

## Environment protection spending

The scale of initiatives undertaken is confirmed by the environmental spending and investment projects recently implemented by Grupa LOTOS, as well as other members of the LOTOS Group.

In the years for which the LOTOS Group has prepared CSR reports, i.e. 2006-2011, the amount spent by the LOTOS Group on environmental projects ran to PLN 652,637 thousand. Charges for economic use of the environment incurred during the same time by the LOTOS Group totalled PLN 28,373 thousand.

### Environmental spending and investment projects

<b>LOTOS Group</b>			
Expenditure [PLN thousand]			
	<b>2009</b>	<b>2010</b>	<b>2011</b>
Total investments	2,495,553	759,510	296,699
Environmental investments	153,893	33,648	34,709
Spending on environmental protection*			37,534

\* Exclusive of the cost of investment projects and charges for economic use of the environment.

<b>Grupa LOTOS</b>			
Expenditure [PLN thousand]			
	<b>2009</b>	<b>2010</b>	<b>2011</b>
Total investments	2,271,034	587,610	78,000
Environmental investments	138,818	16,812	12,116
Spending on environmental protection*			22,981

\* Exclusive of the cost of investment projects and charges for economic use of the environment.

### Charges for economic use of the environment

<b>LOTOS Group</b>			
Emissions [PLN thousand]			
	<b>2009</b>	<b>2010</b>	<b>2011</b>
Air emissions	3,576	4,306	4,805
Water withdrawal	288	245	210
Wastewater discharge	401	528	487
Waste landfilling	5	2	0
Total	4,270	5,081	5,502

<b>Grupa LOTOS</b>			
Emissions [PLN thousand]			
	<b>2009</b>	<b>2010</b>	<b>2011</b>
Air emissions	3,089	3,817	4,268

Water withdrawal	211	160	144
Wastewater discharge	260	306	313
Total	3,560	4,283	4,725



As one of the Polish market leaders, the LOTOS Group seeks to be perceived as the best petroleum company operating in the Baltic Sea region, when assessed on the basis of its product and customer service quality, and professional management.

**Wojciech Blew**  
Technology Development & HSE Director  
of Grupa LOTOS

As one of the Polish market leaders, the LOTOS Group seeks to be perceived as the best petroleum company operating in the Baltic Sea region, when assessed on the basis of its product and customer service quality, and professional management. Our ability to maintain the market lead will inextricably depend on our respect for the principles of sustainable development, in particular the rational use of natural resources, as well as minimising the impact of all the LOTOS Group members on the natural environment. The respect for the principles of sustainable development is manifest in our constant commitment – already at the stage of designing and then construction and operation of production units – to using state-of-the-art technologies, involving solutions intended to minimise emissions thanks to material and energy saving processes and thanks to low consumption of electricity, water and non-renewable resources.

Our installations are equipped with multiple failure prevention systems, such as alarm systems or cutting-edge distributed computer control systems, featuring process optimisation and an option to immediately block any developments that could pose a hazard to the installations, equipment or the environment. We have classified the risk of an industrial failure as one of our key risks, which is why in our daily activities we place such strong emphasis on preventive measures. We perform checks to diagnose the condition of our equipment, while organizing regular training and drills to practise failure response, etc. Any failure that does occur is subject to thorough analysis and is discussed during current training in order to prevent its reoccurrence.

The monitoring system we employ provides for ongoing control of the production processes and their impact on the environment. Measurements of air emissions and ambient air pollutant concentrations enable quick reaction whenever there is an unfavourable growing trend in any metrics reflecting the refinery's environmental impact. We constantly monitor the intake of water and the quality of treated wastewater discharge, in order to properly assess its impact on receiving waters.

The data on emissions contained in this year's report (measurements taken in 2011) clearly shows how we have implemented one of the most basic principles of sustainable development, namely the principle of decoupling, which consists in a disproportionately lower increase in environmental pressures relative to gains in throughput capacities. Our water or waste recovery rates (more than 45% and more than 90%, respectively) confirm that environmental concerns are at the very top of our agenda.

Even though relevant regulations have not yet been written into law, Grupa LOTOS monitors greenhouse gas emissions throughout the fuel life cycle, from production, to processing, to logistics and use by the end customer. Greenhouse gas emission volumes over the product life cycle are measured for the engine fuels: LPG, gasoline and diesel oil. The GHG (greenhouse gas) emissions computed for the individual fuels are presented per units, i.e. in CO<sub>2</sub> eq per 1 MJ of energy contained in the fuel. The overriding objective of all activities in this respect is to achieve a GHG emissions reduction of 6% by 2020, by using methods designed to ensure efficient use of energy.

Other installations built as part of the 10+ Programme and launched in 2011 have enhanced the refinery's flexibility with respect to processing various types of crude. This has allowed the Company to diversify its crude purchases, which in turn provides for the most efficient processing from the economic point of view, e.g. heavy crudes are processed when demand for bitumen components grows, but at the same time light crudes, suitable for the production of fuels and oil bases, can be processed on the second distillation line. The newly launched mild hydrocracking unit (MHC) has been supplying a new stream, namely paraffin fraction, with respect to which there have been plans to ultimately sell it as a commercial product. Owing to various optimisation steps, the fraction is now used in whole inside the refinery, contributing to a broadening of the range of engine fuels and increasing the output of base oils. That translates directly into higher efficiency of the oils unit. In late 2011 we carried out performance tests of vacuum distillation of refined paraffin fraction, the initial results of which give a real chance for the production of high-quality group II bases. Group II bases are characterised by a low sulphur content (below 0.03%), making them suitable to be used as bases for the production of modern lubricants.

We also attach great importance to the quality of our products, acknowledging their secondary environmental impact in the place of application or consumption. Our fuels have very low sulphur content. They contain additive packages, i.e. specially selected blends of complex chemical compounds which improve their properties, delivering significant environmental benefits. The additives improve combustion, protect engines from contaminants, etc., as confirmed by tests carried out by

leading European laboratories.

Our gasolines and diesel oils are manufactured with the use of biocomponents, obtained from renewable resources. All our products have Safety Data Sheets (SDS), drafted based on the applicable legal requirements (REACH Regulation). The information included in SDS warns users – where necessary – of potential threats connected with using a particular product.

**Wojciech Blew**

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