INTRODUCING PAYMENTS FOR ECOSYSTEM SERVICES (PES) IN THE REPUBLIC OF TAJIKISTAN: LEGAL FRAMEWORK, ISSUES AND MECHANISMS

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Abstract: This article deals with the rational use of natural and land resources through the introduction of advanced technologies, including environmental service payments, its advantages and Tajikistan's opportunities for implementing it. Environmental service payments are described as a source of funding for measures taken to improve the use of resources and to protect the environment. The implementation of PES projects brings the parties involved certain economic benefits. Most importantly, the use of resources contributes, rather than deteriorates, the environmental situation, hence the need to implement PES. The article presents issues relating to PES implementation, including legislative ones, as well as its advantages and disadvantages. A detailed description is given of the mechanism for introducing PES using the example of water-related PES. The article concludes with recommendations on how to improve the regulatory framework and the implementation of PES as an effective tool for sustainable resource use.

Keywords: payable ecological services, ecological service suppliers, ecological service recipients, water-related PES, introduction of PES, sustainable land management.

1. Introduction

After obtaining independence following the collapse of the Soviet Union, the amount of state investments to all areas, including environment protection, decreased sharply. In market conditions, the availability of sources of financing and self-financing and the capacity for self-development are the important factors for the proper functioning of every economic sector. Finding effective sources of financing environment protection requires both a reasonable approach and organizational and regulatory strategies.

Tajikistan is rich in natural, historical, cultural and recreational resources. Over 70%

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of total population lives in mountain areas. In practically all regions and natural zones in Tajikistan, land degradation, irrational use of water resources and pastures substantially affect the rural population, most vulnerable to poverty and unemployment since these communities are directly dependent on what the land provides them for survival. Agriculture is the main source of income for rural population. The main problem with agriculture is the ongoing degradation of land resources the rate of which depends on height and type of ecosystem as well as on land-use regime. Land degradation has various forms: erosion, salinization, yield reduction, exhaustion of soil, etc. Degradation issues are also connected with areas such as ecosystem services, including forage resources and foodstuff, which are essential for local agricultural production and life sustenance.

Tajikistan is a landlocked country located in the south-eastern part of Central Asia. The territory of Tajikistan is 142600 km^2; the country borders Kyrgyzstan in the north, China in the east, Afghanistan in the south and Uzbekistan in the north and west. 93% of its territory is covered with mountains. Terrain height varies from 300 to 7,495 m above sea level, and almost half of the territory is at an altitude of over 3,000 m. Glaciers cover 8,476 km^2 or 6% of Tajikistan's total area and, according to available information, account for about 576 km^3 of fresh water reserve. One of the country's main topographic features is presence of high-mountain lakes with a total area of over 680 km^2;most of these lakes are located in the eastern part of Pamir. 80% of total number of lakes (about 1,000) are located at an altitude beyond3,000 m above sea level (Razokov 2018).

Historically established agricultural production sectors in Tajikistan do not always correspond to the level of development of modern agriculture. As a result, the country's potential natural resources are not fully utilized. That is why one of the essential current tasks is to implement measures for sustainable land and natural resource management and to introduce, among other things, advanced technologies for the rational use of land and natural resources and payment for ecological services.

However, sustainable land and natural resource management is impossible without an appropriate regulatory framework. The existing regulatory framework is based on the traditional use of land and natural resources, established in the pre-independence period when land use practices and policies paid insufficient attention to advanced technologies relating to sustainable land and natural resource management with the exception of certain legal acts on combined

forests management (CFM), basin-type water resource management and so on.

First of all, the above results from the level of involvement and awareness of land users and, consequently, from their low demands and, secondly, from the costliness of some difficult-to-implement technologies, especially following the parceling of large farms into small ones in compliance with a recently adopted governmental program.

The existing regulatory framework is not fit for the sound introduction of payment for ecosystem services (PES) as introduction of separate PES elements and forms may lead to discrepancies with certain legal acts. Research conducted in this area is expected to detect the mechanisms for introducing PES and, consequently, to contribute to the elaboration of a legal act providing a comprehensive framework for this technology.

In Tajikistan, the level of law-obedience in land use area is rather high but initiative is low for avoiding any conflicts with official authorities, so it is crucial to elaborate a special law on PES or to add an appropriate clause to the Law on Environment Protection. Any initiatives to introduce innovations should be legally valid. For example, introduction of CFM in Tajikistan was legally impossible until 2012, and only after amendments were made to the Forest Code in 2012, an active implementation of this technology started in some districts of the Republic.

This study aims to analyze the current legal and regulatory framework for land and natural resource use with a view to identifying advantages of certain legal acts and appropriate mechanisms for PES introduction in Tajikistan.

As demonstrated in other countries, PES introduction is especially effective in water resource use. Tajikistan is rich in water resources, and the main application area is agriculture, which accounts for77% of the country's total water consumption. While about 80% of agricultural production takes place on irrigated lands, the irrigation and drainage systems are functioning poorly.

Yearly, tens of thousands land plots are not in use due to serious degradation or lack of a proper irrigation system. Nearly 400 000 ha out of about 730 000 ha of irrigated lands are used with gravity flow, and over 50% of the irrigation channel net is seriously damaged. The remaining lands are served by pumping plants with an effectiveness of about 40-50%. These issues limit farmers' access to the required volume of water, which leads to reduced crop yield. Water supplying bodies often do not receive payment from farmers, and payment delays increase water suppliers' indebtedness in respect of electricity bills, hence the impossibility to update the system.

Although amendments and additions were made to the Water Code in 2012, thus enabling the implementation of water resources integrated management (WRIM) and basin approach, the appropriate by-laws were not adopted and the water resources management is still based on the administrative and territorial approach. The recently accepted Water Sector Reform Program for 2016-2025 (Governmental Decree No. 791, 2015) includes the road map for WRIM introduction, including transition to the management of hydrographic entities such as river basins/sub-basins and irrigation systems. This Reform provides for the establishment of the following four river basin organizations (RBO) under the Ministry of Energy and Water Resources: Syrdaria RBO, Kafirnigan RBO, Vakhsh RBO and Pyanj RBO (Razokov 2018). These River Basin Organizations will be responsible for planning and monitoring water resources management as well as for carrying out basin management plans. Also, river basin committees are intended to be established as bodies representing the interests of water users and interested parties.

PES introduction is also expected to contribute to biodiversity conservation, especially in natural protected areas (NPA) regulated by the Law No. 788 on Natural Protected Areas, adopted by the Republic of Tajikistan on 26 December 2011. The NPA territory covers 3,1 million ha or 22% of the total territory of the republic and includes 4 nature reserves, 13 wild life reserves and 3 national parks, including the Tajik National Park. All NPA subdivisions have completed work on zoning which resulted in the division of NPAs into reserved territories and territories where economical activities are authorized. PES can be introduced on the latter territories for owners and resource users to cooperate on a mutually advantageous basis.

Pasture resources also need radical improvement. The total area of pastures/grazing lands in Tajikistan is 3,9 thousand ha or 80% of agricultural land. Many of these pastures show signs of overgrazing and degradation. Deteriorated vegetation of Tajikistan’s pastures has a broad environmental impact on local water resources, biological diversity and climate change. Tajikistan is one of the world’s main water reservoirs since 840 000 ha of its territory are covered with glaciers (6% of the total territory) which feed about one half of rivers in Central Asia. Therefore, their further deterioration may have a serious impact on the region as a whole. Conservation of Tajikistan’s vast pastures is of a great importance for maintaining short-term and long-term sustainable water supply both in Tajikistan and in the region. Consequently,

stabilization and further development of this sector should become a national priority.

2. Materials and Methods

The Law on Pastures was adopted for the first time in 2013, which presents mechanisms for rational use of pastures through the establishment of pasture users groups (PUG)responsible for optimal pastureland planning, compliance with pasture rotation and regulation of pasture load(National Centre). Also, this law contains a clause on beekeeping development according to which bee keepers are authorized to set up their beehives on pasture land with a view to increasing honey production.

This clause makes it possible to implement PES on pasture plots involving beekeepers and pastures owners. Based on a mutual agreement, pasture owners provide beekeepers with degraded pasture plots for cultivation of melliferous herbs such as alfalfa, thus enabling the beekeepers to grow Lucerne and gather abundant honey harvest. In their turn, the pastures owners harvest excellent alfalfa crops and improved soil health on their pastures.

Environmental services and their payment by natural resource users as well as expenses for natural resource protection and rehabilitation depend directly on environmental conditions. In Tajikistan, several laws on land use significantly facilitate consideration of issues relating to a rational use of jointly managed land resources including elements of PES.

Below are listed the advantages offered by a number of existing laws, obligatory for all users, even those using land plots within the frame of PES(National Centre):

- Law on the State Regulation of Assurance of Agricultural Lands Fertility of 2004 obliges land users to inform authorities about their use of agrochemicals and pesticides to comply with agro-technical and agrochemical, reclamation, plant health and anti-erosion rules and standards;
- Law on Biological Safety of 2005 aims to reduce risks of unfavorable GMO impacts on human health, biodiversity, ecological balance and environment condition;
- Law on the Association of Water Users of 2006 states that non-commercial associations of water users are established for fair, effective and well-timed distribution of water between all members and other water users and for surveillance over timely water supply payments;
- Law on State Support of Agro-industrial Sectors of 2007 presents the procedure for obtaining public subsidies/grants and a list of sectors/organizations authorized to receive them;

- Law on Farmer Households of 2016 prohibits public, social and cooperative bodies from interfering into economic activities carried out by farmer households. This law requires farmers to take measures for improving soil fertility and the environmental conditions of lands and to make timely payments for water use, electricity supply and so on;

  To meet these requirements, those farmers who are independent in land use planning are allowed to chose partners for PES-based combined land management;
- Law on Soil Conservation of 2009obliges land users to implement measures to improve soil fertility, prevent dehydration and rehabilitate degraded soils. The law includes a clause on sustainable control on soil condition through public environment surveillance;
- Law on Food Security of 2010 focuses on the competitive distribution of state investments among national agricultural producers as part of the public food safety policy.
- Law on Biological Management and Production of2013 lists legal principles of biological (organic) management, including organic product manufacturing, processing, storage, import, export, transportation, packaging and sale; that is, the law concerns products manufactured without GMOs or chemical/synthetic substances, and with a rational use of water during the manufacturing process. This law presents standards and the certification procedure for organic products;
- Law on Fish Breeding, Fishing and Protection of Fish Resources of2013 regulates commercial and recreational fish breeding and fish resources, fishing limits and measures to protect fish and fish habitat;
- Clause 18 of the modified Law on Environment Protection" indicates that funding for measures on environment protection comes from the government, donations from physical and legal persons as well as other financial sources, authorized by the legislation of the Republic of Tajikistan. Clause 19 of this Law presents benefits and quotas for nature resource use allocated to users for a specific period and amount including regulation of discharge/emission to the environment and storage of manufacturing wastes.

  According to Clause 20 of this Law, payment for natural resource use (land, subsoil, water, forest and other vegetation, animals, recreational, etc.) gives the right to use natural resources, to use natural resources in compliance with fixed limits and quotas; and to use of natural resources beyond fixed limits and quotes. Payment for negative impact on environment is necessary for discharge/emission of contaminants, storage of wastes and other impacts on environment beyond fixed limits and quotas.

Below is a detailed analysis of legislation on land use, indicating a possibility to collect payment for the use of natural resources.

According to the Constitution of the Republic of Tajikistan, water is exclusive state property, and the State ensures its effective use and protection for the benefit of the population. In accordance with Clause 31 of the Water Code, public supply water use is free of charge. Exceptions are made for special water use under which payment for water use is taken within specific limits (Law of the Republic of Tajikistan No. 744 dated 28 June 2011); above-limit and irrational use of water resources; services related to water collection, transportation to the users' location, water distribution and purification; granting of the right to use water for irrigation purposes; implementation of other waterworks (excepting agricultural irrigation and forestry). All of the above should be taken into consideration when implementing PES with a view to distributing water resources among users and for estimating the cost of services.

In the Republic of Tajikistan, land is exclusive state property, and the State ensures its effective use for the benefit of the population. According to Clause 32 of the Land Code, the land use in the Republic of Tajikistan is payable. Payment for land use has to be done yearly as land tax or rental payment. Land tax and its rate are determined by the Tax Code of the Republic of Tajikistan. Rental payment is given to the first land user according to the rent agreement.

Producers of agricultural products (legal persons, farmer households and cooperatives), who have rights for the so called simplified tax regime, are exempted from land tax. Basic land tax rates vary from 1.09 to 676.53 Tajik somoni (1 USD = 9.44 Tajik somoni) per hectare depending on the location and destination of land. Actual tax rates vary according to the size of a plot (Strategy 2011).

Collected taxes are to be allocated to the financing of various measures relating to land protection, soil fertility improvement, cultivation of new lands, implementation of regulations, work on the state land cadaster as well as land monitoring and state control and protection of land use.

Forests are considered to be the Republic's main natural resource despite the fact that they cover only 3% of the territory. According to Clause 64, all uses of state forest resources, indicated in the legislation of the Republic of Tajikistan, are payable taking into consideration useful properties of forests, accessibility of forest resources and market price for forest products (Razokov 2018).

Another important law governing payment for nature resource use, is the Law on Subsoil. According to Clause 2 of this law, subsoil in the Republic of Tajikistan belongs exclusively to the State and may be given for use to certain state bodies by delegation of the right to use and to certain subsoil users by providing them with the right of limited or limitless use. In the Republic of Tajikistan, private ownership of subsoil is inadmissible. Lang purchase and sale, granting, pledging, and unauthorized exchange of subsoil are prohibited. Clause 43 contains a system of payments for subsoil use, which includes the right to use it; fees for reproduction of mineral and raw material base and license fees.

Furthermore, subsoil users have to pay taxes, fees and other payments established by legislation including land tax and payment for geological information. Also, they may qualify for a discount in case of subsoil exhaustion.

According to the Clause 45, payment for subsoil use my be taken as follows: part of extracted mineral raw materials or other products; implementation of works or services; payment transfers to republican, regional and district budgets as a share in the statutory fund of the currently established mining company(Law of the Republic of Tajikistan No. 351 dated January 05, 2008). Payment rates for the right to extract mineral resources depend on the type, quantity and quality of reserves, natural, geographical, mining and economic conditions of exploration, development of deposits and possible risks.

The main achievement at the launch of the water sector reform was the establishment of the Water Users Association (WUA) in accordance with the Law of the Republic of Tajikistan on the Water Users Association(National Centre). Clause 18 of this law indicates the sources forming the property of WUA, such as fees of its members, humanitarian assistance of physical and legal persons and other sources which are not forbidden by the law, with possible inclusion of payments of individual water users as part of the implementation of PES.

According to Clause 32 of the Law of the Republic of Tajikistan on Pastures, the association of pasture users, farmer households, other agrarian farms and individual pasture renters have to pay as secondary land users in compliance with regulations specified in the agreement. Rental payment is determined or modified depending on the type of pasture, head of cattle and species. Rate of rental payment for any kind and form of pasture use is calculated by commission on pastures regulation within local administrative authority with taking into consideration the norms of optimal load,

livestock and type of pasture. The payment should not be inferior to the mainstream rate of tax, and the amount specified has to be submitted for approval to the Majlis/Council of People's Deputies of a city and/or district. The minimum rental payment should not exceed the twofold mainstream rate of tax. Funds collected from pasture rental shave to be used to improve the condition of pastures and for other purposes indicated in medium-term and annual pasture land planning.

Therefore, the system of payments for using natural resources in Tajikistan is sufficiently well developed, yet not deprived of shortcomings. For example,Tajikistan's current system of payments for environment contamination has undergone only minor changes since 2010. All legaland physical persons obliged to receive ecological permissions have to make payments for contaminants emitted into the atmosphere from stationary sources, for discharge of contaminants into water reservoirs and also for waste generation and disposal.

Main rules and regulations governing payment for contamination are indicated in the Law on Other Payments to the Budget of2016, which regulates all payments to be included into the state budget, excluding payments specified by the Tax Code in 2012. The Resolution of the Committee on Environment Protection indicates specific basic rates and regional coefficients.

All payments for water contamination are made to the republican budget whereas payments for atmosphere contamination and waste generation are currently shared as follows between the central and local level of state authorities: Republican Stabilization Fund of Economy Development (5%); Committee on Environment Protection (20%); Budgets of local authorities (20%) (environment protection as a whole); and local representative offices of the Committee on Environment Protection (55%).

Other payments are specified for using forest resources and wilderness by the Government Decree No. 546 of2007 on approval of payment rates for the implementation of legally valid activities and issuance of permits for use of natural and other resources. Ratesare revised yearly and usually indexed to take account of inflation. The indexation coefficient is 0.7% for every percentage point of annual inflation over the previous year.

There is also a tax for use of lands belonging to the state forest fund such as pastures. The per-head cattle tax rate is 2.48 Tajik somoni or USD 0.3 per season. In recent years, the total income of 1.5-2 million Tajik somoni has been payed to forestry budgets. However, cattle grazing on forest reserve lands cannot be considered as a totally positive practice due to possible negative consequences such as deforestation and soil erosion. In general,

however, these budget revenues are important as they ensure the financial viability of forestry since state budget allocations are insufficient for the proper functioning of the above activities.

Taxes for natural resource use fall into the following two categories: (i) taxes for subsoil use and (ii) royalty for the use of water resources. The Tax Code (Chapter XII) regulates both of them. All revenues derived from natural resource use go to the central government budget.

Irrigated agriculture(Strategy 2011) accounts for about 90% of total water consumption in Tajikistan. The combination of self-flowing irrigation and mechanically water pumping from rivers to elevated areas is used in main irrigational channels which are the basic elements of water supply and drainage structures. Self-flowing irrigation is used in about 60% of irrigated land and is relatively cheap. In contrast, irrigation using mechanical water lifts, which is needed for about 40% of irrigated lands, is much more expensive, mainly due to high energy consumption for pumping water to greater heights and sophisticated technological means used, associated with significant operating/maintenance expenses as well as high depreciation costs. Most pumping stations require repairs or replacement, and special attention should be given to improving the energy efficiency of the technological process.

In 2011, the responsibility for setting the irrigation water charge was assigned to the Anti-Monopoly Service. The Anti-Monopoly Service approved a uniform tariff for water supply for irrigation purposes in the amount of 1.5 dirams/m^3 excluding VAT, which amounts to 15 Tajik somoni (USD 1.60) per 1,000 m^3 excluding VAT and 17.77 Tajik somoni including VAT. Due to the lack of water measuring devices, water charges are calculated according to official water consumption standards for each main crop (Razokov 2018).

The uniform rate provides, more or less, for the reimbursement of operating and maintenance costs of gravity systems. However, in most cases it is insufficient to cover costs of water pumping systems. Considering the necessary depreciation deductions, the rate of irrigation payments, as a rule, does not provide full cost recovery either for gravity irrigation systems or water pumping systems. On average, the current payment rates cover only about half of operation and maintenance costs per m^3. Actually, the annual cost of electricity for pump operation is about 35 million Tajik somoni (US$ 5.3 million), which significantly exceeds the amount allocated for electricity in the budget of the Amelioration and Irrigation Agency.

Water user associations are organizations that collect irrigation payments and transfer that to local offices of the Amelioration and Irrigation Agency of the Republic of Tajikistan. Importantly, the collection rate of irrigation payments is only about 60%. The low profitability of agriculture has a negative impact on the farmers' ability to pay for irrigation services. In addition, their willingness to pay is constrained by the poor quality of irrigation services, namely, by the limited reliability of water supply when it is most needed.

Tariff-setting regulations for drinking water supply and sewage services are contained in the Water Code of 2000and the Law on Drinking Water and Drinking Water Supply of 2010.

Given the above information, Tajikistan has the following economical tools:

a) Payment for special water use, charged in Tajikistan in various ways(obligatory payments such as payment for forestry and other uses; penalties, fees, taxes and rental payments). Payment for using special nature resources does not exempt users from damage compensation resulting from the unauthorized use of nature resources (extraction, mining) or any other negative impact on the environment. All collected payments for using special nature resources (taxes, fees) and obligatory payments (e.g. payments for forest use and rental payments) are transferred to the state or local budgets and to the environmental fund under the Committee on Environment Protection affiliated with the Government of the Republic of Tajikistan.
b) Payment for general nature resource use (subsidies, tariffs, licenses)

Following the above analysis of current land use conditions and payment practices for using natural and land resources, which also provides good opportunities for PES application), the authors will now discuss the essence, advantages and mechanisms for implementing PES in Tajikistan. One specific example of a successful application of PES in the water sector will bring more clarity in the legislative procedure for paying for nature resource use.

3. Results

Current practice shows that environment protection organizations increasingly use economic and market mechanisms for landscape and biodiversity conservation on various levels. Most of these mechanisms are based on the principle that contaminating organizations/individuals should pay and include abroad spectrum of penalties, sanctions and tariffs for compensating damages made to the environment.

In the last decade, the approach to financing the environmental sector has gradually changed. Newly introduced methods punishment the guilty and foster measures to preserve nature. PES is one of the innovative approaches aimed at creating new markets and redistributing financial flows for the benefit of organizations and individuals working for landscape and biodiversity conservation.

The legislation of the Republic of Tajikistan defines the term “ecosystem” as a dynamically developing combination of plants, animals, microorganisms and their habitat, all functioning as a whole. The legislation provides no specific definition of “ecosystem services” but indirectly defines it as benefits received by the population from ecosystems. All ecosystem services are classified as follows: supplying (food, water, forest and raw materials), regulating (their impact on the climate, flood control, natural disasters, water resources quality and spiritual values of nature) and supporting services (soil formation, photosynthesis, nitrogen cycle, etc.).

Analysis of legal terms such as “natural resource use”, “natural resources”, “environmental components”, “natural entities” in the legislation of the Republic of Tajikistan lead to a conclusion that, in the context of chargeable nature resource use, legislators take the resource approach directed at obtaining materialized profit from the environment, natural products or revenue in specie. This approach identifies the legal effect and strengthens the economic evaluation of the so-called supplying/productive ecosystem services. However, it does not reflect the regulating, supporting and cultural features of other ecosystem services.

Ecosystem services are neither free of charge nor accessible for all in equal measure(Mountains 2010). Even if the ecological and other values of ecosystem services are put aside, land users willing to reducing the use of fertilizers in order to conserve river water quality will lose profits - which can be easily calculated -by harvesting crops. This is due to the fact that the more they use fertilizers, the richer harvests, but the water in river will be more contaminated. By renouncing this profit (intentionally or unintentionally), they render a service to other users living downstream.

Obviously, from the economic point of view, suppliers will continue providing their services only if they have some rationale for doing do. For instance, service consumersshould compensate for the lost part of the profits. Thus, the minimum amount of PES amount should be equal to the sum of alternative expenses of this sustainable use of natural resources.

In the light of above, PES provides natural resource owners such as farmers and forest owners within centives to manage their resources in such a way as to render ecosystem services. PES is defined as a voluntary agreement between, at least, one buyer and one seller, with exact specification of ecological services bought and sold providing that the seller will actually guarantee the implementation of the agreed ecosystem service (Wunder 2015). The key ecological services, including carbonic sequestering, biodiversity conservation, protection of water collecting basins and beautiful landscapes may be included to the PES scheme (Wunder 2005).

To be effective, PES systems should be focused on a specific ecosystem service and provide an additional payment to the ecosystem service when things follow their natural course. In many cases, the PES approach should be supplemented with other relevant approaches. The voluntary nature of PES means that the involved parties have great trust in each other(Mountains 2010).

The payment amount is usually based on previous incomes coming from the use of natural resources taking into consideration expenses incurred from rendering this or that ecosystem service. Thus, the PES system is intended to support the living standard of population while giving consideration to broader social advantages resulting from ecosystem services.

The elaboration and implementation of PES is not an easy task and involves considerable initial effort. It is necessary to establish for ecosystem services a framework aimed at determining whether or not PES creates the surplus value. The PES system also depends on the social capital of both buyers and sellers, based on their mutual confidence. The NGO may also be involved into the elaboration process (Wunder 2005). Besides, the cost of deals may be rather high. Therefore, the implementation of the PES system to the range of political tools requires thorough assessment of its expenses and benefits in comparison with other available political tools.

The first PES project in Central Asia was launched in 2008 in Kyrgyzstan by the Regional Ecological Center of Central Asia (REC CA) in collaboration with GEF and local interested parties, including national and local authorities, water user and pasture associations, local experts and the general public. The project aimed to improve the environmental health of alpine and subalpine ecosystems by increasing their pasturing sustainability. Among chargeable ecosystem services were water supply to the water drainage basin, conservation of water quality, biodiversity and forests. On one hand, farmers involved in pasturing and living

upstream and divisions of the Natural Forest Service are considered sellers and, on the other, tourists and farmers involved in agricultural irrigation are considered buyers. Although the PES system faced a number of obstacles, such as low potential, unwillingness to pay for ecological services and a limited understanding of interconnection between pasturing upstream and water quality downstream, the project provides a unique possibility for training and acts as aspringboard for further implementation of PES in the region.

PES is the compensation paid to ecosystem service providers by consumers. ES (ecosystem services) providers are the economic entities (i.e. any physical or legal persons) who provide ecosystem services or maintain them at their current level. ES are not provided by people in the strict sense of the word. However, activities of certain people and organizations (in particular, Protected Areas) are directed to conserve ecosystems and their properties necessary for the provision of ES. For example, country-specific ES may be the conservation of high quality of fresh water in rivers. ES providers will be land and water users whose lands are in river heads because the quality and amount of water downstream directly depend on the agricultural method they apply, including the amount of fertilizers and pesticides used; deforestation or, on the contrary, forest recreation; the inappropriate use or contamination of water resources, and more. If the quality of water is maintained at a certain level due to efforts made by land users living upstream, the latter can be defined as ecosystem service providers.

ES users are economic entities that benefit, also in economic terms, from a service provided and are ready to pay for it. The willingness of consumers to pay for a particular service is a prerequisite for the existence of a relevant market(Mountains 2010).

In the considered example, consumers of the high-quality water service are companies or individuals living in the lower reaches of rivers and using water for domestic or industrial purposes. In both cases, water quality is of great importance for these entities/individuals, and, therefore, if informed, they are likely to pay compensation to ES providers for striving to maintain the river water quality and for avoiding activities harming its quality (for example, by limiting the use of mineral fertilizers on lands adjacent to a river).

The aim of PES is to create a market for services that currently have no price. On the other hand, service users will be ready to pay for these services under the following conditions. First, they should be informed about how exactly suppliers' activities ensure the high quality of the ES and, second, they

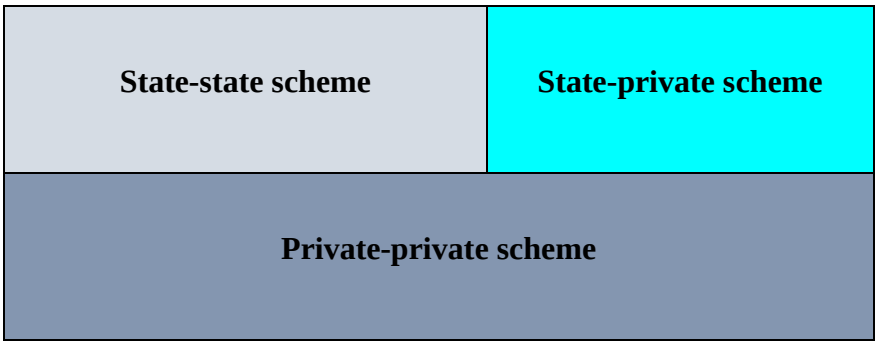
should be confident that it is more profitable to make a payment rather than to incur other expenses such as, in our example, the cost of building and operating water treatment facilities. The maximum amount of PES should still be more cost-effective than any of the possible alternative solution to the problem.

The real amount of PES is determined for each specific case as part of negotiations between the supplier and the consumer of the service, as well as their intermediaries.

It must be stressed once again that the main aim of the PES mechanism is to familiarize users with the idea that ES are not free of charge yet have a considerable economic value that needs to be paid. To do this, abstract ecosystem services have to be transformed into the category of necessary "goods" through awareness raising and environmental education of both the population and especially decision makers.

Different interested parties can play the role of buyers, sellers and mediators in the PES system. These parties can be divided into two major sectors, the state one and the private one. The PES system can be classified in three main schemes can be presented, depending on the type of organization and involved individual payers (Mountains 2010):

- State-state scheme
- State-private scheme and
- Private-private scheme



- State-state: in some cases, government organizations/agencies act as ecological service providers and buyers(ES). For example, the Ministry of Energy and Water Resources is faced with water shortages due to a reduced runoff in the catchment area. In this case, this state company may pay another state structure e.g. the National Forestry Agency, for providing affore station services in the upper reaches of the basin with a view to increasing the water flow in the catchment area and into the reservoir, thus solving the issue of water supply;
- State-private: this is the most common type of PES. Of special interest, in this regard, is the national PES system established in

Tajikistan, in which WUAs pay for water delivery from surface water sources to state organizations in accordance with anal located quota, and farmers pay for water delivery to WUAs in accordance with a bilateral agreement.

For example, an agreement on delivering water for irrigation purposes, concluded between a farm and WUA, specifies that water supply services shall be paid in Tajik somoni according to the following water supply service tariffs, set by the State Committee on Investments and State Property Management in2015:

- use of water for purposes other than land irrigation:2.45 dirams per $1m^3$of water exclusive of VAT;
- use of water for irrigation of agricultural land (regardless of ownership) and in lift irrigation:1.5 dirams per $1m^3$ of water exclusive of VAT.

The clause *Obligations of Parties* states that the representative body of the Amelioration and Irrigation Agency prepares irrigation systems for the growing season and provides Water User with water according to the contract and water use plan. If the representative body of the Amelioration and Irrigation Agency (AIA) under the contract and water use plan cannot provide WUA with water and the Water User suffers economic damage, the AIA representative body is obliged to compensate for the damage caused, according to the Law of the Republic of Tajikistan on Water Users Association (Water Code of the Republic of Tajikistan). In the absence of an agreement between the AIA representative body and the WUA, dispute settlement shall be channeled in accordance with the current legislation of the Republic of Tajikistan.

In Tajikistan, economic relationships are established between state structures, Farmer Associations and Pasture Users Associations (PUAs) for mutual payment of services.

One of the PES types is cooperation between individuals (trading scheme), based on the willingness of private structures to create profitable relationships in order to increase the efficiency of their activities. A good example illustrating this type of PES would be a scheme applied by drinking water companies which are interested in conserving groundwater and protecting it from pollutions, in particular, pesticides used by farmers in their agricultural activities.

The above-mentioned trading scheme was established by the Law of the Republic of Tajikistan on Public Initiative Bodies in2018. According to Article 3 of the Law, a public initiative body is a public non-membership voluntary association of citizens the aim of which is to resolve social issues arising locally. These public voluntary bodies

have no higher authorities or organizations and are usually called *makhalinsky council*, *makhalinsky committee or housing committee* (from *makhala*,'local community').A Public Initiative Body is authorized to have its own bank account, sea land letterhead. In accordance with the legislation of the Republic of Tajikistan, Public Initiative Bodies can cooperate with government, non-government and international organizations operating in Tajikistan in order to address existing social issues.

Article 4 of the Law on the Relationship of State Agencies with Public Initiative Bodies defines the following requirements for compliance with the status of Public Initiative Body: state agencies shall meet all necessary legal, organizational and other conditions for managing activities carried out by Public Initiative Bodies and shall assist the population in exercising the right to public initiative. Local executive bodies of State authority and their officials shall not interfere in the activities of Public Initiative Bodies, with the exception of cases indicated in regulatory legal acts of the Republic of Tajikistan.

As can be seen, the Law makes it possible to resolve locally issues relating to the volume and priority use of irrigation water and pastures use within the frame of local agreements on payment for environmental services concluded between rural makhalla councils. At the same time, there is a real opportunity to involve NGOs and international organizations to implement their plans and programs.

Nowadays, Tajikistan offers four main ecological payment categories, in which compensation payments and market creation is feasible. These are services to ensure provision of high-quality fresh water, preservation of biodiversity and landscape aesthetics, and reduction of greenhouse gas emissions. These four "products", each of them including a whole range of services, today have a real economic value, which can be easily calculated and sold if properly advertised.

PES scheme using the example of a water basin		
	Upstream ES users/sellers • Cattle breeding • Industry • Forestry • Ecosystems in upper river basin Impacton river flow quality, volume and regularity	Payments
Ecosystem services		Downstream ES consumers/buyers: • Hydropower Station • Drinking water • Irrigated agriculture • Fisheries • Recreation and tourism • Ecosystems in lower river basin

In Tajikistan, high-quality water supply services are the most specific and economically assessable type of ES. This concept includes:

• Watercourse regulation: flood prevention and management, watercourse maintenance during the dry season;

• Water quality regulation: maintenance of the required concentration of nutrients, mineral compounds, salinity, etc.;

• Erosion and sedimentation control;

•Aquatic habitat preservation(maintenance of specific temperature, salinity and other conditions in water bodies necessary for the survival of valuable species), etc.

Biodiversity conservation services consist in conserving specific ecosystems, plant and animal species, and genetic diversity. Carbon sequestration is carried out by green plants and is directly related to the presence of forests and, therefore, this service can be rendered in two ways: either through conservation of existing forests or through affore station.

Conservation of aesthetic and cultural values of landscapes includes the following: creation of new protected areas, natural and

cultural heritage sites; protection of mountains, natural landmarks and even indigenous ways of life. These natural values are especially important in the light of the developing tourism sector in Tajikistan; however, their economic value is most difficult to assess.

The baseline in the PES development is a comprehensive analysis and assessment of existing situation. Analysis/assessment can be carried out by stakeholders themselves or by additional experts. Existing water and land management are to be assessed in order to identify management issues and possible solutions.

Participation of stakeholders in the PES analysis and evaluation process presents a number of advantages (Overview 2011). First, available knowledge leads to substantiated decision-making; second, agreement in the early development stages of PES reduces risks of eventual conflicts; third, thus improving the transparency of public and private activities; and fourth, the above measures foster trusting relationships between all participants in the process.

PES planning allows enables the analysis of all key sectors that cause problems and require improvement, the compilation of a list of problems and recommendations for handling them and the identification of priority issues for a given period of time(Mountains 2010).

Such a comprehensive analysis results in the detection of a significant number of problems and issues that require environmental and economic solutions. All the identified problems are put on a special list – a problem register - which presents issues relating to water provision to the population and agricultural production, reduction of negative impacts on the environment and increase in management efficiency.

The compilation of problem registers is necessary for further ranking and priority-setting. Once detected, priority problems form the basis for setting goals for the next step – agenda elaboration.

Problem registers should be open to all interested parties and the general public that also have the right to make proposals relating to the expansion or reduction of the list of problems.

Detected problem	**Negative consequences and risks**	**Reasons**	**Area of activity**	**Indicator**	**Ranking number**

Lack of irrigation water	- loss of irrigation water - reduced land productivity	- long service life of irrigation systems - obsolete irrigation systems	Agriculture (irrigated agriculture)	-efficiency of irrigation systems -loss of water between water withdrawal to land irrigation	
Contamination of water bodies with collector-drainage and discharge waters from settlements/cities and farms adjacent to rivers	-declining water quality in water bodies - increased risk of infection diseases	- lack of consistent maintenance of water supply systems - lack of treatment systems - non-observance of water protection zones/areas	Communal service	-amount/ volume of waste waters, discharged into rivers -river water quality indicators	

Table 1. A sample problem register

A problem tree based on the identified problems is created for clarity. Whether problems have been resolved or not affects the conditions and possibilities to implement PES. The problem tree compiled at the analysis stage provides a good framework for developing a tree of goals and objectives.

In economic terms, service providers will have an incentive to continue providing it only if service consumers compensate their lost benefits. Thus, the minimum amount of PES should be equal to the sum of alternative expenses for sustainable environmental management. Given the above-mentioned phases of PES implementation, when using PES in environmental practice (for example, in order to attract additional resources for funding natural protected areas), first, it is

necessary to determine the ecosystem service to be sold, to describe it in as many details as possible and to assess its economic value. This process requires certain scientific knowledge, as well as consultation with all the parties involved in the process (Padgiola 2017). At the stage of information collection and analysis, it is most important to determine exactly what service is provided, to whom (for example, natural protected areas, water user or pasture user associations) and at what level.

The level of ES users may be local (for example, enterprises located downstream from, for instance, natural protected areas that use its water for production purposes);national (state, NGOs and private companies); and international (grants from international funds and NGOs, are factually an example of PES) levels. The number and composition of consumers of a specific is determined depending on your product for sale, needs and capabilities.

At the next stage, it is necessary to create or find a suitable financial mechanism/structure for collecting payments from ES users. It is also important to set an optimal price for the service: it should be neither too high from users' point of view nor exceed the cost of alternative ways to solve the problem (for example, construction of water treatment plants). At the same time, this price should cover all transaction and management costs. Estimating the cost of a service requires the involvement of professionals for economic analysis, consultations with all users and examination of their capacity to pay through various questionnaires and surveys.

Ideally, a financially sustainable mechanism has to be created that guarantees a long-term rather than a one-time flow of funds. For this purpose, as many sources of income should be involved as possible including tax revenues, resource usage fees (charged, for example, for entry into protected areas), subsidies from local and regional budgets, grants from international NGOs and foundations, etc.

If there are several recipients of PES such as natural protected areas, individual local residents, farms and forestry enterprises, a mechanism should also be elaborated for distributing compensation to ES providers. Again, ideally, the payment amount should be such as to compensate them for lost/unrealized profits. As an example, compensation payable to local residents for preserving a local forest that they could have otherwise cut down and sell to a logging company should not be less than the amount they would have obtained from the latter. In case of pastures or protected areas management, the main task is to preserve ecosystems. However, some minimum PES should be determined, taking

into consideration the effort and time of workers required for the implementation of environmental measures (Padgiola 2017).

There is no unique recipe for determining PES value. As a rule, the price is determined depending on the size of the land plot where environmental protection measures are carried out (or where no "anti-measures" are taken), on the result achieved (if measurable), etc. In addition to direct financial payments, PES can be in the form of non-monetary contributions such as free training opportunities for environmentally responsible local residents, material (but not monetary) support for water and pasture user associations, farmer associations, natural protected areas and infrastructure development, among others.

If many partners are involved in the PES process, it makes sense to create a special PES management structure/body aimed at finding and bringing together potential ES sellers and buyers, providing assistance in contracts, drawing up ES implementation plans and monitoring the program's effectiveness. If this structure is established as a separate body, administrative costs should be as low as possible.

At the initial stage of research and implementation of the PES system, as experience in other countries shows, these expenses are usually very high and are often covered with targeted grants (GEF, USAID, World Bank and etc.), and the system should further become self-sufficient. Regular costs should include costs associated with monitoring, providing users with reports detailing where they money goes and reporting finances to the relevant authorities.

In our opinion based on our experience with these and similar issues, monitoring of PES performance and sharing the results with consumers is an important part of the process. Users and government representatives should be constantly shown the economic importance of this service and the effectiveness of PES with reference to real numbers and other indicators. The general public should also be informed about the real cost of "free" clean water and air without which the success of no such scheme can be guaranteed.

Type of ecological service	**Type of ecosystem**	**Example of PES**	**Limitations of PAS use**
Fixed water supply volume(flood and erosion and	Forests, fresh water reservoirs	Downstream water users (industrial enterprises, communal services, etc.) are	Previously, ecological services providers had neither institutional nor

sedimentation control; maintenance of water quality, salinization control; conservation of water basins and adjacent ecosystems, maintenance of popper outflow volume in dry season, etc.)		to pay land users and owners for sustainable agricultural methods and implementation of environmental measures to ensure fresh water supply. The State (at various levels) is to compensate farmers for introduction of sustainable agricultural methods (for example, non-use of pesticides; affore station, etc.). Land users, whose activities reduce soil and water salinization (e.g. by affore station) may sell their salinization increasing quotas to enterprises that contaminate the environment.	legal rights to request compensation for their services. Nowadays, various mechanisms are available for recovery of compensation payments. On the downside, users are not always ready to pay for these services.
Carbone absorption	Forests	Companies involved in activities contributing to major greenhouse gas emissions into the atmosphere should pay for affore station and other forest conservation practices in their respective countries or abroad.	Transaction expenses are high and a result may be seen only in the long term.
Esthetical values of nature	All	Tourism organizations are to pay protected areas for	This government-funded market is in its

		permission to enter their territories, of great interest to tourists for their natural landscapes or unique biodiversity.	initial stage of development. Services are provided at artificially lowered prices.
Biodiversity conservation	All	The State (at various levels) provides tax concessions to landowners if they create private protected areas on their lands or take environmental measures. Users buy food products environmentally responsible companies and pay for eco-friendly brands. Pharmaceutical companies fund forest conservation activities to make sure medicinal plants used in pharmaceuticals they sell come from environmentally clean areas.	The non-material value of most of these services cannot be clearly defined or calculated, and the same is true for consumers. It is difficult to define threshold values such as the minimum forest land where this service may be implemented. Transaction expenses are high.

Table 2. Examples of PES and restrictions on their use

Before launching PES, the possibility of implementing this mechanism should be assessed in each specific area, for example, by answering the following questions:

- What environmental tasks are planned to be completed by introducing PES?
- Where and how the support (including the material support) can be received for planning and launching PES?
- Who are the stakeholders and how to involve them in the negotiation process?

Research should be conducted for an in-depth assessment of PES implementation

possibilities according to the following method.

A step-by-step method for PES implementation makes it possible to assess how well this type of PES fits the chosen protected area and how realistic its implementation will be in a specific area. According to the method, the protected area management, water user associations or any other organization responsible for protecting and using rationally aquatic ecosystems and their resources initiate the introduction of PES. At the initial stage, the leading organization (protected area management, pasture user association, water user association and NGO) substantiates the need to implement PES and finds out how the proposed PES mechanism can help accomplish a specific environmental task. Also, clear project objectives should be defined and sources of funding should be explored for planning and launching of PES.

The preliminary preparations done, the leading organization gathers a Working Group involving all previously identified interested parties identified. This Working Group conducts research to answer the following questions:

- what ecosystem services protected area management, water user associations, farms, pasture user associations or makhalla committees provide;
- explore the current demand for these services;
- determine potential threats to terminate currently existing services;
- determine environmental measures which may improve the quality of the service and withdraw possible threats;
- identify all providers of similar services, apart from protected area management)and the conditions under which they are ready to continue providing these services;
- analyze the existing legal framework for making allowance and payment methods/forms;
- determine technical, training and financial resources necessary to launch the PES mechanism;
- estimate the cost of a future service;
- consider the institutional mechanism for collecting and distributing payments: who will pay and/or collect; whether an environmental fund is needed to accumulate payments and interests, who and how will be responsible for distributing payment between service provider(s), who and how will monitor;
- consider whether it is necessary to use the consulting services of organizations experienced in the implementation of such mechanisms.

The next step is to negotiate with interested parties. The Working Group’s members invite all the stakeholders selected during the analysis stage, as indicated above. This process includes the following:

- compilation of the list of interested parties;
- individual negotiations with each of the interested parties, clarification of their priorities, vision, readiness and opportunities to participate in the proposed mechanism's implementation;
- identification of main water and land users whose participation in the project is necessary (others can join at later stages, if they so wish);
- conduct of public awareness raising campaigns for different groups of population, aimed at explaining the environmental and economic significance of water systems, PES, etc.

The next step is the elaboration of terms of reference/specifications for more in-depth research, the purpose of which is to convince key water users to join the project:

- determine the hydrological, economic, legal and other information necessary to demonstrate to water users the importance of making payments ;
- analyze the information available in the protected areas and identify what needs to be studied additionally;
- determine the scope of the study;
- set the research objective based on the above;
- Conclude research agreements with experts (personnel of protected areas or external experts).

Based on the determined objectives, specialists conduct research on protected areas, pasture and water user associations. Below are some research samples which may prove useful for providing a rationale for PES:

- determine in which parts of the water basin the introduction of PES is most relevant;
- assess the economic value of water services in a particular territory or part of it;
- identify the best conditions for monitoring project performance;
- explore opportunities for PES implementation within the existing administrative and legal framework;
- determine which institutional form is most suitable for PES implementation under specific conditions;
- calculate the cost of services and administrative costs for the implementation of the payment mechanism.
- calculate what revenues water and pasture user associations and other service providers may collect from PES.

If the research results have that PES can be implemented, members of the Working Group inform water users about these results and the need to implement PES. Based on the research results, a set of documents is prepared for each category of

water users. All water users should be provided with this information.

The second to last step consists in negotiating agreement terms between suppliers and consumers of the service, if necessary, with the participation of government representatives. The terms of each party are formulated and discussed, the payment amount agreed, a detailed plan of environmental measures approved, the mechanism for payment collection and transfer agreed, responsible officials appointed, and the PES agreement signed (Padgiola 2017).

The last stage is the implementation of activities specified in the contract. The Working Group monitors these activities and brings necessary modifications to the action plan. Performance is evaluated on a regular basis and proper corrections are made during the working process.

Advantages and disadvantages of PES are demonstrated by using the most appropriate entity, i.e. use of water resources

Advantages	**Disadvantages**
• Improvement or maintenance of the current quality of water systems; • More effective distribution of finances for water resource protection; • Provision of additional services on a more effective market basis; • Additional and sustainable source of protected areas financing; • Additional possibility for raising awareness among the public community and authorities of economic and ecological values of water systems and protected areas; • Fairer distribution of profits coming from water ecosystem services; •Possibility for improving the local population's wellbeing, including	• Difficulty in defining specific interconnections between environmental measures and ecological service quality; • Difficulty in detecting potential service consumers and in attracting their interest; • Long and complicated development of a new market; • Sometimes the PES mechanism is not the most effective economic way to meet water users' expectations; • High transaction expenses connected with negotiation planning and organization and the introduction of the monitoring system; • Often, PES can only be implemented with grants from international organizations, and the mechanism stops working when there is no more funding; • It is difficult to involve a large number of interested parties into the process;

residents of protected areas and adjacent territories; • Enhanced collaboration and inter-sector cooperation in environmental issues and dispute settlement; • Transition to sustainable methods of nature resource use; • Development of applied and detailed research on protected areas and adjacent territories; • Elaboration of indicators and methodologies for economic assessment of natural resources, including protected areas; • Protection of the national cultural heritage such as natural protected areas, etc.	• Often, expensive scientific research is required to obtain information about interconnections within ecosystems; • Public awareness raising campaigns require great efforts; • Difficulties are possible in defining property rights • Modifications to the existing legislation or law enforcement practices are often necessary; •Services of intermediary organizations are often required; • Impossibility of the socially deprived to pay for services, previously free of charge, may lead to increased growth and social conflicts; • Alternative expenses resulting from the withdraw al of territories from economic use; • The population may be prompted to make reverse responses, e.g. to fell trees in an attempt to obtain payment for re-affore station.

Table 3. Advantages and disadvantages of using water-related PES

Consideration should be taken of the following factors for successful implementation of the ecosystem service payment system. First of all, a service should be in high demand, which is characterized by the following:

- high population density and/or presence of enterprises capable to pay for the service;
- users' understanding about or persuasion of the importance of the service and of the necessity to pay for it;
- high demand for the service as public health, cost-effectiveness of production and living standards are directly dependent on its quality;
- possibility of demonstrating to users that their funds are directed to the provision of this service and contribute to the improvement of its quality;
- trust in the organization implementing the payment mechanism.

If there is demand, there is supply. PES supply means the following:

• payments adequately compensate land users' efforts to provide services and cover lost development opportunities;
• no substitutes are available in the regions for this service (for example, a protected area is unique in the whole region or presents some unique features);
• demand for the service grows, thus stimulating increased supply;
•measures are well defined to provide the population with this service.

A clear understanding of ecosystem relationships and processes is important for PES implementation, and the following should be specified in advance:

- the watercourse (river basin, etc.) has to be identified and its ecosystem services defined;

- the implemented payment mechanism fits or not the overall protection strategy for the given water basin (a water user association, a protected area or its part);

- the water basin provides ecosystem services with a measurable economic value;

-service users are clearly aware of the threats to the quality deterioration;

- it is possible to monitor the quality of services provided;

- the most effective environmental protection measures are determined for a specific situation.

4. Conclusions

As stated previously, the availability of an appropriate legal framework is another important requirement for the introduction of PES. Property rights and provisions for land/resource use should be clearly defined. Service providers should be entitled to receive compensation payments based on current legislation and payments collected should be transferred directly to service providers rather than to the budget.

The introduction of PES implies a legal framework that regulates the procedure for concluding contracts between service suppliers and users. The land user must have the legislative right to take necessary environmental measures in a water basin, even if its borders cross those of administrative districts. Currently, in Tajikistan water resource management is moving from territorial to basin management. If partners do not comply with contract conditions, a dispute settlement mechanism involving arbitration bodies,

among others, is to be elaborated and implemented.

Other factors behind successful PES implementation include the political context and institutional framework. This means, in the first place, the political stability in the region and the availability of opportunities for service sellers and buyers to carry out such operations. All interested parties should be informed and, if possible, involved in the service provision process. Relevant regulatory documents should be developed to enable key decision makers to support this initiative. A mechanism/structure should be elaborated to ensure provision of services and receipt of payments. It is necessary to provide legal market mechanisms which can operate at the local level and regulate the service provision process. Stakeholders should be prepared to interact with each other for the creation of a new market. At the same time, the administrative costs of mechanism implementation should be minimal and the monitoring of service quality properly elaborated and implemented. Finally, the developed interaction mechanism has to be sufficiently flexible and capable of adapting to any eventual changes.

In conclusion, the study led to the following results:

- PES is a relatively new area and, consequently, an unusual economic tool in Tajikistan. Only eight projects have been implemented so far with the support of international organizations, and a wide audience does not have full access to the outcome of these projects.

- Local research have not conducted any research in this area yet. Therefore, there is little public awareness and farmers and resource users are not informed about the PES technology, its essence, advantages and mechanisms for practical application.

- Nature resource users do not have a clear idea about how to determine the cost of services and to find sources of funding for the implementation of PES mechanisms at different levels. Most importantly, users do not know for which projects and at which level PES is most acceptable.

- Finally, there is no appropriately developed regulatory framework for the implementation of PES, without which the full implementation of this technology is impossible in Tajikisstan. On our opinion, there is an urgent need to create an active working group bringing

together stakeholders, leading scientists and lawyers to work on elaborating recommendations onhow to improve the regulatory framework for PES implementation. This work is expected to result in amendments and additions to the current legislation or in the adoption of a new law or legislative act to ensure successful implementation of PES in Tajikistan.

References

A brief overview of the recommendations for payments for ecosystem services in the Republic of Kazakhstan,2010. Almaty Regional Environmental Center for Central Asia. Almaty: Kazakhstan.

Markus G., Kordulla O. 2009. Strategic analysis of the problems of regional development and the state of the environment, United Nations University. Bonn: Germany.

Motomy, T. 2005. Assessment of the government of Tajikistan on development management. Dushanbe: Tajikistan.

Mountain communities of Central Asia in the face of climate change - call to action. Forum for sustainable development of the Central Asian mountain communities. 2010. Central Asian Mountain Partnership (CAMP). Bishkek: Kyrgyzstan.

Mountains of the World- Ecosystem Services in a Time of Global and Climate Change The World of Climate Change. 2010. ICIMOD: Nepal.

Padgiola, S.2017. Global practice in the field of environment and natural resources. Payments for Environmental Services Workshop, Project for Environmentally Sustainable Land Use and Life Support in Rural Areas. Dushanbe: Tajikistan.

Razokov B., Kabilova, N. 2018. Management of Use of Natural Resources in Tajikistan. Dushanbe: Tajikistan.

Set of acts regulating transboundary issues between Tajikistan and the Kyrgyz Republic and the GEF / UNEP / UNU PALM, Project, 2011. Dushanbe: Tajikistan.

Site of National Centre for Legislation under the President of Tajikistan. http://www.mmk.tj/ru.

Strategy on sustainable land management in High Pamir and Pamir-Alay Mountains, GEF / UNEP / UNU PALM Project. 2011. Dushanbe: Tajikistan