

Ecological Modernization: Intentions and Reality

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Abstract—The authors analyze the global practice of transition to environmental forms of energy in order to protect the environment. The article focuses on the discursive nature of the decisions made and the contradictions of their implementation. It is shown that Russia is involved in the global environmental movement, but takes just its first steps on this path. Further progress in this direction depends on the social and economic development and greening of consciousness.

Keywords—ecology; coal generation; renewable energy sources; Paris Agreement; carbon regulation; environmental awareness

I. INTRODUCTION

One of the modern trends of scientific knowledge is greening, aimed at optimizing the interaction of man and nature.

Even Descartes said that people "should become masters of nature" [1]. But the French materialists of the XIX century somewhat softened the accent and began to call a man "son of nature". However, the scale of society's activities in relation to nature in the era of the industrial revolution was not limited to anything. Anthropocentric type of "green thinking" dominated. Nature was perceived as an object of unilateral human exposure [2].

The increase in the pace of nature use since the second half of the XX century led to a paradigm shift: from the domination of man over nature to the co-evolutionary stage, to the idea of the joint development of nature and society.

The environmental crisis (occurred in the 60s) actualized the transition to new strategies of civilizational development. Since the 90s, the theory of ecological modernization has become popular among scientists. At the same time, the scientific categorical apparatus has been updated with the concept "social and eco policy".

Today, the task of environmental modernization appears in the light of the new concept of "nature":

- the natural environment is no longer regarded as an inexhaustible resource for human activity,
- ethical norms apply to the relationship of man with the natural world.

An approach to solve these problems is environmental modernization, based on technological and social

innovations aimed at protecting the environment and ensuring environmental safety. Such an approach is impossible without an ecocentric worldview that is being formed through education and science [3]. The driving forces of environmental modernization are: government, business, and public organizations, individuals (scientists, teachers, and engineers) [4]. Environmental issues have been the subject of national and international politics since the last quarter of the XX century. By the beginning of the XXI century they have become one of the key directions.

II. ENVIRONMENTAL SCENARIO: COUNTRIES VIEWPOINT

Theoretical awareness of environmental safety and practical actions in this direction not only often do not coincide, but also are in opposition and contradiction.

There is a correlation between the growth of energy consumption and welfare and, accordingly, between carbon dioxide emissions and welfare. One tenth of the world's population generates almost half of total emissions, 1% of wealthy Americans account for 5 times more emissions than the average person in the country.

Modern trends increasingly intensify this polarization and do not provide a basis for leveling social inequality, which could, for a certain period, at least not increase the environmental index on emissions.

At the same time, increasing the well-being of the population in Africa and Asia over the next twenty-five years (according to forecasts) will lead to an increase in energy consumption, which will further complicate the situation [5].

On the one hand, politicians sign the Paris Agreement (PS), which provides for measures to reduce emissions by 2020, on the other hand, they do not apply environmental legislation in developing countries.

The change in the European ecological landscape is associated with the transition in the foreseeable future to ecological forms of energy in order to minimize the impact on climate and environmental pollution.

In 2017, most EU countries signed an agreement to refuse to build coal-fired power plants by the end of the second decade of the XXI century.

Some countries did not follow the EU's decision to refuse production of hydrocarbons in favor of imports, citing their position as protection of their national interests.

According to Polish experts, own raw materials guarantee energy security by reducing dependence on raw materials (by analogy with gas). The EU, due to this position, had to adjust the plans for this country: limit emission parameters and guarantee subsidies, extending the transition period.

The main existing indicators characterizing the economic level of countries do not meet the requirements of "green modernization", and a number of them contradict common sense [6]. Thus, the oil spill automatically increases the GDP at the expense of the spent funds to eliminate the consequences. That is why in the middle of the first decade of the XXI century, an environmental index began to be applied when ranking the economies of countries, taking into account the measures taken to minimize emissions induced by the energy component.

In accordance with this index in 2018 the United States and Saudi Arabia were at the end of the ranking. Russia was ranked at the beginning of the sixth dozen countries, China - at the beginning of the fifth. The leading positions were taken by Sweden, France, and the United Kingdom, who in 2017 headed this rating.

Germany, which gives no more than 2% of harmful emissions, advocates the rejection of carbon energy and the closure of coal-fired power plants by the 20-30th of XXI century. Yet in the second decade, it is planned to stop coal mining and fill the need for it by importing. And this is despite the fact that coal accounts for up to 40% of the generated electricity (and in total 80% of the economy depends on fossil sources). Such a dramatic "energy turn" is caused by the solution of tasks aimed at strengthening geo-economic positions: minimizing dependence on raw material exporters, environmental protection. The projects of a number of national institutions show that renewable energy sources (RES) and gas power plants in the near future can replace nuclear power plants and coal generation.

On the other hand, Germany did not join the alliance of countries that advocated the cessation of the use of coal, arguing the position with large financial costs for closing mines and creating new jobs. In addition, the priority of the economic policy of the country is to ensure the business interests of automobile concerns, which make a significant contribution to raising GDP. (However, the emission of greenhouse gases is mostly seen in the transport sector, there are just more than 47 million diesel and gasoline cars in the country). German unions abandoned government support for climate strategy for the same reasons. Public opinion polls show that 4/5 of the population is ready for restrictions for environmental purposes, i.e. give preference to public transport (however, only a third of the population agree to give up on a personal car), 65% can forgo to fly by an airplane, etc.

Eco-tasks are accompanied by discussions in the professional community, referendums, and social movements. The environmental trend in Germany got an ideological tint, largely due to the position of the Green Party, the youth and adolescent movement for climate conservation and the fight against global warming. The latter is connected with various kinds of structures of climatic lobists, the Club of Rome

(who made a significant contribution to the harmony of the relationship between man and nature). Demonstrations are held weekly in a number of cities, gathering up to 40,000 teenagers, to demand the transition for renewables everywhere by the mid-30s of XXI century.

In the US, global warming issues are at the center of the political and party struggle. At one extreme there is a strategic project related to "the New Green Course", the unconditional transition to carbon-free energy generation, the abandonment of nuclear energy and the transition to renewable energy. This approach has been criticized by the expert community within the country. Among the arguments such a course is considered not to be realistic: it is nuclear power that provides half of carbon-free energy generation in the country.

At the other extreme there are practical actions in the environmental field within the country and in the international arena. In 2018, the US president announced his readiness to repeal the law regulating the amount of carbon produced by power plants into the atmosphere. In the same year, the withdrawal from the Paris Agreement was announced: the US not only did not ratify the international agreement, but also declared readiness to withdraw from it, since the PS contradicts national interests, inhibits industrial growth, its adoption is fraught with the loss of millions of jobs.

In 2019, the United Kingdom published the Unified National Energy and Climate Plan until 2035, which aims to reduce the share of fossil energy sources, giving priority to renewable sources and nuclear generation.

After a twenty-year break the country began to develop a project of a new NPP, not sticking to the concept of renewable energy.

Despite the fact that carbon dioxide emissions in the country are one percent, there is a strong protest environmental movement. This is due, among other things, to the concentration of bank capital in the country, its transboundariness. The "green" movement thus tries to influence an unethical business that does not take into account environmental demands, reformat it into an investment with the option "eco". It was under public influence that companies ranked according to this principle.

The Church in England also did not stay aside from modern trends and made a strategic decision to curtail investment in a non-green business that ignored decisions of the PA.

Ecological modernization in building a low-carbon economy is largely determined by the development of a regulatory mechanism in the field of taxation, innovation, and the development of adaptation methods.

FIP advocates for the introduction of a tax on emissions of gases with a view to a significant reduction by 2030. In countries such as Sweden, Switzerland, there is such an environmental tax. In Sweden, this is 120 euros per ton of carbon used. At the same time, other taxes are reduced.

In Germany, they do not adhere to this approach, citing negative consequences for the standard of living. This is evidenced by public opinion - only a third of the respondents were in favor.

The overwhelming majority of countries with carbon regulation use the mechanism of trading in quotas.

Three-quarters of all investments in renewable energy are invested by developed countries and a number of developing countries like Rwanda, Guinea.

Significant success on this path reached the Scandinavian countries. By 2017, Denmark was ahead in the introduction of solar and wind turbines, high rates (but less than half) in Uruguay, Germany, and Ireland. But by 2019, in general, investments in solar energy have decreased by almost a quarter; they have grown by 3% in wind energy.

In Ireland, in some states of America, Germany, in certain periods, the demand for electricity from renewable energy sources was supplied by 55% -66%.

Japan, whose possibilities for renewable energy are limited, has drawn up a Basic Environmental Plan until 2030 and proclaimed the construction of a "hydrogen society".

Despite the fact that within two decades, renewable energy in the global fuel balance will increase, the use of traditional fuels will also increase by a third depending on countries and types of energy. (This will be facilitated by the low cost of electricity from coal and not common profitability of renewable energy).

According to other Western calculations, in 30 years in Europe it will be possible to supply all energy demands through renewable energy sources, primarily solar and wind energy.

III. ENVIRONMENTAL ASPECTS OF POLICIES: RUSSIAN FORMAT

Russia took the first steps in this direction back in 1992 when the Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea was signed. To fulfill its conditions, the Russian side (Lukoil) has developed a zero discharge technology. Environmental monitoring of Russian facilities on the Baltic and Caspian Sea shelves did not reveal a single violation [7].

In 1996, the Concept of the transition of the Russian Federation to sustainable development was approved.

In 2012, the "Fundamentals of state policy in the field of environmental development of the Russian Federation for the period up to 2030" were approved.

In 2015 the "Concept of the formation of a reporting monitoring system and verification of greenhouse gas emission in the Russian Federation" was adopted.

From January 2015, the basic law "On Environmental Protection", came into force, according to which the industry must improve environmental regulation and use only the best available technologies (BAT).

By 2030, the Russian side pledged to limit greenhouse gas emissions to 70 - 75% of the 1990 level. Russia proposed the creation of a new direction for the development of civilization - a nature-like: "It should be about creating fundamentally new nature-like technologies that do not cause damage to the surrounding world, but exist with it in harmony and will restore the balance broken by man between the biosphere and the noosphere" [8].

In April 2016, Russia signed the Paris Agreement - an agreement under the UN Framework Convention on Climate Change.

When discussing the issue of ratification of PA the problem of climate change and the role of anthropogenic and natural factors in this process turned out to be in the center of scientific discourse. The points of view can be summarized as follows.

First, the role of anthropogenic factors in climate change is an artificial problem; they give only 5% of emissions and cannot be decisive:

- temperature fluctuations have always been observed, even when there was no economic activity at all,
- the climate depends on solar radiation and the natural greenhouse effect of the planet (the ability of the atmosphere to retain heat). Increased carbon dioxide emissions are not the cause of climate change, but its effects. Studying the ultra-long-term cyclic of cosmic phenomena, it became clear that "Solar activity during the times of ancient Greece and Rome was about the same as at the end of the XX century (it was much lower in the Middle Ages) ... cosmic factors influenced climatic conditions, and this led to death of ancient civilizations" [9],
- climate fluctuations are associated with the specifics of the orbital motion of the Earth, primarily with the secular decrease of the axis of rotation of our planet,
- the release of methane, which is not associated with industrial activity, also affects the increase in temperature and enhances the greenhouse effect.

Second, warming is not observed, the Arctic ice is only increasing. Niagara Falls recently has frozen several times, etc. Supporters of this approach believe that if global warming is considered an axiom, then the ratification of PA by Russia will lead to an increase in electricity prices, the collapse of entire industries and multi-million unemployment. [10]

Third, the warming factor does not cause objections on the basis of anthropogenic and natural causes and has positive and negative sides.

In 2019 "Ecology" was allocated to a separate national project, the format of which has not yet been completed. Statistical data on target indicators are not published. But there are also positive developments: the assessment indicator, reflecting the effectiveness of power in this direction, is included in the criterion "environmental quality".

In May 2019, the energy security doctrine was adopted, where one of the challenges for the fuel and energy complex of Russia is the development of alternative energy sources, which indicates the recognition of the need for "green energy".

The national carbon regulatory system in Russia is not yet fully developed and is under discussion. In August 2018, in Russia a project on the inclusion of non-tax payments was published, including environmental payments, and environmental impact into the Tax Code. New approaches to taxation have caused opposition primarily from business, as well as scientific experts. In 2019, after significant amendments, a new project was published, regulating the relations of business and government in this context. The beginning of the reforms implementation was decided to be postponed until 2021, thereby creating the conditions for business adaptation.

In 2019, a new version of the draft law on the regulation of greenhouse gas emissions was also at the center of the discussion (draft Federal Law "On State Regulation of Greenhouse Gas Emissions and Amendments to Certain Legislative Acts of the Russian Federation"). The discursive nature of the discussion strengthened the proposal of the Ministry of Natural Resources to ratify the Paris Climate Agreement.

Here are the main points put forward by scientists and practitioners:

- Emission control instruments should apply not only to production, but also to the scope of operation (road and air transport);
- carbon certification of vehicles is needed (air, sea etc.),
- use a differentiated approach combining incentives with tax payments,
- test alternatives in pilot environmental projects,
- scientifically justify the priorities of the tax mechanism and the mechanism for trading quotas,
- develop adaptation measures in the face of increasing emissions,
- create a unified international methodology for accounting for greenhouse gas absorption by forests, thereby leveling the paradoxical situation when the forestry of Finland and other countries is more effective in absorbing harmful emissions than in Russia.

On the way to the implementation of environmental modernization in Russia the following is needed:

- reformatting public administration – "ecology is not a brake on the economy" . The implementation of this turn is complicated by the scale of the Russian economy, slow growth, cold climate;
- development of the adequate business regulation models, creating conditions for transforming

commercially unprofitable "green" projects into investment-attractive ones, so that financial structures take into account environmental challenges when placing investments. Ultimately, minimize the watershed between the state and business in accordance with the concept of "green" energy [11];

- apply modern technological solutions, create "clean technologies". The Ecology departments of universities play its role in addition to leading research centers" (for example, BMSTU) [12] [13];
- to develop RES, especially in hard-to-reach regions (Yakutia, Sakhalin, Transbaikalia) and to consider as potential for the future. If in a number of countries, renewable energy makes up 40% of the energy balance and more and the task is set to the middle of the XXI century to double this figure, then in the Russian format by the middle of the XXI century only 5%.

IV. CONCLUSION

Overcoming inertial thinking in this context requires a whole range of communication strategies in order to change mental attitudes, the formation of environmental awareness. Here, the humanities with their ability to think critically and dynamically, to offer multi-vector solutions are called upon to play their part [14].

New ideological meanings do not automatically settle in the mind, but in the era of information and communication technologies and the education system "through life" with its distance forms, fertile conditions are created for the greening of consciousness [15].

Ecological modernization is regarded today by the world community as one of the main strategies - for international consciousness has become "greener" so much.

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