



**Dr hab. Alina Yakimchuk<sup>1)</sup>**  
**MA (Student PhD) Yuliya Semenova<sup>2)</sup>**

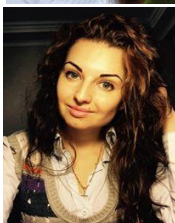
*<sup>1)</sup>Department of Public Administration, Documentation and Information Activities, National University of Water and Environmental Engineering (Rivne, Ukraine)*

*alinayakim@ukr.net*

*ORCID: 0000-0002-5038-5215*

*<sup>2)</sup>Department of Public Administration, Documentation and Informational Activities, National University of Water and Environmental Engineering (Rivne, Ukraine)*

*yuliya\_kh@ukr.net*



## **FORMATION OF THE MARKET FOR ENVIRONMENTAL SERVICES IN THE CONTEXT OF RATIONAL WATER USE**

## **KSZTAŁTOWANIE SIĘ RYNKU USŁUG EKOLOGICZNYCH W KONTEKŚCIE RACJONALNEGO WYKORZYSTANIA WODY**

## **ФОРМИРОВАНИЕ РЫНКА ЭКОЛОГИЧЕСКИХ УСЛУГ В КОНТЕКСТЕ РАЦИОНАЛЬНОГО ВОДОПОЛЬЗОВАНИЯ**

### **Abstract**

*This article comprises definitions of environmental services, environmental services market as well as the preconditions for creating a loyal environment for the development of environmental services market. We propose principles of improving the system of relationships environmental services subjects in the context of rational water resources use. The key moments of improving the system of rational water resources use while using market tools for environmental services have been described. We designate the principles of environmental services market forming in Europe. We analyze the issues of inheriting these principles in Ukraine and we propose the ways for their optimization.*

**Keywords:** *environmental services, rational water resources use, environmental services market, optimization.*

### **Streszczenie**

*W artykule zostały zdefiniowane pojęcia usług ekologicznych, rynku usług ekologicznych, a także wskazane warunki wstępne tworzenia przyjaznego środowiska dla rozwoju rynku usług ekologicznych. Zostały zaproponowane zasady doskonalenia systemu relacji interpersonalnych prezentowania usług ekologicznych w kontekście racjonalnego zużycia wody. Także zostały opisane najważniejsze elementy doskonalenia systemu racjonalnego zużycia wody z wykorzystaniem narzędzi rynku w sferze nadawania usług ekologicznych.*

**Dr hab Alina Yakimchuk**

**MA (Student PhD) Yuliya Semenova**

**Opublikowany:** 2017-12-30

**DOI:** 10.5604/01.3001.0010.7635

**Wydanie:** International Journal of New Economics and Social Sciences 2017; 2 (6): 198-206

*Zostały przedstawione zasady kształtowania się rynku usług ekologicznych w Europie, a także przeanalizowana problematyka naśladowania danych zasad na Ukrainie oraz proponowane sposoby optymalizacji.*

**Słowa kluczowe:** usługi ekologiczne, racjonalne wykorzystanie wody, rynek usług ekologicznych, optymalizacja

### **Аннотация**

*В статье определены понятия экологических услуг, рынка экологических услуг, обозначены предусловия создания лояльной среды для развития рынка экологических услуг. Предложены принципы усовершенствования системы взаимоотношений субъектов предоставления экологических услуг в контексте рационального водопользования. Описаны ключевые моменты улучшения системы рационального водопользования, используя рыночные инструменты в сфере предоставления экологических услуг. Обозначены принципы формирования рынка экологических услуг в Европе. Проанализирована проблематика наследования данных принципов в Украине и предложены пути оптимизации.*

**Ключевые слова:** экологические услуги, рациональное водопользование, рынок экологических услуг, оптимизация.

**Statement of the problem in general outlook and its connection with important scientific and practical tasks.** The market of environmental services is not only an independent branch of modern entrepreneurship but it also may be used as an economic tool of the mechanism of rational natural resources use in general but of rational water resources use in particular.

The 'green economy' is a lever arm for developing the market of environmental services as its providing means for environmentalization of political decisions, legislative transformations and intensification of the western partnership in the environmental sphere.

The market of environmental services includes market of environmental goods, environmental industry, non-material environmental services, ecologic capital and works as activities themselves. All of these elements are tools for effective work of the mechanism of rational resources use. The administration of these tools can show serious economic and environmental results.

**Analysis of latest research where the solution of the problem was initiated.**

Significant achievements in the development of the theoretical issues for the environmental services market improvement made by such scientists as: Galushkina T. P., Gordiychuk Y. G., Khumarova N. I., Berzina S. V., Pruygara I. O., Fomenko V. A., Lipanova O. A., Brezovska Y V., Sydorchenko T. F., Kostetska K. O., Yatskov A. V., Saadjan I. A., R.H. Dubas, A.V. Yatsyk, L.H. Melnyk, O.I. Karintseva,

S.M. Shevchenko, M.A. Khvesyk, Y.M. Hryshchenko and others. Along with the contributions of scientists on the subject matter of the paper, it should be said that in the context of rational water resources use the aspect of environmental services still remains not fully investigated, the environmental services are hardly classified. We shall develop this classification to facilitate improving of the system of rational water resources use.

**Aims of paper.** The purpose of the

**Dr hab Alina Yakimchuk**

**MA (Student PhD) Yuliya Semenova**

**Opublikowany:** 2017-12-30

**DOI:** 10.5604/01.3001.0010.7635

paper is analyzing the possibility of including environmental services as one of the tools of the economical mechanism of rational water resources use. We want to discover the ways this market of environmental services should work and also which kind of economic situation may become a precondition to creating this market.

**Exposition of main material of research with complete substantiation of obtained scientific results.**

Using of the marketing tools for obtaining the environmentalization aim and rational water resources use is a part of the economic mechanism of water resources use the same as cooperation of economic structures, forms, methods which form the water legislation economy subjects (Melnyk L. G., 2003).

Now we start with investigating the key preconditions for stimulating the development of environmental economy, such as creating the huge market of ecologic goods, services similar to the European one. This European market repeats the strategies of the sustainable development such as:

- Changing the unstable industrial models and consumption (we mean the resource-saving technologies, nature protecting technique;
- Environmentally clean and clear production;
- Rising the nature environment quality,
- Playback of the destroyed environmental systems and landscapes (here we take into consideration first of all water systems);
- The development of environmental evaluations system;
- Environmental liability insurances (Vorobyova O. A., 2010).

Principles of sustainable development dictate that water inflow must increase due to water recycling and the use of alternative

sources. So now we insist that the increase in water consumption due to population growth and the sanitation level must be compensated by the technological reduction of water use. This process should include the reduction of transport and technological losses and redundant waste (Ukrainian Hydro-Economic Complex Provided Sustainable Development, 2005). Modern economic theory emphasis that exactly the private business in the sphere of rational natural resources use is the first step to gain such a progress. But private sector needs a positive economic climate which means possibility for investigations and innovations, credits and safe insurance policy.

The system of environmental insurance is one of the weakest aspects of Ukrainian environmental services system. But still we start analyzing of the ecologic entrepreneurship with nature-saving and rational resources use investments (Khvetsyk M., 2006).

The development of the environmental market depends on the public demand for the environmental goods, services, technologies and safe and qualified environment. This comes to concrete environmental policy, system analysis and evaluation of the regional environmental markets structure. So environmental entrepreneurship is mostly small and middle business which needs a special support (T.P. Galushkina and others, 2012). The situation depicts how a small positive environmental idea is weak and hardly realized unless it is a good business idea or other words – idea for business. This is how it works in the well-developed countries: there is a strategy for environmental thinking for common units, for small entrepreneurs and for corporations. For example, the strategy of “environmental thinking for radical transformation”. They provide some environ-

**Dr hab Alina Yakimchuk  
MA (Student PhD) Yuliya Semenova**

**Opublikowany: 2017-12-30**

**DOI: 10.5604/01.3001.0010.7635**

mental principles of nature for the innovations businesses such as:

- **Networks:** here we take into consideration that all living systems are interconnected so they may share their resources while using boundaries.
- **Cycles:** this for sure is about the dematerialization point, because an ecosystem may generate no waste if using the tools of secondary use etc.
- **Partnership:** Environmental strategies mean co-operation, partnership and networking.
- **Diversity:** Environmental systems achieve the resilience and robustness through the variety and complexity of their environmental webs so that increasing diversity may cause the increasing of resilience.

The particular point -partnership - concerns also the cooperation of business and environmental organizations.

Environmental policy in global aspect means co-working in such fields as using no-waste technologies, using water-cleaning technologies at the end of the production processes. The first point (if analyzing the water field) is connected not only with lessening of water wastes but also with considering a regional factor while planning the water-intensive production. So intensification of the environmental businesses means its diversification and accurate planning. Basic principles of environmentalizations may be used at any enterprise, such as dematerialization, and forming of the environmental thinking as its part. But environmental policy is also connected with structural, investment, financial, scientific, social, budget policy and also tax policy and inner-economical one (Melnyk L. G. and others, 2005). Modern Ukrainian environmental law does not al-

low to develop resource-saving technologies at enterprises. The power to do this is rude fiscal policy but we consider it only in combination with environmental education and the development of environmental mentality (Melnyk L. G., 2003).

Evolution of the environmental services market also shows a close connection between rising of the quality and quantity of these services and between intensifying of the environmental mentality.

Here we shall use the classification of the environmental services to the objects which they influence, such as:

- Goods and services which stop or lessen dropping of the polluted parts into the atmosphere;
- Goods and services which stop or lessen dropping of the polluted parts into the water objects;
- Goods and services which prevent or lessen wasted formation;
- Goods and services which prevent or lessen land degradation.

So these services are used to create an equipment for environmental protection, for resources-saving and for environmental landscaping and also the informational environmental businesses (T.P. Galushkina and others, 2012).

This classification is most valid for the subject of our investigation because it is useful in our attempts to combine the strategy of environmental services market and the aspect of rational water resources use. In particular we are interested in those goods and services which prevent or lessen dropping of the polluted parts into the water objects.

We also take into account the individual and general types of services; industrial and non-industrial types; the services for

**Dr hab Alina Yakimchuk**  
**MA (Student PhD) Yuliya Semenova**  
**Opublikowany:** 2017-12-30  
**DOI:** 10.5604/01.3001.0010.7635

free and services which cost money; regular services and one for time services (Khvesyk M., 2006).

We also need to analyze what kind of organization may give these services. This analytics is useful in creating the principles and pre-conditions for existing of the whole services market. These can be state organizations (these which are connected with the environmental legislation), or public organizations (such as children organizations, student groups, parties, environmental unions etc) and private organizations (marketing, insurance, consulting, audit etc).

According to the classification of the main water consumers, which are agriculture, industry and communal use, we shall try to find out which of these sectors have needs for environmental services and of what kind of them. But moving from general to particular, we take into account all kinds of water consumption by the purpose of water use:

1. Provision of drinking water;
2. Municipal needs;
3. Medical and recreation purposes;
4. Agriculture (without irrigation);
5. Irrigation;
6. Industrial needs;
7. Hydroelectric engineering;
8. Water transport and water rafting;
9. The needs of fishing industry;
10. Sewerage;
11. Environmental protection;
12. Sanitary needs;
13. Multipurpose use etc (Yatsyk A., 1997).

Using the statistical data we calculate that municipal needs rank first basing on the water demand, followed by industry and agriculture.

In this investigation we'll focus on one of the main water consumers such as agriculture.

The main problems of water consumption in agriculture are the such as:

- insufficient number of centralized water systems and wastewater treatment thereof;
- inadequate technical conditions of agricultural water supply systems due to their inconsistency with the standards.

Solving of these problems requires firstly reducing water losses during its transportation to the irrigated fields (Yatsyk A, 1997). Here we turn to the experience of the developed countries which find creating the special equipment also as a part of environmental services market. This point of view (meaning in classifying) helps us theoretically to bring out environmental services field to the market policy. Attraction of water resources in agricultural turnover should consider the trend of non-recoverable water use decrease in general. Using such tools or environmental services as the intelligent closed control systems for automating water distribution and irrigation is the main step toward the rational water resources use in this field.

Here we fix the types of environmental services for the agricultural sphere in context of water resources as they are commonly provided in Ukraine and in the European countries.

**Dr hab Alina Yakimchuk**  
**MA (Student PhD) Yuliya Semenova**  
**Opublikowany: 2017-12-30**  
**DOI: 10.5604/01.3001.0010.7635**

Types of environmental services for the agriculture	Subtypes and characteristic of separate types and positions
Monitoring of the environment	Agro-environmental monitoring and monitoring of water resources using the methods of distant water probes
Environmental management	Environmental -economical evaluation of water resources; creating of the environmental policy for the agricultural enterprises; organization of agricultural and resource-saving studies, seminars, public talks etc; economical calculations and evaluation of the necessity of nature-saving activities at the agricultural enterprises; innovational marketing Excursions, walks etc
Green tourism	
Environmental consulting	Water resources environmental safety consulting; agricultural consulting
Environmental audit (and water expertise)	Complex investigation of agricultural farms; investigation of land parts;
evaluation of the polluted parts release	Licenses for the special water use, for the polluted wasted release
and so managing the sewerages problems	Decreasing of the sewerages, control at its influence on the water resources
Environmental insurance	Purchasing an insurance, finding out risks
Environmental engineering	Which means technical base expertise
Devices for environmental controlling	Purchasing a particular devices and systems for environmental controlling of water resources quality

**Fig 1. Rate of types of environmental services for the agricultural sphere in context of water resources use**

Source: formed by the author on the basis of (O. I. Orel, 2014)

The multi-vector market of environmental services includes all of these particular types and we start with environmental management as the binding modeling tool for the rational water resources use. So the environmental management starts with environmental -economical evaluation of water resources. Purchasing water, or payments for water is basis of the economical mechanism rational water resources use. In Ukraine, water is chargeable for all customers and the cost is determined by some basic components such as: licenses, normative, payments rates and payments distribution system.

Most economists emphasis that environmental problems may be solved by giving some temporary financial privileges for those enterprises which introduce water saving technologies and environmentally safe technologies. As we determined that environmental technologies creature is one of the environmental services, we make an intermediate conclusion about the necessity of using some market tools among environmental services to develop another environmental services. This comes to one complicated system of rational water resources use where environmental services market becomes not just a tool but separate system subject (T.P. Galushkina, 2008).

But another point of view is the necessity of introducing the market mechanism also in the system of payment regulations instead of a strong state control.

Now the environmental services market is facing not only inner, system problems, but more outer – connected with the current economic and political situation in Ukraine.

Private organizations which provide environmental services, the same as state

**Dr hab Alina Yakimchuk**  
**MA (Student PhD) Yuliya Semenova**  
**Opublikowany: 2017-12-30**  
**DOI: 10.5604/01.3001.0010.7635**

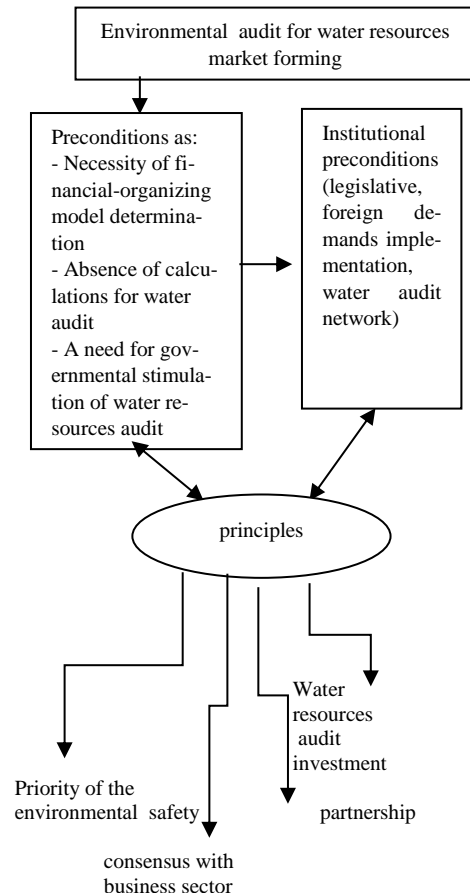
structures, need financial support as investments for providing innovations in the sphere of nature saving. The innovational sector itself has a number of problems such as:

1. Lack of the objective and prognostic vision of the innovational potential development, especially in the environmental services sector.
  2. Here comes the tendency to low level of environmental vision in general.
  3. There is lack of personnel trained for literate use of innovations in the environmental services sector.
  4. There is a global consumers' attitude toward the environmental services enterprises.
  5. Weak institutional providing of the environmental services market.
  6. Low control for innovational activities.
  7. Low legislative support.
  8. Non-using of innovations even in the sector of environmental services which strongly depend on innovations.
- When enterprises start another kind of services or change one to another they do not always take into consideration the innovational factor.

Returning to the environmental services for water resources, we shall stop at the point of environmental audit as the significant part of the system or its basis. So environmental audit in water resources field is a management tool for systematical, periodical, objective evaluation of the ration between processes for the water resources protection. Consequently, it must increase the effectiveness of the enterprises which produce environmental services and

goods. The American data shows an increasing of the dependence of companies' competitiveness from their environmental politics and environmental audit (T.P. Galushkina, 2008).

Now the development of water audit seems to be almost uncontrolled because of its non-being taken into account into the regulatory politics and because of absence of some development program. Here we depicted the preconditions and principles of water resources audit market creating and developing.



**Fig 2. Conceptual basis for the environmental water resources audit market forming in Ukraine**  
Source: formed by the author on the basis of (T.P. Galushkina and others, 2012)

**Dr hab Alina Yakimchuk**  
**MA (Student PhD) Yuliya Semenova**  
**Opublikowany: 2017-12-30**  
**DOI: 10.5604/01.3001.0010.7635**

Environmental audit and water expert-  
isis basis for environmental insurance. The  
world experience shows the direction of its  
functioning as it became a part of liability  
for environmental pollution insurance.  
From our point of view, this is the most  
structural way to bind water resources se-  
cure to the modern insurance system where  
the objects are water resources, the subject  
(or the insurer) is a company or enterprise  
or any other organization which might be  
potentially dangerous for the environment.  
Historically, this kind of insurance started  
in USA as a part of general responsibility.  
But raising of the environmental threats,  
modern environmental situation in every  
country formed the necessity for establish-  
ing the dedicated environmental fund.  
Ukrainian insurance system needs not only  
a formal existence but all the preconditions  
for its sufficient work because it faces seri-  
ous tasks such as:

- Increasing of level of citizens' so-  
cial protection (from environmental  
threats, water pollution etc);
- A source for accumulating funds  
into the national economics. These funds  
may be used for covering the negative en-  
vironmental influences at natural re-  
sources in general and water resources in  
particular.

The mechanism of environmental in-  
surance provides:

- The right for local self-govern-  
ment bodies to conduct a special environ-  
mental insurance regime at one or another

territory due to possible environmental  
risks (this also comes to administrative re-  
forming);

- Creating of transparent costs dis-  
tribution system so that local budgets get  
some part from the general volume of in-  
surance services;
- Forming deposits for using the in-  
surance reserves when the necessity for  
some resources-saving projects comes.  
They might be also use for providing the  
water-saving programs (Alimurzaev G,  
1999).

**Conclusions.** The environmental ser-  
vices market needs to develop the loyal  
economic sphere and improve the system  
of the elements' interaction. We deter-  
mined that environmental services in the  
sphere of rational water resources are used  
as the tools for the economic-environmen-  
tal mechanism of rational water resources.  
Here we have been paying a strong atten-  
tion to such environmental tools as eco-  
logic audit and insurance as one of the most  
important and weakly developed. The Eu-  
ropean and American experience shows an  
increasing of the role of environmental  
services in economics doing emphasis at  
the fact that companies which provide en-  
vironmental services need support. We an-  
alyzed the problems of investments for this  
kind of activity which causes the lack of in-  
novational businesses. So as environmental  
services are tools for rational water re-  
sources use system, they should be diag-  
nosed and developed as its obligatory part.

## **Bibliography**

1. Алімурзаєв Г. // Російський економічний журнал. – 1999 - № 3 – с.19-25
2. Воробйова, О. А. Розвиток рекреаційно-туристичної сфери як соціо-еколого-  
економічної системи на принципах сталого розвитку / О. А. Воробйова // Екологічний  
вісник. - 2010. - № 5. - С. 26-27.
3. Галушкіна Т. П., Гордійчук Є. Г., Хумарова Н. І., Берзіна С. В., Пригара І. О., Фоменко  
В. А., Ліпанова О. А., Березовська Ю. В., Сидорченко Т. Ф., Костецька К. О., Яцков А.  
В., Сааджан І. А. Формування ринку екологічних послуг в форматі розвитку «зеленої»  
економіки. Одеса – ШПРЕД НАН України. – Саки, 2012. – 264 с.

**Dr hab Alina Yakimchuk**

**MA (Student PhD) Yuliya Semenova**

**Opublikowany: 2017-12-30**

**DOI: 10.5604/01.3001.0010.7635**

**Wydanie:** International Journal of New Economics and Social Sciences 2017; 2 (6): 198-206



4. За ред. Т. П. Галушкіної : Екологічний аудит: теорія та практика – Одеса, 2008. – 47 с.
5. Мельник Л. Г., Карінцева О. І., Шевченко С. М., Шапочка М. К., Бун Е., Хенс Л., Перелет Р. О. та ін. Основи стійкого розвитку: Навчальний посібник / За заг. Ред. Л. Г. Мельника. – Суми: ВТД «Університетська книга», 2005. – 654 с.
6. Мельник Л. Г. Екологічна економіка: Підручник. – 2-ге вид., випр. і доп. – Суми: ВТД «Університетська книга», 2003. – 348 с.
7. Орел О. І. Екологічні послуги як інструмент екологічної національної політики. [Електронний ресурс]. – Режим доступу:[http://www.natureus.org.ua/repec/archive/1\\_2014/18.pdf](http://www.natureus.org.ua/repec/archive/1_2014/18.pdf)
8. Хвесик М. А. (2006) Водне господарство України: системні суперечності, структурні диспропорції та колізії регулювання. – Київ : Вид-во РВПС України НАН. – С. 7-14.
9. Ящик А.В. (1997) Екологическиосновырациональноговодокопользования. – Киев : «Генеза». – 640 с.
10. Ukrainianhydro-economiccomplexunderconditionsofsustainabledevelopment [SustainabilityofGroundwaterResourcesanditsIndicatorsProceedingsofsymposium S3 heldduringtheSeventh IAHS ScientificAssemblyatFozdoIguaçu, Brazil, April 2005). IAHS Publ. 302, 2006 .Naturalresources [Electronicresource]. Access mode: <http://iahs.info/uploads/dms/13393.09-35-42-S3-18-Ognianik.pdf>.

## References

1. Alimurzaev G. // Russian economic journal. – 1999 - #3 – p. 19-25
2. Vorobyova O. A. Development of the recreation-touristic sphere as social-economic system basing on the priniples of sustainable development / O. A. Vorobyova // Ecologucal journal. – 2010. – № 5. - p. 26-27
3. Galushkina T. P., Gordiychuk Y. G., Khumarova N. I., Berzina S. V., Pruygara I. O., Fomenko V. A.M Lipanova O. A., Brezovska Y V., Sydorchenko T. F., Kostetska K. O., Yatskov A. V., Saadjan I. A. (2012). Forming of the environmental services market in the format of 'green' economy development. Manual. O: IPREED NAN Ukraine (in Ukr).
4. Edited by Galushkina T. P.: Ecologic audit; theory and practice. – Odessa, 2008. – 47 p.
5. Melnyk L. G., Karintseva O. I., Shevchenko S. M., Shapochka M. K., Bun E., Hens L., Perelet L. O. and others. Basics of the sustainable development: Manual / Edited by L. G. Melnyk – Sumy: VTD 'Univercity book', 2005. – 645 p.
6. Melnyk L. G. Environmental economy: Manual. – second edition – Sumy: VTD 'Univercity book', 2003. – 348 p.
7. Orel O. I. Environmental services as instrument of ecologic national policy. 2014 [Electronic resource]. – Access mode:[http://www.natureus.org.ua/repec/archive/1\\_2014/18.pdf](http://www.natureus.org.ua/repec/archive/1_2014/18.pdf)
8. Khvesyk, M. (2006) 'Water Management of Ukraine: System Contradictions, Structural Disparities, and Adjustment Collisions', Kyiv: Publishing Centre of the Council for Ukraine's Productive Forces Studies of NAS of Ukraine, pp. 7-14.
9. Yatsyk, A. (1997) Environmental Fundamentals of Rational Water Use, Kyiv: "Heneza", 640 p.
10. Ukrainian hydro-economic complex under conditions of sustainable development [Sustainability of Groundwater Resources and its Indicators Proceedings of symposium S3 held during the Seventh IAHS Scientific Assembly at Foz do Iguaçu, Brazil, April 2005). IAHS Publ. 302, 2006 .Natural resources [Electronic resource]. Access mode: <http://iahs.info/uploads/dms/13393.09-35-42-S3-18-Ognianik.pdf>.

**Dr hab Alina Yakimchuk**  
**MA (Student PhD) Yuliya Semenova**  
**Opublikowany: 2017-12-30**  
**DOI: 10.5604/01.3001.0010.7635**