AZERBAIJAN FROM INNOVATIVE GOVERNANCE TO GREEN ECONOMY

E.Ahmadov

PhD in Economic Sciences
Academy of Public Administration under
the President of the Republic of Azerbaijan
Deputy Head of Planning and Management
of Sustainable Development Department.
E-mail: elshan.ahmadov@dia.edu.az
tel: +(99412) 4926361
mob: +(99455) 2770713

Received 18 February 2016; accepted 16 June 2016; published online 30 June 2016

Abstract

The entry of Azerbaijan into the list of developed countries by 2025 is a priority task set by Mr. President Ilham Aliyev. Further development of country is based on sustainable development conception. Since the recent economic achievements of Azerbaijan are based on the principles of innovative management and this trend is the basis of transition to a green economy in Azerbaijan. Knowledge-based economy in parallel with the innovative governance, in turn, serves to restore the ecological balance and effective resource management. At the same time conveying the effectiveness of innovative development to the population provides social welfare. In this regard, some examples of efforts and initiatives for sustainable development by Vice-President of the Heydar Aliyev Foundation, initiator of IDEA Public Organization Mrs. Leyla Aliyeva reviewed in the article.

Keywords: green economy, knowledge based economy, environmental management, competitive economy, energy efficiency.

JEL classification: F21, D24 O1.

Introduction

Vice President of Heydar Aliyev foundation, founder of IDEA social union (International Dialogue for Environmental Action) Mrs. Leyla Aliyeva in her speech emphasized that “an environmental education will empower future leaders with the knowledge and tools necessary to relate to the environmental challenges of our time.

Our actions today are the seeds we sow that will bear fruits reaped tomorrow". For the country that took the path of sustainable economic development is particularly important to make constructive use of scarce resources as well as knowledge-based human potential. Indeed in the recent years Azerbaijan has succeeded to achieve a competitive economic structure based on information and innovation, improve the living standards of society, adoption of democratic tradition by society, providing high-quality employment opportunities through reforms realized in public administration and economic management during last decade. Policies and implementations targeted for raising economic welfare of the society inevitably contribute to all pillars of sustainable development [1, 258]. In this context, structural problems of the economy were overcome and significant improvements were achieved in economic indicators such as GDP growth rate, GDP per capita, borrowing requirement and public finance, inflation, balance of payments and employment. At present, Azerbaijan provides 100% of its gross energy consumption through domestic production, which is currently largely reliant on the exploitation of the country's hydrocarbon reserves, namely oil and natural gas. The country does not depend on foreign resources in the energy sector. Azerbaijan exports oil, natural gas and electricity. Over the last years, the Republic of Azerbaijan has successfully identified political development, administrative reform and comprehensive economic development as national priorities in order to increase economic growth, alleviate poverty and unemployment. Proof of this Azerbaijan has become a member of United Nations Economic and Social Council (ECOSOC UN).

One of the main indicators that specify the position of any country in the world community is competitiveness. This comprehensive indicator synthesizes many aspects of the economy: the quality of products and processes, resource consumption goods at all stages of their life cycles, image and brand value, business excellence manufacturers, retail and service organizations, legal certainty, and the organization, professionalism and efficiency of the public administration.

The indices presented in Figure 1 show that Azerbaijan has a best result among the CIS and Eastern Europe countries, ranking 38th among 140 countries.

Figure 1. Adjustment to the GCI scores by sustainability indicators 2014-2016

The Global Competitive Report				
2014-2015			2015-2016	
Country	**Rank**	**Score**	**Rank**	**Score**
Azerbaijan	**38**	**4,53**	**40**	**4,50**
Lithuania	41	4,51	36	4,55
Latvia	42	4,50	44	4,45
Turkey	45	4,46	51	4,37
Kazakhstan	50	4,42	42	4,49
Russia	53	4,37	45	4,44
Georgia	69	4,22	66	4,22
Ukraine	76	4,14	79	4,03
Romania	59	4,30	53	4,32
Greece	81	4,04	81	4,02

Source: Own construction according to the World Economic Forum, Global Competitiveness Report 2014-2015, 2015-2016 [8]

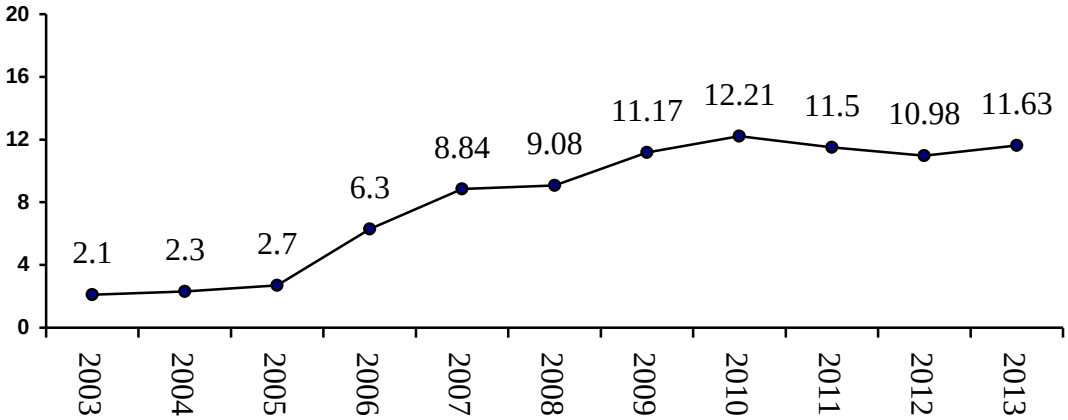
Rapid development and swift industrialization of the South Caucasus region has brought about environmental concerns and raised many ecological issues in recent years. From the date of "International Dialogue for Environmental Action" opening the center has been home to many short and long term training courses, seminars, roundtables and lectures on environmental topics, as well as "eco-cinema" sessions both for students and specialists in this field. It subscribes to a number of international journals and bulletins in order to secure up-to-date information on environmental matters and make a difference though innovation, leadership and proactive actions [2, 40]. Mrs. Leyla Aliyeva saw quite clearly, through her youth work, that the environment was a key cause of concern for young people in Azerbaijan as it is in the region and the world. 85 environmentalists from 35 countries participated in the International Camp of Young Environmentalists, held in Gabala, in November of 2011 [3, 218]. The Youth Camp was held for three days through an opening ceremony and three different workshops. Participants adopted «Gabala Declaration» calling on the people around the world to take personal responsibility on ecological problems and urging to bring environmental action and thinking into their daily lives. The main objectives of this camp were to promote active participation of the young environmentalists in public life of the region, to reinforce the role of young environmentalists in their own communities and encourage them to become an ambassador for local environmental awareness, and to nurture communities through an open dialogue, while ensuring the emergence of a new generation of independent young experts in the field of environmental studies.

Founder of IDEA Mrs. Leyla Aliyeva as pointed out "the future depends on how we live today. This is a reality that needs to be embraced by younger generations across the globe. We need to take responsibility for our environment and admit that our actions today are the seeds we saw that will bear the fruits to be reaped tomorrow. It is time to sum up the achievements of the recent year, plan for tomorrow and unite for one earth, one future" [2, 2].

2. How the knowledge community affects an economic performance

Promoting the wellbeing of current and future generations is the central objective of sustainable development. Sustainable Development is a pattern of economic development in which resource use aims to meet human needs while preserving the environment so that these needs can be met not only in the present, but also for generations to come. Sustained social development, the reduction of poverty, a rise in living standards and improvements in wellbeing is not possible without economic development an increase in the production of goods and services and economic development cannot be decoupled from environmental change. The production and provision of all goods and services implies a transformation, degradation and depletion of natural resources. Effective use of energy resources is essential for sustainable development and there are various methods used in evaluating whether these resources are used. One of the widely proven methods for measuring the efficient use of resources is the index showing the consumption of energy needed to produce gross domestic product (GDP) [4, 133]. From 2003-2013, GDP per unit of energy in Azerbaijan is increased by more than 3 times. (See figure 1). In terms of these indicators, Azerbaijan demonstrates high performance in par with the developed countries. Managing natural resources to aid in the transition to sustainable development involves more than just extensive education at all levels. A sustainable nexus between social, economic and environmental development will not only require a more balanced distribution of economic resources, but also a shift towards green economies, characterized by sustainable patterns of consumption and production.

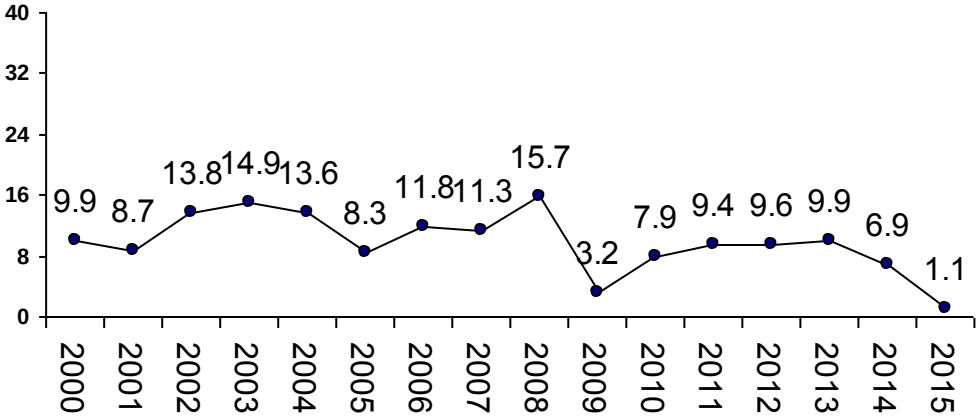
Figure 2. GDP per unit of energy use (PPP $ per kg of oil equivalent) in Azerbaijan



Source: Own construction according to the World Development Indicators & Global Development Finance

As an indicator of this trend we can show more than 700 thousand new jobs from 2005 to 2015 most of which falls on the share of non-oil sector. Also an alternative energy use in Azerbaijan including sun, wind and electric power was in the focus of sustainable development trends. Nevertheless, economic and political crises taking place in the world has not passed Azerbaijan economy. During the economic crises of 2008 and 2014 non-oil sector growth rate increased at first, and then slowed down. See the Figure 2. The process of slowing down is due primarily to the decline in oil prices on world markets and the reduction of the State budget. In this regard, the government is taking steps to reduce some public investment programs that have been planned in advance for the development of the productive sectors of non-oil sector, while the budget allocated more funds to the social and economic programs. Despite the efforts of the Government of Azerbaijan to realize the diversification of industries and stimulating the development of non-oil sector, Azerbaijan today has a competitive advantage in the main oil refining and chemical industries. The main priority sectors in the development of non-oil sector in Azerbaijan are considered to be agriculture, tourism, technology of information and communication, processing industry. International financial institutions emphasize the importance of the agricultural and tourism sectors. Thus, 44 % of the employed population is working in this particular field. For this reason, the development of agriculture is carried out successive government programs and reforms involved the latest technology.

Figure 3. Non-oil economy share in GDP in Azerbaijan (%)



Source: Own construction according to compiled by the author according to the Central Bank of Azerbaijan

The concept of green economies has emerged in recent years as a widely accepted shift from traditional thinking, in which environmental protection and management was viewed as being separate from economic development. It is now recognized that future economic development must be linked to both environmental and social pillars. A green economy must benefit coastal communities in developing states who depend on a healthy ocean for their survival. Healthy oceans are essential for the sustainable development of millions of people. Therefore, the concept of a green economy needs to be extended to a blue-green economy [9]. In this concern also Caspian Sea and Azerbaijan coastal area is of great importance according to green economy transformation progress. Population dynamics also have a critical influence on social, economic and environmental development and consideration of them needs to be central to any future development agenda [10].

Besides the weightless economy is also a knowledge based economy and considered to be a part of contribution to the green economy, where knowledge is widely traded as an intangible product, not just used as a tool to manufacture physical products. Software, databases and intellectual property are some examples of weightless economy. There are only two avenues still open for the continual betterment of a society, once its resources have been allocated to maximise the economic welfare of its citizens. The first is expropriation: a society can plunder the economic achievements of other societies. The second is technical progress: a society can utilise continuing developments in the arts and sciences to improve the lives of its citizens. The former option is neither clever nor subtle. More crucially, it is self-liquidating: it cannot result in sustained improvement [5]. Therefore,

technical progress is the only feasible engine of growth in a modern economy. But it is naive to suppose there is not a price to pay for technical progress, and that to ensure continuing economic growth; societies can get by without making difficult sacrifices. Those choices might turn on whether to channel resources into blue-sky research, exploring the boundaries of human knowledge and experience, but which might have no immediately visible pay-off. Or, they might hinge on smoothing the reallocation of people and resources from one line of work to another, as new productive options open and others close. One example of these changes is what has come to be known as the "weightless economy". It is mean an economy where creating value is associated increasingly with dematerialised products: computers, telecommunications, machine and biological software, mathematical algorithms, and related services. Such an economy also includes designs and ideas - computer databases, new financial products, better entertainment and more efficient ways of transmitting information. These objects are dematerialised because their economic values reside not in a physical form, but in their organisation of zeroes and ones, binary bits of logic. "Dematerialized products are important for economic growth for a number of reasons. First, they are infinitely expandable: their use by one person takes nothing away from their contribution to another's welfare or productivity. For instance, when a piece of software - installed on a satellite server circling the Earth - is used by myself in my office, no physical limitations prevent the simultaneous and equally efficient use of that software by someone else in New Zealand. The same is not true of a chocolate biscuit - once I have eaten that biscuit, no one else can" [5].

3. Examples of environmental management in Azerbaijan

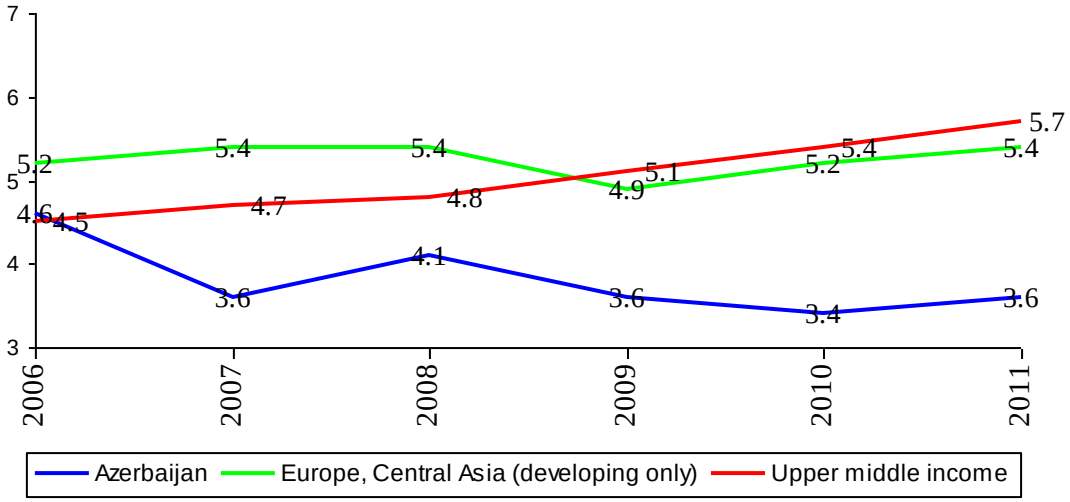
According to the Constitution of the Republic of Azerbaijan, everyone has a right to live in a healthy environment, as well as receive information about the current state of the ecology of the country. At the same time, no one is allowed to harm or damage the environment and natural resources. This is guaranteed by the state. According to the Constitution, the protection of the environment is the duty of every person. Ecological balance can only be achieved through the formation of an appropriate environmental outlook in all age groups, especially among the younger generation. Youngsters should be inculcated with a feeling of responsibility for the protection and improvement of the ecology in order to ensure their careful attention to the environment. For this purpose different propaganda mechanism should be used. Key point here is to change the public attitude to the environmental problems [6, 16].

Azerbaijan is situated between Europe and Asia, and embodies the Eastern wisdom and Western progress. The unique feature of Baku is that the architectures of ancient Icherisheher and Maiden Tower harmonize with samples of newly constructed modern buildings. In the past, Azerbaijan was the hub of the historic

Silk Way. Geographical position of Azerbaijan has not only influenced our culture, but also our nature. 9 out of the 11 climate zones exist in Azerbaijan, and this ensures our biodiversity" [7].

Azerbaijan, as a country blessed with natural oil and gas reserves and located in an environmentally challenging region, has also been active in solidifying and focusing society efforts to thwart the dangers posed by ecological challenges. To that end, the year of 2010 was announced the «Year of Ecology» in Azerbaijan. To reduce dependence from fuel and gas the government adopted State Program on the Use of Alternative and Renewable Energy Sources. By this program it's expected to decrease CO2 emissions and till the 2020 it's expected to increase alternative and nuclear energy percentage of total energy use in Azerbaijan. One of main environment disaster in over the world is carbon dioxide emissions. Carbon dioxide emissions are those stemming from the burning of fossil fuels and the manufacture of cement. They include carbon dioxide produced during consumption of solid, liquid, and gas fuels and gas flaring [11]. According to IEA and World Development Indicators on trends in greenhouse gas emissions the results of Azerbaijan emissions are less than Europe and Asia developed and developing countries, also with upper middle income countries. See Figure 3.

Figure 3. Emissions (metric tons per capita) Azerbaijan; Europe, Central Asia (developing only); Upper middle income



Source: Own construction according to IEA Statistics © OECD/IEA 2014 (http://www.iea.org/stats/index.asp),subject to https://www.iea.org/t&c/ termsandconditions/

Despite its young age, the country managed to reshuffle and refocus on environmental-friendly industries and businesses, while engaging younger generation in awareness-building and empowering each member of its community to become the leader for local environmental action. The first ever Center for Restoration and Rehabilitation of Wild Nature in the South Caucasus was established in Azerbaijan. Children in Azerbaijan and throughout the Southern Caucasus grow up proudly learning that they live in a region which boasts nine of the world's eleven climate zones. It has more than its fair share of environmental wonders. But it also is a country and a region with serious environmental challenges, from endangered species to industrial pollution to basic issues of water supply and safety. The beginnings of a government-led environmental investment programme are beginning to be seen in Azerbaijan, with industrial clean-up, a strong National Parks project, mass tree planting, and the first moves into renewable energy. The young generation in Azerbaijan understands the difficulty and urgency of the environmental burdens of the time and shares a common passion for the environment.

The Caucasian Biodiversity Summit was held at the Heydar Aliyev Center, following the initiative of IDEA (International Dialogue for Environmental Action) Public Association, and with the organizational support of the Heydar Aliyev Foundation and the Heydar Aliyev Center. Azerbaijan's First Lady, President of the Heydar Aliyev Foundation Mehriban Aliyeva, Foundation's Vice-president, founder and head of IDEA Public Association Leyla Aliyeva, and Arzu Aliyeva attended the event. The event was also joined by well-known international experts, representatives of a number of influential organizations, including the International Union for Conservation of Nature (IUCN), World Wildlife Fund (WWF), Smithson Institute, London Zoology Association and Harvard University, as well as scholars from Azerbaijan.

In the recent years a lot of different projects have been implemented by Leyla Aliyeva on protection of the environment and planning the future activities. The project "The Big Five of the Caucasus" providing for protection of 5 endangered animal species – brown bear, emperor eagle, wolf, gazelle and the Caucasian leopard is of special significance". IDEA participants launched a special campaign with the motto of «Young tree for Young Spirit», according to which, 300.000 trees were planted in 2012. Volunteers – students from different universities of Baku, government workers, and representatives from different organizations – have already made a huge progress and initial mass tree-planting took place on the «Greening Department 2» located on the 17th km of the highway from Heydar Aliyev Airport towards the city center, in Zikh highway.

Over 3 million trees were planted within the framework of the projects implemented; classes have been created at education establishments on protection of the environment. "Our primary objective is to secure rehabilitation of endangered species in the world, and their protection. Joint works are being carried out with a number of international organizations in this direction. Azerbaijan is a member of the International Union for Conservation of Nature" [7]. The environmental education of the young generation is a guarantee of a sustainable future and productive environmental management. For this reason, IDEA organizes different social activities on ecology, and treats the new generation in an ecologically responsible way. These awareness raising programs of IDEA have been welcomed by students as a chance to be engaged not only in studies but also in social activities [7].

The rapid growth of the economy, including the successful implementation of the well-planned oil strategy of the National Leader of Azerbaijan Heydar Aliyev, created great opportunities for addressing environmental problems. The close attention of the country's leadership to environmental issues has increased the efficiency of the measures taken in this field. Major projects have been successfully implemented and continue to be fulfilled in this direction. Over the past ten years, due to the intensification of tree planting and reforestation measures the forest area has reached more than 1 million hectares, increasing from 11.4 to 11.8 % of the total territory of the country. Over the past 10 years more than 20 million different species of trees and shrubs have been planted in the areas outside the forest territories. Over the last 5 years large landscaping projects based on up-to-date methods have been implemented around the city of Baku and Absheron peninsula. 3.4 million trees and shrubs were planted on an area of 3294 hectares, with the length of drip irrigation system of about 9 kilometers. As a part of these projects more than 845,000 olive saplings have been planted in different regions over an area of 1384 hectares. It is worth mentioning that the area of these new olive plantations equals the area of all the olive groves planted throughout Azerbaijani history. We face the task of achieving the Millennium Development Goals in water management. In order to improve wastewater management the existing large wastewater treatment plants are being modernized and new ones built and a sewer system is being laid in all the regions of the country. Based on the order of the President of the Republic of Azerbaijan «On Measures for the Protection of the Caspian Sea from pollution» the Ministry of Ecology and Natural Resources established the "environmental protection system of the Caspian Sea" consisting of 17 stations of sewage treatment plants for the cleaning of around 6400 cubic meters of wastewater daily aimed at preventing the contamination of about 100 kilometers of the coastal strip of the Absheron peninsula. Large-scale projects are also being implemented for the population's supply of drinking water and water supply

systems are built in all regions of the country. Since 2007, according to the order of the President of the Republic of Azerbaijan «On some measures to improve supplies of clean drinking water» the Ministry of Ecology and Natural Resources installed water treatment modular structures aimed at providing safe drinking water to the most remote settlements in a short time; as a result more than 400,000 people in 222 villages along the Kura and Araz rivers have been provided with clean drinking water. Work on the development of specially protected natural territory has been carried out in order to preserve the biodiversity and save the gene pool of rare species of plants and animals, with the area having doubled over the last 10 years. Currently there are 9 national parks, 11 state nature reserves and 24 state national parks with a total area of 893 thousand hectares. There was not a single national park in Azerbaijan until 2003, while today the specially protected areas form 10.3 % of the country's territory, including national parks of 3.7%. Special attention is being paid to the historic reintroduction of some species to their habitat. More than a hundred head of gazelle have been resettled in their historical habitats as part of the project implemented with the support of the Heydar Aliyev Foundation. As a result of all these measures there has been a natural growth of rare species that were in danger of extinction.

Serious progress has been achieved in the field of waste management. A modern plant for the incineration of municipal solid waste was built in Baku with the capacity of 500 thousand tons per annum together with a screening plant; in addition, the Balakhani landfill has been rehabilitated. Special attention is being paid to the management of hazardous waste. The National Center for the management of hazardous waste was established at the Ministry of Ecology and Natural Resources and the landfill of hazardous waste was built where more than 100 thousand cubic meters of toxic mercury waste and other industrial waste, including medical waste has been disposed of. In recent years outstanding results have been achieved in Azerbaijan in the field of the mitigation of climate change. Despite the fact that Azerbaijan is not included in the group of Annex 1 of the United Nations Framework Convention on Climate Change (i.e. the country didn't take quantitative commitments to reduce waste causing a thermal effect) and these wastes in Azerbaijan constitute a very small part of the world's waste, in the period after Kyoto concrete measures have been taken aimed at reducing waste; as a result, despite the rapid development of the economy, this waste has been reduced from 70 million tons in 1990 to 50± 2, 5 million tons per year since 2005.

4. The sustainable energy strategy in Azerbaijan

The State Programme for the Development of the Fuel and Energy Sector (2005–2015) targets the reduction of losses and prevention of theft and the inefficient use of energy in order to cover the electric power and natural gas

demands. It is stated that full payment of the cost of the electricity and natural gas consumed is one of the factors that would ensure the efficient use of these resources. The State Programme on the Use of Alternative and Renewable Sources (2004) also envisages more efficient utilisation of hydrocarbon energy sources as one of the objectives. Although the government sets the targets for an energy efficient economy, there is no law or secondary legislation specific to EE activities.

Since 2009, Azerbaijan has been signatory to the International Renewable Energy Agency (IRENA) and has created the State Agency on Alternative and Renewable Energy Sources (SAARES). A national strategy on the use of alternative sources of energy and RES for the period 2012–2020 is being prepared by SAARES and by the Ministry of Industry and Energy (MIE), including an RES Law, which is expected to be published by the end of 2012. As of June 2012, SAARES has become the State Company on Alternative and Renewable Energy Sources. This will provide a mandate to develop RES projects. A state budget of $60 million has been committed to the development of RES.

Hydropower is for now the most important renewable energy (RE) resource in Azerbaijan and in 2010 hydropower satisfied about 18% of the need for electricity generation. Azerbaijan has about 1000 MW of operating hydropower capacity and an additional 62 MW of planned hydropower capacity. Although there has been little implementation of wind energy in Azerbaijan until the present day, interest has been growing. Its use has huge prospects in some regions of Azerbaijan. Calculations suggest that the Republic of Azerbaijan has the economically feasible potential to produce about 800 MW of wind power. The main potential is in the southeast around the Caspian coast. There is also competition with tourism development. The estimates of the solar, biomass and geothermal potential are more uncertain. Even though there is sufficient space to install solar panels, the estimated potential of 5000 MW can only be a long-term goal due to the relatively high upfront investment cost. Biomass utilization is equally unlikely without an incentive system in place. There exists only the potential of geothermal energy for heat supply, due to the relatively low temperatures of the wells. The main barrier to RES development is the low tariffs that were set in 2007 and are still valid for 2012, with 3.2 US$/kWh for small hydropower plants (HPPs) and 5.7 US$/kWh for wind. Another barrier is the lack of a legal basis for connection rules. In order to overcome the barriers to developing RES in Azerbaijan two projects are relevant.

The project for preparation and implementation of an action plan for RE and EE will be undertaken by the Khazar Consulting Agency. This project is ongoing on the part of SAARES in co-operation with the International Academy of Ecoenergy. Azerbaijan is interested in finding solutions to the problems regarding

environmental protection and the rational utilisation of natural resources. In support of Azerbaijan's environmental protection goals, a number of important laws, legal documents and state programmes have been developed and approved in order to improve the ecological situation in the country.

There are two gross indicators of progress. First, the reliability of power supplies has improved, leading to a flow of funds to the power sector in Azerbaijan. Second, a 90% collection rate of the electricity bills has been achieved. This happened after many years of significant problems, when transmission and distribution companies were unable to collect bills and consequently had insufficient funds to pay for the generated electricity. The three priority areas for development in the energy sector of Azerbaijan are identified as follows: rehabilitation of power grid for improvement of power supply quality and loss reduction; development of renewable energy; improvement of demand-side EE and energy conservation'.

The main objective of the Azerbaijani Government in the field of energy has been to become self-sufficient in terms of meeting the energy demand. This objective has been achieved for oil since 1998 and for gas since 2007. Moreover, in addition to committed exports, there is currently an overcapacity of 6 billion m^3 of gas that could be exported to Europe and this is expected to increase to 10 billion m^3 by 2017. According to Action Plan 2011–2015 approved by the President for the implementation of the State Programme on Poverty Reduction and Sustainable Development 2008–2015 the country will begin privatisation of enterprises in the fuel and energy sector. The institutional arrangements for EE are at early stage of development in Azerbaijan. Institutional development should be informed by an understanding of the short, medium and long-term tasks to be accomplished and to which the authorities need to give early and high-level consideration. The European Bank for Reconstruction and Development (EBRD) has supported the preparation of a €165 million investment programme to modernise and upgrade AzDRES TPP (the country's largest thermal power plant (TPP)). This project has also applied for carbon credits under the clean development mechanism (CDM) and is expected to reduce CO^2 emissions by 3 million tons CO^2 eq. annually.

Nevertheless, the output of gas fired power plants could be considerably reduced, by developing this RES potential, which could make the GDP growth, which is currently mainly driven by oil and gas exports, more sustainable and long lasting. International donors, the EU and the Energy Charter are strongly supportive of Azerbaijan in terms of its EE efforts; with a view to complying with concluded agreements the administration should take a more explicit and structured approach to capturing the benefits of EE for all.

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