



Saint-Petersburg
Mining University



XVI INTERNATIONAL FORUM-CONTEST OF
STUDENTS AND YOUNG RESEARCHERS
“TOPICAL ISSUES OF RATIONAL USE OF NATURAL
RESOURCES”

UNDER THE AUSPICES OF UNESCO

17-19 June 2020

SCIENTIFIC CONFERENCE ABSTRACTS

VOLUME 2

SAINT-PETERSBURG
2020

УДК 001:(622+55+669+33+502)=111

ББК 26+33+35.514+34.3+65

M432

The Volume contains works of young researchers - participants of the XVI International Forum-Contest of Students and Young Researchers “Topical Issues of Rational Use of Natural Resources”, which was held at St. Petersburg Mining University on June 17-19, 2020. The Volume can be of great interest for a wide range of researchers, scientists, university lecturers, specialists and managers of industrial enterprises and organisations as well as for businesspeople involved in exploration, prospecting, development and processing of minerals.

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EFFICIENT USE OF RESOURCES IN THE FIELD OF ENERGY EFFICIENCY THROUGH THE PRINCIPLES OF THE CIRCULAR ECONOMY

The energy transition is one of the most important environmental problems of the 21st century. One solution that will help accelerate this transition is a circular economy. The approaches of the Ellen MacArthur Foundation, the report of the Greenpeace organization, the report of the World Wind Energy Association (WWEA), the report of the International Geothermal Association, Europe 2020 Strategy, and the European Commission study are systematized. The novelty of the article is that: a category of efficient use of resources in a circular economy is defined; types of energy are systematized for sustainable development: a balance of economic, social and environmental components, through a model of circular economy, which will achieve resource conservation in the field of energy efficiency.

The approaches of the Ellen MacArthur Foundation, the report of the Greenpeace organization, the report of the World Wind Energy Association (WWEA), the report of the International Geothermal Association, Europe 2020 Strategy, and the European Commission study are systematized.

Having studied the various approaches of the authors to the definition of these concepts by comparison and analogy, we can conclude that the Concept of the circular economy offers effective business models to ensure more environmentally friendly resource use, contributing to the achievement of the goals of sustainable development of society.

The article used historical and statistical methods, as well as a systematic approach to the study of economic phenomena [systems approach in economics], which helped to identify the relationship of all elements, accounting for these relationships and the study of individual economic objects as structural parts, identifying the role of each of them in The general functioning of the circular economy and its impact on individual elements. The method of comparison and scientific modeling reveals the role of the circular economy in resource conservation, minimizing waste and reducing environmental pressure while achieving significant economic and social results

The first step is to change our systems by switching from carbon-based energy (oil, gas, coal) to clean energy (solar, wind, hydropower, etc.). But it is also important to act on the principle of energy efficiency, which is to measure the difference between the actually used energy and the total energy consumed (often higher due to losses) and, accordingly, in order to reduce consumption. The principle of the circular economy is to achieve the most efficient use of resources. Therefore, it is the main lever for the development of innovative solutions for the transition to clean energy [1].

The circular economy offers increased resource efficiency; more environmentally friendly resource use, separation of welfare from resource consumption; reuse and recycling involve the use of primary resources. At the same time, they reduce our dependence on such resources. It improves our capabilities and the ability of future generations to meet their needs.

Our studies have allowed us to state that the concept of a circular economy acts as a practical basis for resource efficiency and offers effective business models to ensure more environmentally friendly resource use, contributing to the achievement of sustainable development goals of society.

The circular economy is based on a paradigm shift: waste turns into a resource. Efficient use of resources means reducing the amount of resources needed to produce a unit of output, that is, simply put, doing more with less. Reducing the consumption of resources (such as raw materials, energy and water) not only leads to a reduction in by-products (including waste,

wastewater, air pollution and greenhouse gases per unit of production), but also reduces the demand for the supply of these materials upstream, as well as Entrances along with their environmental costs.

Consequently, it is an economy of recovery and reuse. At the same time, it transforms production chains and consumption patterns and does not link GDP growth with the use of natural resources.

It will be important to invent new economic models and think outside the box, as for cities, so that efforts to improve resource efficiency remain available to government agencies and companies, as their quality of supply and competitiveness must be maintained. The European Union can make a significant contribution, in particular through legislative and regulatory policies that will stimulate innovation, encourage the development of alternative resources and stimulate initiatives [2].

World experience in implementing circular projects indicates that business models based on its principles are successfully used by many companies, including transnational corporations, including Apple, Coca-Cola, Philips, Renault, Unilever, etc. At the same time, widespread adoption this concept is constrained by many barriers due to the lack of sufficient experience in the practical implementation of such projects.

Resource efficiency makes economic sense. This is one of the basic principles underlying the entire circular strategy of the economy, and it is fundamental to green growth. Using less resource, more efficiently, you can maintain your competitive advantage, create green growth, create sustainable jobs and better protect the environment [3].

Transformation into a resource-saving, environmentally friendly and competitive low-carbon economy is one of the three goals of the 7th Environmental Action Program. To achieve this goal, we need to apply resource efficiency at every stage of the product life cycle: we must use eco-innovation to develop smarter products, produce and consume in a more reasonable way, and process and reduce waste in general.

REFERENCES

1. Circular economy and resource efficiency: a driver of economic growth in Europe European Issue n°331. [Access mode: https://www.robert-schuman.eu/en/european-issues/0331-circular-economy-and-resource-efficiency-a-driver-of-economic-growth-in-europe#ancre_1].

2. Energy security. Terms and definitions / Ans. Editor Corr. RAS Voropay N.I. - M.: IAC Energy2005.

3. Energy and Economy Kurt Yeager (Electric Power Research Institute and Galvin Electricity Initiative, USA) [Access mode: https://iiasa.ac.at/web/home/research/Flagship-Projects/Global-Energy-Assessment/GEA_Chapter6_economy_hires.pdf].

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ORGANIZATIONAL AND LEGAL ASPECTS OF USING SYSTEM OF RENEWABLE ENERGY SOURCES FOR INVESTMENT ACTIVITIES IN RUSSIA

At present, Russia is at the initial stage of diversification of electricity exclusively from gas and oil in favor of establishing the priority of renewable energy sources (RES). The relevance of the study lies in the fact that the legal regulation of the use of renewable energy sources (RES) as a fuel and for the production of electricity is a new area of Russian jurisprudence, which is at the initial stage of its development. The novelty of the study is the analysis of existing mechanisms for stimulating the production of renewable energy and the subsequent development of doctrinal proposals for legislative improvement of civil law