than girls were using deep tube well water than shallow. There was a significant role in the primary caretaker's education and it was higher among deep tube well water users (OR 1.29; 95% CI 0.98-1.70; $p < 0.062$). In these data we can see that most of the children were living in a joint family and their housing condition also was not good, maximum numbers of housing floor was made by mud (OR 1.10 95% CI 0.82-1.48; $p < 0.080$). Among them a total 501 children had electricity in their houses were using deep tube well water (OR 1.46 95% CI 1.14-1.87; $p < 0.002$). Treat drinking water was higher in those who were using shallow tube well water. But the main source of drinking water was deep tube well water and it showed a statistical significant result (OR 0.73 95% CI 0.58-0.91; $p < 0.006$). Hygiene practices was higher in deep tube well users than shallow. The chances of developing diarrheal diseases was lower in households who used shallow tube well drinking water than deep tube well.

The key observation for this analysis is that the proportional decrease in the incidence of diarrhea was nearly as large in households using a shallow tube well than in those using a deep tube well

Conclusions

This study result showed a controversy like literally we know that deepness of tube well is better than shallowness. Because it's free from most of the surface organism. But in this study, we found that the uses of deep tube well water has a significant effect on developing diarrhea among under five children. It is presumed that not only improvement of knowledge about drinking habit, housing condition, personal hygiene but also enhancement of knowledge related drinking tube well water that can also reducing the mortality and morbidity rate of under-five diarrheal disease in developing countries. It is possible that the greater physical separation between deep wells and major surface sources of microbial contamination, such as latrines and ponds, may have provided a protective effect.

In sum, we have described the design and methods of this study and our efforts to achieve scientific rigor while maintaining simplicity and standardization. We tried to present a candid portrait of the considerations that were entertained in developing the study design, the challenges encountered, and solutions developed along with the potential strengths and limitations of the methods. This level of detail is intended to provide the scientific and public health communities with high-quality data that can be used to update and strengthen diarrheal disease burden models and to guide strategic planning and resource allocation for the future. Moreover, further research can be done for future validation of the study findings.

Summary

Effect of deep tube well water use on Childhood Diarrhea: A case-control study at Kumudini women's medical college and hospital, Mirzapur, Bangladesh

Yasmin Jahan
Hiroshima University, Japan

SM Atiqur Rahman
University of New England, Australia

Abu Sayeed Chowdhury
Hiroshima University, Japan

Md Moshiur Rahman
Hiroshima University, Japan

This study desires to identify the effect of deep tube well water on developing diarrhea among the children aged 0-59 months seeking care at Kumudini Women's Medical College and Hospital, Mirzapur, Bangladesh. A total 1394 children were enrolled during December 2007 to March 2011. This study obtained enrolled child clinical, socio- demographic, nutritional status for identification of potential diarrheal determinants. A total 501 children had electricity in their houses and only 124 were living their houses which floor was made by mud. Treating method was higher in who were using deep tube well water as their main source of water. Uses of tube well water has a significant effect on developing diarrhea among under five children.

Key words: *water, diarrhea, nutritional status, clinical, socio-demographic*



EPIDEMIOLOGY OF PULMONARY TUBERCULOSIS IN GEORGIAN PENITENTIARY SYSTEM

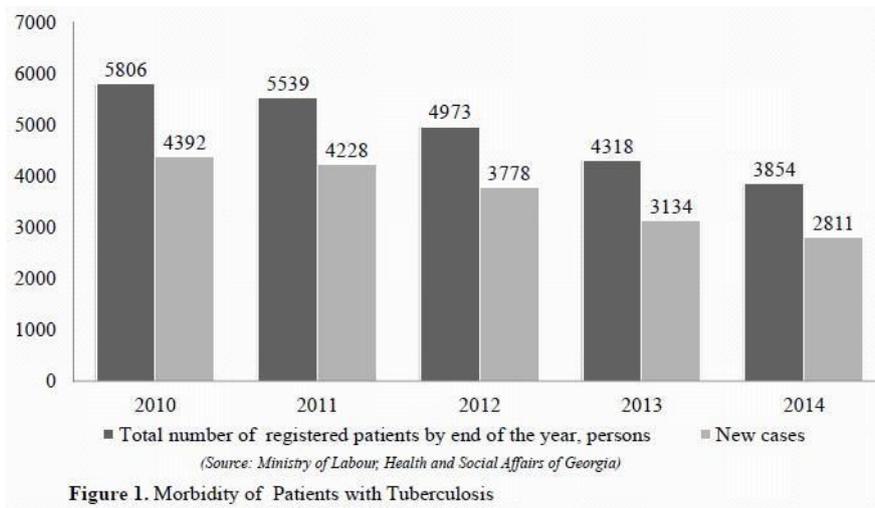
Mariami Beridze

Tbilisi State Medical University, Georgia

Kakha Vacharadze

Tbilisi State Medical University, Georgia

In Georgia, prison healthcare is under the responsibility of the MCLA (Ministry of Corrections and Legal Assistance of Georgia). Previous plans of transferring prison healthcare to the MoLHSA have been regularly postponed on the part of the MoLHSA. The Medical Department of MCLA was re-organized in 2013, in accordance with the Decree No.59 of the Minister of Corrections and Legal Assistance of Georgia from 15 March 2013 on the Approval of the Statute of the Medical Department of the MCLA. A new organizational structure was created with four Divisions: a) Division of Primary Healthcare and Outpatient Services; b) Division of Specialized Medical Services; c) Division of Medical Practice Regulation; d) Division of Healthcare Economy and Logistics. When presenting the newly structured Medical Department, the Deputy Minister emphasized that as a result of the re-organisation “Medical services have become independent in decision making – medical decisions are taken by medical professionals.



Autonomy of the doctor is secured.” Indeed, interviews with prison doctors during the assessment visit conveyed the impression that these physicians now could act in professional independence without interference of non- medical superiors. However, professional independence of healthcare staff in prison is not addressed in Decree No.59 and should be legally anchored. Currently, the number of healthcare personnel is 439 (175 doctors, including 100 GPs and 75 doctors by specialties and 264 nurses) for 10,328 inmates. Besides them, there are 141 social workers and 15 psychologists. The quantitative relation of inmates/medical staff has improved remarkably in comparison to previous years. Moreover, after December 2012, up to 40% of medical staff was replaced by newly employed or re-employed medical staff. However, this fact has also created a need of training of newly employed staff on peculiarities of healthcare in prison.

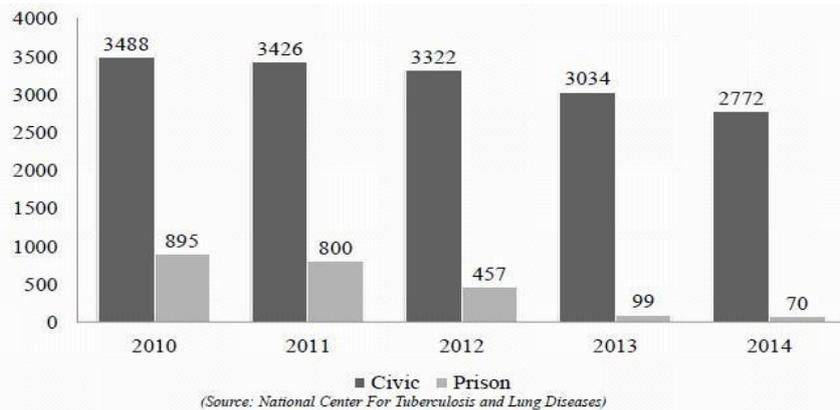


Figure 2. Distribution of new cases in prison and civil society (in absolute numbers), 2002-2014

The study revealed a number of concerns with the current TB control situation in Georgia, including:

1) Lack of coordinated screening efforts

Although all incarcerated individuals are screened for TB on admission to the prison system, there is no ongoing active systematic screening. This is largely due to a lack of medical and laboratory staff to perform screening on a regular basis. In terms of passive screening, prisoners who have signs and symptoms of TB must wait weeks to see a medical provider who may or may not screen them for TB. Furthermore, many prisoners are not aware of the signs and symptoms that should prompt them to request screening.

2) Delays in initiation of appropriate therapy

Once a prisoner has presented to a health care provider for TB screening, he or she must often wait weeks to months before appropriate treatment is initiated. Laboratory results are not routinely available to health providers in the prisons, and even when there is a positive smear or culture, it can take weeks for these results to reach the proper providers. In some regions of the country (western Georgia, for example), it can take two to four weeks for patients diagnosed with TB to be transferred to the treatment colony at Ksani. These delays lead to increased periods of exposure for other incarcerated individuals.

3) Lack of human resources for managing TB in the prisons

Although there are enough physicians and nurses in the country of Georgia to manage the problem of TB, the prison system is suffering from a lack of human resources. The prison rules have capped the number of physicians and nurses that can be hired. Recruitment of staff to work in the prisons is problematic, and health care personnel are demoralized. Turnover of most key personnel is reported every three to six months. In addition to their overwhelming clinical loads, the physicians and nurses are burdened by paperwork. For security reasons, they do not have Internet access and are isolated in the work they are doing. For example, none of them were able to attend World TB Day activities in 2011. If screening is to increase and more patients are diagnosed, action must be taken to strengthen the prison health system to accommodate the increasing workload.

In addition to managing TB, some prisoners also have co-morbid conditions that decrease the likelihood of their TB being cured. Chief among these is diabetes mellitus, which has been shown not only to increase the likelihood of developing active TB but also to reduce the chances of TB cure. There are no medicines in the prisons for managing co-morbid conditions such as diabetes.

4) Lack of laboratory resources

The prison has an excellent laboratory system, but it is unable to handle the increased work load of mass screening, even at a single prison facility. Physicians reported being unable to screen prison suspects because they were limited in their ability to send sputum samples. If screening efforts are to improve, then laboratory facilities must also be strengthened.

5) Poor infrastructure

Certain prisons have upgraded facilities and improved not only living conditions but also reduced the risk of becoming infected with TB. However, many prison facilities in Georgia have sub-standard living conditions that facilitate the spread of TB. For example, one prison which reports a large proportion of TB cases has a facility in which 100 to 150 incarcerated individuals are kept in one large room with no ventilation and no windows. In order to decrease the spread of TB, major infrastructure improvements are needed.

1) Poor follow-up of patients with TB who are released from the prisons

For those prisoners who do become sick with TB while in the prison system, successful treatment outcomes are less likely, especially among those released from prison while on treatment. It is estimated that fewer than 40% of incarcerated individuals who are released from prison while on treatment actually report to health centers to complete therapy. This means they are more likely to develop drug-resistant forms of TB and to spread TB in the larger community. There is no system for following up with prisoners who have been released, nor for tracing their household and community contacts.

In 1993, in an unprecedented move, the World Health Organization (WHO) declared a global TB emergency to raise concern about the dramatic rise of tuberculosis and more-deadly drug-resistant strains and to urge public-health officials at local, regional, and national levels to put tuberculosis back on the map. The former Soviet Union is one of the “hot zones” in today’s global TB emergency. The break-down of the centralized Soviet medical infrastructure, combined with extreme poverty, malnutrition, and overcrowding of refugees, orphans, and internally displaced persons, sustains the ready spread of tuberculosis and increases rates of infection. Throughout the region, the number of cases more than doubled between 1990 and 1996, and new cases have steadily increased since 1996 (Farmer 2003:127; Stern 2003; Zalesky et al. 1999). The collapse of the Soviet Union also opened up a previously closed terrain for the globalization of Western biomedical knowledge and practices and market-based medicine. The health-related effects of these interventions are a critical site for ethnographic inquiry (Field et al. 1999:159–160; Rivkin- Fish 2000, 2005:8). In response to the emergency, the WHO first recommended a program of short-course chemotherapy that evolved into a highly standardized protocol branded Directly Observed Treatment, Short-Course, or DOTS.⁶

First launched in 1994, DOTS is marketed today as the “gold standard” of TB control, as the only hope for reining in a deadly contagion. The WHO promotes DOTS as a simple, rational, and efficient strategy both in terms of cost, which is approximately \$20 per person, and length of treatment, which is six to nine months.

Although this course of treatment is shorter than treatment under the Soviet system, which often lasted as long as two years and was not standardized (and, thus, bred drug resistance), temporalities of daily life are not universal. A six- to nine- month treatment regimen rooted in daily direct observation is not necessarily “efficient” for patients, their families, or health care professionals. Throughout the former Soviet Union and eastern Europe, standardization is a key element of post socialist transition; implementing international standards in industry packages personhood and action in new forms and brings much-needed capital to fledgling economies (Dunn 2004a, 2004b:175– 177).

Worldwide, DOTS implementation confers legitimacy on international public-health networks and secures resources that the state cannot provide. As a highly effective “standardized, bureaucratic product” (Bowker and Star 2000:1), DOTS is marketed and distributed as a medical-technical intervention—as a mobile protocol that can be successfully implemented regardless of context. As one representative of an international organization working on DOTS implementation in Georgia told me, “[With DOTS] your TB program works under whatever conditions: in refugee camps, in prison, wherever. If you take your patients’ sputum, you diagnose correctly, you get results. That’s a good message. If you just do your program you can forget about the big social economic approach” (interview with MSCI representative, Tbilisi, October 2003).⁷ In this conception, standards indicate a baseline according to which compliance to “rational” and “efficient” forms of care are measured, without attention to the social matrix in which knowledge about and experiences of illness are produced and articulated (Bukhman 2001).

In Georgia's post-Soviet context, new forms of governance are instantiated by the introduction of medical and scientific standards such as the DOTS protocol. This is an instance when "medicine becomes a political intervention-technique with specific power-effects" (Foucault 2003:252).

As many analysts argue, however, the DOTS protocol falls short because of the overemphasis on the biomedical—on the ingestion of antibiotics—without accounting for or utilizing local systems of knowledge and meanings about illness, treatments, and community and family networks (Keshavjee and Becerra 2000). Biomedical rationality never falls on neutral ground: Its interventions are subject to local interpretations, resistance, and subversion, providing the conditions for different practices, such as prisoners trafficking sputum. Although the prisons serve as a laboratory for the implementation of DOTS in Georgia, the power effects of DOTS as a technical intervention are neither perfectible nor predictable. DOTS implementation in Georgia's prison system combines multiple levels of surveillance that reveal not only standardizing resources of global non-governmental organization (NGO) medicine but also state failure and challenges to sovereignty at the level of the nation-state.

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Summary

Epidemiology of Pulmonary Tuberculosis in Georgian Penitentiary System

Mariami Beridze,
Tbilisi State Medical University, Georgia

Kakha Vacharadze
Tbilisi State Medical University, Georgia

Tuberculosis is a global epidemic and is among the world's leading deadliest diseases. TB deaths are expected to decrease by 50% globally by 2015. TB is a major public health problem in Georgia. The World Health Organization estimates that since 2000, the spread and mortality of new TB cases has declined permanently in Georgia. Registered cases in 2013 – 4320 (includes 73% of new cases and 21% of previously treated cases). Combating TB elimination is a major problem because of the high prevalence of MDR-TB. TB is a serious problem in the prison system. TB is 10 times more common in prisoners than in civilians. Approximately, there are about 10 million prisoners in the world. Most of them are men, ages varying between 15 to 45 years. Many of them are either carriers or infected with hepatitis B, C and HIV/AIDS. Infection risk is higher in closed spaces. According to 2011 data, every 5th case of TB that is registered is a prisoner. In 1998, the Red Cross Society within the frames of the National Tuberculosis Program launched TB control program for the prison system which was implemented until 2004

Key words: Tuberculosis. Epidemiology. Georgia. Prison. Infection

EFFECT OF E – GOVERNANCE IN PUNJAB PAKISTAN WITH SPECIAL EMPHASIS ON HEALTH SECTOR

Atta Ur Rehman

Introduction

Background

Electronic governance or e-governance is the use of Information and Communication Technology (ICT) for performing government activities and delivering services to the public. It is a form of e- business¹ in governance comprising processes and structures involved in deliverance of services through electronic means. This includes the exchange of information, integration of various stand-alone systems and services between government-to-government (G2G), government to citizen (G2C) and government- to-business (G2B) in a convenient, transparent, more friendly and inexpensive manner.²

Pakistan, like many other developing countries, is at the beginning of implementation of e- governance. According to e-government world rankings established by United Nations E-Government Survey 2012, the E-Government Development Index (EGDI) of Pakistan was 0.2823 as a result of which Pakistan ranked at 156th position out of 190 countries being lowest in South Asian countries³.

The Punjab province of Pakistan is moving fast and progressing ahead in the field of the implementation of e-governance as compared to the other provinces⁴. Punjab Information Technology Board (PITB) established in 1999 is the main organization responsible for developing systems of e- governance and implementing in various departments.

There are various models of e-governance which have been experienced by different countries. The type of model depends upon the type of application and the functional requirement of the system.

Table 1. E-Governance Development Index

Country	E-gov. development Index		World e-gov. development ranking		Population (in millions)
	2012	2010	2012	2010	
China	0.5359	0.4700	78	72	1,341
India	0.3829	0.3567	125	119	1,225
United States	0.8687	0.8510	5	2	310
Indonesia	0.4949	0.4026	97	109	240
Brazil	0.6167	0.5006	59	61	195
Pakistan	0.2823	0.2755	156	146	174
Nigeria	0.2676	0.2687	162	150	158
Bangladesh	0.2991	0.3028	150	134	149
Russian Federation	0.7345	0.5136	27	59	143
Japan	0.8019	0.7152	18	17	127
Mexico	0.6240	0.5150	55	56	113

There are many applications developed and deployed in the Punjab for e-governance. One of these systems is Dengue Activity Tracking System implemented by the PITB. E-governance has major role in all walks of life but health sector has vital importance. Therefore special research is being conducted on the effectiveness of Disease Surveillance System (DSS) and Anti Dengue App of Punjab Government. The outcome this research is way forward for further e-governance based health systems in Punjab. This

research thesis covered e-governance models of Punjab Government with a special emphasis on Dengue.

Significance and Scope of Study

The application of ICT in government processes is highly significant. It helps in reforming administrative processes through automating the procedures, reducing paper work, and delivering services to the citizens with greater accountability, transparency and responsiveness. With E-Governance public action has come under public glare thus inducing norms and values of accountability, openness, integrity, fairness, equity, responsibility and justice in the administrative culture becoming efficient and responsive. This has become possible since ICT ensures transparency via dissemination and publication of information on the web which involves detailed public scrutiny making the service delivery efficient and accountable. It fosters economic development by reducing transaction costs making services cheaper. It also helps in social development by empowering citizens through access to information as they can participate and voice their concerns which could be accommodated in the formulation and implementation of strategies and policies. The competitiveness in the organizational sphere today has forced public functionaries to perform to their best ability and this is achieved only when information regarding all aspects are made available to the management at every point in order to make routine as well as strategic decisions which are done effectively via the use of ICTs. However, these objectives can only be achieved through robust and effective e-governance model.

The study of e-governance model in Punjab with special emphasis on Dengue will unfold the strengths and weaknesses of e-governance model adopted by Punjab government in the Dengue Activity Tracking System. It will explore to what extent this system has been proved to be effective and useful in fighting against dengue and if it is a successful model by all means then could it be replicated in other fields so that fruits of e-governance are achieved. This will enhance public trust and efficiency of the government departments.

Research Methodology

Type of Research

It is an exploratory research based on the primary data collected through questionnaire survey from the strata of relevant respondents. The research study has both qualitative and quantitative aspects. Likert scale is used in questionnaires which is a quantitative tool at the same time nature of questions is qualitative.

Research Questions

1. Is the Disease Surveillance System (DSS) developed for Dengue Control is a better E-governance model in Punjab?
2. Is DSS for Dengue is well designed and functioning properly to work as a monitoring and decision support system?
3. Has DSS played the key role to control dengue in Punjab?
4. Are the users of the DSS satisfied with functioning of the system?

Sampling Technique

Stratified random sampling technique is used to check the effectiveness of e-governance model of Punjab Government for Dengue control. It is a technique in which the population embraces a number of distinct categories, the frame can be organized by these categories into separate "strata." Each stratum is then sampled as an independent sub-population, out of which individual elements can be randomly selected.

In our case, to address the research questions, we have three type of respondents; (i) those who use android app in the field and upload data on the system, (ii) those who have user names and passwords and have access to the system and (iii) general public who does not have any direct interface with the system.

The study has been conducted in Lahore considering the fact that Lahore was affected most by the dengue in the year 2011 and number of users of the system is maximum in Lahore. So our strata are users of the android app and system in Lahore.

Data Collection Technique

The tool used for data collection is questionnaire survey. As it has been mentioned earlier that there are three different interfaces and different users of the DSS for Dengue, there for three questionnaires were developed 1) To get feedback from general public 2) To get feedback from operational staff about anti-dengue App and 3) To get feedback from departments about DSS.

Sample Size

There are three type of respondents. The sample size for each has been discussed below.

20 respondents were DSS users from Lahore and 35 respondents were anti-Dengue App users from the same district. For the estimation of sample size following Formula was used to maintain 95% confidence level and 5% confidence interval.

Here:

n = Sample Size

$Z_{\alpha/2}$ = Critical value of the Normal distribution at $\alpha/2$

(Here taken as 95%)

N = Population Size (Here the number of beneficiaries in flood affected Tehsil of a District)

p = Population Proportion (taken as 0.50)

ME = Desired Margin of Error (taken as 5%)

For the questionnaire aimed at general public random 50 persons were selected.

Data Analysis Technique

Following statistical techniques were used in data analysis

- SPSS to present and analyze data
- Chi Square to apply test of Hypotheses

Findings & Recommendation

On the basis of the analysis of the data made in previous sections, we come up with the following findings and recommendations.

Findings

- Most of the educated people are not aware of e-governance model of Dengue Surveillance System (DSS) developed and implemented by Govt of the Punjab.
- It is accepted that the Govt has been successful in control of dengue, but it is not established that it was clearly a fruit of DSS because a significant number of people who are the users of the system are of the view that the dengue control was not merely due to this system, though it

provided a good tool for evidence based monitoring.

- The users of Dengue App face certain issues in the field for which they need continuous technical support
- DSS is a useful G2G model but it is not a G2C model.
- DSS has not been much helpful in tracking and eradicating larvae
- DSS is a good e-governance model which can be replicated in other areas.

Recommendations

- A public version of DSS should be launched which is user friendly so that people have an access to the statics and other information related to dengue.
- An awareness campaign should be launched for public awareness of DSS.
- Android application should be updated according to surveyor's feedback and problems in app should be resolved
- System should be updated frequently according to new arising needs and requirements raised by concerned staff using DSS for dengue
- DSS system should also be used for Hepatitis and areas where more people are suffering from it should be marked like dengue and then that areas should be checked for causes
- DSS have heavy data base which can be used for other health and non-health related purposes

Conclusion

Government of Punjab, introducing e-governance systems so that government to citizens' interaction and government process can be improved. Dengue Surveillance System Hajj Management Information Systems, Crime Investigation Reporting, MIS for Maintenance of Agri-Machinery, Database of Livestock Farmers, Urban Immovable Property Tax system and Disease Surveillance system are just few examples of e-governance.

Disease surveillance system for dengue is used by all concerned departments and is helpful to control dengue, decision making and monitoring the activities of all stake holders. This system is effective since 2012 and more than 2,772,074 anti-dengue surveillance activities are submitted via android mobiles this huge quantity data can helpful in any other monitoring activity. But in public there is no so much awareness of this system. There is need to lunch massive campaign in public and is good model to replicates in other province of Punjab.

Dengue Surveillance System is a successful e-governance model which has G2G interface but it needs to have G2C and C2G interface as well and requires proper advertisement to make the people aware of the system. Such system should be replicated in other departments and areas.

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Summary

Effect of E – Governance in Punjab Pakistan with special emphasis on Health sector

Atta Ur Rehman

The research study is about E-governance models of Punjab-Pakistan with a special focus on Dengue control. Pakistan is a developing country which seriously requires better service delivery by the departments through E-governance. The modern trend that is use of Information and Communication Technology in the government functioning and service delivery is being improved in almost every developing country of the world. The developed nations are already much ahead in this field and E-governance is equally important to achieve SDGs. Pakistan's ranking in the e-governance index in the world was 156th out of 190 countries as per UNDP survey of e-governance 2012. This seriously needs to be improved. In the province of Punjab, the organizations like PITB and Urban Unit together are working to introduce and implement e-governance models.

Key words: *E-Governance, Urban Unit, Punjab PITB, ICT, SDGs, DSS, GIS, Lahore*



SUSTAINABLE DEVELOPMENT OF GENDER EQUALITY SYSTEM IN THE REPUBLIC OF AZERBAIJAN: PROBLEMS, GOOD PRACTICE AND PERSPECTIVES

Elgun Safarov

State Committee for Family, Women and Children Affairs, Azerbaijan

“Women's rights activists are being targeted at alarming levels, and violence against women politicians impedes progress on women's civil, political, social, economic and cultural rights. It is now widely recognized that violence against women, including harassment and harmful practices, are major barriers to the fulfilment of human rights, and a direct challenge to women's inclusion and participation in sustaining peace. Without tackling it, we will never fulfil the 2030 Agenda for Sustainable Development. It is time to further our collective action to end violence against women and girls for good.”

United Nations Secretary-General António Guterres

Gender equality is the main part of the sustainable development. United Nations Sustainable Development Goals will not be implemented as the instrument without gender equality. And Republic of Azerbaijan fully supports gender policy and system of the protection of women rights.

Azerbaijan has achieved a high level of economic growth and undertaken major investment in developing infrastructure, including rural areas, allowing a rapid decline in poverty rate to some 4.9 percent of the population. For the last eight years budget expenses has increased 12 times and Gross Domestic Product (GDP) 3 times. The annual government allocation for necessary activities ensuring gender equality and women's empowerment has increase to more than 1 million USD.

For elimination of discrimination against women, government has reviewed its laws, policies, regulations, programmes, administrative procedures. Important Laws “On gender equality”, “On Combating Domestic Violence”, the Law “On Amendments to the Family and the Criminal Codes” on prohibition early and forced marriages and increase of sanctions for such offences (2011) have been enacted. A new set of “Regulations for State Control over Ensuring Gender Equality” have been submitted for approval and adoption.

A number of state programs on “Poverty Reduction and Sustainable Development”, “Employment Strategy”, “Social economic development of the regions” bears a gender component and has already influenced on the balanced development of the regions, women's empowerment and ensuring women's employment. All these achievements and broad measures in the sphere of participation of women in social and political life led to the increase of women representation in all spheres of the society. Women share in employed population has reached 49%, in civil service to 30 %, 28 % in entrepreneurship. Today 69,2 % of working women are involved in private sector and 30,8 % of them in public one .Women representation has reached to 16.8 % in National Parliament and 35 % in municipalities. The role of women in development of science is also exceptional. 46 percent of PhDs and 51% of all scientific workers are women. The number of women with PhD has increased by 22 percent within the last 5 years.

Development Concept “Azerbaijan-2020:the vision of future”, the National program for Action to Raise Effectiveness of the protection of Human Rights, National Strategy on Combating Domestic Violence especially targeted at ensuring and promoting the rights of women, and achieving their full development and advancement.

A number of governmental programs are targeted on improvement of social welfare of 156 thousand women refugee and 297.731 thousand of internally displaced women from 20% of our occupied territories in the result of the conflict in Nagorno-Karabakh. The State continues work on their re-integration into the society. They are offered a comprehensive range of services on employment, access to healthcare and different levels of education. As a result of taken measures, the poverty rate among IDPs was reduced from 74% to 25%, most of them got medical insurance and normal living conditions.

Relevant state institutions stimulate women’s engagement in business for increasing employment of single mothers and women from low-income families. Especially, development of entrepreneurship refugees and IDP women is one of the important tasks. For this reason, a State Program on “Providing refugee and IDP women with relevant job” was adopted in 2000 (two thousand). At the same time, the Labor Code, Family Code, Criminal Code, Code of Administrative infringements and the Code of Civil Procedure reflect women’s right on life, employment, economic and property rights.

The special attention is paid to the development of rural women. Special projects on women’s empowerment, increasing of their economic and social activities, vocational education are realized in rural and remote areas. Recently The State Committee for Family, Women and Children Affairs and UN has started the joint projects on “Promoting rural women’s participation in economic and social life “with the purpose to develop women’s capacity and analyze existing problems in rural areas. We are keen on further development of small and medium women’s businesses as the key element for poverty reduction, increase of their economic, social influence and elimination of gender inequality. A number of events such as Forums of Women Entrepreneurs’ were held for stimulation women’s work in economic sector and fostering women’s entrepreneurship. The National Fund on Assistance for Entrepreneurship also enhances funding sources for women. In the last 3 years soft credit lines up to 10 million AZN were given to 410 women entrepreneurs.

Systematic measures are taken to increase women’s participation in decision making process, in community-based activism and local governance. Today women take part actively in civil-society building by asserting their presence in both formal and informal organizations. It should be noted that more than 200 of approximately 2 000 non-governmental organizations are women NGOs dealing with different aspects of women issues. Besides women political activity grows year by year. Currently million of women are the member of different parties and their political council .For example, women forms 49% of ruling New Azerbaijan Party.

The Government of Azerbaijan attaches high importance to the implementation of the Beijing Platform of Action, Millennium Development Goals, and is fully committed to ensuring gender equality in all spheres. We have made enormous strides by promoting gender equality in employment, health, education, economic and social policy, as well as addressing violence against women.

Since the adoption of the Law “On guarantees of gender equality» in 2006, important amendments have been made to other laws and to the establishment of the favorable conditions for the advancement of women in certain fields. Government strengthened programs to support women entrepreneurs, providing gender equality in the process of developing small enterprises, trainings and access to credit. In order to resolve women’s problem several state programs that bear gender components have been approved in Azerbaijan. Development Concept “Azerbaijan-2020:the vision of future”, the National program for Action to Raise Effectiveness of the protection of Human Rights, State Program on Azerbaijan Youth 2011-2015, State Program on Poverty Reduction and Sustainable Development in 2006-2015 “, all aimed at ensuring and promoting rights of women and achieving their full development and advancement.

In 2007 by the decision of the Cabinet of Ministers of the Republic of Azerbaijan was adopted Complex Programme on the prevention and fighting against the everyday violence in democratic community.

1 October 2010 come into force Law of the Republic of Azerbaijan “On the prevention of domestic violence” adopted by the Decree of the President of the Republic of Azerbaijan. Law defines and regulates the implemented measures aimed at the prevention of the violence committed by abusing the close ties of relationship and cohabitation or previous cohabitation and its adverse legal, medical and social consequences, social protection of victims of domestic violence, provision of legal aid thereto, as well as elimination of circumstances leading to domestic violence. In the first article “Main definitions” added new terms in the Azerbaijan legislation: domestic violence, victim of the domestic violence, physical violence on domestic motives, mental violence on domestic motives, imposition of illegal economic restrictions on domestic motives, sexual violence on domestic motives, prevention of domestic violence, protection order. At the same article we got new definition aid centres-shelters. In the law we got especial article which are regulated status and work of these centres. The same time last years we adopted new regulations (rules or directives) of the Cabinet of Ministers of the Azerbaijan Republic :

- *Rules of the consideration complaints on the domestic violence when they don't include the elements of the criminal content (Decision 46, 24 February 2012).*
- *Rules on the prophylactic (preventive) registration of the persons which made domestic violence and educational - preventive work with them (Decision 206, 19 December 2011).*
- *Rules on organisation and carry out (conduct) of the data base on the domestic violence (Decision 207, 19 December 2011).*
- *Rules on activities of the aid centres to the victims of the domestic violence and on accreditation aid centres of the non-governmental organisations (Decision 89, 25 April 2012).*

State Committee for Family, Women and Children Affairs of Azerbaijan Republic already established 3 aid centres-shelters for the victims. The same time we have already 10 accredited NGO shelters. But off course it is not enough for the population 9 and a half million.

Raising women's activity and advocating their full participation in economic and social life are in the center of attention. Today forty nine point five percentages of women are involved in labour activities. They are not only active in traditionally accepted spheres, such as education and medicine, but they are also found themselves appropriate in economy, technology, military forces, national security and law-enforcement bodies, oil sector and other difficult areas of occupation. The Government is focused on diversification which is necessary for growth of employment and sustainable development in rural areas. By entering into self-employment and setting up small businesses women can be at the forefront on innovation and diversification in rural areas.

Advancement of women in economy, policies of our government in achieving SDG, promotion of regional dialogue and exchange experiences, forge our partnership and learn best practices.

To achieve the goals of sustainable development the National Coordination Council was established by a presidential decree on October 2016. Azerbaijan is the only country that created the National Coordinating Council for Sustainable Development, and this was highly assessed by the UN. The council's main goal is to bring state programs and strategies covering the socio-economic sphere into line with the objectives of sustainable development. It is chaired by the Deputy Prime Minister and holds meeting of its working groups on economic development and employment, social and environmental issues, monitoring and evaluation every month.

Economic independence of women is one of the components of their active participation in political and public life. It facilitates poverty reduction, ensure advance in women's economic and social performance and in many cases eliminates gender based discrimination in society. President His Excellency Mr. Ilham Aliyev pays significant attention to the activities of business entities and creation of favorable conditions for the development of private enterprise. The loans provided by the state and the work carried out by the National Fund on Assistance for Entrepreneurship also provide extensive support to the development of women businesses, especially in rural areas.

The development of the "Strategic Road Maps on the national economy" on main economic sectors, adoption of several steps towards the liberalization of business environment including the elimination of licenses for various fields of activity, improvement of tax, as well as the establishment of "Asan Support for Family Business" center (ABAD) will facilitate the creation of new job positions and development of small and medium entrepreneurship.

Today 69 % of working women are involved in private sector and 31 % of them in public one. In 2015 share of women entrepreneurs in small and medium business reached 28 percent, while earlier their share was only 4 percent.

In 2016 we began "Special Economic Mapping and Labour Market Assessment" to review the context of local economic development and state regional development and employment strategies.

In the framework of the projects on **"Enabling civil society to play greater role in advancing gender equality and women's rights"** we conduct the assessment of employment opportunities for women in the local labor market and business development trainings. Special competition was launched among 4 groups of women graduate from the Start and improves your Business Program. In result 12 best micro project proposals were identified and provided by in-kind contribution to start businesses.

Alongside with the Business development trainings special awareness raising and sensitization campaigns to change gender stereotyping related to the choice of jobs and gender-based distribution of family duties are conducted regularly. We hold meetings with the private sector and banks to sensitize them to gender specific needs and initiate dialogue between the businesses and civil society activists to promote women's rights .Special training on the "Development of policies and programmatic interventions in the area of economic empowerment and community-based activism of young women" and "Gender-sensitive policies and programmatic interventions for economic participation of rural women" are conducted for the staff of local executive authorities and the Ministry of Labour and Social Protection, representatives of trade unions, private sector enterprises, and public officials from other relevant agencies.

As another example of the support to the rural women willing to increase the level of their economic activity should be mentioned the Project on "Promoting Rural Women's participation in the Social and Economic Life". The project aimed at creating the mechanism for disseminating knowledge, teaching skills and facilitating information exchange in the area of rural women's economic empowerment. It also supports network building among economically active women residing in rural and sub-urban settlements. The Project envisioned this mechanism as a regional Women's Resource Centers focusing on economic and social empowerment of rural women. The Centers function as a part of the regional branch of State Committee and strengthen our efforts in addressing the needs and concerns of rural women in the area of economic and social participation. We raise public awareness regarding the benefits of women's community activism, develop the capacity of rural women to engage in decision making and support network building among socially active rural women in the area.

Joint project with UNDP, Swiss Cooperation Office and local NGOs entitled "Gender Assessment: Analyzing barriers to economic and social participation of women and girls, and producing action oriented Recommendations "help us to analyze reasons, preventing women and girls from accessing economic and employment opportunities in the private sector both in rural and urban areas.

We have started to conduct the study assessment in Baku and 6 regions and will produce report with recommendations to the private sector and a wide range of other stakeholders for advocacy and action.

We conduct a number of trainings on “Plan your future” and “Family Budget Management” in the regions to teach family members how to sum up their incomes and their management, create household budget.

Government of Azerbaijan is in a strong position to invest in supporting women’s empowerment and gender equality and we look forward to strengthened partnership to address these gaps and challenges. Women and girls with their potential could bring critical contribution to sustainable development.

Educated woman means educated nation and educated generation, the issues like women’s education, eradication of illiteracy among them, women’s health and ensuring their economic independence have always been a priority. Throughout the time, relevant works have been done in mentioned sphere with positive outcomes. Experience shows that, women’s economic independence enhances their opportunities to be represented in public and political realm.

In Azerbaijan, women’s active participation in different realms of society is closely connected with the name of National leader Heydar Aliyev. His principle position in public administration, state women’s policy caused the involvement of skilled women into the work of strengthening the statehood through promotion to different leadership positions.

In this timeline, the number of women obtained higher and secondary education has been higher than that of men. The number of men with higher and secondary education increased 5 times, whereas women’s number increased 7 times. It opened wide opportunities for women not only to work in production but also for their promotion in public and political sphere. There have been considerable achievements in the field of healthcare. Presently, 62% (sixty two percent) of doctors are women. This dynamics can be observed in other fields of society as well. For instance, women are involved into oil and chemistry and other fields of heavy industry. Government’s policy on increasing welfare of population, eradication of poverty, achievement of sustainable development and ensuring gender equality in all spheres gives positive results. So, the State Committee for Women’s Issues was established in 1998. The Decree issued by the President “On increasing women’s role in Azerbaijan” dated from 1998 (nineteen ninety eight) and “On implementation of state women’s policy in the Republic of Azerbaijan” dated from 2000 (two thousand) create favorable conditions for women to act in any sphere of society.

For the increasing the measures of the state in the human rights protection was established the State Committee for Family, Women and Children Affairs in 2006 following the Decree of the President Ilham ALIYEV and the same time for the improving the legislative base on gender equality, the Law “On State guarantees of gender equality” and the law “On prevention of Domestic Violence” were adopted in 2006 (two thousand and six) and in 2010 (two thousand and ten) respectively. It worth mentioning, that Ms Mehriban Aliyeva, First Vice-President of the Republic of Azerbaijan, First lady of Azerbaijan, President of the Heydar Aliyev Foundation approaches to women’s public life with great concern. Ms Mehriban Aliyeva demonstrated special initiative in adoption of the Law “On prevention of Domestic Violence”.

Adopted state programs play important role in promoting women’s role in political, social, economic and cultural life of the country. These programs are approached from gender context. Gender expertise of budget and other legislative acts are of important tasks. We have also recorded success in this field.

As in other fields, Azerbaijan hosted many international events on gender and women’s rights. In 2010 (two thousand and ten) seventh Council of Europe Conference of the Minister responsible for gender equality “Bridging the gaps between *de-facto* and *de-jure* gender equality” was held in Baku.

The plenary session on the topic “Women’s rights are human rights and human rights are women’s rights” held in the framework of Krans Montana Forum in 2012, International Conference “Women’s role in twenty first century: responsibilities of women politicians”, Third Forum of Female entrepreneurs was held in the framework of UNECE with collaboration with SPECA and Azerbaijan chairmanship. Especially, we must underline that Azerbaijan was elected as the chair in SPECA.

In this regard, elaboration of Strategy of Azerbaijan Family, National Action Plan on gender equality is envisaged. At the same time, there is a need for the institute of Family psychologists, increase the number of shelters in order to improve the quality of works with the victims and offenders of domestic violence and for early intervention.

The monitoring system on cases of violence, drop-out of schools and early marriages had been established. Another urgent issue is to set up institute of Family, Women and Children Affairs. Adoption of the mentioned documents and establishment of institutions reaffirms that family and women's rights are one of the principal orientations of the Government.

Especially states must include exact budget to the gender equality, create state shelters and give the financial and political support to the NGO's and implement the system fully without of any exceptions.

Successful woman is the base for the successful child, family and society. Woman is the energizer of the modern community.

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Summary

Sustainable development of gender equality system in the Republic of Azerbaijan: Problems, Good Practice and Perspectives

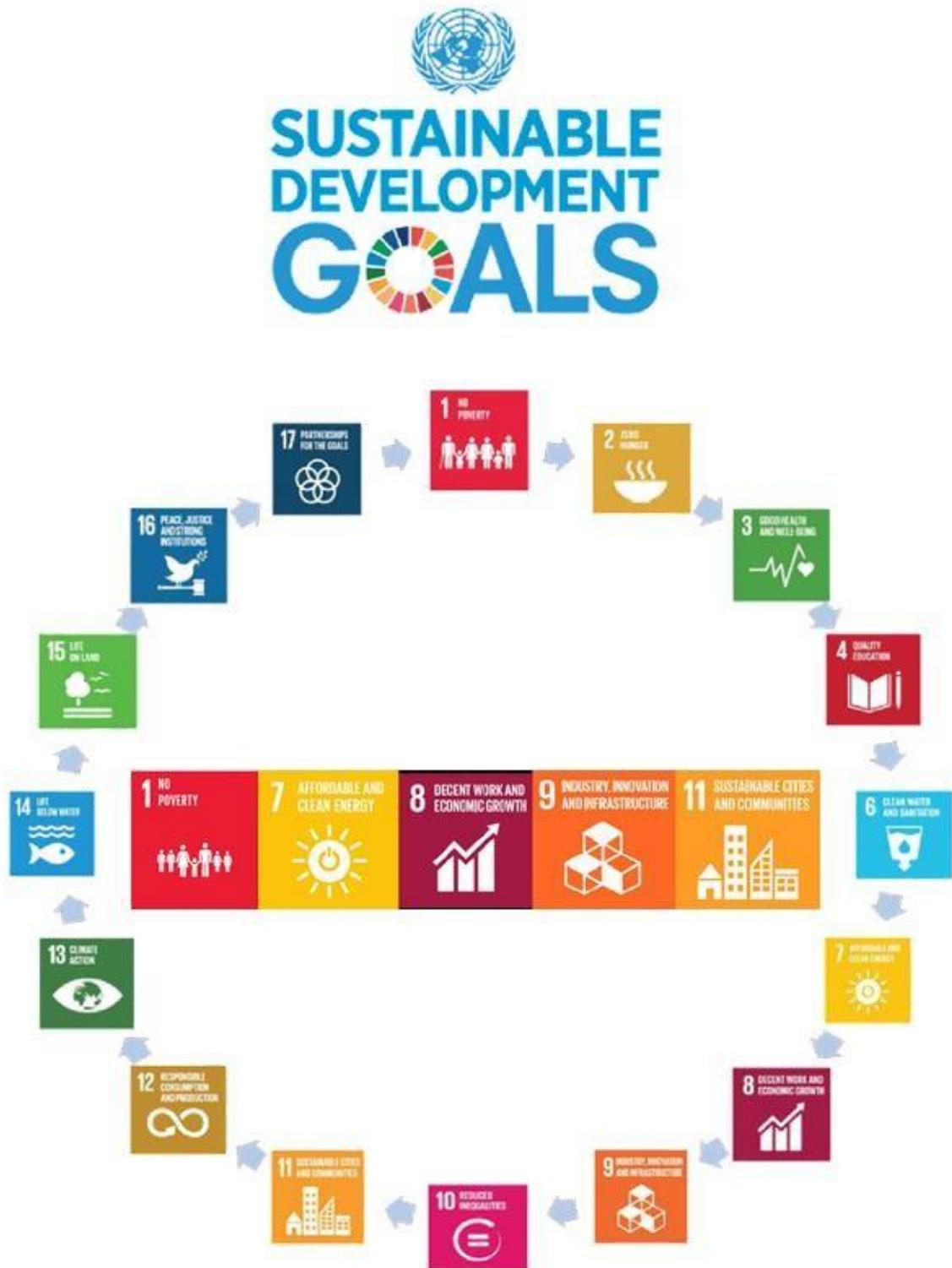
Elgun Safarov

State Committee for Family, Women and Children Affairs, Azerbaijan

Sustainable development of gender equality is the main mechanism of the state policy. Problems and practice of the resolving them in the gender equality are the good point for the progress. States are responsible for the implementation of CEDAW not only in the national legislation and especially in the policy. Azerbaijan has a good experience in the building process women rights protection system and already delivering it to the Arabian, Asian and African states.

Women rights are the human rights. Sustainable Development Goals manage the implementation de-jure and de-facto. However development of the national legislation must go with the development of the society.

Key words : *Gender, equality, development, women, discrimination, economic, refugee, violence*



DESIGNING OF INFORMATION SYSTEMS OF MANAGEMENT BY FIRMS

Suheila Guseinova

*State Committee of the Republic of Azerbaijan for Standardization,
Metrology and Patents, Azerbaijan*

Aydin Samedov

Azerbaijan State Economic University, Azerbaijan

Rauf Mamedov

Azerbaijan University of Cooperation, Azerbaijan

The modern methodological base of information management system design depends on the system diagnostics and firm organization modeling affecting the set management functions (SADT in practice). Such designs are presented in the form of following models: functional, information and dynamic.

The given process comprises the step-by-step complex which can be submitted as follows:

- appropriate data acquisition and information diagnostics in the sphere under investigation;
- process of organization modeling (IDEFO)
- partial change of organization modeling process (if necessary). In modern practice IDEFO process is generally used by information management system design based on the separate operation formation inside the firm where the decomposition of their functions in certain business processes is taken place. Determination of business processes is immediately due to the functional responsibilities of appropriate firms and their activities [1].

However, in practice there have been found other methodologies of information system design, among them are RAD (component-oriented design); RUP (industrially object-oriented design). It should be noted that unlike other methodologies IDEFO is the most simple and available.

Simplicity and availability of IDEFO methodology is that the precise consistency of various communications is shown according to their content and character.

Communication types in information management systems develop the data-base management system based on the relational data base model. As a whole the relational data base models are referred to the information in the form of complex interrelated tables or they are referred as "relations" [2].

In information management system design there has been taken the electronic system documentation which is the management system of in-firm processes of formation, acquisition, reprocessing and storage of electronic documents capable of controlling various information flow later as in the space as in time. In information and communication system of the firm activity they are referred as electronic system documentation [3, p.6].

The major advantages of electronic system documentation use are: increase of productivity and performance of staff work; sharp decrease of expense for document maintenance and storage; simplification of system documentation; acceleration of document retrieval and their storage security.

We consider that at present the most effective project of electronic system documentation in firm activity is the electronic system documentation architecture "Business" suggested by the scientists [3].

Task of information management system design is the determination of electronic system documentation performance (ED); work performance (WP), economic benefit of activity (EB) [3].

The criterion for performance of electronic system documentation can be the following relation:

$$E_g = \frac{Q_g}{t_g} \rightarrow \max$$

where Q is the total work with documents; t_g is the time expended in the performance of the given work.

The criterion for work performance with the documents (or work quality) is the set of estimation system by individual users and is given in the following way:

$$E_p = \frac{\sum_{j=1}^n E_1}{n} \rightarrow \max ; \quad E_p = \frac{\sum_{j=1}^m KE_2}{\sum_{j=1}^m K}$$

where E₁ is the total estimated value of the system by i-element; E₂ is the total estimated value by j-user of system by i element; k is the expert weight factors; m is the number of polled users. As for the criterion of economic benefit of system documentation it can be presented as:

$$E_E = S_x + S_0 + S_n$$

where S_x–is the cost of information storage; S₀ – is the cost of information reprocessing; S_n– is the cost of access to the information.

Unfortunately, the determination of the criterion for the performance of electronic system documentation and work performance with the documents in Joint-Stock Company “Azersun Holding” and “Synergy Group” is almost impossible because of lack of applicable scientific and technical information. Therefore a graphic example with arbitrary data which makes it possible to carry out methodic calculations of criterion for performance of electronic system of documentation and criterion for work performance with the documents (See Table1) is used.

Determination of criterion for performance of electronic system documentation and criterion for work performance with documents in facilities per a month arbitrary figures, 1000 manat

Table № 1

Criterion for performance of electronic system documentation (E_g)	Total work with documents (Q_g), 1 hour	Time expended for fulfillment of given work (t_g), 1 hours		
E _g = 0,781	Q _g = 250	t _g = 320		
Criterion for work with performance documents (E_p)	Total estimated value of user (E₂)	Expert weight factors (K)	Number of polled users	
E _p = 19,525	0,781	8	25	

In a similar way we determined the economic benefit criterion system documentation in facilities [See Table 2]. Determination of economic benefit criterion of electronic system documentation in facilities arbitrary figures:

Table № 2

Economic benefit criterion of system documentation E_E	storage (S_x)	Cost of information reprocessing (S_0)	Cost of access to information (S_n)
$E_E = 0.572$	0.125	0.279	0.168

The calculated materials of Table 1 and Table 2 have methodical and advisable character but in perspective they can be used by Joint-Open Company 'Azersun Holding' and 'Synerji Group'

As to the management the information systems are designed on the functional base including subsystems of personnel management; of money resources and finance; audit; management; of commodity line circulation and logistics; management of production and commercial activity; management of supplier and client contacts; management of high personnel body.

We outline them briefly:

- subsystem of personnel management involves the system of managerial registration of firm personnel, their qualification estimation, operations by employee wage calculation;
- subsystem of management of money resource finance supplies the automatization of tasks on money flow fulfillment and budget resources of firm accounts
- subsystem of management of commodity line circulation and logistics is designed for automating sale operations in the sphere of commercial activities, for automatization of storage and transport operations as well.
- subsystem of management of production and commercial activities depends on the automatization process of production and commercial purpose tasks in the sphere of strategical and efficient planning;
- subsystem of management of supplier and client contacts is designed for automatization of information acquisition and processing processes on markets, clients, supplies, to be trained on pursuance of marketing researches as well;
- management of high personnel body is trained on timely soft ware of firm administration to take managerial decisions [4].

Nowadays by designing information systems, the solution of many problems of firm management information system improvement is entrusted on information management that is the activity focused on the process to provide task fulfillment in the sphere of facility system management and realization of its main functions; forecasting, planning, motivation, organization, control and etc. Timely acquisition, processing and representation of necessary information to high rank managers to take efficient administrative decision carry out the given process.

To solve this information, the administration performs the following important function:

- management by information and communication system and technologies;
- management by process of information resource formation at all firm hierarchy levels;
- management of vertical and horizontal information system of communication;

The distinguishing feature of information management is that the participants of a given process are concerned not only by necessary information for the firm but they take an active part in work making administrative decisions. [5,p. 245].

In contemporary firms, different types of information management organization structures have been found. We note the most commonly used:

- functionally oriented
- oriented with commodity
- marketingly oriented

In practice of home facilities there have been clearly met organization structures of functionally oriented information management which activities are in a good agreement with the management functions of a particular facility.

In home firms there have been rarely occurred information management organization structures with commodity or marketing oriented. In the first case, information management organization structure is arranged through the separation of information commodity in types of their services; in the second one except abovementioned it contains necessary information of marketsegment.

So information management organization structures are source of effort systematization for rational activity of high rank administrative personnel, also personnel of medium and lower group of firm management to achieve formulated economical and organization tasks.

As it seen the main aim of information management and information marketing is the information software of firm management system on which base the project of all information system of firm management has been developed. In practice with information management the firms face immediately with the information marketing. Being the base of any marketing investigations it involves the following information data: qualitative information on the commodity (information on agreement with the world standards; information on commodity production by rivals, line information (information on product selection manufactured by firms and their rivals); information on clients (statistical data on competitive firms, information and results of expert estimation, consumer survey); marketing information (information on markets, demand and offers, fluctuations of market situation); information on competition and rivals (quantity and type competitive facilities, their share holding in marketing processes); logistic information (information on system of commodity line circulation and supply, transport and expeditionary operations); information on expenses and cost (information on cost price, firm expenses); price information (price fluctuation for commodity, fluctuation of rate exchange) and etc. [6].

This information marketing complex includes the most general and reliable information on marketing situation as a whole and among firms. Information marketing activity is first management system, taking optimal management decisions.

Besides it is desirable to highlight the peculiarities of information management system design of commercial activity where such subsystems as the sale management; supply management; management of storage facilities and stocks; commodity line circulation management, order management and etc.

We consider some of them:

- subsystem of purchase management serves for providing necessary information for firm personnel to take optimal decisions in the sphere of purchased commodity;
- subsystem of order management is focused on automatization of operations like order execution, commodity delivery by orders and etc;
- subsystem of management of storage facilities and stocks is intended for storage facility automatization and commodity stock control, transportation and storage, packing operations;
- subsystem of commodity line circulation management is focused on record automatization process of volume of commodity sale, money turnover, settling with customers and etc;
- subsystem of accounting and control enables the operation by management accounting (according to treaties, orders, separate documents) to be automated and etc. [7.p.436-439]

In modern practice the isolated sphere of commerce is the electronic commerce fulfilling the following operations:

- to realize firm commodity on internet;
- to adjust and cooperate relations with clients;
- to use exchange system of commodity supply and services;
- to cut the cost of commodity supply and their further sale;
- to respond immediately for market conjuncture processes;
- to decrease significantly distribution costs
- to increase substantially client section, to improve their service;
- to realize their commodity without regional barriers, i.e. to enlarge considerably extensive sphere;
- to upgrade mutual accounting system [7,p.441-447]

Development of business process management system which are sometimes called start-to-finish business process tube a special position in the project of firm electronic documentation sphere. Designing start-to-finish business processes of EDS system enlarges substantially the possibilities of implementation and use of regulated procedures as from its preprocess (information entry) to yield for a reliable partner.

The main advantages of electronic documentation system can be the following: EDS implementation depends on the process of rationalization of document flow circulation and thereby increases the efficiency of firm management information system; business processes proceed unattended through the personnel exchange information; standards high rank management are optimized for taking decisions; separate components of business processes are automated; risky management on many economic and organization problems are cut down.

To create a unified extensive sphere for procedure acquisition, reprocessing and storage of information documentation is so-called system 'ELAR-SAPERION'. The essence of given system is by using a great number of modules by master generation to create a serial systematization of all document flows and document circulation up to economical and organization activity of the firm.

The major advantage of the system "ELAR-SAPERION" is the fact that it coalesces all novel information and communication system with production and commercial activity of the firm, in particular it automates the firm principle activity (credit process; regulation of treaty process; document circulation system management) and automatization of side processes (selection, placing and improvement of personnel professional skills; complete automatization of office work system; management of production and commercial activity that is forecasting, planning, organization, accounting, control and etc.)

The system "ELAR-SAPERION" has acquired importance because of automatization of financial documentation including the following components: loading with any package of financial documentation to the system; formation of documentation system related to business processes; serial coordination of package with different content; input of integration system mechanism with external environment, connected with the business processes; determination of document route due to the importance of signed treaty [8].

Thus by using the system "ELMA CCM", the system "ELAR SAPERION" as well we can design modern information management systems of Joint-Stock Company "Azersun Holding" and Joint-Stock Company "Synergy Group."

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Summary

Designing of information systems of management by firms

Suheila Guseinova

*State Committee of the Republic of Azerbaijan for Standardization,
Metrology and Patents, Azerbaijan*

Aydin Samedov

Azerbaijan State Economic University, Azerbaijan

Rauf Mamedov

Azerbaijan University of Cooperation, Azerbaijan

In this paper, systematical tools and investigation methods of information control systems of firm business activity are discussed. The efficiency of electron circulation, work, economical efficiency of ISC “Azersun Holding” and ISK “Synergy Group” firms have been investigated. Electronic documentation system markedly increases the efficiency of firm management activity, as it is able to solve the following tasks by systems: to create unified data base; to develop the unified extensive zone for documentation system; to establish automatic system for management account and signed treaties to activate control system on various executions; to classify all the process related to business projects, to create a safe information system.

Key words: information systems; electron document circulation; economical; efficiency; information diagnostics

PERSPECTIVES ON USING THERMAL ENERGY FROM GEOTHERMAL WATERS IN AZERBAIJAN

Vagif Abbasov

*Institute of Petrochemical Processes named after acad. Y.H. Mammedaliyev of
Azerbaijan National Academy of Sciences, Azerbaijan*

Amina Mikaylova

Institute of Radiation Problems of Azerbaijan National Academy of Sciences, Azerbaijan

Famil Humbatov

Institute of Radiation Problems of Azerbaijan National Academy of Sciences, Azerbaijan

Ravan Mehdiyeva

Institute of Radiation Problems of Azerbaijan National Academy of Sciences, Azerbaijan

Javid Safarov

Institute of Technical Thermodynamics, University of Rostock, Germany

Developed countries have a wide range of opportunities by using alternative energy sources to meet the energy needs of their populations and economies. This is due to the protection of environmental cleanliness in energy production, the reduction of toxic substances released into the environment, and the efficient utilization of hydrocarbon resources. Alternative energy sources are divided into two groups: renewable and non-renewable.

Non-renewable energy sources such as oil, gas, and coal are not infinite and their scope is limited. Therefore, it is more expedient to use renewable energy sources. Renewable energy types include solar, wind, hydro, geothermal, wave, biomass, etc. Using renewable energy resources efficiently, it is possible to produce environmentally friendly and economically viable energy. The push towards efficient utilization of environmentally friendly energy resources is reflected in the “National Program of Azerbaijan on the Use of Alternative Energy Resources” and “Strategic Road Map” [1].

Azerbaijan has great potential in the use of alternative energy sources. Azerbaijan receives on average 1900-2200 kWh equivalent solar energy per square meter a year. Azerbaijan ranks ahead of many countries in this indicator. Just in the Absheron peninsula, it is possible to generate annually 4-4.5 billion kWh of electric energy by wind energy. Our country has the potential to use the energy of 172 million m³ of geothermal water with a temperature of 40-100 °C during a day [5].

Azerbaijan also has large thermal water deposits with high temperatures that can be used in household, residential buildings, and in greenhouses [8].

Geothermal energy is the energy of the heat sources that exist in deep layers of the Earth. As known, the temperature in the Earth's core is 6600 °C, and 15 °C on the surface. The temperature in the core emerges as a result of decomposition of radioactive substances on the Earth, which leads to the release of large quantities of heat. Thus, the large temperature difference between the Earth's core and the surface causes a strong heat transfer from the core to the surface. This heat flow creates strong geothermal heat sources by heating the rocks, water and other substances in the deep layers of the earth. When the geothermal energy carrier is a water vapor, it can be used for the purposes of generating electricity. Typically, thermal waters contain large quantities of dissolved gases and have high salinity. Therefore, there occurs a danger of scale formation in heat exchanges [3,6].

An important factor of thermal water is its temperature. The flow of hot geothermal waters at the depth of 5-10 km of the earth erupts from the earth's surface in the forms of steam and geysers. At great depths, the water reaches the state of so-called "water plasma". This state is characterized by the fact that on one hand, the water ceases to be water, and on the other hand, is not water steam. It occurs when, due to high temperatures, the velocity of molecular motion is comparable with the speed of molecular motion of steam, but the density remains in a liquid state as in water. Such steam-water mixtures are often thrown out to the surface in the form of geysers. These waters can be used as thermal energy for heating directly homes and greenhouses [2,4].

The forecasting exploitation resources of thermal waters over Azerbaijan are estimated as follows:

Southern slope of the Greater Caucasus – 2,000 m³/day (30°C -50°C),
 Guba-Khachmaz zone – 21,000 m³/day (40°C-70°C),
 Apsheron peninsula– 20,000 m³/day (20°C-70°C),
 Mountainous part of the Lesser Caucasus – 4,000-5,000 m³/day (30-74 °C),
 Nakhchivan AR – 3,000 m³/day (40°C-53°C),
 Talysh mountain region – 15,000 m³/day (31°C-43°C),
 Lenkoran plain – 7,000-8,000 m³/day (44°C-64°C),
 Kur-Araz lowland – 170,000 m³/day (22-94 °C),
 In Republic - 245,000 m³/day [7]

Depending on the geothermal features of the region, a change occurs in water temperature. It is the reflector of tectonic, age, hydrodynamic, as well as lithological features of water-bearing strata. The water temperature has a direct influence in the viscosity, filtration rate and also chemical composition and density. The change in density of pure water varies depending on the temperature 30°C - 0,9839 gr/cm³ 100 °C- 0,95838 gr/cm³. The water density also depends on temperature, gases, dissolved salt, as well as suspended particles [4].

In Azerbaijan thermal and thermo-mineral waters are widespread in local areas in rocks with different ages and lithium content. This water varies in temperature, flow rate, chemical and gas content, forecasting resources, balneology and so on. Wells in the depths of the Greater and Lesser Caucasus, as well as their natural exits in the Talysh mountain range, in the Samur-Devechi foothill plains, Absheron, Ganja-Garabagh-Mil, South-East Shirvan and Lankaran plains are used for balneological purposes. As the temperature of these waters changes in a wide range, their usage as an alternative energy source is not equally effective everywhere. However, in many regions of Azerbaijan, electricity, hydrocarbon, wood and other sources of heat are not sufficient; thus it is worthwhile to pursue thermal water use and recycling. From an economical point of view, thermal water use is helpful because it saves permanent sources of forests and fruit trees and hydrocarbon deposits for later or other uses. The estimated use of thermal waters in the country is 245,000 cubic meters per day. Depending on the pressure and temperature of the water (75-97 °C), such as heating water in direct heating networks, the temperature is at between 50- 75 °C, and can be profitably used in water and steam. Considering their complex chemical and gas content as well as their mineral aggression, their utilization and piping can be realized by applying the experience of other countries [5].

The investigation of thermal and mineral water deposits is theoretical and practical, and has the following applications:

- Sanatorium construction;
- Industrial bottling;
- Chemical industry;
- As a source of heat energy

At present, geothermal waters are used in Italy, New Zealand, Japan, the Philippines, Finland, France, Belgium, Germany, USA and other countries to produce thermal energy. For example, Iceland's capital, Reykjavik is completely heated by such waters.

It should be mentioned that, the temperature of the Khudat (Devechi), Shikhov (Absheron), Daridagh (Julfa), Salahly (Gazakh), Alasha (Astara), Neftchala (Kur-Araz), Tartar (Kur-Araz), Jarly (Kur-Araz) Arkivan (Masally) thermal water sources in Azerbaijan is $\geq 50^{\circ}\text{C}$. Their salt content is also different as are the depths of the wells. The depths of the wells are as follows in the order of the names listed above: 1300 m, 2400 m, 300 m, 450 m, 500 m, 1700 m, 850 m, and 600 m. The deepest well, then, is the Shikhov thermal water well (2400m), and the shallowest is the Daridagh thermal water well (300 m) [2].

We intended to take the thermal water samples from five wells with $\geq 50^{\circ}\text{C}$ temperature for analysis. Samples were investigated for element content by IRIS Intrepid II Optical Emission Spectrometer. As shown from Table 1, all samples have a high concentration for cations (Ca, K, Mg, and Na).

Table 1. Element content of thermal water samples

Elements	Unit	Tartar	Kurdamir	Neftchala	Khachmaz	Shikhov
Al	mg/kg	<0,1	<0,1	<0,1	<0,1	<0,1
As	mg/kg	<0,1	<0,1	<0,1	<0,1	<0,1
B	mg/kg	4,6	43,7	46,2	2,0	113
Ba	mg/kg	1,1	4,2	0,3	0,2	0,2
Ca	mg/kg	312	1583	7491	40,0	9,1
Cd	mg/kg	<0,1	<0,1	<0,1	<0,1	<0,1
Co	mg/kg	<0,1	<0,1	<0,1	<0,1	<0,1
Cr	mg/kg	<0,1	<0,1	<0,1	<0,1	<0,1
Cr	mg/kg	<0,1	<0,1	<0,1	<0,1	<0,1
Cu	mg/kg	<0,1	<0,1	<0,1	<0,1	<0,1
Fe	mg/kg	<0,1	<0,1	<0,1	<0,1	<0,1
Hg	mg/kg	<0,1	<0,1	<0,1	<0,1	<0,1
K	mg/kg	33,7	309	225	7,3	57,7
Li	mg/kg	0,3	3,2	3,0	0,2	4,0
Mg	mg/kg	45,5	313	1426	6,0	6,4
Mn	mg/kg	<0,1	<0,1	1,5	<0,1	<0,1
Mo	mg/kg	<0,1	<0,1	<0,1	<0,1	<0,1
Na	mg/kg	2933	13816	54374	568	7950
Ni	mg/kg	<0,1	<0,1	<0,1	<0,1	<0,1
P	mg/kg	<0,1	<0,1	<0,1	<0,1	0,4
Pb	mg/kg	<0,1	<0,1	<0,1	<0,1	<0,1
S	mg/kg	25,6	<0,1	379	44,6	450
Si	mg/kg	29,5	21,7	10,6	12,8	18,1
Sn	mg/kg	<0,1	<0,1	<0,1	<0,1	<0,1
Ti	mg/kg	<0,1	<0,1	<0,1	<0,1	<0,1
V	mg/kg	<0,1	<0,1	<0,1	<0,1	<0,1
Zn	mg/kg	<0,1	<0,1	<0,1	<0,1	<0,1

It should be mentioned that the specific difference of Kurdamir water is that there are B, Ba, and Li in its composition. Neftchala water has Mn, and Shikhov water has P. There is Sulfur in four of the waters taken for research. These are Tartar, Neftchala, Khachmaz and Shikhov waters. The temperature of five water samples which we have taken, varies between $41,5 - 50 \div 94$ C. The water pH is 6,7 - 8,2. As for the mineralization of the water, it is in line with the sequence of the above-mentioned waters (g/l): 59,8; 8,6; 1,6; 5,9; 23; 90,0; 13,6; 17,2. [2,9]. The water contains specific anions in the composition.

As seen, the highest mineralization is in Neftchala and Kurdamir waters, and the lowest in Tartar, Khachmaz and Shikhov. The high temperature (94°C) of Jarli water resources makes it promising as a heat carrier for agro-industry and household heating systems. However, the presence of cations (especially calcium) that create hardness and lower amounts of hydrogen sulphide in its composition requires the development of special technology for its use. The thermal waters in the territory of Neftchala contain methane gas and 90,0 g/l of mineralization and production of chemicals, in particular iodine and bromine, and thus, the usage potential of this water is increased [2,7].

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Summary

Perspectives on using Thermal energy from geothermal waters in Azerbaijan

Vagif Abbasov

*Institute of Petrochemical Processes named after acad. Y.H. Mammedaliyev of Azerbaijan
National Academy of Sciences, Azerbaijan*

Amina Mikayılova

Institute of Radiation Problems of Azerbaijan National Academy of Sciences, Azerbaijan

Famil Humbatov

Institute of Radiation Problems of Azerbaijan National Academy of Sciences, Azerbaijan

Ravan Mehdiyeva

Institute of Radiation Problems of Azerbaijan National Academy of Sciences, Azerbaijan

Javid Safarov

Institute of Technical Thermodynamics, University of Rostock, Germany

Thermal water sources in the territory of the Republic of Azerbaijan have high temperatures and rich mineral contents. It is known that thermal waters have a wide range of applications. Factors that limit the use of thermal waters are the composition of radioactive isotopes, salt precipitation after heating (scale formation), high corrosion and the aggression of water.

Geothermal waters can be used both in the households and in the heat supplies of settlements and heating of greenhouse farms in the country. The thermal water source with the highest temperature in the territory of Azerbaijan is the Jarly well. The temperature of these waters is $\geq 94^{\circ}\text{C}$.

According to the results of the research, it is possible to produce high quality agricultural products in an area of 10 hectares by using the thermal water sources in the territory of Azerbaijan as heat energy. As an alternative source of energy, it also makes it unnecessary to release flue gas into the atmosphere while effectively using thermal waters as well.

Key words: *Thermal water, alternative energy, fresh water, ecologically clean energy, temperature*

ELECTRICAL CONDUCTIVITY OF IODINE FUNCTIONALIZED CARBON NANOTUBES/POLIMER COMPOSITES

Sevda Abdullayeva

Research & Development Center for High Technologies (RDCHT), MTCHT, Azerbaijan

G.M. Abdullayev Institute of Physics, Azerbaijan National Academy of Sciences, Azerbaijan

Alexey Goryunkov

Lomonosov Moscow State University (MSU), Russia

Igrar Nazarov

Baku branch of the Moscow State University named after M.V. Lomonosov (MSU), Azerbaijan

Askar Huseynov

Research & Development Center for High Technologies (RDCHT), MTCHT, Azerbaijan

Introduction

One of the actual and progressive trends of industry of nanomaterials, in particular, modern materials science is the creation of new functional and structured materials with required properties [1]. Among them, the most promising and in great demand nanomaterials over the past two decades that has attracted tremendous attention of the researches from both an academic and industrial point of view are novel conductive polymer composites with nanometer-scale additives. Such materials have wide prospects for their potential practical application in many different areas such as transistors, sensing materials, energy storage and energy conversion devices, biomedical applications and so on [2-4]. In this connection the objective of the work is to produce novel conducting polymer/nanocarbon composites based on iodine-functionalized multiwalled carbon nanotubes (I-MWCNTs) and epoxy, silicone or polyurethane polymers and to study the effect of the functionalization of CNTs on the electrical characteristics of the composite materials.

MWCNTs were synthesized in the laboratory setup by the conventional aerosol-assisted chemical vapor deposition (AACVD) method [5]. Cyclohexane and ferrocene were used as a starting material and catalyst precursor, respectively. Iodination of MWCNTs was performed in a thick-walled quartz reactor. Sample of MWCNTs (1 g) and commercial crystalline iodine (3 g) were mixed and sealed in the quartz reactor under inert atmosphere (Ar). The quartz reactor was heated in a tubular muffle furnace at 350 °C for 3 hours. Obtained iodinated material was separated in two parts. The first part of iodinated MWCNTs were used as prepared and contained physisorbed and chemisorbed iodine (sample I/I₂-MWCNTs). The second part was subjected by several stages of washing with ethanol until the brown coloration of dissolved iodine was completely disappears. As a result, the second sample was enriched with iodine chemically bonded to MWCNTs (I-MWCNTs).

Several polymeric resins including polyurethane, silicone and epoxy were used for preparation of polymer/MWCNTs composites with various types of MWCNTs samples (impurity-free MWCNTs, I- and I/I₂-MWCNTs samples). To compounding, MWCNTs were dispersed in liquid resins followed by polymerization yielding a solid MWCNTs/polymer mixture [6]. The resulting products were transferred to metal rectangular mould and subjected thermoforming at 100 °C for 8 hours for completing of polymerization. The composition and nanomorphology of iodinated MWCNTs were studied by elemental analysis, IR spectroscopy and SEM/EDX microscopy. Registered current-voltage characteristics of MWCNTs/polymer nanocomposites makes possible to reveal effect of iodine derivatization of MWCNTs

and the nature of the polymer matrix on resistivity and conductivity of the nanostructured composites.

Results

The synthesized sample of MWCNTs is consisted of collateral arranged MWCNTs with an average outer diameter of 37 nm (SD of 13 nm) according to analysis of SEM data shown in figure 1a. Estimated from EDX data elemental composition of the MWCNTs sample corresponded 99.5 wt% of carbon with residual amounts of the iron catalyst of 0.5 wt%. SEM/EDX data of iodine-functionalized MWCNTs are shown in figures 1b and 1c. One can see, nanomorphology of carbon nanotubes was not changed after iodine treatment procedure. I/I₂-MWCNTs sample contained larger amounts of iodine (4.9 wt%) in comparison with I-MWCNTs sample (0.2 wt%). Thus, the only small part of iodine atoms was covalently bounded to carbon atoms of MWCNTs.

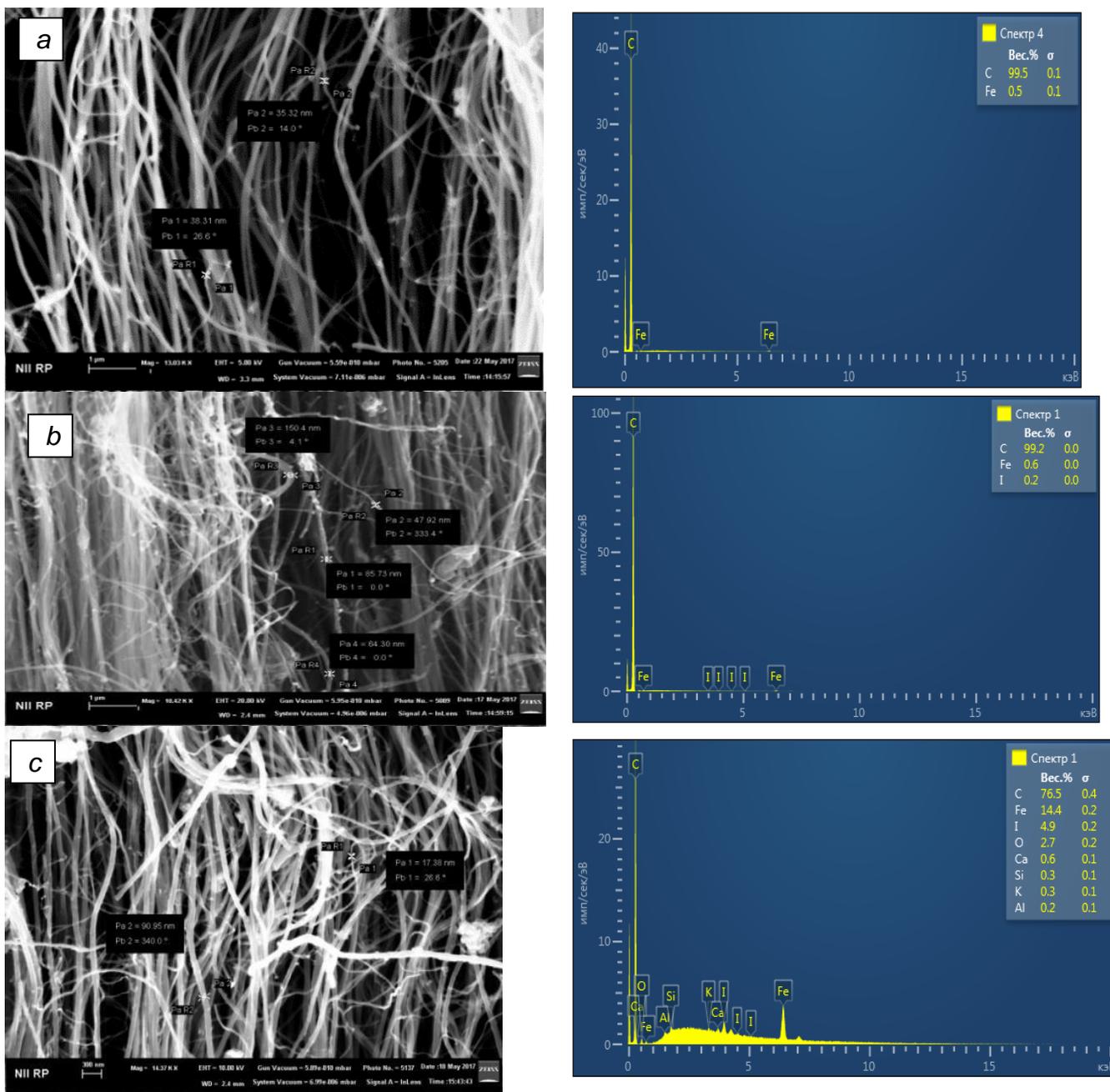


Figure 1. SEM images (left) and EDX data (right) for as-prepared MWCNTs (a), I-MWCNTs (b), and I/I₂-MWCNTs (c) samples.

To removing Fe-containing catalytic particles, MWCNTs were undergone treatment with nitric acid (28 % HNO_3). This kind of purification of MWCNTs is accompanied their partial oxidation with formation of carboxylic moieties. It consistent with IR spectra data presented in figure 2a; the spectra of purified MWCNTs sample revealed bands at 3430 and 1652 cm^{-1} which were assigned to stretching vibrations of OH and C=O, respectively.

At contrary to pristine MWCNTs samples, IR spectra of the I-MWCNTs samples contained intense band at 550 cm^{-1} within the typical region of C-I group (figure 2b). It indicates the presence of C-I bonds in iodine-modified carbon nanotubes. The same band was observed in IR spectrum of the sample I/I₂-MWCNTs sample (figure 2c).

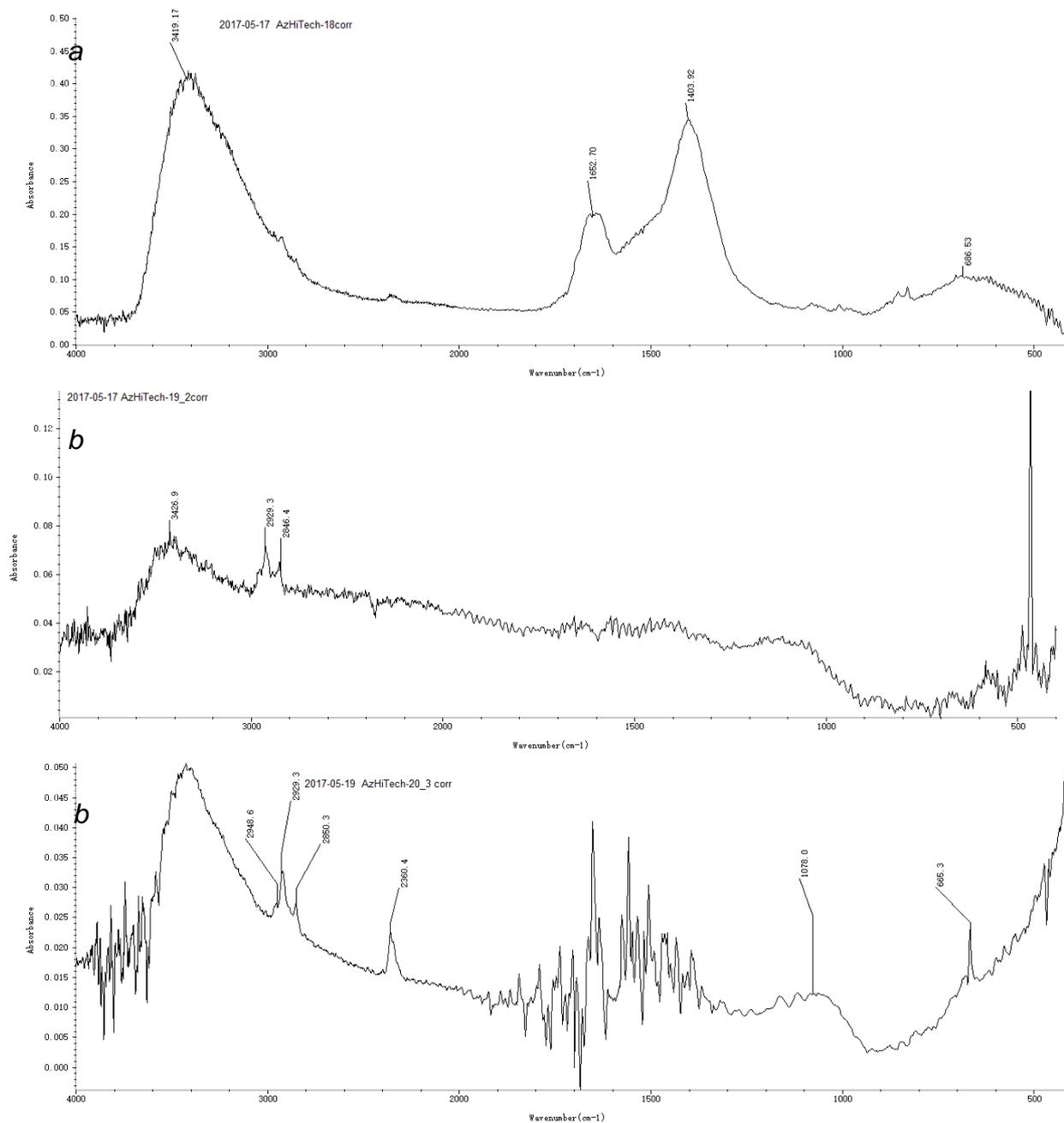


Figure 2. IR spectrum of pristine MWCNTs (a), I-MWCNTs (b), and I/I₂-MWCNTs (c).

Nine nanostructured composites based on three samples of prepared carbon nanotubes and three polymers (polyurethane, silicone and epoxy) were prepared. The current-voltage characteristics of the prepared composites were measured and used for determination of electrical resistance, specific resistance and conductivity listed in the table 1. One can see, the highest specific electrical conductivity was found in case epoxy resin and pristine MWCNTs composite.

Table 1. Electrical properties of the prepared nanocomposite materials^a

Composite	Polymer ^b	Additive ^c	R, Ohm	ρ , Ohm·m	σ' , S·m ⁻¹
1		pristine MWCNTs	49	$1.2 \cdot 10^{-1}$	8.2
2	PY	I-MWCNTs	$36.6 \cdot 10^3$	109.9	$9.1 \cdot 10^{-3}$
3		I/I ₂ -MWCNTs	49	$1.2 \cdot 10^{-1}$	8.2
4		pristine MWCNTs	58	$1.8 \cdot 10^{-1}$	5.57
5	Silicone	I-MWCNTs	221	0.5	1.95
6		I/I ₂ -MWCNTs	1300	3.9	0.26
7	Epoxy	pristine MWCNTs	42	$6.5 \cdot 10^{-2}$	15.4
8		I-MWCNTs	83	0.1	10.0
9		I/I ₂ -MWCNTs	9400	30.1	$3.3 \cdot 10^{-2}$

^a

According to the measured current-voltage curves. ^b PY – polyurethane. ^c 5 wt% of additive was used.

Three composites based on pristine MWCNTs and for epoxy resin, polyurethane and silicone matrices demonstrated gradual decreasing of specific conductivity from 15.4 to 5.6 S m⁻¹, respectively. At the same time, the matrix effect is changing in case of I-MWCNTs additive (composites № 2, 5, 8). The minimal conductance was observed for I-MWCNTs/silicone composite whereas I-MWCNTs/epoxy the composite kept the highest electrical conductivity.

The presence physisorbed and chemisorbed iodine also affects the electrical conductivity of the epoxide and silicone based composites. The electrical conductivity is much higher for composites with covalently bound iodine with MWCNTs, I-MWCNTs (samples № 8, 5) rather than composites with I/I₂-MWCNTs (where iodine is present simultaneously in both chemically bound and physisorbed forms, samples № 9, 6). For polyurethane composites (samples № 2, 3), the specific electrical conductivity also differed greatly, but in the case of I-MWCNTs based composite showed low conductivity.

Conclusions

MWCNTs were synthesized by using of AACVD method and carried out their functionalization with iodine. Novel MWCNTs/polymer composites based on the obtained carbon nanotubes and polymeric materials (including polyurethane, silicone and polyepoxide) have been developed. Current density–voltage characteristics of the fabricated nanostructured composites were recorded and the resistivity and conductivity values were estimated. It is shown that the electrophysical properties of nanocomposites based on iodine-functionalized MWCNTs are influenced both by the type of bonding of iodine with a carbon nanotubes (chemical bonding or physical adsorption) and by the nature of the polymer matrix in the composite.

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Summary

Electrical conductivity of Iodine Functionalized Carbon nanotubes/Polimer composites

Sevda Abdullayeva

*Research & Development Center for High Technologies (RDCHT), MTCHT, Azerbaijan
G.M. Abdullayev Institute of Physics, Azerbaijan National Academy of Sciences, Azerbaijan*

Alexey Goryunkov

Lomonosov Moscow State University (MSU), Russia

Igrar Nazarov

Baku branch of the Moscow State University named after M.V. Lomonosov (MSU), Azerbaijan

Askar Huseynov

Research & Development Center for High Technologies (RDCHT), MTCHT, Azerbaijan

Multiwalled carbon nanotubes (MWCNTs) were synthesized via the aerosol-assisted chemical vapour deposition method (AACVD) and modified with crystalline iodine. Nanomorphology and compositions of the prepared materials were characterized by means of SEM/EDX methods and IR spectroscopy. Novel electrically conductive nanocomposites based on iodine-contained MWCNTs and polymeric matrices (silicone, polyurethane or epoxy resin) were prepared. Influence of the MWCNTs functionalization and polymer nature on the electrical properties of the novel materials was revealed by means of measurements of the current-voltage characteristics and the electrical conductivity.

Keywords: *MWCNTs, AACVD, ferrocene, cyclohexane, xylene, polymers, silicone, epoxy, polyurethane*

THE MODIFICATION OF EPOXY OLIGOMERS WITH SOPOLICONDENSATION METHOD

Fariz Amirov

Azerbaijan State University of Oil and Industry, Azerbaijan

Tamilla Naibova

Azerbaijan State University of Oil and Industry, Azerbaijan

Narmin Rahimova

Azerbaijan State University of Oil and Industry, Azerbaijan

The development of various industries, including oil, engineering, agriculture, etc., is associated with the preparation of compositions based on oligomers with predetermined parameters. One of the main aspects of the preparation of such compositions is the modification of oligomers and compositions containing complex performance indices on their basis. Modified oligomers can be made as coagulants, composite compositions, such as varnish and dye coating composition, glue composites, layered plastics, electrolysis components, and so on. (1-3).

Composites based on epoxide oligomer are widely used in various industries. The reason is that its parameters can be adjusted during synthesis. Also, choosing the appropriate method of fastening epoxide oligomers is the improvement of key indicators by modification during its synthesis or processing. The most advantageous of these methods is its chemical modification. Adding a small amount of modifier to the system improves its physical-chemical and physical-mechanical performance.

The production of epoxide oligomers globally, including the United States, Western Europe, Japan, China, South Korea, Taiwan, is continuously growing. The former SSRI produced approximately 100,000 tons of epoxide oligomer per year, including various epoxy-dian oligomers manufactured at the Sumgayit Organic Synthesis Plant. At present, the main part of production of epoxide oligomers in Russia (~ 90%) is made at "Uphahimprom" in Ufa. It is possible to obtain epoxide oligomers in various aggregates, solid, soluble and fluid. It is used mainly in the preparation of powdered colors (dyes) from ED-8 epoxy-dian oligomers obtained in solid form.

The main raw materials in the production of epoxide oligomers are epichlorhydrine and diphenylpropane. In many cases, diphenylpropan is another substitute, for example, resorcin. But both ecological and economically diphenylpropan are considered favorable. That is, more than 75% of the world-wide epoxide oligomer is produced by diphenipropane. In the study, the process of benzoquanamine modification of epoxide-dian oligomers was investigated.

The goal is to completely eliminate the deficiencies, the obscurity of the oligomer, and to enhance its stiffness and stickiness. The modification of epoxy-dian oligomer by copolymerization was carried out in the laboratory reactor equipped with thermometer, refrigerator and mixer. The basic physical-chemical and physical-mechanical indicators of modified and sulluomer-derived saponicondensation (by addition of benzoquanamine 3-monomer) were studied (4-5)

For comparison, the key indicators of unmodified epoxy-dian oligomers have been studied and the results are given in the following table:

<u>Number</u>	<u>Indicators</u>	<u>ED-22trade-mark epoxy-dian oligomers</u>	<u>Modified with benzoguanamine epoxy-dian oligomers</u>
<u>1</u>	<u>Appearance</u>	<u>light yellow</u>	<u>white</u>
<u>2</u>	<u>Quantity of epoxy groups %</u>	<u>21,8-22,0</u>	<u>17,8-19,6</u>
<u>3</u>	<u>Quantity of hydroxy groups %</u>	<u>0,2-0,8</u>	<u>0,6-1,8</u>
<u>4</u>	<u>Molecular mass</u>	<u>390-450</u>	<u>483-550</u>
<u>5</u>	<u>Softening temperature °C</u>	<u>65-70</u>	<u>80-85</u>
<u>6</u>	<u>Density, kg/m³</u>	<u>1240-1250</u>	<u>1300-1320</u>
<u>7</u>	<u>Stickiness;MPa</u>	<u>20-25</u>	<u>30-32</u>
<u>8</u>	<u>Heat resistance °C</u>	<u>140-150</u>	<u>150-170</u>
<u>9</u>	<u>Visconsi Fy of 50% solition in V₇₋₄ machine, sec.</u>	<u>50-55</u>	<u>60-65</u>

It is also known from the analysis of the IQ and NMR spectra of benzoquanamine (sooliomeric) of benzoquanamine by epoxy-dian oligomers (6) that the modification of epoxy-dian oligomers is a chemical modification and retains its ability to function as reagent functional groups on its basis as a coagulator.

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Summary

The modification of Epoxy Oligomers with Sopolicondensation method

Fariz Amirov

Azerbaijan State University of Oil and Industry, Azerbaijan

Tamilla Naibova

Azerbaijan State University of Oil and Industry, Azerbaijan

Narmin Rahimova

Azerbaijan State University of Oil and Industry, Azerbaijan

Epoxy organosilicon oligomers have been used as the principal components of coatings, adhesives, reinforced plastics, and casting compounds. The modification of epoxy oligomers with organosilicon compounds of different nature makes it possible to increase the yield temperature and physicochemical properties of the composites. In the article, the epoxide is modified by benzoquinamine of the oligomer. The main parameters of the received oligomer were studied, and it was recommended for use as a co-ordinator for the preparation of various compositions.

Key words: *Epoxy oligomer, polycondensation method, modification of benzoquinamine, composite adhesive, ED 22, ED 8*

AN ASSESSMENT OF GEOTHERMAL ENERGY TECHNOLOGY AND THE ROLE IT MAY PLAY IN SUSTAINABLE DEVELOPMENT

Farhad Akbarov

Azerbaijan State Oil and Industry University, Azerbaijan

Just two centuries ago, before the oil era the world used renewable and ecology friendly energy sources only: rivers and sea tides, moved water wells, windmills, and ships. However, since the 19th century more and more increasing race of rapid industrial development required super intensive exploration and use of fuel first. This led to the rapid depletion of fossil carbon reserves and to the continuous increasing threat of the greenhouse effect of the atmosphere and its radioactive pollution. So, on the eve of the 21st century the world had to revert to safe and renewable energy sources such as wind, solar, geothermal, tidal power, biomass energy plant and animal life products, and to create and successfully operate new unconventional power plants such as tidal power plants, wind power plants, solar power systems, wave power plants and geothermal energies. This report examines the role of the last of mentioned sources among the nominees for the role of member of future energy mix.

It is clear that one source of energy cannot replace the others, but together with other nominees can make a contribution to the reduction of CO₂ emissions to the atmosphere.

The possibilities are:

Fossil fuel	Sustainable source	Renewable source
Coal; Oil; Gas	Electricity; Nuclear	Hydroelectricity; Solar; Wind; Maritime (Wave; Tide); Geothermal.

This does not mean that fossil fuels are to blame, rather, our usage should be examined. Chemists would confirm that oil is not for burning. A lot of product could be produced from it as it was described in our lectures. So we need coal, oil and gas in the future. Even now, fossil fuels could help in pollution reduction; if coal could be change to oil and oil to gas it would reduce greenhouse gases. It means that oil is more environmentally friendly than coal and gas is more environmental friendly than oil.

Countries which have natural gas extracted from the deep wells (the deeper well the cleaner the gas) have successfully taken part in the CDM (Clean Development Mechanism) projects. So, let's calm oilmen (ourselves): We will need coal, oil and gas in the future, but they are not to be so unreasonably burnt. Let's remember Mendeleev "To burn oil means to stoke a stove with banknotes". Fossil fuels are needed in the future, but if to be burnt, first it must be passed through CCS (Carbon Capture and Storage) process, it could be done during processes Coal to Liquids (CTL); Gas to Liquids (GTL); Biomass to Liquids (BTL) by Fischer –Tropsch synthesis. But to reduce fossil fuel burning, we need widely use renewable sources of energy, one of which is geothermal energy.

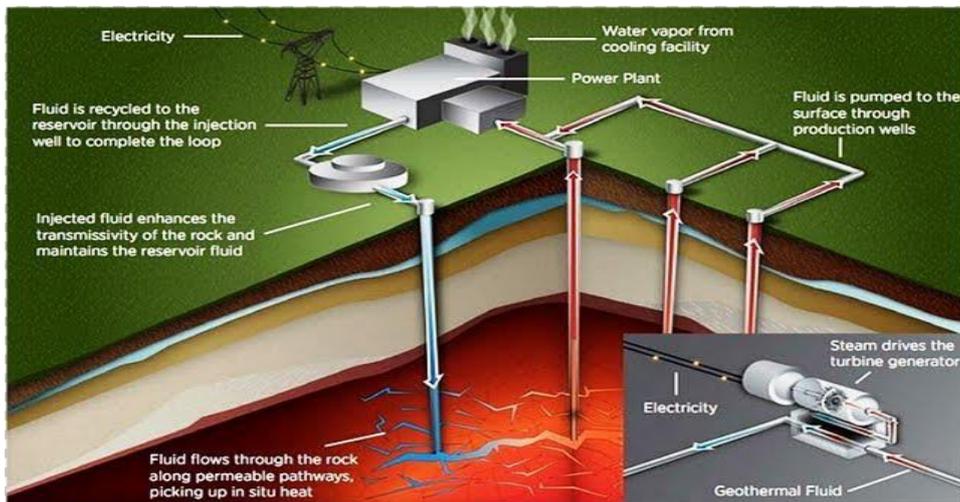
Geothermal energy is the energy derived from the natural heat of the earth. To achieve this heat, people need to drill wells (Picture 1). Geothermal gradient in the wellbore is increased by 1 ° C every 36 meters of well depth. This heat is delivered to the surface in the form of steam or hot water. This heat can be used directly for heating of houses and buildings, or to produce electricity. In volcanic areas, the circulating water is superheated above boiling temperatures at relatively shallow depths and along fractures, the water rises to the surface and forms geysers.

According to various estimates, the temperature at the centre of the Earth is at least 6650°C. The rate of cooling of the Earth is approximately equal to 300-350°C in a billion years. Land allocated 42×10^{12} Watt

of heat, of which 2% is absorbed in the crust and 98% - in the mantle and core. Modern technology cannot provide the heat that is released too deep, but 840,000,000,000 W (2 %) available geothermal energy can provide for the needs of humanity for a long time. The areas around the edges of continental plates are the best place for the construction of geothermal power plants, because the crust in these areas is much thinner.

In 2009, the total capacity of 77 geothermal power plants in the United States amounted to 3086 MW. Until 2013 the country plans to build more than 4,400 MW. In the Philippines, the production of steam from geothermal sources provides about 27% of all electricity in the country. Mexico, Italy, Kenya also have geothermal power plants. In Iceland, there are five geothermal district heating power plants produce 25% of all electricity in the country. One of these stations supplies the capital, Reykjavik. Stations use underground water, and the excess water is drained into a giant pool to be used.

Israel is one of the largest producers of geothermal energy in the world. It is cooperating on this issue with the United States.



Picture 1. Structure of geothermal power station.

Advantages and weaknesses

<p>Advantages:</p> <ul style="list-style-type: none"> • lack of pollution and carbon emissions • no need in fossil oil burning • renewal ability of the energy source • possibility of direct use of thermal energy • input in smart house heating concept • low cost of operating in comparison with the thermal power plant • ideal heat transfer agent in the face of hot water or steam 	<p>Disadvantages:</p> <ul style="list-style-type: none"> • problem of drilling in the remote and isolated sites • problem of producing energy transportation • limited number of sites with geothermal energy
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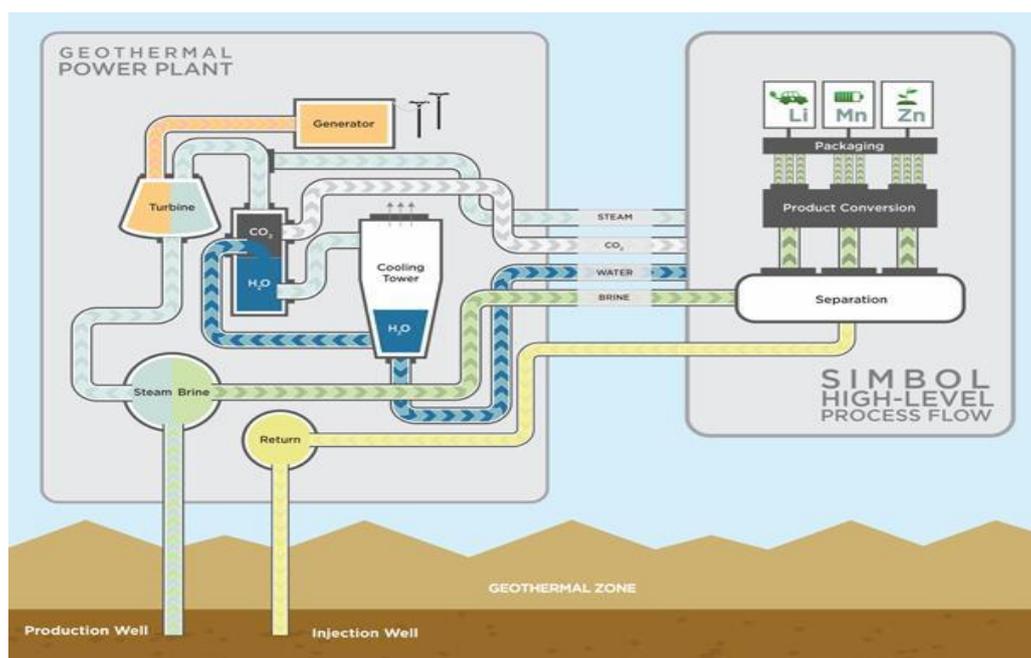
Geothermal energy is used not only in industry, but also in the house building and could contribute in the smart house concept. Geothermal technology uses a permanent inexhaustible energy source as follows: in the ground at a depth of about 1.8 meters pipes are connected to a pump and a heat exchanger device. This technology is completely safe for the environment.

In 2012 the commercial plant for the extraction of Lithium as bypass product of geothermal power stations. According to Technology Review, the world demand for Lithium compounds in 2010 was 102,000

tons, and by 2020 it is expected to grow to 320,000 tonnes. This mainly will be due to mass adoption of electric vehicles and hybrids, followed by the growth production of lithium batteries.

This technology has been developed by new California-based “Simbol Materials” company. It was decided to build a plant for the extraction of Lithium, Manganese and Zinc from hot brine, circulated in a pipe system of the 50 MW geothermal power plant near the Salton Sea. Being raised from the depths, it contains 30 % of dissolved substances, including so interested Lithium, Manganese and Zinc. Now the mixture is used only for the production of steam, which turns a turbine, and the waste brine is simply pumped back into the aquifers. With new technology, fluid is directed into a series of filters that derive from it the desired compound. They will be separated, purified and sent to the consumer.

The scheme of combining geothermal plant with the production line of Lithium is shown in Picture 2.



Picture 2. Scheme of combining of geothermal station with lithium manufacturing line (by Simbol Materials)

In the near future, the capacity is going to be 16,000 tons of lithium carbonate per year. This order is comparable to the power of the world's major manufacturers of the lithium. Simbol Materials emphasizes that it has developed a system, which can be easily connected to the existing geothermal power plants. The company hopes to expand its innovation on several other objects, tripling the production of lithium by 2020. Currently lithium is being produced as mining minerals with process at great expense of energy, water, land, and with the associated "production" of the mountains of waste.

In new technological processes, the circuit with power lithium-rich solution is raised to the surface and it is only processed, and used for it geothermal plant resources, heat and water. If the company's plan succeeds, it will help the U.S. reduce its dependence on imports of lithium, and if the idea was picked up in other countries, the world will get an additional source of important raw materials.

Nowadays the global geothermal potential remains under-used, particularly in developing countries due to a lack of investment. Geothermal wells are not cheap, and its operation requires skilled and well-trained personnel. But world has great experience in oil and gas well drilling. Even offshore thermal well drilling does not seem to be a big technical problem. It is clear that investors could not be attracted only by environmental reasons – they need economic reasons.

The possibility to utilize bypass product will render the investment profitable and could boost the sector by developing of technologies of utilizing energy of underground earth's dry hot rocks. Depleted oil and gas fields could be also used to inject water inside and have thermal energy extracted water or steam.

Moreover, there are lots of reservoirs with very high temperature (over 400°C), where the water is neither liquid nor steam, what is known as a "supercritical" state. With these reservoirs, drilled wells will deliver power ten times as much as traditional wells. The potential development of submarine geothermal resources is another area currently being investigated.

Conclusions

No one source of energy could change the energy market at once. To cover energy demand, fossil fuels will be needed for years. But people must use new technologies of synthetics to prevent or at least limit pollutions. It is possible and will be followed by increasing of the part of the sustainable and renewable sources of energy. The industry and transport of fossil fuels have mostly affected the greenhouse gas concentration.

The world gets closer to the anti-carbon dioxide pollution revolution by more widely using clean alternative energy sources. Even though the geothermal energy is not very widely used in the world, it has triple effect on the clean energy boosting: 1) Renewable heat energy for thermal power station without fossil fuel burning; 2) Smart house heating by geothermal energy pumped by heat pumps from beneath the earth; 3) Bypass product of lithium for lithium-ion batteries production will be very important for the car mass electrification that is the base of the anti-carbon dioxide pollution revolution.

According to above mentioned points, it is very likely that geothermal energy will play a crucial role in future energy mix. So, oilmen can be confident in their future demand. Future mission of oilmen is to provide the world with clean and unlimited energy source in the face of thermal energy.

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Summary

An assessment of geothermal energy technology and the role it may play in Sustainable Development

Farhad Akbarov

Azerbaijan State Oil and Industry University, Azerbaijan

This article provides an assessment of geothermal energy technology and its role in the future energy mix, i.e. its impact on future energy demand and the environment. This report contains advantages and challenges regarding the chosen source of energy. To assess the role in the future energy options I needed to know what energy mix is predicted to be in the midterm and a longterm future and what energy sources are welcomed in the future concerning sustainability, renewal ability and environmental friendliness.

Besides the geothermal electrical power technology, I also wanted to show the geothermal energy (earth heat) use for housing heating method, i.e. impact in the smart house technology. The bypass product of the thermal stations processing, exactly the technology of extracting lithium from the working brine was very promising. Lithium is going to have a critical role in the very important world car electrification project as it is considered being the best source for the Lithium-ion car batteries.

This paper uses a variety of sources, including books and YouTube videos. Some sources from the Internet needed critical analysis and are not considered in this report. At the end of report I concluded that geothermal energy with its bypass product of Lithium will have a crucial role to play in the future energy mix as a clean source of energy.

Key words: *Geothermal Energy, Earth heat, Energy Security, Clean energy, Future Energy mix*

MONITORING THE EFFECTS OF POISONING CAUSED BY TOXIC SUBSTANCES

Irada Mirzazadeh

Azerbaijan National Academy of Sciences, Azerbaijan

Ulkar Naghizade

Clinic of internal medicine and geriatrics of Hospital Marbach, Germany

1 . Introduction

According to the World Health Organization, “prompt and adequate treatment of acute poisoning can save lives by minimizing the impact of poisoning ”. Even if the poisoning was discovered and treated in time, however, its effects can linger and arise after a long period of time. A few weeks later, Parkinson’s and heart muscle damage inflicted deaths can occur. Clearly, these people are poisoned by toxic substances are in need of long-term monitoring [1]. Monitoring involves changing position of the object, and its performance is desirable observation or comparison with the previous observations.

Along with the diagnosis of poisoning by carbon monoxide poisoning in order to forecast has a great importance for the consequences of monitoring. The health status of a poisoned person should be observed during a certain period of time. During the monitoring, statistical data analysis methods can be applied.

2 Statistics and Literature review. The number of people affected by carbon monoxide poisoning in Central Europe and Southwestern Europe over the year 2004 is shown in Table 1 [2, 3].

Table 1. Consolidated Table of carbon monoxide poisonings

Country/Region	Extrapolated Incidence	Population Estimated Used
Carbon monoxide poisoning in Central Europe (Extrapolated Statistics)		
Austria	3,406	8,174,762
Czech Republic	519	10,246,178
Germany	34,343	82,424,609
Hungary	4,180	10,032,375
Liechtenstein	13	33,436
Poland	16,094	38,626,349
Slovakia	2,259	5,423,567
Slovenia	838	2,011,473
Switzerland	3,104	7,450,867
Carbon monoxide poisoning in the Southwestern Europe (Extrapolated Statistics)		
Azerbaijan	3,278	7,868,385
Portugal	4,385	10,524,145
Spain	16,783	40,280,780
Georgia	1,955	4,693,892

Table 2 demonstrates the number of people who suffered from carbon monoxide in the city of Baku throughout 2006-2016.

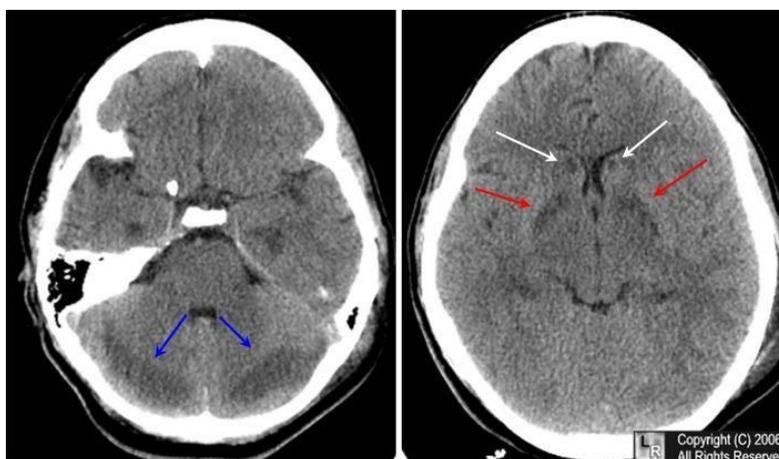
Table 2. Information on poisonings in the city of Baku during 2006-2016

№	Districts of Baku	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
1	Narimanov	41	38	38	48	69	121	127	118	105	137	77
2	Khatai	77	159	154	82	106	135	192	126	161	201	177
3	Sabayil	47	26	36	41	42	85	109	88	139	74	94
4	Yasamal	57	64	88	483	118	137	151	132	76	116	183
5	Nasimi	20	103	186	122	129	221	237	178	187	185	100
6	Nizami	-	40	63	54	64	123	171	200	197	175	159
7	Binagady	53	70	217	129	190	316	395	378	371	419	493
8	Khazar	-	-	9	9	17	26	36	63	78	91	87
9	Surakhany	34	33	59	62	70	141	141	193	185	185	199
10	Sabunchi	30	43	111	72	107	147	221	202	158	177	271
11	Karadag	42	83	83	86	98	115	232	145	206	166	139
12	Pirallahı	-	-	-	-	-	-	-	-	25	23	19
13	Total:	401	659	1044	788	1010	1567	2012	1823	1888	1949	1998

The different parts of toxic substance treatment, including carbon monoxide poisoning includes diagnosis making, management and treatment, and antidote therapy. These methods complement each other and are carried out under the supervision of a doctor, but one of the main problems that is not always apparent until after a long time is the importance of the patient's long-term condition after treatment. Studies have shown that carbon monoxide poisoning is not only harmful effects to the human body, but that its results still manifest after a long period of time. This is mainly seen in disorders of the nervous system and cardiovascular system diseases. According to scientists, among those poisoned by carbon monoxide, 37% of patients suffered from cardiac muscle damage. 1/4 of the poisoned people had died after 7 years. Professor Timothy Henry, an eminent American Cardiologist expert, says that "the main result of the study of carbon monoxide poisoning is the delivery of long-term negative impact on health." According to Henry, the number of patients who suffered from myocardial injury from carbon monoxide poisoning have higher mortality rates [4].

The factors that affect mortality include the source of carbon monoxide poisoning, concentration of toxic substance, amount in the body, how fast medical attention is received, and how adequately it is provided. In general, higher amounts of carbon monoxide mean higher mortality. However, a gap is observed in 2% of patients who had severe poisoning neuro-physiological. More than 10.8% of the patients after 3 years suffer neuro-physical disorders (memory disturbance, personality disorders) (Fig. 1).

Figure.1. Carbon monoxide poisoning. Unenhanced CT scan of the brain about 16 hours after injury shows bilaterally symmetrical low attenuation lesions in the cerebellum (blue arrows), globus pallidus (red arrows) and caudate nuclei (white arrows). The patient was in a house fire.



In recent years, innovations in the chemical and construction industry have led to streets surrounded by tall and thin skyscrapers on both sides. Though traffic congestion is reduced with respect to the speed of vehicles, carbon monoxide emitted from vehicles accumulates in the air near-surface where people breathe in a closed environment. Carbon monoxide collected in the atmosphere in less windy conditions also creates a dangerous situation for the health of people. All of these lead to chronic intoxication. One of the reasons for the increase of cardiovascular diseases is chronic intoxication. For these reasons, the following needs to be considered:

- Differential diagnosis of patients in comatose states;
- Health surveillance to poisoned person after a certain period of time.

3. Methods

Solution of the first problem is carried out using mathematical and artificial intelligence methods in intelligent information system. The second is monitoring issue after receiving treatment outcome. Monitoring is advisable for both those poisoned once and also for persons affected by chronic intoxication.

Monitoring needs to be conducted after successful treatment in a hospital. Therefore, starting time of monitoring should coincide with the end of the treatment. Functional parameters and biochemical analysis of carbon monoxide victim needs to be checked from time to time during the monitoring (fixed time interval). The type of poisoning needs to be checked in relation to the cardiovascular and nervous systems. Patients should be monitored with the same tests during the duration of the monitoring period as determined.

Analysis should be checked in a certain time interval to carbon monoxide victim after antidote therapy and appropriate treatment in order to control the situation. Double autocorrelation and non-parametric methods [5] are used for comparison and detection of analyzed results with most specificity. Any change or signs in the patient could be observed by using these methods. The application of appropriate methods allows the assesment of independent indications, symptoms assesment of before and after treatment, assesment of the differences between the dynamics of change and plays an important role in the detection of change differences.

4. Monitoring Tips

Time changes in carbon monoxide poisoning should be controlled after receiving treatment in order to avoid the consequences of toxication. Time series method is used in those situations. The basis of time series analysis is that former happenings have important indications for future happenings. Time series data is a sequence of successive moments of time, which reflects the situation. In contrast to randomly selected analysis, time series based on observation data of equal times. Time series can be often found in medicine. Time series analysis has two goals: determination the nature of queue and prognosis. In both cases, the model must be specified before the turn to the interpretation of the data.

According to the analysis of time series, data consists of a systematic component and a random voice complication detection components which are arranged in a regular variable. The majority of research methods allows to observe the change in the index on a regular basis using a variety of methods for filtering noise. Routine variables of time series have two classes: either the trend or seasonal components.

Change dynamics reflects the trend. The trend consists of the variable components changed throught the time organized in a systematic linear or non-linear. The seasonal component is repeated periodically [6].

Time series process used to identify prognostic factors of data in the past, today linked to a similar effect in the near future. Analysis of observations is a continuous process which estimated in a certain discrete moments of time (when you can evenly across the distribution). For that reason indications which can cause a dangerous development in near future should be selected (months, sometimes years).

There is not automated method for detection of time series. If the trend (increasing or decreasing) is monotone, the queue is not difficult to analyze. If the time series has enough offense, in that case smoothing process should be conducted primarily as a method of filtration.

Smoothing process is a kind of moderation of data. In this case, the non-systematic errors repel each other. The most common method of smoothing method is moving average, when m the members of the neighboring row of each member shall be replaced by a simple average, $m - 1$ is aprice of intervals. Also, the trend is to be used for the detection of exponential smoothing. If there is non-linear component, a set of data needs to be carried out to remove it. For this reason, most of the time logarithmic, exponential, or polynomial transformations can be used. In some cases, the least squares method is carried out in the smoothing. All of these methods are given the relatively smooth line noise filtering, transforms to circle.

Moving average method determine the start of a new trend, also warns of the end or return. This method allows you to keep track of the development process, it can be viewed as trend lines. However, this method is not used for making predictions, because it follows a trend, but it can't predict only shows the start of a new trend. Smoothed curve and the trend observed during the performance of the simplified average, short-term floating-average rate reflect dynamics more accurately for long intervals calculation.

Moving average is defined as follows:

$$y_t = \frac{1}{m} \sum_{i=t-p}^{t+p} y_i, \quad (1)$$

where y_i - value of the i -th level; m - the number of levels from smooth intervals - $(m = 2p + 1)$; y_t dynamic row of the current level; i - number smooth level range; p - m single range value $p = (m - 1)/2$

Smooth change interval depends on the determination of the indicators. Thus, indicators of irregular, small changes smooth interval are assumed to be more. If you are required to take into account changes in smoothing, small gap becomes smaller.

Moving average method is used if time series is organized in straight line because this time is not misrepresenting the dynamics of the index. If the range is non-linear, usage of this method can cause distortion of indicators. It is used when smoothness is exponential [7].

Analytical smoothing method is an identification of development trends as time series function.

$$\hat{y}_t = f(t), \quad (2)$$

where \hat{y}_t - theoretical value of time series with analytical expression for the time t -time. Theoretical value are derived from the mathematical model.

Indicating the trend of development, the following features are implemented:

- The linear function with straight line graphs:

$$\hat{y}_t = a_0 + a_1 t$$

- Exponential function

$$\hat{y}_t = a_0 * a_1^t$$

- Exponential function second degree (parabola)

$$\hat{y}_t = a_0 + a_1 * t + a_2 t^2 ;$$

- Logarithmic function:

$$\hat{y}_t = a_0 + a_1 \ln t$$

Estimation of functions parameters are carried out by least squares method. In this case, the solution is the minimum value of the sum of theoretical and empirical levels squares:

$$\sum (\hat{y}_t - y_t)^2 \rightarrow \min, \quad (3)$$

where \hat{y}_t - calculated, y_t - real levels.

Smooth on a straight line is used in cases where the increments are fixed.

Smooth with exponential function is applied in geometric changes in the when there is a steady increase in the ratios.

Secondary exponential function smooth is used to changes dynamic range and stable chain increases.

The smooth on logarithmic function reflects growth of the number of decrease, the recent increase in the time series.

Counting accuracy of the analytical expressions is defined as follows: sum of empirical series of price must coincide with the sum of the smoothed series levels. In this case, small errors can occur due to the calculated values:

$$\sum y = \sum \hat{y}_t. \quad (4)$$

Autocorrelation is used to determine patterns of additional data change in time series smooth method. Autocorrelation function, determine indication whether it is increasing or decreasing based on seasonal fluctuations.

Determination model is used to assess the trend model accuracy:

$$R^2 = \frac{\sigma_{\hat{y}}^2}{\sigma_y^2}, \quad (5)$$

where, $\sigma_{\hat{y}}^2$ - theoretical model dispersion of the data variance, σ_y^2 - empirical dispersion of the data.

Trend model shows development tendency of R^2 close to 1 indicators in values. According to the time series method, data processing is carried out in three stages:

In the first phase filtering is carried out not to take into consideration distortions resulting from seasonal or other changes. The main goal of filtration is to find out y -changes affected from x -changes, eliminate factors that will affect that relationship further. A few known methods for filtering floating above the average value is the most widely used.

According to the moving average price at the time of moving to and fro in the price index is calculated by determining the average number. In this situation, the long-term periods doesn't show accurate value compared to the changes in the short-term periods. However, filtration should be conducted carefully. Important information may be lost as a result of the smoothing filter. Therefore, filtration should be carried out in several ways, the results should be verified with the help of correlation analysis.

The second stage is a conduction of the forecast index. For this reason regression model selection and installation is carried out.

Regression analysis is used for two reasons:

- Detection of relationship between the measured parameters;
- Prognose of the value of a variable based on the value of regression equation for non-dependent.

Monitoring with carbon monoxide poisoning shows interesting facts according to the method of time series in the monitoring of indicators to determine whether certain moments of time, but also forecast of the change indicators. Time series method is using to show the chagned indicators of regression equation by time to time. Single regression equation shows the variation of the moments and observation of a person poisoned by a factor. Changes of signs in time, creates time series of dynamic rows. The characteristics of that rows is time factor (x), and dependant variable (y) factor, the sign of the value change. The dependence between them can be shown as regression equation.

The changes indications by using the method of time series depends on single factor regression equation or multivariate factor of regression equation. In addition, the figure forecast in a single-factor regression equation is given by:

$$= a + b * (6)$$

where a - the free member; b - determines the slope of the regression line rectangular axes. According to the least squares method to determine the parameters of the equations will be as follows:

$$a * n + b \sum = \sum y \quad (7)$$

$$a \sum x + b \sum x^2 = \sum y * (8) \text{ Formulas}$$

given for determination of parameters:

$$= y - b * (9)$$

$$b = \frac{\sum x - \bar{x} \sum y}{\sum x^2 - \bar{x}^2} (10)$$

Multivariate regression equation is used to monitor and prediction of the dynamics of change of many traits at the same time:

$$\hat{y}_x = a + b_1 x_1 + b_2 x_2 + \dots + b_m x_m (11)$$

Based on the assumption of multivariate regression testing is not possible, dependants becomes more obvious on the basis of the probabilities. Because the regression coefficients for the various tendencies traits values cause a shift in the regression line, and can change direction. Even one trait value in the presence causes a change in the outcome. Despite it is necessary to monitor the observation of a large number of indicators in carbon monoxide poisoning, more realistic indication of each individual was considered more appropriate to the forecast by the factorial regression. This has been confirmed in numerous experiments. The prognosis by regression equation is given for a certain time after the end of the monitoring period.

In the third stage, the quality of the model should be estimated.

The regression is carried out by adequacy of the model determination:

$$R^2 = \frac{\sum_{i=1}^N (\hat{y}_i - \bar{y})^2}{\sum_{i=1}^N (y_i - \bar{y})^2} \cdot (12)$$

where - \hat{y}_i - relevant to x_i the theoretical or estimated value y_i .

Determination coefficient shows variables depending on the degree of compared dispersion. The adequacy of the regression equation is increasing in respect to R^2 high value. Determination coefficient regression model useful for prediction. The regression equation for the determination of a criteria of Fisher are used:

$$F = \frac{R^2}{1-R^2} * \frac{n-m-1}{m} \quad (13)$$

where R - determination coefficient, n - number of observations, m - number of parameters in x variables (the number of factors in linear regression model).

This criterion assesses the significance factors included in the regression equation. Calculated F -value of the significance level α , are compared with 1 and $n-m-1$ in table value. If the calculated F value exceeds the value of the table, ie, $F \geq F_{table}$, then x factor included in the model is statistical significance. If the calculated F is less than table value, x variable doesn't affect to y variables changes and the inclusion in the model is inappropriate.

Determination coefficient with the help of correlation is defined as follows:

$$r = \sqrt{R^2} \quad (14)$$

Determination coefficient, $-1, +1$ varies in correlation coefficient. Determination coefficient is close $+1$ shows close relation of y variables with x factor to prove that indicator is the most significant factors for formalization of consequences. In this regard, the regression model can be used to forecast the indicator.

The indicators selected for monitoring medicine will be:

$$x_i \in \{X\}, i = \overline{1, n}$$

where x_i - indicator.

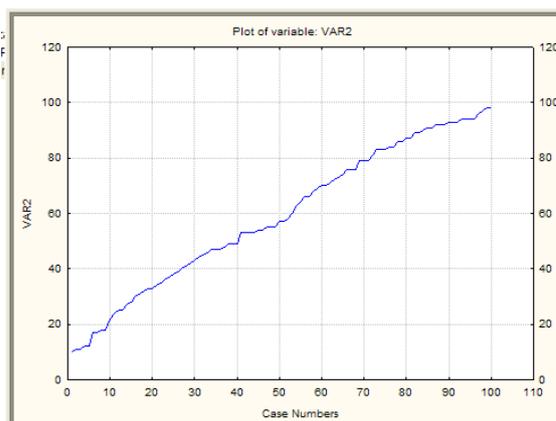
There are ending regulatory values for given parameters. Based on this, there is specific change interval for $\forall x_i$ (in some cases, the standards are different for men and women). Standards in accordance with the upper and lower boundaries is y_i and z_i . Then

$$y_i < x_i < z_i$$

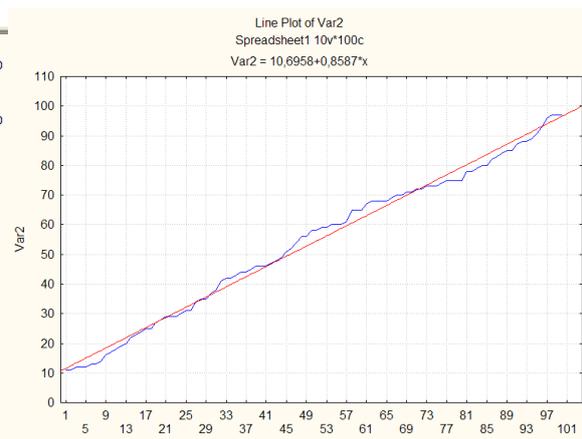
should be. Each x_i is observed in $T = \{t_1, t_2, \dots, t_k\}$ time. k - is the number of measurements. Then x_i^j can be described as an arbitrary parameter, where $i = 1, 2, \dots, n, j = 1, 2, \dots, k$. Lower and upper variables can be considered as pathology:

$$x_i^j < y_i \text{ or } x_i^j > z_i$$

Autocorrelation functions are established for observation of any change of variable x_i^j in $T = \{t_1, t_2, \dots, t_k\}$ time. It should be noted that the numbers do not reflect the cost of health indicators, the random number generator has been used. K as the number of points used in the determination during the observation period, sometimes it means the number of years or monthes. For example, 100-point numbers with a given distribution (fig.2a), trend (fig.2b), smoothing curve (moving average) (fig.2c), forecasting (fig.2d), shown a certain time autocorrelation (fig.2e) and partial autocorrelation function (fig.2d). This series show ascending value of numbers.



a)



b)

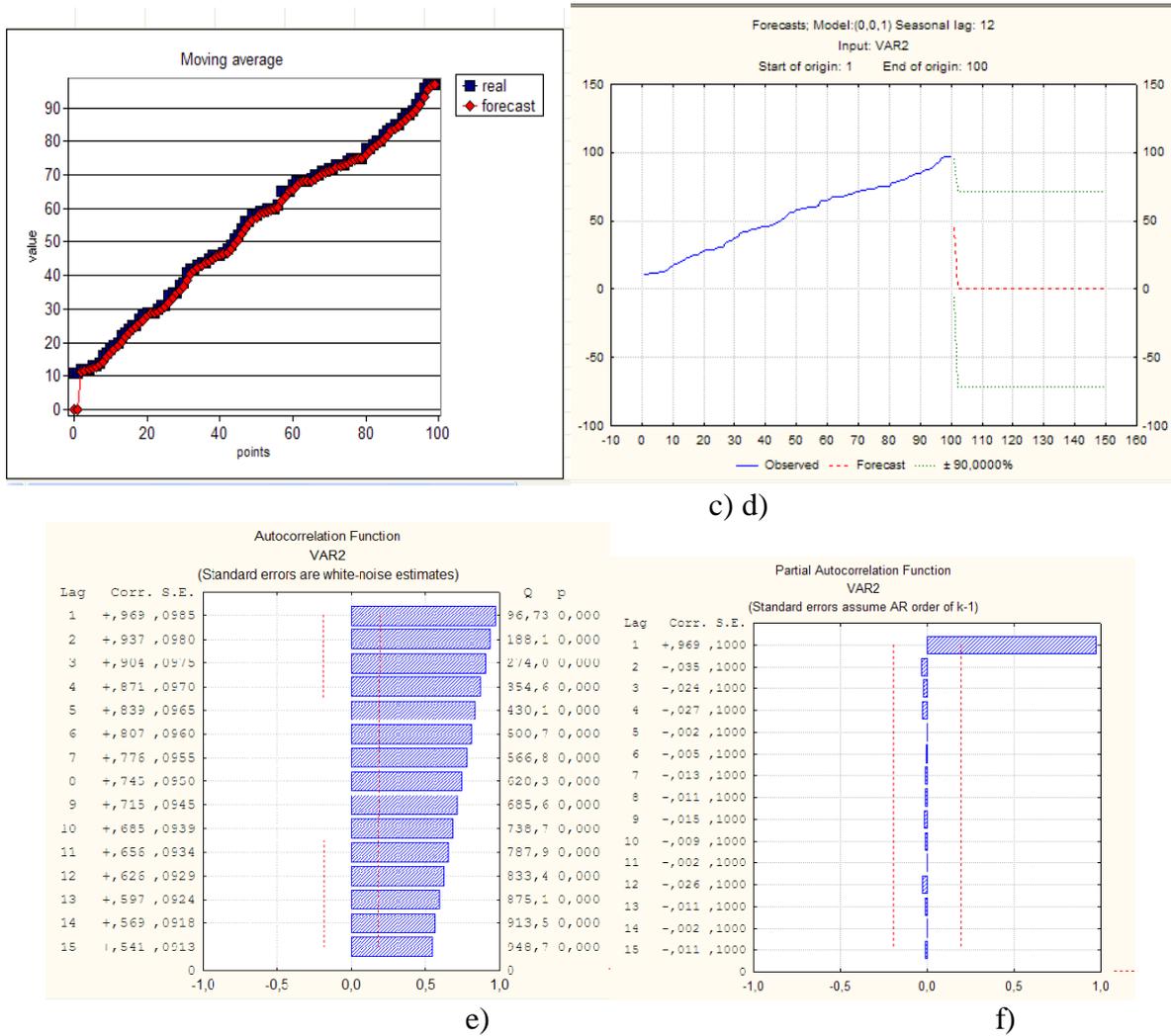
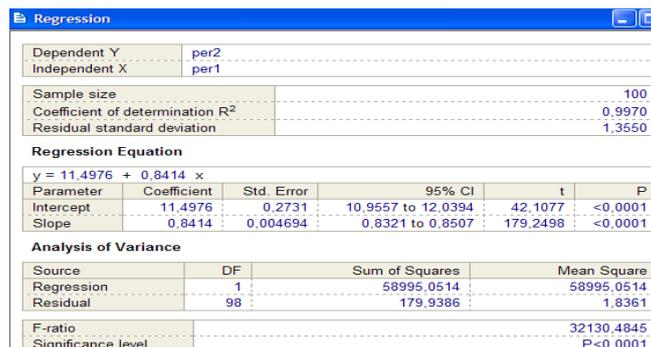


Figure.2. Characteristic of time series with ascending numbers

Partial correlation shows variables between two random variables, when taken the effect of internal values of autocorrelation doesn't take into account. Partial autocorrelation is almost same with simple autocorrelation in small moving. In practice, the periodic dependence of the specific autocorrelation is showing as "clean". The appearance of autocorrelation and partial autocorrelation depends on the length of the time series. Autocorrelation function shows the model accurately when the series is long. When the range is short, correlogram loses its accuracy and autocorrelation and autocorrelation estimation degree is decreasing. Meanwhile, the trend shows that there is not a periodic function in autocorrelation changes.

Regression equation for distribution, coefficient of determination (fig.3a), scatter regression of the order given as follows (fig.3b):

Fig.3a



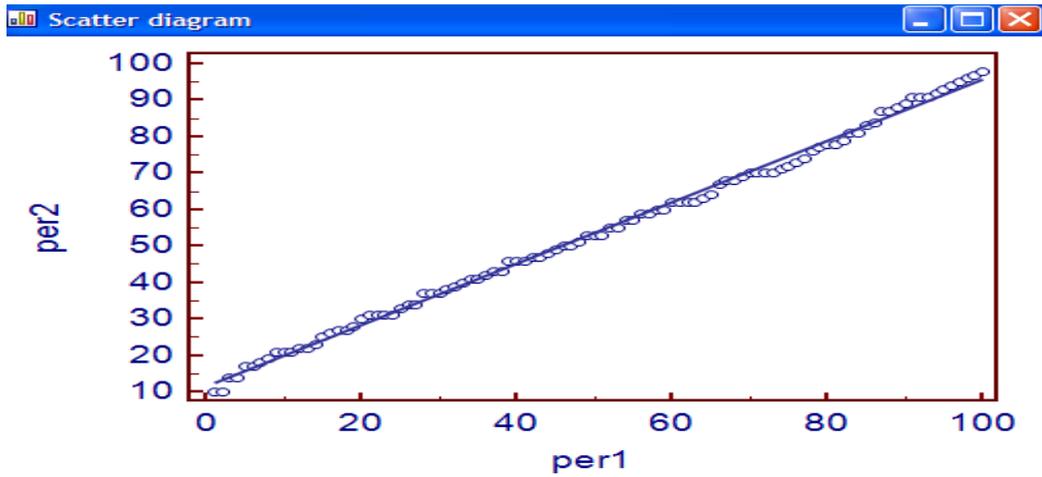
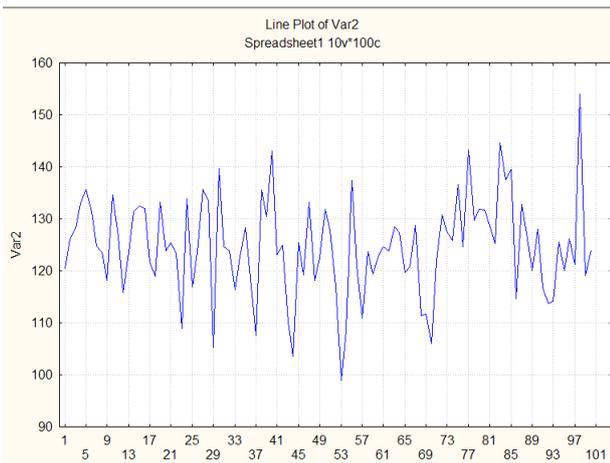


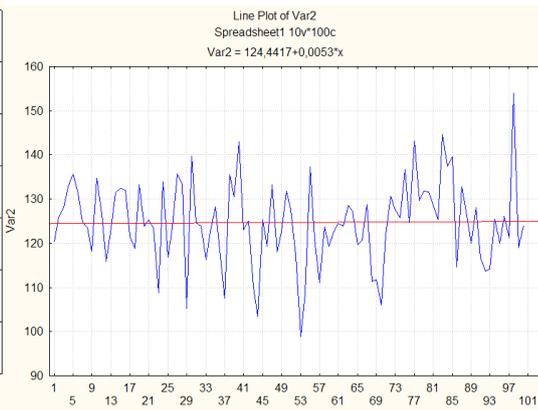
Fig.3b

According to Fisher criteria, this statistic is significant.

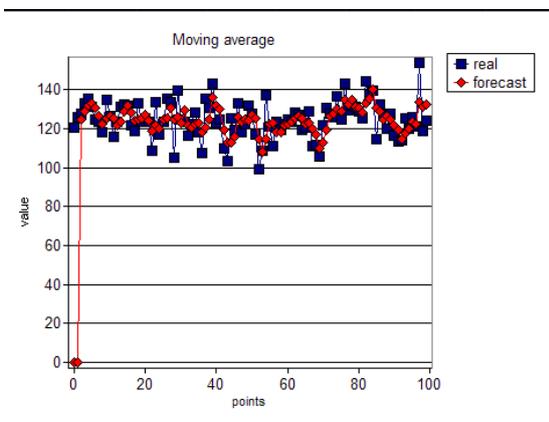
Another example for number of shows with normal distribution in fig.4a,b,c,d,e,f [8].



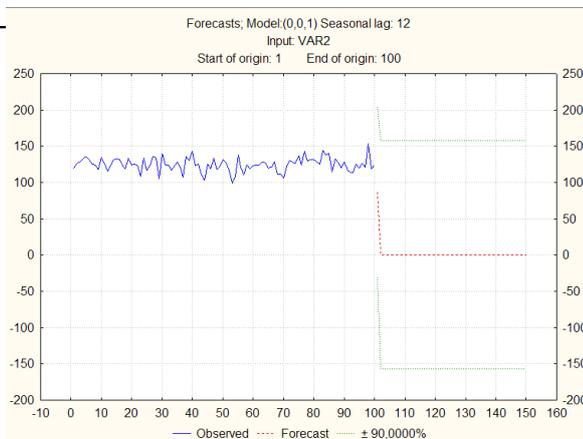
a)



b)



c)



d)

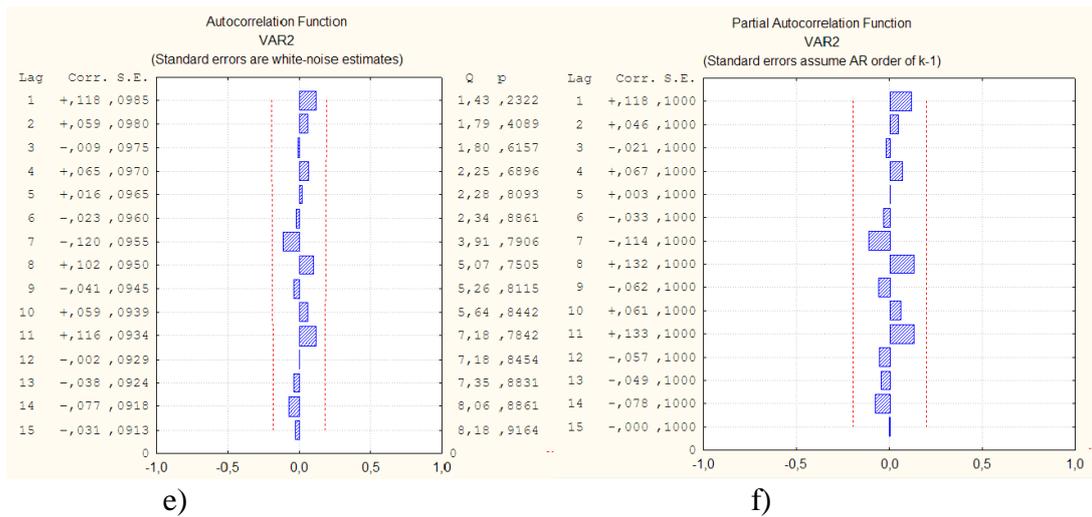


Fig.4. Characteristic of time series with normal distribution numbers

Regression equation for distribution, coefficient of determination, scatter and regression of the order given as follows (fig.5a,b):

Fig .5a

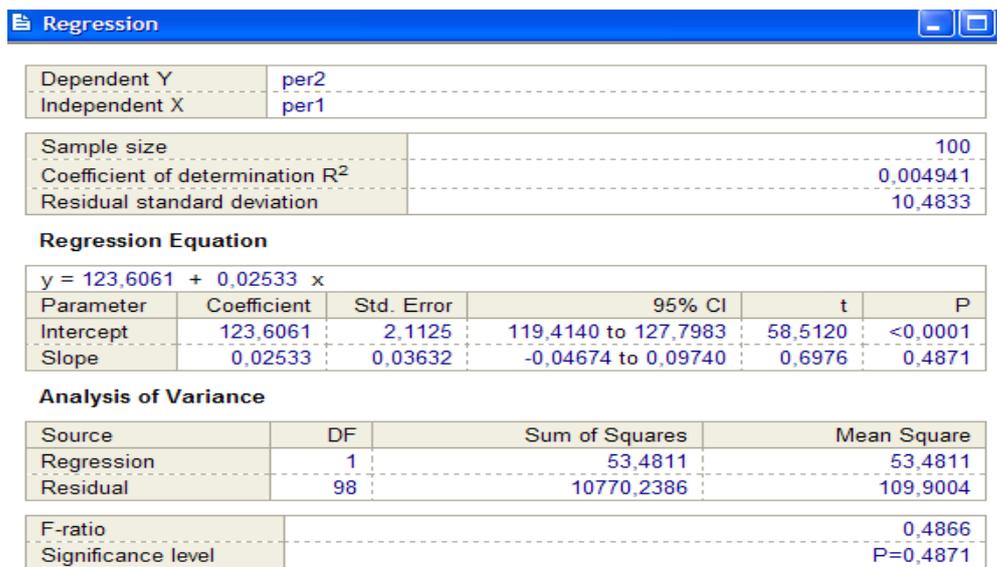
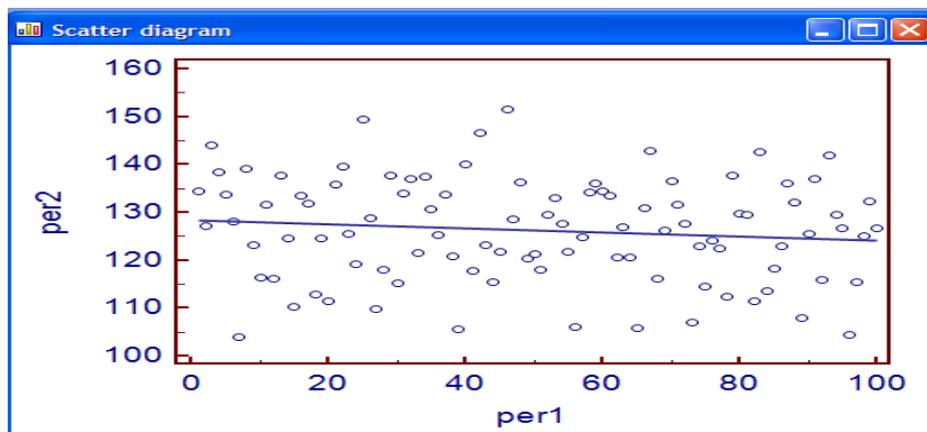


Fig.5b



Smoothing curve, autocorrelation and special autocorrelation functions shows that there is trend in that range. Determination coefficient value shows that forecast is impossible. According to Fisher theory, the value of indication is not significant.

During the course of the monitoring indicators of each time interval along with the observation of one or several indicators needs to be found observed. Mann-Whitney criteria is used for the evaluation of the difference between two independent indicators, Wilcoxon T-criterion is used for evaluation of monitoring from treatment period, any indication of a change in a certain time, Friedman method is used to measure the difference between double monitoring difference evaluation and Kruskal-Wallis criterion is applied for assessment of presence of indicators in several measurements.

Conclusions

This work proposes a time series method for monitoring the state of a patient after treatment of carbon monoxide poisoning. The said method allows to trace dynamics of indices in time intervals and detect a more important index for observation of treatment resistant symptoms and elimination of excessive checks. For comparison of the indices in time intervals parametric and non-parametric criteria of biostatistics are employed.

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Summary

Monitoring the effects of poisoning caused by Toxic Substances

Irada Mirzazadeh

Azerbaijan National Academy of Sciences, Azerbaijan

Ulkar Naghizade

Clinic of internal medicine and geriatrics of Hospital Marbach, Germany

According to statistical data, with the development of oil, chemical, gas industries cases of poisoning caused by toxic substances employed in these branches have become more frequent recently. A special place among them is occupied by carbon monoxide, poisoning with which has been growing steadily. This research deals with poisonings caused by carbon monoxide and chemical substances which are clinically close to carbon monoxide in pre-laboratory situation and this calls for conducting differential diagnosis. Considering such consequences of similar poisonings as myocardial infarction, Parkinson's disease u.a. it is expedient to perform monitoring of a patient after staying in a stationary hospital which determines optimum time of its performance, kind and the number of analyses required for developing an intelligent system. This paper proposes an elaboration of an intelligent information system for monitoring in cases of poisonings with toxic substances using carbon monoxide as an example.

Key words: *Carbon monoxide, poisoning, monitoring, parametric criteria, non-parametric criteria, biostatistical methods*

THE IMPORTANCE OF ENERGY PROJECTS TO THE FUNDAMENTAL SUSTAINABLE DEVELOPMENT OF AZERBAIJAN

Coshqun Rahimov

Institute for Scientific Research and Project-Design Construction

Materials named after S.A. Dadashov

Azerbaijan State Oil and Industrial University, Azerbaijan

In Soviet times, Azerbaijan was dominated by Russia and pipelines, which supply natural gas to world markets, have always been routed through Russia. Thus, Russia has limited the ability of the Caucasian states to act independently in the energy sector. In 1989, Steve Rempin, a representative of the British oil company Ramco, laid the foundation for the implementation of the Baku-Tbilisi-Ceyhan (BTC) project. The State Oil Company of Azerbaijan (SOCAR) asked Remp to negotiate with large oil companies in 1990 about the sale of Azerbaijani oil to the West. This marked Remp's first contacts with BP, the British oil company. In early 1991, another oil giant, Amoco, an American company, becomes involved. On August 30 of the same year, the Republic of Azerbaijan declares its independence. Immediately thereafter, between Armenia and Azerbaijan, a war begins over the disputed territories of Nagorno-Karabakh, and activities related to oil freeze for a while.

In the mid-1990s, Azerbaijan had only one route - the Northern route for oil transportation (2). The "new oil strategy" put forward by national leader Heydar Aliyev, however, indicated that Azerbaijan should have different routes. At the time, Caspian oil was exported via the Baku-Novorossiysk and Baku-Supsa oil pipelines to the world market. On February 18, 1996 in Moscow, an agreement was signed on the transportation of Azerbaijani oil to the Novorossiysk port of the Black Sea through the territory of Russia. In this agreement, in paragraph 2 of the contract, Russia accepted that it does not own Azerbaijani oil. The length of this pipeline in the territory of Azerbaijan is 231 km, and the diameter of the pipeline is 720 mm (3). The Baku-Novorossiysk oil pipeline is 1330 km long, and transports oil to the port of Novorossiysk on the Black Sea. The parties agreed on legal and technical problems of transporting Azerbaijani oil through the territory of Russia. According to the initial terms of the contract, oil from Azerbaijan began to be exported to the world market via the northern pipeline on October 25, 1997. At the same time, Azerbaijan pursued a policy that meets national interests to transport oil through alternative routes. Despite political risks, on March 8th, 1996, in Tbilisi, President Aliyev and President Shevardnadze of Georgia agreed to the plan for the Baku-Supsa. The tripartite agreement between the Azerbaijan International Operating Company (AIOC), SOCAR, and the government of Georgia, known as the "Contract of the Century", provided for the transportation of Azeri oil from the Azeri, Chirag and Guneshli fields via the Baku-Supsa pipeline. Azerbaijani oil was first exported via the Baku-Supsa oil pipeline on April 17, 1999. The biggest advantage of this route is to bring Azerbaijani oil to the world market with a pure brand of "Azeri Light". In addition, another advantage of the pipeline is that the transportation of oil to Supsa was relatively cheap compared to Novorossiysk. The transportation of oil to Novorossiysk costed \$15.67, and transportation via Supsa was \$13.14. The length of the Baku-Supsa pipeline, which runs along the western direction, is 837 km, and its diameter is 530 mm. The launch of the Baku-Supsa oil pipeline was the basis of the Southern Energy Corridor, and for the first time in its history of independence, Azerbaijan had an alternative oil transportation route (4).

The projects implemented in the energy and transport sectors, which were completed and completed, drastically change the energy and transport map of the region. The launch of the Baku-Tbilisi-Ceyhan oil pipeline in 2006 and the Baku-Tbilisi-Erzurum oil and gas pipelines in 2007 led to the opening of new corridors in the region. (5). Two of the three Azerbaijani oil pipelines transport our resources to Black Sea

ports, and one to a Mediterranean port. Azerbaijan has become a transit country for the transportation of energy resources. The main export oil pipeline Baku-Tbilisi-Ceyhan (BTC) named after Heydar Aliyev, which was commissioned in 2006, is the most important event in the continuation of the oil transportation strategy built on the national interests of the country, which strengthens its independence. Oil produced under the Contract of the Century (about 1 million barrels per day) is transported to world markets via this pipeline. The length of the BTC is 1,768 km and its construction was completed in 2005. The first oil shipment on May 28, 2006 arrived in the Turkish port of Ceyhan. The official opening ceremony of the pipeline took place on July 13 at Ceyhan port and in Istanbul with the participation of high-ranking officials from 98 countries. The implementation of the strategically important BTC pipeline project is the result of long intensive processes and complex negotiations. (4).

The planning and implementation of the BTC pipeline took place over a period of less than 10 years. On April 26, 1998, a trilateral meeting of the Presidents of Azerbaijan, Georgia and Turkey was held in Trabzon. According to the presidents, the main export pipeline was to be the Baku-Tbilisi-Ceyhan pipeline. On November 18, 1999 at the OSCE summit in Istanbul, an agreement was signed between the presidents of the three countries on the transportation of crude oil to Azerbaijan, Georgia and Turkey through the main export pipeline Baku-Tbilisi-Ceyhan. On the same day, the Istanbul Declaration was signed between Azerbaijan, Turkey, Georgia, Kazakhstan and Turkmenistan to support the Baku-Tbilisi-Ceyhan project and attract US and Kazakh oil to the project. As a logical continuation of this process, the construction of the Baku-Tbilisi-Ceyhan pipeline was started on September 18, 2002 in Sangachal, and construction work was completed in 2005. About \$ 4 billion was spent on the construction of the pipeline. BTC Co., established for the construction and operation of the pipeline, with ownership delegated as such: BP (30.1%), SOCAR (25%), Chevron (8.9%), Statoil (8.71%), TPAO (6.53%), İtoçu (3.4%) , INPEX (2.5%), KonokoPhillips (2.5%) and Amerada Hess (2.36%). (4).

The BTC pipeline is designed to transport up to 50 million tons of Azerbaijani oil per year. From its launch in 2006 until May 30, 2012, 185.9 million tons of Azerbaijani oil have been shipped to world markets. The BTC pipeline is of great importance not only for the three countries it passes through, but for Europe and for the whole world in terms of economic, political and energy security. Since the BTC pipeline is economically viable, some states intend to transport their oil through this pipeline. Kazakhstan has also signed an agreement on the transportation of Kazakh oil through the BTC. (4). Almost 50% of the budget of Azerbaijan is associated with the export of oil. 90% of Azerbaijan's exports are oil and natural gas. Pipelines are very important for transporting these products to a country dependent on oil and natural gas. Due to the conflict between Azerbaijan and Armenia, as well as the hostile position of the US on Iran and Russia, the length of the Baku-Ceyhan pipeline crosses through Georgia and exceeds 1,760 kilometers. The capacity of the pipeline is about one million barrels per day. The BTC pipeline projects include:

- 8 pumping stations (2 in Azerbaijan, 2 in Georgia, 4 in Turkey)
- 2 intermediate pumping stations
- 1 sterilization station
- 101 small bank

The pipeline's diameter is 42 inches in Azerbaijan and Turkey. The diameter of the pipeline in Georgia is 46 inches. The diameter of the pipeline is reduced to 34 degrees Celsius in the last decline in Turkey to the Ceyhan terminal.

The Baku-Tbilisi-Ceyhan (BTC Co.) pipeline company is responsible for the construction and operation of the entire pipeline. It is a joint venture registered by 11 shareholders and managed by BP, the company's largest shareholder. The main oil refinery of the BTC pipeline was launched on May 10, 2005, and oil reached the Ceyhan terminal on May 28. About 10 million barrels of oil are needed to fill the pipeline. On June 4, 2006, the first tanker with crude oil exported from this pipeline was sent. (1).

Geological justification shows that 70% of the territory of Azerbaijan has oil and gas resources. Many international oil contracts were concluded covering the offshore and onshore areas, including the "Contract of the Century", where production will grow to its apogee in the next 2-3 years, and in the near future it

will be possible only with Azeri-Gunashli and Chirag platforms, barrels or more than 60 billion tons of oil per year. The potential of natural gas in the country is estimated at about 1-2 trillion cubic meters. (6).

In order to safely transport such large volumes, there is a need for reliable infrastructure. Azerbaijan considers the creation of alternative export routes to the world markets of its rich hydrocarbon reserves as a priority of its energy policy. Thus, our country is currently exporting oil and gas resources along seven routes. (7). Gas production in the country in the coming years will increase dramatically, and a significant part of the "blue fuel" will be exported to Western Europe. This requires a new gas transport corridor. Such a system will be the Southern Gas Corridor, consisting of three important segments. The first segment is the South Caucasus Gas Pipeline (SCP), which currently transports Shahdeniz gas to Georgia and Turkey along the Baku-Tbilisi-Erzurum route and has become an important factor in energy security in the region. The second segment, the TANAP (Trans-Anatolian Natural Gas Pipeline) project, signed between Azerbaijan and Turkey in 2012, strengthened Azerbaijan's role in European energy security. The third segment will be the Trans Adriatic Pipeline (TAP). At the initial stage, Azerbaijan will receive 10 billion cubic meters of gas through the Southern Gas Corridor, with the volume expected to double in later stages. In addition to the Shah Deniz gas field, the existence of such deposits as in Umid and in Absheron in Azerbaijan, significantly increases the importance of this project. The reserves of natural gas are 2.5 trillion cubic meters. (8).

The strategy of gas transportation of Azerbaijan is based on ensuring its state and economic interests. This strategy allowed the Azerbaijani state to further strengthen its positions in the region and in the world and become a reliable energy partner for Europe. During these years, the export of energy resources and their profitability in Azerbaijan grew.

In addition, the amount of foreign investment sent to Azerbaijan under various projects has also increased. Only recently, lower world oil prices have affected oil revenues. But it is expected that this situation will soon stabilize. (9). Tripartite cooperation and partnership relations with Azerbaijan and Georgia have so far played an important role in the implementation of major transregional projects, and it is important for future projects to also be conducted with the spirit of such cooperation. All projects were implemented with due regard for the interests of all three parties and were beneficial for all parties. Since energy resources are exhaustible, when starting any project, as a rule, the potential for future expansion of the project is also taken into account. It is expected that Turkmenistan and Iran will join the project in the future due to their positions as Caspian littoral states. Azerbaijan has demonstrated its position regarding the national interest in this project, and President Ilham Aliyev repeatedly stated that Azerbaijan also supports the Nabucco project, an additional pipeline that would further connect Turkey and Western Europe. On the other hand, Azerbaijan has also demonstrated its commitment to bringing its gas resources to the world markets on terms most favorable to it, and pursued a more aggressive 'attack' policy.

Azerbaijan also supports the Nabucco project to strengthen its positions in negotiations with transit countries and potential buyers, and also successfully implement other transit routes. The first step in the attack strategy was launched in Bucharest in 2010 with the AGRI project (Azerbaijan-Georgia-Romania Interconnector). The main advantage of a small number of transit countries is that it is a convenient way to enter the market of many European countries. The cost of AGRI, which supplies Azerbaijani natural gas to Romania, will be \$2-4 billion, depending on the volume of transported gas. The volume of injected gas will be 2-8 billion cubic meters. The second important step was the conclusion of the Azerbaijani-Turkish gas deal this year. This agreement also includes the laying of a new gas pipeline connecting Azerbaijan and Turkey. (4).

Azerbaijan's support for the Nabucco project also reflects its own desire to conduct an energy policy that puts its own interests first. The Nabucco Consortium, which manages the Nabucco project, introduced the Nabucco West project in 2011, a smaller pipeline meant to link up to a larger system. In parallel, an important step was taken in the implementation of agreements on the construction of a new gas pipeline between Azerbaijan and Turkey in 2010. (4).

It can be said that Azerbaijan is the cradle of the world oil industry because oil was first produced in an industrial way here, being processed, transported by tankers, railways, pipelines (10).

The exploration and development of oil deposits began on the shore, on the shelf, and in the deep parts of the Caspian Sea. Ever since, the energy sector has played a decisive role in the rapid development of the Azerbaijani economy, especially in recent years. (eleven). Currently, the Azerbaijani government is pursuing a policy of increasing the competitiveness of the country's economy, developing the non-oil sector in the country, diversifying the economy and increasing exports. An important task facing the government today is to ensure the sustainable development and renewal of the oil industry, which is the basis of the country's economy and its the main source of income. The main tasks facing the development of the oil industry are:

- Strengthening and increasing the level of oil and gas production, which is an important aspect of ensuring energy security as well as integrating Azerbaijan into the global energy security system. The implementation of any project at the trans-regional level is not an easy task. In addition to covering a large area, there is a strong political and economic rivalry over projects that are promising access to large markets. The introduction of effective projects increases GNP, which at the discretion of the public. Later this GNP is divided between the entities participating in the project (companies, shareholders, banks, etc.). The effectiveness of different types of projects is determined by the income and expenditure in these subjects:

- Overall project efficiency
- Effective participation in the project

The evaluation of the project's effectiveness is evaluated in order to identify the potential attractiveness of the project participants and to find sources of financing. It includes:

- Public (socio-economic) effectiveness of the project.
- commercial efficiency of the project (13).

Social performance indicators take into account the socio-economic consequences of the project, including the direct costs and costs of the project, as well as the costs of outsourcing and environmental, social and other non-economic impacts in related areas of the economy.

Indicators of the commercial performance of the project are based on the financial results of its implementation for the participant implementing the project. It is assumed that it meets all the necessary costs for the implementation of the project and uses all of its results.

The effectiveness of the project will be determined to verify the feasibility of the project and verify that all stakeholders are interested in it.

Efficiency of the project includes the following:

- Efficiency for the enterprise-participant
- Efficiency for shareholders (Efficiency of investment investment in shares)
- Participation of a structure of a higher level in the project in comparison with the participant-participants, including:
 - regional efficiency - for individual regions
 - Sustainability - for individual financial and industrial groups, business associations and holding structures
 - Budget efficiency - Effectiveness of state participation in the project

Based on the evaluation of the project's effectiveness, the following main principles were laid down:

- view the entire life cycle of the project (settlement period)
- Modeling of cash flow, including all amounts and details of cash flows for the reporting period

- Comparison of comparable conditions for different projects (project options)
- Positive principle and maximum effect. The impact of the project on the project should be positive to make the project effective from the perspective of the investor. A project that has a greater impact on an alternative layout should be preferred

The evaluation of the effectiveness of investment projects is carried out in two stages.

At the first stage, the overall efficiency of the project is calculated. The goal of this stage is to create the necessary conditions for the overall economic evaluation of project solutions and the search for investors. For domestic projects, only their commercial effectiveness is evaluated and, if it is acceptable, the transition to the second stage of the assessment. If the source and terms of financing are already known, it can not be estimated for commercial efficiency. The second stage is realized after the development of the financing scheme. At this stage, the number of participants is indicated, and each of them is determined by the effectiveness of their participation in the project and the financial viability of the project. At this stage, for local projects, the effectiveness of participation of individual project participants in the project, the effectiveness of investment investments in shares of such joint-stock companies.

The evaluation of investment projects is carried out in the following order:

- Investment opportunities (opportunities, investment proposals)
- Preliminary project (stage of primary selection, justification of investments)
- Final preparation of the project (project stage, feasibility study)

Investment opportunities and stages of project preparation are usually limited to the overall efficiency of the project. Meanwhile, the calculation of cash flows is carried out at current prices. Implementation of such an assessment has always been a difficult task, which is explained by a number of factors: First, investment costs can be repeatedly executed either once, or for a long period of time (sometimes for several years). Secondly, the process of obtaining results from the investment project is long (at least more than one year). Third, long-term operations lead to an increased risk of uncertainty and error in the evaluation of all aspects of investment. The existence of these factors required the creation of special methods for evaluating investment projects. These methods allow us to make informed decisions with the lowest possible error rates (13).

These principles can be applied to evaluate new projects going forward. On September 17, 2017 in Baku, the signing ceremony of a new agreement on the development of the Azeri-Chirag-Gunashli oil block with the participation of Azerbaijani President Ilham Aliyev was held.

At the Heydar Aliyev Center in Baku, the government of Azerbaijan and the State Oil Company of the Republic of Azerbaijan (SOCAR), BP, Chevron, INPEX, Statoil, ExxonMobil, TP, ITOCHU and ONGC Videsh. Together they today signed an amended and revised agreement on the joint development and production of Azeri fields, Chirag and Deepwater Gunashli (ACG). The agreement must be ratified by the Azerbaijani parliament. The agreement was signed by SOCAR President Rovnag Abdullayev and representatives of partner companies on behalf of the Azerbaijani government at the event, in which Azerbaijani President Ilham Aliyev and a group of high-ranking foreign government officials took part in Baku. BP will remain the operator of the project on the basis of the production sharing agreement and in accordance with the revised agreement. Under the agreement, the share of SOCAR in ACG will be increased from 11.65% to 25%, and international partner companies will pay \$3.6 billion to the State Oil Fund of Azerbaijan. ACG can invest \$ 40 billion over the next 32 years.

After the approval of the agreement, the new partner shares in ACG will be as follows: BP - 30.37%; AzACG (SOCAR) - 25.00%; Chevron - 9.57%; INPEX - 9.31%; Statoil - 7.27%; ExxonMobil - 6.79%; TP-5.73%; ITOCHU - 3.65% and ONGC Videsh Limited (OVL) - 2.31%.

After this agreement between SOCAR and its partners, an agreement was reached on the promotion of engineering projects to evaluate the additional production platform for the ACG contract zone.

SOCAR President Rovnag Abdullayev said: "Today is a wonderful day for Azerbaijan, which reminds us of the date of the "Contract of the Century" today, signing the first contract of ACG as a result of the intense efforts of our great leader Heydar Aliyev, despite the difficult political and economic conditions of that time. The basis for the future economic development of Azerbaijan was laid in 1994.

In 1994, ACG invested \$ 33 million, since the first contract was signed in 1994, and our country earned more than \$125 billion in direct revenues from the production of 440 million tons of oil. After negotiations between SOCAR and partner companies today, we signed a new contract for the ACG project on the basis of agreed terms that would last until the end of 2049. The terms of the new agreement come into force after approval by Milli Majlis of the Republic of Azerbaijan, we maximize the economic benefits that ACG will bring to our country, and the terms of the new agreement reflect the growing financial and technological potential of our country and our company since 1994, as well as the trust of foreign partner companies to the economy of Azerbaijan and to raise our partnership to a new level. "

BP Chief Executive Officer Bob Dudley said: "The century contract really changed the energy supplies of Azerbaijan to Europe and Europe over the past 23 years, and the agreement signed today is perhaps the most important in the history of Azerbaijan. This event will allow us to work together for the next 32 years to maximize the long-term development potential of the ACG and maximize the oil recovery factor with new investments, new technologies and new joint efforts. So, I think that this is called the Agreement on a New Century that will be right."

It should be noted that the agreement on the distribution of the existing production to the ACG was signed on September 20, 1994. The United States was invested in the development of the industry. The first oil was obtained on the Chirag field on November 7, 1997. ACG has so far produced about 3.2 billion barrels of oil (about 440 million tons), which was transported via the Baku-Tbilisi-Ceyhan and Western routes to the world markets. In total, more than 30 billion cubic meters of associated gas were delivered to the government of Azerbaijan ACG. In the first half of 2017, ACG produced an average of 585,000 barrels per day. Currently, ACG has 8 platforms - 6 production platforms and 2 technology platforms. From these platforms, oil and gas are transported to the Sangachal terminal, one of the largest oil and gas terminals in the world.

According to the State Oil Fund of Azerbaijan, the total revenue from ACG in the period from the beginning of 2001 to March of this year was 123.102 billion US dollars. (14).

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Summary

The Importance of Energy Projects to the Fundamental Sustainable Development of Azerbaijan

Coshqun Rahimov

Institute for Scientific Research and Project-Design Construction Materials named after S.A. Dadashov

Azerbaijan State Oil and Industrial University, Azerbaijan

This article describes how Azerbaijan uses its energy resources at different times. The implementation of energy projects on a planned basis through the territory of Russia is considered a result of the restrictive policy under the leadership of the USSR. Then, after the independence of Azerbaijan, the country under the leadership of Heydar Aliyev, planned the necessary projects that have since greatly impacted the future of its development - the Baku-Tbilisi-Ceyhan, Baku-Novorossiysk, and Baku-Supsa projects. New projects have also been studied in regards to economic efficiency and the importance of social development for sustainable economic development. The transportation of Shahdeniz gas to Georgia and Turkey along the Baku-Tbilisi-Erzurum route, as well as the continuation of this project with the transportation of Azerbaijani gas to the Trans Adriatic Pipeline (TAP) and the Trans-Anatolian Natural Gas Pipeline (TANAP), emphasizes the importance of these projects for Azerbaijan, Turkey, and Georgia as well as European countries such as Italy and Albania.

Key Words: *Baku-Tbilisi-Ceyhan, oil and gas, energy resources, project efficiency, investments, oil pipelines*

MODERN TRENDS IN WORLD ECONOMIC DEVELOPMENT: A POLITICAL ECONOMY APPROACH

Kaysin Azretovich Khubiyev
Moscow State University, Russia

Amil Magerramov
Baku State University, Azerbaijan

Hadjiagha Rustambekov
Baku State University, Azerbaijan

Emin Garibli
Azerbaijan State University of Economics, Azerbaijan

Introduction

Humanity entered the 21st century with the hope that it will leave in the past and get rid of everything that is destructive, unfair, alarming, and dangerous to the outlook and fates of peoples and individuals. Hopes have not come true. With the collapse of the USSR, the world became unipolar and the total responsibility for global development passed over to the side of developed capitalism. The so-called "evil empire" was destroyed and now, it seemed, there was no impediment to creating "the empire of good". However, a quarter of a century is a long enough historical period to have shown the world the results of good deeds. The world observed these "good" things: the destruction with impunity of whole countries, including by military means; turning them into a testing ground for the implementation of technology through internal strife; the deployment of a new wave of economic wars, etc. Attempts to spread "liberal values" of the capitalist social order throughout the world did not make the world safer or fairer. Capitalism has not only failed to overcome the accumulated problems before the global economic development, but also saddled them with new ones: ethnic and religious conflicts, terrorism, and mass migration of populations. The old problems of poverty and increased differentiation and worsening of environmental problems have been preserved acquiring a global scale. Awareness of these facts has become fairly widespread, but at the same time doubts are intensified about the prospects of the dominance of the unipolar world values. The need to change the foundations of the social order is placed even in world forums organized by the elite of the capitalist countries, in particular, the Davos Forum.

A new global economic division of the world

The world's leading centers of economic development (the US, EU and China) have launched a new trade and economic division of the world in the twenty-first century. It is accompanied by the deployment of a new type of competition between countries and their associations. It is manifested in the formation of new economic alliances of states. This is not a comparison of their economic strength and competition of multinational companies and global networks, although they are involved in this. It is a competitive fight of the economic unions of the countries, the total potential of which allows them to influence the global economic environment. In fact, there is a new global trade and economic division of the world. The USA, which has created numerous interstate associations and actively participates in them, dominates here.

The latest global initiatives in this area are: projects of Trans-Pacific Partnership (TPP) and the US Atlantic economic partnership with the EU, known as the Transatlantic Trade and Investment Partnership (TTIP). The realization of these projects has aimed at changing the trade and economic picture of the world that affects the economic interests of a number of post-Soviet countries, as well as intergovernmental organizations, including EAEU. It is even possible to predict the gradual nominalization of WTO, just like the Bretton Woods system collapsed gradually because of the emergence of new and parallel operations of power and mechanisms of international economic relations and institutions.

The above-mentioned economic division of the world is not only related to the tensions around the commodity markets, but also to the uneven distribution of basic resources. In the recent decades, the developed countries, especially the United States have been developing due to the world economic space vacated by the collapse of the Soviet Union. This "reserve" for the development of the leading countries was exhausted, partly due to China's transformation into one of the centers of the global economy. In this context, a new trend develops in world economic dynamics. Its study will help forecast the impact of global trends on the economy of EAEU member countries and allow appropriate decisionmaking.

In this connection, one should take into account the specifics of the global economic crisis that originated in the roots of modern capitalism. Previously the world economic crises would start in developed countries and developing countries were following the "locomotive"; now the world economic dynamics are increasingly showing signs of "counter-cyclical swing", which indicates that the world's resources have been distributed and redistributed and capital no longer has the opportunity to develop at the expense of the colonial space. If one looks closely at the world's hot points, one can see that all the local wars are accompanied by a redistribution of resources. The counter-cyclical nature of the global economic dynamics should be taken into account in the design and implementation of the objectives and specific programs of the EAEU and other international organizations. In particular, if developed countries monopolize their technological advantages for their own sake by preventing their distribution, EAEU countries should use their resource advantages, gradually turning them into a competitive advantage.

The monopolization of the technological advantages of the industrialized countries takes the form of integrated partnership under the auspices of the United States as evidenced by the actual target setting of TPP. The agreement on establishment of the Trans-Pacific Partnership was signed on February 4, 2016 in Auckland (New Zealand). According to forecasts, the share of TPP countries (along with Japan) in the world GDP may reach 38-40% and a quarter of world trade, with the leadership in terms of share of GDP, but staying behind the ASEAN + 6 trade block, in terms of the share in the world trade if China participates in ASEAN.

TPP pushes free trade goals in the Asia-Pacific region at the first glance. However, it is a glossy side of the project. The main motive for the creation of this organization is to create an alternative to the ASEAN and APEC to counter their growing influence. The great problem is not only the direction but also the means of struggle, which is planned to involve the assistance of international organizations. Not all materials of the new association have been made public, and nevertheless, it is possible to make some conclusions and forecasts to guide both individual (national), and joint economic policy within the EAEU on the basis of information already leaked into the public space.

Many years of preparation in conditions of secrecy has hidden the preparation of new methods of global competition by TPP. We think these methods cover the main danger, which are expressed in the following points:

1. The agreement provides for the regulation of a large range of issues related to the legal protection of intellectual property rights (Internet domain names, registration and protection of trademarks, the protection of copyright and related rights, restrictions in the production of cheap analogues of patented drugs) associated with agriculture, telecommunications, financial services, customs cooperation and tariffs, mutual investments. These measures seem to be aimed at monopolization of innovations and R&D objects to limit access of competitors to the facilities of technological development.

The danger lies in the monopolization of the benefits of technological progress, the creation of closed regulatory spaces, barriers to overflow of technology, strict control of process flows, and control of technological rent. As China's economic potential is largely based on the effective use of technology and the secondary commodity counterparts, the introduction of the TPP plans will be a heavy blow to the Chinese economy and could lead to serious conflicts of international level.

2. More substantial seems the means of struggle through "labor and environmental standards," raising them up to a certain "international" level. The pressure of USA and its through the "export" standards of the developed countries that were created partly at the cost of the debts of developing countries, which will be discussed below.

3. Anticipated regulation of disputes between transnational corporations and the governments of sovereign states would lead to the rule of the US transnational companies over national governments.

Complete information about the content of the TPP does not exist, because not all the documents of its establishment have been disclosed, however, we know the main goal - the struggle for dominance in the region and in the world economy. For this reason the role of international organizations with their control and legal functions becomes more important.

The same political and economic objectives are pursued by another global trade and economic project too. In July, 2013 the United States and the European Union began to prepare an agreement on the establishment of a transatlantic trade and investment partnership (TTIP). Theoretical justification of this project is more than modest, however, the promise of practical benefits are impressive. According to them, a free economic zone of TTIP should bring benefits to both sides of the Atlantic countries. The US economy should annually receive an additional 90 billion Euro and the EU budget will be supplemented by additional 100 billion euro. According to the calculations of the European Commission, if the zone works, Europe will gain 400 thousand new jobs, and each European family would receive an increase in their income in the amount of 545 Euros. The rest of the world should also not suffer. Due to the transatlantic customs union, the volume of the global economy must grow by 100 billion Euros as European officials promise.

This is also a glossy side of the project. There is a simple question: where and by what means these additional benefits will spill over to the whole world, if this project is for trade, rather than production and technology? The answer is obvious, based on the fact that the participation of Eurasian countries is not expected in this Union, their displacement from the world trade promises outlined benefits¹. It is yet another project with the potential of global economic struggles.

If they manage to create the second transatlantic alliance, the simultaneous and parallel launch of these two projects will cover a large part of the world economy. Beside the already mentioned points, it will lead to the transformation of the WTO into a nominal organization as its main condition for a preferential movement of goods, services and resources between countries coincides with the regulation of foreign trade relations rules in the TPP and TTIP. Covering almost all industrialized countries of the world, these countries have created a new mechanism for unfair competition and exploitation, where the integrated structure of the TPP and TTIP essentially designed to block the rest of the world that cannot leave the WTO without falling into isolation. For example, in the WTO there is a competitive ability of countries with weakened economies from a transformational crisis. These countries were invited to the movement towards integration of all global unions in a single space of the WTO on the basis of the depoliticized principle of pragmatism. However, there are realities that threaten the functioning of the WTO and anticipate global trends of modern neo-colonial type.

Several authors have openly questioned the role and functions of international organizations. T. Pugel notes on this issue that the global economy does not have a global government.

¹Upon in late 1990, the EU has decided to tighten the requirements for imported products, exported to Europe, cereals, dried fruits and nuts from Africa declined by as much as \$ 670 million. For companies with emerging market requirements outweigh the negative effect of the positive impact of open borders. According to experts, if the transatlantic alliance, the most vulnerable will be the products of the developing countries will create.

Therefore, although it is true that there are international organizations that are trying to manage the parties of global economy (in particular the WTO, the IMF, the UN, the World Bank), each country has the right to ignore or neglect these global institutions, if it deems it necessary.²

One could agree with this opinion by adding only that the contradictory effects of the activities of global institutions is the lack of assessment of the national factors of economic development in individual countries and regions of the world.

This "assessment" in other formulations has existed before too. However, if in the past century it was accompanied by colonial conquests and political subordination of the national resources of another national space, under current conditions, this goal is achieved by intervening into the external resource environment through economic methods. The principal conductors of these methods are the TNCs, which integrate the national economic interests of their representing states into the global system of economic interaction.

Trend of indebtedness in the global economy

Another form of economic pressure on developing countries is the debt outstanding between the two countries. The modern world economy can be characterized as of debt nature in general that may be indicated by the following data on the state debt of developed countries in relation to the annual GDP¹. On average, the developed countries have debt (only governmental), "going beyond" for the annual GDP. If before the middle of the last century, the debt crisis was expressed in developed countries being creditors of developing countries, now it is reversed. China, for example, holds a quarter of the US external debt. Developed countries at the expense of others gained leadership, both in the development of technology and the level of social security. By raising social standards and by creating an attractive environment for working and living, developed countries have concentrated the highest quality of human capital and leadership support at the expense of attracted intellectual resources of developing countries, ie, creditor countries. Exploitation of the developing countries has become of more subtle and sophisticated nature today. At the expense of creditors the developed countries concentrate intellectual resources of developing countries who contribute to working out debts of their countries of origin.

To summarize the above mentioned, the following global contradiction is composed: on the one hand, the United States as one of the centers of the world economy is struggling with the growth of China's influence on the world economy. On the other hand, China is a creditor of the United States. It is yet the "dormant" contradiction. However, the trade wars are started with the launch of sanction mechanisms against China, that as we have shown above, follow directly from the strategic objectives of TPP, the stated contradiction can go to a more "hot" phase of development and resolution. Russia and Kazakhstan are directly involved in the orbit of economic relations with China and they are directly related to the effects of predicted processes and contradictions of the world economy within the framework of the dominant triangle US-EU-China.

² Pugel, Thomas A. International Economics. 15th ed., N.Y. University, McGraw-Hill, 2011, p7.

From the above you can make the first conclusion: in the XXI century a new stage of the struggle for trade and economic division of the world has begun for its resources and markets. History witnessed the tragic experience, when the world economic war developed into the world's armed conflicts. In this situation, the individual countries and international organizations, alternative trends of global dominance face two challenges: the fight for their national economic interests and a proactive nature of the struggle for the prevention of political conflicts that arise on the basis of economic and trade conflicts. In this regard, it should be noted the urgency and the need for individual and collective efforts of the member countries of EAEU, other countries and organizations in the following areas:

first, the use of the experience of protection of self interests through cooperation with international organizations and focus on the strategic objectives of symmetric responses to threats originating from the new initiatives on the economic division of the world;

second, together with partners and allies to start a promising development projects of the global organizations by expanding the contours of integration and the creation of Greater Eurasian Partnership with the participation of the CIS countries as well as China, India, Pakistan, Turkey, Iran and other states and integration alliances (ASEAN). As a first step, it is offered to start consultations with expert groups for the unification of cooperation in the areas of investment, customs administration, intellectual property protection, non-tariff measures. In the future, to reduce or cancel tariff restrictions, to develop a network of bilateral and multilateral agreements with the differing depth and speed, level of communication and market opening. It should be a flexible integration of a cooperative structure that encourages competition in the field of science, engineering solutions, where the participants can fully realize their potential and competence. At the same time EAEU can speak as an integration nucleus.

Trends in prevalence of unipolar confrontation in the global economy

In this situation the EAEU, interacting with other countries and organizations, especially in the Asia-Pacific region can withstand the competitive unipolar world trade and economic dominance. As a new entity, it should use the experience of the experience of phased development of economic cooperation of other organizations, in particular ASEAN organization. Experience of ASEAN is also important because together with trading partners (ASEAN + 6) the organization is not inferior to the TPP in terms of world trade. Two important circumstances cause particular attention to the ASEAN today. Firstly, the association or partnership of EAEU and ASEAN would constitute an alternative TPP in the region. Second, the experience of almost all stages of the ASEAN development and application of policy tools is useful for a relatively young organization, as is the EAEU.

The process of transformation of ASEAN into one of the world's political and economic centers of the multipolar world has stimulated this regional grouping of countries to actively address a number of critical tasks. These include: the formation of a free trade zone and investment zone; the introduction of the single currency and the creation of deployed economic infrastructure, formation of a special management structure. Even today, the ASEAN Free Trade Area - AFTA is the most consolidated economic group in Asia. The main instrument for the creation of a free trade area agreement is an agreement of the Common Effective Preferential Tariff (CEPT). CEPT also provides steps to harmonize standards and quality certificates for products, the production rules of fair competition, simplification of internal investment and customs legislation, promoting the process of creating joint regional enterprises, etc. In order to achieve these goals, the ASEAN Consultative Committee on Standards and Quality was created.

¹Japan - 242.3%, Greece - 174%, Italy - 133.1%, Portugal - 125.3%, Ireland - 121.0%, USA - 107.3%, Singapore - 106.2%, Spain - 99 , 1%, Great Britain - 95.6%.

In order to increase the competitiveness of goods produced in the ASEAN region, as well as to create conditions for attracting investments in the region the search have begun for new forms of industrial cooperation. In accordance with the Basic Agreement on ASEAN Industrial Cooperation Scheme – AICO, the condition for the creation of a new company is the participation of at least two companies from different countries of ASEAN and the presence of at least 30% of the national capital. The objectives of AICO are: growth of industrial production; growth investment in the ASEAN states from third countries; expansion of the domestic trade; improving the technological base; improving product competitiveness in the world market; increasing the role of the private sector. Furthermore, it provided a number of non-tariff preferences, including advantages in obtaining investment.

The agreement on the Common Effective Preferential Tariff (CEPT) creates leverage on the structure of production through mechanisms of reorientation of enterprises from production of raw materials and semi-finished products to the production of the final product. AICO, in turn, introduces further incentives for this purpose. In particular, with regards to the import of finished products, semi-finished products (intermediate products) and materials use of preferential tariff rates is intended, whereas, the final products have unlimited access to ASEAN markets, and access of intermediates and raw materials to these markets is limited. This experience is very important to overcome raw material orientation of the economies of a number of post-Soviet states, diversification and restructuring with a focus on building the value-added.

The experience of stimulating investments are also important. In October 1998, the Framework Agreement on the establishment of the ASEAN Investment Area was signed (AIA), which covers the territory of all states - members of the association and is one of the main tools to attract domestic and foreign investment through the provision of national treatment to investors, tax incentives, the abolition of restrictions on the share of foreign capital. In March 1999, a decision was made on extension of the national treatment to the investments in services directly related to the manufacturing industry. An important feature is that these decisions covered only direct investments, leaving outside the portfolio investment.

We believe that all the subjects related to the development of ASEAN have relevance to the EAEU. Accounting for this experience will enable faster and more efficient passing the stages of formation and development of a relatively new organization.

While using the experiences of integration of different regions of the world one must take into account both their positive and negative points. It is especially true about the inclusion of political factors in the processes of economic integration. Haste in this respect can put hold on the extension of boundaries and deepening economic integration. The emphasis on the political component in the process of economic integration is fraught with opposite effect. In this respect, centrifugal trends are characteristic emerging even in the most developed conditions of integration. It is no coincidence that the attempts to transform EU into a political union, a kind of supra-government served as one of the main reasons of Brexit.

It is extremely important in this context to proceed from the fact that the economic development of each country should, first and foremost, "closely follow the contour of its global interests," to be able to optimize the external economic relations in a unipolar exploitation of an cultivated "open economy". It implies both a realistic assessment of own capabilities, and the development of methods of most effective use of integration ties on the international arena. They, in turn, are largely designed to weaken the intensity of the negative impact of global conflicts on the development of the national economy.

Global economic trends and national interests

One of the most important activities in this respect is the economic diplomacy. A variety of economic diplomacy tasks can be divided into three implementation levels: micro, macro and mega economic. If microeconomic diplomacy implies support for individual enterprises, individual actions of the economic operators, then the macro-economic level covers public policy issues in the field of logistics, reproduction cycles, and the fiscal sphere. On the mega-level the issues of development and defending of the national positions are decided in solving the problems associated with the entry of the country into various integration associations. The difference in methods of economic diplomacy can be seen in various countries, both developed and developing. Each of them has its own approach to the understanding of economic interests and economic diplomacy. For example, some countries base on ideological imperatives in determining these interests and their achievement methods, while others focus on objectives of keeping or achieving leadership. The most effective choice seems to be when the main reference points of diplomacy and the whole foreign policy are the growth of domestic production and living standards. Individual periods or practical steps of countries must be evaluated through the prism of foresight and the use of the variability of conditions of competition on the world markets, the most successful ones today and tomorrow, in the short and the long term extending the implementation range of national economic interests. In Azerbaijan a clever economic diplomacy determines largely the most important socio-economic achievements of the country in the international arena. Having significant oil and gas resources and considering their increased liquidity in the global markets, the strategic course of the country's economy is characterized by the utilization of the absolute advantages of natural factors with a view to modernizing all components of the economy. As a result, Azerbaijan has gained the positions of the leader state in a quite vast territory and significant weight in terms of mega economics (¾ of gross domestic product of the South Caucasus is produced in Azerbaijan). There are new areas of direct manifestation of national economic interests of Azerbaijan in the Caspian Sea Basin, the Caucasus, the Middle East, the Mediterranean region. Leading energy and transport corridors of Eurasia, extending across the country on the world axes of the East - West and North - South have strengthened sovereignty and expanded the integration prospects of Azerbaijan. In these processes, there is a tendency of regionalization of the economy of the country in the Eurasian territorial and temporal coordinates, which objectively precedes economic integration if national interests are realized.

Conclusions

1. The current stage of development of the international economy takes place in the new global re-division of the world market, associated with the creation of integrative associations directed against the growing influence of emerging economies in the Asia-Pacific region. The US dominance in the world economy is supported by the active promotion of the transatlantic project agreements between the US and the EU. In addition, the implementation of these projects will lead to the weakening and even the threat of actual existence of the WTO.

2. The Russian Federation is a member of numerous largely overlapping associations. The dispersal of efforts and resources creates a tendency of bureaucratization of supranational administrations, hampers the efficiency of their operation. Several organizations need to be reformatted to focus and concentrate the efforts on the new tasks and challenges.

3. Growing limitations of the world's resources and the inability of the development in neo-colonial space generate counter-cyclical trends in the world economic dynamics between developed and developing countries, which should be considered in the functioning of EAEU.

4. EAEU will be affected by the trends in the debt economy and its feature that in contrast to the 60s of the last century indebted are developed countries, and creditors are developing countries.

5. EAEU must take into account the experience of going through other associations through similar stages of development in its formation. Experience of ASEAN seems to be extremely useful.

6. The macroeconomic situation in Russia is characterized by a trend of stabilization of the main macroeconomic parameters and the most volatile markets. The country's leadership is planning to move through the expansion of favored conditions for the business environment. On the other hand, it continues to institutionalize the restructuring and re-industrialization of the economy. This strengthens the incentives for international cooperation.

7. One of the main strategic objectives of EAEU is the transformation of resource advantages of national economies into competitive advantages. It can be implemented in a number of areas. The paper discusses the problem developing the production chains to deepen the processing of hydrocarbons and petrochemical industries.

8. Economic diplomacy serves the most effective method of finding a balance of interests in the global economic environment, achieved at the intersection of the objectives of individual states and their economic integration. Economic and diplomatic steps towards the development of integration ties of Azerbaijan can be characterized as the most pragmatic in difficult conditions of formation of a multipolar world economic space.

Summary

Modern Trends in World Economic Development: A Political Economy Approach

Kaysin Azretovich Khubiyev
Moscow State University, Russia

Amil Magerramov
Baku State University, Azerbaijan

Hadjiagha Rustambekov
Baku State University, Azerbaijan

Emin Garibli
Azerbaijan State University of Economics, Azerbaijan

This article examines trends in world economic development, including the fight for a new trade and economic division of the world and the counter-cyclical and debt nature of the movement of the world economy. In the context of these trends, the article discusses the formation and development prospects of the Eurasian Economic Union (EAEU) and the impact of global economic trends on the national economy.

Economic science is far behind the theoretical analysis of the current world economic trends, which is closely linked to the national economies of sovereign states in the context of globalization. This paper will attempt to present theoretically the current trends on the global and national levels primarily from the standpoint of political economy.

Key words: *Trade and economic division of the world, counter-cyclical movement of the global economy, EAEU, ASEAN*

THE ROLE OF THE “SOUTHERN GAS CORRIDOR” PROJECT IN THE SUSTAINABLE DEVELOPMENT OF CASPIAN BASIN COUNTRIES AND EU

Fuad Humbatov

*National Confederation of Organizations of Entrepreneurs (Employers)
of Azerbaijan Republic, Azerbaijan*

The actuality and close interrelation of such fundamental aspects of the contemporary geopolitics as energy security and sustainable development have been studied in many researches on base of various the relevant approaches. In our days it's impossible to imagine any slight economic development of a country without creation a sufficient and stable energy supply system. Only effective energy supply sector can best advance sustainable development of each country by producing and delivering secure and environmentally-friendly sources of energy and by increasing the efficiency of energy use (1, p.46). In almost all the relevant researches one can observe very frequent use of the combination of terms of the 3E's – energy security, economic development and environmental protection that proves once more a dialectic close interrelation between the terms of energy security and sustainable development.

According to the classic definition a sustainable development given in various academic papers and particularly in the light of Ms. Harlem Brundtland's terminology, sustainable development is a mode of management and life when each society has to satisfy the needs of the present generation without compromising the ability of future generation to satisfy theirs (1, p.41). It's economically feasible only via the rational management of human, natural, and economic resources that aims to satisfy the essential needs of humanity in the very long term. Secure, environmentally-friendly, and efficiently produced and used energy is one of the milestones of the sustainable development (1, 49).

Nowadays, fossil fuels (coal, oil and gas) supply most of the world's energy demand, with nuclear energy and large scale hydropower also making significant contributions. The ratio of global proven reserves to current consumption are, approximately, for coal 400 years, gas 60 years and oil 40 years (3, p.1). In the same time, in various academic researches it is predicted that the global energy mix will remain fairly stable and dominated by fossil fuels to 2030 due to the size and inertia of the energy system and the inability to change it quickly. Current demographic, economic, social, and technological trends – if not counterbalanced by strong new government policies – pose major challenges to the long-term sustainability of the global energy system. If governments do not implement policies beyond those already planned between now and 2030, it is projected that energy consumption will increase by over half (53%); the energy mix will remain fairly stable and dominated by fossil fuels (80% share); energy-related CO₂ emissions will increase by over half (55%); and large populations of the world's poor will continue to lack access to electricity (about 1.5 billion) and modern cooking and heating services (about 2.5 billion). In this scenario, energy consumption increases from 11 200 Mtoe (millions tons of oil equivalent) in 2004 to 17 200 Mtoe in 2030 (4, p.24).

All these scenarios and challenges underline once more an organic interrelation between sustainable development and energy security aspects necessitates focusing specially on the ability of the energy supply system of each region. This system consists of suppliers, transporters, distributors and regulatory, financial and R&D institutions – to deliver the amount of competitively-priced energy that customers demand, within accepted standards of reliability, timeliness, quality, safety and environmental impacts, under a wide range of geopolitical, economic, social, technological and weather circumstances.

As it's well-known from early researches, energy security concept was preliminarily defined within the context of the geopolitical risks to external oil supplies. Nowadays, energy security is a broader concept which encompasses all energy forms, all the external (foreign) and internal (domestic) links bringing the

energy to the final consumer. The ways energy supply disruptions mainly consist of equipment malfunctions, system design flaws, operator errors, malicious computer activities, deficient market and regulatory frameworks, corporate financial problems, labor actions, severe weather and natural events, aggressive acts (e.g. war, terrorism and sabotage), and geopolitical disruptions. But in practice, the most worrisome disruptions or potential disruptions are those linked to: 1) extreme weather events; 2) mismatched electricity supply and demand; 3) regulatory failures; and 4) concentration of oil and gas resources only in certain regions of the world (4, p.24).

Currently the last reason of disruption of energy supply mentioned above is widely misused by certain energy supplier countries for the sake of some geopolitics motivations. That's why the current world system of energy supply and use is rather unsustainable. Moreover, it is insecure and unreliable, because of the heavy dependence on conventional oil (e.a. crude oil), coming from limited reserves concentrated in politically volatile regions, and the inadequate capacity and maintenance of the network infrastructures for delivering gas and electricity. Insecure energy supplies inhibit development by raising energy costs and imposing expensive (sometimes life threatening) cuts in services when disruptions actually occur.

On the other hands, nowadays the problem of optimization of energy consumption has two main vectors. First of all it's a problem of inefficient, wasteful consumption of energy in production and personal consumption that conducts to exhaustion of non-renewable resources and excessive environmental pollution. The second and important problem is extremely different gaps in consumption levels over the countries, regions and even civilizations. The last issue becomes much more essential if we consider climatic, technological, socio- economic, civilization differences between regions (5, p.49). In this regard, it has huge importance to provide uniform, sufficient diversified supply of energy resources for all regions in the world in order to create an equal energy conditions in overcoming of global challenges and problems in the context of sustainable global development, and also for mobilization and involving of all countries, stakeholders for the solution of these global tasks of humanity.

In this regard, the "Southern Gas Corridor" (SGC) project actively launched and advocated by the Republic of Azerbaijan could be considered as a key part of ensuring secure and affordable supplies of energy to Georgia, Turkey and European Union countries.

Nowadays, many countries in Central and South East Europe are strongly dependent on a single supplier for most or all of their natural gas. To help these countries diversify their supplies, the SGC aims to expand infrastructure that can bring gas to the EU from the Caspian Basin, Central Asia, the Middle East, and the Eastern Mediterranean Basin.

Initially, approximately 10 billion cubic meters (bcm) of gas will flow along this route when it opens in 2019/2020. Given the potential supplies from the Caspian Region, the Middle East, and the East Mediterranean however, the EU aims to increase this to 100 bcm of gas per year in the future. In fact, SGC is a combination of four different energy projects: the offshore development of the Shah Deniz Phase 2 gas; the expansion of the South Caucasus pipeline from Azerbaijan through Georgia and into Turkey; the construction of the Trans-Anatolian Pipeline (TANAP) across Turkey; and the construction of the Trans-Adriatic Pipeline (TAP), which will connect to TANAP and transport natural gas to Greece, Bulgaria, Albania, and Italy. The current South Caucasus pipeline, fueled by the Shah Deniz oil field in offshore Azerbaijan, provides 8.6 bcm of natural gas a year to Azerbaijan, Georgia, and Turkey. Shah Deniz phase 2 has the potential to provide an additional 16 billion cubic meters of natural gas to the four European countries served by TAP. The final investment decision for the second phase of the Shah Deniz project was made in December of 2013, and the construction of this second phase is underway. Even with the connection of 3 pipelines in the Southern Corridor sending natural gas to Europe, challenges remain.

EU actions for expanding the Southern Gas Corridor include:

- keeping the infrastructure projects needed for the Corridor on the EU's list of projects of common interest. These are projects which can benefit from streamlined permitting process, receive preferential regulatory treatment, and may apply for EU funding from the Connecting Europe Facility

- cooperating closely with gas suppliers in the region including Azerbaijan, Iraq and Turkmenistan
- cooperating closely with transit countries including Azerbaijan, Georgia and Turkey
- negotiating with Azerbaijan and Turkmenistan on a Trans-Caspian pipeline to transport gas across the Caspian Sea (6,2)

Till now natural gas for Europe has been supplied from Northern and Central Europe, and increasingly through Turkey to the South. But region's energy vulnerability the one with involvement of Russia and Ukraine) as the world grows increasingly interdependent. This energy security vulnerability can be a threat to the national security and, with Europe deeply connected to the U.S. in the international energy market, Europe's energy security prospects are the U.S's energy security concerns and vice versa. Russia could remain a primary supplier of natural gas to Europe in the future, because six European countries imported 100% and 9 countries imported 40% of their natural gas from Russia – but that some form of diversification was a high importance in the light of last political situation in the region. So looking for different energy suppliers to Europe from a different source or location, and through a new route, is the main goal for energy diversification in Europe, as is the case with the Southern Gas Corridor.

EU is one the leading consumers of energy resources in the world. It consumes 1,825 mln ton oil equivalents, which makes up 16% of the global energy mix. The EU economy is based on crude oil and natural gas, however in some member states, such as France or Sweden, nuclear power is a significant source of energy generation. According the International Energy Agency nowadays the EU consumes around 535 bcm of gas, and after 15 years this may increase to 600 bcm. Therefore the EU gas market development is well characterized by IEA as “unprecedented uncertainty” (7, pp.80-81).

As it's described in the EU Energy Diplomacy Action Plan: “foreign policy should give particular priority to partners and initiatives crucial to EU efforts to strengthen the diversification of EU energy sources, supplies and routes, as identified in the Energy Union Communication, in particular in our neighborhoods (e.g. **the Southern Gas Corridor**), the Euro-Mediterranean energy cooperation, the East Mediterranean region, Energy Community” (8, clause 2). This project will certainly influence positively the development of economics of such vulnerable countries as Albania etc.

In addition, on November 18, 2015 the European Commission adopted a list of 195 key energy infrastructure projects, known as projects of common interest (PCIs). As it was mentioned above the Projects of Common Interest will enable the gradual build-up of the Energy Union by integrating the energy markets in Europe, by diversifying the energy sources and transport routes (9). The list of projects is an update of the PCI list adopted in October 2013. The list includes 108 electricity, 77 gas, 7 oil and 3 smart grids projects and it's an indeed pride that SGC is also in the updated PCI list.

With implementation of SGC project Azerbaijan and Turkey are going to become significant players who will manage to strengthen their position in the relations with EU and other key actors in the world energy market. In this regard, being the fourth gas corridor to Europe SGC may affect considerably political ambitions of other main gas-suppliers. But according to all political observers, an overall considerable impact of this project to the sustainable development of the EU and the Caspian Basin will overcome all other efforts aiming to hinder this very important and timely launched project.

Talking about the role of SGC to the sustainable development of the whole Caspian Basin that embraces the territories of Azerbaijan, Kazakhstan, Turkmenistan, and Georgia, as, an important transit route direction(not taking into consideration of Russia and Iran), first of all let's make some comparative analysis on total oil and gas reserves of the region. It varies widely, as many experts speculate that only a fraction of the hydrocarbon deposits have actually been found. To put these figures in perspective, the proven oil reserves of the entire region (Kashagan fields in Kazakhstan and gas the Shah Deniz field of Azerbaijan) are under a third of those for Iran or Iraq, the proven gas reserves are about half as much as Qatar's. If one considers, however, possible reserves—especially taking into account that because of the unsettled legal status of the Caspian that much of it remains unexplored—the totals become far more impressive, comparable (at the high end) to the proven reserves of Saudi Arabia or the proven reserves of Iran and Iraq combined.

As for gas, Turkmenistan's total possible reserves equal the proven reserves of Saudi Arabia, and the total possible reserves for the region as a whole equal the proven reserves of Saudi Arabia, Iraq, and the United Arab Emirates combined. Clearly, some early pronouncements of a “new Persian Gulf” might have been exaggerated, but, considering that potential oil reserves (1.5 trillion bcm of gas and 6.8 billion barrels of oil) are more than the proven reserves of Venezuela, Nigeria, Libya, and Norway combined. (10,11).

Competition over energy reserves in the Caspian Basin has been going between main political actors (Russia, US, China and EU) for many years. Iran is also an important player if not main, although it has been hobbled on the following account: its failure to settle the legal status of the Caspian (blamed by the Iranians on the Russians) has limited off-shore Iranian exploration. The dynamics of energy rivalry in the region depends upon a number of factors, including security issues, global energy demand, domestic politics within the region, and the strategies of external actors. But the analysis of this rivalry proves no outside power has been able to establish overwhelming dominance in the region (12-14). Instead, the competition among external actors has given local states significant freedom to maneuver.

Thus, SGC gives the Caspian Basin countries a unique chance to neutralize any serious geopolitical risks from the relevant political actors and to get all the necessary conditions for sustainable development for the long period.

In addition, after lifting all international sanctions against Iran, this project offers a huge potential to official Tehran to enlarge its presence in European energy-market by joining to SGC and to upgrade its whole ecosystem, as well as to attract foreign investments (particularly from EU) to its rapidly developing economy.

As regards Turkey, besides the fact that the Trans-Anatolian gas pipeline (TANAP) as one of the main parts of the SGC making this country an important gas-hub in the region, these projects stipulate an integration of the Turkish energy market with the EU, especially development in accession negotiations, the opening of Energy Chapter, and regional cooperation and integration in the Energy Community and the Mediterranean (14). It was clearly stated at the meeting of EU Commissioner for Climate Action and Energy Miguel Arias Cañete and Minister Albayrak on January 2016 that closer energy cooperation between EU-Turkey (e.g. SGC) (13) and the necessity to focus on such issues as energy efficiency and renewable, climate change and follow-up on COP 21, gas markets and interconnections that were among the key instruments of sustainable development of each country.

The transportation capacity of SGC will be raised till 23 bcm by 2023 and 31 bcm by 2026 that will give a huge impact to the ecosystem, sustainable development of the whole region. SGC is an outcome of successful energy diplomacy of the Republic of Azerbaijan. As it's argued in the current paper the SGC project has a huge impact to the sustainable development of Azerbaijan and the whole Caspian Basin region and EU by promotion of energy security aspects. These sustainable development principles in Azerbaijan are broadly reflected in the development concept “Azerbaijan 2020: Future Vision” approved in 2012 by the President Ilham Aliyev (par-paragraphs 3, 12) and our country is steadily realizing all steps in order to achieve the goals of this concept. By the way on March 18, 2016 Southern Gas Corridor Company (Cənub Qaz Dəhlizi QSC) which has been rated BB++ by the relevant rating agencies, placed 10-year \$1bn Eurobonds, yielding 6,875%. US and English investors showed an extremely high interest for the company's Eurobonds and this fact proves once more a high importance of SGC in the world energy market.

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Summary

The role of the “Southern Gas Corridor” project in the Sustainable Development of Caspian Basin countries and EU

Fuad Humbatov

*National Confederation of Organizations of Entrepreneurs (Employers)
of Azerbaijan Republic, Azerbaijan*

The paper is devoted to the role of Southern Gas Corridor project in the sustainable development issues of Caspian Basin countries, as well as EU. There were quoted the close interrelation of energy security and sustainable development in contemporary geopolitics and in the light of necessity to energy supply diversification of EU, energy potential and actual regional geopolitical processes in Caspian Basin, there were described the main geopolitical, economic advantages of SGC to all involved states for next decades. The actual challenges of energy security have a decisive role for the sustainable development of each country. They consist of improving the human, economic, social and environmental conditions of the people of today and tomorrow that demands much greater levels of energy services, as well as delivering of these services in a manner that is more universally accessible, affordable, reliable, safe and environmentally friendly. These challenges, doubtless, require fundamental changes in technologies, methods, and infrastructure and of course people's behavior everywhere.

Key words: *Sustainable Development, Energy security, Environmental protection, optimization of energy consumption, Southern Gas Corridorproject, Caspian Basin, EU Energy Diplomacy Action Plan*

FEATURES OF THE MONETARY ASSURANCE OF MACROECONOMIC STABILITY FOR SUSTAINABLE DEVELOPMENT IN THE CONTEXT OF GLOBALIZATION

Nigar Ashurbayli-Huseynova

Azerbaijan State University of Economics, Azerbaijan

"Achieving sustainable human development is the most significant problem facing the world community". This statement was made in 1987 by the UN General Assembly. Since then, it has not lost its relevance - the concept of sustainable development is actively discussed by world leaders today [1]. Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. The very concept was adopted at the United Nations Conference on Environment and Development, held in Rio de Janeiro in 1992. The concept of SD was formulated by means of relations of three directions: economic, ecological and social.

Over the past 20 years, the interconnection and interdependence of countries has increased significantly. This is manifested in all spheres, including trade, production and financial markets. The processes taking place in economies of some countries are rapidly transferred to the economy of other countries in one form or another. The concept of globalization is used to describe the growing interdependence of countries.

The processes taking place in the world and in neighboring partner countries have not bypassed our country. As, in December 2015, 20 year-long financial stability reacted to a sharp decline in oil prices and a continued weakening of the currencies in the main trading partner countries by transition to floating exchange rate regulated by the Central Bank. After transition to the new regime, the stability of the financial markets has been restored as a result of the successful financial policy of the state in pursuit of manat's equilibrium. For comparison, it was not possible to reduce the ardor in the financial markets of Russia or Kazakhstan in such a short period of time after transition to floating currency regime. The process of melting the Central Bank's strategic currency reserves was stopped only through fiscal strain and monetary support measures. Although monetary policy has achieved its ultimate targets and controlled manat's exchange rate and inflation, the impact of unfavorable conditions in world markets has not been neglected by the real sector and banks. "Standard & Poor's " (S & P) agency has lowered Azerbaijan's credit rating from BBB to BB +. At the same time, the rating of different commercial banks operating in our country has been downgraded.

In March 2016, was established the Financial Markets Supervision Chamber public legal entity- mega regulator, which was able to respond the calls from current financial markets more effectively and flexibly. In addition, in order to consolidate the stability of banking sector further steps have been taken by the Central Bank, and currently there are 37 banks operating in our country.

It is already possible to notice the benefits of economic reforms in Azerbaijan in the financial sector. In particular, the policy of economic inculcation through the banking sector is successfully implemented in the context of manat and price stability. Rapid economic reforms and good infrastructure form the basis for economic growth and sustainable growth.

With the purpose of sustainable development and monetary assurance of macroeconomic stability in the context of globalization, it is necessary to trace the direct impact of financial globalization on the MCP impact, analyzing its effect to transmission mechanisms of the policy. Attempts to synthesize various theoretical approaches to monetary policy led to the fact that several channels of this policy with impact on economic activity have been allocated:

- interest rate channel;
- exchange rates channel;
- credit channel;
- a channel associated with asset prices

Transmission mechanisms are the channels through which the decisions of the MCP affect the economy. Probably the most famous of them is the interest rate channel. Although the MCP instrument is a very short-term interest rate, long-term rates have a greater impact on savings and investment decisions.

The direct channel is linked to the interest rate on the basis of the IS-LM model.

The channel related with the exchange rate shows the effect of changes in exports and imports. The credit channel takes place when banks react to monetary policy mainly by changing interest rates and lending. The channel associated with asset prices shows how the level of investment and consumption changes as a result of a change in the share price.

In the first approach, proceeding from what has been said, the process of globalization is connected with the exchange rate. The channel effect associated with the exchange rate can be complicated by the fact that the exchange rate, in addition to the interest rate, is set by the central bank within the country, depends on many other factors, including the state of foreign trade, economic situation in the trading partner countries, changes in the mood of market actors and confidence in the policy of authorities. In modern conditions the exchange rates are characterized by relatively high volatility (changes in interest rates). The channel activity associated with the interest rate in those countries where financial markets (including bond markets) are underdeveloped and the banking system is based on external financing, providing mainly short-term domestic loans is particularly complex. This situation is common to many developing countries.

International integration of financial markets is called financial globalization. This definition implies an increase in cross-border capital flows and the trading of financial assets in the financial-global world. The global nature of financial markets has created a favorable area for the growth of financial innovation, which in turn has made financial markets more closely integrated and complex.

Lucas Papademos stated in his speech that financial globalization, measuring both the amount of stocks of foreign assets and the external liabilities of the entire economy as a percentage of GDP, tripled in the advanced economies from the early 1990s to 2004 and only in the Euro area the amount of outstanding foreign assets and liabilities increased from 190% of GDP in 1999 to 280% in 2005 [3]. In Azerbaijan, GDP in real terms decreased by 3.9% to 43.4 billion manats. GDP per capita amounted to 4512.5 manats [4].

Another statistical indicator of financial globalization is the correlation between financial variables in different countries. A high correlation between short and long-term interest rates and asset prices indicate a higher financial globalization.

Correlations between variables in financial markets increased with increasing financial interdependence. High rates between financial variables are due to the growing secondary effects of national financial markets on other countries.

In the context of financial globalization, the task of developers of monetary policy becomes more and more complicated. They may also need to take into account international developments when making decisions in the area of monetary policy. The integration of financial markets can affect the transmission mechanism of monetary policy, making some channels more important, and some others less effective, in contrast to the case in the past with less integrated financial markets.

MCP operates through the control of short-term interest rates. Changes in the short-term interest rate affect the conditions in financial markets, affecting long-term interest rates, bank loan offers, capital and asset prices and the exchange rate.

Expectation theory of the timing structure states that long-term interest rates represent the average of the expected future short-term interest rates. Thus, in the international integrated financial markets, the sensitivity of the long-term interest rate and the price of long-term assets to a short-term interest rate may decrease due to the influence of international market conditions on long-term interest rates. Does this mean that monetary policy has lost its effectiveness in the context of financial globalization?

The discussion is not resolved, and the number of studies is growing on this issue, especially after the financial crisis of 2007. Some authors argue that the ability of central banks to monitor monetary policy depends on enhancing financial globalization. For example, Rogoff argues that even large central banks have less direct control over the medium and long-term interest rate at present than it could be in the case of less integrated financial markets [5].

Inflation in the period of globalization. Inflation is a deterioration in the purchasing power of money. This happens when the central bank carries out money issuance in a volume larger than the demand from the market. The result is a possible increase in all prices and salaries. And while the discrepancy between supply and demand for money remains, prices and salaries will grow.

Globalization can complicate the process of inflation only if it somehow disrupts the work of the central bank, but this seems unlikely. In fact, some scientists believe that globalization has actually improved the behavior of central banks, punishing those whose currencies do not have a stable purchasing power. Average annual inflation in Azerbaijan in 2016 was 13.3% [4].

Indeed, world inflation was moderate in the 1990s, as the global integration of financial markets accelerated. For example, according to the IMF, from the early 1970s to the early 1990s, world inflation averaged about 16% per year. Since the mid-1990s, world inflation has averaged slightly less than 5% [6]. Most of the recent improvements have come from developing and emerging countries with market economies - groups that previously did not have monetary and political discipline.

By the middle of the 1980s, central banks in key developed countries, especially in the US, Britain, Japan and many European countries, had regained confidence in what they lost in the 1970s. In these countries, residents benefit both from direct consequences of low and stable inflation, and from the indirect influence of having a currency with an international reserve status. Ultimately, as long as the central bank has an independent monetary policy, that is, it is not tied to a fixed exchange in which its hands are tied - the level of inflation is determined by money-credit policy.

Kenneth Rogoff argues that globalization has led to greater price flexibility, which has reduced the ability of central banks to use inflation surprises to increase output [5]. As a result, central banks will have less interest in trying to use a short-term trade-off between inflation and unemployment.

Globalization, as it makes markets more competitive, also has the potential to stimulate productivity growth. Higher productivity growth can lead to lower inflation, since it directly reduces prices if the MCP does not become more expansionary. In addition, such growth facilitates monetary regulation institutions permission to reduce inflation, as production growth will continue at a rapid pace when inflation decreases. Since globalization increases competition, it can also reduce margins, and this reduction can lead to a drop in relative prices. However, lower mark-ups and price levels should only have a temporary effect on inflation. In addition, forecasting lower margins as a result of globalization, appears to be contrary to the high rates of corporate profitability, which we are seeing now in the world.

One of the characteristics of globalization is that it has brought more than a billion new workers into the world economic system from China and India. Some observers argue that, thanks to the sale of cheap goods, developing Asia, and especially China, "exported deflation" and will continue to do so until salaries in these countries increase.

Relative price changes. Of course, prices can change not only because of inflation. Prices are constantly adjusting to changing pressure from supply and demand. Economists call this the adjustment of the relative price, and it is fundamentally different from inflation.

Relative price changes reflect important information about the deficit of specific goods and services. The rise in the relative price indicates that demand is higher than supply (or that the supply lags behind demand), while a fall in the relative price indicates exactly the opposite.

Inflation, on the contrary, does not provide any information useful for our consumption, production and choice of labor. In any case, inflation can add noise to the price signals that inform us of our decisions, and can lead people to erroneous economic choices. Worse, inflation can cause people to divert time and resources from activities conducive to production and long-term economic growth, and to activities that serve only to protect their wealth, and not to expand it.

Globalization is not detrimental to the central bank's ability to control inflation, but history shows that it can sometimes increase relative price changes by exerting more pressure on global demand and supply from individual countries. Some of them directly affect the purses of consumers, as well as the prices of imported and exported goods. Many domestic industries use foreign resources, so domestic costs can grow and fall with global price shocks. Similarly, external competition will affect the pricing strategy of domestic firms and the salary requirements of domestic labor organizations. Some of the beneficial effects of globalization are even harder to see. Developing specialization, global integration on the market slowly increases productivity and reduces unit costs, thereby supporting lower inflation.

Risks associated with a sharp decline in global financial imbalances. Incomplete financial globalization, reflecting the low level of financial market development in other fast-growing emerging market countries combined with the hypothesis of "excessive saving," can partially explain the current level and evolution of global net foreign assets and liabilities.

Participants in the financial market may eventually question the sustainability of some of these policies and change their behavior in anticipation of their final consequences. There is no doubt that financial globalization contributes to the international division of risks, promotes economic growth and reduces macroeconomic instability. However, the size and specific asymmetry of the positions of net foreign assets observed since the late 1990s are associated with potential mid-term and long-term risks to financial stability. Main and sharp corrections to asset prices associated with the disorderly elimination of global financial imbalances can become the main mechanism for dissemination of financial instability.

At the same time, practice demonstrates the persistence of a significant number of countries, mainly developing ones, seeking to regulate the rates of their currencies. One of the brightest manifestations of this trend is the significant growth of world foreign exchange reserves in recent years. These processes support the world monetary system, indirectly based on the prevalence of the US dollar, primarily as a reserve currency. If the world monetary system changes to bipolarity, first of all, in terms of substantial enhance of the role of the euro as the currency of reserve assets, the national currency policy will face new significant external risks.

Bogomolov O.T., emphasizing the influence of globalization on the stability of national financial systems, states that even in situations where financial crises can be triggered by internal causes (for example, erroneous state policy), the presence of significant short-term speculative capital flows and its possibility of rapid exit from the country increases the impact of these crises [7].

Improvements in information and communication technologies have become important factors of globalization. Consequently, in a globalized world where goods and services can easily be obtained from low-cost suppliers, access to foreign financial markets is readily available, and capital flows across national borders can have important implications for MCP.

Changes in the economic environment due to global forces can change the relative importance of the channels through which MCP operates. The theory suggests that the key elements of the MCP structure, such as the inflation process and the transmission mechanism, can be affected by the global integration of financial and commodity markets through various channels.

Moreover, globalization can have a permanent impact on prices. The importance of globalization consequences MCP is emphasized by central banks and scientific researchers [8]. It is generally recognized that MCP bodies can no longer ignore international developments in the context of globalization. Consequently, the adoption of MCP has become a complex task.

Theoretically, globalization can influence inflation and monetary policy through several channels.

First, globalization can directly affect MCP by changing the environment in financial markets. In integrated financial markets, MCP transmission mechanism can be affected by changing the relative importance of transmission channels. Moreover, the response of the long-term interest rate to short-term rates may decrease due to the impact of international market conditions on the long-term interest rate.

Secondly, financial globalization, i.e. higher international mobility of capital, may have an imbalance, forcing central banks to pursue sound money-credit policies.

Globalization can affect domestic inflation through trade. Trade integration can have a direct impact on inflation through the import price channel and the indirect effect through increased competitive pressures. Cheap imports from China and other developing countries put downward pressure on prices, when this import is used as a contribution to the production process.

However, the effects may not be in one direction. Reducing pressure on prices due to lower imports can increase the purchasing power of consumers, which they will use to buy other products that increase the pressure on the prices of these products. In addition, the growth of international trade is associated with high productivity growth in developing countries, such as China and India. The high demand for raw materials from these countries increases the pressure on the prices of manufactured goods. These compensating effects may be one of the reasons for skeptical and mixed empirical data on the impact of globalization on domestic inflation.

Certainly, the ongoing global economic integration is a phenomenon of the greatest importance that will contribute to the formation of the Azerbaijani economy for decades. Globalization did not have a significant impact on the ability of the CBAR to affect the financial state in the country and did not lead to substantial changes in the process that determines the level of inflation. However, to adopt an effective MCP, it is now necessary to consider a variety of global influences, many of which have not yet fully understood. The CBAR continues to give high priority to understanding the influence of globalization on the economy of the country as a whole and on conducting of the transmission monetary policy of Azerbaijan in particular.

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Summary

Features of the monetary assurance of macroeconomic stability for Sustainable Development in the context of globalization

Nigar Ashurbayli-Huseynova
Azerbaijan State University of Economics, Azerbaijan

The article considers the concept of sustainable development, the main directions of sustainable development concept. Particular attention is paid to the peculiarities of monetary assurance of macroeconomic stability in the context of globalization for sustainable development. By analyzing its impact on transmission mechanisms of monetary policy, the direct effect of financial globalization on influence of this policy is traced. The paper further notes that globalization can affect the incentives for central banks to control inflation and, more directly, inflation processes in the short and medium term. Investigating the materials, the author draws the conclusion that, theoretically, globalization can affect inflation and monetary policy through several channels. First, globalization can directly influence the MCP by changing the environment in financial markets. First, globalization can directly influence the MCP by changing the environment in financial markets. Secondly, financial globalization, i.e. higher international mobility of capital may have an imbalance, forcing central banks to pursue sound money-credit policies for sustainable economic growth.

Key words: *Sustainable development, macroeconomic stability, globalization, financial globalization, integration, money-credit policy*

THE ROLE OF FISCAL ISSUES IN SOCIO-ECONOMIC DEVELOPMENT OF THE REPUBLIC OF AZERBAIJAN

Aybeniz Qubadova

Azerbaijan State University of Economics, Azerbaijan

Macro-level financial policy is divided into two: fiscal and monetary policies. Monetary policy pertains to money-credit policy, and fiscal policy is an actions plan that captures all the revenues and expenditures of the state (budget summary). The budget policy is an integral part of fiscal policy. However, in some literatures, financial policy implies only fiscal policy. On the other hand, western literature considers finance of enterprises and financial markets as a financial concept. Issues related to fiscal policy are studied within a public (or state) financial context.

According to I.I. Mislyayeva, budgetary policy is determined effort implemented by the state party to manage the key development parameters of budget revenues and expenditures, including public debt.

Group of scientists state that the purpose of the budget policy is to achieve sustainable and effective economic growth by optimizing tax collection and rational planning of budget expenditures.

In some western literatures, the budget policy is understood as the main directions of the budget's revenue and expenditure policies. Here, the main direction of expenditure policy is being socially- and investment-oriented. At the same time, the substantive part of revenue policy is tax policy.

The concept of budget-tax or tax-budget policy is more commonly used in the Republic of Azerbaijan, as well as in the CIS countries in general.

This is primarily due to the fact that the budget policy (in the CIS countries, the budgetary policy is primarily understood as budget expenditures) in the CIS countries is determined only by the Ministry of Finance and the tax policy is determined by the Ministry of Taxes (or Tax Inspection).

In the economic theory, there are two widespread forms of budgetary policy:

1. expansionist (incentive) - elimination of the periodic crisis by reduction of taxes or increase of budget expenditures,
2. restrictionist (restrictive)- restriction of the periodic growth of economy due to the securitization of budget expenditures or tax increases.

The positive results of the expansionist policy are the elimination of the cyclical crisis in a short-term, and the negative consequences are the increase in budget deficit and inflation, and tax burden on enterprises.

The positive effects of restrictionist policy are the reduction in the budget deficit, the decline in inflation and tax burden on businesses, and the negative consequences are the increase in short-term unemployment and the threat of stagnation for long-run.

Fiscal capacity refers to detecting and directing to the relevant destination of necessary funding in order to solve socio-economic problems facing the state in conditions of fiscal sustainability for medium- and long-term. At the same time, the difference between the current costs and possible costs should not lead to a decrease in the credit worthiness of the public sector. This explanation indicates that fiscal capacity is focused on identifying additional funding in the budget sector. The concept of fiscal capacity itself is not considered as a new concept.

Fiscal capacity can be achieved as a result of the following measures: [1]

- by increasing revenue volumes, through expanding tax base, optimizing tax burden, raising tax rates,
- as a result of grants reduction received from abroad and the volume of public debt,
- through privatization of state property,
- at the expense of increasing the efficiency of tax collection coefficient and expenses, as a result of the fiscal decentralization,
- through cutting back unproductive expenditures.

The essence of fiscal sustainability

The essence of the more fiscal sustainability conception, that have been a lot of discussed lately, is the equal use of revenues from oil or other natural resources (in a percent expression) for a long-term period. In the countries such as the Russian Federation, Kazakhstan and Azerbaijan, the concept, as a rule, is defined on the basis of specified form- the principle of unchanged real expenditures (or revenues). The main indicator used is the percentage ratio of revenues from oil to non-oil GDP and the non-oil budget deficit. Oil is taken conditionally. In this case, the indicator of percentage ratio could also be used on funds received from copper and other natural resources.

There should be key criteria for the effectiveness of the budget system. The issue discussed cannot be the definition of criteria for only the efficient use of resources.

The key criteria are the protection of fiscal discipline, proper allocation of resources in accordance with the targets set (allocation efficiency), economic efficiency of expenditures financed by the state budget and other budgetary systems. In other words, the effectiveness of budget system, on the one hand, is considered as a proper use of revenues from natural resource, and on the other hand, it refers to debt sustainability, long-term financing of retirement costs, improving the financial performance of state-owned enterprises, and the effect of tax regimes.

Experience of Azerbaijan. It is known that the fiscal sustainability of the country demonstrates the volume of all government revenues. On this basis, firstly, it is necessary to clarify the oil components in the context of the summary budget. This category includes three elements of the state budget, the State Oil Fund's revenues and loans to the energy sector. These are the following [2].

State budget:

- SOCAR's taxes paid to state budget
- AIOC's taxes paid to state budget
- Transfers of SOFAZ to the state budget

State Oil Fund:

- SOFAZ's revenues.

Main directions of fiscal policy of the Republic of Azerbaijan

The main directions of the country's budget (including tax) policy over the past few years are as follows:

Macroeconomic indicators guiding the budget and tax policy in accordance with the macroeconomic environment emerged in the country in 2003-2009 reflects the determination of additional income sources to the state budget, expenditure priorities, maximum utilization of funds, increasing the direct participation and impact on management of economy, ensuring its flexibility, development of entrepreneurship, strengthening of financial discipline and transparency, avoidance of inflation, improving the application of targeted social assistance, raising living standards of the population, increasing their income and employment levels, poverty reduction, development of entrepreneurship and regions, as well as, creating financial opportunities for other state measures.

The main objective of the budget and tax policy is to ensure that the state budget is used to improve the material well-being of the population, increase incomes and employment levels, manage the country's economy, maximize efficient use of revenues in the medium- and long-term perspective, where the high profitability of the oil sector is achieved, strengthen financial discipline and ensuring transparency, as well as to provide sustainable development of the non - oil sector, increase the role of the state budget in the regulation of the economy, maintain the stable macroeconomic situation in the country, to achieve the possible reduction of financial, economic crises and inflation pressure, and make it the main financial source and economic instrument for stimulating its dynamic development[4].

Another key purpose of the policy is to improve the state budget expenditures, to ensure that the growth rate of current expenditures does not exceed the growth rate of the non - oil sector of the economy, to promote perspective development along with current work, to ensure establishment of competitive economy and infrastructures, to increase the share of domestic resources in the investments attracted to the economy, and to afford the transition to the distribution of funds through medium-term programs.

Minimizing tax discounts, expanding taxpayer circle, and continue efforts in order to reduce tax rates, in accordance with the international practice, are also among the main priorities.

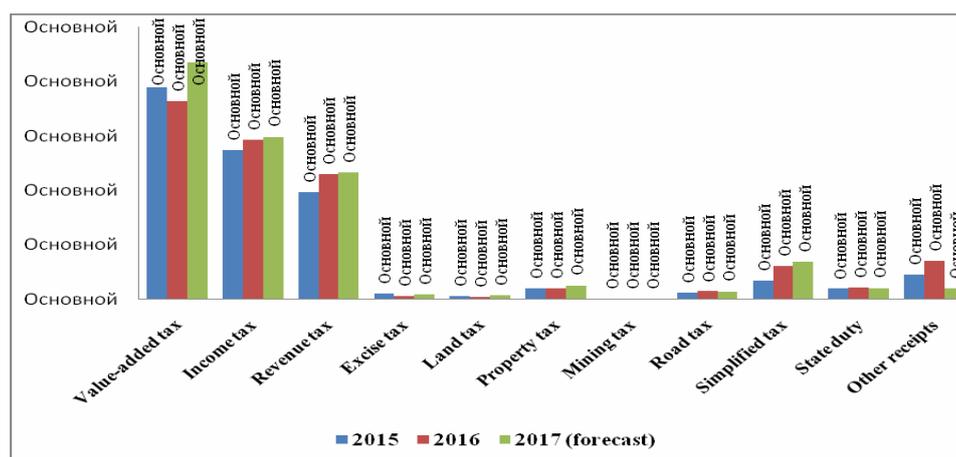
Complex macroeconomic measures have been taken to ensure economic growth in 2003-2010, to increase financial guarantee of state program for elimination of poverty and economic growth, to develop entrepreneurship, which is of particular importance to the regions, stimulate the export-oriented product production, as well as to meet the population's demand for food products at the expense of local sources through the development of the agriculture sector.

In 2016, The Ministry of Taxes contributed 7.15 billion manats to the state budget, while the forecast was estimated at 7.10 billion manats. During the reporting period, 77.05 percent of the taxes included to the budget was through non-oil sector and 22.95 percent- oil sector [4].

Compared to the same period of 2015, the total amount of tax revenues to the budget from non-oil sector increased by 7.5 percent (377 million manats). If we analyze the performance of tax revenues on payments in 2016, we can see that total tax revenues are mainly formed by VAT and income tax.

Also, the increase in other payments, especially in revenue tax, had also affected the general tax receipts.

Graph 4. Non-oil tax receipts, mln. manats

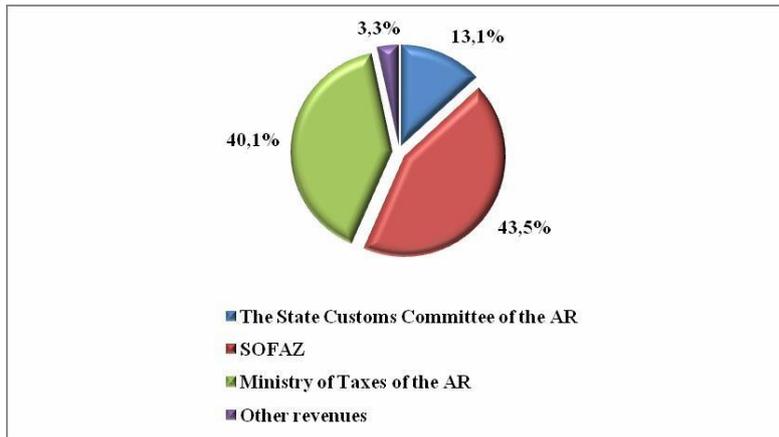


It is possible to observe the decrease in transfers from the AR Oil Fund in the structure of budget revenues for 2016. While the share of transfers from the Oil Fund in the budget revenues in 2015 was 47.4 percent, in 2016 this figure dropped by 3.9 percent and was 43.5 percent.

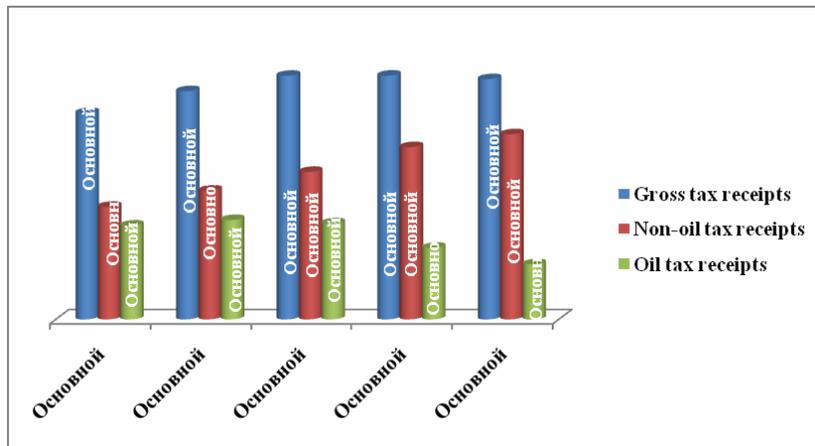
In 2016, 65.9% of state budget expenditures were directed to current expenditures, 24.1% to capital expenditures, and 10.0% to the services related with state debt and liabilities. Also, 35.2% of these expenditures were directed to the financing of social expenditures, i.e. labor payment fund, pensions and social benefits, medicines and food costs and this is 10.1 % more, in comparison with the same spendings in 2015.

The total volume of the state budget deficit is 241.2 million manats.

Graph 5. The structure of state budget revenues in 2016



Graph 6 demonstrates the structure of tax revenues by oil and non-oil sector in tax payments to the state budget during the years of 2012-2016. Here we can see clearly that the volume of tax revenues by non-oil sector is steadily growing. Although, revenues from oil and non-oil sector in total tax revenues amounted to approximately the same volume in 2012, there was a significant increase in non-oil sector revenues in 2016.



Graph 6. Dynamics of gross, oil and non-oil tax receipts, mln. Manats

2. Formation steps of tax system in the budget organization process of AR SWOT analysis of fiscal policy

Several concepts and methods currently applied in fiscal policies have been taken from the private sector. One of these methods is SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis. The purpose of applying this method is to identify the strengths and weaknesses of organization, as well as its possibilities and threats. SWOT is divided into internal (strengths and weaknesses) and external (opportunities and threats) blocks.

The strengths of Azerbaijan's fiscal policy are a low level of tax rates, the level of public debt, including external debt, budget deficit and tax burden being below the limit accepted in international experience, as well as, significant increase in the share of direct taxes in recent years, and existence of a specific body (Chamber of Accounts) that can audit the budget.

At the same time, significant dependence on oil revenues (including the transfers from State Oil Fund), insufficient funding of social insurance deductionsto meet SSPF costs, increase in external debt per capita, raising the debt limit by 3 times, predicting the overall budget deficit at the rate of 10% of GDP can be regarded as weaknesses of Azerbaijan's fiscal policy.

The opportunities facing the fiscal policy of Azerbaijan are the expansion of the tax base through development of the real sector, especially the non-oil sector, as well as coordination of budget expenditures with socio-economic targets and increase ineffectiveness of expenditures as a result of application of the targeted program budget conception.

The threats facing the fiscal policy of Azerbaijan are the SOFAZ's transfers to compensate significant budget losses as a result of sharp fluctuations in crude oil prices on the world market, credits, subsidies, loans and dotations to state-owned enterprises suffered during the global financial crisis and increase in the budget deficit and expenditures with this regard.

The following table summarizes SWOT analysis, that combines the strengths and weaknesses of the fiscal policy, as well as the opportunities and threats facing the Republic of Azerbaijan.

Table 1.

	Opportunities	Threats
Strengths	Extension of the tax base for the medium- and long-term period as a result of full or partial exemption of taxes for non-oil sector	Making amendments within the expenditure items of functional and economic classification without exceeding the limit of existing budget expenditures, in order to reduce the likelihood of transferring funds from the budget to the state-owned enterprises suffered during world financial crises
Weaknesses	It is possible to take advantage of the opportunity of long-term use of oil revenues as a result of applying the principle of non-exchangeable real revenue (or expenditure), used as one of the main forms of fiscal sustainability. At the same time, this condition would reduce the dependence of the state budget on oil.	The "golden rule", defined by the legislation for maintaining the overall budget and public debt limit at a normal level (for making changes every year) - defining the limits of deficit and debt for a long-term period.

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Summary

The role of fiscal issues in socio-economic development of the Republic of Azerbaijan

Aybeniz Qubadova

Azerbaijan State University of Economics, Azerbaijan

The article considers the concept of budgetary policy and explains the main forms of this policy by demonstrating its positive and negative effects on the state's fiscal system. Particular attention is given to analysis of main objectives of budget-tax or tax-budget policy, which is more commonly used in the Republic of Azerbaijan and the ways to achieve the effectiveness of budget system. Further, the paper notes the importance of applying SWOT method in order to identify the strengths and weaknesses of the state, as well as its possibilities and threats. At the end, by investigating the given data on the state budget of AR, the author summarizes SWOT analysis, and constructs a table that combines the strengths and weaknesses of the fiscal policy, and also demonstrates the opportunities and threats facing the Republic of Azerbaijan.

Key words: *Sustainable development, stability, fiscal policy, financial globalization, fiscal sustainability, tax-budget policy*

THE IMPACT OF PERSONAL TRAITS OF CADETS ON THEIR TRAINING AND DISCIPLINE

Elnara Shafiyeva

Baku State University, Azerbaijan

Reyhan Manieva

Armed Forces Military Academy, Azerbaijan

The effectiveness of the state's foreign and domestic policies is largely determined by its military-defensive potential. Military service is service by an individual or group in an army or other militia, whether as a chosen job or as a result of an involuntary draft.

The army is primarily understood as a state institution with a strictly defined defense purpose, in which the military function has a slightly self-contained content. This vision of the army, which is especially methodologically sound, creates a certain one-sidedness in its study, and sometimes leads to conclusions that do not allow us to approach internal military problems as civil, promote the formation of views on the army only as a specific vocational education [4].

For a strong army is very important military education. Military education system plays exceptional role in the creation of the Armed Forces in accordance with contemporary standards. As we know, military education is a training and education process which provides systematized knowledge, skills and continuous development of stages including a special strategic sphere in order to ensure the security and defense of the Republic of Azerbaijan. Military education system comprises the network of military educational institutions and educational management agencies implementing consistent multi-stage educational programs and the main purpose is the training of patriotic and skilled staff having an outlook complying with the state education standards and capable of carrying out the tasks of the Armed Forces in order to ensure the security and defense of the Republic of Azerbaijan. At present, training of military personnel of the various categories for Armed Forces and other military formations are being carried out in military education institutions [3].

Military professional activity can be classified as one of the most demanding for its subject, with most of the requirements traditionally addressed to the personality of the serviceman, to his inner world. People differ not only in intelligence and efficiency, but in an intangible something referred to as "personality".

As a human being each one of us shows certain specific patterns of thinking, feeling and acting. In everyday life we often find people who are called "aggressive", "jolly", "happy" and so on. These are impressions of people which we carry with us and use while interacting with them. It is in this sense that we frequently employ the word 'personality'. The study of personality has also attracted the attention of psychologists and they have developed various theories of personality. Also, they have developed certain tools to assess people's personality. The personality related information is used in selecting people for various jobs, giving guidance to people in the need of psychological help, and mapping their potential. Thus the study of personality contributes to different areas of human behaviour. His term personality is used in a number of ways including the apparent features of a person. However, psychologists use it to refer to the characteristic pattern of thinking, feeling and acting. By characteristic pattern we mean the consistent and distinctive ways our ideas, feelings and actions are organized 'personality' as the essence of the person. It is a person's "true" inner nature the unique impression that a person makes on others is equally important in understanding personality.

"Personality is the dynamic organization within the individual of those psychophysical systems that determine his characteristics behavior and thought".

Personality is usually defined as the set of habitual behaviors, cognitions and emotional patterns that evolve from biological and environmental factors. While there is no generally agreed upon definition of personality, most theories focus on motivation and psychological interactions with ones environment [8].

Man's interest in personality is as old as his interest in the supernatural. Thus some ideas about personality may be found in primitive customs, myths and superstitions as well as in all the great religions of the world. In Literature, since the days of the great poetry, character writers have presented interesting personality types. Like other abstract terms defining personality is difficult. There are various definitions of personality. Some of these aspects may be given more weight than others and play more vital role in the development of one's personality. There are three basic factors, which have to be considered in describing personality.

These are:

1. The internal aspects: these are feelings, the physiological systems, glands and inherently determined physical features.
2. The social situation: they include the influence of the family and other groups to which one belongs, the influence of customs, traditions and culture.
3. The reactions or behavior; they are results from the interaction of the individual and the stimuli from the environment.

To many people personality is the most exciting topic in psychology. Part of this excitement, no doubt, has been aroused by the stress placed upon personal acceptability in modern life. In the main, personality has been studied from three points of view: of types, traits, and overall structure. Type theories portray an individual with respect to a relatively few broad classifications. Trait theories try first to discover the meaningful personality dimensions, and second to describe a person in accordance with the degree to which he exhibits these characteristics. Finally, structure theories envisage the individual personality as an organized and dynamic whole rather than as a collection of its variable constituent parts or elements.

Personality is a dynamic growing thing. It grows in a social setup, through social experiences and continual adjustment to the environment. Early theories assumed that personality was expressed in people's physical appearance. Personalities are characterized in terms of traits, which are relatively enduring characteristics that influence our behavior across many situations. One challenge to the trait approach to personality is that traits may not be as stable as we think they are [7].

As noted in psychological literature, transformation of a person into personality is the result of three psychological categories. These are reflection- communication- activities.

The psychological structure of personality is primarily due to its cognitive.

One of the primary functions of the human brain is to take information from the external world and make sense of it so that we can successfully interact with our environments. Many of the early steps in this process involve creating perceptions of the world based on sensory information.

Formation of the human personality occurs only in the process of communication with other people, under the influence of society, that is, in the process of socialization of the individual. From this point of view, action should be regarded as one of the main conditions of personality formation. The main type of human activity is game, education and work.

Military education activities, one of the main types of activities and this type of activity provides the cadets with theoretical knowledge, skills and habits.

Specifically, it should be noted the Military Lyceums, founded by our great national leader Heydar Aliyev, are the starting point for the formation of military personality. These military lyceums have been centered on the establishment of the officer corps, which forms the power structure of our army.

These military high schools don't only upbringing of the person, but also form them as intellectual, professional officers. The study of the psychological characteristics of the cadets is a prerequisite for the proper identification of the training and education program. Individual psychological features of personality are characteristic, temperament and abilities.

By the term character, we mean an enduring and distinguishing mental and moral characteristic in an individual. It is the only factor which determines our reaction or response to the given event or situation. It defines a person's behaviour pattern, thinking style, controls feelings. It is based on the environment that surrounds us, mental ability, moral principles and similar other factors. It is the most precious thing possessed by a person, evidenced by the limits he/she never crossed. Character is totality of settled individual characteristics of psychical activity formed during the process of adaptive ontogenesis development and based on the psychophysiological constitution matured as the result of individual upbringing. Physiological processes give human beings the following seven distinct qualities: hysteroidness, impulsiveness, flexibility and agility, conformity, correctness, criticality and sentimentality. The appropriate type of character appears as a result of the dominance of one of these qualities over the others.

Temperament, in psychology, an aspect of personality concerned with emotional dispositions and reactions and their speed and intensity; the term often is used to refer to the prevailing mood or mood pattern of a person. The notion of temperament in this sense originated with Galen, the Greek physician of the 2nd century AD, who developed it from an earlier physiological theory of four basic body fluids (humours): blood, phlegm, black bile, and yellow bile.

A human ability is a union of a native process in humans and a content inferred from relatively permanent changes in behaviour. Abilities are of two kinds: Cognitive and Psychomotor. Both cognitive and psychomotor abilities are the products of maturation and learning. In turn, possessing a particular ability facilitates further learning. Extensive researches conducted on human abilities have yielded beneficial results, so that it is now possible to easily identify and classify different human abilities [5].

Although the activity is influenced by all three individual psychological features, the main attention in the article is given to one of these features - the temperament

The success of cadet training in colleges depends on many factors. And a significant role in this is played by such a natural feature as temperament. It is laid down genetically, and on its basis many habits, behavior patterns, activity style are formed. We will talk about how to determine how temperamental the Cadets are and how these features can affect their teaching..

Temperament is a set of mental features characteristic of a certain person, which are associated with emotional excitability. In other words, temperament is a natural feature of every person, which determines his emotional response in this or that situation. Today psychophysiologicals distinguish four types of temperament: sanguine, choleric, phlegmatic, melancholic.

People with sanguine personality type tend to be lively, optimistic, buoyant, and carefree. They love adventure and have a high risk tolerance. Typically, Sanguine people are very poor at tolerating boredom and will seek variety and entertainment. Needless to say, this trait may sometimes negatively affect their romantic relationships. Because this temperament is prone to pleasure-seeking behaviors.

Someone with pure choleric temperament is usually a goal-oriented person. People with choleric personality type are very savvy, analytical, and logical. Extremely practical and straightforward, choleric people aren't necessary very good companions or particularly social. They dislike small talk and enjoy deep and meaningful conversations. They would rather be alone than in company of shallow, superficial people.

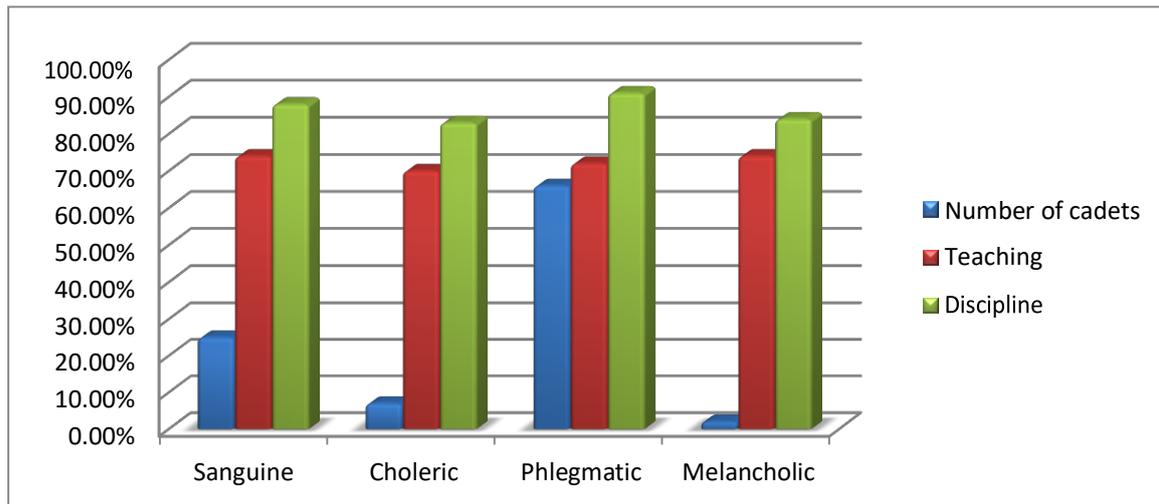
Someone with phlegmatic personality type is usually a people person. They seek interpersonal harmony and close relationships. People with phlegmatic temperament tend to avoid conflicts and always try to mediate between others to restore peace and harmony. They are very much into charity and helping others.

People with melancholic personality type love traditions. They love their families and friends and, unlike sanguine temperament, do not look for novelty and adventure. In fact, they avoid it at all costs. They are very social and seek to contribute to the community. Being extremely orderly and accurate [1].

Therefore, it is very important to take into account the temperamental characteristics of the cadets in the organization of their educational activities.

To examine the influence of cadet's temperament on their teaching and discipline, we tested Ayengin's (80-dimensional) temperament test with them. As a result, we were able to analyze the effectiveness of the individual psychological features-temperament of the same course (272) on achievements in the field of teaching and discipline in the 1st and 3rd courses.

Figure.1. Characteristics of temperament, teaching and discipline of cadet 1 course

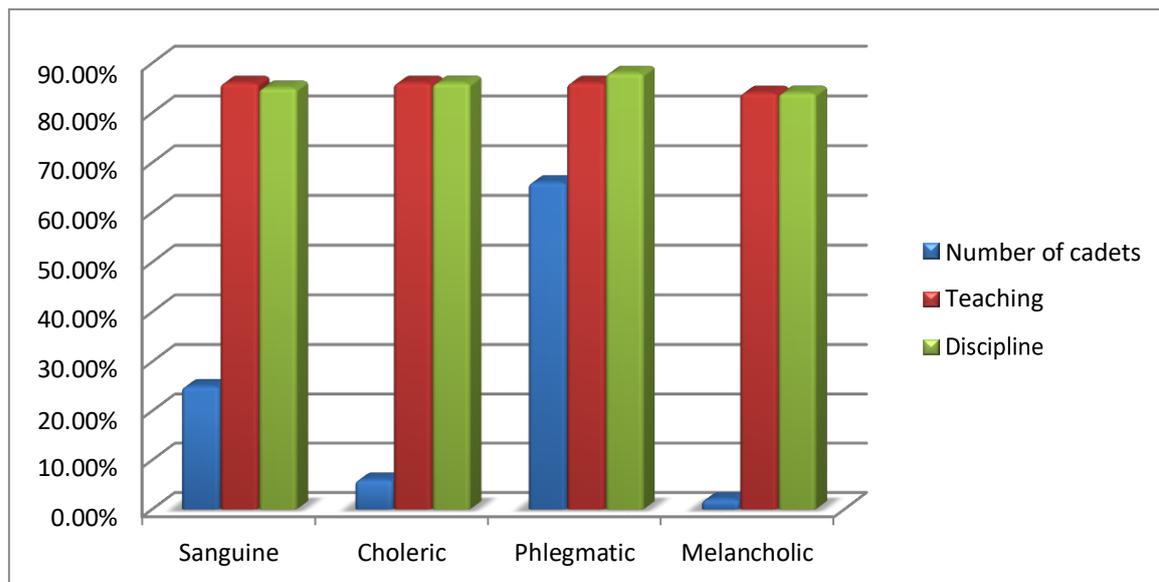


When we look at the results of this test, we can clearly see that the type of phlegmatic temperament prevails in the course. The 1st picture reflects the 1st course compares the cadet's individual-psychological characteristics (temperament) with their teaching and discipline.

From the first picture that the psychological features of the temperament have an impact on cadets discipline and teaching. First of all, compare the discipline. In the picture, the discipline of phlegmatic temperament appears to be higher than that of other types. As a result the non-sustainability of the psychologic character of the choleric temperament has shown its effect on its discipline. Because the lowest discipline is in choleric. The comparison of teaching indicators, in contrast to other temperament varieties, the lowest education rate was found in choleric temperament cadets.

In the 1st course there are a direct proportion of the cadet's educational and disciplinary indicators and their individual-mental characteristics (temperament). Because of the stressful conditions in the military, psychological features give it a clearly evident.

For this reason, the cadets of the same course have been compared with the temperament type in the third year of teaching and discipline. The results obtained are reflected in picture 2.

Figure 2. Characteristics of temperament, teaching and discipline of cadet 3 course

As a result the lowest level of discipline among cadets was found in melancholic cadets. Among the cadets, phlegmatic have again shown the highest degree of discipline. The results show that the curriculum growth is higher than in the 1st course. It is clear from the findings that the dynamics of mental activity is based not only on one temperament, but on other conditions, in particular on motives and psychic states. In her monograph professor E. Shafiyeva has developed a 6-element personality concept that, according to this concept, the training of officers is primarily aimed at the development of the following 6 components:

- Intellectual-cognitive;
- Motivation;
- Emotional;
- Volitional;
- Self-regulation; self-control
- Practical, military-professional [6].

As can be seen from this classification, it is impossible to imagine the structure of a person without motivation.

Human activity does not exist except in the form of action or a chain of actions. For example, work activity exists in work actions, school activity in school actions, social activity in actions (acts) of society, etc. If the actions that constitute activity are mentally subtracted from it, then absolutely nothing will be left of activity. This can be expressed in another way: When a concrete process is taking place before us, external or internal, then from the point of view of its relation to motive, it appears as human activity, but when it is subordinated to purpose, and then it appears as an action or accumulation of a chain of actions. Separate concrete types of activity may differ among themselves according to various characteristics: according to their form, according to the methods of carrying them out, according to their emotional intensity, according to their time and space requirements, according to their physiological mechanisms, etc. The main thing that distinguishes one activity from another, however, is the difference of their objects. It is exactly the object of an activity that gives it a determined direction.

According to the terminology I have proposed, the object of an activity is its true motive. It is understood that the motive may be either material or ideal, either present in perception or exclusively in the imagination or in thought. The main thing is that behind activity there should always be a need, that it

should always answer one need or another. Thus the concept of activity is necessarily connected with the concept of motive. Activity does not exist without a motive; 'non-motivated' activity is not activity without a motive but activity with a subjectively and objectively hidden motive. Basic and "formulating" appear to be the actions that realize separate human activities. We call a process an action if it is subordinated to the representation of the result that must be attained, that is, if it is subordinated to a conscious purpose. Similarly, just as the concept of motive is related to the concept of activity, the concept of purpose is related to the concept of action. Every activity sets out certain requirements for human psyche and its dynamic characteristics

Well-known scientists always pointed to the problems of an individual approach, speaking about the upbringing of children. We now illustrate the application of temperament ideas to an important system in support of education, namely, mastery motivation. Mastery motivation is initially closely linked to the basic emotional-motivational systems seen in young children, and hence to variability in functioning of the dimensions identified with temperament. It is further linked to cadet's experiences of reward and punishment in mastery-related situations. Finally, however, with the passage of time, mastery motivation becomes increasingly affected by the evaluations of others and selfevaluations reflected in ego involvement and personality. The dynamics of these systems are important in maintaining and enhancing children's motivation in the classroom, cadet's reactions to success and failure in the classroom are subject to powerful socializing influences in the home and during previous schooling. Some cadets are more teachable than others, at last in the perception of most teachers. Temperament appears to be related to education in a number of ways, including teacher's perceptions, classroom adjustment and actual educational achievement [2].

Schooling takes advantage of basic dimensions of temperament in the creation of learning environments for cadets. One of the most important of these is positive affect and approach. The positive Affect approach system is an early support for what has been called "mastery motivation." Messer described mastery motivation as, 'ba psychological force that stimulates an individual to attempt independently, in a focused and persistent manner, to solve problems and master a skill or task that is moderately challenging to him or her'".

Regardless of the characteristics of the temperament, it is possible to change their teaching and discipline indicators in a positive way. To achieve high results in teaching and discipline, for each temperament must be created a motive.

Problems in training with cadets-sanguineers can arise due to restlessness, superficiality of interests, insufficient concentration on the subject and a thirst for new impressions. To avoid this will allow:

- Interest of the cadet in the subject: it is best to dilute the material with interesting examples, jokes and other
- Diversity of tasks and lack of monotony of activities
- Adequate praise and criticism
- Providing the cadet sanguine with constant activity
- Splitting a large task into a series of small
- Working together at home, reading an interesting book, etc.

Cadet cholericists in the specialized school may have problems with behavior due to excessive activity and restlessness, rapid reaction to failure and criticism. In order to maximize their learning, it is necessary:

- To enthrall the cadet, to provoke interest in the subject
- Do not load it with monotonous activity, but give different tasks

- Teach you adequately to assess your abilities, so that failures do not lead to violent negative reactions
- Talk with the teacher and ask him not to criticize the cadet unnecessarily, and in case of emergency, do it gently and individually
- Break up work into blocks and give time for rest, if you need to do too much
- Do not show violent positive / negative emotions in communicating with the Cadet, as choleric people easily "catch" them
- Switch the cadet's attention to something else if you feel that there is an emotional tension that can lead to an "explosion"

Phlegmatic cadets may experience learning difficulties due to difficulties in adapting to new situations, excessive slowness and adherence to stereotypical actions. And the following will help them:

- Gradual rather than quick inclusion in the work - do not ask the cadet to immediately answer a question or lightning-fast task
- Ensuring the Cadet sufficient time to adapt to the new conditions, as well as to consider, perform and verify the assignment
- An explanation of what is required of it in the course of performing activities
- Building self-reliance and communication skills and interacting with others
- Frequent praise - it is necessary to find in the activities of the cadet plus, pay attention to it and praise him
- Timely preparation for lessons and assignments
- Interest in activities
- Reducing the influence of various distractions when doing homework (conversations, TV, music, etc.)

To prevent the successful learning of melancholics can their slowness and fatigue, the difficulty of switching between different activities, a negative reaction to failure and criticism. To make the training of such cadets more successful will allow:

- Gradual rather than quick inclusion in the work - do not ask the cadet to immediately answer a question or lightning-fast task
- Building self-confidence and self-reliance
- Frequent praise - it is necessary to find in the activities of the cadet plus, pay attention to it and praise him
- Creating a benevolent atmosphere
- Talking with the teacher and asking not to criticize the cadet unnecessarily, and in case of emergency, do it gently and individually
- Breakdown of work into blocks, the ability to take a break and rest, if you have to do too much
- Providing the cadets with sufficient time to think, execute and verify the assignment
- Reducing the influence of various distractions when doing homework (conversations, TV, music, etc.)

Temperament is a natural feature of a person, which strongly influences his behavior and successes. However, there are no bad or good temperaments - each of them has its pros and cons. In order for a cadet with any features to be trained successfully, it is necessary simply to pay attention to these very features and create for him the most optimal teaching conditions.

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Summary

The impact of personal traits of cadets on their training and discipline

Elnara Shafiyeva

Baku State University, Azerbaijan

Reyhan Manieva

Armed Forces Military Academy, Azerbaijan

The article deals with such issues as personality, its activity, formation, structure. Different opinions on the essence of the individual are studied, activity is considered as one of the basic conditions for the formation of identity. The process of forming a military personality and the role of training in this process are considered. The formation of personal qualities and personality and psychological characteristics of the cadets are analyzed. In addition, the methods of creating the motives of each type of temperament were studied, which enable them to learn in their educational activities on the basis of their individual and psychological characteristics.

Key words: *personal characteristics of cadets, temperament, activity, cadet motivation, cadet training, military discipline*

THE STUDY OF THE OXYDATIVE FUNCTIONALIZED MULTIWALLED CARBON NANOTUBES BY THE DERIVATOGRAPHY METHOD

Sevda Abdullayeva

*Research & Development Center for Hi-Technologies (RDCHT), MTCHT, Azerbaijan
G.M. Abdullayev Institute of Physics, Azerbaijan
Azerbaijan National Academy of Sciences , Azerbaijan*

Askar Huseynov

Research & Development Center for Hi-Technologies (RDCHT), MTCHT, Azerbaijan

Aydin Israfilov

Research & Development Center for Hi-Technologies (RDCHT), MTCHT, Azerbaijan

Samira Mammadova

G.M. Abdullayev Institute of Physics, Azerbaijan National Academy of Sciences, Azerbaijan

Introduction

For innovative nanomaterial, such as carbon nanotubes (CNTs), along with the strength and weight characteristics the thermal stability also plays a key role [1]. Understanding the behavior of both pristine and modified CNTs at high temperatures and oxidizing environments is crucial for high-temperature practical applications of materials based on carbon nanotubes, especially polymer composite materials, catalysts, etc [2-4]. In this regard the objective of this work is the study of the thermal stability in the air atmosphere of the oxidative functionalized multi-walled carbon nanotubes (o-MWCNTs) by TGA/DSC method.

Experiments on the synthesis of multiwalled carbon nanotubes were carried out by the aerosol-assisted chemical vapor deposition (AACVD) method. As a raw material light gasoline fraction of the Azerbaijan oil was used [5]. To obtain O-MWCNTs, carbon nanotubes were subjected to treatment with the mixture of concentrated sulfuric and nitric acids [6]. The composition and nanomorphology of oxidative MWCNTs were studied by SEM microscopy and IR spectroscopy. The thermal stability of o-MWCNTs under the air environment and the analysis of the products of their thermal oxidative decomposition process were performed using a derivatografic thermogravimetric analyzer coupled with the FTIR spectrometer and the mass analyzer.

Major Results

In accordance with the data of SEM analysis illustrated in figure 1, the tubular structures of functionalized nanotubes are somewhat curved and also contain layers of other phases of carbon that can explain the excess of the outer diameter of the o-MWCNTs (120-288 nm) in the nanometer range. The presence of a large number of impurity inclusions of non-tubular carbon forms are attributable to the fact that as an initial carbon-containing raw material, not an individual substance was taken, but a mixture of carbon compounds – a gasoline fraction.

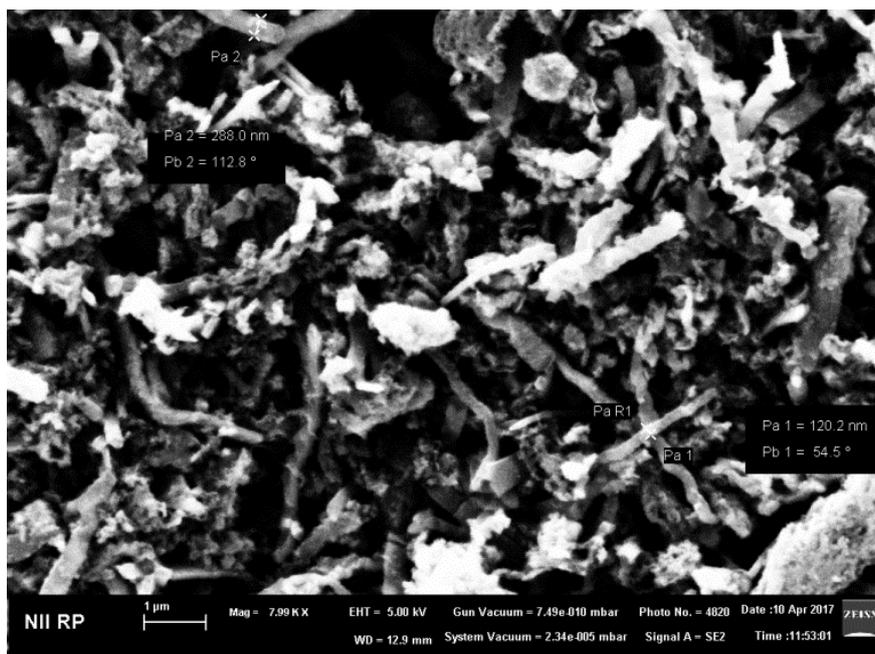


Figure 1. SEM image of *o*-MWCNTs.

The Fourier-IR spectrum of *o*-MWCNTs sample (figure 2) confirmed the attachment of oxygen-containing groups (carbonyl / ketone, carboxyl, hydroxyl) on the surface of carbon nanotubes. The manifestation of peaks of strong and medium intensities in the frequency ranges $3946.96\text{--}3585.65\text{ cm}^{-1}$, $3565.17\text{--}3460.41\text{ cm}^{-1}$, 2391.05 cm^{-1} and $1634.46, 1694.73\text{ cm}^{-1}$ can be related to the stretching vibrations of the associated hydroxyls (OH) in carboxyl ($\text{O}=\text{C}-\text{OH}$), free (non - hydrogen - bonded) hydroxyl groups, O-H bonds in the carboxyl group of COOH strongly bounded by hydrogen bonds and C=O bond of the carbonyl group of carboxyl (COOH) or keto group of the quinone type, respectively.

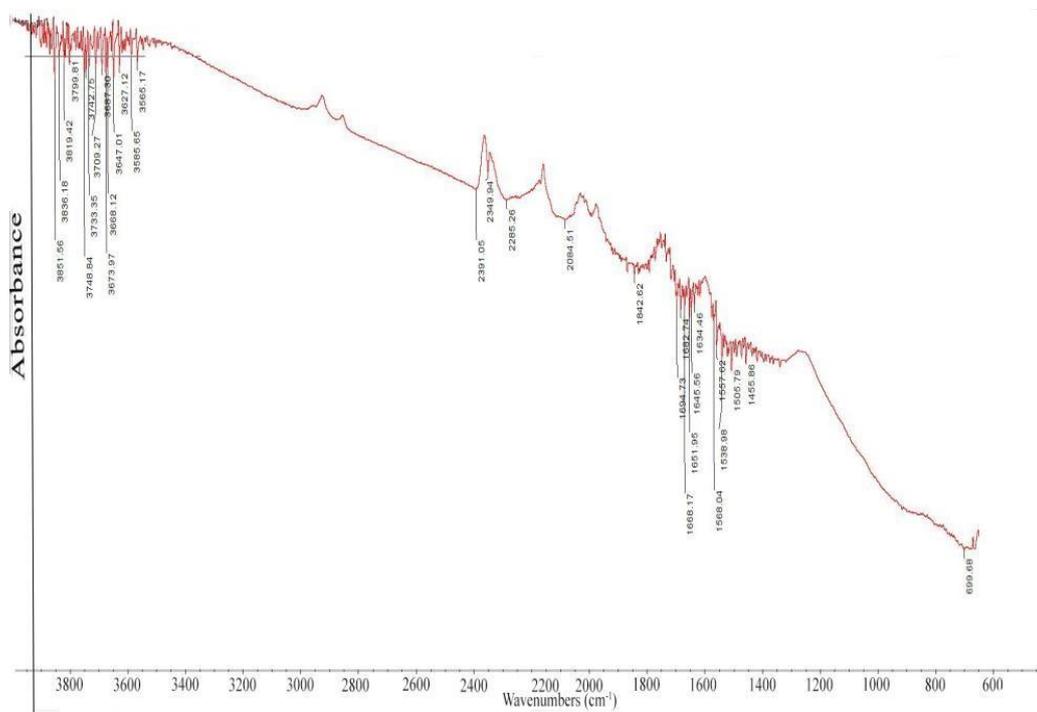


Figure 2. FTIR spectrum of *o*-MWCNTs.

The results of mass change (TGA) and thermal effects (DSC) of products formed in the process of thermdestructive transformations of o-MWCNTs are reflected in the form of a derivatogram (Figure 3). There are several plots on the thermogravimetric curve with one, at least a pronounced area of decrease in mass ($T = 370\text{-}600\text{ }^{\circ}\text{C}$) and the relevant peaks with extremums on the Gaussian-like DSC curve. The mass wastage of the sample of nanotubes at temperatures of $75\text{-}350\text{ }^{\circ}\text{C}$, $350\text{-}470\text{ }^{\circ}\text{C}$, $470\text{-}600\text{ }^{\circ}\text{C}$, $600\text{-}735\text{ }^{\circ}\text{C}$ is apparently connected with the desorption of physically sorbed water, decarboxylation and/or decarbonylation of CNTs, dehydration processes and oxidation of unstructured (amorphous) forms of carbon and burning of the carbon nanotubes, respectively. The results of DTA were compared with Fourier-IR and Mass spectrometry data (Figure 4-Figure 7), associated with TG-DSC analysis of evolved gases during thermal oxidation.

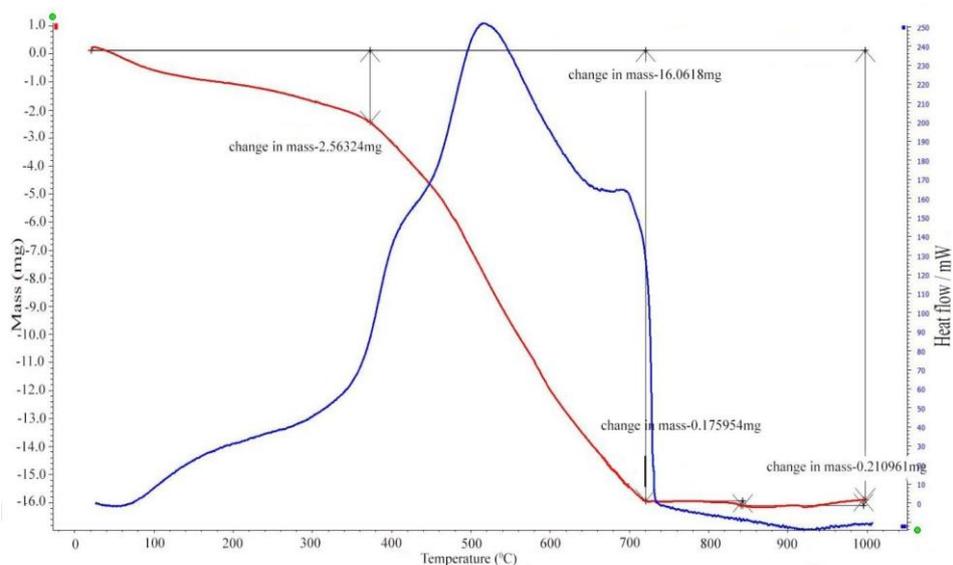


Figure 3. Derivatogram of curves of weight loss (TGA) and enthalpy changes (DSC) of o-MWCNTs sample.

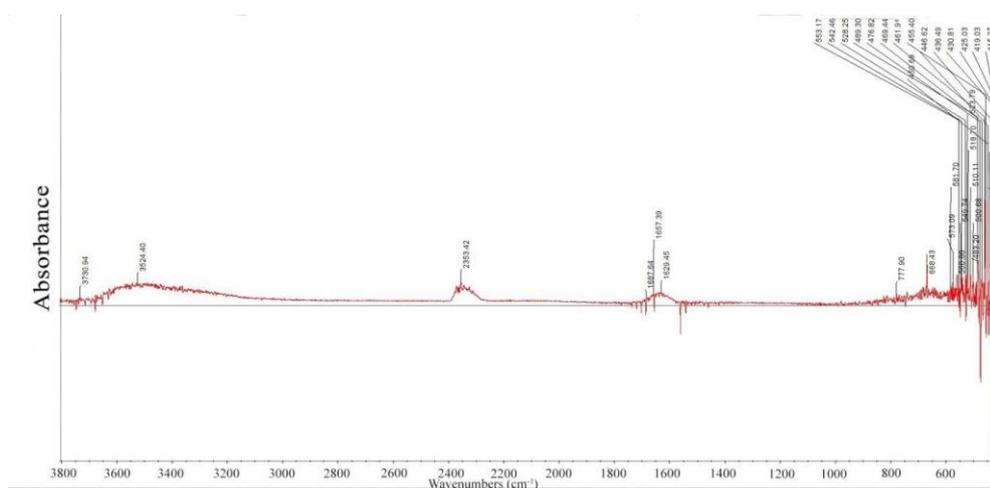


Figure 4. FTIR spectrum of gaseous products of the oxidation-thermal destruction process of the o-MWCNTs sample at a temperature of $370\text{ }^{\circ}\text{C}$

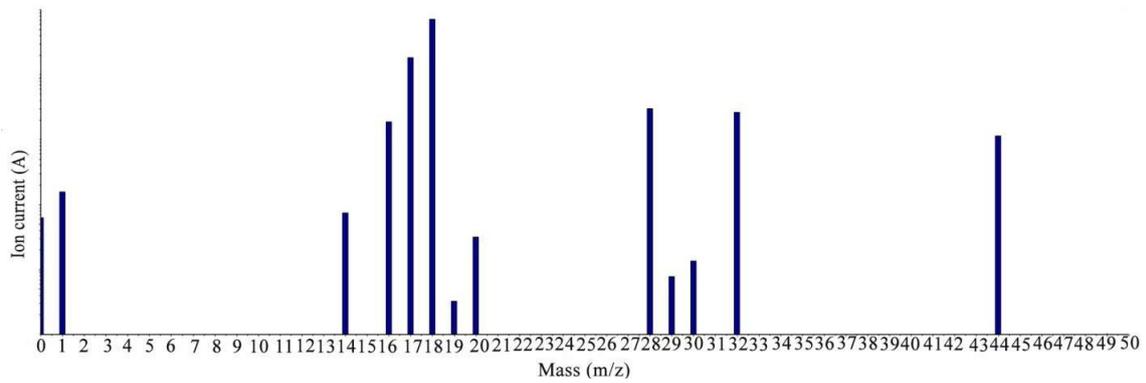


Figure 5. Mass spectrum of gaseous products of the oxidation-thermal decomposition process of the f-MWCNTs at 370 °C.

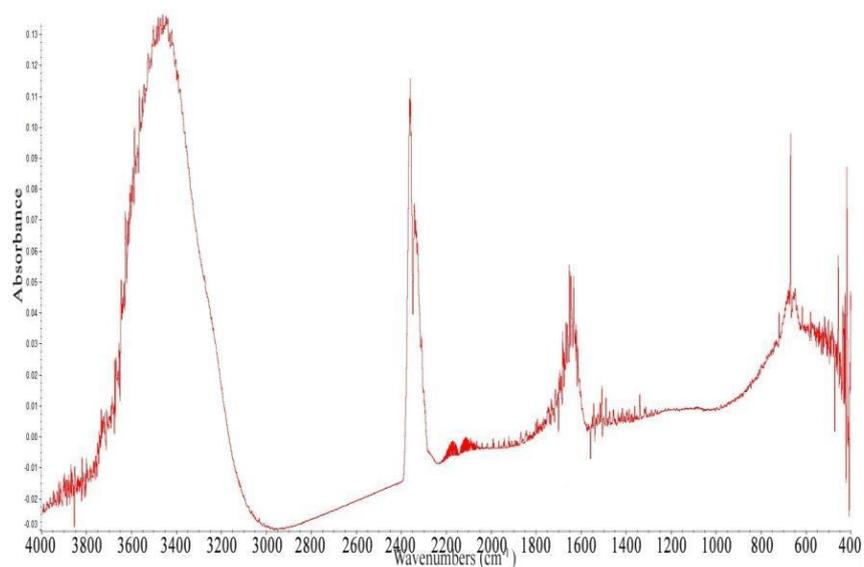


Figure 6. FTIR spectrum of gaseous products of the oxidation-thermal destruction process of the o-MWCNTs sample at a temperature of 500 °C.

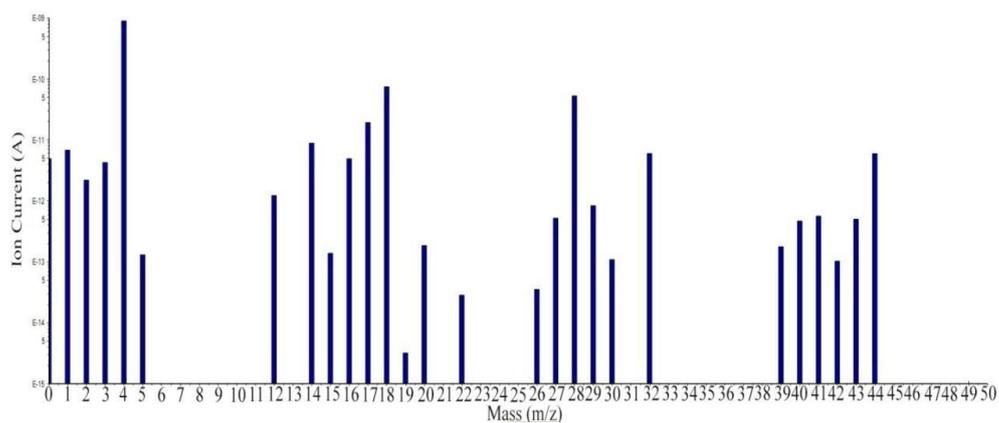


Figure 7. Mass spectrum of gaseous products of the oxidation-thermal decomposition process of the f-MWCNTs at 500 °C.

Conclusions

MWCNTs were synthesized by using for the first time the light gasoline fraction of the Azerbaijan oil as well as conducted their oxidative functionalization. FTIR analysis of functionalized MWCNTs indicates the presence of oxygen-containing groups (COOH, C–OH, OH) on their surface. It has been identified that in the temperature range of 350-470 °C decarboxylation of the sample is occurring. In the 470-600 °C region, both the dehydration process and the oxidation of unstructured forms of carbon proceed, as indicated by the appearance in the given temperature interval of a wide oxidative exotherm with a maximum at 520 °C. At 600 °C, along with the oxidation of amorphous carbon, combustion of o-MWCNTs is also observed, which is confirmed by Infrared spectroscopy analysis data, where in the range 1650-1500 cm⁻¹ there is no peak inherent in the C=C bond of the framework of carbon nanotubes.

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Summary

The Study of the Oxydative Functionalized Multiwalled Carbon Nanotubes by the Derivatography Method

Sevda Abdullayeva

*Research & Development Center for Hi-Technologies (RDCHT), MTCHT, Azerbaijan
G.M. Abdullayev Institute of Physics, Azerbaijan National Academy of Sciences, Azerbaijan*

Askar Huseynov

Research & Development Center for Hi-Technologies (RDCHT), MTCHT, Azerbaijan

Aydin Israfilov

Research & Development Center for Hi-Technologies (RDCHT), MTCHT, Azerbaijan

Samira Mammadova

G.M. Abdullayev Institute of Physics, Azerbaijan National Academy of Sciences, Azerbaijan

The thermal stability under the air atmosphere of multiwalled carbon nanotubes (MWCNTs) functionalized by oxygen-containing groups (o-MWCNTs) were investigated by means of the Derivatographic Thermal Analysis (DTA) method. O-MWCNTs were obtained on the basis of carbon nanotubes synthesized for the first time from the light gasoline fraction of the Azerbaijan oil. To effectively determine the composition of the gaseous products released during the oxidative thermal destruction of nanotubes and evaluations the character of their thermal decomposition, a derivatograph combined with an IR spectrometer and a mass analyzer was used. The results of the analysis were registered in the form of DSC and TGA curves as well as IR and mass spectra.

Key words: *Aerosol CVD, MWCNTs, oxidative functionalization, thermal stability, TGA/DSC, FTIR, mass spectrometry, SEM*



NECESSITY OF THE REFORMS IN UNITED NATIONS FOR PEACE AND SOLUTION OF THE REGIONAL CONFLICTS

Ramila Dadashova

Azerbaijan National Academy of Sciences, Azerbaijan

As has been expressed in the 1st article of the UN Charter, the purposes of the UN are: to maintain international peace and security, to take effective collective measures for prevention and removal of threats to the peace, and for the suppression of acts of aggression or other breaches of the peace, and to bring about by peaceful means, and in conformity with the principles of justice and international law, adjustment or settlement of international disputes or situations which might lead to a breach of the peace(1, p.5).

Many contributions of the UN had been in the history created after the World War II with the purpose to support the peace and security. This organization has been successful at least in preventing World War III. It is necessary to note that in this organization has made a lot of useful decisions, or international documents: the declaration about human rights, the declaration about independence given to country once a colony and people, the charter about economical rights and duties of the states, the declaration about the expansion of the nucleus arms, the agreement about prohibition of nuclear test, the agreement about prohibiting of the simple weapons. The acceptance of the some decisions, agreements and conventions proves that the UN is very usefull organization for mankind. The UN is the irreplaceable international organization in supporting peace and security, in the extraordinary help, in areas of defence of the human rights, holding of the elections, fighting with infectious diseases. The war of new world, barbarian ideology, racial discrimination, and the confrontations have been weakened in the result of activities of the UN.

The regional conflicts that are not soluble to local are turned to the international conflict and this is one of problems that threaten the international security in the modern time. The role of the democratic liberty increases in the man's life at present time and it is preferred the diplomatic means, negotiations, the mediation of the third side for solution of the regional conflicts.

The United Nations Security Council is the principal organ responsible for maintaining international peace and security. The Security Council is composed of 15 Members. Five permanent members are China, France, Russian Federation, Great Britain, and the United States. The other ten members of the Security Council are non-permanent members. They are elected by the General Assembly through majority vote to take on a two-year term. Since the establishment of the Security Council, permanent members have used their power of veto in accordance with their national interests when the Security Council gives any political sanction. Veto power has been responsible for the silence of the Security Council on some major international conflicts including the 2003 Iraq War, the 2008 conflict in Georgia, the 2009 massacre of Sri Lankan Tamils and the recent Syrian conflict. Although the issue of Israel-Palestine conflict is on the agenda of the Security Council, this body has not been successful in condemning the violence and settlement activities through issuing resolutions (11, p.11). Over the last 20 years out of a total of 24 vetos, 15 have been used by the USA to protect Israel (11, p.3). This undemocratic privilege of the permanent five combined with other flaws of the Security Council led to several calls for reform. V.L.Oleandrov - Russian researcher notes that there are two principles in the UN, principles of democracy and realism.

Democracy principle is that each state announces the opinion what discussed, gives recommendations in the General Assembly. But the realism principle is that international relations are dependent from hegemony states (5, p.191-193). The restriction of the rights of the General Assembly by the members with veto right of the Security Council, the participation of these members in each of the basic organs of the UN breaks the principle of sovereign equality of the states. According to article 24 of the UN Charter, the foundational treaty of the United Nations, the UN Member States have conferred the primary responsibility of maintenance of international peace and security to the Security Council and have agreed that this body, in order to carry on this duty, acts on their behalf. The Member States have agreed to accept and carry out the decisions of the Security Council through article 25 of the Charter (1, p.19)

Activities of the UN must be directed to prevent of the regional conflicts, to defend the peace and the security, to repulse the Americanism, the natosentrism; making an effort of the USA to control the world from the unique centre under idea of globalizing demands the reforms in the UN. Improve of the system of international security with united effort of the world states assumes urgent importance at present.

What reforms is it necessary for strengthening the activities of the UN put in order of the regional conflicts in the modern time? It is necessary for the perfect functioning of the Security Council, the General Assembly, the Economical and Social Council, the Secretariat, the International Court of Justice in prevention of the problems of international security, developing the system of balanced international relations.

One of the directions of the development of the international organizations is to force the states to observe the norms of international law. All member states must fulfill the decisions of the Security Council according to the UN Charter. The Security Council will be able to accept serious sanctions against the disturbance of the norms of international law. Therefore the opinions of the High-level group on danger and change on application of the sanctions, the problem of creation of the mechanism of the supervision including the embargo in the selling of weapon are suitable to demands of the modern time (3; 4). Corresponding decisions accepted by the Security Council are able to prevent the disturbance of the rights. UN will be able to accept only military sanctions at present. The sanctions will be applicable only when the members of the organizations do not fulfill their obligation.

The USA does not have wished only to be the economical hegemony and they make an effort to strengthen position in economical rich and strategical important regions of the world. After the decline of the bipolar system the attitudes between Russia and the USA has changed, Russia lost his superpower position. The attitudes between Russia and the USA now has lost the character of ideological contradiction, the geopolitic discord became stronger, the difference of opinion arose between two states in solution of the international problems, in the trade, in the military areas, in the regional security, in the strategical stability, in the UN and in the other problems.

The national interests of the USA collide with the interests of any country that makes an effort to domination in the region of Eurasia. One of priorities of the Eurasian politics of the USA is to broaden to the east of the composition of the NATO. Joining of the NATO of the Central Europe states, Baltic States, Ukraine is in the circle of interests of the USA. A.D.Boqaturov writes that, "the purpose of the European politics of the USA is to defend their security and the purpose is to come closer to Middle East, in the Caspian Sea, in the Central Asia is ecological security, the purpose in Russia, in Japan, in Korean, in China, and strategical interests in India. (14, p.362).

One of strategical purposes of the USA in the Eurasia is to control in the system of Eurasian central communication and to become stronger in the place which in the past was the Silk Way connecting the Pacific Ocean with Atlantic Ocean. A.F.Panarin writes that USA can not be a long-term, a hegemon without neutralizing China and India (12, p.42). The USA had big influence in the Caucasian region after declining of the USSR. N.A.Nartov announces that the purpose of the help of the USA to Ukraine, Azerbaijan, Georgia is to weaken the centralize politics of the Russia (10, p.268).

S.S.Jilchov and I.S.Zonn write that one of the methods of the foreign policy of the USA is to pressurize to regions under the pretext of defence of the human rights and in the expansion of the democracy (7). The American researchers write that the USA have not strategic interests in the Central Asia and in Caucasus which these regions have not so much of energy reserves. The purpose of the USA is to become stronger in the democratic institutes, to explore energy reserves, to put in order the conflicts in regions (8, p.241). Z.Bjezinski writes that the USA helps the new independent states by developing them in getting stronger than Russia. (9, p. 242).

Yet in seventies of XX century the USA proposed entering of Germany and Japan to the row of the permanent member of the Security Council. Germany being one of the leaders of the European Union continues global influence by EU. It is the basic partner, it is the loyal colleague, and it is necessary military base of the USA. Germany collaborates with USA in the activities of secret service. The USA supports the pretension of the Germany being of constant member of the Security Council. Z.Bjezhinski writes that it is necessary to support the leadership of Germany in the Europe by USA for achieve the Europe. Germany supports the formula of "forgiveness+security = Europe+America" (9, p. 80). So, Germany is basic supporter of the America in the Europe.

Japan assumes more importance for the USA when China becomes stronger. The USA need a strong ally in the creation of order of the new world and this state strengthens the cooperation with Japan in the security area in the eastern Asia. The USA supports the pretension of electing of Japan to the row of the constant member of the Security Council. Japan does not use his economical leadership, his situation and it does not make an effort to be regional dominant state. It prefers to pursue the policy under subordination of America. The role in security of the America in the Far East is dependent from the cooperation with Japan (9, p.61).

Russia supports the leading role of the UN in the security. In the 58th Session of the General Assembly V.V.Putin, the President of Russia announced that the UN does not have an alternative for the security of the mankind (15, p.9-20). The resolutions of the UN about the global security show that the UN is multilateral system which secures modern security. Russia does not accept the NATO politics of the USA and prefers the OSCE for the security of the continent. Russia makes an effort to put in order the conflicts in post-soviet's place with the help of the Commonwealth of the Independent States or itself. South Caucasus stays are the limelight of Moscow from point of view to secure the national security of Russia.

Russia uses veto right for its geopolitical interests. From 1946 to the time of its fall and the subsequent succession of Russia, this country vetoed a total of 119 resolutions. After Russia took the USSR's seat in the Council, it has used the veto power sparingly. So far Russia has blocked six resolutions, twice jointly with China (11, p.12).

China is in the 3rd place after the USA and Russia according to economical potential, it is the biggest potential competitor of the USA. Chinese army according to number (2, 5 million) is in the first place (13, p.3-8). Special corporations being in the USA go to the expense of learning of China (14, p.362). The USA tries to keep under control of China as Russia by way of becoming stronger in the Central Asia. The American researcher E.Rubinstayn writes that Russia occupies Eurasia. China will enter to alliance with Russia and Iran against the USA, Europe and Japan (6, p.15). Creating of the alliance of China and of Russia stimulates the USA to approach with Japan which has historical contradictions with China. Russian researcher N. A. Nartov writes the alliance between Japan and China can put an end geopolitical hegemony of the USA in the Asia and Pacific Ocean region (10, p.272). The USA finance the separatists of Uygur being in the Sintszyan-Uygur autonomy circle for weakening of China. The USA do not know the problem of joining of the Taiwan with China. So, the contradictions being between China and USA does not become clear only by gentleness of China. Russia uses veto right for its geopolitical interests. Since 1971 and after replacing the Republic of China, the People's Republic of China has used its veto power six times; four of them were exercised after the end of the Cold War. As mentioned above, China joined Russia in vetoing two resolutions which intended to condemn human rights abuses in Burma and Zimbabwe. Like Russia, China also had economic interests in these two countries (11, p.12).

Great Britain is the state supporting of the foreign policy of the USA lately. It assumes importance for USA yet. Great Britain does not accept the political unity and prefers to the economical integration on the basis of free trade, to coordinate the foreign policy, to security and defence in outside the European Union. It seldom uses its influence (9, p.59). The European states are dependent on the USA in defending the security.

France does not make an effort only to the political role in the Europe and it makes efforts in strengthening its influence in the Mediterranean countries, in the Northern Africa countries; Morocco, Tunisia, Algeria. The France contingent leads to being supported of the security in the same regions. In opinion of the France, the basic purpose is to connect of the Europe under administration of France and at the same time the chief role of the America should be restricted approximately in the Europe. If France wants to create the future Europe, it must involve Germany in reducing the role of the America in the Europe. The USA had created the strategical centre for learning in France after the disagreement related with Iraq (14, p.362). The last time France and Great Britain used their veto power was in 1989 in a joint veto with the USA on the situation of Panama. Therefore, these two countries have not vetoed any resolutions in the last 20 years (11, p.13).

At present the UN connects 193 states in itself. The General Assembly is one of the six principal organs of the United Nations and the only one in which all member states has equal representation. All 193 members' states of the United Nations are members of the General Assembly. The resolutions of the General Assembly carry recommendation character for the members of the UN.

Yet in 60s-70s of the century XX F.Meyer and D. Mitrani-Germany investigators speak with offer of the raising the rights of the General Assembly to the calculation of privilege of the Security Council. F.Meyer had offered not distinguishing of members, raising the number of members of the Security Council, addition AFR and the Japan to the row of permanent members. The investigator supporting the UNGA resolution 377 named, "Uniting for Peace" accepted by General Assembly in November 1950. This resolution reaffirms its important that the Security Council carries out its responsibility in maintaining international peace and security and that the permanent members limit their use of the veto power. This resolution further recognises that the failure of the Security Council in fulfilling those tasks will not relieve the United Nations of "its responsibilities under the Charter to maintain international peace and security" Therefore, when the permanent members of the Security Council find themselves at odds and fail to reach unanimity on a matter that appears to be a threat to international peace and security, this resolution authorises the General Assembly to immediately consider that matter and issue its own "appropriate recommendations" to the Member States "for collective measures". Those collective measures can include "the use of armed force when necessary" (11, p.26-27). Therefore, one can conclude that this resolution gives the General Assembly final responsibility rather than secondary responsibility.

The carrying of recommendation character of decisions and resolutions of the General Assembly, participation of 5 permanent members of the Security Council in all the basic organs and influencing them to the decisions accepted, the initiatives proposed, restrict the sovereignty rights of the states and General Assembly (2, p.147). To increase the role of the General Assembly, to fulfill collective motion and decisions will be able to strengthen the peace potential. The problem arises in the diary of the General Assembly must be discussed in short time, accepting resolutions must not repeat, must be implemented. To our mind, the problems discussed in some organs of the UN must be discussed in the General Assembly anew. Them decision must be accepted with the majority of 2/3 voices. It will allow to affirming once again of the sovereignty rights of the states represented in the UN.

The diminishment of the number of the decisions and the realization them is one of the urgent problems. Keeping of the veto right of the permanent members prevents to put in order of the regional conflicts, therefore the "veto" right must be liquidated. UN General Secretary must control the sanctions consulting with the Security Council.

In the both model of the High-level group on danger and changes offered the liquidation of the veto right (3; 4). It is possible to prefer the opinion of this group about to elect 8 members to the time of 4 years.

The liquidation of the veto right assumes urgent importance for preventing the geopolitical interests of the constant members of the Security Council. All member states must fulfil the decisions of the Security Council according to the Charter of the UN. The recommendation character of the decisions of the General Assembly, taking part of the permanent members in all basic organs and influencing to the decisions restrict the sovereignty rights of the General Assembly at the same time of the states. Veto right of the permanent members prevents in putting order of the regional conflicts. The problems discussed in some organs should be discussed in the General Assembly anew and the decisions must be affirmed once again with the majority 3/2 voices. The increase of role of the General Assembly, the realization of decisions will be able to strengthen the peace potential of the UN. The problems must be discussed in short period; the decisions accepting must not be repeated.

For strengthening the cooperation between Security Council and the Secretariat is one of important factors. The collaboration between the Security Council and Secretariat is one of the important factors for stronger peace and security. UN Secretary General must inform the Security Council about the potential conflicts. Increase in the composition of the team of Secretariat creates conditions carrying out the peace operations. Division into military and police functions makes creation of the group on problems of criminal law and law-court creating opportunity to secure the supreme of the right.

Carrying out the norms of international law by the International Court of Justice is the important factor in balancing the international relations. The collaboration should be achieved between the Security Council and International Court of Justice. If the Security Council can not define the aggression act, the International Court of Justice must implement this right. They have to address to the International Court of Justice for putting in order the international conflicts. Special tribunals must be organized on genocide; military crimes committed against the mankind, the persons who became as known accused in crimes according to the Convention about the prevention of the genocide crime and therefore to be punished the Commission of the International Court of Justice must be created to put in order the legal problems about captives. The International Court of Justice must collaborate with the Council on Human Rights and Commission on Compensation.

The activities of the Council on Human Rights must not be politicized; they must be fully directed at security of the Human Rights. They should be kept under control of the states on the level respected Human Rights, missions must be sent for this purpose to conflict zone. The chairman and members of the Council on Human Rights must meet together with representatives, chiefs of a corresponding government, parliamentarians, law-courts, non-governmental organizations, scientists, journalists, must be included into community. The entire member states must fight against selling the illegal weapons, exploitation of the natural resources in regions of the armed conflicts, against exchange of the goods, against illegal moving of the population from the occupier state to the territory been occupied.

One criteria of effective increase in the activities of the UN is its collaboration with the regional and sub-regional organizations. This collaboration must be implemented according to the VIIIth part of the UN Charter. Otherwise efficient activities of the regional organization are impossible and won't be intensified even in the region of the conflict. For instance, take those of the CIS in Georgia, or unproductive activities of the OSCE in Azerbaijan. Collaboration of the UN with the regional and sub-regional organizations is of importance in putting in order the regional conflicts. Because these organizations know better their regions and they know better the language, habits of the inhabitants. At the same time the use of the potential of these organizations makes easier the burden falling on the UN from point of view of finance, technique, etc. But collaboration of the UN with the regional and sub-regional organizations must be in conformity with the 52-54th articles of the UN Charter, otherwise results will be negative because a regional organization will be able to take part from the preconceived position. The greater state of a region will be able to work to implement special interests in the region. At the same time the regional organization cannot alone put in order the conflicts. Its opportunities are less for involving the world unity. The necessity crops up of to connect peace, aiming to strengthen with regional organizations.

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Summary

Necessity of the reforms in United Nations for peace and solution of the Regional conflicts

Ramila Dadashova

Azerbaijan National Academy of Sciences, Azerbaijan

The UN had been created after the Second World War for guarding a peace and security. In the modern time, new global dangers occur, the importance of UN increase and it is necessary to perfect of affairs of UN. There is a need especially to carry out of reforms in the UN influencing to put in order of the regional conflicts positively. Putting an end to veto right assumes urgent importance for preventing the geopolitical interests of the permanent members of the Security Council. Problems discussed in the some organs should be discussed in the General Assembly anew. The collaboration should be achieved between the Security Council and in the International Court of Justice. If the Security Council can not define the aggression act, the International Court of Justice must implement this right.

Key words: *regional conflicts, reform, veto right, geopolitic confrontations, the Security Council, the General Assembly*

ELECTORAL SYSTEMS AND THE ELECTION SYSTEM OF AZERBAIJAN

Fuad Khalil-zadeh
Baku State University, Azerbaijan

Introduction

Plurality systems, otherwise known as 'first-past-the-post,' are used for elections to the lower chamber in 43 countries including the United Kingdom, Canada, India, the United States, and many Commonwealth states. The aim of plurality systems is to create a 'manufactured majority', that is to exaggerate the share of seats for the leading party in order to produce an effective working parliamentary majority for the government, while simultaneously penalizing minor parties, especially those whose support is spatially dispersed. In 'winner take all,' the leading party boosts its legislative base, while the trailing parties get meager rewards. The focus is effective governance, not representation of all minority views. The basic system of simple plurality voting in parliamentary general elections is widely familiar: countries are divided into territorial single-member constituencies; voters within each constituency cast a single ballot (marked by an X) for one candidate; the candidate with the largest share of the vote in each seat is returned to office; and in turn the party with an overall majority of seats forms the government (Miller et al., 2000, p. 455).

One feature of this system is that single-member constituencies are based on the size of the electorate. The United States is divided into 435 Congressional districts each including roughly equal populations with one House representative per district. Boundaries are reviewed at periodic intervals, based on the census, to equalize the electorate. Yet the number of electors per constituency varies dramatically cross-nationally: for example India has 545 representatives for a population of 898 million, so each member of the Lok Sabha serves about 1.6 million people, while in contrast Ireland has 166 members in the Dáil for a population of 3.5 million, or one seat per 21,000 people. The geographic size of constituencies also varies substantially within countries, from small, densely packed inner-city seats to sprawling and more remote rural areas.

Under first-past-the-post, candidates usually do not need to pass a minimum threshold of votes nor do they require an absolute majority to be elected, instead all they need is a simple plurality, i.e. one more vote than their closest rivals. Hence in seats where the vote splits almost equally three ways, the winning candidate may have only 35% of the vote, while the other contestants get 34% and 32% respectively. Although two-thirds of voters supported other candidates, the plurality of votes is decisive. In this system the party shares of parliamentary seats, not their share of the popular vote, counts for the formation of government. Government may also be elected without a plurality of votes, so long as they have a parliamentary majority. In 1951, for instance, the British Conservative party was returned to government with a sixteen seat majority in parliament based on 48.0 percent of the popular vote, although Labour won slightly more (48.8 percent) of the vote. In February 1974 the reverse pattern occurred: the Conservatives won a slightly higher share of the national vote, but Labour formed the government. Moreover, under first-past-the-post, governments are commonly returned with less than a majority of votes. No governing party in the UK has won as much as half the popular vote since 1935.

For minor parties, and for minority social groups, the spatial concentration of votes in this system is critical to the outcome. Parties like the Greens, with shallow support spread across a wide range of constituencies, do far less well than those like nationalist parties with a strong concentration in key regions. Hence, for example, in the 1993 Canadian elections the Progressive Conservatives won 16.1 percent of the vote, but suffered a chronic meltdown to only two MPs. In contrast, the Bloc Quebecois received 18.1 percent of the vote, but a solid showing of 54 MPs. The New Democratic Party won even fewer votes (6.6 percent) but emerged with 9 MPs, far more than the Conservatives. In a similar way social groups who can concentrate their support spatially, like African- American or Latino voters in urban areas, can prove relatively more effective in getting their representatives into the US Congress than groups which are widely dispersed across legislative districts (Rule and Zimmerman 1992) (Miller et al., 2000, p. 461).

The source of power, in a democratic regime, is elections, and consequently it is the basis of legitimacy. Therefore, the purpose of parliamentary elections in multi-party democracy, first and foremost, is to clarify which party or parties will govern the country for a certain period, in other words, is to determine which party will establish the government or which party will be in the opposition.

Emerging democracies adopt their initial electoral system in different ways. In the case of the post-Soviet States, with the explosion of new parties after the Soviet breakdown in 1991, the link between electoral law and party systems has very important implications. The types of party systems emerging in these countries will exert an influence on the possibilities of democratic consolidation. To a certain extent, government stability in these countries does and will depend on the degree of fragmentation of the party system (Sedelius, 2001, p. 4).

Elections in transition

In the new democracies and especially in several Post-Soviet countries, there are some difficulties with the lack of democratic traditions, as well as the absence of electoral experience. Major political parties were formed as a result of the national liberation movement in the Post-Soviet countries. Such parties sprang up during the fight for state sovereignty. Their main goal was to determine their ideological frameworks after gaining independence.

Political pluralism, one of the important principles of democracy stipulates political parties directly. Today, practically there are political parties almost in all countries of the world and they are actively involved with the public and political life. The experience of various countries shows that political parties and party systems in any country are not eternal and are subjects to frequent changes. In other words, an endless number of different electoral systems may exist in different countries. The main reason for this is that any electoral system cannot comply with all criteria chosen for evaluation. When choosing any system each state takes different principles into account. Therefore, each country chooses the electoral system in accordance with the government's effective functioning and the country's economic growth. One of the most important arguments is that parties contribute to the stability of the political system (Norris, 1997, p. 297).

The most commonly used method for allocating seats in the remainder system was named after the Belgian mathematician, d'Hondt. The remainder systems work by allocating the seats per constituency according to a quota, and then by allocating remaining seats according to the votes 'left over' after the quota has been applied. The remaining seats could be given to the parties with the greatest number of leftover votes, or the least number, and in principle in several other ways (Reeve et al., 2006, p.152).

Election system in the Republic of Azerbaijan

The will of the Azerbaijani people constitutes the basis of state power of the Republic of Azerbaijan. This will is reflected by freely and regularly conducted elections by secret and personal voting via general, equal and direct suffrage, as well as by the nationwide voting –referenda conducted by secret and personal voting based on general, equal and direct suffrage (Nasirov, 2010, p.296).

Rules for the organization and conduct of Presidential Elections of the Republic of Azerbaijan, elections to the Milli Majlis of the Republic of Azerbaijan and Municipal Elections, as well as nationwide voting – referenda shall be determined by the Election Code of the Republic of Azerbaijan which was approved and enforced by the Law signed by President Heydar Aliyev on May 27, 2003. The Code consists of 7 sections, general provisions, special part and 38 chapters (9).

The legislation act implies main concepts, principles, principles and methods that regulate issues on exercise of suffrage, election and referendum bodies, transparency during the preparation and conduct of elections (referenda), nomination and registration of candidates, pre-election (pre-referenda) campaigning, organization of the voting, complaints against violation of citizens' suffrage and liability for the violation of these rights and other issues. According to the Electoral Code of Azerbaijan, the will of the people of Azerbaijan is manifested through fair and regular elections based on general, equal and direct suffrage by means of a secret and personal ballot, as well through nationwide opinion polls/referenda based on general, equal and direct suffrage by means of a secret and personal ballot. The Azerbaijani State guarantees the free expression of the will of the people of The Republic of Azerbaijan through the protection of principles and norms of universal suffrage. This Code establishes the rules for the organization and conduct of elections of deputies to the parliament of the Republic of Azerbaijan (the Milli Majlis), presidential and municipal elections of the Republic of Azerbaijan and nationwide opinion polls/referendums (Samuel, 1990, p.13).

If we look at history, the parliamentary elections in Azerbaijan were held under a mixed system until 2000. In other words, one hundred of the 125 seats in the National Parliament were elected according to the pluralistic-majority system and 25 seats were formed for the proportional representation system. But after 2000, since 2005, the parliamentary elections have been held by the pluralistic majority system. Some opposition parties put forward proposals about the restoration of the proportional representation system. In contrast, the majority party in the parliament says that the pluralistic-majority system is more compatible with the reality of Azerbaijan (8).

Conclusion

Through comparative cross-national and cross-temporal analyses, we can clearly understand that countries with similar political cultures tend to have similar systems. In general, the study of election rules has not drawn much on recent advances in the analysis of voting systems, and this is a point to which we return shortly. First, though, it is important to stress that studying the rules of an activity is an important subject partly because it helps us to understand the strategic elements of that activity.

In sum, there are three main points to be made, which are then explained in greater detail:

1. Not only is there a considerable number of electoral systems that we could think of if we tried; in reality there is an infinite variety of electoral systems that could be devised.
2. Electoral systems are key variables in the political process in a democracy, because to a large extent they determine who gets what, when and how.
3. Despite the infinite variety of systems and their importance in allocating values in a society, in most regimes electoral systems tend not to change, and even the change that comes is not very radical. Particular electoral systems are maintained even when the elites forming the government change.

In weak party systems, the absence of party identification leaves voters with no options, other than to rely on the personal characteristics of certain candidates and patronage. In the more unstable new democracies (several post-Soviet states are good cases in point), parties continually enter and leave the political scene, and therefore provide no continuity between the elections. Under such conditions, the opportunity for voters to keep lasting preferences for one party or another is of course, minimal. (Sedelius, 2001, p.5)

Thus, it would probably be a mistake to assume that institutional effects found in established democracies will be replicated in the different social and political context of new democracies in Eastern Europe and the former Soviet Union. (Norris, 1997, p. 297) In addition, as often occurs in the first elections after authoritarian rule, party choices of candidates for office and voter preferences may be guided by calculations (correct or incorrect) regarding who can best ensure the continued stability of the new democratic system. While this may indeed bolster that stability, this form of choice by no means reflects democratic consolidation (Miller et al., 2000, p. 461).

In sum, political corruption and inferior economic situations are some of the most frequent barriers to the development of party system. Lack of information about the programs and agendas of the political parties creates chaotic situations in democratic transition. The point is, that in the context of new democracies, where the consolidation process is not completed, it is difficult to attribute voting preferences in the same way as in institutionalized consolidated democracies.

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Summary

Electoral Systems and the Election System of Azerbaijan

Fuad Khalil-zadeh
Baku State University, Azerbaijan

Elections are the most important component of modern policy. They represent a way of formation of bodies of authority and management by means of expression by certain rules (according to an electoral system) political will of citizens. As a result of elections the elected candidates are allocated the powers of authority. The article examines electoral systems in relation to democratic theory, and it links the study of electoral systems to that of voting systems. It compares elections in various other kinds of systems, and it looks at the differences between Azerbaijan's experience and those of other countries. The article tries to bridge the gap between theory and practice. The literature regarding the formation of party systems in different transition societies reflects that the establishment of an institutionalized party system where competing parties exist is an extended process that requires a lengthy period of time. This study also accounts for different electoral system in terms of political modernization and democratic transformation.

Key words: *electoral system, democratic theory, passive suffrage, voting systems*

THE NECESSITY OF REINFORCEMENT OF THE UN MECHANISM OF ARMENIAN NAGORNO - KARABAKH CONFLICT

Farahila Babaeva -Shukurova

Azerbaijan National Academy of Sciences, Azerbaijan

Armenian-Azerbaijan conflict has got deep historical root causes. This process started with the movement of Armenians to the territory of Azerbaijan occupied by Russia at the beginning of the XIX century undergone through the massive terror and genocide of Azerbaijani people in 1905-1906 and in 1918-1920. Later on, during the Soviet Union period on the basis of the former Azerbaijani lands, current Armenian SSR was established by the execution of ethnic cleaning against the Azerbaijanis who had been living there for centuries. By the decision of the Central Executive Committee of Azerbaijan SSR dated July 7, 1923 the Nagorno Karabakh autonomous region has been established. By starting repelling the remaining 250 thousands of Azerbaijanis from the Armenia SSR at the end of 1987 in a planned manner the next stage of the conflict was triggered. On 20th February 1988 the decision adopted by the Armenian representatives of the Session of the Regional Council of Nagorno-Karabakh Autonomous Region, "About the request to General Assemblies of Azerbaijan SSR and Armenia SSR for the assignment of the NKAR from the Azerbaijan to the Armenian republic" and on the 1st of December 1989 the resolution of the Armenian SSR General Assembly, "Reemerging the Armenia SSR and Nagorno Karabakh" was adopted which has still not been cancelled (1).

Current Armenian-Azerbaijani conflict which became even tenser in 1992-1994, got the shape of the large scale military aggression of Armenian republic against the Azerbaijan republic. The occupation of Khojali at the night from 25th to 26th of February 1992 included in the list of the black list of the crimes committed against the humanity during XX century as a specially brutally committed tragedy. In this genocide 613 innocent inhabitants were killed including old people, women and children (2).

After this, the Armenian armed forces funded from the abroad occupied Shusha, Khojali, Khijavend, Lachin, Kalbajar, Jabrayil, Kubadli and Zengilan regions and most part of the Agdam region including the center of it, some part of the Fizuli region including its center and the part of Tartar region together with 890 settlements around it which belonged to the former NKAR in 1992-1993, in total about 1/5 part of the Azerbaijani territory and drove all the Azerbaijani population there from their native land. So, as a result of the conflict about 1000000 Azerbaijanis became a refugees, 20000 of Azerbaijanis were killed, 50000 of them were wounded or got permanent disabilities, 5000 of Azerbaijanis were disappeared and Nakhchivan region exposed to the blockade by the Armenian republic (3). Since 12th of May 1994 ceasefire was achieved between the sides of the Armenian-Azerbaijani conflict.

The Armenian-Azerbaijan conflict didn't attract the attention of the international community for long time. One of the reasons of this was that the world community was not interested on resolving it at the first stage because this was recognized as one of the multiple factors to facilitate the collapse of the Soviet Union and its elimination could have hindered the destructive processes within the Soviet Union. It is quite interesting that, the Nagorno Karabakh conflict triggered by directly Kremlin's scenario. The union administration intended to hinder the expansion of the freedom movements observed in the allied republics by distracting the attention from the main problems of the country by means of creating the regional conflicts based on principle of "separate and rule".

Armenian armed forces had fairly expanded the scale of the operations toward the occupation of the territory of our republic in 1992. However, no international organization objectively estimated this aggression which are in the eyes of everyone as a grossly violation of international law. It is true that in different periods the UNESCO and EU had adopted some resolutions and declarations about it. However these documents didn't estimate the true causes of the conflict and didn't identify the differences between aggressor side and the side which is exposed to the aggression.

After declaring its independency, Azerbaijan Republic called for different organizations such as the UN and world states about the conflict. Azerbaijan became a member of the UN on March 1992 (4). Later on Azerbaijan requested the UN to raise its concern against the aggressor policy of Armenia and to stop the occupation actions of this country. The representatives of the UN visited the region based on this request and reported to the Secretary General about the outcome of this visit. The Secretary General on its turn stated that he supports the efforts of ESCO and they are ready to assist it to get the results (5). It was already the symptoms of cold approach by the international community to this conflict.

Occupation of Shusha in 1992 made Azerbaijan to call for the UN again. On May 12 the UN Security Council satisfied them by just adopting a declaration after discussion of Karabakh conflict. In the declaration, concern was expressed about the situation getting worse in Karabakh and the need for aid to refugees was stated.

In the UN SC resolutions number 822, 853, 874 and 884 about the expansion of the military aggression of Armenia against Azerbaijan and also in the 7 declarations adopted by the chief of the SC, the necessity of the security of the territorial integrity, sovereignty and borders of Azerbaijan is stated (6). Despite, it was indicated in the UN SC resolutions that the aggressor forces must immediately leave the occupied territories of Azerbaijan but the power states like the US, France and Russia didn't agree with calling Armenia as an aggressor state and advised to resolve the conflict by means of negotiations and ceasefire.

Thus, the efforts of the UN and world community for resolving Azerbaijan-Armenian NK conflict by means of peaceful ways didn't give an effective outcome due to Armenian republic remaining in open aggressor position. The main cause of the unsuccessfulness of the peaceful policy of the UN in the region is not confirming the direct aggression of Armenian republic against the Republic of Azerbaijan.

Despite of the fact that the Republic of Armenia violates the international law principles defined in the 1st and 2nd items of the UN charter and in the Final act of the OSCE, the multiple fact-finding missions of the mentioned prestigious organizations avoid or unwilling to recognize the direct involvement of the Armenian armed forces in the conflict while they make their decisions. However the known resolutions of the UN SC and the current documents of the other international organizations and the declarations of the chief of the SC reflects the recognition of the involvement of the republic of Armenia in this conflict by some means and aggression factors. And this is an international crime; in the 29th session of the UN GA held in 1974 any kind of the aggression (in direct or indirect way) was declared to be a military crime (7). The aggression of Armenia against Azerbaijan explicitly violates the norms and principles of international law. So that, as a peacekeeper organization the main function of the UN is mentioned to, "Maintain the international peace and to conduct effective and collective measures against the aggressive actions or any other violating actions directed to break the peace" in the 1st paragraph of the 1st item of the UN charter. The charter bans not just aggression, but it also bans the application of threat or force in interstate relationships (the 2nd paragraph of the 2nd item), requiring the peaceful resolution of any kind of conflicts that might happen between states (the 3rd paragraph of the 2nd item).

The state which has been exposed of aggression raises the issue in front of UN SC about requiring the responsibility of the aggressor state according to the 39th item of the UN charter. Even having the mentioned fact in one of the clauses of the notion of the aggression is enough for the UN SC to apply the mandatory actions against the aggressor state according to the 6th and 7th chapter of the Charter. In the UN GA draft resolution number 2330 (XXII) 18th December 1967 prevention of the aggressive actions, maintaining the international peace and security according to the UN charter as well as the meaning of the aggression were reflected to be able to conduct effective measures (8). All the actions which form the genocide crime identified in that convention have been applied against Azerbaijani people through the aggression of Armenia against Azerbaijan. The aggressor policy of this aggressor country has been committed for more than 20 years explicitly in front of the world community.

The documentations adopted by the all international organizations on resolving the conflict by peaceful means also once more say the strengthening the position of Azerbaijan and confirms the resolution of the issue on the basis of the international principles. In this point of view 4 resolutions of the UN SC, decisions of OSCE, European Council and Islamic Cooperation Organization also have importance and they are legal basis for defense of the fair position of Azerbaijan in an international level. But recently in the resolutions adopted in the summits of European Parliament and the UN, the territorial integrity of Azerbaijan and ending the occupation is supported.

For that reason the power nations should take decisive practical measures according to the 7th chapter of the UN Charter and should submit Armenia to the will of international community if they really want to stop the aggression which is dangerous to the modern international relationships.

It has already been 25 years since Azerbaijan exposed to the unsettled conflict of Nagorno Karabakh with Armenia. Armenia is still keeping the 20% of Azerbaijani territory under its occupation ignoring all the resolutions which mandatory legal force adopted since 1993 calling the armed forces back from the occupied regions immediately, completely and with no conditions. As a result, there are more than 1000000 refugees and forced immigrates in the country. Azerbaijan requires the fair and peaceful resolution of this conflict since long time and it is still aiding more than 640000 forced immigrates. The resolution of their exile problem, returning them to their own lands in a safe and peaceful conditions still remains very first priority of the government of Azerbaijan. Maintaining the sustainable economic development by the President Ilham Aliyev through the recent 14 years, decreasing the poverty, opening 1.6 million workplaces allowed having some achievements in this field. 96 modern settlements have been built, more than 250000 refugees and forced immigrates have been provided with apartments. The poverty level of the forced immigrates have been reduced from 75% down to 12%. In total, 6 billion USD was spent for addressing the social problems of the refugees and forced immigrates (9). However, we think that the severity of the humanitarian situation of the forced immigrants makes necessary to have the international assistance to the national efforts. The full recovery of the human rights of the forced immigrants, directly depends on the resolution of this conflict and for this purpose the activity of the UN and its human right mechanism has to be strengthened.

List of documents adopted by the United Nations on the Armenian-Azerbaijani conflict

Security Council resolutions

Security Council Resolution (S / RES / 822) - April 30, 1993

Security Council Resolution (S / RES / 853) – July 29, 1993

Security Council Resolution (S / RES / 874) – October 14, 1993

Security Council Resolution (S / RES / 884) – November 12, 1993

Security Council Chairman's declarations

Statement by the President of the Security Council (S / 23904) - May 12, 1992
Statement by the President of the Security Council (S / 24493) – August 26, 1992
Statement by the President of the Security Council (S / 24721) – October 27, 1992
Statement by the President of the Security Council (S / 25199) – January 29, 1993
Statement by the President of the Security Council (S / 25539) – April 06, 1993
Statement by the President of the Security Council (S / 26326) – August 18, 1993
Statement by the President of the Security Council (S/PRST/1995/21) - April 26, 1995
GA resolutions

Emergency international assistance to internally displaced persons and refugees in Azerbaijan, 48/114 - 23 March 1994

Situation in the occupied territories of Azerbaijan, 60/285 - 15 September 2006
Situation in the occupied territories of Azerbaijan, 62/243 - 25 April 2008 (13).

But these decisions still remain on the paper and are not implemented by Armenia.

Azerbaijan's position on this issue is unambiguous and completely transparent. All the occupied territory of Azerbaijan must be released and the rights of refugees to return their own lands must be ensured. With this regards, the government of Azerbaijan has prepared a comprehensive safe and secure repatriation plan for the refugees to return to their own lands called “Great return” together with the international organizations. After declaration of ceasefire in 1994 between the both sides, the Armenian-Azerbaijan Nagorno Karabakh conflict has been recognized as a frozen conflict in international world. But this is not as it recognized. Through these years, Armenia unilaterally violated the ceasefire many times. On April 2016 again by violating the ceasefire agreement, Armenia fired Agdam and Tartar regions by using artillery intensively. As a result of that, 34 Azerbaijani peaceful inhabitants were wounded, 6 inhabitants were killed including children, 232 houses were destroyed, Public and private estates, as well as civilian infrastructure were seriously exposed to damages (10). Armenian armed forces not satisfying with it intensively and intentionally fired Alkhanli village of Fizuly region by using heavy weapons on July 4 2017 resulting in the killing of 2 years of child with his grandmother. On 7th of August 13 years old inhabitant of Tovuz region was seriously wounded. In fact, this conflict is still not frozen. Ceasefire violation occurs every day targeting the civilian population have become commonplace. In the recent years, 34 Azerbaijani children were killed by Armenian aggressor army. In the 72th session of the UN GA, delivering a speech from the high tribune the president of Azerbaijan Republic announced to the world community that the fair position of Azerbaijan based on the international law who’s the territory remains under occupation for 25 years.

The problem Azerbaijan faced is not only a problem of the region, it concerns to the whole world. By taking advantage of financial assistance of some donor countries and international organizations, Armenia encourages the forced settlement of the Syrians with Armenian origin and the others in Karabakh region. That’s why the world community must demonstrate more decisive and consecutive position on fair resolution of this conflict and must convince Armenia to start working on the peace agreement. The main obstacle to solution of the problem is that Armenia possesses a non-constructive position, not showing respect to the resolutions of the UN SC, OSCE and EC. That’s why, long time efforts of OSCE’s Mins Group remains unsuccessful who try to achieve peaceful solution of the problem. All the decisions and resolutions adopted by international organizations regarding strengthening Azerbaijan’s position once again and the confirmation of the solution of the problem on the bases of international principles of law. From this perspective, the speech of the president of Azerbaijan republic Ilham Aliyev in the 72th session of the UN GA once again shows the strengthening of our international positions and getting support by a range of international organizations to Azerbaijan.

The same time the statement of, “The integrity of Azerbaijan can never be the topic of discussion in negotiations.” Stated repeatedly and unequivocally by the president Ilham Aliyev, increased the hopes that the conflict will be solved fairly maintaining the territorial integrity of our country: “...Armenian-Azerbaijan Nagorno Karabakh conflict must be solved on the basis of international law, the UN SC resolutions, and the territorial integrity of Azerbaijan must be fully restored.”

Azerbaijan’s position on the solution of the conflict remains unequivocal. The problem should be solved in the condition of ensuring the territorial integrity of Azerbaijan and within the internationally recognized borders of our country. This position is based on international law norms and principles, the UN charter, the final act of Helsinki and multiple international documents adopted on solution of this problem. In this perspective, 4 resolutions adopted by the UN SC, also decisions of OSCE, the Council of Europe and Islamic Cooperation Organization also are important and they are legal basis for defense of fair position of our country in the international level. The aim of the Minsk group of OSCE established on March 1992 is to mediate the peaceful solution of Armenia-Azerbaijan Nagorno Karabakh conflict: “From December 1996, the Minsk Group is co-chaired by three states - Russia, the United States and France. But unfortunately the conflict still remains unresolved. Not many progresses have been achieved so far in the negotiation mediated by the Minsk group. Armenia is not interested in resolution of the conflict. He tends to keep the position of neither fire, nor peace (11). But in the beginning of April 2016 as result of subversion of Armenian armed forces the tension in the contact line of troops which was followed by numerous human casualties once more confirmed that remaining the conflict frozen might always cause the intense war.” But the international mediators for some reason don’t demonstrate unequivocal position about this case although they support the territorial integrity of Azerbaijan. We expect the co-chairs of Minsk group of OSCE as well as world community to take a precise measure to solve this problem fairly. Failure to adhere to the principle of justice draws to crisis not only the region, but also the entire world.

It is long time since the Armenia-Azerbaijan Nagorno Karabakh conflict has not been resolved. This conflict emerged as a result of Armenia's occupation of 20% of Azerbaijani lands. The UN has adopted 4 resolutions about this conflict. In these resolutions immediate removal of the invader from the occupied lands is required. However, for years, these UN documents have been dropped by Armenia as an unnecessary piece of paper. Despite that, the permanent members of the UN SC don’t effectively require the invader to leave the occupied lands of Azerbaijan. It is interesting that, 3 members out of 5 of the Security Council are co-chairs of the OSCE Minsk group which is dealing with the resolution of the conflict. It means that they are twice more responsible on resolution of the conflict. But what is the reality?

The reality is that, the USA, Russia and France doesn’t put the aggressor in its place as a neither permanent member of the UN SC, nor as a co-chair states. It is a painful and thought-provoking truth, but it is still the case. In such case, a question appears how come that the decisions of the UN SC about Iraq, Libya and Syria are immediately fulfilled but the decisions about Armenia remains ineffective? It leads to conclusion that the UN SC doesn’t treat geopolitical problems fairly, discriminates between states. But in fact the UN has got effective influence mechanisms in such situations.

Azerbaijan always stresses the importance of the following the relevant decisions of the SC and the principle to respect the states territorial integrity with regards to different matters related to the conflict between Azerbaijan and Armenia and calls for stopping the serious international crime acts doing unpunished committed through the conflict. The president Ilham Aliyev in his speech before the conference on the SC on May 4 2012 mentioned: “The ethnic cleaning policy of Azerbaijanis resulted in the occupation of 20% of internationally recognized territory of Azerbaijan and expelling more than 1 million people from their own lands. The SC has adopted 4 resolutions requiring the Armenian army to leave the occupied lands. But unfortunately it is already 20 years that Armenia ignores these resolutions” (12).

Azerbaijan always states the necessity to perform reforms in the organizations to reinforce the UN activity on solving the problems of mankind. Having note about the importance of the UN SC ability of demonstrating and adequate approach to prevent mutual misunderstandings between the member states in the current period where very complex processes are in progress in the international environment, in the 58th session of the UN GA on September 2003 Ilham Aliyev emphasized that the existing UN mechanisms did not meet the requirements of time and it made a necessary matter to ~~to~~ conduct reforms within the organization.

Azerbaijan proposed retreatment of the UN mechanisms, especially revising the veto right of the permanent members of the Security Council. Thus, Azerbaijan again brought the necessity of taking extra measures for achieving more effective actions for solving the existing problems and for increasing the role of the UN in international world to the agenda in the 59th session of the UN GA in September 2004. In the session the government head of Azerbaijan stated that: “The reformed Security Council must have a larger content, more responsible and democratic, it should have more transparent work methods and it should more operatively respond against the risks, threats and dangers of XXI century.” Azerbaijan actively participates in reforms discussions within the UN, especially in the activity of the interstate negotiations group.

Development and cooperation are one of the UN's major goals. Reasonable scale of cooperation and development opportunities have been formed within the UN considering the rising welfare, preventing the wars and securing the peace and security. It is already the second decade that the development issues have been put into discussions in the UN high level discussions as a main goal and it was decided to achieve definite targets within the given period of time. In the UN summit in 2015 the decision was made about continuation of these efforts started on 2000 through the next 15 years (till 2030) and some targets on global development have been identified (169 targets on 17 “Sustainable Development Goal”). The UN promotes the international cooperation in this field by means of different agencies (13).

The president of Azerbaijan Ilham Aliyev, speaking in the 59th session of the UN GA held on September 2004 stated that the 4 resolutions of the UN SC about the Karabakh conflict was still not implemented and he stated that it was necessary to prepare effective mechanisms to make them work (12). The same time our leader stated that the reformed Security Council must have a larger content, more responsible and democratic, it should have more transparent work methods and it should more operatively respond against the risks, threats and dangers of XXI century.

On 29th October of the same year the matter of, “The situation in the occupied lands of Azerbaijan” was included in the UN GA session agenda by the initiative of the delegation of Azerbaijan. Later on in the 98th plenary session of the 60th session of the UN GA held on September 7th 2006 and in the 86th plenary session of 62nd session on 14th of March 2008 the resolutions of “Situation in the occupied lands of Azerbaijan” have been adopted (13). In these documents Armenians settlement in the lands of Azerbaijan, committing fires in those lands were condemned and unconditional withdrawal of Armenian armed troops from the occupied lands of Azerbaijan following the 4 resolutions of the UN SC were required. Along with that in these resolutions the respect to sovereignty of Azerbaijan and its territorial integrity have been expressed as well as the right of the expelled people to return to their own lands once again confirmed.

Azerbaijan accepts the UN to have an important role in maintaining the international peace and strengthening and maintaining the security as well as in the process of democratization. The same time official Baku supports the idea of performing the UN reforms in order to enable it to fight against the problems and threats concerning the world on XXI century.

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Summary

The necessity of reinforcement of the United Nations mechanism of Armenian Nagorno - Karabakh conflict

Farahila Babaeva -Shukurova
Azerbaijan National Academy of Sciences, Azerbaijan

In these documents, Armenians settlement in the lands of Azerbaijan, committing fires in those lands were condemned and unconditional withdrawal of Armenian armed troops from the occupied lands of Azerbaijan following the 4 resolutions of the UN SC were required. Along with that in these resolutions the respect to sovereignty of Azerbaijan and its territorial integrity have been expressed as well as the right of the expelled people to return to their own lands once again confirmed.

Azerbaijan accepts the UN to have an important role in maintaining the international peace and strengthening and maintaining the security as well as in the process of democratization. The same time official Baku supports the idea of performing the UN reforms in order to enable it to fight against the problems and threats concerning the world on XXI century.

Key words: *Conflict, UN, ESCO, Nagorno Karabakh, Armenian-Azerbaijan*

IS ACCESS TO THE INTERNET A "HUMAN RIGHT"?

Shabnam Mammadova
Azerbaijan Diplomatic Academy, Azerbaijan

Introduction

By the 50s years of the last century, the history of the Internet started with the development of the electronic machines, and the first concepts of the Internet network appeared in the computer science laboratories of the USA, UK, and France. Unlike last century, today not only lab scientist but also each individual has a chance access to the Internet.

According to the Global Internet Report 2015, more than 3 billion people have access to the Internet and predicted that connection via mobile devices would increase the number of Internet users in the upcoming future.[5]It seems that everyone will fulfil most of the daily activities via the Internet in the next decades. However, the whole world community does not have access to the Internet. Even though we live in the advanced technology era, people from less developed countries still struggle with availability of Internet connection.

But the question is that should everyone have access to the Internet? The UN argues that access to the Internet is a human right. Especially, after the UN's declaration on access to the Internet as being a human right got a high attention from the public. From this perspective, my purpose in this paper is to define access to the Internet within democracy setting by highlighting a freedom of speech, freedom of opinion and freedom of assembly. Secondly, I will examine why access to the Internet is an important subject for a whole community within the framework of Sustainable Development Goals. To that end, my aim is to answer the research question to what extent access to the Internet is a human right.

Access to the Internet for promotion of democracy

In contemporary period, everything and anything have already been converted into the new technological period. In fact, most people have an officially confirmed online access to state mechanism; however, the international community still does not use advanced technology for implementation of representative democracy, says political scientists. Critically, even though everyone has access to the Internet, why the contemporary world does not use technological tools for the election process, scientists answer the question.

I believe in fact, access to the Internet promotes democracy itself in the community and gives extra opportunities everyone to stimulate a freedom of speech, freedom of opinion and freedom of assembly. In the contemporary period, political candidates, cultural critics, and media representatives use the Internet as world audience and deliver own thoughts more easily than has ever been possible before.

First of all, today's election campaigns are arranged via the Internet by establishing Facebook groups for promotion. This opportunity of the Internet allows candidates to express own thoughts to the supporters, and contribute ideas with others. For instance, access to the Internet had a huge impact on the UK 2015 General Election. Before the election, electors shared different opinions on Facebook and Twitter accounts by using several hashtags. According to the number of hashtags on the social networks, experts had already predicted that which party would win in the voting.[2]

Secondly, access to the Internet stimulates a freedom of assembly in the society. In the contemporary period, people prefer to come together on the online platforms rather than a public sphere.

According to the International Journal of Not-for-Profit Law 2011, the U.S. Secretary of State Hillary Clinton claimed that "cyber space" is the public square of the 21st century to meet with people. [7] In 2016 the U.S. President election, several election campaigns arranged via Facebook had also major impacts on Trump's victory, say politicians. [6]

In addition, online petitions via Internet has become popular activity recently. By signing electron petition system, each individual, in fact, participates in the political decision-making process. Freedom of assembly via Internet promotes each citizen's potential role in participation process.

It seems that access to the Internet promotes democracy by stimulating freedom of speech, freedom of opinion and freedom of assembly. From this perspective, the UN claims that access to the Internet is a human right to promote democratic citizenship in society.

Access to the Internet within Sustainable Development Goals

Access to the Internet is a human right to achieve sustainable development, argues the UN. Like other human rights, access to the Internet also supports the development of the humanity. According to the UN, access to the Internet and application of digital network into daily life is one of the progress indicators of the country to achieve Sustainable Development Goals. [1] The UN also argues that less developed countries should provide global and affordable access to the Internet by developing Information and Communication Technology system by 2020. [3]

Former UN Secretary-General Ban Ki-Moon argued that more than 80% of households have internet access in developed countries; whereas two out of three residents do not have in developing countries. [3] According to the UN's reports, access to the Internet is acknowledged as a human right to indicate country's living standards. The UN considers that access to the Internet is a human right because of following reasons:

a) Firstly, the UN claims that access to the Internet is a human right to establish Electron Government (e-government) within the framework of Sustainable Development Goals. According to e-government system, each citizen may use several services via the Internet to carry out bank transaction, payments, and other services without time-consuming. E-government aims to increase transparency between civil servants and citizens by using advanced information and telecommunication technologies. Within Sustainable Development Goals, access to the Internet reduce "distance" between civil servants and citizens, minimize waste of time, and bring progress for better living standards.

b) Secondly, UN argues that access to the Internet is a human right for better education within Sustainable Development Goals. Research via Internet gives extra opportunities students to work on new studies. The reason is that advanced education system by digital technology encourages students to analyse-synthesize their observations, develop problem-solving experience and decision-making and critical thinking skills. Using Internet resources in education makes students apply theoretical knowledge into the practical area. For instance, WWW open source offers students a full of endless enlightening websites for study. Interestingly, in past nobody could imagine education without printed books; however, today each individual can be an educated citizen by accessing to the Internet.

Furthermore, innovative trends on Internet simplifies to search information, collect data, and do research. Education websites in Google and informative videos on YouTube give a plenty of opportunities students to perceive comprehensive knowledge. It seems that access to the Internet is not only human right but also education itself, I believe.

c) Thirdly, the UN claims that access to the Internet is a human right to protect world cultural heritage, in other words, native language. By the end of the century, approximately half of the world's 7000 languages have struggled with a threat of disappearance.[4] Fortunately, access to the Internet allows everyone to promote own native language by writing Wikipedia articles and posting texts on Facebook and Twitter accounts. For instance, one proposed project from Facebook company stimulated people to write the native language and provided a translation of written texts into several languages to be understood by other nations. Within this project, the number of languages increased from 20 to 80. Elias Quispe Chura, translation manager at Facebook company believes that many young people started to share posts in endangered Aymara language mainly spoken in Bolivia, Peru and Chile after initiated this project. [8] It is argued that access to the Internet may protect endangered languages by giving a human right those need to promote the native language.

Conclusion

To sum up, access to the Internet is a human right to promote democratic regime in society. Access to the Internet stimulates a freedom of speech, freedom of opinion and freedom of assembly for each citizen's active participation in political decision-making process. Within framework of Sustainable Development Goals, the UN considers access to the Internet as human right for following reasons: First, it targets establishment of E-Government system to ensure transparency between civil servants and citizens; secondly, it offers several opportunities to achieve better education by using advanced technology tools; thirdly, it helps to protect and promote endangered languages by using them on online platforms and translating them into other languages. From this point of view, I believe access to the Internet aims to achieve social progress and better standards of life for development of humanity as other human rights.

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Summary

Is access to the Internet a "human right"?

Shabnam Mammadova
ADA University, Azerbaijan

The Sustainable Development Goals are a universal call to achieve peace and prosperity for better future. Goal 9 targets fast forward progress in the field of Information and Communication Technologies and achieve affordable access to the Internet in less developed countries by 2020. Within framework of Sustainable Development Goals, my purpose in this research paper is to define importance of access to the Internet as human right in a democratic setting, and examine several reasons of its declaration by the UN. To that end, this paper answers the research question that to what extent access to the Internet is a human right.

Key words: *UN, Sustainable Development Goals, access to Internet, human right*



