Features of industrial management in the field of ecology

Oleg Burgonov¹, Dmitrii Kruglov¹, and Elena Ivleva¹
¹ Saint-Petersburg University of Management Technologies and Economics, 190103
Saint-Petersburg, Russia

burgonov@list.ru, kdvspb@list.ru, ivlevaes@mail.ru

Abstract. The processes of global reorganization make managers pay attention to environmental safety and regulation of economic systems. In modern conditions, it is possible to solve environmental problems only by accelerating the development of economic activity. An entrepreneur who seeks to improve competitiveness and becomes a leader, both at the international and national levels. This happens when the company’s management implements environmental programs related to financial activities and trade.

1. Introduction

Development of technologies and techniques concentrates the changes which after reaching a certain threshold will become an impetus for transition to a new technological paradigm. Emergence of the new paradigms will result in development of the economy. Leading European and global companies focus their efforts on moving from the 4th to the 5th level of process maturity [1]. As a result, new business lines and forms of management, as well as new industries are created. New terms appear in the economic science: green entrepreneurship, eco-entrepreneurship, ecopreneurship, eco-friendly products, green market, green business. The latter is about environmentally friendly business results (product) and environmentally friendly technologies of its production.

In parallel with origination of scientific management, new forms of organization of social labor will be prepared on the basis of relevant theoretical studies. Such studies will form methodological and theoretical bases of the next stage of science development. Use of the general scientific methods helps to summarize that we are at the threshold of a new form of industrial management. The management system itself becomes the most important intangible asset. Currently the researchers put forward an idea that the success of business in XXI century will be determined not only by achievements in development of production technologies, but also by the level of development of industrial organizations management. Business tries to improve its management using new methodology and tools [2].

The study supports the thesis that using the ecological concept of industrial management in the manufacturing enterprises is a strategic approach that makes businesses more competitive and socially responsible.

The purpose of the study is to identify the dependencies and relationships between various environmental factors and the level of development of industrial enterprises, as well as their impact on innovation activity, efficiency and competitiveness.
2. Setting the problem

Global restructuring processes force managers to pay attention to environmental safety and regulation of economic systems. In modern conditions the only way to solve environmental problems is to accelerate the corporate development. The entrepreneur strives to improve the level of competitiveness and becomes a leader, both internationally and nationally. It happens when the company's management implements environmental programs related to financial activities and trade. Entrepreneurship is not only creation of a product, but also creation of new values and ideas. However, if solutions to the problems are not known, the management needs consulting services on environmental management:

- about the existing regulations in the field of environmental management;
- for organization of training system for employees on environmental standards;
- for creation of an image of "environmentally friendly enterprise";
- on conducting a production policy aimed at transition to new types of raw materials, business processes, technologies.

It means that solving the initial problems will help small and medium-sized businesses to find additional ways for making a profit. The ecological acceptability of different activities should be checked during the examination. In the process of carrying out of such an analysis of the environmental component developed by the International Bank for Reconstruction and Development, it is possible to assess the environmental impact of investment projects planned for implementation. As market conditions change in the field of investment projects involving the use of low-waste technologies, it is possible to predict an increase in the role of consulting services. Companies operating in the field of technically complex products are not sufficiently studied. If you need a detailed analysis of the decision-making mechanism within the existing enterprise management system, the environmental problems can be considered by the marketing department. In this regard we see a formation of environmentally oriented market space and management.

Most prognoses related to the environment show that there is a beginning of global irreversible processes that may lead to disastrous results. Such scientists as D. Meadows and D. Forrester from the Club of Rome in 1972 in their work "The Limits to Growth" criticized the negative trends of human development [3, 4]. Pollution of the environment is an important indicator of civilization development, which will grow if effective measures are not taken. The development paradigm has four components: improvement of the environment, efficient use of resources, social and economic development. It should be emphasized that the measures taken to address the environmental problems at the state level are insufficient, often requiring a regional level, for example, the EU [5,6].

In addition to the 1996 concept of sustainable development, there are other documents in the field of environmental development. The Government of the Russian Federation, realizing the importance of movement in this direction, has made certain commitments in the form of "Fundamentals of the State Policy for the Period Until 2030" and the State Program "Environmental Protection for the Period Until 2020". Total amount of funds planned for "Environmental Protection for the Period Until 2020" program is 335.8 billion rubles. The main direction of creation of these documents is the balance of interests between the preservation of the environment and the interests of economic development. The purpose of the state policy in the field of ecological development is addressing the issues providing growth of nonpolluting economy [7]. Achievement of this goal is only possible through creation of an effective management system. The environmental policy is aimed at meeting the requirements of organizations related to environmental protection, which can lead to significant costs, for example, investments to bring agricultural enterprises in line with the standards of organizations for protection of animals.

Environmental management is usually associated with investments in environmental activities. Russian statistics traditionally take into account the costs of environmental objectives in three areas: for protection of atmospheric air, water resources, lands. We see an increase in costs for all rows of the table (table 1.) [8].
Table 1. Investments in fixed assets aimed at environmental protection and rational use of natural resources (in actual prices, million rubles; 1992 – billion rubles).

| Years | Total | Atmospheric air | Water resources | Land |
|-------|-------|-----------------|-----------------|------|
| 1992  | 53    | 9.2             | 33              | 7.1  |
| 2000  | 22339 | 7948            | 8251            | 3520 |
| 2005  | 58738 | 19839           | 26143           | 9206 |
| 2010  | 89094 | 28127           | 48025           | 9340 |
| 2015  | 151767| 40120           | 78941           | 15703|

3. Basic results
In Russia, environmental entrepreneurship as a segment of the national market appeared in 1988-1989. In 1991, there were more than 10 thousand enterprises that declared provision of environmental services, but only 20% of them actually worked in environmental field. In year 2000 their number increased, when reorganization of state environmental management bodies diminished the clout of this activity. Currently, there is a pronounced trend of activity in this economic sector.

Current types of environmental entrepreneurship in Russia are: wind power, solar power, hydropower, bio- and geothermal energy, production of energy-saving equipment, recycling and reuse of waste, etc.

In parallel, there are two types of environmentally oriented businesses: new business and established business which is able to shift to green technologies. The first is business, which is initially based on the idea of environmental entrepreneurship and is a new direction created in accordance with the idea of innovative development, being an accurate representation of sustainable development and environmental safety principles [9, p.102].

A survey of 47 respondents (managers) helped to identify the main trends and problems of development of environmental entrepreneurship in the Russian Federation. According to the largest number of respondents (79%) the main obstacle for them is lack of support from the state. The three main problems include the lack of a regulatory framework (21%), a tax and credit support (30%), the need to provide state order for the products of environmental entrepreneurship (49%). At the same time, most of the respondents believe that the environmental business activities will make a real contribution to the environmental improvement.

The need for state regulation of environmental activities is primarily caused by the fact that in this case the use of only market mechanisms is significantly complicated for a number of reasons. First of all, it is rather difficult for individual subjects of environmental entrepreneurship to concentrate the large-scale resources for the implementation of the necessary investments in environment-oriented production facilities. It requires significant capital investment, market forecasting, staff training, etc.

Secondly, many enterprises producing environmental products and technologies do not become efficient immediately. Therefore, isolated, without state support, environmental production facility can suffer significant losses or even go bankrupt. External incentives or guarantees of full or partial recovery are required.

Thirdly, the economic effect of the use of environmentally-friendly and environmental restoration technologies and industries is manifested in various types and many areas of activity. Therefore, it is often difficult to assess the full effect of activity at the level of an environmental business entity, because some portion of associated effects are outside the scope of its activities. In addition, in the current realities, environmental products are not in demand, as environmental protection has not become one of the main objectives of corporate business strategies.

Therefore, it is necessary to provide measures for increase in demand for environmental products through development of real programs with real funding sources, necessary infrastructure and legal framework in order not to become dependent on foreign environmental technologies in the near future and not to lose the environmental products market.

The lack of financing for modernization of production facilities in view of the environmental situation, once again confirm the need for greening of production processes by the way of creation of better management system. The environmental management system is focused on achievement of
results at a low cost. In this regard, organizational activities are a priority. However, it requires highly skilled workers.

"Strategic management" concept provides two degrees of readiness of the businesses to the solution of environmental safety problems: environmental and ecologized management options. Ecologized management is a management of an economic entity by adapting the existing infrastructure to the requirements of international and national regulations in the field of resource saving. This situation is typical for the majority of Russian enterprises. Environmental management - is the management of environmentally safe production facilities, providing a balance between economic and environmental performance throughout the life cycle of the production complex and its products. An example is PAO Gazprom, which plays a key role in the economical development. Gazprom is developing its long-term development strategy. It takes into account not only the objectives of the company's shareholders and the economic interests of the state, but also the role of improvement of the environmental situation [10].

Considering participation of Russia in a community of countries with developed economies, it is necessary to say about compliance of these States with common international norms and rules. A company that has implemented environmentally-oriented tools in its management system (ISO 14000) will get advantages by gaining economic benefits and achieving significant competitive advantages [11]. Organizations that are members of EMAS (Environmental Management and Audit System) together with implementation of environmental policy will have the right to use a special logo. This attribute will increase confidence in the environmental activities of the company and increase the chances in a competitive struggle in the international market.

A number of Russian companies already meet the requirements of ISO 14000, EMAS and bring their products to international markets. Such enterprises include Sokol Aircraft Plant in Nizhny Novgorod, Engine-Building Plant in Rybinsk, Aluminum Plant in Krasnoyarsk, etc. Formation of new categories and recognition of such qualifications as manager, is a feature of economic development, determined by the technical achievements of our time. At the same time, the digitalization of society makes profound changes in the organization of production. Digital technologies helps to promptly identify errors of individual responsible persons and managers in production organization and management, to identify their incompetence, to open a prospect of improving the level of the managers. Unfortunately, freeing a person from hard physical labor, digital technologies place heavy demands on physiological capabilities and mental activity.

In this regard the concept of environmental management becomes particularly relevant - environmental management is a management of activities through implementation of measures aimed at safety of working conditions of the managers. The stated above elements of environmentally oriented management are interrelated with the environmental idea (figure 1.).

The process of environmental management should start with determination of the interests of the economic entity for which the management system is developed. Uncoupled from interests of economic entities, it makes no sense to consider environmental risks and consequences of the entrepreneurial activity.

Then the purpose of the subject-oriented environmental management is to maximize the equity capital taking into account the interests of other partners, the society and nature in the form of limitations on a number of actions. When building an environmental management system, the interests of owners and non-owners of the business entity should be taken into account, first of all, they include the life and health of all people in direct contact with it.

Along with the financial consequences of the environmental problems that reduce business profits by additional compensation payments, it is also necessary to take into account the reputational and ethical categories up to stopping and closing of the production facilities. The balanced social development should be based on the mechanism of biological balance of the environmental and individual safety. This approach requires fundamental changes, which are based on the environmental focus of all human activities.
Figure 1. Elements of environmentally oriented management.

Currently, we need to solve the following problems for the development of this sector of the economy. First, it is a lack of regulations that would clearly identify this type of activity and its results. Secondly, it is necessary to determine the goals and instruments of state regulation in this field. Thirdly, development of a system of elements for environmental business management mechanism, which effective functioning will help to achieve the goals. Fourth, implementation of continuous monitoring of the management system functioning.

A variety of objectives aimed at provision of balanced operation of the constituent elements of the management mechanism is based on three levels: operational, tactical and strategic. At the operational level, they create conditions for activities in the field of environmental entrepreneurship, contributing to an increase in production, sales of environmental products in the external and domestic markets and increase its competitiveness through the growth of innovative activity of environmental businesses. The tactical level of the goals is aimed at creation of conditions for effective functioning of the mechanism of environmental entrepreneurship management, contributing to the development of market relations and diversity of ownership in this field of activity, as well as full promotion of innovative activity.

The strategic level of the goals should be aimed at creation of investment attractiveness of the environmental sector of the national economy, contributing to creation of a favorable economic, environmental and social environment.

The following indicators are proposed as indicators of achievement of the goals:

Level I:
- solvency of environmental companies;
- share of innovative products in the revenue;
- budget revenue growth;

Level II:
- growth of infrastructure support tools;
- simplification of conditions for starting and doing business;

Level III:
- average profitability of environmental entrepreneurship;
- investment attractiveness in this field;
- growth of social parameters of the region;
- reducing environmental risks.
Statistics confirm a possibility of identifying the factor of "environmental innovation" both within the structure of organizations engaged in environmental innovation, and in the special costs associated with environmental innovations [8].

| Parameters                        | 2012 | 2013 | 2014 |
|-----------------------------------|------|------|------|
| Share of companies with environmental innovations | 22.4 | 12.9 | 13.6 |
| Costs associated with environmental innovations, mln. rub. | 27768 | 15098 | 20914 |
| Share of organizations using the pollution control system | 12.1 | 10.8 | 11.1 |

4. Conclusion
The report attempts to point out some important factors affecting the environment on the functioning of industrial enterprises. The results of the survey show that there are still a small number of Russian companies that, mainly with state participation, take advantage of environmental management as part of strategic management. In this regard, it is necessary to green the industry and use the opportunities provided by the environmental management system.

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