ISSN 0798 1015

REVISTA ESPACIOS

HOME Revista ESPACIOS ÍNDICES A LOS AUTORES

GERENCIA • GESTÃO • MANAGEMENT Vol. 39 (Number 12) Year 2018. Page 28

Meliorative institutional environment: The area of state interests

Entorno institucional mejorado: Área de intereses del estado

Vyacheslav N. SHCHEDRIN 1; Sergey M. VASILYEV 2; Aleksandr V. KOLGANOV 3; Lyudmila N. MEDVEDEVA 4; Andrey A. KUPRIYANOV 5

Received: 23/12/2017 • Approved:22/01/2018

ABSTRACT:

The concept of sustainable development is one of the modern, most supported by the world community system of views on life, on the interaction of society and nature. Reclamation as a set of fundamental rules in the field of optimal use of natural resources fully meets the principles of sustainable development and is among the priority tasks of the development of the states members of the Eurasian Economic Union. The article deals with the issues of institutional justification for the further development of the meliorative complex; The factors constraining innovative updating are analyzed. The ways of using the mechanism of public-private partnership and the potential of agricultural cooperation in the development of reclaimed lands are shown. The use of micro hydropower stations on the derivational irrigation systems of the foothill areas of the South of Russia is justified and technological solutions for the use of micro hydropower plants at water intakes, bottom water outlets, end discharges, sprinkling machines are proposed. The public significance of the problem studied is pointed out because melioration is not only a labor market, but a vital habitat.
Keywords: reclaimed land; Strategy of reclamation development; scientific and technical support for land reclamation; Derivational irrigation systems; The use of mini hydropower plants on irrigation canals; Ecological and economic justification for the development of irrigated lands

RESUMEN:

El concepto de desarrollo sostenible es uno de los más modernos y más apoyados por el sistema de opinión de la comunidad mundial sobre la vida, sobre la interacción de la sociedad y la naturaleza. La recuperación como un conjunto de reglas fundamentales en el campo del uso óptimo de los recursos naturales cumple plenamente los principios del desarrollo sostenible y se encuentra entre las tareas prioritarias del desarrollo de los Estados miembros de la Unión Económica Euroasiática. El artículo trata sobre los problemas de la justificación institucional para un mayor desarrollo del complejo meliorativo; Se analizan los factores que limitan la actualización innovadora. Se muestran las formas de utilizar el mecanismo de asociación público-privada y el potencial de cooperación agrícola en el desarrollo de tierras recuperadas. Se justifica el uso de microcentrales hidroeléctricas en los sistemas de irrigación derivativos de las zonas montañosas del sur de Rusia y se proponen soluciones tecnológicas para el uso de micro centrales hidroeléctricas en tomas de agua, sumideros, descargas finales y rociadores. Se señala la importancia pública del problema estudiado porque la mejora no es solo un mercado de trabajo sino también un hábitat vital.
Palabras clave: tierra reclamada; Estrategia de desarrollo de recuperación; apoyo científico y técnico para la recuperación de tierras; Sistemas de riego derivados; El uso de mini centrales hidroeléctricas en canales de riego; Justificación ecológica y económica para el desarrollo de tierras de regadío

One of the concepts closely associated with sustainable development is the concept of a "green"

economy, which will justify the need for further development of mankind within the "optimal capacity of the natural environment". In 2009, an analytical report was published: "The New Green Course", in which activities were presented on the application of environmentally friendly technologies in industry, urban and agriculture; Proposed measures to stimulate investment in "green technologies" (UNEP, 2011). Since that time, UNEP has started intensive activities to promote "green technologies", to determine the basic principles of the functioning of the economy, including: fairness and objectivity in the allocation of resources within a single generation and between generations; Preventive approach to environmental impact; Objectivity in assessing the use of natural resources; The need to achieve macroeconomic goals by creating "green" jobs, increasing the competitiveness of key sectors of the green economy (UNEP, 2011). The UNEP report says that the "green" economy is "a system of economic activities related to the production, distribution and consumption of goods and services that is aimed at improving human well-being without prejudice to future generations" (UNEP, 2011).

Table 1
Conceptual approaches to the development of the green economy

Problem	Solution
Political sphere	
Opaque policies of world power structures, weakness of local authorities	Enhancing the role of global institutions in order to effectively manage the global economy. Change in the position of regional authorities, embedding the economy in the natural and social spheres; Formation of new indicators of measuring social progress, welfare, quality of life, sustainable development
Economic sphere	
Depletion of natural resources; Extinction of species	Understanding economic growth As the riches of nature, which has boundaries of capacity. Implementation of the 4R waste management model (reduction and reuse). Change in consumer behavior in accordance with the capacity of nature
Intellectual sphere	
Separation from the reality of the dominant directions of economic theory; Inability of society to influence climate change; Food chain industrialization	Revision of theories of demand, supply, growth. Long-term. Complexity. Integration of sciences. Search for new sources of energy and nutrition
Moral Sphere	
A significant part of the population lives in poverty, they do not have access to food and water; Growing corruption and the growth of international crime	Reform of world institutions taking into account the requirements of local communities; Social and environmental equality; Revision of the goals of the world economy; Diversity of solutions at the regional level; Access to the knowledge economy and innovation

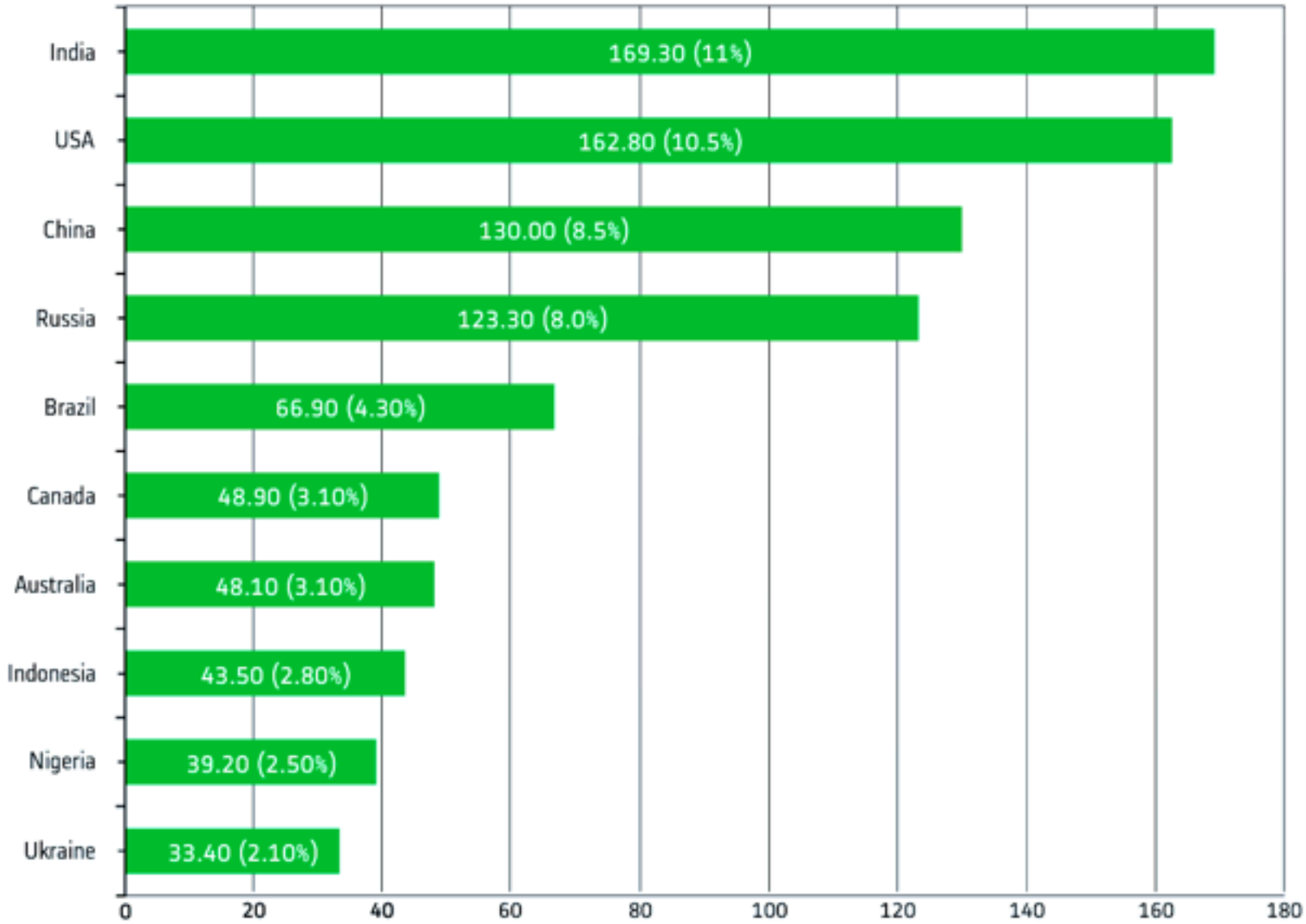
The concept of a "green" economy comes from the requirements of rational use of natural

resources in agricultural production (Green Economy, 2015). An important component of Russia's natural capital is its land resources; The most valuable part of them - agricultural land, which occupy about 220 million hectares (13% of the total area of the country). The water supply is 30.2 thousand m3 per person per year (one of the best indicators in the world). The main problem in the use of water resources is a significant uneven distribution across the country. The European part, where more than 70% of the production and agricultural potential is concentrated, account for no more than 10% of water resources (Water Code of the Russian Federation, 2006). As a result, water scarcity is felt in the South of Russia and in rural areas. The programs adopted in the member states of the Eurasian Economic Union aimed at improving the sustainability of agricultural production in a changing climate and natural anomalies; On the use of energy and resource-saving technologies; To use the mechanism of public-private partnership in the part of introducing innovations. The meliorative science of Russia is among the world leaders; A significant contribution to its development was made by such scientists as V.V. Dokuchaev, V.I. Vernadsky, K.K. Gedroits, BB Polynov, I.P. Borodin, N.I. Vavilov, L.S. Berg, V.N. Voeikov, G.F. Morozov, P.A. Kostychev, V.R. Williams, B.B. Shumakov, V.N. Sukachev, IP Kruzhilin, etc. The activity of the Russian meliorative school is focused on the study of natural processes, in its natural and assimilated state. The scientific approach to undertaking reclamation measures on agro landscapes is based on the fact that the amount of enclosed anthropogenic energy in the implementation of complex amelioration landscapes should be compensated for by energy that is alienated from harvesting and energy directed at restoration of fertility of changed landscapes (Kolganov, N. Sukhoi, V. Shkura , V. Shchedrin, 2016). Excessive energy input will lead to deformation of the geosystem and development of degradation processes, insufficient - to reduce the natural resource potential.

On irrigated lands that make up less than 20% of the area of arable land, more than 40% of crop production is produced. The largest amount of irrigated land is in the United States (14% of the total agricultural area), which allows them to receive up to 30% of agricultural output from total production in the country.

Figure 1

Land reclamation in the countries of the world, million hectares



In Russia, irrigated land (less than 5% of the total arable land area) yields up to 20% of the total yield. Russian scientists and specialists assess the country's needs in irrigated lands in different ways. Thus, academician IPAydarov believes that the area of irrigated land in the country should be 22-35 million hectares; In the opinion of Academician I. P. Kruzhilin, "... the irrigable lands suitable for irrigation and the necessary areas that ensure the average sustainability of agriculture should amount to 12 million hectares"; Scientists from the Federal State Biological and Biological Agency RosNIIIMP justify the view that 10 million hectares of irrigated land and 8 million hectares of drained land must be provided to ensure sustainable and high yields (V. Shchedrin, 2015). In the concept of Russia's food security until 2020, figures are presented that indicate the need to have 18 million hectares of reclaimed land, which makes it possible to raise the productivity of agrobiocenoses 2 to 3 times. In Russia, the natural climatic potential of agricultural land is 2-3 times lower than in the US and the EU, as evidenced, for example, by data on the provision of arable land with precipitation. It is the factor - lack or excess of natural precipitation justifies the need for land reclamation. The issues of the development of land reclamation require a comprehensive solution with the involvement of scientific support for the subsectors: crop production, animal husbandry, processing and storage of products (Government Decree No. 120, 2010). State management in the field of land reclamation is carried out by the President of the Russian Federation, the Government of the Russian Federation, the executive bodies of the constituent entities of the Russian Federation and the federal executive body (the Department of Land Reclamation of the Ministry of Agriculture of the Russian Federation), which performs regulatory and legal regulation in the field of land reclamation (FZ-4 " On land reclamation ", 1996). In 1999, the structure and list of management structures of land reclamation in the country was approved, which is still valid up to the present day (the order of the Ministry of Agriculture and Food of the Russian Federation, 1999). Territorial bodies in the field of land reclamation carry out the functions of specially authorized state bodies in the territories of the relevant subjects of the federation and are included in the Department of Land Reclamation. In the federal and regional programs in the

field of land reclamation, priority is given to certain types of land reclamation, depending on the natural and climatic features of the respective territories and the level of development of the agro-industrial complex. The ongoing state monitoring of the state of reclaimed lands allows us to identify destructive changes in a timely manner, and draw the appropriate conclusions. Throughout the history of Russian statehood various terms were used to refer to land reclamation: "field adjustment" (XVIII century), "land correction" (early 19th century), "land improvements" (early XX century). The term "land reclamation" in the sense in which it is used at present is established in Russia only in the middle of the 20th century. The conceptual and semantic content of the denoting term became much wider with time, new meanings were added to it. The doctrinal definition of land reclamation belongs to the scientist and meliorator A.N. Kostyakov, who understood it as "a system of organizational, economic and technical measures that have the task of radically improving the unfavorable natural (soil, climatic, hydrological) conditions of reclaimed territories by appropriately changing and regulating their water and associated air, food and heat regimes."Acts in the EurAsEC countries on land reclamation are regulated precisely by directions in the field of melioration, voiced by A. N. Kostyakov. Indigenous land improvement is the main feature of the phenomenon under consideration, distinguishing it from all other measures that have an impact on nature and land. In the current legislation of many countries containing imperatively established environmental requirements, this understanding of land reclamation is taken into account. Legislative consolidation of the environment has a very progressive significance, and is largely due to the adverse consequences to which previously unreasoned actions in the meliorative sphere (for example, drainage of the Polesie marshes, desiccation of the Aral Sea) have led (Kh. Isainov, 2007). Proceeding from the foregoing, it can be summarized that land (land, forest land), including soils, reclamation systems, separately located hydraulic structures, protective forest plantations, as indirect resources-air, subsoil, water, water, Plant and animal life (L.Kireycheva, I.Yurchenko, A.Nosov, 2009).

Table 2

Land reclamation: consequences and proposed solutions

Component	**Positive consequences**	**Negative effects**	**Recommendations**
Soils	Increase in fertility due to improved water-salt and water-air regimes, reduction of water and wind erosion processes	Possible loss of fertility as a result of increased processes of water and wind erosion, deterioration of the water-salt regime, deterioration of the air-water regime	Application of appropriate methods and techniques of irrigation; Agrotechnical measures (improvement of soil structure, justified crop rotation); Arrangement of forest shelterbelts
Surface water	Increased costs and levels for drainage systems, which can lead to improved water quality; Improvement of water quality in the watercourse due to enhanced self-purification processes in reservoir creation; Decrease in turbidity of water due to sedimentation processes	Increase in mineralization of surface waters; Water pollution by pesticides, fungicides, nutrients; Increase trophic level of reservoirs in connection with the increase in the content of nutrients	Application of engineering and biological measures aimed at increasing the self-cleaning ability of a water body. Constructive solutions of spillways and water outlets aimed at increasing the flow aeration

The groundwater	Increase in groundwater resources due to infiltration of additional water during irrigation	Decrease in groundwater resources due to reduction of infiltration of surface waters during dehumidification; Pollution of water with poisonous chemicals, organic and mineral fertilizers	Measures to prevent water pollution: organizational - creating a hydraulic divide between polluted and clean waters, preventive - creating a network of wells to monitor groundwater
Fish resources	Changes in the conditions for the existence and reproduction of fish	The death of young fish in water harvesting for irrigation	Activities related to the protection of ichthyofauna and fish resources
Vegetation	Replacement of natural vegetation in the territory of the irrigation system with agricultural crops	Loss of forest land in the land allocated for the construction of the irrigation system; Change in the condition of "forest growth" in the adjacent territories	Activities related to the protection of rare plant species and valuable forest species: irrigation of forests in the arid zone
Animal world	Change in species composition, number of animals, for example, as a result of the creation of favorable conditions	Infringements of migratory ways of birds; Increase of people's access to rare, protected objects of fauna	Activities related to the protection of animals: the choice of the location of HMS, taking into account the conservation of useful, rare species of animals
The air environment	Improving the air by creating water surfaces	Direct air pollution during the construction of canals and networks	Activities related to air pollution protection; Creation of forest belts
Landscapes	When building canals, relief, soil, vegetation, water sources change	Violation of the landscape: the change of natural lands to anthropogenic	Activities related to the protection of landscapes: ensuring the preservation of the natural or optimal water regime of the territory
Recreational resources	Increase of the recreational potential of the territory: creation of canals, forest plantations	Infringement of conditions of use of water objects for medical, cultural and improving purposes	Compensation measures: construction of retaining structures with a decrease in the level in the watercourse

The current legislation in the field of land reclamation is commonly understood in a broad and narrow sense. In a broad sense - a set of regulations aimed at streamlining public relations related to the implementation of land reclamation activities on land of various categories, protection of reclamation systems, and separately located hydraulic structures. In a narrow sense - a set of laws that regulate social relations in a particular area of land reclamation. Since the legislation on land reclamation is not just a set of combined norms and acts, but a complex institute of research and relations formed in the structure of legislation, it is possible to assert with full certainty about the presence of a legal institute for land reclamation. Preservation of reclaimed lands, protective forest plantations, effective functioning and restoration of the destroyed meliorative complex is impossible without the participation of a state with "significant managerial potential" (I. Kruzhilin, 2008). At the same time, the state's actions in the

meliorative sphere must be balanced and reasonable in order to prevent the emergence of a "dependent" attitude on the part of land users. Along with the state administration in the field of land reclamation, there are other types of management - municipal, public, on-farm. However, most of the administrative functions are carried out by federal and regional government bodies (V. Shchedrin, 2015, RF Government Decision-922, 2013). In most countries, the state takes on the basic costs of maintaining and developing land reclamation systems. So, in the USA 70% of works on construction of hydraulic structures and reclamation systems are carried out at the expense of the state; In the Netherlands, the program for the reconstruction of irrigated land is 65% provided with public expenditure (farms receive loans that are repaid within 30 years); In China, the amount of financing for reclamation projects is distributed according to the scheme: 30% of the funds are allocated by the state, 40% by the provinces, and 30% by the peasants-water users. In accordance with the federal target program "Development of land reclamation of agricultural land in Russia for 2014-2020" (Resolution of the Government of the Russian Federation-922, 2013), the state takes 40.7% of the developmental drainage network. Unlike other countries in Russia, financial participation of agricultural cooperatives in land reclamation is not visible. The issues of reliability and environmental safety of the irrigation and drainage systems are especially relevant now, after a rather long period of insufficient attention to problems of land reclamation, the state and society have realized the need to take cardinal decisions on restoring the reclaimed land fund, reconstructing and upgrading the irrigation and drainage systems to improve their operational reliability and ecological Safety (Reclamation systems and facilities: JV 81.13330.2012,1986). Modern science has theoretically grounded criteria for the reliability and environmental safety of reclamation systems; Developments to determine the controlled parameters of performance; Certain quantitative and qualitative values of the technical condition and safety level of hydraulic structures (hereinafter - the GTS); The justified schemes of operation of the GTS (V. Shchedrin, 2013).

Innovative-oriented development of the meliorative industry in the agro-industrial complex refers to Russia's national strategic priorities, and in order to achieve the set goals it is envisaged: technical re-equipment of functioning land reclamation systems through modernization of irrigation and drainage networks, acquisition of modern watering equipment by modern irrigation equipment; Automation and telemechanization; Construction of reclamation systems of a new generation with the use of science-intensive innovative technologies that provide coefficients of operational reliability and usefulness no lower than 0.95 and saving water and energy resources up to 40% (S.Vasilev, V.Schedrin, 2011).

According to the certification of reclamation systems in Russia there are: 1922 thousand hydraulic structures, including 285 thousand on state systems (58 thousand in federal ownership, 227 thousand in the ownership of the subjects of the federation, in municipal property and in property of legal entities and individuals - 1637 thousand); Gauging stations 4302 pcs., Irrigation equipment more than 20 thousand machines. The federal property includes: 232 reservoirs, 2,033 regulating hydrosystems, 454 water intake facilities, 6,543 km of pipelines, 1,577 pumping stations of irrigation systems and 135 drains, 3,346 km of dams (on drainage and irrigation systems), irrigation and drainage channels with a length of 39,873 km.

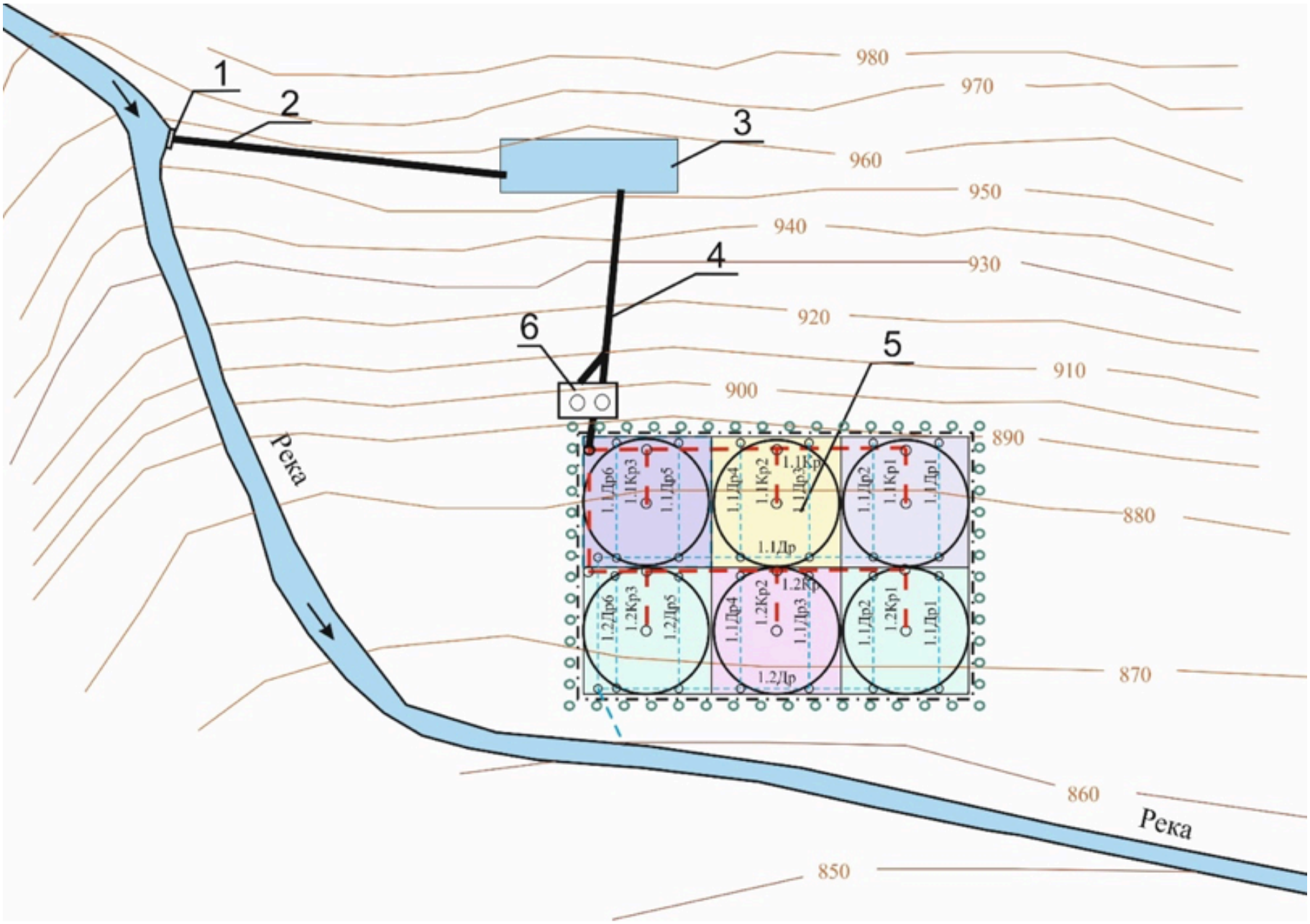
The total area of reclaimed lands as of 01.01.2010 was 9030.4 thousand hectares, including 4245.8 thousand ha of irrigation and 4784.6 thousand hectares of drainage.

One of the ways to improve the efficiency of the meliorative complex (in terms of energy saving and ecology) is the use of renewable energy sources (hereinafter referred to as RES) (L. Lukavsky, 2016). According to the Energy Strategy of Russia for the period until 2035, in the short term, the country will not lack traditional energy resources, since it has: 20% of natural gas; 21% of the world's hydrocarbon reserves. As a result, the use of RES is likely to be concentrated in the field of autonomous power supply. The study shows that in the small amount (approximately 5% of the total energy consumption in the irrigation and drainage

systems in the country), various types of renewable energy will find their application at land reclamation facilities (V. Shchedrin, 2013). Research conducted in FGIBNU RosNIIPM shows the efficiency of electricity use in irrigation from micro-HPPs on derivational irrigation systems in foothill areas. In the foothill zone there is a kind of "energy paradox" - when in some parts of the system the energy is first irretrievably extinguished, and then taken from other sources (in the form of electricity) to create heads during transportation and for irrigation. In this connection, a logical prerequisite arises about the advisability of a scientific approach in the use of the initially existing energy reserves of water sources. On the basis of the research, the following basic schemes for the creation and useful use of water heads (derivational heads obtained by engineering solutions for diverting the flow from the main channel, but with a smaller bias) are suggested. The flow diagram (Figure 2) shows the derivational irrigation system with a pipeline.

Figure 2

Technological scheme for the use of micro-HPP in the area of derivation of the irrigation system with a pipeline with a sequential Connection of micro-hydropower plants and sprinklers

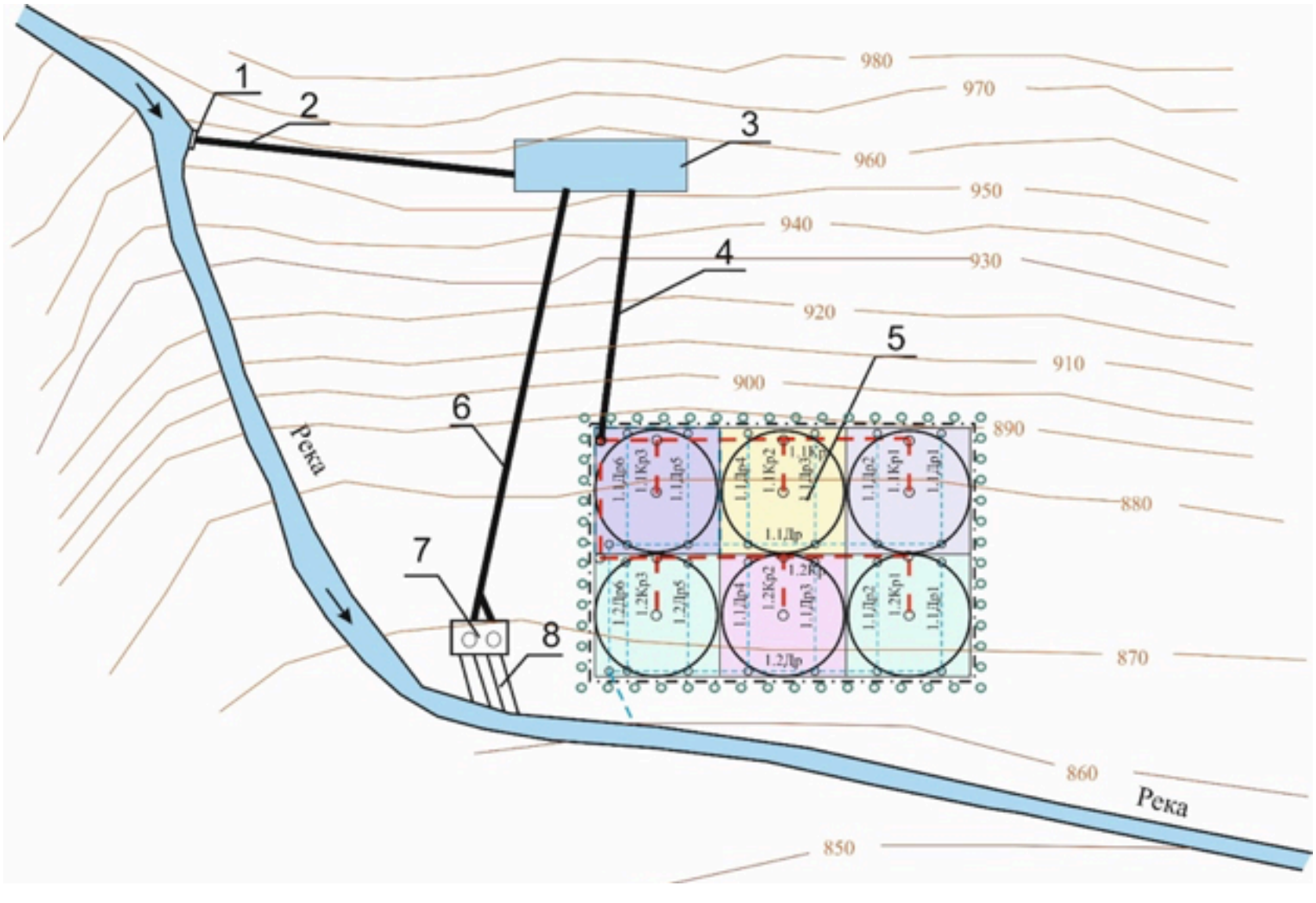


1 - water intake structure; 2 - derivational pipeline; 3 - day regulation pool;
4 - pressure pipeline; 5 - irrigated area; 6 - building of micro-hydropower plant

From the daily regulation basin set at the calculated mark, from the condition for creating the necessary pressure, water is fed through the pressure pipeline to the micro-hydroelectric power station, from where it flows through the pressure line to the sprinklers, that is, the work flow is sequential. Figure 3 shows the flow diagram of the derivational irrigation system, when the micro-HPP is connected in parallel to the sprinklers, while the supply and discharge of water into the source is carried out via a separate pipeline.

Figure 3

Technological scheme for the use of micro-HPP in the area of derivation of the irrigation system with a pipeline with parallel Connection of micro-hydropower plants and sprinklers

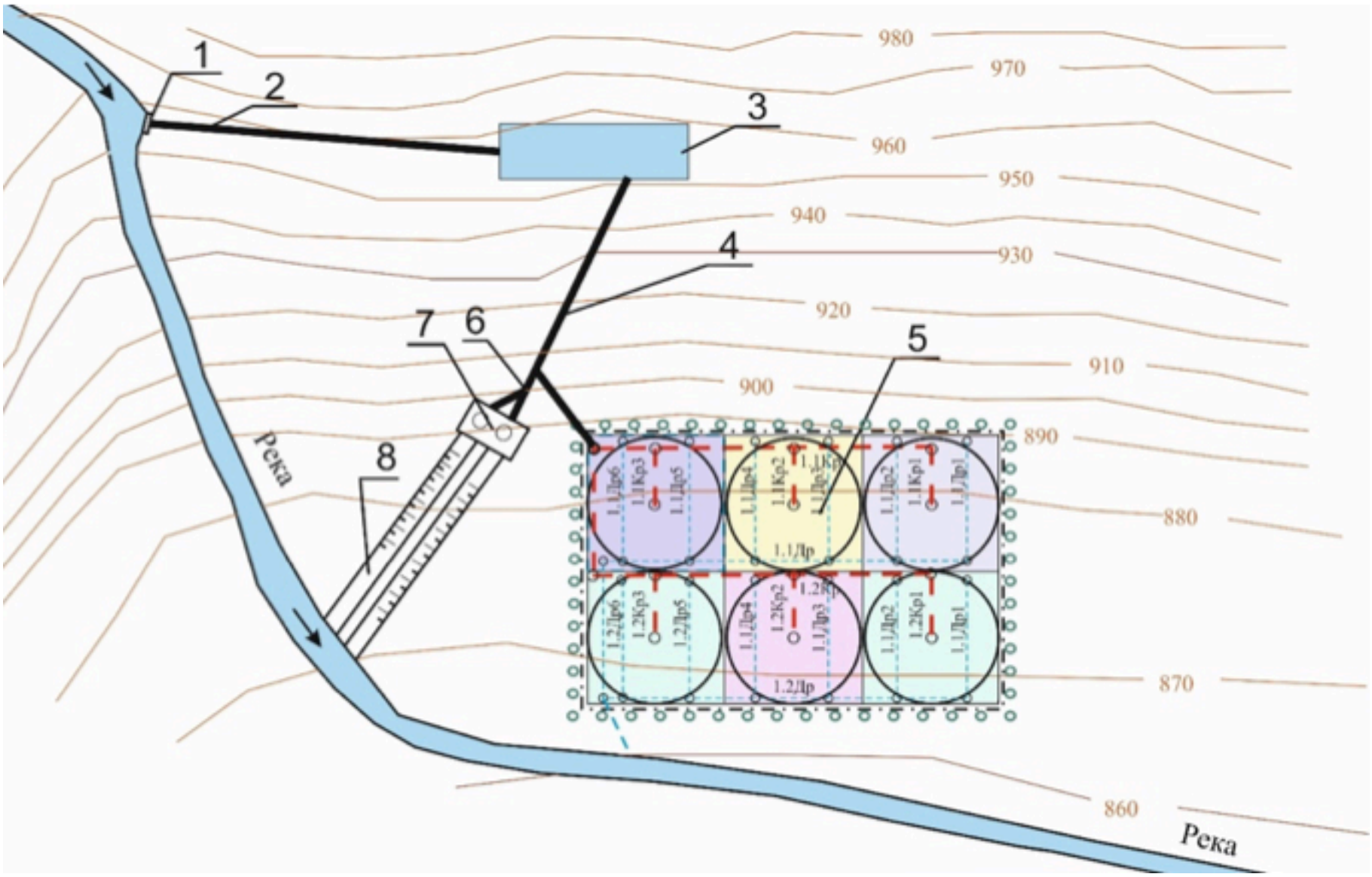


1 - water intake structure; 2 - derivational pipeline; 3 - day regulation pool;
4 - pressure pipe to sprinkler machines; 5 - irrigated area; 6 - pressure pipeline to micro-HPP;
7 - building of micro HPP; 8 - outlet channel

Figure 4 shows a similar scheme, but the initial section of the pipeline supplies water to both the irrigated area and the micro-hydropower plant, thereby reducing the cost of building the complex of structures

Figure 4

Technological scheme for the use of micro-HPP in the area of derivation of the irrigation system with a pipeline with parallel Connection of micro-hydropower plant and sprinkler



1 - water intake structure; 2 - derivational pipeline; 3 - day regulation pool;
4 - pressure pipeline; 5 - irrigated area; 6 - pressure pipeline to micro-HPP;
7 - building of micro HPP; 8 - outlet channel

Figures 5 and 6 show the technological scheme of the derivational irrigation system with the installation of micro-hydropower plants directly on the sprinkler. The estimated power of the micro-hydropower plant depends on the consumption of the sprinkler; On the supply line of the sprinkler, taking into account the loss of pressure on the hydraulic unit.

Table 3
Characteristics of micro HPP parameters for sprinklers

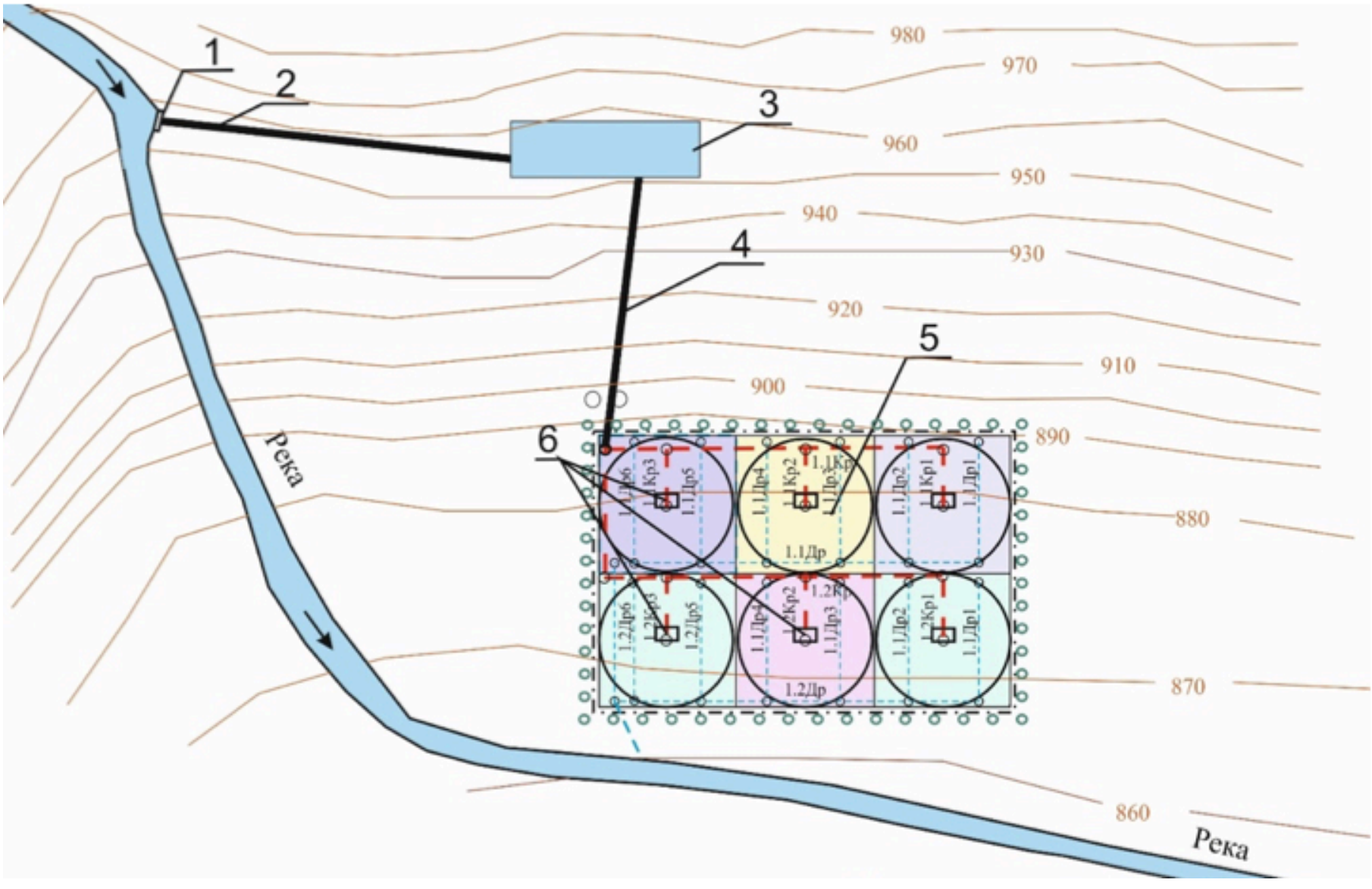
Consumption, L / s	Water head, m				
	20	30	40	50	60
	Power of micro HPP, kW				
40	6,4	9,6	12,8	16,0	19,2
50	8,0	12,0	16,0	20,0	24,0
60	9,6	14,4	19,2	24,0	28,8
70	11,2	16,8	22,4	28,0	33,6
80	12,8	19,2	25,6	32,0	38,4

90	14,4	21,6	28,8	36,0	43,2
100	16,0	24,0	32,0	40,0	48,0

Table 3 shows the values of the working head in the pipeline, the flow rate of the water in the sprinkling machine, over which it is possible to determine the installed capacity of the micro HPP (the working head in the pipeline must be at least 2 atm.) In the course of the study, technological schemes for the use of micro HPPs on derivational irrigation systems were developed Foothill areas, which include the basic requirements for a water source for the construction of micro-HPP, technological schemes for the use of micro-HPPs in the areas of derivation of irrigation systems from the pressure head M pipeline, as well as technological schemes for the use of micro-hydropower plants on hydraulic structures of derivational irrigation systems.

Figure 5

Technological scheme for the use of micro-hydropower plants in the area of derivation of the irrigation system with the pipeline itself On the sprinkler

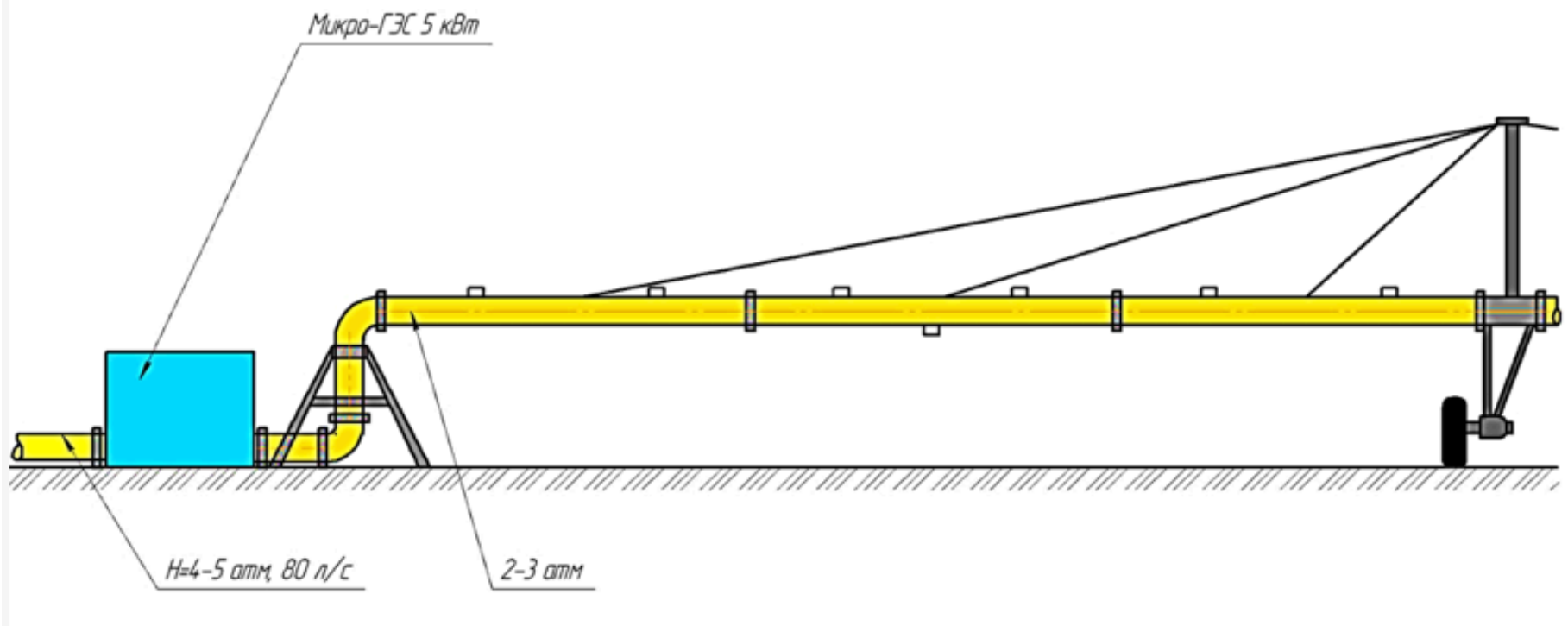


1 - water intake structure; 2 - derivational pipeline; 3 - day regulation pool; 4 - pressure pipeline; 5 - irrigated area; 6 - micro-hydropower plant on a sprinkler

---

Figure 6

Schematic of the technical solution for the installation of micro HPPs on the supply pipeline of a circular sprinkler



Application of the developed technological schemes for the use of micro-HPPs of various capacities (from 5 to 100 kW) in the practice of water management allows to reduce energy costs for the internal system operation of irrigation systems (in particular, irrigation equipment) by 10-15%. Among the elements of innovative renewal of the country's agro-industrial complex are agrarian parks. The agro-industrial park is an innovative scientific and production-economic system for the development of rural entrepreneurship, which makes it possible to involve the associated state-private resources. The model of the agro-industrial park that has developed in Russia is a complex of buildings and facilities for processing and selling agricultural products, training and retraining specialists, providing consulting services and promoting foreign products to the domestic market. Most likely, Russian agro-industrial parks are well-structured Ecobazars (L.Medvedeva, 2015). The world leader in the development of innovative agricultural parks is the United States. The most famous of them are RTP and NC Biotech Center, UC Davis Center for Science and Innovation, Univ. Wisconsin Biotech Center, KC BioScience Authority-Animal Health Corridor; In the field of processing of agricultural products - Food Innovation Center, Food Processing Center. Financing of scientific research and development of production in agro-parks is carried out according to the scheme: state + private investments, which allows to successfully solve the problems of food safety. Effectively, the operating park North Carolina Research Triangle Park (North Carolina), known as RTP covers an area of more than 3 thousand hectares. It employs more than 170 organizations, employs more than 4 thousand specialists; Within the framework of innovative cooperation, the North Carolina Biotechnology Center (NC Biotech Center) is highly effective. A study of the RTP experience shows that, despite the extremely weak. Economic development of the region during the formation of the park, the lack of highly qualified staff, the necessary base, a small experience of entrepreneurial activity, if desired (from the state and private investors), you can achieve significant results in the development of agriculture, increase the revenue side of the state budget (E. Makarova, 2015) . If the industrial parks in Russia have some experience: the national standard GOST R "Industrial parks. Requirements "; Decree No. 831 of the Government of the Russian Federation of 11.08.2015 "On Approving the Rules for Granting Subsidies from the Federal Budget to Russian Organizations - Managers of Industrial (Industrial) Parks and (or) Technoparks for Reimbursing Part of the Costs of Interest on Credits Received in Russian Credit Institutions and the State Corporation "Bank for Development and Foreign Economic Affairs (Vnesheconombank)" in 2013-2016 for the implementation of investment projects to create industrial (industrial) parks and (and Tech parks, within the framework of the subprogram "Industrial parks" of the State program "Development of industry and increase of its competitiveness"; Decree of the Government of the Russian Federation of August 4, 2015 No. 794 "On industrial (industrial) parks and management companies of industrial (industrial) parks", then agrarian parks for the production of agricultural products are not. The model of

ameliorative agrarian park, developed by the scientists of the Federal State Biological University "RosNIIIPM", is aimed at developing the meliorative sector, increasing irrigated land, obtaining high yields, and opening new jobs (S.Vasilev, 2016). Under the program of Federal Target Program No. 922 of March 12, 2013, "Development of the Reclamation of Agricultural Land in Russia for 2014-2020," the state undertakes obligations to develop land reclamation, increase the area of irrigated land, and compensate agricultural producers for up to 70% of the costs of creating irrigated land. However, in the current economic situation (crisis), this is difficult to do, since most agricultural producers do not have the opportunity to invest in land improvement. Increase in irrigated lands according to the scheme: private investor + The state does not happen and in the proposed concept of ameliorative agrarian park the main investor should be the state, it should take risks on attracting private investments. To place the agromeliopark (federal and regional executive authorities) incurs the costs of designing, building the infrastructure of the park, including the irrigation system, for arranging financial leasing for agricultural producers; On rendering of outsourcing and consulting services. The proposed mechanism of public-private partnership creates conditions for investment of public (state) and private (agricultural producer) partners in the ratio - 70:30. The state, at the expense of budgetary investments, can ensure the creation of an ameliorative agricultural park (hereinafter - MAP, Table 4); On a competitive basis, provide long-term land for lease to agricultural producers, which, in turn, will undertake to repay the state 30% of the costs incurred. The main feature of the MAP is that it harmoniously combines highly productive land use, economic stability, scientific validity of innovation in the agro-industrial complex (L.Medvedeva, 2015). The pilot area for the MAP may be the arid and shallow north-eastern part of the Stavropol Territory, located in the construction zone of the 5th stage of the Great Stavropol Canal. The conducted researches in the zone of BSC-IV showed that the irrigation area here can be: 64 516 hectares; The number of widely used sprinkling machines is 800 pcs. The use of micro-HPP, combined with sprinkler technology, will allow saving energy resources of agricultural producers.

Table 4
MAP: goals, objectives, results of activities

goal	Increase in agricultural production, ensuring food security of the country
Tasks	Expansion of land reclamation lands; Increase in the number of agricultural producers; Introduction of innovations; Development of PPP tools
Principles	Rationality of the use of scientific and agrarian potential; Balanced, proportional and integrated socio-economic development of the region; Public-private partnership and cooperation
Functions	Coordination of works on creation and functioning of the park; Holding competitions for the selection of residents, concluding agreements with them; Renting of reclaimed lands; Assistance in preparing documents for state support; Rendering of marketing and consulting services, including participation in electronic trading
Scientific support	On the part of the region, the provision of tax, property, customs and other benefits that promote the development of legal entities, attract investors
Preferences	On the part of the region, the provision of tax, property, customs and other benefits that promote the development of legal entities, attract investors
results	Entering new irrigated lands; Increase in agro-production; Meeting the growing needs of

	the population for agrarian products that meet international quality standards; Increase of volumes and expansion of assortment of the grown up production, ousting from the Russian market of foreign manufacturers; Increase in employment and living standards of the population in the region; The transformation of agriculture into an important segment of the region's tax base, in view of the increase in tax revenues from producers of products

MAP in the foothill zone of the Stavropol Territory can become a demonstration site for the EurAsEC countries, in particular for Kazakhstan, where in the next five years, it is planned to restore irrigation systems on an area of 610 thousand hectares.

For the innovative development of land reclamation and the achievement of positive dynamics in the agro-industrial complex, it is necessary to create new organizational and legal institutions and tools for public-private partnership.

Bibliographic List

1. M. Vasiliev Aspersionis / SM Vasiliev VN Cutis. - Novocherkassk: RosNIIPM, 2016 - CCCLII p.

2. aqua Code III Iunii a Russian Foederatio of: Fl-LXXIV № MMVI (Transierunt a re publica Duma Aprilis XII, MMVI) [electronic resource]. - mode Access: http://www.consultant.ru/popular/waternew .

3. HR Isaynov Latest Comments and economic bases reclamatione ipsius incremento in efficientiam Dei in agricultura (theoriis et methodis usu). M.: FSEIHPE RGAU, MSHA eos. A. 2007. Timiryazeva C. LVI.

4. In statu progressio pro rusticarum products et rusticarum progressionem et moderatione continentiae fora, et rudis materiae superinstitoriorum utentur cibus in MMXIII - MMXX, probatus est ex senatus consulto M. Government 14.07.2012 DCCXVII numerus.

5. DOCTRINA NOVAE HIEROSOLYMAE DE Russian Foederatio, probatus ex senatus consulto Presidential cibum securitatem in January XXX, MMX № CXX;

6. Humanum Development Report 2011.Ustoychivoe progressionem occasiones et pares: melior est omni futuro. UNDP MMXI.

7. Kireycheva L. legum et iuris securitatem - clavis mechanism de actio in progressionem belli status quorundam / IV Kireycheva: I. F. Nocte Diei Yurchenko, A. // C. Nosov Vias ad emendare efficientia cultura irrigatur / FGNU "RosNIIPM" . - Novocherkassk, 2009. - Vol. 42. - P. 25-31.

8. Kruzhilin IP Africa est a basic elementum sustineri et augendae cultura per loca arida of Russia / IP Saccharum cibum ensuring securitas de Russia et in agros Kruzhilin //: materiāli Intern. doctrinalis et practicalis. X Confess. - Volgograd, 2008. - C. 17-26.

9. Lukavsky: S. Study: renewable navitas ad switch omnino non potest mundus per annos singulos fontes MML [electronic resource] / S. Lukavsky. - mode Access: http://gearmix.ru/archives/25208, MMXVI.

10. Makarov, BI? Eget porttitor agriculturae centers, et pomaria in Civitatibus Foederatis Americae // Creative Economy. - 2015. - V. 9. - numerus 3. - p. CDVII - CDXX.

11. Medvedev, LN; Quod est elementum Agrotechnopark infrastructure de regione innovative irae / AS agribusiness Ovchinnikov, E.N.Patrina, L.N.Medvedeva // problems quod actu est potentiale ad innovative progressionem curatores, formatio culturae. Inter materiam. nauchn.-Pract. X Confess. Minsk, IV - V MMXV Iunii - BSATU Minsk, 2015 - p CXC - CXCIV.

12. IN Medvedev LENIMENTUM universa APK Volgograd regionem - nam creatio est ex modern Quaestus, qualis amplio publicorum / IN vitae Medvedev, MK // Starovoytov de agro-industriae progressio Ars universa rusticus et fines current internationalis environment, in Russian Foederatio: Sat. Interne materiae. doctrinalis et practicalis. Confess., 70th anniversario dicata

est in Victoria magni AMANS PATRIAE Bellum autem 1941-1945. (Volgograd, February III, V Februarii, MMXV, VPO "Volgograd GAC"). - Volgograd, 2015 - P. 268-273.

13. INCILE ratio quod facilities SP 81.13330.2012. In editione updated 3.07.03-85 partorum portiuncula. - Intra. 01.07.1986. - M., 1986. - XXIII p.

14. Foederatum Program Target "terram reclamatione ipsius progressio pro rusticarum usus Russia 2014-2020 ': Resolutio M. Government XII Octobris datas, CMXXII № MMXIII (January die XXV ut emendentur, MMXVII) [electronic resource]. - Reproduction of original: http: docs.cntd.ru/document/499051291 .

Emendare efficientiam et industria salutaris industria

15. Et Animadversiones ad Russian Foederatio Actus Apostolorum quidam legum et Foederatum legis XXIII Decembris, MMIX № CCLXI FZ, ut ex Iulii III, MMXVI // Garant Peritus MMXVII [electronic resource] . - NPP 'Service Garant "MMXVII.

16. ordo Russian Foederatio of Ministerio rusticae de 25.02.1999 N XCII

17. Decretum 12.10.2013 numerus CMXXII Government (ut emendari queat in 01.15.2015). "In Federal Program Target" terram reclamatione ipsius progressio pro rusticarum usus 2014-2020 Russia "- URL: http://consultant.ru/document/ .

RA18 Ad decimumoctavum dicendum progressionem autem agriculturae terram reclamatione ipsius in Sarmatia / AV KOLGANOV, NV Arente Skin VN, Schedrin V. N., ed. V. N. Schedrina. - Novocherkassk: RosNIIPM, 2016 - p CCXXII.

19 Russian universa de agro-industriae progressio innovative ad tempus belli ascendit ad MMXX [Electronic resource]. - Reproduction of original: http: pandia.ru/text/78/227/27573.php .

20 Lex autem Foederatum January X, N IV-Fl MCMXCVI "De terra LENIMENTUM" (ut emendari queat) Access: http://base.garant.ru

21. Shchedrin ipsi VN Current status progressio in posterum, et in terram reclamatione in Sarmatia / N Schedrin V. // Rationalis Problemata aperui in hujus usu prirodohozyaystvennyh complexa drylands: Sat. scientific. illustr. Intern. doctrinalis et practicalis. conf, Zaymische salsissimo claudentur: 22-23 Maii MMXV - S. 340-352.

22. Shchedrin ipsi VN Irrigation System of Russia in saeculum saeculi / Schedrin V. N., W. KOLGANOV SE, SM Vasiliev sicut supra dictum Churaev. In duas partes. - Part 1 - Novocherkassk: SRSTU (NPI), 2013. - CCCXCV p.

23. Shchedrin ipsi VN Atque usu et irrigationes chernozems types modo de Europae parte meridionali Russia: Books / VN Shchedrin: S. M. Vasilev. - Novocherkassk: Lick, 2011. - CDXXXV p.

24. progressio in Russia per terram reclamatione ipsius agriculturae / AV KOLGANOV, NV Arente Skin VN, Schedrin V. N., ed. V. N. Schedrina. - Novocherkassk: RosNIIPM, 2016 - p CCXXII.

25. UT Green Economy: Sustainable meatus ad progressum et paupertatem exstirpatione. Access: http://www.unep.org/greeneconomy

26. Green Economy: «omnium» sic de - Analysis de re propositiones contexuerunt habueritis UNCSD 'nullus capturam ". [Electronic documentum]. Aditus - URL: http://www.ecoaccord.org/rio20/news/6.htm /

27. UT Green Economy: meatus ad progressum et paupertatem exstirpatione Sustainable: UNEP, MMXI [electronic resource]. Access: http://www.unep.org/greeneconomy

---

1. Russian Scientific Research Institute of Land Improvement Problems, Novocherkassk, Russian Federation
2. Russian Scientific Research Institute of Land Improvement Problems, Novocherkassk, Russian Federation
3. Russian Scientific Research Institute of Land Improvement Problems, Novocherkassk, Russian Federation
4. Russian Scientific Research Institute of Land Improvement Problems, Novocherkassk, Russian Federation
5. Russian Scientific Research Institute of Land Improvement Problems, Novocherkassk, Russian Federation

6. Novocherkassk Engineering and Land Reclamation Institute named by A.K. Kortunov, Novocherkassk, Russian Federation

Contact email: rosniipm@yandex.ru

Revista ESPACIOS. ISSN 0798 1015
Vol. 39 (Number 12) Year 2018

[Índice]