

NOTES TO THE SUSTAINABILITY PERFORMANCE

1. CLIMATE CHANGE

General aim: Manage risks and opportunities related to climate change

ACHIEVEMENTS:

- A geothermal concession contract for the Jászberény area was signed by MOL Group Joint Venture CEGE (65% MOL share) in 2014. Project plans include starting a 2 year exploration program that will establish and test a system composed of one pair of wells.
- Analysis of the most important 50 energy efficiency projects, many of them from the New Downstream Program, shows that compared to the baseline year 2011, the emission of 320 thousand tonnes of CO₂ was avoided by Exploration and Production and Downstream production operations. These projects alone resulted in an annual financial savings of almost HUF 13bn in 2014.
- 47% of total direct CO₂ emissions in the Exploration and Production division is related to the venting of the CO₂ that is produced together with hydrocarbons and released to the atmosphere. This was significantly reduced from 419 thousand tonnes in 2013 to 361 thousand tonnes in 2014 as a result of the Enhanced Oil Recovery (EOR) program at INA which came into operation at the end of 2014.

CHALLENGES:

- Decreasing number of potential energy efficiency programs with short return on investment.

Climate change is one of the most important megatrends to impact the business environment of the company. MOL Group's efforts are primarily focused on managing risks and exploiting the potential opportunities associated with Climate Change. The overall approach is described in the Climate Change Statement of MOL Group which is publicly available on the website.

1.1. FUTURE PRODUCT PORTFOLIO

Related objectives:

- "Maximize the share of low-carbon products and services"
- "Start implementation of first geothermal project in Upstream"

MOL Group is committed to increasing the share of low-carbon products and services it offers. MOL Group has launched and continues to work on a series of R&D projects which are designed to reduce the life-cycle emissions of its products. Aside from optimizing the

standard product portfolio, MOL Group puts special focus on developing and using technologies that use non-edible or waste-based feedstocks to produce advanced renewable fuels and refinery streams. Integrating renewable energy into our operations is considered to be a promising option. Moreover, MOL Group is continuously monitoring the ongoing development of different emerging technologies which may have huge potential to reduce the carbon footprints of the products in the future.

Non-food based renewable fuels

Over the last year, major R&D efforts were put into three early stage projects for converting cellulosic feedstock into liquid fuels or fuel components, with special focus on advanced pyrolysis approaches and further product upgrading. The work will continue in the next year, supported by external research partners and academia.

For short-term compliance with renewable energy targets considering future indirect land use change (ILUC), the viability of technological alternatives for processing GHG-efficient waste fats and oils (namely, renewable diesel blending and production using hydrotreatment) were investigated. A decision about their implementation is expected to be made in 2015 following completion of the detailed technical and economical assessment.

Some pre-existing renewable energy research projects that concern the use of edible or waste feedstocks (such as algae to oil, waste plastic-based fuel and biogas production) were discontinued, mainly due to the currently unfavourable economic situation. Nevertheless, the related R&D field is being continuously monitored and the situation will be reconsidered if major advances in technology occur to improve the economics of these processes, or if existing legislative burdens are reduced.

Thinking ahead, MOL Group has also commenced exploring future energy carriers by evaluating project ideas for storing renewable energy and converting it to transportation energy.

MOL Truck Diesel

This high quality, CO₂-efficient product was introduced to market in 2013. In the course of 2014, the formula of truck diesel was further developed to improve the product's GHG-efficiency.

Chemically stabilized rubber bitumen

After the introduction of this product to market in 2013 MOL Group gained a substantial achievement in this field in 2014 when the product received ECO-label certification. Moreover, sales of the product increased to 250% of the preceding year, allowing MOL Group to re-use 25,000 waste-tyres for the production of this outstanding

quality product. A significant step forward was also made in terms of the application of the product: for the first time in road construction history of Hungary, rubber bitumen was applied to all three road-layers to the full satisfaction of the road construction company (Villány, Hungary).

Biofuels

MOL Group is not directly involved in the production of biofuels. However, both MOL Plc. and Slovnaft have minority shares in joint ventures involved in the production of biodiesel. These companies operate independently from MOL Group and are considered as financial investments.

In 2014 MOL and Slovnaft purchased approximately 450 million litres of biocomponents (a similar quantity to 2013), including biodiesel and bioethanol, from the aforementioned joint ventures and third parties. The biodiesel includes both first generation biofuels and biofuels produced using waste feedstock.

The biofuel purchased in 2014 is in compliance with the sustainability criteria defined in the ISCC certification system. This independent and globally-applicable certification system ensures that emissions of greenhouse gases are reduced. Attainment of ISCC certification indicates that the biofuel complies with the requirements of the EU Renewable Energy Directive (RED).

Geothermal developments (E&P)

MOL Group considers geothermal energy to be an investment opportunity in the field of renewable energy. The geological and engineering knowledge and technological similarities between certain phases of hydrocarbon extraction and the geothermal energy projects may create an advantage for oil and gas companies in this field, and in Central Eastern Europe there is clear potential for the development of geothermal infrastructure from a geological perspective.

Following successful bidding in 2013, a concession contract for the Jászberény area was signed by MOL Group Joint Venture CEGE (65% MOL share) in 2014. Project plans include the commencement of a 2 year exploration program that will establish and test a system composed of one pair of wells. Energy production capacity and opportunities will be defined on condition of successful testing.

Renewable energy production at MOL Group is otherwise only related to supplying own operations on a minor scale, e.g. by generating solar power at remote E&P locations.

1.2. ENERGY EFFICIENCY AND GHG EMISSIONS

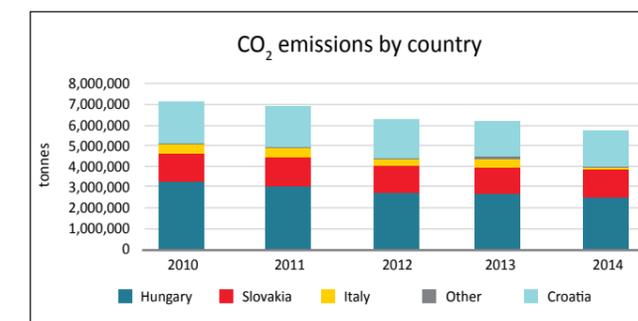
GHG emissions

Related objective:

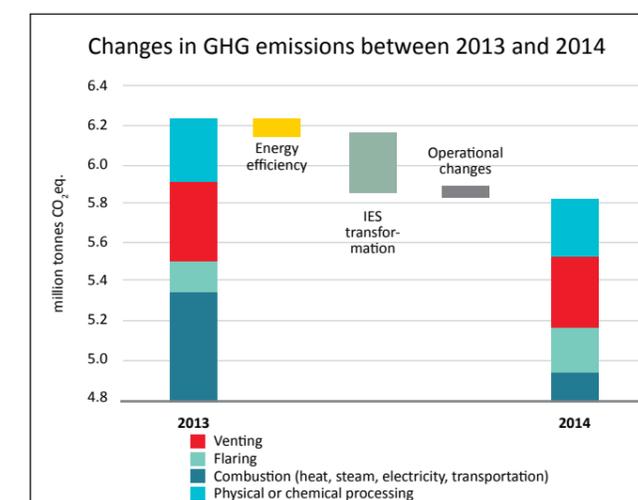
- "Ensure all sites move up one decile in their sectoral CO₂ benchmarks from current positions in Downstream".
- "Reduce CO₂ intensity of operations by 20% by end of 2017 (in tCO₂/toe) in Upstream."

Total direct GHG emissions from MOL Group activities amounted to 5.81 million tonnes of CO₂ equivalent in 2014, which is 7% lower than in 2013 when 6.23 million tonnes of CO₂ equivalent were emitted

and 20% lower compared with the 2010 baseline year (7.14 million tonnes). The single largest component in GHG emissions is carbon dioxide (CO₂) the emission of which is shown in the chart below in country breakdown.



This overall decrease is a result of both lower production volumes and energy efficiency measures, as shown in the chart below. The single most important reason for the decrease in emissions in 2014 was the transformation of the IES refinery into a logistics hub, resulting in a reduction of 284 thousand tonnes of emissions.



The primary sources of the GHG emissions of MOL Group are refining and petrochemical operations. To better monitor performance, in 2010 MOL Group introduced the CONCAWE – Solomon CO₂ intensity indicator (CWT – Complexity Weighted Tonnes). This indicator is production-based but can be modified according to the complexity of the refinery. The results presented below indicate a slight improvement in carbon intensity (3%) for the refining sector when compared with 2011. With regard to petrochemical sites, the tracking of CO₂ intensity is done through monitoring the production of high value chemicals (HVC) while for the exploration and production facilities, the company tracks CO₂ intensity using OGP standard kg CO₂/toe.

Notes to the sustainability performance

CO₂ intensity (production-weighted average) of refineries and petrochemical sites of MOL Group [GRI EN16]

YEAR	2010	2011	2012	2013	2014	CHANGE 2011-2014 (%)
Refining (t CO ₂ /kt of CWT)	N.A.	36.64	36.43	35.59*	35.54	(3.00)
Petchem (t CO ₂ /t HVC)	1.011	1.032	1.031	1.020	1.020	0.89

*2013 data has been restated here due to re-calculation of the CWT indicator in Rijeka

Change in CO₂ intensity by refinery (t CO₂/kt of CWT) and by petrochemical site (t CO₂/t HVC)* [GRI EN16]

SITE	REFINING					PETROCHEMICAL	
	DUNA REFINERY (MOL)	SLOVNAFT (SLOVNAFT)	MANTOVA (IES)	SISAK (INA)	RIJEKA (INA)	TVK	SPC
Change (%) 2014/2010	(1.48)	(3.00)	3.96	32.45	(37.64)	(1.0)	16

A significant factor in direct GHG emissions is the venting of CO₂ from Exploration and Production operations in Croatia. 47% of total direct CO₂ emissions in Exploration and Production division are related to the venting of CO₂ that is not a direct product of combustion or flaring but is produced together with hydrocarbons and released to the atmosphere. The total volume of vented CO₂ decreased significantly from 419 thousand tonnes in 2013 to 361 thousand tonnes in 2014. The decrease is a result of the Enhanced Oil Recovery (EOR) program at INA, one of the most important MOL Group investment projects in Croatia which went online in October, 2014. This project involves applying one of the so-called tertiary methods of enhanced oil recovery to increase the quantity of recoverable oil and to permanently dispose some of the CO₂ that is produced. In 2014, over 51,386 tonnes of CO₂ were re-injected.

Scope 3 GHG emissions (from product use, crude supply and business travel)

Scope 3 GHG emissions by origin (t CO₂) [GRI EN17]

EMITTED BY	SOURCE OF EMISSION	2012	2013	2014
Customers	Use of purchased refinery products (t CO ₂)	50,305,352	51,060,438	48,486,612
Customers	Use of purchased natural gas (own production) (t CO ₂)	7,528,676	6,566,103	6,025,497
MOL Group	Business trips (t CO ₂)	3,943	4,414	2,984
Suppliers	Production of crude oil (purchased from external sources) (t CO ₂)	1,722,810	1,399,445	1,179,981
Total		59,560,780	59,030,400	55,695,074

The calculation of CO₂ emissions related to product use and services (Scope 3) was further developed in 2014. Now the data cover not only sold products and business travel but also crude oil deliveries that are purchased. Due to relatively unchanged refined product sales, as well as the decrease in natural gas production, scope 3 emission amounted to almost 55.7 million tonnes of CO₂ (a decrease compared to last year's emissions of 59.0 million tonnes).

Although accounting for a small share of total MOL Group emissions, business trip-related CO₂ emissions are also tracked and reported. These business travel-related emissions accounted for 2,984 tonnes of CO₂ equivalent in 2014.

Energy Efficiency

Related objective: "Decrease Downstream production energy consumption by 5% by end of 2014"

Oil and gas production is an energy intensive industry. Exploration and production, refining and petrochemicals all consume large amounts of energy. As a result, increasing the efficiency of energy consumption is a key factor in business success. Even though making financial savings is the main priority of such projects, their GHG emission-reducing impact is also significant. MOL Group continuously improves the monitoring of its achievements to reduce CO₂ emissions. The target of reducing energy consumption in Downstream production business by 5% until the end of 2014 (compared to 2011 baseline) was achieved, the overall decrease in energy consumption was 18.6% in the period. Total decrease is a result of several factors, such as changes in production or portfolio and also energy efficiency measures.

Analysis of the 50 most important energy efficiency-improving projects shows that, compared to the baseline year 2011, an estimated 320 thousand tonnes of CO₂ emissions were avoided in Exploration and Production and Downstream production operations. Energy efficiency projects

alone resulted in financial savings of almost HUF 13bn. The one-off emission reduction in 2014 (compared to previous years) is 85 thousand tonnes of CO₂ with related financial savings of approximately HUF 3bn. Exploration and Production activities are responsible for less than 10% of overall Group-level consumption. However, with decreasing production levels in Central Eastern Europe, efficiency measures are still necessary to maintain intensity levels and the efficiency of production. In 2014, further projects were implemented which included replacing old and inefficient pieces of equipment and utilizing the benefits of process-optimization measures. Significant achievements were also made with the utilization of associated petroleum gas in Russia (detailed information about this project is provided in the chapter of this report about Gas Leakages).

The Refining and Petrochemicals activities of MOL Group are the largest consumers of energy in the operations, accounting for almost 90% of Group-level energy consumption (including both direct and indirect energy), while energy bills are the single largest operational cost items for Downstream business. Accordingly, energy efficiency has been in the focus of the Group-level New Downstream Program that was designed to significantly reduce energy use in the period 2011-2014 and will continue to be the focus of efforts. Energy efficiency-related activities which made the greatest energy consumption and emission reductions were usually related to improvements in energy-intensive technologies (e.g. replacement of a de-ethanizer reboiler, optimization of a distillation column influx), improvements in energy production and transfer (boiler efficiency improvements, reductions in losses from the steam network) and reductions in flaring. In line with MOL Group's ongoing efforts to further improve the efficiency of its assets and reduce GHG emissions, planning of the implementation of an Energy Management System (based on the ISO 50001 standard) has started at TVK Plc. and MOL Plc. in 2014, with certifications expected for 2015. Besides meeting legal obligations, implementation of the Energy Management System will increase energy awareness and facilitate energy efficiency improvements by creating a common framework for the companies' energy management activities and by facilitating the incorporation of energy management prin-

ciples into everyday organizational practices. Similar energy audit systems are already in place in Slovakian operations and are being planned by the Croatian INA Group.

Additional to the most important business related activities, minor improvements are continuously being made at our other assets such as MOL's filling station network, office buildings and warehouses. One good example is the future service station concept of MOL Group. The first service station to use energy efficient and renewable technologies was built in Budapest in 2011 and received the Energy Globe National Award for its architectural concept in 2014. Similar stations are planned for Croatia and Slovakia as well (as a part of the "Energy for the Future" project, INA in Croatia plans to rebuild one filling station in Zagreb and one in Split according to this concept). MOL Group also continues to mitigate CO₂ emissions related to use of products and services (scope 3) through efficiency measures such as reducing the number of short and long haul flights which are taken by using E-Systems (e.g. audio & video-conferencing) and car-sharing schemes.

Gas leakages

Gas leakages or losses in the oil and gas industry include those that result from the flaring and venting of hydrocarbons.

Flaring refers to the controlled burning of unused hydrocarbon for technical or safety reasons. The gas flared in Exploration and Production is 'associated petroleum gas' (APG) while in Downstream some of the gas generated during the refining process is flared for safety reasons. Oil and gas leakages are considered to be losses of valuable material that represent operational inefficiency.

Flared gas represents only a small fraction of the total amount produced and processed by MOL Group, but it is not insignificant in terms of quantity. As a result, projects have been carried out to reduce emissions to the environment and minimize losses.

CO₂ generated from flaring accounts for around 3% of the total direct GHG emissions of MOL Group. The amount of gas flared during MOL Group's activities is shown in the tables below:

Flaring in E&P activities in 2014 (where MOL Group is operator) [GRI OG6]

	MOL E&P	INA E&P	PAKISTAN	RUSSIA	KURDISTAN REGION OF IRAQ	TOTAL
Flared hydrocarbon volume (m ³)	4,559,085	17,650,653	2,500,661	2,916,490	832,368	28,459,257
CO ₂ (tonnes)	11,413	32,846	15,004	8,633	2,414	67,896

BaiTex (Russia) commissioned a gas turbine (of 1.8 MW capacity) in 2014 in order to increase APG utilization to 95% and to facilitate the use of excess gas for power generation. The project reduced CO₂ by 572 tonnes in 2014.

At Matyushkinskaya Vertical (Russia) gas engines were installed to utilize associated gas to both produce electricity and reduce MOL Group's environmental impact. Their utilization level has reached more than 80%.

In the Kurdistan region of Iraq, controlled flaring of H₂S is still continuing, at least until the appropriate solution (re-injection or other) is finally made technically feasible and is approved. For this reason an H₂S system audit was conducted at the production and drilling & well operations services to detect high risk activities and to eliminate any potential emergency situations that may arise.

Flaring in Downstream activities in 2014 [GRI OG6]

	MOL	SLOVNAFT (REFINING + PETRO- CHEMICALS)	IES	INA (RIJEKA+SISAK REFINERIES)	TVK	TOTAL
Flared hydrocarbon volume (tonnes)	6,210	8,403	1,946	20,751	6,955	44,265
CO ₂ (tonnes)	11,709	25,239	5,897	65,889	21,485	130,219

Total CO₂ emissions from flaring increased considerably at our Downstream business in 2014 to 130,219 tonnes (up from 106,806 tonnes in 2013). This increase is primarily due to turnarounds and to the increased number of shut-downs and start-ups at some of the sites. Nevertheless, activities to reduce flaring from our normal operating processes continued. Some examples are listed below.

Despite the overall increase, major projects were undertaken to reduce flaring at Downstream. In our Hungarian Petrochemical plant TVK, one project designed to decrease flaring resulted in a reduction of 1,159 tonnes of CO₂ emissions. In July 2014 at the Danube Refinery a flare gas recovery system was implemented for the FCC and GOK-3 flares. The flare gas recovery system reduced CO₂ emissions by 3,174 tonnes. Moreover, at the Rijeka and Sisak refineries flare top replacement projects were also carried out to reduce flaring.