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**STATE OF ENVIRONMENTAL SERVICES IN AZERBAIJAN (DOWNSTREAM OF THE
KURA RIVER BASIN) AND WAYS OF DEVELOPMENT OF PAYMENTS FOR
ENVIRONMENTAL SERVICES (PES)**

RAFIG VERDIYEV
ECORES, NGO, Azerbaijan

E-mail: rafig2000@mail.ru, www.water-resources.iatp.az

Background. Azerbaijan has plenty of water quality and quantity related problems. Being depending on transboundary waters it suffers from high water pollution and scarcity. The human activity in the river basins lead to degradation of biodiversity, water and soil pollution. There is now transboundary cooperation on river basin ecosystem conservation.

There is no appropriate system of Payments for Environmental Services. Of existing three main types of activities directed at payment for ecosystem conservation (public payment schemes, self-organized private deals and trading schemes) only the first is practices in Azerbaijan but not in direct way. Activities undertaken by the government in cooperation with international organizations and financial institutions to protect of ecosystem at national level at specially protected areas and don't cover the whole river basin ecosystem related issues.

In the article some recommendation are made in order to promote the development of Payments for Environmental Services in the Azerbaijan Republic and for the entire transboundary Kura river basin.

1. State of water resources and related ecosystem of river basins.

1.1. Water Resources. The fresh surface water resources of the South Caucasus mainly consist of run-off from the Kura – Araz River Basins. Kura with its vast river system is the key water provider or, as hydrologists say, is the main water artery of the Caucasus. The river flows through the territories of Turkey, Georgia and Azerbaijan Republics. The total length of the river is 1,364 km and it has a total watershed area of 188,000 km². Of this area, 58,000 km² relates to Azerbaijan, 34,700 km² to Georgia, 29,800 km² to Armenia and 66,000 km² to Iran and Turkey/see 1-4/.

25% (7.5 km³) of total water resources of rivers is formed within the Azerbaijan Republic. At present water resources of Kura and Ganikh in Georgia and water resources of Araz in Turkey, Iran and Armenia are decreased by 20% as a result of water intake.

Many rivers of Shirvan zone where is located such cities Shamakhi, Akhsy, Sumgait Kurdamir and etc are drying up due to the lack of atmospheric precipitation and high level of evaporation in summer are beyond reaching of sea or main river. Water demands of population need to be solved

As water poor region, water supply over the Azerbaijan Republic territory makes up about 100- thousands m³/ km², the quotient amounts to an average of about 1 thousands m³ of water per

person per year. Accordingly, Azerbaijan Republic occupies one of the last place in the world. Water resources of the Republic are distributed very irregular over administrative districts. Water resources of Sheki-Zakatala zone, Khachmaz and Kelbajar economic districts exceed those in other areas.

Absheron and Kura-Araz lowlands where is located such industrial cities us Baku, Sumgait, Alibayramli, Salyan and etc(Mpst of countries population live here) are the most water poor regions. At the period of vegetation in Republic river run-off amounts is only 10-20% of annual and in Lenkaran-Astara zone it does not exceed 5%. The water supply of the Azerbaijan Republic territory situated downstream of trans-boundary rivers makes up about 100,000 m³/ km². This quotient amounts to an average of approximately 1,000 m³ of water per person per year, which places the

After the South Caucasus countries gained independence a comprehensive environmental law was passed and new legislation reflecting the important economic and political change since that time has been prepared. The accepted laws of these countries on Environmental Protection corresponds to realized reforms and to joined international conventions.

In spite of that, one cannot get an accurate picture of water resource management in the basin by reading even their post Soviet legislation, or by reviewing the institutions established, many of which remain from the Soviet period/DAI, 2003/. There is also flood protection strategy.

As is shown in the South Caucasus Water Management project report by the US company Development Alternatives Inc.(DAI), the existing situation and numbers of necessary steps maybe characterized as follows/DAI, 2003/:

- Effective integrated water resource management approaches *within* each country are necessary for effective trans-boundary integrated water resource management;
- Present water management and enforcement regimes within each country are legally and institutionally weak, but stronger regimes will be essential to establish integrated water management and agreements;
- Understanding the norms and behaviors affecting stakeholders on the ground will inform policy makers of the most effective legal and economic incentives likely to spur integrated water resource management.

1.2. Wetlands. Azerbaijan is one of the countries in the South Caucasus and has a territory of 86,600 km². The range of elevation within the Republic varies from 4,480 m. in the Major Caucasus Mountains (Bazarduzu crest) to -26.0 m (Caspian Sea level). The average altitude of the area is 384 m with 18 per cent of the area below sea level, 39.5 per cent is between 0 and 500 m, 15.5 per cent is between 500 and 1,000 m., and 27 per cent is greater than 1,000 m. Sharp changes of altitudes due to the orographic structure of the Major and Minor Caucasus Mountains and the location of the Kur-Araz lowlands form the unique climate in the Republic. Climate conditions and relief of the area plays special role in formation of the water resources of the republic.

Wetlands of Azerbaijan play an important role in formation and distribution of water resources of the country. In this regards their protection, sustainable use and restoration are essential for the sustainability of water resources management.

Wetlands of Azerbaijan perform functions such as flood control, water purification, water regulation, production of fish and etc. They exist at all elevation zones from marches in river deltas, to swamps, lakes, and creeks in alpine regions.

There are 250 wetland areas, including mountain lakes with total area of 250 km². Ten of which have the surface area more than 5 km². Some of the lakes are freshwater and others are saltwater lakes.

Wetlands are been categorised as followings:

1. Wetlands of Kura Araz lowlands
2. Wetlands of Absheron;
3. Mountain wetlands

Ramsar Sites of Azerbaijan Ag-Gol and Ghizil-Agaj and many other wetlands in the Kura floodplain play important role for flood mitigation and water supply for fish. Most of the wetland areas are located on the Caspian Sea Coast and Kuta –Araz lowlands. Before their area made up 80,000 ha (in the middle of last century). Now area of wetlands has been dramatically decreased in result of antropogenic activity, including construction of cascade on water reservoirs on Kura and Araz rivers .

The largest wetland in Kura-Araz lowlands is Sarisu. It is located in lowlands with an area of 65.7 km² and capacity of 59.1 million m³. The total area of these 4 wetlands of Kura-Araz lowlands make up 165 km²

As it is mentioned, the construction of water reservoirs negatively affected the wetlands. Level of water at Shilyan, Bostanchala, Garasu, Mahmudchala, Agchala and other wetlands has significantly decreased and most of them had died because of non sufficient amount of water. Four mentioned large wetlands which are separated from Kura now get water from the collector-drainage system of Kura-Araz lowlands.

In result number of flood increased and fish reserves have been decreased. People also can not use wetlands so wide as they did before. Now wetlands of this area receive the Kura waters at the period of maximal flooding and do not allow the flood to spread to large areas.

There are more than 50 reservoirs in Azerbaijan. Although most of them were been built for irrigation purposes. Because of absence of safe drinking waters people use their waters also for drinking.

Water reservoirs has also created their own ecosystem. They changed climate at sites where they are built and made it more moderate. Number of dry years and strong winters has been decreased.

Reservoirs are being used for different purposes including water supply for population, irrigation fish industry, energy production and etc.

Number of wetlands of Absheron reaches 150. Their total area makes up 50 km² . Only 6 wetlands are large(Boyuk Shor, Masazir, Binagadi, Kurdakhani, Khoja Khasan and Krasnoe). At XVII-XVIII centuries wetlands of Absheron were been used for salt production and medical treatment. Now they are strongly polluted.

Wetlands of Lesser Caucasus mountain are situated at 1400-3000m above sea level. Their number is 20 and total area is 12 km². Largest wetlands are Alagol, Garagol and Gou-gol. Their waters are clean. These wetlands are good places for tourism development.

Number of Great Caucasus mountain wetlands reach 70. Their total area is 2km². In this areas number of population is not high and waters of wetland are clean.

Wetlands also take an active part in formation of beautiful ecosystem of Greater and Lesser Caucasus mountain areas including climate of the territory. Most of rivers because of them are regulated and do not have rear frequency run-off characteristics.

1.3. Forests. The total forest area of Azerbaijan is 860,000ha or 10% of its territory. Specialists estimate that 5 hundred years ago forest cover made up 40-50%.

Forests play the main role in preventing soil erosion, protect waters and provide habitat for most of the terrestrial animal species.

The forests are classified for five ecological regions in Azerbaijan: the Greater Caucasus Mountains, the Lesser Caucasus Mountains, the Kura-Araz valley and floodplain, the Talish-Lenkeran zone, and the Caspian Sea. The distribution of forests with regard to location is various. 48,8 percent of forests are located in the Great Caucasus, 34,2 percent occupies the Lesser Caucasus, 14,5 percent cover Talish mountains, 2,5 percent are confined to the Kura-Araz lowland and 0,5 percent is the share of Nakhichevan Autonomous Republic. Although Azerbaijan enjoys rich and divers flora it is poor in terms of forest cover. 75-80 percent of Tugay forests (riparian forests) playing a role of the shield in the central part of the country's area have been destroyed. Mountain and foothill forests have been logged in an unregulated way and are in decline. Natural regeneration capacity is rapidly getting limited (as a result of unauthorized grazing, encroachment

and anthropogenic impact) and subsequently, the future of the irreplaceable green cover of Azerbaijan is being threatened with extinction.

The forest coverage in Sheki Zagatala zone makes up 27%. That is why run-off coefficient here is highest. Quality of water is high and waters are sweet. Observation shows that humidity of soil under forest is 2,5-2,8 times higher than it is in area which is not covered by forests. These areas also are characterised with high and stable level of ground waters.

20% of basins of Agstafachay, Tovuzchay and Zayamchay rivers is covered by forest. This leads to 4-5 times increase of their run-off.

In the basins of rivers of the South slope of Greater Caucasus (rivers of Shirvan) and many rivers of Nakhchivan forest does not exceed 5%. In these rivers annual run-off is low and in summer they dry. During the period of intensive rainfall of snow melting because of absence of forest often occur floods maximal discharges of which dozen times exceed their average values. Absence of forest also create suitable condition for soil erosion and landslides.

In rivers of Gobustan because of absence of forest ground waters make up 5% of total, but at the river Pircagat of neighbouring territory with higher forest areas this figure exceed 15%.

Results of research of specialists show that in the subalpine zone mountain slopes mainly are steep and most of waters of rainfall and melting snow flow through the surface and create plenty of tributaries. But below at the forest zone these waters become captured by forests and transferred to grounds. In lower elevations water appear at the surface like small springs.

Mountain steppes cover lower altitudes, and are used for agriculture (crops, vegetables, fruit trees and fodder plants). There are many species that are remote ancestors of domestic fruit trees (e.g. pear and almond trees). Dry scrub forests of Juniper, pistachio, maple, and almond are combined with scrub species.

In these areas run-off occurs only during the period of snow melting or rainfall. In summer rivers dry. At the areas with no forest or other plants often soil erosion and landslides occur.

The Kura-Araz valley and floodplain includes semi-desert vegetation (dominated by wormwood). Steppe vegetation occurs in the lowlands and foothills, dominated by grass and thorny shrubs, within which small areas of endemic pine, *Pinus eldarica*, can be found. This zone is also used for agriculture. Total forestry makes up 0.8% and no run-off.

Riparian (*tugay*) forests occur along riverbanks. Wing nut, oak and poplar prevail. These forests are especially endangered in the Kura valley, because the water regime has been changed by the construction of a hydropower plant. Now in the Kura valley this figure has decreased to 23,000 ha.

Forests help to conserve river bed stop its deformation and soil erosion and protect wetlands of the area from drying.

Results of research show that run-off of rivers with high forestry coefficient basins in summer months is higher. Role of ground waters in formation of run-off of these rivers also is higher.

In order to provide all year run-off of rivers the area of forest at their basin should be 25-30%. In this regards forest areas should be increased And density of forest at southern exposition and steep slopes should be higher.

Trees to be planted should be different because of high conservation property of mixed forests.

In Azerbaijan, forests are degraded owing to two major problems. These are illegal logging and grazing, both caused by economic problems and poverty.

The Ministry of Ecology and Natural Resources is considering measures for the restoration of these areas, including pumping and irrigation systems that would keep changes in the water levels close to natural ones. Although it is not possible to assess the size of the impacted area without a thorough EIA, the fact is that the few remaining tugay forests are very endangered and should be preserved.

Local communities, including large numbers of refugees, try to solve their economic problems by raising cattle, over which there is no control. Too many animals per unit of area degrade pastures and forest areas, especially young trees and shrubs. Forest regeneration is thus endangered, and

overgrazed pastures turn to barren soil exposed to erosion. An integrated approach to forest and rangeland management is needed.

Forestry inspectors report that illegal logging is widespread, amounting to 30,000 to 40,000 m³ annually (no statistics were available to verify these figures). Owing to the energy crisis, local people and refugees cut forests to provide their households with firewood. Inspection is very weak; there is one forest inspector per rayon (34 altogether) and they lack equipment (primarily vehicles and communication tools).

1.4. Land degradation. The soil-vegetation cover in the country is very differentiated and is distinguished by environmental problems as a result of anthropogenic impact. Only 4,2 million hectares or 49,3 percent of a total of 8,6 million hectares of land in the country is suitable for agricultural purposes. These lands have tended to degrade due to the effects of erosion, salination, bogging, chemical pollution and other processes.

One of the factors playing a particularly intensive role in this process is erosion (wind, washout, ravine and irrigation erosion). 3,7 million hectares or 43 percent of the land have been exposed to this process and 0,7 million hectares of them are agricultural lands the nominal value of which is about one billion US dollars. The main causes of the exposure of these lands to the effects of this factor are, along with the climate conditions, their remaining idle for a long time in terms of cultivation as well as the low level of agrarian culture, unregulated grazing, destruction of forests and vegetation and other anthropogenic factors.

1,2 million hectares of the country's land has been subjected to salination over 600 thousand hectares of which are irrigated lands. Such factors as the deterioration of collector-drainage channels, landscape relief, ameliorative specifics, the degree of salination, the construction of water storages taking no account of the level of ground waters and other factors, the inundation of the coastal zones as a result of the rise of the Caspian sea level as well as the rise of ground waters have led to soil salination and withdrawal from the use in agriculture.

Approximately 300 square kilometers is subjected to torrents. The dangerous zone particularly encompasses the Great Caucasus mountain range and torrents taking place biennially cause an enormous damage to nature by washing out about one million cubic meters of soil. 30 thousand hectares of land in Azerbaijan have deteriorated and ceased to be used impacted by mining operations, intensive desertification and anthropogenic factors. Of them 14 thousand hectares are contaminated by oil, 108 hectares by chemical wastes, 5571 hectares by sediments of watering channels, 1580 hectares is affected by extensive mineral resources exploration, 163 hectares by construction and municipal wastes and the rest are contaminated by wastes from mining operations.

2. Ecosystem conservation activities carried by the government

There are some activities undertaken by the government in cooperation with international organizations and financial institutions to protect of ecosystem. Of existing three main types of activities directed at payment for ecosystem conservation (public payment schemes, self-organized private deals and trading schemes) the first is more practices in Azerbaijan.

Organization of management of water resources of Azerbaijan is carried out in accordance with existing legislation. The laws adopted by Parliament are enforced by relevant decrees of the President of the country. These decrees determine also the authorities of relevant state bodies. The Ministry Cabinet of the country in accordance with the decrees of the President adopts a number of necessary regulations and decisions prepared by corresponding bodies of executive power.

These organizations have corresponding subdivisions, including scientific research institutes, which carry out monitoring of the state of water resources, carry out research, and develop standards and other documents.

Relationships between water users are regulated, along with Water Code, by legislative acts on sanitary-epidemiological safety and other legislative acts. Relationships connected with drinking water supply and discharge of waste water, are regulated, along with Water Code, by corresponding legislation of Azerbaijan Republic. Relationships on land, forest, entrails of the earth, vegetation and animal world, atmosphere, exploration and protection of ground water, as well as property and other administrative relationships emerging during use and protection of water bodies, are regulated, along with Water Code, by relevant legislation of Azerbaijan Republic.

Regulations of state control and standardization of use and protection of water bodies are approved by the Ministry Cabinet of Azerbaijan Republic. Regulations of standardization in the field of use and protection of water bodies are established by the Ministry Cabinet of Azerbaijan Republic. The right for use of water bodies can be obtained in the procedure envisaged by legislation of Azerbaijan Republic. President of the country establishes the types of use of water bodies which require special permission. The state control on the observation of regimen of use and protection of natural resources, other economic activity of physical and juridical persons in water protection zones is conducted by the Ministry of Ecology and Natural Resources and Committee of Amelioration and Water Economy within the limits of their authority.

Control of water protection zones is conducted by the Committee of Amelioration and Water Economy at the Ministry Cabinet of Azerbaijan Republic, which have the right to stop or prohibit operations having harmful impact on the condition of water bodies. Control of protection of ground waters is conducted by the Ministry of Ecology and Natural Resources. Admissible norms of harmful influence on water bodies are established by legislation on environmental protection and water legislation and are approved by the Ministry Cabinet of Azerbaijan Republic.

Volumes of minimal flow of water and water intake without their regeneration are established for each water body by the Committee of Amelioration and Water Economy at the Ministry Cabinet of Azerbaijan Republic and Ministry of Ecology and Natural Resources. Basin agreements are completed between the Committee of Amelioration and Water Economy at the Ministry Cabinet of Azerbaijan Republic, municipalities and water users. Basin agreements are prepared on the basis of water balances, schemes of integrated use and protection of water resources, state programs and other projects of use, restoration and protection of water bodies by proposal of the Committee of Amelioration and Water Economy and Ministry of Ecology and Natural Resources.

According to the regulations, the rules of user charge are established by the Ministry Cabinet of Azerbaijan Republic. When calculating the user charge, the price of water service is taken for basis. Payment for water consumption at water bodies in municipal ownership is established by municipalities in the procedure given in the first part of present article. Fee for water consumption at water bodies in private ownership is established on the basis of agreement completed between owners and water consumers. Types of payment related to consumption of water bodies and rules of payment are established by the Ministry Cabinet of Azerbaijan Republic.

Authorities of “relevant agencies of executive power”, anticipated by Part Four of Article 227 of the Code of Azerbaijan Republic on Administrative Violations, are fulfilled, respectively, by following agencies given below:

- non-purposeful use of drinking water – the Committee of Amelioration and Water Economy at the Ministry Cabinet of Azerbaijan Republic;
- issues related to municipal water body – Joint-Stock Company “Azersu”;
- violations of requirements for sources of drinking water, water treatment facilities, sanitary-protection zones of water-pipes, non-compliance of the quality of drinking water to the sanitary requirements and standards – the Ministry of Health of Azerbaijan Republic;

- irrigation of green plantations by drinking water and washing of transport facilities, purposeless leakage of drinking, domestic, technical and waste waters (in yards, streets, communication networks and energy distribution) –local executive municipal bodies.

For the regulation of provision of population, enterprises, institutions and organizations with high-quality water in necessary quantities, meeting the requirements of state standards, discharge of waste water in accordance with the Law on Water Supply and Sewerage, the local executive municipal bodies acting as water supply and sewerage system institutions shall follow the following principles:

- a) Cost recovery of water supply, sewerage and waste disposal services;
- b) Providing consumers with water of adequate quality and in required quantities, in the first turn, this concerns drinking water;
- c) Rational use of water resources;
- d) Creation of reliable system of treatment and discharge of sewage and waste disposal

Corresponding executive bodies in accordance with conditions envisaged by legislation in agreement with municipalities, issue the permit for the following:

- a) use of surface and ground waters in definite quantities;
- b) discharge of sewage in different surface and ground water bodies, also transportation and waste disposal (including liquid waste) in soil or water bodies;
- c) Construction of dams, water reservoirs and other hydro-technical facilities.

Water supply and sewerage organizations can offer in the agreement the following types, terms and sum of payment for services for all categories of consumers:

- a) payments for the quantities (amount) of water received in accordance with active regulations on the basis of information from water meter appliances or calculations, and discharged wastewater;
- b) payments for connection to the systems of water supply and sewerage;
- c) single payment for connection to the systems of water supply and sewerage;
- d) preliminary payment (advance) for the organizations of water supply and sewerage for the installation of technical means, including water-gauge appliances.

The financial resources of about 180 billion mantas were allocated in the last year from national budget to carry activity on melioration and irrigation. The project of rehabilitation of drainage irrigation infrastructure with the support of the World Bank (credit in the volume of 42 million USD) and the Government (46 million USD) was implemented. In another project titled “Irrigation” the credit of 35 million USD has been allocated by the World Bank for restoration of distribution systems and strengthening of Water User Associations. In the given project the installation of water-gauge devices is also envisaged. Besides, by credit of Islamic Development Bank Khanarkh channel is built, whereas the second phase of the construction of the Main Mil-Mugan Drain has already been completed. Asian Development Bank funds the project of combating the floods in mudflow areas (22 million USD).

On transitional stage the Government made the decision of conducting reforms in all fields of socio-economic life of the country. These reforms envisage also the field of agriculture, where certain results have already been achieved.

The main objective of the reform in the system of land-reclamation and water economy is defined – improving the relationships of ownership on the objects of land-reclamation and irrigation while increasing the efficiency of irrigation water use, gradual transition of the sector to the cost recovery.

The main task of the reform is also specified – maintaining of big land-reclamation and irrigation capacity, ensuring the future development of the sector.

The Government has taken the decision to introduce the user charge gradually from 1 January 1997. The new corresponding service of control of chargeable water use was created.

The Ministry of Ecology and Natural Resources is responsible for conservation and protection of water resources from pollution establishes and approves standards of minimal allowable discharges (MPD) of wastewater and controls them through regional offices.

During last years existed “Azersu” JSC established tariffs on the use of water different for residents, organizations funded from budget and in industry (185 manats/m³ or 0.04 USD/m³, 800 manats/m³ and 2,200 manats/m³ respectively). Owing to economic problems, lower tariffs were set for population (realistic tariffs are close to 500 manats/m³). The collection of bills is 80%. There are few water meters. The collected funds do not cover expenditure. During last year water tariffs increased by more than two times.

By financial support of the World Bank and European Bank of Reconstruction and Development (86 million USD) and the Government (10 million USD) the Project on Reconstruction and Rehabilitation of Water Treatment Facilities of Djeiranbatan and Kura Water Pipelines has been implemented (partially). Through the grant of the Government of Sweden 370 pumping stations of the city of Baku (there are 900 of them) have been repaired and grouped. Through financial assistance of the World Bank (13.5 million USD) the project on partial reconstruction and rehabilitation of water treatment facilities, water intakes and others, damaged because of the earthquake in 2000, has been implemented.

There are also some measures directed at the protection of existing nature complexes by getting up and running specially protected nature areas.

By Resolution of the President of the Republic of Azerbaijan No.222 of 22 May 2004 a State Programme on the rational use of summer and winter pastures, grasslands and combating desertification in the Republic of Azerbaijan has been approved. One of the responsibilities is to preserve nature cover of the country, to expand specially protected nature areas for the protection of biodiversity. Appropriate actions have been already made in this direction.

These are specifically state nature reserves, national parks, state sanctuaries and natural monuments with different status of protection. There are four national parks, 14 state nature reserves, 20 sanctuaries, over 2083 trees aged above 100, 37 geological and paleontological sites and an area of 15 thousand hectares of endemic and valuable forest species.

At present, the overall area of specially protected nature areas have in short time been extended from 484 800 hectares up to 584 000 hectares constituting 7 percent of the country's area.

Work undertaken for the creation of a network of specially protected areas and conservation of biological diversity in these areas in compliance with the requirements of the state's leadership concerning the protection and development of Azerbaijan 's natural resources. By relevant resolutions of the Cabinet of Ministers the area of state nature reserves has been extended. There have been established new National parks and State reserves. Presently, land allocation documents scientifically justifying bringing the area of specially protected territories up to 954,2 thousand ha have been prepared by Ministry of Ecology and Natural Resources.

In accordance with the legislation of the Republic of Azerbaijan other categories of specially protected nature areas can also be envisioned.

Reserves are the strictest and most effective system of protection of typical landscapes of nature and genetic diversity of the plant and animal kingdoms.

The protected areas are not evenly distributed across the country, but the main landscapes of ecological importance are represented within the protected areas system.

Presently, there are 14 state nature reserves, 4 National Parks and 20 state sanctuaries in the country/5/.

forestation activities. This year in spring on 1450 ha against 1448 hectares new forests have already been planted. This year the production of up to 240 tons of different tree and shrub species has been forecasted in order to grow 32 million seedlings. At present, considerable preparations are being undertaken to this end. For comparison it should be pointed out that while in 2001 reforestation and forestation activities were undertaken in an area of 4700 ha, in 2002 this indicator has increased by 1,6 times having constituted 7750 ha. Forest planting and sowing activities were undertaken in an area of 2025 ha in 2001 and 3150 ha in 2002. Currently, 50 forest protection and rehabilitation, regional tree nurseries, forest planting institutions, scientific-research forestry institute, forest protection and stocking units operate under the umbrella of the Ministry.

In order to strengthen technical capacity of institutions during 2001 and 2002 12 tractors, 10 trailers, 10 diggers, 2 cars and 1 microbus, spare parts for the amount of 190 million manat were purchased.

In order to tackle the alarming problems in terms of environment protection Ministry of Ecology and Natural Resources implements other actions according to the plan. Thus:

- Environmental condition of lakes in the Absheron peninsula has been surveyed and appropriate actions have been implemented. The ad-hoc committee has undertaken the determination of the degree of pollution, the significance of location, and nature of actions to be implemented. As an outcome a report on environmental condition of lakes has been prepared and submitted to state bodies.
- Recommendations to prevent a transboundary pollution of the Agstafachay water reservoir have been submitted to the Government of the Republic and currently, concrete actions are being carried out on the installation of modern laboratories in the transboundary area;
- In order to mitigate the pressure on forests caused by a shortage of energy supply in remote areas proposals on the use of alternative sources of energy in rural zones have been presented;

Pursuant to provisions of the Credit Agreement on Development signed between the Republic of Azerbaijan and International Development Association Project Implementation Unit established within the Ministry of Ecology and Natural Resources of the Republic of Azerbaijan is responsible for the implementation of environmental projects.

3. Development of system of Payments for Environmental Services (PES) Azerbaijan Republic (downstream of the Kura river basin)

The protection and sustainable use of forests, wetlands, soil and other elements of river basin ecosystem have not always been a priority during the period of former soviet union and also during the recent years of independence financial problems and political, economic and technical choices of development, without a long-term perspective, have caused destruction of these ecosystems with negative consequences for water resources.

The Kura river basin feature a highly rich and unique biological diversity and outstanding ecosystems that provide multiple functions and benefits, such as biodiversity conservation, water purification, pollution reduction, flood protection and support for socio-economic activities such as fisheries and tourism.

Starting from 1950th huge constructions on rivers resulted with the loss of most of the basin wetlands, and a severe reduction in habitats and biodiversity.

As is mentioned the relevant state agencies are involved into following environment conservation activities:

- Pollution prevention from municipal, industrial and rural sources;
- wetland and flood plain restoration programs;

- biodiversity conservation programs; and
- sustainable use of rural environments so as to reduce pollution, natural resource depletion and natural hazards

In order to make the planned state level actions more effective it is important to develop the PES systems.

Before, water management usually focused on the protection, restoration and use of aquatic ecosystems, such as rivers and lakes, and their surrounding environment. Lack of awareness of the role and functions of water-related ecosystems and the services they provide has sometimes been a drawback of the “Command and Control” approach.

In recent years, policies, strategies and actions made by developed countries have increasingly recognized the role of forests, wetlands and soils and their services to ensure sustainable water management, supporting inland waters and their basins from mountainous areas to the sea.

The “Command and Control” approach can’t be continued in the future. To reduce the pressure on the natural resources and provide incentives to protect and restore water-related ecosystems, it is necessary to transfer from this approach to methods that include market-based economic instruments, especially payments for ecosystem services.

The current situation in the Kura river basin requires the development of payments for environmental services (PES) and related sustainable financing schemes that support environmental conservation and improved rural livelihoods in large-scale international watersheds. The guiding documents can be the EU institutional and financial mechanisms for rural development, agriculture and the environment.

The issues of water resources conservation, their integrated use are priorities of Azerbaijan. During the meeting in September 2005 with water related agencies’ representatives the President of the Azerbaijan Republic Ilham Aliyev expressed that water is among the top priorities of the country.

In this relationship the issue of securing the sustainable finance of conservation programs should be included into “Strategic Action Plan of the country and entire Kura Basin” and take into account the priorities, action plans and programs of the EU regarding water resources, and key EU programs: the 2000 Water Framework Directive; the Rural Development Policy; and the Common Agricultural Policy.

Main area should be promotion of the integrated management of water resources and transboundary collaboration, in order to tackle interconnectedness of different water and land uses, both up and down stream. It is important to apply the EU system of payments for watershed-related environmental services and use of the EU Rural Development Policy and the European Agriculture Fund for Rural Development as a potential source of support for funding, helping pay for rural environmental and social goods and services.

Payments for environmental services is the generic name of a variety of arrangements whereby governments, businesses and other users pay farmers and other water and land managers, for conservation activities that deliver watershed-related environmental services. These environmental services may include flood control, erosion control, sedimentation control, water quality control, maintenance of aquatic habitats, and maintenance of dry season flows. To the extent that watershed protection is achieved by keeping or restoring vegetation and natural landscapes, other environmental services may arise, including forests conservation, biodiversity conservation, carbon sequestration, landscape beauty, etc.

There is an increasing interest in water management and rural development circles alike, regarding the ability of PES to deliver biodiversity and water conservation and at the same time becoming a new source of income for small farmers and rural communities.

PES objectives and policy choices regarding investment, trade, subsidies, taxation and regulation, lessons learned from Europe and other regions of the world suggest that the following steps be taken into consideration when establishing payment for ecosystem services:

- Ensuring that water resources should not be managed in isolation from other ecosystem components, such as land, air, living resources and humans present in the catchment area
- Analyse legal and institutional barriers for undertaking of PES;
- Rising awareness and get support of stakeholders;
- Identification and engagement of all major stakeholders.
- Who is recipient: farmers, rural producers, conservation institutions and other land, forest and water managers;
- What would they be paid for: maintaining, improving or adopting conservation-friendly land, water and forest practices;
- Who would pay: government, and different donor projects acting in Azerbaijan or in the South Caucasus region, from other donors, related funds, through credits or it could be the private source payments coming from large users of water and the watershed, like business and industry and etc.
- Consultation and cooperation agreements with relevant agencies, ongoing conservation programs and projects in this sphere;
- Organization of a multi-stakeholder dialogue to participate in and discuss the PES related issues;
- Acquainting with land and water uses, their relation to watershed conservation goals for identifying priority conservation-friendly land and water uses;
- Establishment of the size and type of the payments for environmental services for rural producer to maintain, improve or adopt the conservation-friendly land uses and water uses;
- Provision of protection, sustainable use and restoration of ecosystem components as important factor for the sustainability of water resources management;
- Maintenance of ecosystem services provided by forests, wetlands and soils to ensure sustainable water management and the supply of good quality water through the use of economic instruments, such as payments for ecosystem services;
- Maintaining ecosystem services is often cost-effective compared to water-construction works, such as dams and embankments, and water-treatment facilities, which can be far more expensive than protecting or restoring ecosystems that can provide the same services;
- Undertaking of the economic valuation of ecosystem services;
- Creation of institutional and management arrangements, that include representatives of the national and international watershed management authorities, governments, plus representatives of the sellers and buyers
- Establishment of financial mechanisms for the cooperation of providers and buyers;
- Guarantee self-sustaining long-term financial support program;
- Adaptation of activities to local conditions by involving all stakeholders;
- Creation of partnerships between stakeholders interested in the proper use of resources;
- Review and use of the EU regulations in this sphere, to assess opportunities to put in place a PES scheme for conservation of river basin ecosystems;
- Drafting of a detailed proposal of PES schemes for the different river basins of Azerbaijan Republic
- Discussion of the PES proposals with major stakeholders and particularly with the decision makers national level agencies and river basin management authorities pursuant their adoption and implementation.

Undertaking of all mentioned activities may promote payments for environmental services and related sustainable financing schemes that reward the maintenance, improvement or adoption of conservation-friendly land uses are in place, or well advanced in the Azerbaijan Republic. Lessons learned could be derived for the whole Kura river basin.

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