

HOW TO MANAGE SUSTAINABLE DEVELOPMENT IN OIL INDUSTRY: THE CASE OF OMV PETROM

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Abstract:

As exploration and exploitation of oil and gas deposits continue to be among the most polluting industrial activities, this paper deals with revealing the way OMV Petrom, a major oil company from Romania, cope with these issues aiming at protecting the environment and ensuring safe and efficient operations in order to achieve sustainable development and constant growth.

Keywords: oil industry, environmental protection, water management, greenhouse gases emissions (GHG)

JEL Classification: Q01, Q32, Q35

1. INTRODUCTION

Exploration and exploitation of oil and gas deposits continue to be among the most polluting industrial activities (Grove, 1974) despite the fact that hydrocarbon extraction is achieved in a closed system, which should enable them to avoid or, at least, substantially reduce all forms of pollution.

OMV Petrom [1] is the largest integrated operator in the oil and natural gas industry in our country, and at the same time a strategic company for Romania taking into account the amount of turnover and volume of business conducted: OMV Petrom is the sole crude oil producer in the country, and holds a share of 42% of gas production, while the gasoline sales market share is around 50%.

As concerning actions related to environmental protection aiming at sustainable development (Schou, 2000; Schou, 2002), by the nature of its activities, OMV Petrom, as the main oil producer from Romania, has a special responsibility for managing environmental impacts and ensuring safe and efficient operations. To achieve these goals, it aims at applying the best environmental management practice, paying special attention to the emissions of carbon dioxide, water resources and including natural gas, the cleanest fossil fuel, into the energy mix; in fact these issues will be larger explained during this paper.

2. CHARACTERISTICS OF SUSTAINABLE DEVELOPMENT IN OIL INDUSTRY

Despite the fact that oil extraction is achieved in a closed system, which should enable avoiding or, at least, substantially reducing all forms of pollution, the exploration and exploitation of oil deposits continue to be among the most polluting industrial activities as sources of pollution are numerous, while negative effects of these pollutants are serious and long lasting (Bulearca, Neagu et al., 2016).

By the nature of its activities, OMV Petrom, as the main domestic oil producer, has a special responsibility for managing environmental impacts and ensuring safe and efficient operations. It aims to apply environmental management best practices, paying special attention to carbon dioxide emissions, water resources and including natural gas, the cleanest fossil fuel, into the energy mix.

Oil, heavy oil, salt water and various chemicals contamination of land around drilling and extraction wells is, with all its incidentally character, extremely harmful to soil, surface water and groundwater. The severity of pollution will depend, of course, on the nature of the pollutant, its quantity and scope that the pollution occurs. Inventory of contaminated land in various degrees with oil, salt water or mixed blends indicates for the whole country an area of about 50,000 ha. Of these, about 5,800 ha are directly affected by nearly 12,000 productive wells in operation.

For the prevention and combating the environmental contamination with specific pollutants, OMV Petrom promotes a range of measures in order **to comply with sustainable development requirements**:

- building a database that includes all sources of pollution in the investigated area, with identifiers, location, specific pollutants concentration/amount compared to their permissible limits etc.;
- continuous monitoring of extraction installations, storage facilities and all other potential sources, for rapid intervention in case of failures that cause pollutants emissions or discharges;
- regular inspections of installations (especially of pipes and connections) for the timely detection (preferably before production) of cracks and imminent leaks or of those who have already occurred in order to remedy their operation;
- efficient treatment of waste waters (resulting from boreholes, wells repair and cleaning of oil tanks) and their evacuation either by underground reinjection or by reuse in the extraction process after proper cleaning of oil substances immiscible with water etc.;
- facilities dismantling and perimeters rehabilitation occupied by them, immediately after abandoning oil fields whose deposits have been exhausted;
- proper set up of new wells, taking into account the topography, hydrographic network, aquifer, soils, vegetation and fauna of the area in which they will operate.

In conclusion, to minimize OMV Petrom's operations impact on the ecosystem, it undertook to manage resources sustainably. These efforts also include efficient use of water, wastewater treatment and disposal in an appropriate way in areas with high biodiversity sensitivity, and prevention of harmful emissions.

3. OMV PETROM CONCEPT FOR SUSTAINABLE DEVELOPMENT: RESOURCEFULNESS

Resourcefulness is the OMV Petrom concept that aims both at creating a culture based on sustainable development for the efficient use of natural resources, high safety, and environmental standards, and at sharing its values with the third parties involved for a common growth on long-term (Ahrend, 2006). In other words, **resourcefulness encourages the profitable growth in a sustainable and responsible manner.**

OMV Petrom has developed a strong culture of responsibility towards the environment, society, and local communities. OMV Petrom started integrating sustainable development principles into its strategy and activities since its 2004 entry into OMV Group. Thus, in 2012, OMV Petrom adopted the concept of "Resourcefulness", a group-approach that places sustainable development at the heart of its activities. Then, in 2013, went further in this direction, joining the United Nations' Global Pact Initiative and reducing carbon intensity index by 3.4%.

The three pillars that are the foundations of Resourcefulness concept are: eco-efficiency, eco-innovation, and development education. Here is a short description of each one:

- **Eco-efficiency.** By the nature of its activities, OMV Petrom has a special responsibility to manage the environmental impact and to ensure safe and efficient operations. The company aims to apply best environmental management practices, paying particular attention to emissions of carbon dioxide, to water resources, and to include natural gas, the cleanest fossil fuel, in the energy mix.
- **Eco-innovation.** The objective of eco-innovation is to provide valuable and long-term alternative to traditional fossil fuels and to develop new technologies for CO₂ emissions reduction. To do this, OMV Petrom cooperate with OMV Group in initiatives such as producing second generation type bio-fuels, building the necessary infrastructure for mobility in supplying with hydrogen, direct conversion of solar energy into hydrogen, as well as chemical recycling of plastic waste. Innovation and expertise exchanges at the entire Group level help OMV Petrom to provide more value, and to find new and innovative methods to meet increasing global energy demand.
- **Education for development.** OMV Petrom wants to create value and to provide long-term future, helping people to nurture and develop skills for their required professional success. OMV Petrom aim is to support its own employees (around 20,000) and the members of the communities where its activity takes place.

In 2013, over 400 OMV Petrom's managers were attracted at workshops organized to support the integration of Resourcefulness concept in all company's activities. Moreover, starting with 2014, OMV Petrom expanded this program to all its employees.

4. OMV PETROM COMMITMENT FOR SUSTAINABLE DEVELOPMENT: ENVIRONMENTAL MANAGEMENT

To ensure energy supply, OMV Petrom produces and processes oil and gas, as efficiently and safely as possible. As gas is the cleanest fossil fuel, OMV Petrom will focus even more on this as the most important raw material for generating electricity and heat in Europe. Carbon and water management are two directions with particular focus in the eco-efficiency area of research. Among others, these two elements will be largely described below.

Carbon and energy efficiency management. Today, assuring energy supply security and reducing the impact of greenhouse gases (GHG) emissions are the major challenges for oil and gas industry, since energy needs is in continuous increase (Bulearca and Popescu, 2014). To reduce the carbon intensity of its portfolio, OMV Petrom will continue to expand its gas business activities and will promote the use of natural gas for power generation. Moreover, of equal importance is to monitor and control its own GHG emissions.

OMV Petrom refineries, Arpechim and Petrobrazi, implemented Energy Management certified systems according to EN 16001:2009 or ISO 50001:2011. The systems and processes have been installed in such a manner to establish energy targets, to monitor energy performance, and to continuously improve energy efficiency.

OMV Petrom is committed to contribute to OMV strategy for GHG emissions reduction by implementing projects to reduce carbon intensity. For example, in October 2011, commercial operation in Romania of Dorobantu wind farm [2] was initiated, thus contributing to ecological energy production.

Petrobrazi Refinery implemented optimization and energy efficiency projects resulting in savings to the equivalent of 100,000 tons CO₂ in 2011 and another potential to reduce the equivalent of about 200,000 tons CO₂ until 2015.

OMV Petrom is subject to the EU Emissions Trading Scheme and since the end of 2011, 17 of its operational facilities are included in this scheme. About 39% of OMV Petrom's direct GHG emissions (i.e. 1.65 million tons) were CO₂ emissions from installations within the EU Emissions Trading Scheme. As a result of emission reductions and facilities closing, OMV Petrom recorded a surplus of 2.79 million lei per certificate at the end of 2011.

Water management. Water is considered an important aspect of sustainable development, along with energy, providing food and climate change. Globally, available water amount per capita is decreasing [3] and this will continue as long as the number of inhabitants of this planet is increasing, while climate changes are becoming increasingly apparent.

For this reason, as part of Resourcefulness concept, OMV Petrom focuses on water management. To demonstrate the commitment of OMV Petrom and to define high performance targets for water management the company has developed a number of initiatives (Neagu, Bulearca et al., 2016).

A good example, which otherwise is not an isolated case, is the pilot project implemented by OMV Petrom in 2011, called "Water Management", when practices used in exploration and production operations were evaluated. Further more, in 2012 and 2013 this pilot project was extended to the entire company, having as result the development of water management plans in all divisions. All these had as affect a 26% reduction in water extracted from natural resources in 2013 compared to 2011. Moreover, the use of desalinated water, used as process water in the CCPP Samsun and OMV Petrom Asset 10 protocols is a good example of reducing freshwater consumption.

Environment protection. To minimize the operations impact on the ecosystem, OMV Petrom committed to manage resources sustainably. These efforts include efficient water use, wastewater treatment and disposal in an appropriate way in areas with high biodiversity sensitivity, and harmful emissions prevention (Onica, 2001). These directions are further detailed below.

OMV Petrom environmental management is based on the precautionary approach which aims to reduce the company's operations environmental impact. OMV Petrom requirements for environmental management processes are defined in the Directive for Environmental Management. This directive connects the high-level principles set out in OMV Petrom's Policy for Health, Occupational Safety, Security, and Environmental Protection (HSE) and the OMV Group's commitment to the United Nations' Global Pact Initiative to implement these regulations at the operational level.

To ensure the integration of environmental protection processes in OMV Petrom core business, they are connected to other business processes such as investment, strategic development, planning, and procurement budgeted. Detailed environmental standards are defined at business segments and sites level as specified by the respective business activities.

Waste Management. Like any other oil and gas company, OMV Petrom activities generate solid and liquid wastes, including oily sludge, chemical waste, used catalysts, and construction residues. In 2011, OMV Petrom focused on implementing a harmonized approach to improve the waste management efficacy and efficiency. In this respect, waste management processes, waste leakages, waste generated amounts, and waste discharging costs had been identified. Thus, a reliable database, consistent with best international practices was established. In this framework, three major waste contractors were verified to ensure that OMV Petrom's waste generated are managed properly during their final evacuation operations.

Product responsibility. Beside gasoline and diesel, OMV produces a wide range of other products such as bitumen, oils, lubricants, gases and fuels for heating, as well as the specialized products such as petrochemicals and fertilizers for industrial customers. For this reason, OMV Petrom provides high quality products that meet the expectations of its clients and acts in helping them to reduce their costs.

In assessing Research & Development projects, OMV Petrom focuses on new products' CO₂ emissions. Health and safety issues are part of product quality management, from stage production, to storage, transport, and its final sale.

Clean fuels. As a company that produces oil and gas, OMV Petrom operations have great environmental impact, not only by production and processing, but by sold products, too. Currently, 93% of gasoline and 99% of diesel sold by OMV Group are sulfur-free. OMV supports the use of compressed natural gas (CNG) as environmentally-friendly transport fuel. CNG generates carbon dioxide emissions by up to 20% lower, reducing the carbon monoxide by 80% and practically does not cause emissions of particles. Moreover, of the about 4,500 gasoline stations, 466 of them provides gas fuel (LPG or CNG), which means a coverage rate of 10% of OMV Petrom's entire sales.

5. CONCLUSIONS

Entry of Romania into the European Union has imposed harmonization its policies with European policies in all areas, including towards sustainable development, both nationally and regionally. If in time, after 2001, various plans and alternatives to national development strategies were initiated and developed, reflected more or less correct in the "sustainable" realities around us, today we face some commands that will fundamentally influence Romania's future.

In conclusion, to minimize the operations impact on the ecosystem, OMV Petrom committed to manage resources sustainably. These efforts include efficient water use, wastewater treatment and disposal in an appropriate way in areas with high biodiversity sensitivity, and harmful emissions prevention.

By the nature of its activities, OMV Petrom has a special responsibility to manage the environmental impact and to ensure safe and efficient operations. OMV Petrom aims to apply best environmental management practices, paying particular attention to emissions of carbon dioxide, to water resources, and to include natural gas, the cleanest fossil fuel, in the energy mix.

Thus, OMV Petrom manages environmental impact throughout its entire value chain. OMV Petrom's target is to use natural resources in an efficient manner and to minimize waste and emissions to air, water and soil. Constant efforts are made to reduce GHG emissions and water quantities consumed during operations. Energy efficiency is one of the key factors to reduce GHG emissions, also. To do this, lowering energy consumption programs in its activities were promoted.

All exploration, production, and refining activities of OMV Petrom are managed through energy management systems certified according to ISO 50001.

In this respect, OMV Petrom uses natural gas, the cleanest fossil fuel to produce electricity in high efficiency gas-based power plants.

At the same time, water resources are protected both by encouraging a more efficient use of water, and by investments in modern water treatment stations. Therefore, OMV Petrom invested in building or upgrading water treatment plants used in its multiple exploration and production locations, and in upgrading wastewater treatment plant in Petrobrazi Refinery.

ENDNOTES

[1] OMV Petrom S.A. is a Romanian integrated oil company, the largest corporation in Romania and the largest oil and gas producer in Southeast Europe. It is a subsidiary of OMV Group. In late 2004, Petrom was privatized by the Romanian state and sold to Austrian oil company OMV. As of 2005, it was the largest privatization deal in Romania's history.

[2] Dorobanțu is a wind farm of 45 MW, representing 5% of the national capacity of wind power. This is an investment of about 90 millions euro. In 2011, 31,600 MWh were delivered to the national grid, extending energy capacity up to 9 MW in 2012.

[3] In 2010, the United Nations General Assembly declared that access to clean water and sanitation is a basic human right, essential to enjoy life and human rights. However, according to United Nations estimates, in 2030 some 47% of the world population will live in areas with high water deficit.

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