

DOI: 10.29141/2218-5003-2021-12-3-5

JEL Classification: M12, M14, Q52, Q57

Analysis of the environmental employee engagement: A case of a Russian enterprise

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Abstract. The current trend in environmentally oriented business is towards the recognition of the decisive role of personnel in ensuring environmental sustainability, which results in increased attention to the problems of employee engagement in solving the company's environmental problems. However, there is a significant methodological gap in understanding the phenomenon of environmental engagement and methods of its analysis and assessment. The study theoretically substantiates the concept of environmental employee engagement and analyses it using the case study of a Russian enterprise whose activities are committed with significant impact on the environment. Methodologically, the research rests on the concepts of Green Human Resource Management (GHRM) and environmental behavior. A personnel survey was conducted based on the authors' model of environmental engagement, which includes three components: normative, voluntary and potential. The sample included 1,430 employees of the oil and gas industry in Perm krai. The statistical analysis was carried out for the enterprise as a whole, as well as for particular branches and divisions. The study yielded estimates of the environmental employee engagement (EEE) and identified key factors and practices contributing to high employee commitment to environmental values and protection. The results and conclusions encourage the development of tools for researching the environmental behavior of personnel, and can be of use for theoretical and empirical research in the field of GHRM, as well as for practitioners in the analysis and development of HRM models for the purposes of environmental development of the organization.

Keywords: Green Human Resource Management (GHRM); environmental management; environmental employee behavior; environmental employee engagement (EEE); personnel.

Paper submitted: March 9, 2021

For citation: Arzamasova G.S., Esaulova I.A. (2021). Analysis of the environmental employee engagement: A case of a Russian enterprise. *Upravlenets – The Manager*, vol. 12, no. 3, pp. 56–66. DOI: 10.29141/2218-5003-2021-12-3-5.

Анализ экологической вовлеченности персонала: кейс российского предприятия

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Аннотация. Общей тенденцией в экологически ориентированном бизнесе становится признание решающей роли персонала в обеспечении экологической устойчивости и, как следствие, повышенное внимание к проблемам формирования вовлеченности сотрудников в решение экологических задач компании. Однако существует значительный методологический пробел в понимании сущности экологической вовлеченности, выборе методик ее исследования и способов оценки. Статья посвящена теоретическому обоснованию экологической вовлеченности персонала и ее анализу в условиях предприятия, деятельность которого связана со значительными воздействиями на окружающую среду. Методологический базис исследования составили концепции экологического управления человеческими ресурсами (УЧР) и экологического поведения. Методика включала опрос персонала на основе авторской модели экововлеченности, содержащей нормативную, добровольную и потенциальную составляющие. В выборку вошли 1 430 сотрудников предприятия нефтегазовой отрасли Пермского края; статистический анализ проводился как в целом по предприятию, так и в разрезе отдельных филиалов и подразделений. Даны оценки экововлеченности персонала, а также выявлены основные факторы и практики, содействующие высокой приверженности сотрудников экологическим ценностям и охране окружающей среды. Полученные результаты вносят вклад в развитие инструментария изучения экологического поведения персонала и могут быть полезны для теоретических и эмпирических исследований в области экологического УЧР, а также при диагностике и разработке моделей управления персоналом с целью экологического развития организации.

Ключевые слова: экологическое управление человеческими ресурсами; экологический менеджмент; экологическое поведение сотрудников; экологическая вовлеченность персонала; персонал.

Дата поступления статьи: 9 марта 2021 г.

Ссылка для цитирования: Арзамасова Г.С., Эсаулова И.А. (2021). Анализ экологической вовлеченности персонала: кейс российского предприятия // *Управленец*. Т. 12, № 3. С. 56–66. DOI: 10.29141/2218-5003-2021-12-3-5.

INTRODUCTION

Many companies meet the requirements of green economy and pay more attention to environmental issues, including their mission and corporate strategies [Potrich, Cortimiglia, Medeiros, 2019]. However, the development of corporate environmental management systems (EMS), technical and technological measures for environmental protection make a minimal contribution to the achievement of long-term environmental goals and are not sufficient for the sustainable development of companies [Fet, 2006; Aragón-Correa, Martín-Tapia, Hurtado-Torres, 2013; Renwick et al., 2015]. Problems, incidents and difficulties with the implementation of environmental initiatives and new technologies arise mainly due to systematic staff-related errors, such as poor understanding by employees of the enterprise's environmental policy and the lack of environmental information, their reluctance and unwillingness to accept innovations, incomprehension of the environmental consequences of their actions, as well as violation of the established requirements and rules [Bunge, Cohen-Rosenthal, Ruiz-Quintanilla, 1996; Jabbour, Santos, Nagano, 2010; Arzamasova, Esaulova, 2020].

Due to the complexity of environmental problems and the high-risk component associated with the behavior of personnel, it is necessary that employees voluntarily contribute to the environmental activities of the enterprise, participate in the exchange of tacit knowledge and implement solutions for environmental protection [Boiral, Pille, 2012; Saeed et al., 2018]. In ISO 14001:2015 «Environmental management systems – Requirements with guidance for use», the commitment of employees at all levels and departments is seen as a key factor in the success of the company's EMS. However, in EMS, the role of personnel is strongly and unjustifiably underestimated, employees' personal values in relation to the environment are not fully utilized, which, in turn, leads to the fact that environmental improvements and innovations become difficult to implement and are exclusively economically motivated without taking into account social and environmental goals of companies [Govindarajulu, Daily, 2004; Del Brio, Fernandez, Junquera, 2007; Ahmad, 2015].

The problems of personnel greening cannot be regarded as a new direction of foreign scientific research in the field of Green Human Resource Management (GHRM)¹; however, the issues of environmental employee engagement (EEE) today are, on the one hand, extremely relevant for companies [Dumont, Shen, Deng, 2016; Renwick, 2020, p. 41], and, on the other hand, it is a completely new topic even

for researchers and practitioners in HRM [Amrutha, Geetha, 2020]. The very phenomenon of EEE, as well as the factors and conditions that form it, are still insufficiently theoretically and empirically grounded [Benn, Teo, Martin, 2015; Potoski, Callery, 2018; Del Brio, Fernandez, Junquera, 2007, p. 492]. To date, there is not a single study in Russian science devoted to either the involvement of personnel in environmental activities, or to broader issues of environmental behavior, although this problem has already been recognized by scientists at the level of setting individual applied objectives, but not at the level of a holistic methodology or empirical research [Arzamasova, Esaulova, 2020]. Thus, the purpose of the article is to theoretically substantiate the concept of EEE and analyze it using the case study of an enterprise whose activities are associated with significant environmental impacts. Following this goal, first, we perform an analysis of the literature on the problems under review; then, the paper presents a methodology for studying EEE and discusses its results; and finally, it formulates conclusions and recommendations for future research and application in the HRM practice at enterprises.

ENVIRONMENTAL BEHAVIOR AND EMPLOYEE ENGAGEMENT

Over the past decades, the topic of employee engagement has been widely discussed by both scientists and practitioners in the field of HR management, since it is engagement that is a significant factor in the economic efficiency of organizations, and the measures to increase it are an effective management tool [Apenko, Fomina, 2019; Konovalova, 2016; Kulkova, Nikolayev, 2016; Sun, Bunchapattanasakda, 2019]. It is not surprising that scientific community was optimistic about these provisions as a new look at the green behavior of employees, opening up real prospects for the development of theory and practice of GHRM [Saeed et al., 2018; Dumont, Shen, Deng, 2016]. Today, employee engagement is positioned as a key condition for the successful implementation of a proactive approach in environmental management. Despite this, the topic of involvement in environmental activities is still virtually unexplored [Renwick, 2020; Subha, Brown, 2015; Teixeira et al., 2016].

An analysis of scientific works devoted to employees' engagement in environmental protection activities showed the absence of a methodological platform in the area. Thus, studies use concepts such as "green employee engagement", "green employee involvement", "environmental involvement", "environmental employee engagement" [Subha, Brown, 2015; Benn, Teo, Martin, 2015; Veleva, Bodkin, Todorova, 2017]. However, it can be argued that these concepts are not synonymous, since they are associated with different manifestations of employee complicity in the organi-

¹ Green Human Recourse Management (GHRM) refers to a new direction of theory and practice of staff management that combines the spheres of human resources and environmental management.

zation's environmental activities. In addition, the direct transfer of the generally accepted engagement methodology to the conceptual basis of GHRM proved to be difficult, primarily due to the specificity of environmental behavior.

Employee green or environmental behavior (EEB) is defined, on the one hand, as environmentally friendly behavior in the workplace that contributes to the achievement of the company's core business goals in the field of environmental sustainability [Stern, 2000, p. 417], and on the other, as behavior through which employees demonstrate their willingness to cooperate with the company and its members, demonstrating behavior in the workplace that benefits the natural environment [Boiral, Paillé, 2012, p. 432]. Following this logic, Norton et al. [2015, p. 104] identified two types of EEB:

1) required EEB is the behavior prescribed by the organization, which is compulsory within the framework of official duties and provides for compliance with the organizational environmental policy and technologies;

2) voluntary EEB is the behavior that transcends job responsibilities and includes initiating changes in work practices, active participation in environmental programs and projects, support for colleagues and other activities that contribute to the organizational, social and psychological environment of an environmentally oriented business.

The first type shows a normative model of the work role, which implies the fulfillment of formal requirements aimed at reducing or preventing negative environmental impacts [Boiral, 2009; Aboramadan, 2020]. The second type demonstrates "supra-role" (extra-normative) activities for environmental protection, but not required by job functions [Daily, Bishop, Govindarajulu, 2009]. It is argued that employees with a high level of voluntary EEB can motivate the environmental behavior of colleagues and their participation in environmental initiatives [Aboramadan, 2020].

According to Boiral and Paillé [2012, p. 431], the "supra-role" EEB demonstrates an employee's willingness to contribute to environmental sustainability and reflects:

1) environmental initiatives of employees (for example, saving energy resources, separate waste collec-

tion, etc.) that contribute to improving the operational efficiency and environmental performance of the company;

2) promotion of the company's green activities through participation in organized environmental events, promoting the company's environmental image and voluntary participation in green events (forums, conferences, etc.).

3) cooperation and communication between employees in solving environmental problems is an important condition for effective environmental action in the workplace as these activities often require a cross-functional approach, a voluntary exchange of knowledge and experience, and informal training for new employees.

The characteristics of the behavior inherent in the required and voluntary types of EEB are presented in Table 1.

The EEB dual nature determines its specificity, because the required and voluntary types work together to create a unique combination of professional and individual behavioral attributes forming the EEB model that green companies expect from their employees, including:

1) performing official duties in strict compliance with environmental standards and requirements;

2) active participation in the company's environmental initiatives and projects;

3) personal initiatives that proactively contribute to improving the company's environmental performance, etc.

The level of the EEB model implementation depends on the degree of employee engagement that contributes most to personal and corporate environmental results [Hanna, Newman, Johnson, 2018] and goes beyond a formal understanding of environmental management goals or formal demonstration of proactive behavior towards the environment as a whole [Rothenberg, 2003].

Environmental employee engagement is objectively related to different cognitive, motivational and emotional aspects based on personal environmental values and interests of employees [Glavas, 2016; Jackson et al., 2011; Renwick et al., 2015]. Therefore, **EEE** can be defined as an employee's active participation in the

Table 1 – Types and parameters of EEB

Таблица 1 – Типы и параметры экологического поведения сотрудника

EEB type	Parameters
Required	Employee has a positive perception of the company's environmental values and actions. Employee consciously and responsibly follows the environmental requirements and recommendations in the workplace
Voluntary	Employee makes suggestions for improving the company's environmental performance on their own initiative. Employee voluntarily participates in environmental events and promotions organized by the company and contributes to the promotion of the company's environmental image. Employee provides assistance and support for colleagues in tackling environmental problems in the workplace

implementation of environmental policies and organizational goals manifested in the motivation to achieve these goals and the desire to make a positive contribution to environmental initiatives and innovations in the field of environmental protection.

In theoretical and empirical studies on GHRM, the reasons behind EEE are explained in different ways. According to some scholars, the high level of EEE is a consequence of HRM practices such as environmental training, awareness, rewarding environmental performance [Renwick et al., 2015; Jabbour, Santos, Nagano, 2010]. Other researchers argue that EEE depends on value attitudes, competencies, trust in efforts of the management to protect environment and improve morale, behavior and relationships between employees, communication systems, motivation, etc. Therefore, EEE can be increased through the environment culture, teamwork and autonomous groups created to solve environmental problems [Del Brio, Fernandez, Junquera, 2007; Hanna, Newman, Johnson, 2018; Paille et al., 2014; Potoski, Callery, 2018].

The variety of EEE mechanisms makes it necessary to study the sources and factors of EEE that affect the interest of employees in achieving environmental performance and proactive resolving of companies' environmental problems.

RESEARCH METHOD

The EEE model was formed on the basis of the typology of EEB described above, including the required and voluntary EEBs [Norton et al., 2015]. The first type of EEB demonstrates its normative model and is easily identified using the questionnaire from the previous study [Arzamasova, Malysheva, 2019]. The voluntary EEB ("supra-role") requires more differentiation, because such behavior is internally motivated and completely controlled by the employee [Esaulova, 2014]. From this viewpoint, regulated and unregulated EEBs were distinguished. The former is an employee's actions (e.g. participation in environmental programs) that support the company's environmental initiatives. The latter is an employee's proactivity, which is expressed in various forms of proactive behavior and potential willingness to take initiative by proposing, promoting and implementing

environmental innovations. As a result, the structural EEE model was developed (Fig. 1).

In accordance with the model, three evaluation blocks were formed (see Fig. 1):

1) required EEB. The employee is aware of environmental policy, environmental protection, environmental programs and activities. The employee understands environmental issues and their importance for the enterprise's development. The employee takes action to reduce the negative impact on the environment in the workplace;

2) voluntary regulated EEB. The employee discusses environmental issues and solutions with colleagues and makes proposals. The employee takes part in environmental events on his/her own initiative;

3) voluntary unregulated EEB. The employee is ready to make proposals for dealing with environmental issues and problems, as well as to take part in environmental events, contests and company initiatives.

Then, real and potential EEE were calculated. Real EEE was computed through indicators of the required and voluntary regulated EEB, whereas potential EEE was measured through indicators of voluntary unregulated EEB. The final indicators were assessed within the following ranges: "low" is less than 50 %, "medium" is from 50 % to 75 %, and "high" is more than 75 %.

The study was carried out at an oil and gas company in Perm krai (Russia) in 2018–2019. The study involved 1,430 employees of all age groups with work experience of 1 year or more from all – administrative, production and non-production – departments, including managers, specialists and workers. The statistical analysis was performed for the entire enterprise, as well as its divisions individually. To collect data, the authors applied their own EEE quantitative assessment methodology [Arzamasova, Malysheva, 2019] with the use of a software developed at the enterprise specifically for the study. However, the approach to measuring EEE was changed since the results of the previous study in the form of the EEE general level [Arzamasova, Malysheva, 2019] were not informative enough to understand the reasons and factors influencing the activity of employees in environmental innovations.

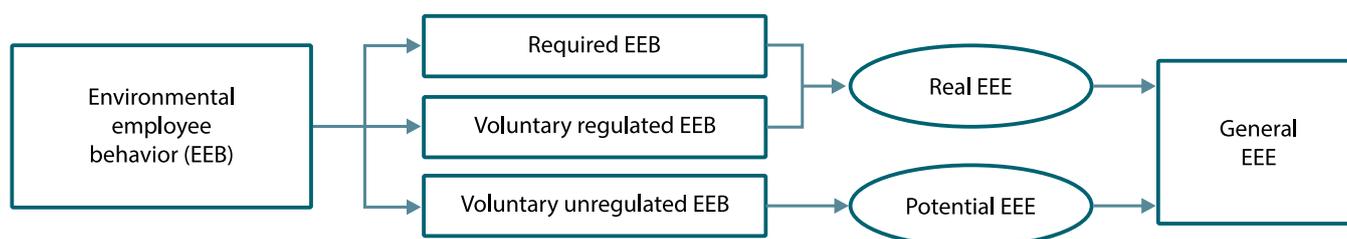


Fig. 1. Structural EEE model

Рис. 1. Структурная модель экологической вовлеченности персонала

RESEARCH RESULTS

The results of the staff survey showed that the average level of real EEE (required and voluntary regulated EEBs taken together) was 63.9 %. What stands out in the research results is a strong imbalance in particular indicators for individual EEB blocks: with a high level of the regulatory component (87.4 %), voluntary regulated EEB was only 40.3 %, and the potential EEE turned out to be extremely low – 32.5 % (Table 2). Consequently, despite realizing the importance of environmental protection and complying with environmental regulations in the workplace, more than half of the employees were not disposed to environmental actions and initiatives beyond the scope of their job responsibilities.

Next, we measured the real and potential EEE in the context of the enterprise's divisions, the levels of which varied from 62.1 % to 64.2 %, respectively (Table 3).

The lowest potential EEE was recorded among the management staff (32.4 %), who, compared with the personnel from other divisions, were notably less concerned about environmental problems and were not particularly interested in participation in additional environmental activities (27 %) (Fig. 2). At the same time, they were ready to participate in improving the environmental and nature protection programs implemented at the enterprise (60 %) (Fig. 3).

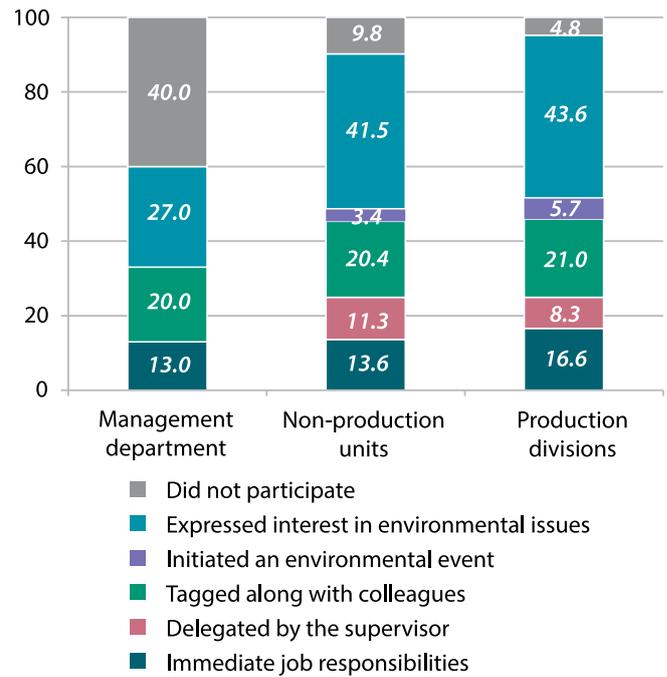


Fig. 2. Employee participation in additional activities aimed at drawing attention to environmental protection issues (campaigns, competitions, seminars, etc.), %

Рис. 2. Участие персонала в дополнительных мероприятиях, направленных на привлечение внимания к вопросам охраны окружающей среды (акции, конкурсы, семинары и др.), %

Table 2 – Assessment of the EEE level

Таблица 2 – Оценка уровня экологической вовлеченности персонала

EEB type	EEE indicator	Quantitative assessment, %	Average value, %
<i>Real EEE</i>		63.9	
Required EEB	Employees are aware of the environment and environmental risks of the company	81	87.4
	Employees are aware of the company's environmental issues	80	
	Employees recognize environmental issues as important to the company's development and functioning	94	
	Employees are aware of the company's environmental activities and projects	98	
	Employees take actions in their professional activities in order to reduce the negative impact on the environment	84	
Voluntary regulated EEB	Employees discuss environmental issues and solutions with colleagues	50	40.3
	Employees make proposals of environmental significance	28	
	Took part in environmental actions aimed at improving the environment on personal initiative	43	
<i>Potential EEE</i>		32.5	
Voluntary unregulated EEB	Employees are ready to make suggestions for solving environmental issues and problems	16	32.5
	Employees are ready to take part in environmental campaigns, competitions and initiatives	49	

Table 3 – Real and potential EEE

Таблица 3 – Реальная и потенциальная экологическая вовлеченность персонала

Division	Real EEE, %	Potential EEE, %
Management department	62.3	32.4
Production divisions	64.2	41.1
Non-production units	62.1	35.1
Weighted average	62.3	38.7

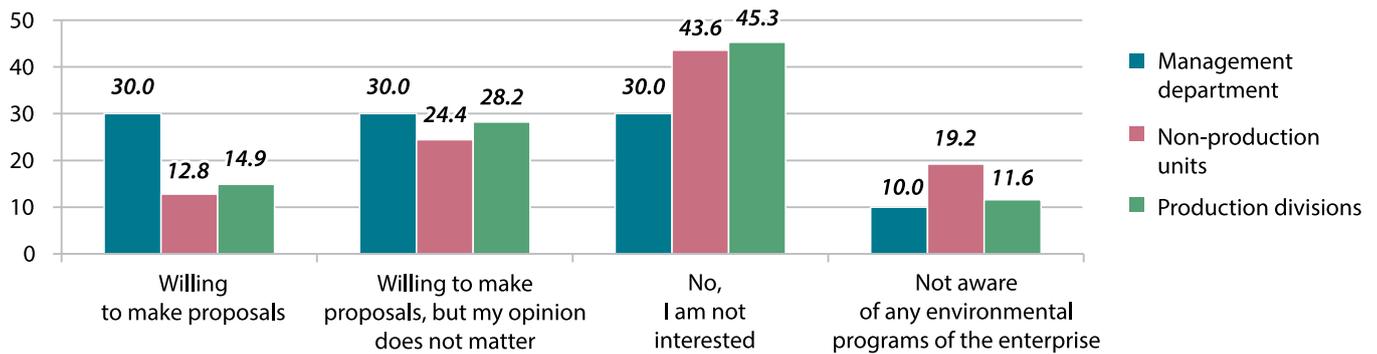


Fig. 3. Willingness to make proposals to the mandatory environmental programs implemented at the enterprise, %

Рис. 3. Готовность вносить предложения в реализуемые на предприятии программы обязательных экологических мероприятий, %

The average values of real and potential EEE in the non-production units amounted to 62.1 % and 35.1 %, respectively. Interestingly, despite a lower level of awareness of environmental programs and activities (19.2 %), the employees of these departments showed as much interest in environmental problems as the production personnel (41.5 %), but less often expressed readiness to participate in extra environmental activities (35 %).

The highest value of real EEE is observed among the personnel of the production divisions, which is due to their focus and direct participation in tackling environmental problems in their daily work. Moreover, the indicator of potential EEE (41.1 %) turned out to be significantly higher than in other divisions and the enterprise average (38.7 %). According to the survey results, the majority of the production departments' employees (80 %) believe that they are completely aware of and comprehend the environmental challenges faced by the enterprise; 85 % of the production departments' staff suppose that, compared with other units, they are more frequently involved in reducing the adverse impact on the environment; participate in additional environmental activities (50 %); discuss environmental issues with colleagues and ways to address them (57.4 %); but at the same time, they rarely make proposals of environmental significance (28.3 %).

Fig. 2 shows that this is employees of the production departments (5.7 %) who most often initiate environmental measures by paying more attention to environmental problems (43.6 %). It is noteworthy that virtually half of the company's employees did not evince interest in improving environmental programs and measures, while a third of the personnel expressed doubts about the significance of their proposals (Fig. 3).

One of the main indicators of voluntary EEE is the participation of employees in additional environmental activities, which fall outside their job responsibilities and are implemented during off-duty hours. The survey showed that more than 90 % of respondents participated in such events, but the reasons behind

that vary greatly. For example, if an employee is delegated to the event by their supervisor, we are talking about required EEB, since subordinates often perceive their manager's request as a work assignment. On the other hand, if a staff member tagged along with their colleagues, we mean passively discretionary EEE, when employees are more focused on friendly ties and team relationships than on their own environmental interests and values.

At the next stage of the study, the EEE factors were established based on the aggregate answers of all the respondents. The employees indicated that their behavior and environmental performance are greatly affected by personal motives and environment-related values, the degree of environmental awareness and material incentives. At the same time, among the least significant factors are the management leadership and company values, the system of communications and interaction, as well as forms and types of non-material incentives (Table 4).

Table 4 – Factors of EEE

Таблица 4 – Факторы экологической вовлеченности персонала

Rank	Factor	Average value, %
1	Personal environmental values and motives	70
2	Degree of environmental awareness and the flow of information	66
3	Material incentives	63
4	Management leadership and company values	44
5	System of communication and interaction	37
6	Non-material incentives	37

Such a distribution of the EEE factors is typical of all the enterprise's divisions (Fig. 4), however, with certain differences. For instance, the management staff are more focused on wage bonuses and lump-sum payments for achieving certain environmental results than on non-material incentives, whereas non-finan-

cial motivation is as important for the personnel of the production and non-production units as material incentives.

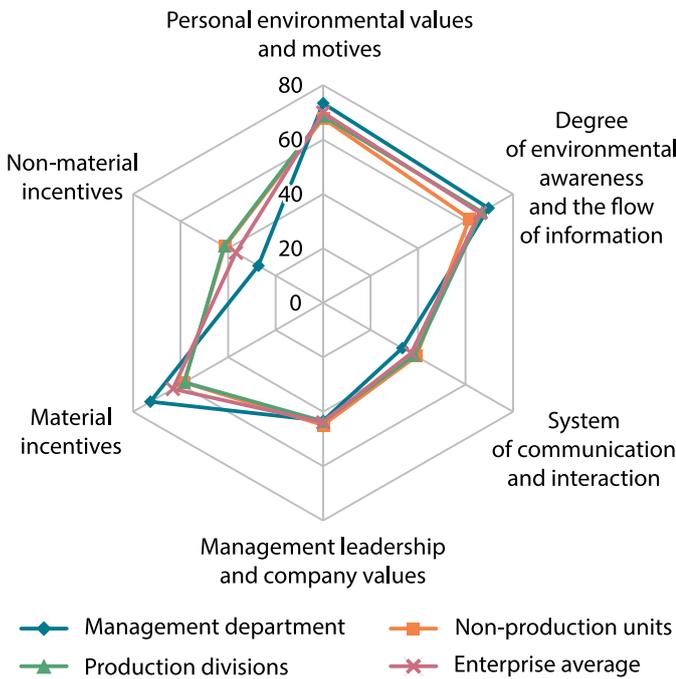


Fig. 4. Factors of EEE by the enterprise's divisions, %

Рис. 4. Факторы экологической вовлеченности персонала по подразделениям предприятия, %

Having analyzed the obtained results, we arrived at the following conclusions:

1) the level of EEE at the enterprise is average, and this is characteristic of all its departments, regardless of whether they are engaged in processes adversely affecting the environment or not. At the same time, the employees directly confronted with environmental issues in their daily professional activities demonstrate the greatest potential EEE;

2) the employees show varying degrees of interest in participating in additional environmental activities of the enterprise. Here, the personnel of the production departments are also most involved. Based on the total number of staff members who take part in such events on their own initiative, we can talk about the effectiveness and efficiency of these measures, especially in relation to the employees of the production and non-production units;

3) communication tools, non-financial incentives and the nature of in-company relationships exert the minimal impact on environmental employee engagement at the enterprise under review.

The interpretation indicates that the mentioned organizational factors have a moderate effect on the interest and readiness of the staff to participate in the environmental activities of the enterprise. As part of the survey, respondents were asked to express their views in free form on measures aimed at improving the environmental performance of the organization.

Most responses offered suggestions of a technical nature; however, 10 % of the questionnaires mentioned measures associated with personnel participation in resolving environmental issues, such as:

- enhancing the involvement of all employees in settling environmental issues, as well as treating the environment with respect;
- holding quarterly organizational meetings on environmental issues;
- engaging all employees in the implementation of environmental programs;
- changing the procedure for evaluating efficiency suggestions in terms of their impact on the environment;
- improving the methods of employee financial motivation for implementing environmental projects, etc.

The results of the survey and the employees' proposals allow us to conclude that not only the management, but also the employees are changing their attitude towards their role in solving environmental issues at the enterprise. In the course of the survey, there was not a single answer we obtained that would mirror the employees' negative attitude to their environmental obligations and work requirements. In addition, there is an obvious change in the employees' individual environmental values, which form a strong motivational basis for their environmental behavior.

CONCLUSION

The analysis of the existing works on GHRM showed that the least studied and most difficult research and applied task is to measure and assess the level of EEE, as an indicator characterizing the degree of employee engagement in achieving environmental and organizational goals. The authors have presented their own approach to this problem in the form of a new research structure, which encompasses, on the one hand, assessing the direct participation of staff members in resolving environmental problems (real EEE), and, on the other hand, evaluating the potential readiness of employees for personal environmental initiatives and active assistance in the implementation of environmental policy and innovations in the company (potential EEE). Such an approach allows focusing on the internal motivation of personnel to environment-oriented activities, which is the driving force behind the active and voluntary participation of employees in responding to environmental challenges.

The research results contribute to the theoretical substantiation of the EEE nature, which is characterized by the presence of required and voluntary components of individual demeanor, which makes it possible to create new approaches to studying the mechanisms and factors in employee environmental behavior. The testing of the proposed model at a large industrial enterprise has proved it to be useful for determining EEE. It expands the opportunities for developing practical EEE solutions for solving specific environmental prob-

lems, as well as participating in particular environmental processes and initiatives due to the employees' potential readiness for individual environmental initiatives.

The present research has a number of limitations. Firstly, the survey was conducted at only one enterprise, which narrows the significance of its results to one industry. Secondly, no study was performed on

the cause-and-effect relationships between the obtained EEE indicators and the outcome of the enterprise's environmental activities. Thirdly, the research did not cover organizational factors, which may have a constraining effect on the EEE level. Consequently, the findings can deviate from the empirical evidence that are possible to obtain in a broader research context. ■

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