



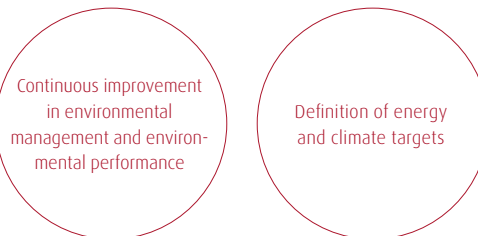
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Environment  
and resources

# Clear guidelines for environmental protection

Environmental protection at Linde covers not only environmentally efficient products but also operational environmental management, energy consumption and material purchasing.

## Sustainability targets Environment and resources<sup>1</sup>



## Environmental protection in the processes

The sustainable alignment of Linde Material Handling is primarily demonstrated by the environmentally friendly and safe products of the Company. They help customers to save energy, reduce emissions and guarantee high safety standards. However, increasingly demanding targets for environmentally benign production and a safe working environment are also being applied at the operational level. Linde has introduced comprehensive HSE management (health, safety, environment) to meet this demand (read more about safety in the workplace from page 43).

### Standards and management systems

As a company of the KION Group, Linde Material Handling is committed to group-wide standards and observes all relevant rules of conduct. The KION Code of Compliance also includes regulations and initiatives on the subject of HSE. These entail:

- complying with all relevant national laws, standards of conduct and industrial standards,

- ensuring a safe working environment and training for employees,
- avoiding the release of pollutants, discharges and emissions into the environment as far as possible,
- reducing the volume of waste by making better use of raw materials and using recyclable materials,
- using materials, products and processes that comply with best environmental practice,
- using resources, energy and raw materials efficiently.

An important focus is the requirement formulated in the HSE policy of Linde that all organisational units must establish appropriate management systems. A large proportion of these systems have already been certified in accordance with ISO 14001, OHSAS 18001 and ISO 50001. By 2017, external certification will have been implemented in all units of Linde throughout the world within the scope of the sustainability strategy. However, these standards are already exerting a tangible effect today. During the year under review, no fines or nonmonetary sanctions relating to compliance with environmental standards were imposed on Linde Material Handling.

<sup>1</sup> Operationalisation of the sustainability targets defined in 2014 can be found on p. 18

Furthermore, key environmental data concerning matters such as energy and water consumption, and waste have been recorded for many years at all the production locations in Germany, France, the Czech Republic, the USA, China and India. Each location is pursuing targets for reduction and efficiency which are monitored by the HSE Manager responsible for the site. In the course of expanding Linde sustainability management, company-wide quantitative targets are being launched from 2016 and they will be monitored in a management review. Compliance with the HSE requirements is being ensured by regular audits at KION level. The implementation of environmental management at Linde Material Handling was reviewed by 125 internal and 29 external audits during the course of the year under review.

#### Current focuses in environmental management

On business and environmental grounds, the focus of environmental management at Linde over recent years has been on the topics of energy and waste. Lower energy consumption in production has tangible impacts on the cost structure and on the generation of CO<sub>2</sub> emissions. Consistent recycling helps to reduce waste. Significant annual improvements have been achieved each year in these areas for each production unit. During the year under review, there were also no spills of waste, fuels or chemicals.

In order to make these successes even more beneficial for all the companies in the Group, the future will see relevant management processes and the associated savings targets being rolled out globally. These also include the incremental introduction of energy management systems in conformity with ISO 50001 in the relevant units. An important energy-savings measure relates to the conversion of sites to LED lighting.

A further target is stronger integration of suppliers into sustainability management. In 2014, the KION Group developed an appropriate guideline which includes environmental and ethical rules for purchasing materials.

## Systematic environmental management

Linde Material Handling makes sustainability a top priority not only in products and services but also in production. On the one hand, the Company has a strong conviction that the biggest lever for more sustainability lies in the products themselves. On the other hand, Linde wants to ensure that these products have been produced and maintained in a process that meets environmentally and socially acceptable standards. 60 % of all our global locations are currently applying reduction targets for energy consumption, CO<sub>2</sub> emissions and volume of waste.

#### Certified management systems

A sustainable production process is based on many different building blocks. The premium approach of Linde is focused on all the individual measures, whether this relates to a closed cooling-water circuit, emulsion separation facilities, heat recovery or air heat exchangers.

Essential enablers are reliable management systems which deliver stable processes and unambiguous indicators in order to implement this aspiration in operational business. All the strands in this process come together at Linde in HSE management. Internationally acknowledged management systems are applied here: ISO 14001 for environmental management, ISO 50001 for energy management and OHSAS 18001 for occupational health and safety. Compliance with these voluntary management systems is reviewed by means of internal Linde audits along with statutory regulations which govern the actions of the Company, although they vary from one country to another. External auditors have also already provided certification at many locations. The global group-wide certification of all locations is now going to be implemented. The plan is to complete this programme by 2017.

During the year under review, seven production facilities in various countries had already been certified in conformity with ISO 14001 or they are currently undergoing the process of certification. With respect to ISO 50001, this applies at five locations. 12 national companies providing sales and service have already been certified at a minimum of one location in conformity with ISO 14001, or certification is being carried out at the present time. Linde regards these certifications as an important investment in the future of the Company. They provide customers with orientation when they are looking for a reliable partner, for example in the context of ethically robust supply chains, and they help to optimise internal workflows.

## Energy and emissions

#### Used and sealed surfaces

During the year under review, Linde Material Handling occupied a total of around 2 million m<sup>2</sup> of sealed land (incl. buildings 1.1 million m<sup>2</sup>) and unsealed land (0.8 million m<sup>2</sup>) with production, administrative, and sales and service locations in 13 countries.

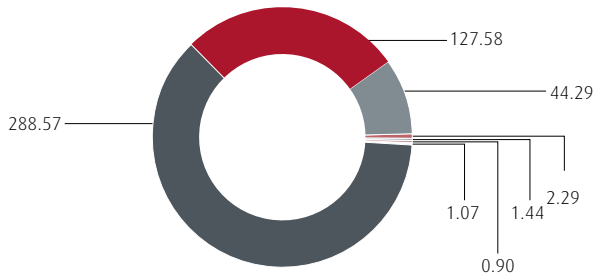
#### Energy consumption

The area of energy is also a cost factor and a variable for environmental impacts. Increasing energy efficiency is one of the most important corporate targets – at the production level and within the company itself. The amount of energy consumption overall (direct and indirect) at our locations and for transport amounted to around



### Direct energy consumption<sup>1,2</sup> (properties, production, etc.)

■ Natural gas ■ Ethanol ■ Coking coal ■ Compressed natural gas (CNG)  
■ Diesel □ Other ■ Heating oil

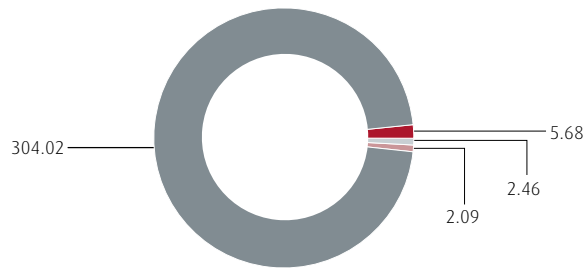


<sup>1</sup> Quantity in terajoules

<sup>2</sup> with rounding differences

### Direct energy consumption<sup>1,2</sup> (transport, business trips, etc. \*)

■ Diesel ■ Petrol ■ Compressed natural gas (CNG) ■ Liquid petroleum gas (LPG)



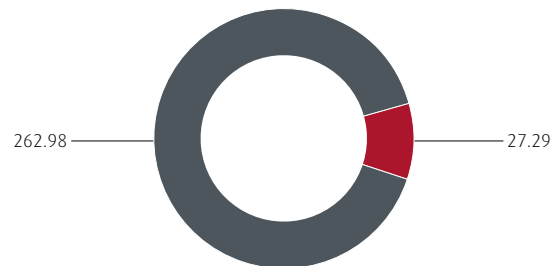
<sup>1</sup> Quantity in terajoules

<sup>2</sup> with rounding differences

\* only the Company's own vehicles or those controlled by the Company; only internal transport processes and business trips, not shipment

### Indirect energy consumption<sup>1,2</sup> (overall)

■ Electricity (power) ■ Heat



<sup>1</sup> Quantity in terajoules

<sup>2</sup> with rounding differences

1,070.7 terajoules. Direct energy consumption at our locations accounted for 466.1 terajoules, and 314.2 terajoules were expended on transport. 62 % of the energy used in our buildings is derived from natural gas, and diesel is used almost exclusively for transport. Indirect consumption includes purchased electricity and amounts to around one quarter of the total requirement.

### Using energy more efficiently

Certifications offer evidence-based insights into areas of weakness and issues offering potential for optimisation. For example, progress in lighting technology today offers a variety of opportunities to reduce electricity consumption. This is particularly relevant because – to take just one example – the energy requirement for lighting at one of our German production locations represents a proportion of 20 % of the total energy requirement.

This is not just a substantial cost factor in an energy-intensive company like Linde. High levels of consumption also impact negatively on the environment by using up resources and generating associated emissions, even though these do not occur directly within the Company. In 2014, Linde therefore started to convert all the production locations throughout the world to energy-efficient lighting.

This fact is also considered for the construction of the factory in Stribro (Czech Republic). Potential savings of 60 % have been estimated for lighting energy at the Fenwick location in Châtellerault. The project being implemented here over a period of three years was launched in 2014. Around 650 mercury lamps of 400 watts each are being replaced with 200-watt halogen-metal vapour lamps, that can be dimmed.

A further very promising project has been brought on stream in France, where the Company has been cooperating with systems provider Schneider Electric to have start-stop solutions installed for truck production in automated operation. When there are breaks in production, at night or at weekends, the energy consumption is significantly reduced further in stand-by mode. Projections anticipate that the investment will have paid for itself by the savings in energy costs within the space of around two years.

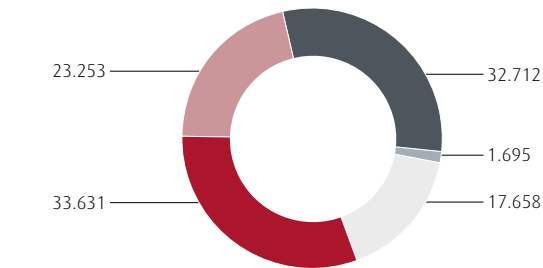
Linde is also playing a proactive role in working towards the improvement of energy efficiency at the paint facilities. Older equipment is being phased out and replaced by new systems which use less electricity and have low service requirements. Opportunities for savings are also being identified for commuting journeys by employees, albeit without restricting mobility. One of the ways these savings are being implemented is to restrict vehicles at the Essen service site to a maximum speed of 130 km/h if they are only used for business purposes. Linde Service in Sweden has introduced a dedicated vehicle guideline with reduced CO<sub>2</sub> emission values which automatically lead to lower consumption.

### Emissions

Emissions of greenhouse gases result from the use of energy described above. They are recorded and presented in accordance with the internationally acknowledged rules of the Greenhouse Gas

## Emissions of greenhouse gases<sup>1</sup>

Direct greenhouse gas emissions (Scope 1): ■ Properties/production ■ Transport  
Indirect greenhouse gas emissions from purchased energy (Scope 2): ■ Electricity  
■ Heat ■ Other indirect greenhouse gas emissions (Scope 3)



<sup>1</sup> Quantity in kilotonnes

Protocol (GHG Protocol). The emissions of volatile organic compounds are mainly generated in the paint facilities.

## Responsible use of raw materials

Linde Material Handling has particularly high production depth. Almost all core components apart from the engine are manufactured by the Company itself. Linde is the only company in the sector which also manufactures the counterweights for forklift trucks at its own facilities. The Company carries out manufacturing activities using advanced production technology.

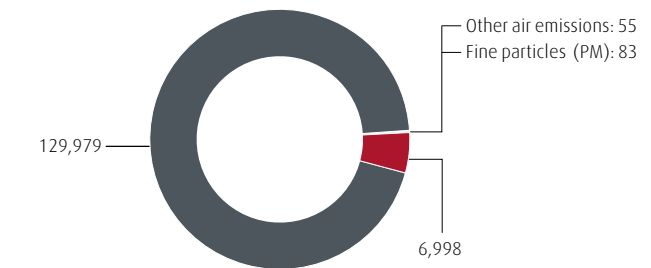
### Materials and recycling

Iron and steel are the main materials required for the manufacture of industrial trucks. 95 % of the total weight of a truck is made of steel. The rest of the vehicle is made up of tyres, batteries, electronics, lubricants, paint and varnish. Pallets and other packaging materials are used for shipment. As with ethical guidelines, Linde Material Handling also integrates ecological standards in its supplier management. As part of the KION Group the Principles of Supplier Conduct are valid.

Linde life-cycle assessments (see page 33) have revealed for environmental optimisation of Linde products that reducing the energy consumption during usage is a much more powerful lever for decreasing the burden on the environment than, for example, replacing materials with substitutes. Having said that, environmental factors also play a role in the selection of materials. For example, up to 90 % of the steel used in the counterweight is made of secondary steel. By the same token, components such as the driver's cab or the lift mast are manufactured from highgrade primary steels owing to the higher design requirements and operating safety.

## Other emissions into the air<sup>1</sup>

■ Volatile organic compounds (VOC) ■ Nitrogen oxides (NO<sub>x</sub>) ■ Others



<sup>1</sup> Quantity in kg

At the end of the product life-cycle, Linde carries out a check to establish whether a vehicle can be included in the range of "Approved Trucks" for reconditioning and reuse. This programme and the general long service life of Linde products means that a vehicle seldom has to be disposed of after the first phase of use. However, if this is the case, a very significant proportion of the vehicles can be recycled.

The recycling programme at the French Linde subsidiary Fenwick has succeeded in significantly increasing the recycling rate over the past several years. Whereas the proportion of recycled materials was still 83 % in 2010. This percentage had increased to 99 % by 2014. It includes 95 % metals (steel and some copper from electronic components).

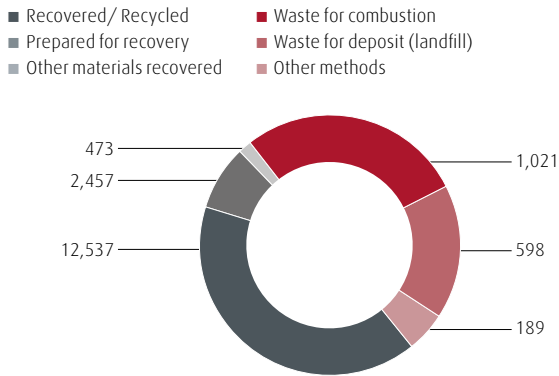
The other four percent cover scrap rubber from the tyres and waste oil from the hydraulic system and engine area. These are collected properly in cooperation with a disposal company and reprocessed almost without loss to form secondary raw materials. Reconditioning of batteries is also frequently part of the scheme for pre-owned "Approved Trucks".

Responsible waste management and recycling also takes place at other Linde locations. In 2014, for example, waste recovery was environmentally optimised in collaboration with a new service provider in Sweden. Waste separation in Germany became even more differentiated and now includes e.g. aerosol cans (varnish, oils) as a recyclable material fraction.

### Waste and disposal channels

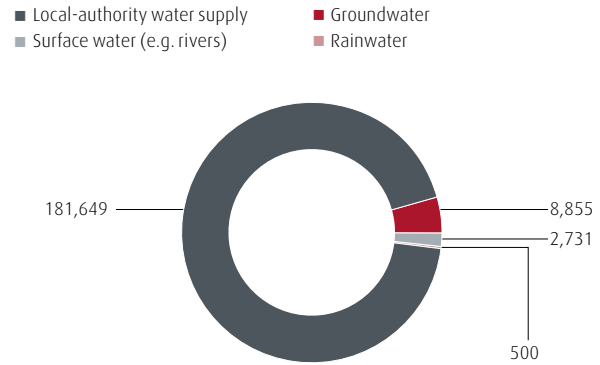
A variety of different types of waste are generated in the production facilities at Linde. They are separated into fractions and disposed of in accordance with the statutory regulations. Metals, paper and

### Disposal and recovery of non-hazardous waste <sup>1</sup>



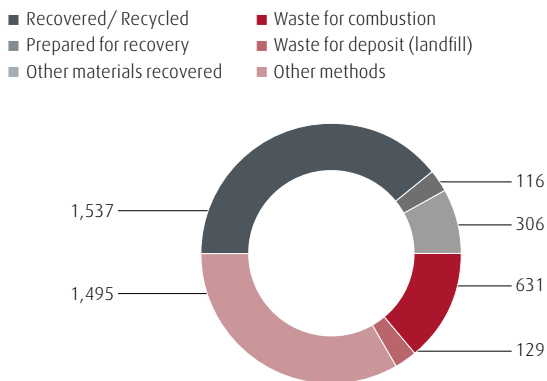
<sup>1</sup> Quantity in tons

### Water consumption <sup>1</sup>



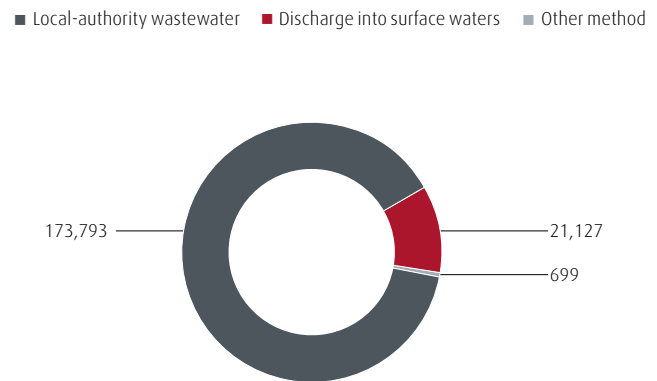
<sup>1</sup> Quantity in cubic metres

### Disposal and recovery of hazardous waste <sup>1</sup>



<sup>1</sup> Quantity in tons

### Wastewater volume <sup>1</sup>



<sup>1</sup> Quantity in cubic metres

packaging material in particular can be recovered – on this basis, Linde has a recycling rate of more than 90 % for non-hazardous wastes. Hazardous wastes at Linde mainly include used lead-acid batteries, old varnishes and solvents, waste oil, and packaging and filters contaminated with these materials. In total, in the reporting year there were 17,300 tonnes of non-hazardous and 4,200 tonnes of hazardous waste.

### Water and wastewater

The production facilities of Linde Material Handling are without exception in regions with generous water reserves and very good local infrastructure. Water is not therefore a significant environmental factor for Linde and savings are mainly carried out for reasons of cost. In total, processes at Linde consumed 194,000 cubic metres of water – 90 % of it from local supply, where also most of the wastewater went. The wastewater quality generally does not require any pretreatment before disposal.

### Environmentally friendly spare parts warehouse

Meaningful waste recycling and energy savings are the focus of an environmentally friendly spare parts warehouse at the British site in Basingstoke. Since a new warehouse was required in 2012 due to a shortage of space, the newbuild was designed right from the start on the basis of environmental principles. Firstly, the warehouse is now also used for the reconditioning of used trucks from recovered and recycled components. The warehouse has also been designed using an intelligent approach to lighting and heating, since different areas of the warehouse can be illuminated or heated independently of each other according to need, or indeed these systems can be switched off if required. Any necessary packaging requirements have also been optimised for the movement of goods such that packaging can be used several times. If this is no longer possible, metal, wood, plastic, paper and cardboard are recycled separately. The concept provides tangible protection for the environment and saves substantial costs for energy and disposal.