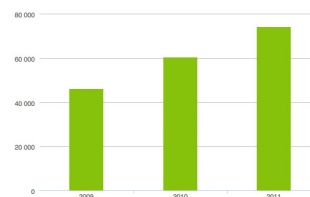


## Transport

The LOTOS Group companies analyse the environmental impact from transporting products, goods and other materials used in their business.

No negative environmental impact has been identified from the transport for the needs of **LOTOS Petrobaltic**. The company uses six seagoing vessels to carry supplies to, and to take away waste and contaminants for disposal or treatment from, the offshore platforms. The same vessels are used to carry crews to and from the platforms. The vessels are powered by low-sulphur diesel oil, which complies with the requirements of Annex VI to the Marpol Convention 73/78. All contaminants and waste from vessels generated during their operations are taken to the shore for disposal or treatment. A potential risk to the marine environment arises in the case of a potential collision of the tanker with another vessel and double-hull leakage. The tanker transports crude oil to the petroleum port in Gdańsk. In 2011, the tanker covered the distance of about 60 km from the B3 field to the port five times, carrying the crude produced from the field. All the ships of Miliana Shipping Company providing sea transport services to LOTOS Petrobaltic have all the required certificates valid and meet the highest standards applicable to such vessels. They do not generate any significant environmental impact.

Use of traction electricity by electric locomotives of LOTOS Kolej [MWh]



**LOTOS Asphalt** has embarked on a number of investment projects the purpose of which is to mitigate the environmental impacts of the company's transport activities. Products are handled at LOTOS Asphalt depots in modern handling terminals, where emissions of harmful fumes into the air are minimised. Air sealing of road tanker filling stations reduces air emissions of harmful gases, such as hydrogen sulphide, and improves the occupational safety of staff involved in road tanker filling. In 2011, work was completed at the Gdańsk loading terminal on the installation of mass flow meters. The mass flow meters provide for precise control of the volume of cargo loaded and help eliminate events which might arise from exceeding the gross vehicle weight rating by vehicles providing transport services to LOTOS Asphalt. This mitigates the destruction of roads by overloaded vehicles.

From LOTOS Asphalt branches, bitumen is carried to end customers by specialised providers of road haulage services. Each of them meets the highest quality standards as far as environmental protection and customer service are concerned. They operate modern transport fleets that meet European standards, thus ensuring safe, economical and environmentally friendly delivery of products to their destinations. In 2011, several dozen new road tractors meeting the relevant environmental requirements were added to the company's fleet of transport vehicles. The new road tractors consume less fuel and meet the Euro4 and Euro5 exhaust emission standards, markedly reducing the environmental emissions of harmful exhaust gases. The vehicles providing international road transport services meet the requirements concerning low noise emissions, as confirmed by relevant signage. The road tankers are properly insulated, which limits the need to heat up products, thus markedly reducing environmental pollution.

Sea shipping of bitumens continued in 2011, with the handling volume at over 100 thousand tonnes per year. With a higher share of sea shipping in the total transport volume, the economies of scale make it possible to reduce harmful environmental emissions and fuel consumption per unit of shipped cargo.

**LOTOS Oil** does not have its own transport fleet. Goods are carried by providers of transport or forwarding services whose customer service and environmental protection standards must meet strict quality requirements, usually confirmed by the ISO 9001 certification. In piece-goods transport, the ISO 14001 certification is required. An internal control system is also in place which helps monitor and supervise the following areas related to transport services: energy consumption, emission of gases into the air, production of wastewater, production of waste, noise emissions and – potentially – leakages. The carriers must have insurance covering risks related to the distribution of all LOTOS Oil products. With respect to the identification of significant environmental aspects and procedures to be followed while transporting, loading and unloading hazardous materials, the company operates on the basis of its own internal rules. Ongoing analyses are carried out with respect to hazards generated by the company's operations involving land transport.

In line with the applicable laws, carriers have the duty to maintain appropriate records of fuel consumption and to report the emission of gases into the atmosphere as a result of providing transport services.

The transport of liquid fuels sold by **LOTOS Paliwa** has been entrusted to specialised companies: LOTOS Kolej in the case of rail transport, and external providers of haulage services in the case of road transport. Transport of fuels is subject to strict regulation under the Polish and international laws concerning transport of hazardous materials, the purpose of which is to minimise the negative environmental impact from transport. Irrespective of the legal requirements, the company has taken a number of measures in order to mitigate the environmental impact of road transport. For instance, it has developed safety requirements for delivery points, prepared safe loading, transport and unloading procedures as well as regular controls of whether these procedures are observed, put in place emergency response procedures, and started to monitor the service providers' vehicles – to check if they meet the relevant technical requirements – as well as the system of selection and training of staff employed to handle the transport operations. Rail transport of fuels is done at the customer's risk and

responsibility, whereas road transport – at the risk and responsibility of LOTOS Paliwa.

For a total number of 43,744 deliveries made in 2011, no occurrences involving leakage of fuel were identified as part of the road transport monitoring process. All costs of removal or elimination of air pollutants as a result of emissions, remedial measures, as well as environmental management and prevention connected with transport services, are borne by the service providers and are not reported by LOTOS Paliwa. Out of a total of 4,835 thousand cubic metres of fuels sold in 2011: 586 thousand cubic metres (or 12% of the total volume sold) were transported using rail tankers, and 1,164 thousand cubic metres (or 24% of the total volume sold) were transported using road tankers. The balance was collected from storage terminals by the customers' own means of transport.

2011 was another year during which the quantities of cargo transported by **LOTOS Kolej** using electric traction increased relative to Diesel traction. The motive power units were also gradually upgraded. As a result, the consumption of engine fuels was further reduced, as were the environmental emissions of exhaust gases and noise emissions by locomotives. Modern TRAXX DE locomotives have Stage IIIA compliant Diesel engines.

In 2011, about 85.5% of all transport work done by LOTOS Kolej (expressed in btkm) relied on electric locomotives. At the end of 2011, the company had 96 locomotives, including 50 electric ones and 46 Diesel ones. Modern locomotives accounted for about 35% of the company's motive power units. Thus, LOTOS Kolej operates one of the most modern locomotive fleets among Polish rail carriers.

#### Diesel oil consumption by Diesel locomotives of LOTOS Kolej [litres]

	2009	2010	2011
H 1	1,938	3,861	2,739
H 2	3,232	3,299	3,059
Total	5,170	7,159	5,798

Source: In-house compilation based on operational data.

The 19% reduction in the consumption of diesel fuel in 2011 relative to 2010 was due to the use of electric locomotives, as well as the gradual withdrawal from service of older types of locomotives, which were being replaced by modern ones consuming less energy. As a result, the consumption of diesel oil per one tonne of transported product has been falling.

#### Consumption of gasoline at LOTOS Kolej for non-traction purposes [tonnes]

	2009	2010	2011
Consumption of gasoline	8.5	7.73	3.88

Source: In-house compilation based on operational data.

In 2011, the consumption of unleaded fuel for non-traction purposes fell considerably as compared with 2010. Fuel consumed for non-traction purposes included almost entirely fuel consumed by company cars used by LOTOS Kolej staff. The reduction was a result of the gradual phasing out of unleaded gasoline-powered cars.

The 22.5% increase in the consumption of traction electricity at LOTOS Kolej in 2011 relative to 2010 is attributable to the growing scale of the company's transport operations and the growing share of work performed using electric traction in the total work.

The transport of products sold by **LOTOS Parafiny** is contracted out to specialised third-party providers, which are required to hold the relevant licences and approvals for the means of transportation to carry hazardous materials. Operators of such means of transportation must hold the required qualification certificates and licences. In most cases, insulated road and rail tankers are used to carry paraffin products. Additional technical requirements are related to weather conditions - the haulage vehicles need to be fitted with a heating system (in winter) or a cooling system (in summer).

All costs related to emissions of pollutants into the air, as well as costs of environmental management to the extent related to transport services, are borne by the service providers.

The company operates production sites in Czechowice-Dziedzice and Jasło. Products are sold directly from those sites. Transport of finished products in packaging to the warehouse, from where the products are shipped to customers, relies on forklift trucks, most of which are LPG-powered, as well as electric trucks. By phasing out older Diesel trucks, the quantity of exhaust gas emissions has been reduced. As part of measures undertaken with the aim of minimising the impact of transport on the environment, LOTOS Parafiny has developed emergency response procedures and started monitoring the vehicles to check if they meet the relevant technical requirements.