

measures (resulting in reduction of specific fuel consumption), and increased use of gaseous fuels;

► **Flaring and venting:** The reduction of flaring and venting is also a key element in the Exploration and Production HSE strategy.

Carbon Strategy

Following OMV Group's Carbon Strategy and targets, Petrom is committed to promote projects that secure both energy supply and reduce the environmental impact, caused by climate change. Such projects cover renewable energy, energy efficiency and innovative solutions for reduction of greenhouse gases emissions during production and industrial processes.

Sustainable Resource Management

Water Management

We use water from many sources for cooling, steam generation and industrial processing. Surface water consumption was about 29.52 mn cubic meters in 2009, and groundwater consumption was about 11.79 mn cubic meters. Waste water (in total 27.72 mn cubic meters) is discharged after appropriate treatments on site or off site in Petrom-owned or communal water-treatment facilities.

Our goal is to use water more efficiently, reducing the impact on local communities and the environment. We take an integrated approach to water management, where other environmental effects are considered and emphasis is placed on preventing pollution and minimizing impacts at source.

Total water consumption in Petrom Refining was reduced by 35% between 2005 and 2009, mainly due to activity restructuring. Waste water is discharged after appropriate treatments on site in wastewater treatment plants. At Arpechim refinery, investments into the wastewater management system led to improvements of waste water quality indicators: reduction by 50% in Chemical Oxygen Demand, by 40% in Biochemical Oxygen Demand, by 90% in phenols and by 70% in ammonia. At the Petrobrazi refinery, a EUR 34 mn project started

in 2009 included measures such as cleaning and refurbishment of API (American Petroleum Institute) separators, reorganization of the biological treatment through a denitrification stage, new measurement equipment and the rehabilitation of the sewerage system.

Large amounts of formation waters have to be managed in E&P operations – 42 mn cubic meters in 2009. In oil and gas production, the proportion of produced water can exceed 90%. Petrom E&P reinjects approximately 95% of produced water. The remaining quantities are treated appropriately and discharged.

Waste Management

Our activities generate a variety of solid and liquid wastes, including oil sludge, waste chemicals, spent catalysts and construction debris. Our goal is to manage waste in a manner that will not pose harmful risks to the workforce, local communities or the environment.

The large amounts of hazardous waste accumulated over a long period of time (sludge pits in E&P and refineries) will be subject to specific waste management programs in the next few years. However, as the financial crisis also hit our company, the planned waste infrastructure construction projects for 2009 were postponed to 2010.

While in 2008 the basic construction of five bioremediation plants was realized, the year 2009 has been used to install office buildings, garages, weigh bridges and laboratories. A consultancy tender for the design, engineering, permitting and supervision of another ten bioremediation plants and eight landfills was developed and launched. After finalization, the waste infrastructure will allow Petrom to start the clean up and abandonment works for more than 10,000 old wells and several hundred production facilities. This will result in Petrom becoming the largest private owner and operator of waste infrastructure in Romania. In addition, Petrom Refining has set up specific waste management contracts with specialized companies. Petrom's fertilizer plant in Doljchim covers an area of around 220 hectares of land with a lot of closed plants. Clean-up of this site, removal of waste and demolishing of closed plants has

Mitigating waste impact

been a major issue within the last years. Best use of scrapped materials is ensured. In 2009, a solution was found for one of the biggest environmental waste issues: the former NPK (Nitrogen-Phosphorous-Potassium) pits were closed, fulfilling all environmental permits for this closure.

Drilling Mud

Drilling waste management was greatly improved by changing the chemicals and drilling fluids used. This allowed us to stop the discharge of fluids as cuttings become potentially recyclable. Petrom is the first oil company to drill extended reach well offshore in the Black Sea, using – also for the first time – low aromatic synthetic oil base drilling fluid (non-water base mud). The rig and the equipment were installed in a way to ensure zero discharge of cuttings or fluids into the Black Sea.

Spills and Leakages

Oil Spills

Pipeline operation and technical integrity undergo regular monitoring. Among other techniques used, pipeline sectors are periodically scanned with 'intelligent' pipeline pigs to assess pipeline condition.

The number of spills for Petrom E&P upstream operations remains high. The majority are related to aging infrastructure. During 2008-2009, Petrom E&P developed an ongoing program for replacement of old pipelines with new ones, especially in the areas established as critical points due to the frequency of the spills.

Petrom E&P has developed specific intervention plans for each field cluster and organized local spill intervention teams, tools and materials. Small spills are managed in house while for larger spills we have contracts with specialized companies in order to quickly apply the appropriate measures. The oil spills related activities are regulated by the Petrom E&P Standard 'Oil Spills Response Plan'. The Field Cluster representatives received the adequate training and annual drills took place to test the response capacity.

Petrom recorded a total of 16 significant hydrocarbon spills (>1,000 liters, level 3, 4 si 5 on a scale of 1 to 5) and 2,591 minor releases during the year 2009 (2008: 10 and 1572 respectively);

the amount of hydrocarbons spilled was 90,674 liters in 2009 (2008: 116,126 liters). The increased number of spills was mainly due to improvement of spills reporting, especially of the level 1 and 2 spills and to 'CARE' online reporting system implementing.

Leakage of Gas Pipelines

Petrom operates a small natural gas distribution network without any compressor station and with a total length of around 900 km. Gas distribution in Romania is regulated as a 'closed system'. Volumetric balance is reported monthly by Petrom to the Romanian Regulator, considering own consumption (technological needs, office heating), variation of pipeline gas stock (in own pipelines and in third party systems) and gas metering devices errors/tolerances. The major issue of imbalance of gas volumes in the system is due to gas metering. Petrom operates about 20,000 metering devices in the field. The overall imbalance is below the given gas metering tolerances.

Air Emissions

Some emissions from our operations have a potential impact on local air quality, including sulfur dioxide, nitrogen oxides and non-methane hydrocarbons. Petrom seeks to avoid, prevent and reduce air emissions in order to mitigate the potential for effects on human health and harm to the environment.

Several modernization projects at the Petrom's refineries led to important environmental improvements. The Babcock boilers at Arpechim refinery's combustion plant were replaced by high efficiency low-NOx burners. Automation increases the combustion efficiency of this large combustion plant up to 90%, leading to energy savings of 300-400 TJ (Terra Joule)/year (equivalent to EUR 2 mn per year) and a decrease of NOx emissions by 75%, down to the level of <100 tonnes/year.

At Petrobrazi refinery, the burner replacement program continued in 2009. Low-NOx burners for the coker and the isomerization units were acquired and will be installed in 2010. The Ethanol/ETBE and MTBE/ETBE tanks were equipped with internal floating roofs, resulting in a reduction of associated air emissions by 95%. The tanks were painted with coatings of thermal

Managing spills

reflectivity or light radiation of minimum 70%. New fire safety, control and automation were installed.

Petrom Marketing installed vapor recovery systems at all major distribution sites in order to reduce hydrocarbon emissions to a minimum. The coverage of vapor recovery systems in the filling stations network was increased during the last two years to 96%.



Biodiversity

Biodiversity is a key responsibility of sustainable development. Petrom pays particular attention to operations within nature conservation areas, seeking engagement of specialists and associations. Our processes are planned based on studies and assessments in order to identify the risks and develop proper plans for close monitoring.

Transport

For the transport of crude oil, gas, oil products and petrochemicals, Petrom uses a logistics structure made up of a pipeline network, chartered double hulled tankers for road transport and rail-specific means of transportation. Rail transport accounts for 80-85% of deliveries from refineries and 30% of oil deliveries from production area, while road transport represents 8 - 10 % for refineries' deliveries. Pipeline transport represents 6.5-10% of deliveries from refineries and 70% for oil deliveries from production area.

Any means of transportation chartered from Contractors must be certified by a competent Regulator and must also fulfill all relevant national and international agreements and requirements.

Environmental Impacts of Our Products

Cleaner Fuels

Following the OMV Group's Directives, starting with 2006, Petrom invested in Refining to upgrade products to EU standards. In 2009, a new plant for the production of gasoline with low sulfur content was commissioned at Petrobrazi. The post-treater plant of Fluid Catalytic Cracker unit has a capacity of over 700,000 tonnes, and the investments amounted to more than EUR 90 mn. Starting with 2009, Petrom achieved full capabilities for the production of Euro V fuels.

In 2009, 80% of gasoline sold by Petrom was sulfur-free (sulfur content of <10 ppm), 18% had a sulfur content between 150-700 ppm. Furthermore, 80% of gasoline sold at our filling stations had a maximum aromatic content of 35% and 20% had an aromatic content of 38-42%. All Petrom filling stations sell only gasoline with a minimum 8.51% bio-ETBE content (equivalent of minimum 4% bio-ethanol) and diesel with a minimum 4% FAME content (bio-component).

Within our network of 659 filling stations in Romania and Moldova, we offer LPG at 68 filling stations, which represents a coverage of approximately 10%.

REACH Implementation

The European Regulation no. 1907/2006 on the Registration, Evaluation, Authorization and restriction of **CH**emicals (**REACH**) came into force in June 2008. As this regulation is mandatory for every EU company which manufactures or imports (from outside the European Community) chemicals (substances and mixtures) and also for downstream users of chemicals (manufactured by other companies), Petrom is highly motivated to address and apply the best strategy for its implementation in a timely manner.

The main steps undertaken by Petrom to implement the REACH Directive are mentioned below:

- ▶ The REACH task force was established in 2008 with members from each business segment. Downstream in the hierarchy, each business segment established teams to perform specific

Upgrading fuels quality