Machine-Building Enterprise Sustainable Development Level Assessment

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Abstract. Most of the countries of the world strive to be committed to the Concept of Sustainable Development and develop their own national system for monitoring progress towards the implementation of the 17 global Sustainable Development Goals. In most cases, implementation is ensured through the national projects that have an infrastructure nature. At the same time, it is very appropriate to use the achievements of business organizations, primarily industrial enterprises, which include environmental and social goals as providing direct production activities. These goals and, accordingly, the indicators that evaluate them, reflect the process activity of the enterprise. The study shows the role of the project activity of the enterprise, which ensures the successful implementation of process goals within the functional direction (by the example of the environmental and social spheres of ensuring the production process of the enterprise). As a result of the analysis of the industrial enterprises standard reporting, indicators that meet the parameters of sustainable development approved in the Russian Federation, are identified. Recommendations are given for expanding the sustainable development goals that an industrial enterprise can meet in the framework of ensuring its production activities.

1 Introduction

The problem of the modern world sustainable development was proclaimed in June 1992 in Rio de Janeiro at the UN International Conference on Environment and Development, enshrined in the "Rio Declaration-92", in the agreement "Agenda for the XXI Century", accepted by 170 countries, and is now increasing its relevance with incredible force. Having a planetary significance, the concept of sustainable development is embodied in 17 common goals (2015); the task is to decompose them at the level of national states in order to monitor their implementation.

The study of the quarter-century-old practice of implementing the concept of sustainable development, implemented by different countries [1-4], allowed us to conclude that this practice is carried out in three variants:

1-development of legislative initiatives that prescribe business conditions for its existence in terms of environmental and social requirements for production, labor protection and safety,

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consumer protection, and the promotion of the idea of an "ecological red line" (environmental restrictions-the example of China);

2-creation of regulatory bodies that have the authority to regulate business activities. For example, in the United States, the Environmental Protection Agency (EPA), the Occupational Safety and Health Administration (OSHA), and the Consumer Product Safety Commission (CPSC); in Switzerland - the Interagency Committee on Sustainable Development (ICSD); in Germany and Japan - the Sustainable Development Councils, which serve as advisory bodies to the Federal Government and all Ministries, etc. Example of China: The Administrative Center for Sustainable Development - a body under the Ministry of Science and Technology that manages current activities and manages projects and their evaluation, organizing research related to the sustainable development strategy;

3-promotion of the sustainable development ideas among business organizations and the public, involvement of the population in the process of its implementation; methodological support of the implementation of the ideas of sustainable development by state and local authorities at the policy level. Consultations with all stakeholders (business, public organizations, local authorities, the scientific community, etc.) on sustainable development issues.

In the same year, 1992, Russia committed itself to achieving the Sustainable Development Goals and immediately began discussing at the national level the problem of assessing the degree of their achievement. This was enshrined in the Decree of the Russian Federation Government No. 1522-p on August 19, 1992, on the basis of which an Interdepartmental Commission was established to develop proposals for the implementation of the decisions of the UN Conference on Environment and Development. By the Decree of the President of the Russian Federation on April 1, 1996 No. 440 the "Concept of the Transition of the Russian Federation to Sustainable Development" was approved, which remains the basic document defining Russia's policy in the field of sustainable development.

All three areas of activity for the implementation of the Sustainable Development Goals work, in turn, in two directions:

1-initiate national projects, for example, the Russian national project "Housing and Urban Environment", or the project "Labor Productivity and employment support", aimed at the implementation of certain sustainable development goals.

2-create conditions for existing business organizations in the form of goals and objectives that guide the activities of enterprises and organizations to achieve the goals of sustainable development. According to these process goals, business organizations report on their traditional indicators adopted in standard reporting.

The list of indicators can be further expanded as needed. The analysis of the current situation and the development of the necessary and sufficient number of indicators was the task of the study.

2 The problem elaboration degree

At the inter-State level, indicators of the Sustainable Development Goals are currently being developed to monitor the achievement of the goals, which is being implemented by the UN Inter-Agency Group of Experts on Indicators for Achieving the Sustainable Development Goals. It consists of 28 representatives of national statistical offices. Russia is also a member of this group and represents the countries of Eastern Europe.

At the level of the Russian Federation: By Order of the Russian Federation Government No. 1170-p on June 6, 2017, Rosstat is entrusted with the authority to coordinate the activities of the subjects of official statistical accounting for the formation and submission to international organizations of official statistical information on indicators for achieving the Sustainable Development Goals of the Russian Federation in accordance with the accepted

international standards for the exchange of statistical data. By Order of the Government of the Russian Federation No. 2033-p on September 23, 2017, the Federal Plan of Statistical Work was supplemented with subsection 2.8 "Indicators for achieving the Sustainable Development Goals of the Russian Federation". The section includes 90 indicators for achieving the Sustainable Development Goals in the Russian Federation. The discussion is still ongoing, and Rosstat invites all business organizations to participate in it. This problem is acutely discussed both in Russian [5-6] and in foreign practice [7-9].

An objective question arises: how to fit the traditional goals of existing enterprises and organizations into a new institutional and project structure that ensures compliance with the sustainable development goals?

The researchers set out to look at the problem of implementing the Sustainable Development Goals on the point of view of the performers, and specifically, industrial enterprises, the importance of which is great in the Russian economy. The sectors of the national economy that represent the domestic industry – mining, manufacturing, electricity, gas and steam-together make up a quarter of the Russian economy, which in practice confirms the importance of these industries for the entire Russian economy. Manufacturing industries occupy a significant place (13.5-15 %) in the domestic industry in the last 5 years in the structure of gross value added by economic sectors of Russia. Analysis of data for the same period is a practical confirmation of the priority nature of mechanical engineering (about 20%) among the "producing" sectors of the national economy[15].

3 Study purpose

It is obvious that industrial enterprises participate in the national projects implementation through the system of redistribution of the benefits created by them (through the functioning of the tax system). But it seems that the modern industrial enterprise itself (within the framework of ensuring its production activities) forms and implements, in addition to natural economic, also social and environmental goals.

Therefore, the purpose of the study is to find among the traditional goals, that evaluate the activities of the enterprise, those that are directly related to the implementation of both social and environmental goals.

4 Background and methodology

After analyzing the existing goals and official indicators of the industrial enterprise, reflecting the social and environmental component of its activities, an attempt is made to compare them with the currently adopted seventeen Sustainable Development Goals (global level) and with nine dozen indicators of sustainable development (level of the Russian Federation). Comparative analysis allowed us to establish compliance and come to conclusions about the addition of the existing set of indicators and make assumptions about the formation of a management mechanism for the sustainable development level of an industrial enterprise that ensures the implementation of the process goals of sustainable development.

5 Sustainable development goals evolution in industrial enterprises practice

Business, whose social responsibility has traditionally been limited to its contribution to economic growth, job creation and tax payments, is now being asked to take on a larger, more integrated task in the practical implementation of the 2030 Agenda, which is proposed to be

considered as a "road map" not only for countries and organizations involved in the process of increasing responsibility for the prospects for sustainable business development, but also for business organizations themselves. [10-11]. And the main place here should be taken by companies that put environmental, social and management indicators (ESG criteria-environmental, social and governance) and ESG investments at the center of their business strategies. Such companies should become business leaders, the main actors in the practical achievement of the Sustainable Development Goals by translating their profits into sustainable and inclusive economic growth, environmental protection and the fight against climate change.

Industrial companies, as one of the leading members of the business community, are expanding their participation in international sustainable development initiatives. The main activity of almost all organizations in the field of sustainable development is the dissemination of these ideas in order to incorporate them into the practice of companies. Among the organizations and initiatives that integrate the business community, we should highlight the UN Global Compact - the world's largest initiative in the field of corporate sustainable development, which unites 7.5 thousand companies and 4 thousand public organizations from more than 135 countries. Each participating company has made a voluntary commitment to align its strategies and activities with the universal principles of sustainable development. The Russian Union of Industrialists and Entrepreneurs is a member of the Russian Global Compact Network.

Despite the lack of legislative initiatives at the international and national level, industrial enterprises, represented by business structures and international associations of industrialists and entrepreneurs, take a responsible approach to the problem of sustainable development. The key motivations for the transition of industrial enterprises to sustainable development are external factors, primarily state regulation, which is largely based on international agreements. A wide range of international agreements in the field of the environment, primarily international environmental agreements, have been translated into state norms and the creation of regulatory bodies that force multinational corporations to comply with environmental and social legislation in the countries where they operate.

An analysis of the reporting indicators of industrial enterprises was carried out [12]. The Table 1 shows the indicators that are mandatory for reporting by an industrial enterprise, and reflect, respectively, the environmental and social components of the activity of an industrial enterprise (column 1, 2). The right (third) column contains the official indicators of the Sustainable Development Goals monitoring of Russian Federation. As you can see, the industrial enterprise reports on a wider range of environmental and social indicators than stated in the current set of monitoring indicators, developed by Rosstat. That is, the requirements of industrial enterprises are higher, and it makes sense to reflect in the monitoring indicators at least those components of the enterprise's activities that it already evaluates and, accordingly, manages them. For example, such significant components of the environmental assessment of production as the "concentration of priority pollutants" and the assessment of the volume of solid household waste disposed of in accordance with the requirements of environmental regulations, have fallen out of sight.

Table 1. Indicators of an industrial enterprise sustainable development: environmental and social components

Sustainable development indicators	Formula for calculation	Indicators for monitoring the SDGs of the Russian Federation
Environmental component ($Y_{ecol.}$)		
Concentration of priority pollutants	$\sum_{i=1}^k (a_i c_{if}/c_{in})$, where c_{if} , c_{in} - actual and normative concentration of the i-th pollutant, a_i -weight coefficients of pollutants	
Emission index CO ₂	CO ₂ concentration/MPC (maximum permissible concentration) of CO ₂	CO ₂ emissions per unit of value added
Degree of water purification	The ratio of the volume of wastewater treated and suitable for use as industrial (drinking) water to the volume of water consumed by the industrial enterprise	
Solid waste disposal	The ratio of the solid waste volume, disposed of in accordance with the requirements of environmental regulations , to the total volume of solid waste produced by the enterprise	
Energy intensity index H	The ratio of the energy intensity index of the enterprise to the value of this indicator of the enterprise-the industry leader. The energy intensity index is the ratio of the amount of energy consumed to the gross income of the enterprise.	Energy intensity, calculated as the ratio of primary energy consumption to GDP
Social component ($Y_{soc.}$)		
Frame stability coefficient	$K_{soc}=1-P_{left}/(P_{av}+P_n)$, Where P_{left} -the number of employees who left the company at their own request and because of violations of labor discipline during the reporting period, number of people; P_{av} - the average number of employees at this enterprise in the period preceding the reporting period, number of people; P_n - number of newly hired employees during the reporting period, number of people	
Salary level	The ratio of the average salary in the enterprise to the average salary in the industry	
Ensuring safe working conditions	The ratio of the total number of occupational injuries to the staff N for the reporting period	Fatal and non-fatal industrial injuries by gender and migration status
Professional development	Ratio of total professional development costs to gross income for the reporting period	

The goals of the enterprise, reflecting the social aspect, also have a production character and are inherent in the activities of the industrial enterprise. In this case, the indicators for monitoring the Sustainable Development Goals can be expanded. Scrupulous work with the enterprises of the industrial sector of the Sverdlovsk region allowed the authors to draw a conclusion about the "double" nature of setting goals by industrial enterprises.

On the one hand, enterprises set "traditional" goals for their development, referring them to the time perspective adopted in production planning – for example, to the year. The wording of these goals does not change from period to period. For this reason, these goals can be called "process goals" [13]. At the same time, it is possible to provide "project" goals [14]. The project goals of the industrial enterprise will be aimed at the implementation of "traditional process" goals. Table 2 shows examples of projects intended for implementation within the enterprise and aimed at achieving process goals. The columns "Greening of production" and "Social aspect of activity" reflect the goals, indicators and projects of the corresponding orientation. In general, Table 2 is a fragment of the Strategic Development Map of the enterprise, from which it can be seen that the direction of "Greening" and "Social aspect of activity" are an integral component of the activity of an industrial enterprise.

Table 2. Fragment of the strategic map of an industrial enterprise

Functional area	Goals-intentions	Indicators SMART	Projects
Finance	- Increase profitability of operations -Reduce production costs	- Profitability (R) - unit cost of production (C/V)	
Manufacturing	- Shortening the production cycle	- Cycle time (hours)	Modernization (robotization) of production facilities
Greening of production	Lower the production energy intensity index	Energy intensity	Installation of Class A energy consumption equipment
Social aspect of the activity	Ensuring safe working conditions	The ratio of the total number of industrial injuries to the staff N for the reporting period	Equipment modernization Conducting training on new equipment

This analysis allowed us to make a proposal to Rosstat regarding the national composition of sustainable development indicators, which consists of the following:

- when forming the list of sustainable development indicators, it is necessary to take into account the process goals of business organizations, primarily industrial enterprises, reflecting the environmental and social priorities of their activities
- focus on the expanded list of environmental and social indicators that are present in the official reports of industrial enterprises.

6 Conclusions

It can be concluded that the process of implementing the Sustainable Development Goals comes from two sides:

- from the top, from the 17 Sustainable Development Goals established at the interstate level;
- from below, from the performers (industrial enterprises), who partially implement the global Sustainable Development Goals through their process goals.

It should be borne in mind that the "project" sustainable development goals (national projects) are implemented at the expense of the budget and are, as a rule, of an infrastructure nature. The process environmental and social goals implemented by enterprises are executed at the expense of the enterprise, at the expense of its "economic" component of the triune goal of sustainable development.

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