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**PROMOTING PAYMENTS FOR ECOSYSTEM SERVICES  
IN THE DANUBE REGION: THEORETICAL-  
METHODOLOGICAL BASES AND PRACTICAL MEASURES**

**ПРОДВИЖЕНИЕ ПЛАТЫ ЗА ЭКОСИСТЕМНЫЕ УСЛУГИ В  
ДУНАЙСКОМ РЕГИОНЕ: ТЕОРЕТИКО-МЕТОДОЛОГИЧЕСКИЕ  
ОСНОВЫ И ПРАКТИЧЕСКИЕ ШАГИ**

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*Узагальнено теоретико-методологічні основи впровадження механізмів плати за екосистемні послуги та представлено конкретні шляхи по їхньому просуванню в економічну практику Дунайського регіону.*

**Formulation of the problem.** The second meeting of the Working Group on Integrated Water Resources Management, held in Geneva in June 2006, examined the concept of payment for ecosystem services in terms of integrated water resources management, and proposed to the UNECE a Draft Code of Conduct on Payments for Ecosystem Services in Integrated Water Resources Management.

The term “investments into ecosystem services” is used in the current analysis to describe the financial and technical investments into restoration, preservation, protection of ecosystems, which are important for the provision of ecosystem services [1].

Recently, innovative financing mechanisms have been recognized as essentials for addressing some of the identified failures in environmental management, in particular, Payments for Ecosystem Services (PES). In a situation of high environmental concerns and limited financial resources, PES can generate additional alternative resources, allocate funds to environmentally friendly management practices and sustainable production patterns, create incentives for investments, and increase the involvement of the private sector in environmental protection.

“Ecosystem services” literary mean the benefits that people get from nature. According to the Millennium Ecosystem Assessment (2000) [2], all benefits from nature are classified into 4 groups of ecosystem services. a project of the European Community, "The economics of ecosystems and biodiversity», The Economics of Ecosystems and Biodiversity, 2008 [3], the development of the Environmental Department, World Bank, the International Union for Conservation of Nature, IUCN, in the 2000s. [4]. In the classic work "The nature of the service: public dependence on natural ecosystems" (edited by the famous American economist and ecologist G. Daly) (Daily, 1997) [5] as examples of ecosystem services provided Provisioning services, being the

capacity of ecosystems to provide food, water supply, wood; Regulating services, being the capacity of ecosystems to regulate the climate, floods, diseases, wastes and quality of water; Cultural services - recreational, aesthetic and spiritual needs; Supporting services, such as soil formation, photosynthesis and nutrients cycle.

**The aim of of this work is** development of financial mechanisms related to water protection and consumption and measures necessary for the introduction and improvement of economic mechanisms and implementation of PES, including examples of potential PES schemes.

Ukraine belongs to European countries with poor local water resources, which are distributed very unevenly. The water use efficiency is extremely low, and the water intensity of GDP (water consumed per unit of gross domestic product) is high enough.

The reform of the water management system in Ukraine remains a major subject to discussion by authorities and scientists. The practical implementation of river basin management based on integrity, interrelationship and consistency with economic development, has been under discussion for a long time.

The issues of basin management autonomy related to the priorities of carrying out water management and protection business; attracting investments for the implementation of promising innovative projects; commercialization of public areas of water management remain pending. Principles of interaction between basin management administration and relevant subsections of the Ministry of Environment of Ukraine and other agencies also remain vague, which again creates the same regulatory vacuum for development of appropriate water management projects, which can dramatically alter the functional orientation of the water use in general and in its different sectors.

The norms of the environmental law, adopted by the Law of Ukraine "On Environmental Protection" are the basis of the legal relations in the field of water resources management and protection. The Water Code of Ukraine, approved by the Resolution of the Verkhovna Rada of Ukraine on June 6, 1995, № 214/95-VR is the basic document regulating the legal relations in the field of water use. According to its provisions, the tasks of water legislation of Ukraine are to regulate legal relationships in order to ensure the conservation, science-based and rational water use for the needs of the society and the economy, water resources recharge, protection of water from pollution, contamination and depletion, prevention of harmful effects of water and mitigation of their consequences, improving the status of water bodies and protection of the water use rights of enterprises, institutions, organizations and individuals. Ukraine has ratified several international conventions, in particular, the Convention on Transboundary Watercourses, and declared intention to follow the implementation of the Water Framework Directive 2000/60/EC of the European Union under the Action Plan "Ukraine - EU" approved by the Cabinet of Ministers of Ukraine № 117 – p of 4/22/05 and number 36 - p of 2/12/05.

Depending on the type of economic agents participating in the water use process, the volume of operation and the environmental impacts on water resources, two major groups of water use can be identified: *general water use*

by the general public on common base which is not related to generating any profit and *special water use* by businesses and individuals.

The management of the general water use on common base is limited to the establishment of sanitary inspection rules, which aim at consumers' safety, and rules that prevent environment deterioration as a result of negligent treatment, pollution or contamination of water bodies. It is implemented by the local authorities which agree their management decisions with the governmental agencies for environmental protection, water resources monitoring, sanitary and epidemiologic security.

Water legislation ensures the implementation of a wide range of measures for water protection from pollution, depletion, prevention of the harmful effects of water and elimination of the consequences of disasters.

**Economy of water consumption price.** The development of market relations in Ukraine requires the establishment of economic relations in the field of water use, which will take into account the interests of the state, the owners/ managers of water resources, and the individual water users.

In order to development of fee-paying water using the following tasks have to be solved: providing economic conditions for the development of market relations in the field of natural resources use; development of payment mechanism for the use of water resources; raising a trust fund; development of market mechanisms for rational water use, taking into consideration environmental requirements.

The payment for water use as natural resource occupies a special place in the economic mechanism of water management.

In Ukraine, chargeable water use was introduced in the 1980s.

On the basis of new methodological approaches to economic valuation of water, the so-called "rental concept" was developed in 1992, on the basis of which temporary tariffs on water use for all water users were identified, approved by the Cabinet of Ministers of Ukraine (1994) upon presentation by the Ministry for Ecological Safety of Ukraine.

**Special use by primary water users.** The concept of payment for water use is based on the principles of ownership of water resources of Ukraine, the Law "On Environmental Protection", and the Water Code of Ukraine. According to this concept the special water use is any of the following types of water use: withdrawal of water with the use of facilities or technical devices, discharge of sewage waters and pollutants, use of water obtained from water bodies or from other water users, and use of water without its removal from water bodies for hydropower engineering, fishery and water transport on the basis of a permit issued in the prescribed manner (Fig. 8).

Special use is based on the licensing system and fees. The order, rules, regulations and payments for each kind of special water use are established by normative and legislative acts on the state level and depend on financial, environmental and social policy of the country. Compliance with the break-even policy and environmental security of water use *provides* for the organization of management process in accordance with the principles of

sustainable development to balance the interests of all stakeholders: business, consumers and environment agents.

The "special water use", defined by article 48 of the Water Code of Ukraine, shall be subject to mandatory environmental taxation in addition to payment for the direct volume of water used. According to the Tax Code of Ukraine, charges for special use of water consist of: 1) Fees for special water use from water bodies, 2) environmental tax for the direct discharge of pollutants into water bodies.

The charge rates on water resources special use are set by the Cabinet of Ministers of Ukraine Resolution № 836 of 18.05.99 "On the charge rates for special use of water resources and the payments for water use for hydropower engineering and water transport" (Table 1). Despite the correction process, these rates remain relevant.

In total, in Ukraine there are 45 regions, according to the charge rates for water intake. The ratio of the lowest and the highest fee for 1 m<sup>3</sup> of water intake from surface sources is 1 to 32.

According to Section XVI of the Water Code of Ukraine "Charges for special use of water" the list of water uses subject to environmental charges, includes:

The use of water taking into account its losses from the water supply system by water withdrawal (primary water users) and/or from water withdrawal equipment of the primary water users on the basis of the charge rates, the actual volume of used water, and the prescribed limits;

The charge rate is set according to "the prevalence of water resources, their quality, reproduction capacity, accessibility, comprehensiveness, efficiency, location, possibility of processing and neutralization of waste and other factors" and is subject to differentiation based on: whether the water body is a surface or groundwater source; type of water basin to which the surface water body belongs; location of the underground water body; type of economic activity.

A coefficient of 0.3 is applied to the charges of housing and communal companies and a coefficient of 0.005 is applied to the charges of the thermo-electric power stations.

For special use of mine, quarry and drainage water the charge is set according to the actual volumes of water and the charge rate (5.93 UAH/100m<sup>3</sup> of water). For water included in drinks ingredients the charge is set according to the volume of water and the charge rates: 25.60 UAH/1 m<sup>3</sup> of surface water and 29.86 UAH/100 m<sup>3</sup> of underground water.

For the use of water without withdrawal from water bodies for hydropower engineering the charge is set according to the standard charge rate (5.24 UAH/10 000 m<sup>3</sup> of water for all rivers in 2011), the actual volume of water passed through the turbine, and limits on water use.

For water transport the charge is set in accordance with time of use of surface water during the reporting period and the charge rates: 0.09 UAH/ton-km for cargo self-propelled and non-propelled fleet, and 0.01 UAH/per person per night of operation for passenger ships.

For fish-breeding the charge is set according to actual volumes of water needed for replenishing of the ponds while breeding fish or other aquaculture in the fish farms (including the volume of water needed for filtration and evaporation), and charge rates: 27.52 UAH/10 000 m<sup>3</sup> of water in case of operation of surface water bodies, and 33.09 UAH/10 000 m<sup>3</sup> in case of operation of groundwater bodies.

These types of charges, except losses in water supply systems, are considered general operating costs, and are included in the cost of production, and in the economically grounded tariff for the provision of piped water supply and sanitation service. The owners of water supply networks are charged for the water loss.

**Environmental taxes on the discharge of pollutants** directly into water bodies are considered general operating costs and are included in the cost of production. It is determined based on the charge rates, the actual volume of discharged pollutants, the fixed discharge limits, and the correction coefficient, determined on the location of the source of contamination.

The charges for special water use by secondary water users is calculated according to an aggregate costs, including salaries, administrative costs, monitoring, etc. Thus in each area in the Ukrainian Danube region the irrigation tax depends on the number of pumping stations. The most expensive water in the area is in Tatarbunary and Kilia – up to 12 kopecks.

However, the actual payment is not for water, but for the electricity spent on water pumping. Agricultural producers (farmers) in Ukraine do not actually pay for water (as a kind of special water use in accordance with the Law of Ukraine “On Environmental Protection”, № 1268-XII of 26.06.1991, Article 38<sup>4</sup>). Moreover, the cost of water supply to the field is beard by the state in the form of subsidies for the activities of the regional water management administrations.

In case of non-fulfillment of technical, sanitary and environmental conditions of use of water resources of Ukraine disciplinary, administrative, civil, and criminal penalties are stipulated, through economic penalties including full compensation of the economic losses, caused by the offender.

**Financial mechanism of water use and water resources protection.** Financial and economic state of water management, conservation and reproduction of water resources is determined by the tariff, fiscal and investment policies of the state. The main sources of generation of funds, to be used for the provision of water supply and sewage outfall services and funding of water protection programs and activities are:

- Payments made by economic agents for using centralized water supply and sewage outfall services (UAH 77 688 mln. in 2009);

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<sup>4</sup> Art. 38. General and special use of natural resources: The use of natural resources in Ukraine is realized according to the rules of general and special use of natural resources. ...According to the rules of the special use of natural resources the citizens, enterprises, administration and organizations can assume possession, use or rent of nature resources on the basis of special permits registered according to the fixed rules for payment for the operation of manufacturing or other activities and on preferential terms in the cases foreseen by the Ukrainian law.

- Rents for use in industrial quantities of water from surface water bodies (UAH 1.2 million.)
- Charges for special water use (UAH 708.97 mln.);
- Current costs of the business on nature protection, related to the operation and maintenance of nature conservation instruments (UAH 4 272.97 mln.);
- Investments in fixed assets, with the aim of building and reconstruction of environmental facilities, purchase of equipment for environmental activities: sewage water purification, protection and remediation of soil, groundwater and surface water (UAH 1 712.71 mln);
- Taxes for pollution of environment through sewage discharge (69.7 mln.);
- Penalties for administrative offences in the field of water resources protection (0.981 mln.);
- Payments for damages and losses incurred as a result of violations of environmental laws in the field of water resources (UAH 4.14 million).

The main sources of financing the environmental protection costs, as in previous years, are the enterprises' own funds covering respectively 76.5% of capital investment and 95.8% of operating costs. The state and local budgets covered 20.5% and 4.1%, respectively. In 2009 UAH 54.06 mln from the development costs of the State Budget of Ukraine was planned to be spent on protection and reproduction of water resources, UAH 3 mln of which to be spent directly on sewage waters purification.

**Financial mechanisms in other nature management sectors.** In 2007, the taxes for special use of forests amounted to UAH 173 million.

Forests reproduction in 2007 was executed on an area of 73.6 hectares, including 60 thousand hectares of planting and seeding and 13.6 hectares of natural reproduction (to the total amount of UAH 60 million according to estimations).

In 2007, the forestry enterprises of the State Forestry Committee undertook forest protection measures on an area of 150.1 thousand hectares. Biological methods of forest protection from pests were applied on an area of 132.3 thousand ha (88%). Over UAH 2.3 mln was spent on forest protection measures.

In 2007, payments for land into Ukraine's budget were UAH 3.8 billion.

In 2007, the State budget of Ukraine provided funding of UAH 9.5 million for land protection, in fact the State Committee for Land Conservation financed activities for the total amount of UAH 9.4 million.

The funds were used as follows: UAH 4 466.3 thousand on construction of erosion-preventive facilities and UAH 1 855.7 thousand on land reclamation.

The Land Code of Ukraine and the Law on the Protection of land hold the farmers responsible for soil fertility restoration. Land restoration is carried out in other sectors of the economy as well. Every year, the companies of Gosugleprom (Coil-administration) plan the works on land resources protection, which are grouped in 15 directions. In 2007, a total of 98 types of work were carried out to the amount of UAH 39.4 million.

Fiscal management of water use today makes a start from the need to strengthen the budget role of bringing water resources in the economic turnover. The low percentage of revenues for special use and use of water for hydropower engineering and transport in the budgets on different levels requires reviewing the charge rates for special water use.

The practice of direct government subsidies and subsidies for water management has shown its helplessness. Commercialization of water component of the economy is required, and the solution of this problem depends on the efficient operation of financial institutions in the water resources market. Taking this into account, national water policy elements should be introduced, which get financial and credit institutions interested in investing resources into rational economic use of water resources [6].

Current tax system requires improvements, which consist of consistent enhancement of the role of payments for water use, introduction of taxes like excise taxes on products, the use of which is associated with damage caused to the water resource potential. At the same time it is necessary to extend tax facilities to companies and organizations that master high efficient technology, such as closed and non-waste systems of water use.

It is necessary to encourage the businesses not only to reimburse the hazardous substances emissions, wastewater discharges and excessive use of natural resources, but to provide a permanent limitation of the negative impact on the environment through the development of environmental infrastructure and the use of the mechanisms of payment for ecosystem services [7].

The analysis of the present structure of the bodies associated with the use and protection of water resources, their inherent functions and the scope of their activities leads to the conclusion that the modern organizational structure of water management hinders the introduction of economic instruments. Today, there is no water body administration which is capable of working on self-financing basis. Its absence deprives the price of water of its most important function: to be a source of income for the companies from which they can reimburse expenditures and generate profit [8].

Transfer of water charges into the budget made it impossible to accumulate financial resources for the reproduction processes, since it is not associated to the investments in water management, the payment has not become a lever for its development, nor it has become a steady source of budget funds.

Also principles of interaction between basin management bodies and the relevant subsections of the Ministry of Environment of Ukraine and other agencies remain vague, and this again creates the same regulatory vacuum for targeted development of appropriate water management projects that will dramatically alter the functional orientation of water use in general and in its different sectors.

A great mass of water users (agriculture, population), not covered by the payment for water use, remained outside the scope of this economic inducement.

The effective price has to reduce the pressure on water resources. This is especially true for agriculture. There is no system of sound water tariffs based on consumption volumes, the reason for this partly consisting in the lack of control of water intake and poor management information system and data collection system.

The elaboration of tariffs should be a reasonable compromise between different political goals, namely taking into account actual price for the services, a cost-effective prices criterion and social equity. This requires intelligent information about the real cost of water, the number of services actually received by different sectors, including communal, the condition of the infrastructure and necessary investments (Management plan of the Ukrainian part of the Lower Danube basin. Information and analytical report, Program of neighborhood Romania-Ukraine, project 2007/141-164 Development of cross-border cooperation in integrated management of water resources in Euroregion "Lower Danube", 2009).

An important factor is also the lack of water quality record in the formation of tariffs for end consumers. The introduction of such a mechanism would encourage measures to improve water quality of the primary consumers and water enterprises.

Besides, state water management departments are monopolists in the market for water supply. This situation can be remedied if independent bodies - special commissions - have the authority to approve tariffs for housing and communal services for the city or region, as the Law of Ukraine "On natural monopolies" has envisaged. Natural water monopolists will become public companies, which, in turn, will have to be legalized.

The introduction of mechanisms of payments for ecosystem services requires:

- Introducing into Ukrainian legislation the categories of ecosystem services, payments for ecosystem services (PES) and investment in ecosystem services;
- Developing a mechanism for economic and environmental transfer associated with the implementation of the principle of payment for ecosystem services;
- Endorsing amendments to the Law of Ukraine "On Environmental Protection" and the Budget and Tax Code of Ukraine on the reallocation of the environmental charges/taxes in favor of enterprises under programmes (projects) implementing PES;
- Initiating the establishment of agencies for ecosystem services as part of the system of public-private partnership.

Verkhovna Rada of Ukraine registered a draft Law of Ukraine, which envisages changing the allocation structure of the charges on the use of natural resources. Beginning with January 1, 2013, in Ukraine, 70% of this charge will remain at the company. With this aim in view, companies and organizations have to develop plans for environmental policy and environmental activities. On the other hand, these 70% may be a reserve for the implementation of PES in Ukraine.



The issues of the basin management autonomy should be solved with priorities to water management and protection business in the context of attracting investment resources for the implementation of promising innovative projects and the commercialization of public water management sector.

**Potential PES schemes. Reedbed management.** In the past, the reed was used by paper production factory of Izmail but after the collapse of the Soviet Union the production was ceased and the resource remained unused. Today, the reed is harvested and sold on international markets to be used in construction and production of light furniture (it is known that reed from Ukraine was used for making sun-protecting umbrellas in Greece, for example). There is a lot of reed in the Danube delta which should be reasonably managed in order to conserve the sustainable environmental status of the wetlands. The implementation of PES-scheme of reedbed management is proposed on the basis of the Danube Biosphere Reserve (Ukraine).

The Danube delta has unique geographical position and rich natural resources. However much further intensification of traditional nature using (including fishing) leads to the decline of its economic and ecological potential. Real alternatives are needed. A good opportunity for Ukrainian part of the delta is the use of the reed resources. Its greatest supplies in Europe are coming from the delta of the Danube. Already today from the Ukrainian Danube delta about 800 thousand sheaves of reed are exported in a year. And that makes about 6–8% of the European market. More than thousand persons are employed in this economic sector. Volumes of the harvested reed can be trebled under condition of having minimum negative influence on the natural Danube ecosystems.

The primary production of reed biomass on the territory of the Danube Biosphere Reserve accounts for about 900 thousand tons. That is, it is possible to consider this resource almost unlimited. In reality, necessity of the landscape mosaic maintenance, reed restoring and regulation of the balance of biogenesis substances demands working out and implementing of effective system of reed management. In particular, it concerns Stensovsko-Zhebrijansky floodplains.

Now on the territory of the Danube Biosphere Reserve (DBR, Ukrainian part of the Danube Delta) the reed is harvested on an area of 3.8 thousand hectares located in island territory of Belgorod and in Stensovsko-Zhebrijansky floodplains. DBR together with Open Company "Ecoforpost" carries out the melioration actions in Stensovsko-Zhebrijansky floodplains, the channel restoration, management of the hydrological mode and the biogenic component of ecosystem.

Cooperation of the Danube Biosphere Reserve with Open Company "Ecoforpost" on management of Stensovsko-Zhebrijansky floodplains can form a basis for introduction of the PES mechanism. Involvement of an external investor can provide stability to the ecosystem services (quality, quantity of reed) and also to improve the environmental conditions of the floodplains.

**Erosion control measures.** Large part of the lands in the Danube area is plowed (on the place of formerly naturally existing steppes). Mainly cereals are cultivated and practices are entirely intensive. The quantities of fertilizers or pesticides loads to the soil are not monitored and there are no good agricultural

practices to ensure the balance. Farmers use mainly fertilizers because the livestock breeding in the region is in decline. This resulted in high pollution of underground water. For this reason, according to the experts the quality of surface water is better than the underground water.

Taking all this into account a possible PES scheme is to harvest the reed and use it both as manure and for prevention of wind erosion by the use of reed mats.

The second identified possibility of the decision of this problem are restoration of old gardens with the row-spacings sowed by a grass and decrease in level of use of pesticides and fertilizers. In this case farmers could pay to owners of a garden. Use of involved with grasses pollinators involved with grasses can be additional benefit (service) for farmers and can potentially reduce the expense of fertilizers.

The third potential possibility is the bookmark of vineyards - under condition of their organic use.

Fourth option is the restoration of steppe habitats but this would have very low economic value.

Fifth option is the restoration and creation of forest protection belts – the issue is that borders between plots are not private property and then the payment scheme would work very hard.

Creation of wood strips and other plantations in agricultural landscapes is a long time known method of fight against soil erosion which is widely used in Ukraine and in the Danube Region. Thanks to the creation of an extensive network of wood strips on farmlands in Ukraine it was possible to reduce the impact of the phenomenon known as "black" storms when strong wind worn out the dry top layer of the soil. Forest belts are also a place of dwelling for many species. Unfortunately, the cases of cutting down of strips of woods have recently expanded. Further destruction of forest plantations especially in a steppe zone leads to simplification of the structure of the agro landscape, soil erosion and reduction of biodiversity.

In territory of the Odessa oblast there are 47.3 thousand hectares of forests, 70 % of which require reconstruction estimated to UAH 14.2 mil. Barrier to the forest restoration represents the fact that the land does not belong to farmers but to local village councils. In turn, the conversion of the land from agricultural to forest category is inaccessible to farmers.

The Izmail Forestry is ready to carry out restoration/planting of forest belts. The plantation costs (including the seedling) account for UAH 1.6 thousand per 50 Square meters. Simultaneously, on separate sites, vineyards can be planted with anti erosion purposes (this has its advantages regardless of the high costs - up to UAH 80 thousand per hectare). The use of reed mats for soil protection in the winter (in the conditions of snowless winter) also is recommended.

Involving of farmers in the process of forest belts planting can be connected to the realization of Kyoto Protocol mechanisms and other green investments schemes.

Benefits and expected results: using of alternative measures against

erosion will allow keeping the soil fertility and will promote carbon deposition.

**Water quality and water resources management.** The free-of-charge use of water basins by aquaculture producers in the area is an ordinary practice in the Danube river basin. The river basin has mainly lakes which are used for irrigation, drinking and some of them for fishery activities.

The aquaculture producers as a rule pay neither for the special water use nor for the maintaining of infrastructure which regulates the water regime. Their only input is planting the basin with fish.

The fish catch consists not only of the bred fish but also of Danube native species. There are two more issues: (1) nobody regulates how much fish is caught – usually the catch declared is much lower than the real one; also, species that are not bred are caught and sold but not declared (2) water is polluted with the fertilizer used by the fish farms but because of corruption it is not possible to impose penalties.

In addition, after being used in the lakes the polluted water is discharged in the Danube River, which is used water supply by the cities of Kilia, Izmail and Vilково.

In fact, the fish farms use the infrastructure and the resources (such as water, the natural function of the basin to produce fish feed) and infrastructure (gates) for free.

Solving these issues can be achieved by using the experience of international institutions such as the International Commission for the Protection of the Danube (ICPDR). It is necessary to connect the managers with other similar businesses in Europe to share their experience. Measures are necessary to convince the fish farms managers to pay for the ecosystem services; to convince the state representatives that measures should be taken in accordance with the requirements of the EU Water Framework Directive.

As a measure to compensate the damage caused to the Danube Biosphere Reserve it is necessary to propose the building of sturgeon factory near Kiliya.

**Wetlands restoration and ecotourism.** In order to restore wetlands in the Danube-adjacent region of Ukraine it is necessary to take the following actions: to make detailed inventory of flood-lands with further exclusion of certain zones from economic usage; to develop strategy for implementation of a complex plan for gradual exclusion from use of degraded agricultural lands and restoration of wetlands; to develop and implement mechanisms for excluding parts of wetlands from the agricultural rotation in view of future restoration of the natural habitats of these areas; to develop and implement a plan for restoring Danube flood-lands located between Danube-adjacent lakes and the river according to the Program of environmental network of Ukraine; to create the Green Corridor of the Lower Danube taking into consideration anti-floods protection of territories; to include the Danube-adjacent lakes and flood-lands to the Danube Biosphere Reserve of the National Academy of Sciences of Ukraine; to create trilateral biosphere reserve of the Lower Danube including the respective territories in Moldova and Romania; to restore and increase the area of riverine forests, flood-meadows and polders along the Danube.

Rehabilitation of the Sasyk estuary can be realized by converting it into its natural state of marine estuary through removing the dam. The aim of the project is to overcome the adverse impact of converting the Sasyk estuary into a fresh water reservoir and to create environmental conditions for sustainable social and economic development of the adjacent areas. Activities within the project are to develop and realize the plan of rehabilitation of the Sasyk estuary through dam removal; to guarantee the future environmental use of the Sasyk estuary by including the entire estuary in the Danube Biosphere Reserve, to combine environment protecting and recreational use of the Sasyk estuary through construction of a yacht port, to reconstruct the Danube–Sasyk canal to be used for rowing; to develop infrastructure for environmental, rural, recreational, historical, ethnical and sport tourism; to increase the attractiveness of the Sasyk coastal areas for recreation construction which must take into consideration the environmental status of the estuary.

The transformation of Sasyk Estuary environmental status is related to the implementation of the project for construction of the Danube-Dniester (Dnieper) irrigation system in the 1980s. The project implied desalination of marine water in Sasyk Estuary by separating it from the Black Sea with a 14 km long dam; pumping and discharging the salt water into the sea and filling the dam with fresh water from the Danube via the Danube – Sasyk canal. This reservoir was supposed to irrigate the lands of Tatarbunari and Saratsky areas of the Odessa oblast on area of 29.2 thousand hectares (first phase) and then on further 28 thousand hectares (second phase).

The environmentally and economically groundless creation of the Danube-Dniester irrigation system on the base of conversion of marine Sasyk Estuary to fresh water reservoir caused negative environmental transformation and caused severe economic, environmental and social problems and conflicts.

The negative changes in the environmental state of Sasyk Estuary are the following: simplification of the biological structure of the water body – decrease of the number of species, especially of valuable fish species; development of eutrophication (development of blue-green algae that are quite dangerous to humans), deterioration of fishery resources. Furthermore the medicinal mud of Sasyk Estuary (as reservoir) was damaged by the introduction of significant amounts of hazardous substances and compounds with waters from the Canal Danube - Sasyk. The negative economic consequences of reorganization of Sasyk Estuary are deterioration of recreation and sanitary potential of the region, water pollution, intensified abrasive process during high water levels of the reservoir, negative impact on Stentsovsko Zhebriyanskie floodplains of the Danube River (territory of the Danube Delta Biosphere Reserve).

Renaturalization of the Sasyk Estuary involves its restoration to its natural state as marine estuary. In order to rehabilitate the Sasyk Estuary cost-effective options for its "marine" use are offered: conservation, recreation and tourism, including sailing, fishing and transport (river - sea port).

On August 10, 2009 the Odessa Regional State Administration and the Odessa Regional Council adopted the order number 615/A-2009 - 420/2009-

PR, according to which a working group is created to develop and implement the project "Improvement of marine ecosystem of the Sasyk Estuary by the construction of connecting canal and rehabilitation of adjacent territories". Finances were allocated to develop feasibility study of destroying the dam. The Cabinet of Ministers by Decree № 757 from August 18, 2010, created an Interdepartmental Commission on expediency and consequences of the elimination of the dam on the Sasyk Estuary.

The project "Aladin" identified potential sources of investment to build a tourist complex on Sasyk Estuary.

The investors of the Sasyk yacht club and the building of Sasyk Marine Trade Port (Russian State Property Fund) can be the financing source for the operations on the rehabilitation of the estuary.

The costs for planning and technical measures for the rehabilitation of the Sasyk Estuary by building a connecting canal are approximately € 4-6 million.

The flooding areas will decrease; the ecological state of the estuary will improve which will answer the needs of the local population (swimming, fishing of quality fish). As a result of the project implementation the health and environmental condition of the villages and resorts will improve, water security and quality of fishery products will increase. The number of tourists will increase. Conditions for reforming the irrigation system will be created; the functions of natural spawning in the North-Western part of the Black Sea will be resumed. The example of renaturalization of such a large natural object is unique and it will help attracting additional investments in future.

### **Conclusions.**

1. Ukraine has a well developed system of charges for water resources use, including, direct charges for the water resources withdrawal and a system of tariffs for secondary water users. Since 2011 an environmental tax on discharges of pollutants into water resources operates. There is also a system of fines.

2. Institutional inactivity, which manifests itself in the "conservation" of the Soviet administrative system of water management, is characterized by high monopolization, unprofitability, and therefore, unattractiveness for foreign investors to develop the water economy sector of Ukraine.

3. Nowadays the payment for ecosystem services remains out of a legal Ukrainian field and official mechanisms of ecological economy, but has interesting prospects of implementing in the Ukrainian conditions.

4. A serious barrier to the introduction of payments for ecosystem services is the fiscal and budgetary legislation of Ukraine. Legal mechanisms of "horizontal" payments for the use of ecosystem services are missing. However, the main barrier to the formation of a system of payments for ecosystem services is the weak willingness of the consumers to pay irrespective of their financial situation and organizational status.

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#### Abstract

**Rubel O.**

**Promoting payments for ecosystem services in the Danube region: theoretical-methodological bases and practical measures**

Specification and generalizations of theoretical-methodological bases of development of payment for ecosystems services mechanisms on their introduction in economics of Danube region are presented.

#### Резюме

**Рубель О.**

**Продвиження плати за екосистемні послуги в Дунайському регіоні: теоретико-методологічні основи і практичні заходи**

В останні роки отримали визнання новаторські фінансові механізми, системи плати за екосистемні послуги (ПЕУ), які розглядаються як один з ключових способів усунення порушень природоохоронної діяльності. В разі суттєвих екологічних проблем в умовах обмежених фінансових ресурсів ПЕУ можуть стати джерелом додаткових альтернативних ресурсів, дати можливість переключити використання засобів на екологічно

безопасные методы управления и обеспечения устойчивой структуры производства, создать стимулы для инвестиций и привлечь частный сектор к работе по охране окружающей среды.

«Экосистемные услуги» означают выгоды, которые получают люди от экосистем. Они включают обеспечивающие услуги, такие как продовольствие, обеспечение водой, лесоматериалами. Выделяют регулирующие услуги, влияющие на климат, наводнения, болезни, отходы и качество воды; культурные услуги, обеспечивающие удовлетворение рекреационных, эстетических и духовных потребностей; и поддерживающие услуги, такие как почвообразование, фотосинтез и круговорот питательных веществ.

В настоящей работе предлагается понимание термина «инвестиции в экологические услуги», обозначающий вложение финансовых, материальных, технических средств в реставрацию, сохранение, охрану экосистем, важных для формирования экосистемных услуг.

Фискальное регулирование водопользования сегодня отталкивается от необходимости усилить бюджетную роль привлечения водных ресурсов в хозяйственный оборот. Низкий процент поступлений платы за специальное водопользование и за использование воды для нужд гидроэнергетики и водного транспорта в бюджеты разного уровня требует пересмотра нормативов платы за специальное водопользование.

В усовершенствовании нуждается существующая система налогообложения, которая заключается в необходимости последовательного повышения роли платы за использование воды, ведение налогов акцизного типа на продукцию, использование которой связано с нанесением ущерба водно-ресурсному потенциалу. Одновременно целесообразно расширить налоговые льготы предприятий и организаций, которые осваивают высокоэффективные технологии, замкнутые и безотходные системы водопользования.

Следует стимулировать предпринимательские структуры не просто возмещать объемы выбросов вредных веществ, сбросов сточных вод и сверхлимитного использования природных ресурсов, а обеспечивать перманентное ограничение отрицательного влияния на окружающую среду через развитие природоохранной инфраструктуры и использования механизмов платы за экосистемные услуги.

Анализ существующей структуры органов, связанных с использованием и охраной водных ресурсов, присущий им функций, сферы их деятельности позволяет сделать вывод, о том, что современная организационная структура управления использованием вод сдерживает внедрение экономических инструментов. Службы, способной уже сегодня работать на хозрасчетных началах на любом водном объекте, нет. Отсутствие ее лишает цену на воду важнейшей функции быть средством получения предприятиями доходов из которых возмещаются собственные затраты и создается прибыль.

Разработка тарифов должна представлять собой разумный компромисс между различными политическими целями, а именно: учетом

реальной цены за предоставляемую услугу, достижением критерия экономически выгодной цены и социальной справедливостью. Для этого необходима разумная информация о реальной стоимости водоснабжения, количестве услуг реально полученных разными секторами, включая коммунальный, о состоянии инфраструктуры и необходимых капиталовложениях.

Важным фактором является также отсутствие учета качества воды в формировании тарифов для конечного потребителя. Внедрение такого механизма стимулировало бы меры по повышению качества водных ресурсов первичных потребителей и водохозяйственные предприятия.

Внедрение механизмов Платы за экосистемные услуги требует:

- ввести в украинское законодательное поле категорию экосистемные услуги, плата за экосистемные услуги, инвестиции в экосистемные услуги (ПЭУ);
- разработать механизм экономико-экологического трансферта, связанного с реализацией принципа платы за экосистемные услуги;
- внести поправки в Закон Украины «Об охране окружающей среды», Бюджетный и Налоговый кодекс Украины положения о перераспределении части экологических платежей / налогов в пользу предприятий под программы (проекты) реализации ПЭУ;
- инициировать создание агентств экосистемных услуг как часть системы государственно-частного партнерства.