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Modern Tools for Sustainable Development of Territories. Special Topic: Project Management in the Regions of Russia

TO A QUESTION OF BAT DEFINITION WITHIN THE NATIONAL ECOLOGY PROJECT

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Abstract

Basic research proves the urgent need to change the principles of managing the world economy and supporting national and regional initiatives aimed at improving the efficiency of resource-saving programs and greening production processes. The creation of a green economy model in Russia within the framework of the Ecology National Project, which is a special economic system whose goal is to increase the well-being of society, reduce environmental risks and the scarcity of natural resources, which ultimately means ensuring the sustainable development of domestic regions, relates to these tasks.

The best available technologies (hereinafter referred to as BAT), as an environmental policy tool, are aimed at reducing the negative impact on the environment, but at the same time they have a direct impact on the economic policies of economic entities, as they inevitably lead to modernization of production. At the same time, the transition to the best available technologies implies, first of all, the introduction of technologies that prevent environmental pollution due to the more efficient use of raw materials and energy resources (resource saving and increasing energy efficiency of production).

The Ecology National Project provides priority funding for the implementation of the best available technologies through extrabudgetary sources of funding, and therefore the task of reviewing the main methods by which enterprises and regulatory bodies will be able to analyze the availability and effectiveness of using BAT, as well as the task of determining the main criteria, which allow one or another technology to be considered the best.

Keywords: Best available technologies (BAT), ecology, sustainable development.

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1. Introduction

Reforming the country's economy in order to bring it to "green" standards is carried out in the conditions of a sharp reduction in the sources of financing environmental projects and complicating the provision of their return on investment; therefore, the "green economy" can be regarded as a "driver" of demand for innovations arising from the ecological modernization of production and technologies. The stimulating effect of the "green economy" affects economic growth in almost all sectors of the economy, most quickly manifesting itself in the fields of water, heat, electricity and sewage, environmental transport and construction, the use of alternative energy sources (Qu, Sun, Guo, & Yu, 2016).

It goes without saying that such modernization cannot be carried out without a sufficiently large investment, therefore, the main constraints for creating a "green economy" are the shortage of long-term resources and the irrational distribution of investment capital, related both to making institutional mistakes and to misunderstanding or deliberate reluctance of business entities to make investments into environmental projects.

Improving the environmental situation in such regions is associated with diversification of the regional economy, deep modernization of the industrial complex, the use of resource-saving technologies, the introduction of modern management practices, methods of public-private partnerships (Craig, 2017). A huge role here is given to the support, including financial one, that the regions can receive as part of the national environmental project, participating in the subprojects "Clean Region", "Clean Air", "Preservation of Unique Water Objects" and "Forest Conservation".

A competent and balanced environmental policy should be aimed at achieving concrete results related to the concept of sustainable development (Shmelev, 2012). But so far, the state, while cooperating with business, is stimulating it, and not motivating it towards environmental modernization. The implementation of the principles of the best available technologies (BAT) should be such a motivating mechanism, the use of which, even on a voluntary basis, is beneficial to all participants of this process.

2. Problem Statement

Currently, there are only two mechanisms for economic incentives for the introduction of BAT: the provision of loans to industrial companies on favorable terms for the development of import substitution and export-oriented production and transition to BAT, as well as the conclusion of so-called special investment contracts (agreements between the state and the investor, which assumes obligations under the creation or development of industrial production in Russia, including based on BAT, for a period of up to ten years, during which the newsroom is guaranteed unchanged business conditions) (Gusev, 2018).

It is necessary to create conditions under which the planned mechanisms of economic incentives for the transition to BAT will be available to the regulated community. At the same time, accessibility means not mitigating requirements, but the maximum reduction of administrative barriers during the passage of state support procedures. Similar work should be done with respect to the sanctions that are planned to be applied to enterprises for violation of the deadlines for implementation and refusal to introduce BAT: increase in payments to sizes comparable to the costs of cleaning emissions and discharges (setting up – 25 and 100 – coefficients for calculating payments), the introduction of new

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compositions of administrative violations and an increase in fines. These measures should provide an additional economic incentive for the transition to BAT. The lack of incentives to upgrade production capacities and introduce new technologies has become one of the reasons for abandoning the old system of environmental regulation. Thus, the application of such mechanisms of economic incentives as the provision of benefits and the imposition of sanctions should give a clear signal to industry participants, indicating that there is a clear benefit from improving environmental efficiency.

3. Research Questions

In Russia, there is a standardized methodology for determining BAT, which is based on the assessment and selection of technologies (methods, means) for preventing and controlling industrial emissions. In our country, BAT are not legally binding, but emission levels corresponding to BAT (associated emission levels, BAT-AELs) provide the basis for establishing environmental permit conditions and are legally binding on industrial enterprises.

The main issue addressed in the course of this study is the establishment of criteria or a list of indicators according to which a technology can be recognized as the best.

4. Purpose of the Study

The aim of the study is to develop an algorithm for determining the technologies as the best, to carry out a comparative analysis of the BAT implementation procedure in different countries using a SWOT analysis of the BAT determining process to identify its strengths and weaknesses, and to identify the main problems that impede the effective implementation of the best available technologies in domestic enterprises of the real sector of the economy.

5. Research Methods

The transition to a “green economy” in our country will be regulated by the national project “Ecology”, each direction of which was prepared jointly with the regions of the Russian Federation, and the list of activities and objects of environmental management was coordinated taking into account the needs of each territory and the real environmental effect. In the structure of the national project “Ecology”, which includes 11 federal projects, four classification groups can be distinguished.

1. Projects aimed at ensuring the cleanliness of a certain management object
2. Projects related to the management and safe disposal of waste
3. Projects related to maintaining the ecological balance of natural complexes
4. Projects related to the introduction of new environmentally oriented technologies

Figure 01 shows a diagram of the formation of supply and demand in the market for the best available technologies, from which we can see that the same industries can act both as consumers and sellers of BAT.

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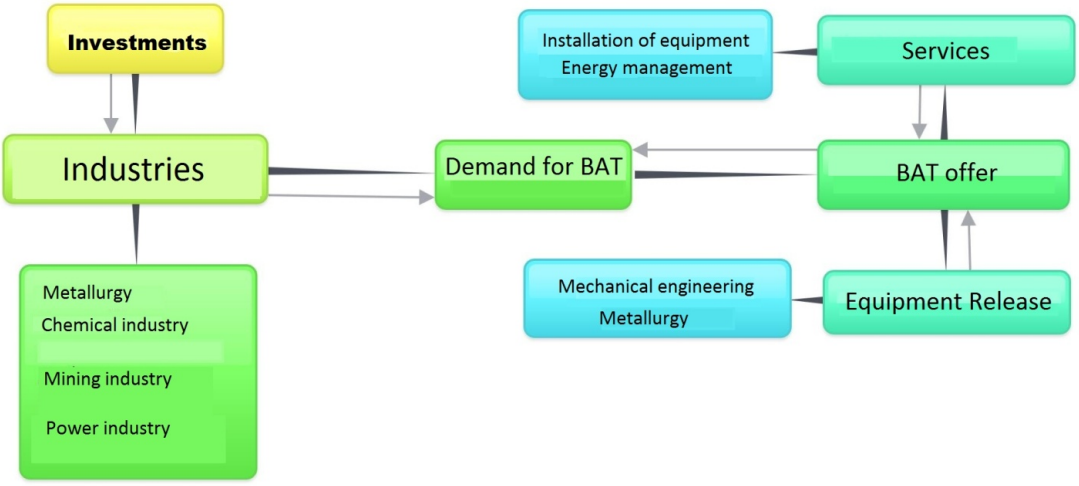

Figure 01. Forming supply and demand for the best available technology

The largest expense item of the national Ecology project provides for 2.4 trillion rubles specifically for expenses related to BAT. In addition to social motivation, there is an economic motivation for enterprises to switch to the principles of BAT: most often, new technologies are not only more environmentally friendly, but in general enterprises become more cost-effective due to modernization (Sheveleva & Tyaglov, 2019). In addition, enterprises that have implemented BAT will pay less for negative impact on the environment or will not pay at all.

Note that when calculating the BAT program, the figure was 4-4.5 trillion rubles, but it was reduced just at the request of companies in order to adjust their real production capabilities with government plans. According to experts, investing 2.4 trillion rubles entirely at the expense of the companies themselves is a rather difficult procedure, so now this figure is more likely to be desirable. But, nevertheless, considerable money will be spent on modernization – in all large structures, financial and industrial groups, budgetary funds have been allocated for greening of the production.

Due to the fact that it is extremely urgent to determine which of the introduced technologies should be recognized as the best and how to set the criteria for classifying the technology as BAT, we consider the experience of a number of countries (see Table 01) regarding the procedure for determining and implementing BAT. In Russia, this procedure is regulated by the relevant Decree of the Government of the Russian Federation (The resolution of the Government of the Russian Federation, 2014).

Table 01. A comparative analysis of the procedure for determining and implementing BAT in developed countries of the world (compiled by the author in accordance with (The best available technologies, 2018)

Category	Russia	China	USA	EU Countries
Criteria for selecting technologies as the best	Based on five criteria established in the Decree of the Government of the Russian Federation "On the procedure for determining Technology as BAT, as well as the development,	Based on the criteria listed in each manual, which typically include an integrated examination of the raw materials of production processes, technologies,	The law and regulatory documents on its implementation set specific factors that should be taken into account, and the criteria for the rigidity of programs for	The main criteria are the key environmental aspects and pollutants in the industry, economic feasibility and technical aspects

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	updating and publication of ITR BAT": environmental impact, economic efficiency, resource use, implementation period, successful implementation on two or more Russian facilities	environmental management measures, levels of resource consumption and emissions, types of pollutants and operator compliance with ELVs	emissions into the air	
Peculiarities of the BAT methodology	Stakeholder attraction, an objective choice of technology	BAT may contribute to achieving ELVs	Performance standards are generally applied in a quantitative form of marginal emissions, giving companies the flexibility to adjust how ELVs are adhered to, taking into account costs and other factors	The methodology is tested and trusted, reliable and guarantees an improvement in the environment
Issues of the BAT Implementation	Short deadlines for preparing BAT documents, not all parties are ready to participate, small enterprises are poorly involved	Notable lack of transparency, problems of responsibility for achieving ELV, if BAT fail to provide results	no data	Limited resources, a long response time to rapid technological transformations, assessment is not based on life cycle principles

In the EU, the Russian Federation and China, there is a standardized methodology for determining BAT, in the US there is no universal standardized methodology for identifying BAT, the procedures differ for different programs and states. In most countries, the choice of industries for determining BAT is based on a more or less formalized assessment of their environmental impact. In the Russian Federation and the EU, a list of industries, or criteria for their selection, are part of the law. The BAT determination procedure adopted in all countries involves the initial collection of information on technologies for the prevention and control of industrial emissions (Burkov, Novikov, & Shchepkin, 2015). First of all, this is done with the help of questionnaires and meetings of interested parties, in some cases – interviews, submitting data online through registration points, as well as a review of literary sources.

In all of the countries reviewed, part of the technology assessment is the consideration of technical and environmental, and in most cases, economic aspects. In some cases, social and other factors, such as biodiversity, are taken into account. There is a hierarchy of technologies in the EU and the Russian Federation, preference is given to solutions integrated into the production (technological) process over "end of pipe" technologies.

Countries' policies in the field of BAT are extremely different in nature: the fact that they were first applied at different times reduces the possibility of comparing the characteristics and limitations of the procedures for determining BAT. Nevertheless, a certain similarity of the strengths and weaknesses of the BAT determination processes can be noted. To do this, we carried out a SWOT analysis of the BAT determination process, during which the strengths and weaknesses of this process, as well as the

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opportunities and prospects for determining BAT determined by them and the risks associated with this process were identified. Let's look at the main results of the study presented in the figure 02.

One of the undoubted advantages of the methodology is the use of the BAT-based approach to the determination of emission limit values. In all countries, technology assessment and/or identification of BAT are part of or serve as a means of identifying legally binding ELVs. This approach to identifying binding ELVs is beneficial in terms of preventing and controlling industrial emissions. It should be noted that some national experts emphasize the benefits of empowering industrial facilities to freely choose their preferred methods for achieving ELVs, using BAT as a guide tool rather than a prescription.

At the same time, some participants of the process point out possible weaknesses in the mandatory execution of ELVs only, excluding BAT, as this may lead industrial operators to neglect preventive measures and predominant application of solutions “at the end of the pipe”. To stop this trend, a number of countries have introduced mechanisms for ranking technologies to prevent the formation of emissions into the procedure for determining BAT. The second possible solution to this problem is to develop ELVs based on specific performance rather than concentration.

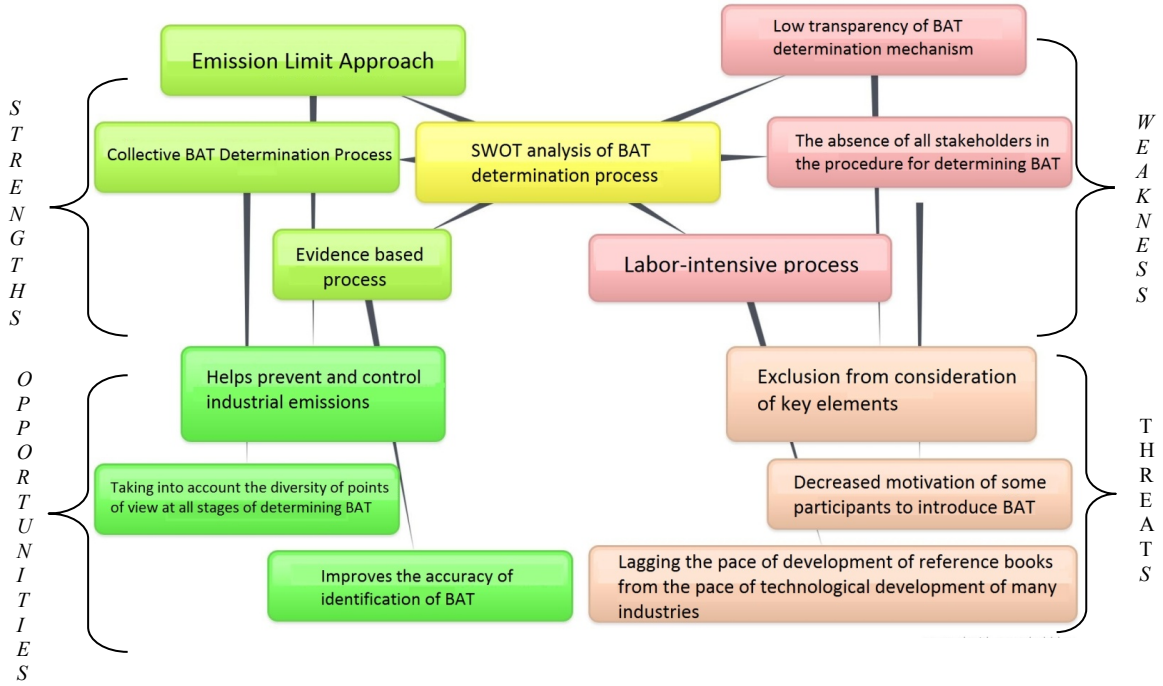

Figure 02. SWOT analysis of the BAT determination process

Another strength of the BAT determining process is peer review. In all the countries we analyzed, BAT and ELVs documents corresponding to BAT indicators are the result of multilateral cooperation, often with the participation of experts from government agencies, individual representatives of the industry and industry associations, public organizations and research institutes. The purpose of this process is the need to take into account the diversity of points of view at all stages of determining BAT, which makes it possible to provide a solid foundation for establishing ELVs.

However, some stakeholders note that the BAT determination procedure is not transparent in their countries. Stakeholders appear to have some difficulties in obtaining information or motivating the determination of BAT, ELVs or their elements. Another problem is that although in theory

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representatives of all interested parties should participate in the process of determining BAT, this is not always the case, as representatives of small companies or industry associations often do not have sufficient resources for this. In other cases, stakeholder groups – even if they have the necessary resources – do not seek to share significant opinions or information, economic information in particular, which could potentially affect the process of determining BAT by excluding key elements from consideration.

The third advantage of the methodology for determining BAT is its reliance on factual data. In a number of countries, the BAT determination process is based on an in-depth analysis of monitoring data, which enhances its value. A properly selected emission monitoring system that transmits high quality data seems very useful in identifying BAT, and some countries that do not have such systems consider this a drawback. As mentioned above, in many cases, the lack of access to data on the economic aspects of technology is an obstacle to an adequate determination of BAT. Although some of the participants of the process, such as operators and industry associations, have this information, they are not always ready to provide it due to strategic reasons.

The weakness of the approach adopted in many countries is the significant time spent on identifying BAT and finalizing documents on BAT, which can take from one to six years (depending on the country). This is in sharp contrast with the rapid technological development of many industries. Experts from some countries consider the lack of a tight time frame a drawback. Some also indicate that BAT preparation procedures often require a large amount of resources. On the other hand, representatives of countries where a short deadline for the development of BAT documents has been adopted note that a tight schedule can adversely affect the quality of documents.

6. Findings

Analysis of all the problems hindering the active implementation of the best available technologies allows us to single out the following as the main ones.

1. The lack of a unified system of target indicators characterizing the success of introducing the best available technologies as a phenomenon and process, which complicates the modeling of developments in this area.
2. The uncertain nature of the concentration of efforts on primarily finding the solution to local or global environmental problems.
3. The impossibility of applying big foreign experience of the use of a number of instruments due to the lack of full state support, since these instruments are exclusively of a market nature.
4. The difficulty of identifying best practices in organizing environmental investments through public-private partnerships.
5. Unreadiness of business to switch to new environmentally friendly technologies and modernization of production: if some companies perceive the “green development” model as a way to increase the competitiveness of the business, others see it as another expense item that increases the cost of production and prices for the buyer;
6. Identification of the “green economy” with a low-carbon/non-carbon economy, which leads mainly to support for carbon-free energy producers.

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7. Conclusion

In current conditions, the database on the used technologies and BAT should contain information on quantitative and specific volumes: anthropogenic impact on the environment, energy consumption and indicators of energy efficiency, resource consumption and indicators of resource efficiency, cash costs and indicators of economic efficiency, as well as features and complexity of practical the application of technology, regarding the features and capabilities of the environment to neutralize the anthropogenic impact on technology application areas (McKenzie, Hyatt, & McDonald, 1992).

Such a database is a necessary information product for designers, business executives, business representatives, and consumers in order to select the most optimal technological solution in specific environmental conditions of the technology application area (Potapov, 2015). At the same time, the state has the right to regulate this choice, but not by the criteria for categorization, but by the norms of maximum permissible emissions (MPE), based on the environmental capabilities in a particular area of application of this or that technology. This approach is enshrined for countries internationally by the principles of the UN Declaration on Environment and Development.

Thus, the primary indicator of the effectiveness of technologies should be an indicator of the amount of environmental impact that allows you to decide on the possibility of using this technology at a given territory. All other indicators – energy efficiency, resource efficiency, economic efficiency are also basic, but are subsequent when choosing a technology for its application.

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