

MONITORING THE ENVIRONMENTAL ASPECTS AS PART OF SUSTAINABLE DEVELOPMENT IN THE OIL INDUSTRY

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***Abstract:** The oil industry is among the industries with a high risk of pollution. The potential negative consequences of this indispensable economic activity have similar causes in all the oil regions, its dimensions differing from one area to another, depending on the technologies used and the compliance with the environmental regulations in force. Sustainability of companies in the oil industry means practicing responsible, efficient and innovative management that manages to keep under control and continuously monitor the problems related to possible environmental risks. Monitoring of environmental issues must be integrated into the sustainable development strategy at the level of management of all companies in the field. This paper synthesizes a series of arguments that come to certify the opportunity of integrating environmental aspects, in particular their monitoring, into the strategy of sustainable development of companies in the oil industry.*

***Key words:** environment, sustainable development, oil industry.*

***Classification JEL:** Q01, Q56, L71.*

1. Introduction

The sustainability strategy must be integrated in the development strategy at the management level of all companies in the field. Managing business responsibly must create long-term value in an innovative and efficient manner. All stakeholders must act to protect the environment and support communities

The overall objective of sustainable development is to find an optimal interaction between four systems: economic, human, environmental and technological. For the model to be operational, this support or viability must be applicable to all subsystems that make up the four dimensions of sustainable development, starting from energy, agriculture, industry, and even investments, human settlements and biodiversity (Bran, 2002).

Monitoring of environmental issues starts from the identification of the current state of the environment and continues with the identification, analysis, estimation and treatment of potential environmental risks.

The attitude of an organization to environmental issues defines the strategy of sustainable development. The main features of this strategy are that it must be documented and implemented in the organization.

Environmental problems management is a component of the general management system, which includes the organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for the elaboration, implementation, implementation, analysis and maintenance of environmental policies.

2. Sustainable development of the industry in the oil industry

Starting from a general concept, sustainable development reflects the idea of development without depletion of resources, by going beyond the limit of sustainability and regeneration of ecosystems. The basis for this concept is the need to integrate economic and environmental objectives and environmental protection.

Sustainability of companies in the oil industry means responsible, efficient and innovative management.

Creating extra long-term value for the company and its stakeholders, respecting the environment, supporting the communities in which it operates and contributing to the

achievement of the ONU Sustainable Development Goals are major, strategic objectives of all companies in the oil industry.

At global level in general and in the oil industry in particular, the main goals of sustainable development are:

1. poverty reduction
2. "zero" hunger
3. health and well-being for all people
4. ensuring a quality education
5. equality regardless of gender
6. Clean water
7. getting clean energy at affordable prices
8. economic growth
9. industrial innovation
10. reducing inequalities
11. sustainable localities
12. responsible consumption and production
13. climate action
14. ensuring the evolution of aquatic life
15. ensuring the evolution of terrestrial life
16. efficient institutions
17. partnerships to achieve the objectives

Figure no. 2. Sustainable development goals



Source: <https://en.unesco.org/sustainabledevelopmentgoals>

Oil companies focus their sustainability efforts on five areas of interest:

- *Health, safety, security and environment (HSSE)*: human well-being and safety, as well as the integrity of business operating facilities and a proactive risk management system
- *Efficient carbon management*: companies need to focus on improving carbon efficiency management in its operations and product portfolio. Companies are

- fully committed to acting on climate change mitigation and responsible resource management.
- *Innovation*: efforts are aimed at developing a culture based on innovation, strengthening the digital skills of its employees and implementing new technologies in business.
 - *Employees*: Companies place people at the center of business and want to create a job that is satisfying, diverse and learning-oriented.
 - *Business principles and social responsibility*: Maintain compliance standards as high as all locations, and the Code of Conduct applies to all employees and suppliers. Companies act responsibly both in terms of the use of natural resources in our operations and in the way in which we build relationships based on trust and honesty with all the actors involved.

Figure no. 2. Areas of interest for sustainable development in the oil industry



Source: Processing after <https://www.omvpetrom.com/ro/sustenabilitate>

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3. Monitoring of environmental issues

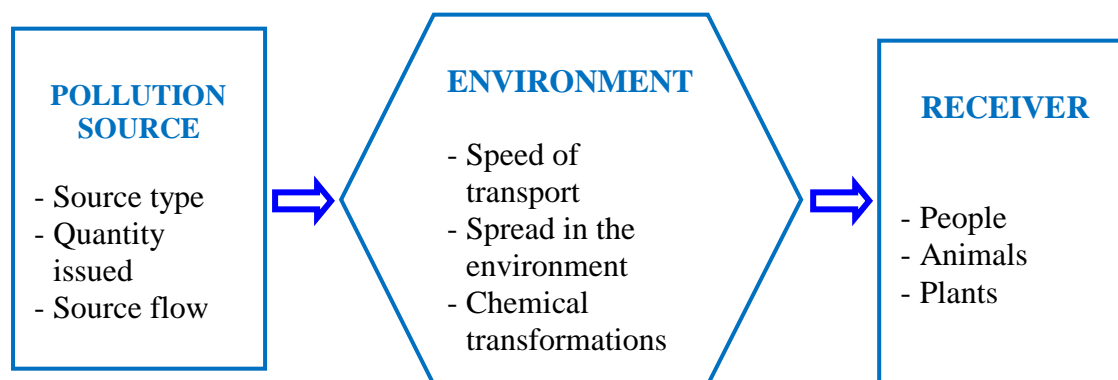
In both its extractive and processing industries, the oil industry is among the industries with a high risk of pollution. The potential negative consequences of this indispensable economic activity have similar causes in all the oil regions, its dimensions differing from one area to another, depending on the technologies used and the compliance with the environmental regulations in force.

Refining, distribution and transportation of oil and petroleum substances can cause pollution to varying degrees of the main components of the environment, terrestrial or aquatic, negatively affecting the vegetation, wildlife and of course, the human (Albu, 2013).

The objectives of the evaluation methodology are set based on a simplified model of highlighting the environmental pollution using the "source-path-receiver" relationship, presented in figure 3. The objectives of the evaluation are:

- establishing the area affected by pollution when the source of pollution is known;
- the detection of the source of pollution starting from the analysis of the affected environmental factors;
- risk assessment on the biotic environment when the pollution level is high.

Figure no. 3. Simplified model of pollution based on the "source-path-receiver" relationship



Source: Albu, 2013.

In order to prepare a pollution assessment and monitoring program, the following criteria are established:

- Reference sample = material sample to identify the state of the unaffected environment and used to determine the accuracy and accuracy of the physico-chemical analysis techniques;
- Alert threshold = concentrations of pollutants in air, water, soil or emissions / discharges, which have the role of warning the competent authorities about a potential impact on the environment and which triggers further monitoring and / or the reduction of pollutant concentrations from emissions / evictions;
- Intervention threshold = concentrations of pollutants in air, water, soil or emissions / discharges, at which the competent authorities will have to carry out the studies of risk assessment and reduction of pollutant concentrations from emissions / discharges;
- Risk assessment = identification and ranking of problems related to toxic emissions and substantiation of quality criteria for the environment.

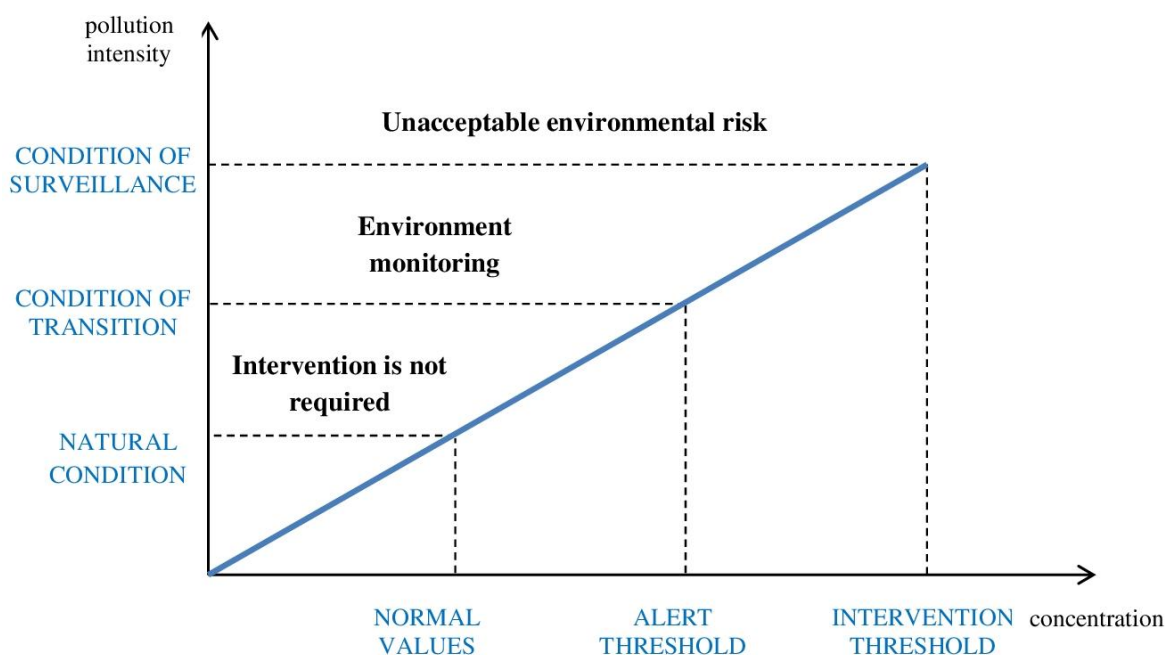
The alert thresholds warn the competent authorities about a potential pollution, and the intervention thresholds are the pollution thresholds when investigating the consequences of environmental pollution (Oțelea, 2012).

In order to determine the degree of pollution of the environment or the risk regarding the intensity of the pollution, the following information must be available:

- a) the history of the oil operations in the site and in the surrounding areas;
- b) geology and hydrology of the area;
- c) drainage of the site or as accurate information about the dispersion in its vicinity;
- d) persistence and mobility of pollutants;
- e) analyzes of pollutant emissions;
- f) the analysis methods available in accredited laboratories;
- g) sensitivity of the surroundings and the use of land or groundwater;

h) legislative provisions, political pressures or of non-governmental organizations.

Figure no. 4. Environmental pollution assessment



Source: Processing after Albu, M., 2013. *Integrarea componentei de mediu în strategia companiilor petroliere*, Editura Universității din Ploiești.

In the elaboration phase of the initial investigation program for the assessment of pollution some of this information may be missing, which is why a program of correction is needed during the objectives for substantiating the intervention programs.

Monitoring the environmental aspects determines the establishment of the ecological impact, the direct or indirect effect of a human activity that produces a change in the sense of evolution of the quality state of the ecosystems.

Keeping the impact under control requires a detailed knowledge of the phenomenon, which involves going through the stages of identification, estimation, appreciation, etc. This is what is pursued by the general concept of Ecological Impact Assessment (EIE).

4. Conclusion

For any organization, regardless of the type of products / services achieved, and especially in the field of the oil industry, the integrated approach of the three fields quality, environment, occupational health and safety and in particular the monitoring of environmental issues is a pressing, logical and useful necessity.

In the oil field, the organization of the activity of monitoring the environmental aspects is based on the following principles:

- diminishing the impact of the activities carried out on the environment;
- identifying and monitoring potential sources that generate environmental risks
- making investments to avoid the occurrence of environmental accidents

The implementation of an integrated system of quality-environment-health management and occupational safety, will offer organizations the possibility:

- improving the image of the organization, by satisfying the requirements regarding quality, environmental protection and work safety;
- keeping all the requirements related to quality, environment and occupational health and safety under control;
- improving the relations with the public authorities, the socio-economic community as a whole;
- limiting the civil and criminal liability, by satisfying the legal regulations regarding quality - environment-security;
- connecting the organization to the universally recognized principles and policies (through international treaties, for example) and giving the organization credibility in this regard;
- Providing a common language for internal / external communication of the organization.

All the presented aspects motivate the opportunity to monitor the environmental aspects in the oil industry as part of the sustainable development in this field of activity.

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