

**THE VOLVO GROUP**  
**SUSTAINABILITY REPORT 2012**



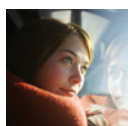
**VOLVO**

# Content



## Front cover:

Tumelo Myeza has started as a Skills for Life apprentice, having graduated from Star for Life schools in South Africa. She is now the first woman working as a technician at Volvo Truck's Pinetown workshop.



## STRATEGIC APPROACH 3

CEO comment	4
About the Volvo Group	6
Sustainability approach	13
Governance	19
Risk management	22



## FUTURE TRANSPORTS 24

Sustainable transport solutions	25
Infrastructure	27
Carbon dioxide-neutral transport	28
Electromobility	30
Intelligent vehicles	32
Freight efficiency	34
Volvo Group Venture Capital	36



## SOCIETY ENGAGEMENT 37

The Volvo Group – a part of society	38
Research partnerships	39
Professional training	41
Traffic safety	44
Commuting	46
Global partnerships	47



## VALUE CHAIN 49

Product development	50
Purchasing	58
Production	60
Distribution and service	71
Product in use	77
Re-use	80



## ADDITIONAL INFORMATION 82

About this report	83
Standards	86
Memberships	87
Independent recognition	88
Contact	91



## PAGES 3–23

As a provider of commercial transport solutions, the Volvo Group's products and services play an important part in our everyday lives – they enable people and societies to fulfill their basic needs and are drivers for economic growth.

# Strategic approach

### Content

CEO comment	4
About the Volvo Group	6
Sustainability approach	13
Governance	19
Risk management	22



## CEO comment

A bus transporting commuters early one morning in Curitiba, Brazil. This is a positive example of the Volvo Group's effort to create sustainable transport solutions that take into consideration the environmental, social and economic dimensions of sustainability.

The Bus Rapid Transit system, the type used in Curitiba, has been developed by the Volvo Group for many decades. Today, when nearly half of the world's population lives in cities, the need for sustainable transport solutions is increasing. Transport systems must have high capacity, low environmental impact and must be safe. At the same time, as supplier, we must adapt to the different economic conditions that exist in the many societies in which we operate.

The Volvo Group's vision is to become world leader in sustainable transport solutions. It is a bold vision that clarifies our com-

mitment to contribute to sustainable development through our operation.

Several of the global challenges facing the world are directly or indirectly connected to the infrastructure and transport sectors: climate change, population growth, urbanization and the shortage of natural resources and raw materials. The Volvo Group's global presence provides us with the opportunity to act and contribute to a positive trend.

I am convinced that sustainable products and services will be a prerequisite for us remaining a globally competitive group in the future. I am

*"The Volvo Group's vision is a bold vision that clarifies our commitment to contribute to sustainable development through our operation."*



also convinced that our vision will make us better at recognizing new business opportunities and thus capturing new market share, while contributing to sustainable development.

Traditionally, sustainability in the automotive industry has first and foremost involved reducing the impact of products on the environment. Naturally, the environmental dimension is still very important, but to achieve sustainable transport solutions, we must also take into consideration the social and economic dimensions. I see a future with a highly effective transport system, with energy-efficient solutions that are safe and secure both for humans and goods.

During 2012, the Volvo Group implemented a number of activities that have brought us closer to our vision. We are now in a period of extensive product renewal and the launch of our new Volvo FH series is very interesting from an energy-efficient and safety aspect, which will help our customers to make their work even more effective. Other examples are our methane-diesel truck that can operate on renewable gas and the hybrid buses that are able to save up to 39% in fuel in certain applications.

I believe that only a sustainable company, with sustainable growth, is able to deliver sustainable solutions. To demonstrate the seriousness of our vision, the Volvo Group has revised our CSR and sustainability strategy and is incorporating it into our daily work. I feel that we have a method that is clearly connected to our business model and our strategies. The model handles risks, supports our business and contributes to sustainable development.

The Volvo Group is active in 190 markets worldwide, which are characterized by various political, legal and cultural systems and our growth in the past decade derived primarily from new markets. Shared core values are required to ensure that our work method is the same worldwide. In 2012, our Board of Directors adopted a new Code of Conduct, which is based on the principles of the Global Compact, the UN initiative for companies' global responsibility, which includes the principles pertaining to human rights, labor issues, the environment and corruption. The Volvo Group's commitment to these issues is genuine and I trust that every employee will comply with these values and the guidelines estab-

*"I believe that only a sustainable company, with sustainable growth, is able to deliver sustainable solutions."*

lished in our new Code of Conduct. Our new Code will also send out a clear message regarding what stakeholders can expect of us.

I believe that a responsible company has better prerequisites for becoming a credible business partner. To meet society's needs for sustainable transport solutions, we must primarily cooperate with our customers but also with other players in the industry and society. To operate in many of our new markets, it is also a prerequisite to contribute to social development.

For example, in 2012, we initiated a training course for mechanics in Ethiopia, trained excavator operators in India and continued to promote our successful traffic-safety project in Brazil. This is in line with our philosophy to contribute to social development, while creating value for the Volvo Group. Another example that I would like to highlight is the Volvo step, our one-year training course for unemployed young people in Sweden, which started in 2012 with 4,000 applicants for the 400 first positions. The Volvo step is an investment in securing our supply of expertise, while contributing something to reducing unemployment in young people in Sweden. One lesson learned from this three-year project is that we in the industry must listen more to young people. They know what they want, which includes working in the industry.

I am very proud of the fact that the Volvo Group has been inspired by the principles of the Global Compact since 2001 in our effort for sustainable development. The Global Compact provides us with an excellent foundation on which to stand and this year's report explains how we integrate the principles with our value chain and our initiatives to contribute to sustainable development. This report presents what we have achieved but even more importantly, our road ahead.

*"This is in line with our philosophy to contribute to social development, while creating value for the Volvo Group."*



## About the Volvo Group

The Volvo Group is one of the world's leading manufacturers of trucks, buses, construction equipment and marine and industrial engines. The Group also provides complete solutions for financing and service. The Volvo Group, which employs about 115,000 people, has production facilities in 18 countries and sells its products in more than 190 markets. In 2012 the Volvo Group's sales amounted to about SEK 304 billion. The Volvo Group is a publicly-held company headquartered in Gothenburg, Sweden. Volvo shares are listed on OMX Nordic Exchange Stockholm.



### Strong positions

- One of the world's largest manufacturers of trucks
- One of the largest within construction equipment
- One of the world's largest manufacturers of heavy-duty diesel engines
- Global market presence



## Strong brands

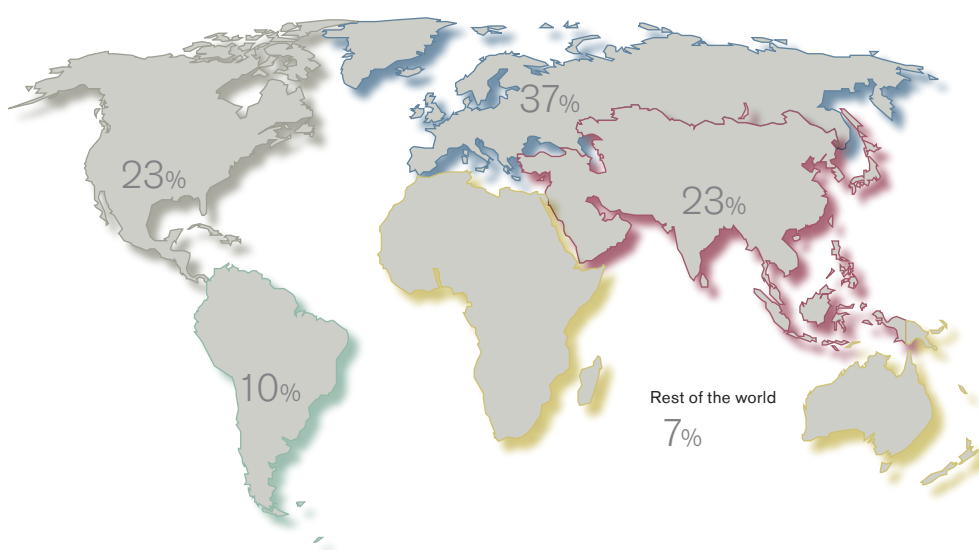
By selling products under different brands, the Group can address many different customer and market segments in mature as well as growth markets.



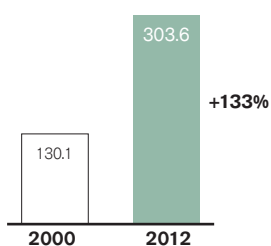
## Global strength

Since the streamlining towards commercial vehicles was initiated more than ten years ago, the Volvo Group has significantly strengthened its positions outside the traditionally big markets of Western Europe and North America. Positions have been moved forward by acquisitions, primarily in Asia, and by the expansion of the distribution and service networks in for instance Eastern Europe and South America. In the year 2000 markets outside of Western Europe and North America accounted for 16 percent of Group sales. In 2012 that share had grown to 47 percent.

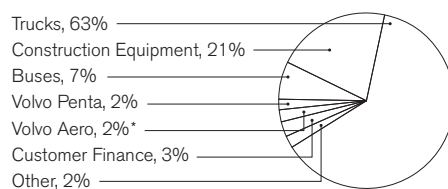
Share of net sales by market 2012



Volvo Group net sales  
2000-2012, SEK bn

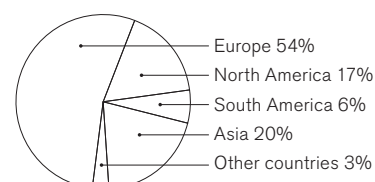


Share of net sales



\* Volvo Aero was divested on October 1, 2012.

Geographic distribution of employees



This information is extracted from the Volvo Group Annual Report 2012.

Key ratios	2012	2011
Net sales Volvo Group, SEK M	<b>303,647</b>	310,367
Operating income Volvo Group, SEK M	<b>17,622</b>	26,899
Operating income Industrial Operations, SEK M	<b>16,130</b>	25,930
Operating income Customer Finance, SEK M	<b>1,492</b>	969
Operating margin Volvo Group, %	<b>5.8</b>	8.7
Income after financial items, SEK M	<b>15,355</b>	24,929
Income for the period, SEK M	<b>11,258</b>	18,115
Diluted earnings per share, SEK	<b>5.44</b>	8.75
Dividend per share, SEK	<b>3.00<sup>1</sup></b>	3.00
Return on shareholders' equity, %	<b>12.9</b>	23.1
Number of permanent employees	<b>98,717</b>	98,162
Share of women, %	<b>17</b>	18
Share of women, Presidents and other senior executives, %	<b>19</b>	17
Employee Engagement Index, %	<b>76</b>	76
Energy consumption, MWh/SEK M	<b>8.5</b>	8.1
CO <sub>2</sub> emissions, ton/SEK M	<b>0.8</b>	0.8
Water consumption, m <sup>3</sup> /SEK M	<b>24.9</b>	26.2
Share of direct material purchasing spend from CSR assessed suppliers, %	<b>66</b>	60

<sup>1</sup> According to the Board's proposal.

## Significant events 2012

The divestment of Volvo Aero, increased ownership in Deutz and the launch of the new Volvo FH truck series were some of the important events in 2012.

### Annual General Meeting of AB Volvo

The Annual General Meeting of AB Volvo held on April 4, 2012 approved the Board of Directors' motion that a dividend of SEK 3.00 per share be paid to the company's shareholders.

Peter Bijur, Jean-Baptiste Duzan, Hanne de Mora, Anders Nyrén, Olof Persson, Ravi Venkatesan, Lars Westerberg and Ying Yeh were reelected as members of the AB Volvo Board. In addition, Carl-Henric Svanberg was elected member of the Board and Board Chairman, replacing Louis Schweitzer who had declined reelection.

Carl-Olof By, representing AB Industrivärden, Jean-Baptiste Duzan, representing Renault s.a.s, Lars Förberg, representing Violet Partners LP, Håkan Sandberg, representing Svenska Handelsbanken, SHB Pension Fund, SHB Employee Fund, SHB Pensionsskassa and Oktogonen and the Chairman of the Board were elected members of the Election Committee.

### AB Volvo signs memorandum of understanding with Deutz

On April 5 it was announced that AB Volvo had signed a non-binding memorandum of understanding with Deutz AG with the intention to explore the potential to extend the long-term cooperation with a joint development of the next generation of medium-duty engines for off-road applications.

The memorandum of understanding also aims at analyzing the conditions for establishing a Deutz majority-owned joint-venture company in China for the production of medium-duty engines for off-road applications. The production company is intended to provide support for the Volvo Group's anticipated growth in off-road applications in Asia. Any implementation requires both companies to agree on the final terms and conditions in a binding contract.

### Unfavorable court ruling in the US pertaining to Volvo Penta engines

Volvo Powertrain Corporation and the US Environmental Protection Agency are in a dispute pertaining to emission compliance of 8,354 model year 2005 Volvo Penta engines under a 1999 Consent Decree entered between the parties. On April 13 the US Dis-

trict Court for the District of Columbia issued an order directing the Volvo Group to pay a total of USD 72 M in penalties and interest. The decision has been appealed.

### AB Volvo acquires shares in Deutz AG

On June 13 AB Volvo announced that it had signed an agreement under which the company was offered the opportunity to increase its shareholding in Deutz AG from 6.7 percent to just over 25 percent by acquiring a total of 22,117,693 shares from Same Deutz-Fahr Group at a price of EUR 5.88 per share, EUR 130 M in total. The transaction was completed in September and made AB Volvo the largest shareholder in Deutz AG, which since many years is a strategic partner within medium-duty engines.

### AB Volvo divests Volvo Aero to British GKN for SEK 6.9 billion

On July 5 it was announced that AB Volvo divests the Group's subsidiary Volvo Aero to the British engineering company GKN for an enterprise value of SEK 6.9 billion. The transaction was completed on October 1, 2012. The transaction generated a positive effect on the Group's operating income of SEK 568 M of which SEK 254 M in the fourth quarter.

This information is extracted from the Volvo Group Annual Report 2012.



The divestment reduced the Group's financial net debt by SEK 5.5 billion.

#### **New Volvo engine for Euro VI**

On July 5 Volvo Trucks presented an engine tailored for the Euro VI emission regulation. Nitrogen oxide emissions will drop by 77 percent and particulate matter emissions will be halved from already low levels. First off the mark is Volvo's D13 460 horsepower engine, which powers more than one-third of all Volvo trucks.

#### **Renault Trucks Defense acquires French manufacturer Panhard**

On July 26 it was announced that Renault Trucks Defense, which is included in the Volvo Group's Governmental Sales business area, acquires the French company Panhard, which specializes in manufacturing light transport vehicles adapted for defense operations. In 2011 Panhard reported sales of EUR 81 M and operating profit amounted to EUR 9.4 M. The transaction was finalized in October 2012.

#### **New Volvo FH launched**

On September 5 the Volvo Group introduced its new Volvo FH series. The new Volvo FH is pushing the envelope for what a premium truck can offer. The Volvo FH is a truck built with the driver in mind and with the focus on improving the haulage firm's profitability.

#### **Volvo Group invests in Russia**

On September 13 the Volvo Group announced that it will invest SEK 783 M in a new facility for the production of cabs at the plant in Kaluga, Russia. The facility, which is expected to become operational in 2014 will manufacture cabs for the Volvo and Renault Trucks brands with a total annual capacity of 15,000 cabs.

#### **Volvo Group announced new truck strategy to achieve profitability improvement**

The new strategy, which is an important step for the Group towards achieving the objective to improve the operating margin by 3 percentage points, was presented in detail at the Capital Market Day on September 25.

#### **Volvo Buses to consolidate the manufacture of complete buses in Europe**

On October 3 Volvo Buses announced plans to concentrate its European production of

complete buses to the main plant in Wrocław, Poland. Production at the plant in Sjöflä, Sweden, will be terminated at the end of June 2013.

#### **New organization for the truck dealer networks in Europe, the Middle East and Africa**

On October 10 the Volvo Group announced that it as of January 1, 2013 introduces a new organization for its truck dealer networks in Europe, the Middle East and Africa (EMEA). The reorganization aims to capitalize more effectively on opportunities for the Group's brands and products in line with the new truck strategy.

#### **Full lineup of Volvo Group trucks in the US earns 2014 greenhouse gas certification**

On December 12 the Volvo Group announced that the US Environmental Protection Agency (EPA) and National Highway Traffic Safety Administration (NHTSA) had certified all Volvo Group truck models in the US, both Mack and Volvo branded, in accordance with 2014 fuel efficiency and greenhouse gas regulations.

#### **Renault s.a.s. divests entire holding in AB Volvo**

On December 13 AB Volvo received a request for the conversion of 110,048,945 Series A shares to Series B shares. Furthermore, AB Volvo's largest shareholder, Renault s.a.s., announced that the company had divested all of its shares in AB Volvo through the sales of 138,604,945 Series A shares on the stock market. In connection with Renault's divestment, Industrivärden increased its holding and at year-end was the largest owner with 6.5 percent of the outstanding number of shares (19.5 percent of the votes). Norges Bank Investment Management also increased its holding and at year-end was the second largest owner based on capital with 4.9 percent of the outstanding number of shares (5.1 percent of the votes).

#### **Consolidation of the Volvo Group industrial operation in Japan**

On January 11, 2013 the Volvo Group announced that it had decided to consolidate its industrial operation in Japan in order to

improve the overall efficiency. In May 2013 the Ota remanufacturing plant will be closed and the operation moved to Ageo, the main plant in Japan. The project also includes cleaning of the land, demolishing of old and outdated buildings as well as moving or phasing out equipment for old products. In total, costs corresponding to SEK 280 M related to these activities were recorded in the fourth quarter of 2012, affecting the truck segment.

#### **Events after balance sheet date**

##### **Strategic alliance with Chinese company Dongfeng Motor Group**

On January 26, 2013 AB Volvo announced that it had signed an agreement with the Chinese vehicle manufacturer Dongfeng Motor Group Company Limited (DFG) to acquire 45 percent of a new subsidiary of DFG, Dongfeng Commercial Vehicles (DFCV), which will include the major part of DFG's medium- and heavy-duty commercial vehicles business. At completion of the transaction, the Volvo Group will become the world's largest manufacturer of heavy-duty trucks. Completion of the transaction is subject to certain conditions, including the approval of relevant anti-trust agencies and Chinese authorities. The purchase consideration amounts to RMB 5.6 billion. The ambition is to complete the transaction as soon as possible and completion is expected to take place within approximately 12 months from signing.

Detailed information about the events is available at [www.volvogroup.com](http://www.volvogroup.com).

## Long-term growth

First up and then down again. The transportation industry is cyclical with swings up and down in the short term. Then add emission standards, political decisions and expectations about the future, all of which impact customers' decisions to purchase now or wait until later. However, in the longer term, the industry's growth is closely linked to an increasing need for transports and infrastructure as economies grow.

### Closely linked to the GDP development

The Volvo Group is one part of the transport industry that connects production with consumption. We are what you might call the life blood. Demand for transport capacity and thus for many of the Group's products is closely linked to the GDP trend.

The extent of investment in infrastructure, which drives demand for building and construction equipment, is also closely linked to the GDP trend. Increased global wealth means that there is a long-term need to build roads, airports, railways, factories, offices, shopping centers, as well as housing and recreational facilities. In the short term, demand is affected by a number of factors including fuel prices, the implementation of new emission regulations, interest rates, etc.

The registration of new trucks on a particular market often follows the same pattern as economic growth in the region.

"The transport industry is largely in tune with the overall economic development, but demand for our products is also governed very largely by expectations about the future," says Johan Adler, Head of Economic Research in the Volvo Group.

This is one of the explanations why many North American haulage companies chose to postpone their investment decisions in the autumn of 2012. Even if there was business to be done and goods to transport, with both the presidential election and federal budget negotiations around the corner, customers decided it was better to be safe than sorry and therefore postponed their purchases.

### Markets move at different paces

The transportation industry is directly linked to economic developments, but the global economies do not move at the same pace. Countries that are heavily dependent on exports, such as Sweden and Germany, are more affected when consumers in other countries tighten their belts. Countries like the US and Brazil are also impacted by a slowdown, but to a lesser degree, as they have such large domestic markets and a relatively small part of what they produce is exported.

"The fact that the Volvo Group is global is an enormous advantage. If we had not been established on the growth markets, we wouldn't have been in the position we currently enjoy," says Johan Adler.

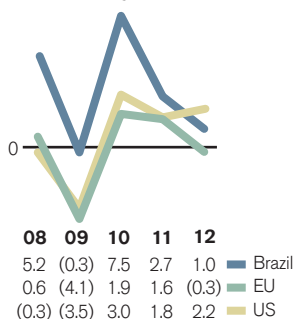
Another kind of event that impacts the whole of the commercial vehicle industry is the introduction of new emission regulations. New standards have traditionally resulted in more expensive, more technically complex trucks. This has generated an advance purchasing effect, a prebuy, as haulage companies have taken the opportunity to update their fleets just before the new regulations come into force. At the same time, new regulations have positive effects on the environment.

### Growth rates in different parts of the world

According to Consensus Economics, global GDP grew by 2.5 percent during 2012 compared with 3.1 percent in 2011. GDP in the EU declined by 0.3 percent following an increase of 1.6 percent in 2011. US GDP increased by 2.2 percent (1.8 percent). Japan's GDP expanded by 1.9 percent following a decline of 0.5 percent in 2011. Growth in countries such as Brazil, India and China hit cyclical lows during 2012. For 2013 global GDP is expected to grow by 2.6 percent. The emerging markets in primarily Asia and Latin America are foreseen to be the prime drivers of global growth.

#### Economic growth in the US, Europe and Brazil

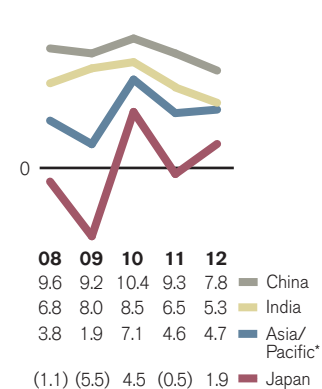
Annual GDP-growth, %



Source: Consensus Economics

#### Economic growth in Asia

Annual GDP-growth, %

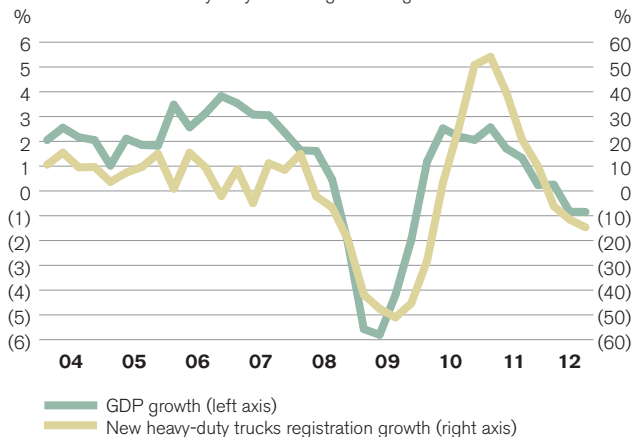


\* China, Hong Kong, South Korea, Taiwan, Indonesia, Malaysia, Singapore, Thailand, Philippines, Vietnam, Australia, New Zealand, India, Japan, Sri Lanka

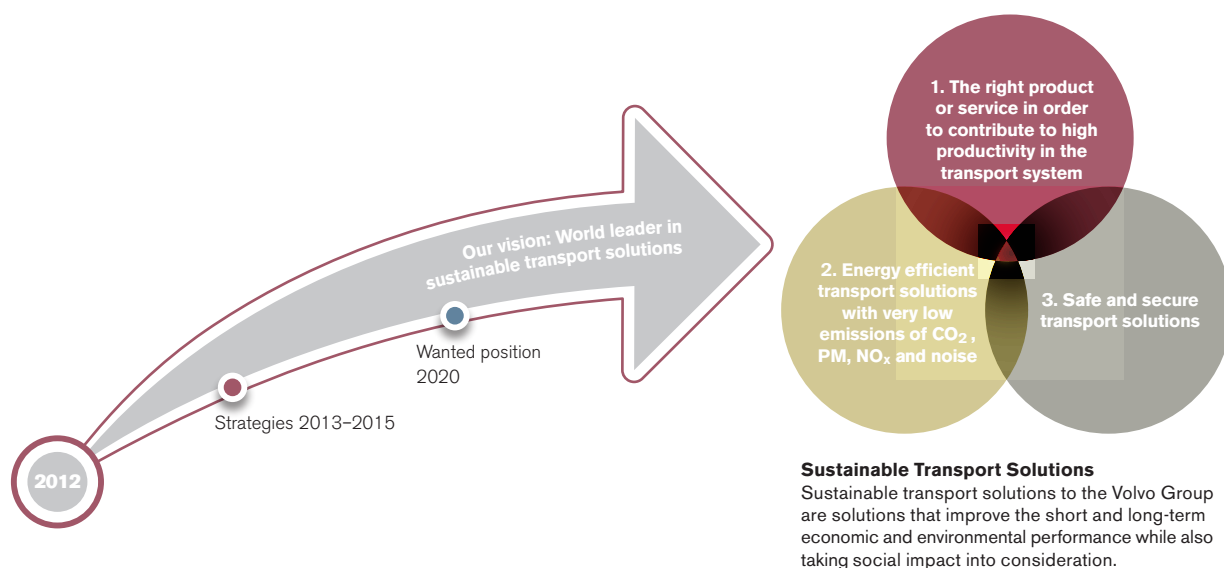
Source: Consensus Economics

#### The Volvo business moves in close tandem with macroeconomic development

Euro area GDP and heavy-duty trucks registration growth







## Strategy

The Volvo Group's long-term plans stake out the road to success – to our vision, our target, as well as our wanted position. Our core values, focus areas, strategic objectives, road maps toward targets and activity plans will help us to achieve this as efficiently as possible.

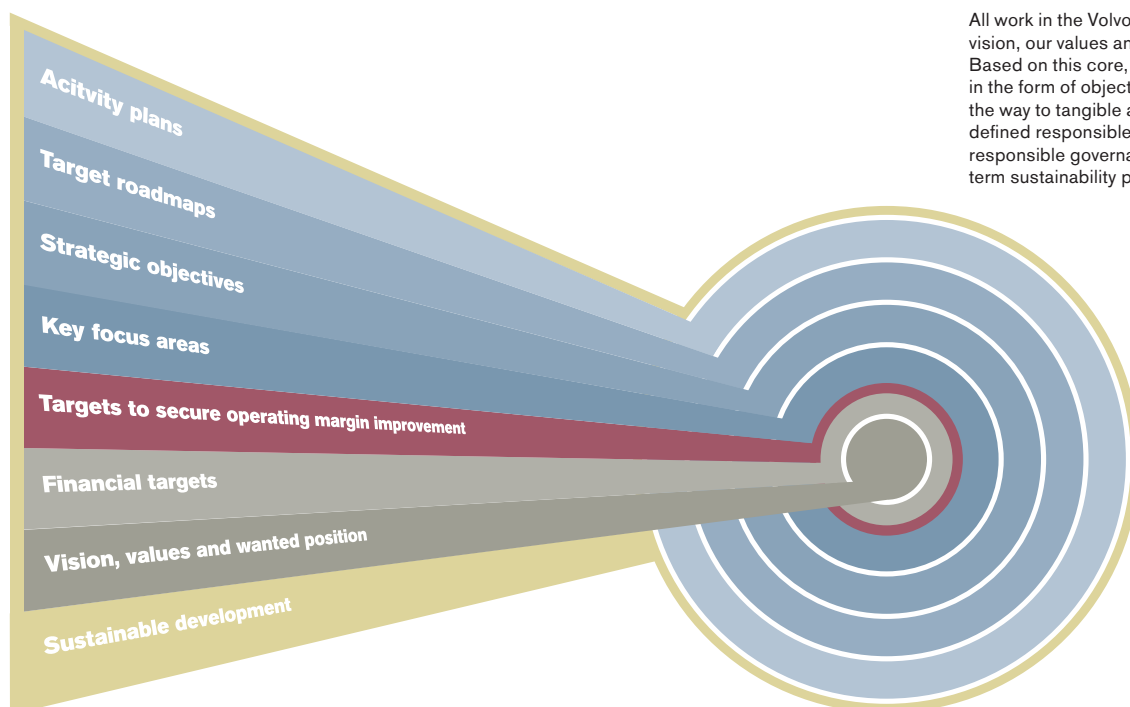
During 2012 we adapted the Volvo Group's governance to becoming more efficient and launched a new strategy to achieve the Volvo Group's targets, wanted position and ultimately, our vision.

All work within the Volvo Group is based on a long-term sustainable perspective, since we are convinced that corporate social responsibility will contribute to long-term success. This approach will enable us to strengthen our brands and relations with business partners and thus create new business opportunities that offer long-term growth and improved profitability.

### Changed prerequisites

The global presence of the Volvo Group has

undergone a dramatic change in the past decade. The Group has grown considerably in emerging markets and has welcomed new employees and companies. As a consequence of this, the Group currently has operations in approximately 190 markets and employs about 115,000 individuals, who strive to create efficient and sustainable transport solutions for our customers.



All work in the Volvo Group is based on our vision, our values and the wanted position. Based on this core, outer rings are created in the form of objectives and focus areas all the way to tangible activities with clearly defined responsible parties. This will lead to responsible governance, based on a long-term sustainability perspective.

This information is extracted from the Volvo Group Annual Report 2012.

### Adaptation of governance

In the past year, we made extensive effort to adapt the Volvo Group to the conditions and expectations of the business world and the future – and to achieve our wanted position by 2020. The efforts resulted in us taking a step toward governance as one Group with coordinated long-term plans for the business areas. The pace has increased with respect to governance and reconciliations connected to the development of the business areas. We have established a distinct brand portfolio and have moved from a regional focus with individual brands to a globally coordinated approach. In addition, we have created a more distinct distribution of responsibility with measurable targets. It is necessary to have all of this in place prior to the commencement of work based on the new strategies.

### Strategy process to achieve the wanted position and vision

During 2012 a new strategy process was

launched, which has resulted in three-year strategies for the individual business areas of the Volvo Group. The process resulted in five to nine focus areas, which are particularly significant for the future development, and approximately 20 strategic objectives per business area. The strategic objectives have been divided into more than 100 road maps and a large number of activity plans.

Our structure for governance encourages close monitoring, as well as rapid and efficient decisions and early adjustments, when necessary. The system also aims to involve all employees, by clarifying how each individual is important to achieving the targets.

### Creating value for many stakeholders

The Group is dependent on stakeholders to develop its competitiveness, in the same manner as its stakeholders are dependent on the Group in many respects. Accordingly, the Volvo Group strives, jointly with stakeholders, to create common values in a manner that is sustainable in the long term.

### Value by stakeholder group

SEK M	2012	2011
Purchase of goods and services	211,458	214,483
Salaries and remunerations*	39,446	37,039
Social costs*	9,680	8,652
Pension costs*	4,126	3,471
Income taxes	4,097	6,814
Interest paid to creditors	2,476	2,875
Dividend to shareholders	6,083	6,082

\* For further information, please see note 27 to the consolidated financial statements in the Annual Report 2012.





## Sustainability approach

Taking social, economic and environmental responsibility is not only about managing risks, it also creates business opportunities and builds trust. Done in the right way it is an effective way to contribute to the development and welfare of society and ultimately to fulfilling our vision – to become the world leader in sustainable transport solutions.

Responsibility is deeply rooted within the Volvo Group and is based on our values and the principles in our Code of Conduct. We strive to assume economic, environmental and social responsibility for our operations, products and services within our sphere of influence. Our commitment is reflected and implemented in policies, decisions and actions.

The Volvo Group is committed to:

**conducting business in a responsible manner**

**taking stakeholders' perspectives into account**

**creating value for our shareholders and society**

**contributing to sustainable development**

We believe that this approach is essential to being perceived as an attractive business partner and to building lasting relations with customers, owners, employees, suppliers and other stakeholders.

As a Group, we are driven by the conviction that it is possible to run a financially sustainable business, while also creating long-term value for our stakeholders.

### The Volvo Group's commitment

Our Corporate Social Responsibility (CSR) and sustainability commitment is based on our vision, core business, operating context, stakeholders' expectations as well as our core values and company culture.

The commitment includes economic, environmental and social responsibility and covers risk management and value creation as well as the Volvo Group's contribution to sustainable development. The approach is

customized to the Volvo Group business environment and operations, and is based on actions and principles relevant to the Group and our sphere of influence.

During 2012 a project to review and further define the Volvo Group's CSR and sustainability strategy was carried out.

Based on the ten principles in the United Nations Global Compact Initiative, other internationally recognized norms of behavior, and interviews with internal and external stakeholders, the Volvo Group has developed a model that describes how we approach CSR and sustainability. The Sustainability Report 2012 is based on this model visualized as a pyramid.

The foundation is sustainable profitability and the Volvo Group core values and company culture, which are also key aspects of the CSR and sustainability commitment.



The base of the pyramid comprises the activities that are conducted in order to be a socially responsible company. This includes risk management with a focus on compliance aimed at maintaining the Volvo Group's reputation as a trustworthy company. These activities are an integrated part of our everyday business and are described in the **'Value Chain'** section of this report.



The middle part of the pyramid is the Volvo Group's engagement in society. The Group takes an active part in the development of a more sustainable society by applying our unique knowledge, experience and resources to addressing societal challenges, such as traffic safety, health and education.

These activities create shared value, meaning that both society and the Volvo Group benefit from them. To read more, see the **'Society Engagement'** section of this report.

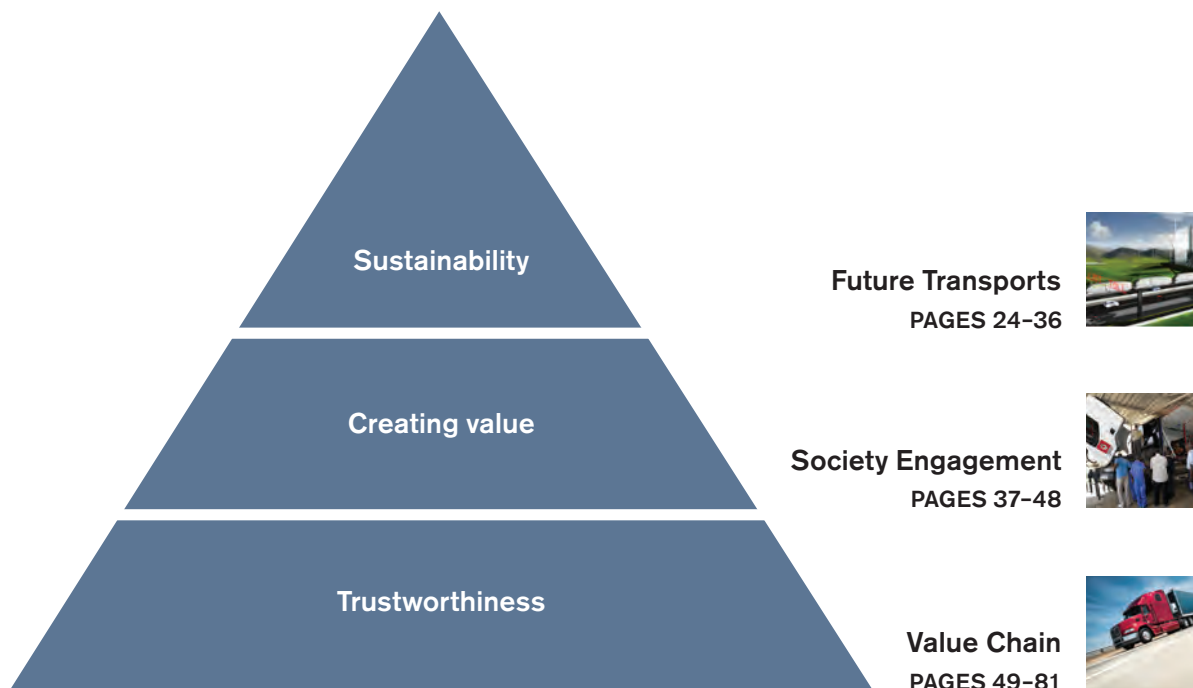


The overall objective of the Volvo Group's CSR work is to contribute to sustainable development and ultimately to fulfill the Group's vision. The top of the pyramid represents the vision – to become the world leader in sustainable transport solutions. We contribute to sustainability through our particular expertise in the development of sustainable transport solutions. We join our forces with universities, authorities and other companies to develop tomorrow's transport solutions. Read more about these initiatives in the **'Future Transports'** section of this report.

**The Volvo Group's vision is to become the world leader in sustainable transport solutions, by:**

- creating value for customers in selected segments
- pioneering products and services for the transport and infrastructure industries
- driving quality, safety and environmental care
- working with energy, passion and respect for the individual.

## The Volvo Group's CSR and sustainability approach



## Short and long-term objectives

The Volvo Group firmly believes that only a sustainable company can provide sustainable solutions. Our vision is to become the world leader in sustainable transport solutions. Our long-term ambitions and short-term objectives guide us towards our vision. Here we have chosen to present a few of the objectives and key performance indicators that we are using to follow up on our performance. How we address the objectives and our progress is described throughout this report.

Examples of our long-term ambitions are:

- Zero accidents with Volvo Group products
- Most attractive employer
- Increased number of women in executive teams
- To offer carbon dioxide-neutral transports
- To make all Volvo Group production facilities carbon dioxide-neutral

Short-term objectives	Result 2012
As part of the commitment of the Volvo Group to the WWF Climate Savers Program	
• Between 2009–2014 the total lifetime emissions of the Group's products shall decrease by 30 million tons	Half time result shows a reduction of 18 million tons between 2009–2011
• The Volvo Group will develop a new truck prototype with 20% lower fuel consumption than a corresponding truck manufactured in 2008	Ongoing
• Prior to 2014, the Volvo Group will offer commercial market trucks that operate on renewable gas	Fulfilled with the Methane Diesel truck
• The Volvo Group will reduce carbon dioxide emissions from its production plants by 0.2 million tons (12%) before 2014, compared with 2008	Half time result shows a reduction of 0.3 million tons (16%) between 2009–2011
All suppliers delivering automotive products shall be certified in accordance with ISO 14001	More than 90% of spending on automotive products came from suppliers certified in accordance with ISO 14001
100% of the suppliers in 'high-risk' countries, as defined from a CSR perspective, shall be assessed in 2012	64% completed the self-assessment, corresponding to 84% of the spend
Between 2010–2012 the idling losses, i.e. energy use outside production, shall be reduced by 50%. Beside the idling losses the energy consumption shall be reduced by 15% per produced unit in 2012 compared with 2008	The total energy use on a Group level has only slightly decreased measured in MWh/MSEK. However the emission of carbon dioxide decreased with about 20% measured in ton per MSEK. Individual plants have been able to considerably reduce energy use outside production (idling losses) e.g. the Renault Truck production plant in France and the Penta engine plant in Vara, Sweden
All plants shall fulfill the minimum environmental requirements	All fully owned assembly plants fulfilled the minimum requirements
All plants shall have completed the energy mapping by 2012	Approximately 70% of the plants have done the energy mapping
The carbon dioxide emissions from inbound and outbound transports shall decrease	Carbon dioxide emissions were reduced by 18% between 2009 and 2011 <sup>1</sup> .
Leadership pipeline project shall be launched in all countries where the Volvo Group has major operations	Completed in 2012
All employees, both blue and white collars shall have a personal business plan	At the end of 2012 the plan had been implemented for all employees
The talent review shall be completed for the Group	Completed for 2012
To attract and retain a diverse workforce	17% of the workforce was female and women represented 19% of the senior executives in 2012
The Employee Engagement Index (EEI) result in the employee survey shall be higher than the norm	The index among Volvo Group's employees was 76% compared to the global norm of 68%
All wholly owned plants shall be certified in accordance with ISO 14001	All but two plants were certified in accordance with ISO 14001
All wholly owned plants shall be certified in accordance with ISO 9001	All plants were certified in accordance with ISO 9001
All white collar employees shall have conducted the anti-corruption e-learning during 2010–2012	31,952 employees have taken the e-learning in anti-corruption
All white collar employees shall have taken the competition law e-learning in a three-year period starting in 2012	More than 36,000 employees took the e-learning in competition law
All employees shall have completed the Code of Conduct e-learning course	Approximately 11,000 employees took the web-based training in November and December 2012
The Volvo Group shall be ranked as one of the most sustainable companies in the world, that is by being included in Dow Jones Sustainability Index	Included in DJSI World and Euro in 2012

The Volvo Group's financial goals are described in the Annual Report.

<sup>1</sup> Results for 2012 will be presented during the second quarter of 2013.



## Global drivers

It is crucial to keep pace with a changing world. Today it is more important than ever to understand our operating environment, how it impacts the Volvo Group and, above all, to find ways to better fulfill future transport needs.

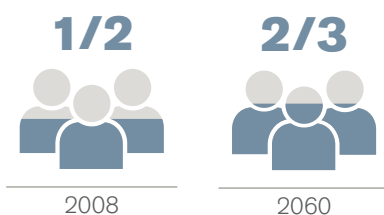
There are numerous factors influencing the business of the Volvo Group. In this section, some of the more significant global and long-term challenges are defined. How these challenges are addressed is explained throughout this report. Together with results from the dialogues conducted with the Group's various stakeholders and business aspects connected to the Volvo Group's operations, the challenges described form the base for the prioritization of the Volvo Group's business activities and serve as the foundation for the redefined CSR and Sustainability strategy.

## Challenges

- Population growth and urbanization
- Climate change and alternative fuels
- Shortage of natural resources and raw material
- Safety and security
- Competent employees

### 1. Population growth and urbanization

The world's population is steadily increasing. By 2050 it is expected to exceed nine billion. Since 2008 more than half the world's population lives in cities and in fifty years, that figure is expected to reach two-thirds of the population. The most intensive pace of urbanization is taking place in Africa and Asia. In addition, the number of cities and regions with populations exceeding ten million is growing rapidly. Approximately 20 percent of the world's population is expected to live in cities with populations in excess of two million inhabitants by 2015.



Since 2008 more than half the world's population lives in cities and in fifty years, that figure is expected to reach two-thirds of the population.

In many countries while the population is growing, the demographic balance is tipping towards aging populations and the working age share of the population is shrinking. These trends will raise the significance of health issues, and require greater focus on employee health.

Likewise, the complex demographic shifts combined with urbanization influence the demands on transport. The overall trend is leading to an increased need for transportation and infrastructure, with effects on the requirements for public transport systems and freight logistics.

Cities, particularly major cities, have specific requirements for urban and traffic planning. Congestion and noise pollution also need to be addressed through the availability of vehicles specially adapted for these environments. In addition, a growing population increases the need for housing, roads and facilities.

### 2. Climate change and alternative fuels

Climate change is one of the most complex and difficult questions of our time. Burning fossil fuel is the single largest source of anthropogenic greenhouse gas emissions. Oil has long been considered a reliable source of energy, but today, oil use is a highly contested issue. This is primarily attributable to the environmental problems associated with oil, but also because future access to oil is uncertain due to dwindling oil reserves, increasing price and instability in oil producing regions.

A shift to sustainable energy resources is crucial. Major efforts have already been made to develop the use of renewable energy sources. However, the development of renewable fuels differs widely among regions depending on the availability of natural resources, which in turn drives the development of vehicles and machines adapted for various types of fuels. The move towards the large scale use of renewable energy is also highly dependent on political decisions and investment capacity to create the necessary production facilities and infrastructure.

### 3. Shortage of natural resources and raw material

Population growth, a rapidly growing middle class and greater purchasing power leads to increased consumption. Mankind is utilizing an increasing amount of land, water and other resources. More efficient use of resources is required and the recovery of a greater proportion of material is becoming increasingly important to secure access to materials.

### 4. Safety and security

Traffic and road safety is becoming even more important as demands on transportation increases. The subject is a high priority for governments and institutions worldwide. There has also been an increase in awareness and the demand for safer products and safety guidelines at construction and operation sites.

In the future, the focus on security is also likely to continue to increase because of crime, military conflicts, terrorism and natural disasters. In relation to transportation this will impact the safety of drivers, vehicles, goods and the general public.

### 5. Competent employees

Increased global presence, new products, new technologies, demographic changes and more rapid fluctuations in the global economy will lead to challenges in the supply of expertise and resources. For many years, interest has waned for education and careers in the fields of mathematics, natural sciences and engineering in some developed markets, while interest has grown in some emerging markets. The need, however, for competent employees with these types of specialist skills will grow as products and services become increasingly sophisticated.

## Stakeholders

To help identify and prioritize Corporate Social Responsibility (CSR) and sustainability issues for the Volvo Group, ongoing dialogues with stakeholders are conducted. The dialogues enable us to better understand both internal and external expectations on the Volvo Group, and to ensure that our business operations build value both for the company and society at large.

### Round table discussions

During 2012 the Volvo Group began efforts to engage a broad set of stakeholders in the Middle East, Asia and the US. Representatives from various stakeholder groups such as NGOs, employees, investors, academia, government representatives and customers participated. The participants were selected because of their affiliation to one of the stakeholder groups, and for their connection to the Volvo Group's business. The geographical areas were not ranked by level of importance.

The main focus of the dialogues was to get an overall understanding of how CSR and sustainability is viewed in the region and what challenges and opportunities can be identified. The aim was also to map the expectations on a company operating in this region and, more specifically, what is expected of the Volvo Group when it comes to CSR and sustainability.

The results of these stakeholder dialogues help us to better understand how we should act and how we can better create shared value around the world. During 2013 the Volvo Group will continue the stakeholder dialogues in other regions.

### Ongoing dialogues

Apart from the discussions described above, ongoing contact with all stakeholder groups is maintained to help us shape our direct business operations and activities. When new operations are started a stakeholder mapping is undertaken and when other major changes are done in the organization, additional contact with the stakeholders is conducted. Stakeholders always have the possibility to convey their questions or opinions via the different contact pages provided on [www.volvogroup.com](http://www.volvogroup.com).

Below are a few examples from our stakeholder map.

### Customers

Products and services are developed in close cooperation with customers to help them improve their own productivity and profitability and support their environmental performance. We have long-term relationships with most of our customers. Customer satisfaction depends not only on the quality and performance of our products, but also on how customers are treated and how service is delivered. More and more of our customers want information about our CSR performance. For some customers, like fleet owners, high CSR and sustainability performance increases our competitiveness in tenders.

Some examples of how we communicate with our customers include:

- Interaction in daily operations
- Dialogue forums such as customer focus groups in the product development phase
- Dialogue via social media
- Customer satisfaction surveys

The Volvo Group follows up on the respective companies' and brands' customer satisfaction position and brand image perception in relevant industries and markets. Customer satisfaction and brand image tracking is measured by established industry surveys.

### Employees and trade unions

The Volvo Group has formalized forums for employee dialogue and development, such as personal development plans. We believe that open dialogue contributes to personal development as well as more committed employees.

The Volvo Group uses several channels for communication among employees such as:

- Intranet
- In-house magazines
- Team meetings
- Films and webcasts

All employees can ask questions directly to the Group's CEO and management via the intranet. For top-down communication we often practice cascading to employees through managers. Internally we communicate in many different languages. A survey among all employees, focusing on measuring employee engagement is normally conducted on an annual basis.

An internal survey conducted in 2012 targeting 10,000 employees, concluded that the most important CSR and sustainability areas on which to focus are the Volvo Group's contribution to community development, followed by fighting corruption and bribery, workplace safety and responsible sourcing.

The Volvo Group maintains close relationships with a number of labor unions both in formal and informal forums.

### Potential employees

It is increasingly important for employees that the company they work for has sound values and engage in social matters. Therefore, the Volvo Group also communicates with potential employees, in order to map their areas of interest and make sure that the Group is regarded as a preferred employer.

This is done in such forums as career days at universities and participation in industry conferences and other events.

### Suppliers

The Volvo Group works closely with its suppliers. We value long-term relationships and the transfer of knowledge and understanding of each other's processes, procedures and values.

Forums for formal communication are:

- Our web-based supplier portal
- Training sessions
- Dedicated supplier days

### Capital market

We communicate regularly with shareholders, other investors and financial analysts with interest in CSR and sustainability issues.

Among those, compliance issues are still of high interest, but the focus has shifted towards the Volvo Group's strategy on sustainable transport solutions and how CSR and sustainability is integrated in the Group's business model. We hold regular meetings for investors and issue a number of publications:

- Annual reports
- Interim reports
- Press releases

A Capital market day is held at least once a year.

*Decision-makers*

The Volvo Group communicates with politicians, authorities and institutions on an ongoing basis. This interaction includes responses to requests for comments on proposed legislation and regulations. The Group also communicates with local authorities regarding such issues as employment and working conditions.

Most of the issues related to the regulation of our products are dealt with industry organizations of which the Volvo Group is a member. A Society market day was held for the first time in 2012.

*Non-Governmental Organizations*

The Volvo Group welcomes dialogue with NGOs. We have approximately 100 cooperative projects with NGOs around the world. The Group has two worldwide strategic partnerships, WWF and Oxfam, but most cooperation is on a local level with local NGOs and aid organizations.

*Universities and research institutes*

The Volvo Group is involved in a comprehensive series of cooperative ventures with research bodies and academic institutions to advance the technologies needed for future product development. One example is the Volvo Group initiative Academic Partner Program.

Our involvement with universities is also important for creating relationships with students and potential employees and thus for securing access to future competence.

**Issues in focus**

Based on the global drivers described earlier, the issues raised by stakeholders and the business environment, Volvo Group's CSR managers have selected areas within CSR and sustainability that they believe are the most important. These areas are:

- Health and safety at Volvo Group sites
- Product safety
- Traffic safety
- Availability of skilled workforce
- Employee training and development
- Air quality in urban areas
- Product related environmental issues
- Fuel efficient products
- Transport efficiency
- Business ethics
- Customer satisfaction
- Anti-corruption

The above list is only a selection of issues in focus and the issues are not ranked by level of importance. There are other areas within CSR and sustainability that are important for the Volvo Group.





AB Volvo Board of Directors. At the back: Berth Thulin, Ravi Venkatesan, Anders Nyrén, Peter Bijur, Olof Persson, Hans Hansson, Mikael Sällström, Lars Westerberg, Lars Ask. At the front: Jean-Baptiste Duzan, Hanne de Mora, Carl-Henric Svanberg, Ying Yeh, Peteris Lauberts.

## Governance

Sound governance is a platform for building a trusting relationship with shareholders and other stakeholders. The new Volvo Group organization, effective as of January 1, 2012, enables a faster decision-making process and clear responsibilities throughout the organization.

We firmly believe that sound business practices are profitable in the long run as they help establish our reputation as a reliable business partner. Our commitment to CSR and sustainability is reflected and implemented in policies, decisions and actions.

### Organization

Members of the AB Volvo Board of Directors have good knowledge and understanding of Corporate Social Responsibility (CSR) and sustainability issues.

The Volvo Group's Code of Conduct is approved by the Board of Directors, who also has formal ownership of the Code. The Board reviews the Code annually.

The Volvo Group's CEO, Olof Persson, is responsible for our vision – to become the world leader in sustainable transport solutions.

In the Group Executive Team, Jan-Eric Sundgren, Executive Vice President Environmental and Public Affairs, is responsible for CSR and sustainability issues. As of April 1, 2013 Niklas Gustavsson will succeed Jan-Eric Sundgren who was appointed Senior Expert Adviser to the CEO and senior management.

The responsibility for overseeing the implementation, follow-up and development of CSR work is delegated to the Volvo Group's Director, Corporate Social Responsibility Malin Ripa.

Responsibility for CSR performance and compliance with the Code of Conduct follows the ordinary line of business responsibility.

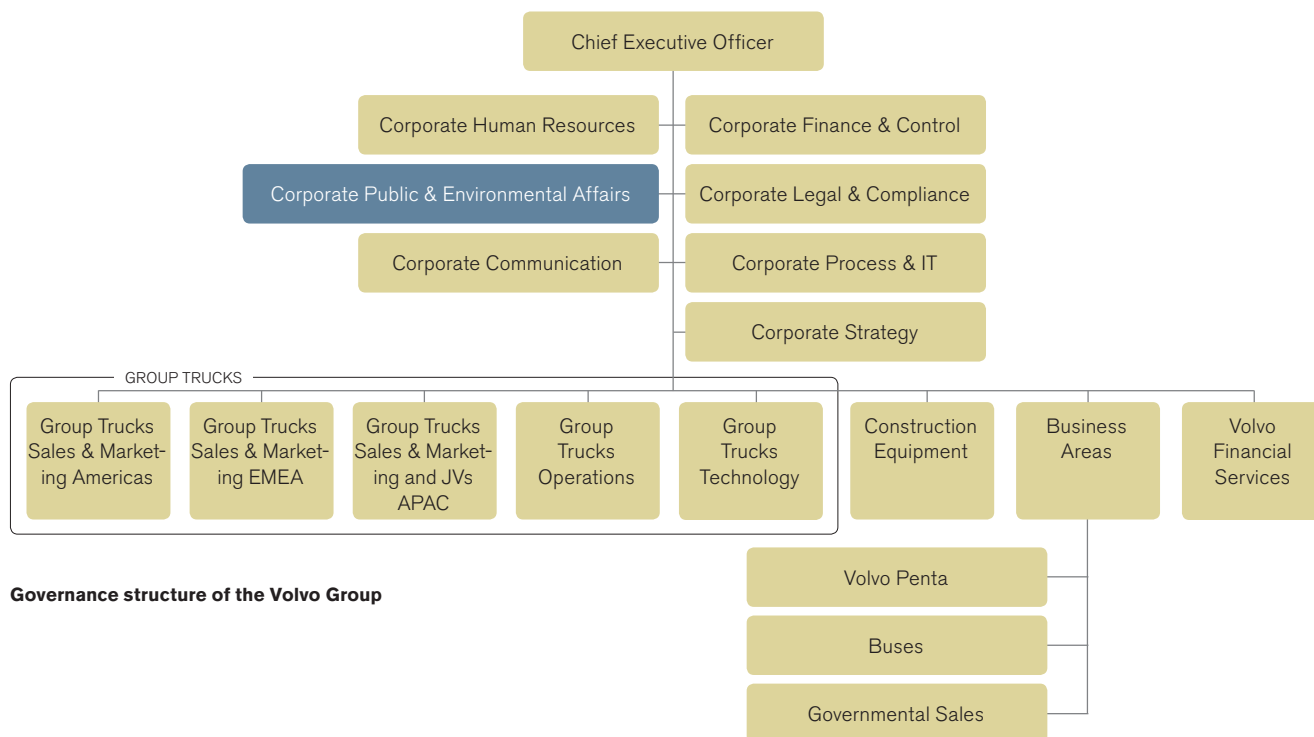
For the complete corporate governance report of the Volvo Group, see the Group's **Annual Report 2012**.

### Governance body for CSR and sustainability issues

CSR and sustainability issues are handled by the Core Value and Public Affairs Council, which is chaired by Jan-Eric Sundgren.

The chairman of the council is responsible for making decisions and following up the implementation of decisions throughout the organization.

The purpose of this governing body is to establish strategies and directions and to follow up on performance. This council also supports and advances the Volvo Group's business in areas related to its core values, CSR and sustainability, public affairs and relevant emerging issues.



### CSR and sustainability committee

A CSR and Sustainability Committee coordinates the work and makes recommendations to the Core Value and Public Affairs Council, which is tasked with supporting and developing the Volvo Group's work with CSR and sustainability.

The CSR and Sustainability Committee is chaired by the Director, Corporate Social Responsibility for the Volvo Group. The committee's members comprise CSR managers within the Group, representing different parts of the organization and relevant processes for the implementation of the internal CSR work.

### CSR in the sourcing process

The Volvo Group CSR Supply Chain network develops and coordinates the CSR work in the sourcing process. All companies within the Volvo Group that have purchasing organizations are represented. The network reports to the CSR and Sustainability Committee as well as to a decision-making forum within the purchasing organization.

### Code of conduct

The Code of Conduct is the Volvo Group's mandatory, Group-wide policy for appropriate business behavior and responsibility towards our stakeholders, and is the backbone of the Group's CSR and sustainability commitment.

The Code of Conduct policy outlines the Volvo Group's principles and minimum standard for conducting business in an appropriate, responsible and transparent manner. It is the minimum behavioral standard and is mandatory for all Group companies, meaning that everyone in the Group must understand and comply with the principles in every day work.

The policy consists of business ethics, human rights and social justice and environmental principles which shall be applied in policies, decisions and activities.

The Code of Conduct is reviewed annually and was recently updated due to higher expectations on companies to assume responsibility for their operations and to changes in the Volvo Group's organization. The new Code of Conduct was adopted by the Board of Directors in September 2012.

The content is based on international charters such as the United Nations Global Compact initiative and the OECD's guidelines for multinational companies. The updated version of the Code contains more principles on business ethics, and guidelines on how to implement the principles of the Code in daily business. The effects of non-compliance are also described more thoroughly, as well as the process for reporting violations.

As a complement to the Code of Conduct approximately 20 other policies in areas such as environmental issues, anti-corruption and workplace practice are implemented in the organization. These complementing policies are often more extensive than the minimum standard in the Code and describe in more detail how to address the issues.

### Implementation and follow-up

The Volvo Group's managers are responsible for communicating and demonstrating the content and spirit of the Code of Conduct as well as for complying with the rules and objectives it includes.

A Group-wide training program was launched in November 2012 to support the implementation of the new Code of Conduct. This is the third round of Group-wide training on the Code of Conduct since 2006. This training helps our employees and managers to reflect on their own attitudes and behavior in different situations. The training is available in twelve languages as an e-learning course and a workshop with open discussions. Since the launch of the new Code of Conduct in November approximately 11,000 employees have participated in the web-based training.

### Compliance with the Code

The compliance with the Code of Conduct is monitored through audits and assessments.

The Volvo Group has a management control system to evaluate how well Group policies, such as the Code of Conduct, have been implemented and enforced by conducting an annual self-assessment to measure the level of maturity. The result of the self-assessment is reported to Group management and the Audit Committee and is used as input to the long-term development of our corporate values and business behavior.

The Audit Committee is established by the Board of Directors with the primary responsibility of overseeing the accounting and reporting processes and the audit of the financial statements. The members of the Audit Committee are independent from the company and the company management.

### Employee commitment

The annual Volvo Group Attitude Survey (VGAS) measures among other things employee engagement which is critical for achieving strategic objectives and for business success. Questions on Code of Conduct are included and measured in the survey.

Findings from the survey are discussed in work groups, involving managers and employees. Feedback discussions result in an action plan with activities addressing areas for improvement throughout the year.

### Report on violation

All employees within the Volvo Group are expected and encouraged to report suspected violations of the Code of Conduct to their direct superiors or managers of their superiors. To support this, a Whistleblower procedure is available.

In the event that a reported incident is not taken seriously, or if an employee does not feel comfortable reporting the matter to his or her superior, the employee can report it to the Head of Corporate Audit in accordance with the Whistleblower procedure. Reports made using this procedure may be submitted anonymously, to the extent permitted by law. In accordance with our Code of Conduct, we do not tolerate retaliation against a person for making good-faith complaints of suspected improper behavior.

All incidents are investigated. Suspected irregularities always lead to further investigation. The consequences are proportional to the gravity of the action. It may vary from a warning to demotion, dismissal and/or filing a police report.

In total, 33 cases were reported in 2012 under the Whistleblower procedure. Eleven of these were dismissed following investigation, as there were no grounds for the allegation. In 19 cases we found grounds for the allegations and proceeded with appropriate actions. Three of these cases are still under investigation. All cases were investigated and reported to the Audit Committee of the AB Volvo Board of Directors.

Among these 33 cases, two cases were dealt with as potential corruption cases in 2012. These were investigated and reported to the Audit Committee. One case is still under investigation

### Continued work

In 2013 the CSR and sustainability work within the Volvo Group will continue. Some of the activities planned include:

- Continued implementation of the Code of Conduct
- Review of the Responsible Supply Chain Management Program, including adjustments according to the new CSR strategy
- Continued work towards integrated reporting
- Stakeholder dialogues
- Development of partnerships with strategic NGOs
- Development of the Creating Shared Value strategy.

Already in 1982 the Volvo Group adopted the first Code of Ethical and Social issues. Our present Code of Conduct was adopted in 2003 and is based on the United Nations Global Compact. It was updated in 2012 and adopted by the Board of Directors on September 5, 2012.





## Risk management

All business operations involve risk – managed risk-taking is a condition of maintaining a sustained favorable profitability. Risk may be due to events in the world and can affect a given industry or market. Risk can be specific to a single company.

At the Volvo Group work is carried out daily to identify, measure and manage risk – in some cases the Group can influence the likelihood that a risk-related event will occur. In cases in which such events are beyond the Group's control, the Group strives to minimize the consequences.

The risks to which the Volvo Group are exposed are classified into three main categories:

- **External-related risks** – such as the cyclical nature of the commercial vehicles business, intense competition, changes in prices for commercial vehicles and government regulations.
- **Financial risks** – such as currency fluctuations, interest levels fluctuations, valuations of shares or similar instruments, credit risk and liquidity risk.

• **Operational risks** – such as market reception of new products, reliance on suppliers, protection and maintenance of intangible assets, complaints and legal actions by customers and other third parties and risk related to human capital.

The financial risks and a few additional operational risks are described in the Volvo Group's **Annual Report 2012**, available on [www.volvogroup.com](http://www.volvogroup.com).

### External-related risk

#### The commercial vehicles industry is cyclical

The Volvo Group's markets undergo significant changes in demand as the general economic environment fluctuates. Investments in infrastructure, major industrial projects, mining and housing construction all impact the Group's operations as its products are central to these

sectors. Adverse changes in the economic conditions for the Volvo Group's customers may also impact existing order books through cancellations of previously placed orders. The cyclical demand for the Group's products makes the financial result of the operations dependable on the Group's ability to react to changes in demand, in particular to the ability to adapt production levels and production and operating expenses.

### Intense competition

Continued consolidation in the industry is expected to create fewer but stronger competitors. The Group's major competitors are Daimler, Paccar, Navistar, MAN, Scania, Caterpillar, Komatsu, Cummins and Brunswick. In recent years, new competitors have emerged in Asia, particularly in China. These new competitors

This information is mainly extracted from the Volvo Group Annual Report 2012.

are mainly active in their domestic markets, but are expected to increase their presence in other parts of the world.

#### **Prices may change**

The prices of commercial vehicles have, at times, changed considerably in certain markets over a short period. This instability is caused by several factors, such as short-term variations in demand, shortages of certain component products, uncertainty regarding underlying economic conditions, changes in import regulations, excess inventory and increased competition. Overcapacity within the industry can occur if there is a lack of demand, potentially leading to increased price pressure.

#### **Extensive government regulations**

Regulations regarding exhaust emission levels, noise, safety and levels of pollutants from production plants are extensive within the industry. Most of the regulatory challenges regarding products relate to reduced engine emissions. The Volvo Group is a significant player in the commercial vehicle industry and one of the world's largest producers of heavy-duty diesel engines. The product development capacity within the Volvo Group is well consolidated to be able to focus resources for research and development to meet tougher emission regulations. Future product regulations are well known and the product development strategy is well tuned to the introduction of new regulations.

#### **Fossil fuel and peak-oil**

Two important issues to address are the role of carbon dioxide emissions and the approach of peak oil, which can influence the fuel prices. More than 95 percent of the energy consumption used in the transport sector today is crude oil-based, hence there is significant potential for developing commercially viable alternatives. Reducing dependency on fossil fuels such as oil, coal and natural gas by increasing the use of renewable fuels makes both business and environmental sense. Developing alternatives that are fuel-efficient and which can be operated using renewable fuels is therefore a priority and a valuable business opportunity for the Volvo Group.

#### **Need for engineering expertise**

As the Volvo Group's products are getting more sophisticated more experts are needed. At the same time the interest for mathematics, science and technology in western countries declines. A crucial factor for the implementation of the Group's vision and wanted position is input from employees, their skills and commitment. A related risk is the need for expertise and competent engineers to continue the development of environmentally-enhanced products.

#### **Operational risk**

##### **The profitability depends on successful new products**

The Volvo Group's long-term profitability depends on the Group's ability to successfully launch and market its new products. Product life cycles continue to shorten, putting increased focus on the success of the Group's product development.

##### **Reliance on suppliers**

The Volvo Group purchases raw materials, parts and components from numerous external suppliers. A significant part of the Group's requirements for raw materials and supplies is filled by single-source suppliers. The effects of delivery interruptions vary depending on the item or component. Certain items and components are standard throughout the industry, whereas others are internally developed and require unique tools that are time-consuming to replace. The Volvo Group's costs for raw materials and components can vary significantly over a business cycle. Cost variations may be caused by changes in world market prices for raw materials or by an inability of our suppliers to deliver.

##### **Safety risks**

The Volvo Group has policies, routines and guidelines designed to help secure safe workplaces in all its operating locations. The Volvo Group has a process for handling issues related to workplace safety such as fire protection, emergency evacuation and so forth. Providing a workplace free from physical hazards is essential for ensuring the safety of the Group's employees, their families, customers

and visitors as well as of suppliers. Volvo Blue Risk assessment is a key tool used during site inspections. This assessment is reviewed and supported by the Corporate Security Function and serves as an input to the insurance program. Managers are responsible for keeping all workplaces free from potential risks and for ensuring that corrective action is promptly carried out whenever a risk is identified.

#### **Environmental risks**

Forthcoming regulations on environmental issues related to the Volvo Group's production sites are dealt with by the Environmental Committee. All sites have been audited by the Environmental Manager for the Volvo Group in order to identify potential risks. Furthermore, all production sites in the Volvo Group have an environmental manager who is responsible for working preventively to mitigate the consequences of an accident if it were to occur. All production plants must fulfill the Group's requirements.

Ninety-seven percent of the production is certified in accordance with ISO 14001. This means that risks are managed systematically and preventively.



## PAGES 24–36

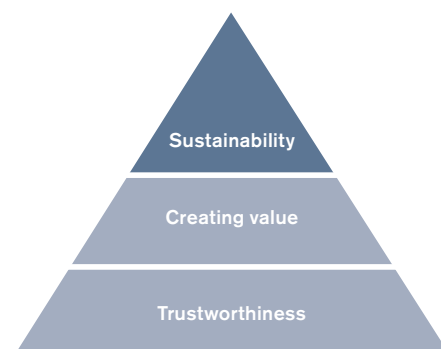
The Volvo Group has a vision – to become the world leader in sustainable transport solutions. We look at present and future global challenges and collaborate with other partners in society to find sustainable solutions for the transportation of goods and people.

We develop tomorrow's solutions today.

# Future transports

### Content

Sustainable transport solutions	25
Infrastructure	27
Carbon dioxide-neutral transport	28
Electromobility	30
Intelligent vehicles	32
Freight efficiency	34
Volvo Group Venture Capital	36





## Sustainable transport solutions

Growing populations and further urbanization put increasing demands on sustainable and efficient transport solutions. The Volvo Group takes an active part in the development of future transports.

The Volvo Group's products and services play an important role in society. Trucks transport food and other goods to their destinations. Buses help many people to reach work, holiday destinations, friends and family. Machines build roads, bridges and schools. Marine engines power inland waterway vessels and coast guard boats. If a fully functional power system is not available, industrial engines can provide a secure electrical supply to hospitals and airports.

While the world keeps moving and needs efficient transport systems, it also faces urgent global challenges, such as climate change, depletion of natural resources, traffic related accidents and population growth, all of which need to be addressed. The complexity, size and scale of these challenges require

cooperation among states, regions, companies and various sectors of society. Transportation is essential but needs to be made sustainable.

The Volvo Group is committed to contributing to sustainable development and finding solutions in its sphere of competence.

Transport solutions are based on several interdependent components. In order to develop tomorrow's solutions, aspects regarding products, infrastructure and societal needs have to be taken into account.

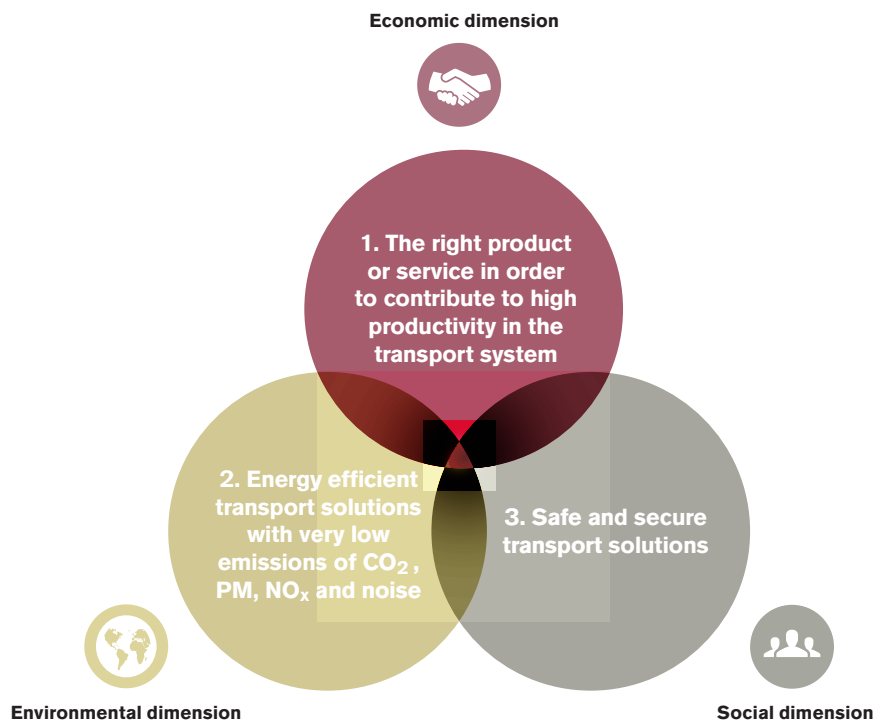
The Volvo Group's products and services are an important part of the transport system. In order for transports to continue to be a driving force for development, the transport system needs to be made more efficient.

### Our vision

To become the world leader in sustainable transport solutions by:

- creating value for customers in selected segments
- pioneering products and services for the transport and infrastructure industries
- driving quality, safety and environmental care
- working with energy, passion and respect for the individual





The above model outlines the three dimensions of sustainable transport solutions. It is in the intersection – where the circles meet – that transport is made sustainable and ultimately the Volvo Group's vision is achieved.

### A holistic approach

The Volvo Group defines sustainable transport solutions as solutions that improve the short and long-term economic and environmental performance while also taking social impact into consideration. Sustainable transport solutions can be achieved by providing:

1. The right product or service in order to contribute to high productivity in the transport system.
2. Energy-efficient transport solutions with very low emissions of carbon dioxide, particulate matter, nitrogen oxides and noise.
3. Safe and secure transport solutions.

#### 1. The right product and service for high productivity

The aim is to provide the right products and services to achieve energy-efficient transport and attain high productivity in the transport system. The end user of the products and their customers expect reliable and cost-effective

transport services. The Volvo Group strives to increase the market for sustainable products by developing commercially viable customer offerings. By promoting the most energy-efficient product available today, such as hybrids, reduced environmental impacts and lower operational costs are delivered to customers. This is one important path on the transformation towards sustainable transport systems.

#### 2. Energy-efficient transport solutions

The Volvo Group strives to provide products that enable more transport work using less resources. It is in the use phase of the products that most advances can be made to increase efficiency. The focus is thus on reducing the environmental impact of products in use by developing:

- energy-efficient vehicles and services
- hybrid drivelines
- vehicles that can be operated on alternative and renewable fuel

Attitudes and behavior are important factors for efficient and sustainable transports. The customers are therefore offered services and solutions that help them use the products and conduct their operations in the most efficient way possible.

#### 3. Safe and secure transport solutions

As transports increase, traffic safety becomes increasingly important. There is an increased demand for security and safety equipment to protect the driver, vehicle and goods as well as people surrounding the vehicle like pedestrians, cyclists and other road users. Modern technology enables protection in an efficient manner.

The Volvo Group's research and development focuses on active and passive safety solutions. For example, research is conducted on solutions and systems that help by giving warnings if the driver is losing attention, and communicate with other parts of society in order to increase overall safety.



## Infrastructure

Infrastructure is one part of the transport system and has to be developed to meet future transportation needs. Exclusive lanes for city buses and adapted highway stretches for trucks are one of many ways to reduce traffic congestion and increase the safety of transported goods and people.

Two examples of how the Volvo Group is contributing to future transport solutions related to infrastructure are Bus Rapid Transit (BRT) and Green Corridors.

### Bus Rapid Transit

Volvo Buses was a partner in the first BRT system in the world in Curitiba, Brazil in the late 1970s. Since then, the Volvo Group has supplied more buses for BRT systems than any other supplier in the world.

Bus Rapid Transit (BRT) is an efficient public transport concept designed to meet growing transport demands in cities around the world. It reduces traffic congestion, lower

the environmental impact and increases the safety of bus passengers. The key elements of BRT are:

- High-capacity buses
- Exclusive bus and/or freight transport lanes
- Off-board ticketing
- Level boarding
- Priority at intersections
- Traffic control
- Passenger information

Cities in which the Group works on BRT systems include Curitiba in Brazil, Bogotá in Colombia, Mexico City in Mexico, Gothenburg in Sweden and York in Great Britain.

### Green Corridors

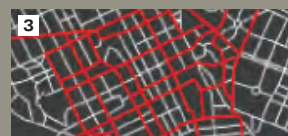
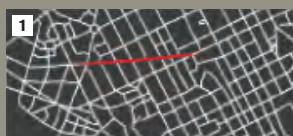
The Volvo Group is involved together with universities, authorities and other transport companies, in the EU Green Corridors initiative to reduce the environment impact of long-distance freight transport.

The idea is to concentrate goods traffic between major urban areas by developing specially adapted routes with an efficient combination of highways, sea routes and railways. Future Green Corridors will provide safer and more efficient transportation with a lower environmental impact and less traffic congestion.

The Volvo Group shares its vehicle technical expertise as well as its knowledge of the transport system and participates in field tests under real operational circumstances.

#### How much public transport does USD 1 billion buy?

1. 10 kilometers of subway
2. 50 kilometers of tramway
3. 250 kilometers of Bus Rapid Transit





## Carbon dioxide-neutral transports

Switching to renewable fuels is one of the keys to reducing the carbon dioxide emissions of the transport sector. Renewable fuels are produced from a renewable source, such as biomass, and production processes that add no excess carbon dioxide to the atmosphere.

The Volvo Group is actively exploring and developing technologies that operate on renewable or alternative fuels.

### The Volvo Group's position on alternative fuels

The Volvo Group prioritizes fuels with high energy efficiency and low greenhouse gas emissions based on a well-to-wheel perspective. All relevant stages of the fuel chain are considered; from the cultivation and harvesting to the distribution and use, as well as availability and long-term supply.

The Volvo Group develops and offers a number of different solutions adapted for various applications and commercial conditions. There is no single existing alternative fuel that is optimal for all applications and all situations.

For long-distance transport, crude oil-derived diesel fuel with increasing renewable and synthetic components will remain the dominant fuel. Liquid methane, DME and methanol are prioritized complements.

For regional transport, compressed and liquefied methane fuel will grow as a result of price and reliability of supply. The Volvo Group believes that biogas will grow slowly, but total volume is limited.

Short-distance transport will, in our opinion, lead the shift to electricity, especially in urban areas. City buses with plug-in or fully electric solutions will be followed by urban delivery and utility trucks. We believe compressed methane, later followed by DME will also be important.

### Vehicles running on renewable fuels

The Volvo Group's ability to produce carbon dioxide-neutral vehicles has already been demonstrated in several vehicles. The research and development within this area continues, in order to present new products running on renewable fuels.

In 2007 the Group produced seven demonstration trucks that were adapted to run on seven renewable fuels. In 2010 the Volvo Group developed an airport snow sweeper running on methane diesel and in 2012 started the series production of the Volvo FM Methane Diesel truck. Read more about these vehicles under '[Product Development](#)' in the '[Value Chain](#)' section of this report.



## Some definitions:

### Alternative fuels

Fuels that can replace conventional diesel or petrol fuel derived from crude oil. Alternative fuels include electricity.

### BioDME

DME produced from renewable material such as biomass, waste and agricultural products.

### Biomass

Biological material from which energy can be extracted.

### Carbon dioxide-neutral transport

CO<sub>2</sub>-neutral transport is achieved by means of vehicles powered by fuels or electricity produced from sources and production processes that add no excess carbon dioxide to the atmosphere.

### DME (Dimethylether)

A gas with no sulphur and ultra-clean combustion that is easy to liquefy and transport. DME can derive from many sources, including fossil fuels (natural gas and coal) and renewable material (biomass, waste and agricultural products).

### Electromobility

Vehicles and machines which can utilize an electric motor to propel the vehicle or machine, or to perform the main purpose of the machine.

### Fossil energy

Non-renewable energy from earlier geological periods, primarily oil, coal and natural gas.

### Fossil fuels

Fuels based on fossil energy, primarily oil, coal and natural gas.

### Hybrid vehicles

Vehicles and machines which can utilize two different power sources to propel the vehicle or machine, or to perform the main purpose of the machine. They should also be able to recover and store kinetic energy.

### Methane

Methane, CH<sub>4</sub>, is a gas and the main component of natural gas and biogas, both in compressed and liquefied form.

### Renewable fuels

Fuels produced from a renewable source, such as biomass, hydro, wind or solar power, and production processes that add no excess carbon dioxide to the atmosphere. Renewable fuels include electricity.

### Well-to-wheel

A concept in which all relevant stages of the fuel chain are considered. This includes the cultivation (including fertilization) and harvesting of the raw material, its transport to the fuel production plant, production and distribution of the fuel to refueling stations, and its use in vehicles.

## BioDME truck

In the framework of the BioDME project funded by the EU and the Swedish Energy Agency, the Volvo Group, together with a number of players including BioDME producer Chemrec and fuel distributor Preem, developed a transport system that encompasses the entire chain from production and distribution of BioDME to operation in Volvo trucks in a number of haulage firms.

From 2010 to 2012, the Volvo Group conducted field tests with ten Volvo FH trucks powered by BioDME, which covered a total of 830,000 km. This was the first time BioDME was used as a vehicle fuel on a large scale, and the evaluation of the field test shows that the BioDME trucks function very well on the road. The technology is reliable and the entire process is characterized by energy-efficiency, from production and distribution all the way to the vehicles themselves.

The Volvo Group will continue to operate the BioDME trucks and further develop the technology towards a future market for BioDME. Use of BioDME instead of diesel will reduce carbon dioxide emissions by 95 percent.

## Transition to renewable fuels

The transition to a low-carbon dioxide society requires collaboration between vehicle manufacturers, vehicle users, politicians, government agencies and fuel producers. The main challenge at this point is the availability of fuels rather than the technology.

In the foreseeable future there will be insufficient biomass or renewable fuels to fully replace fossil fuels. There will not be a single successor to fossil fuel but a range of alternative fuels, with various fuels being used in different parts of the world.

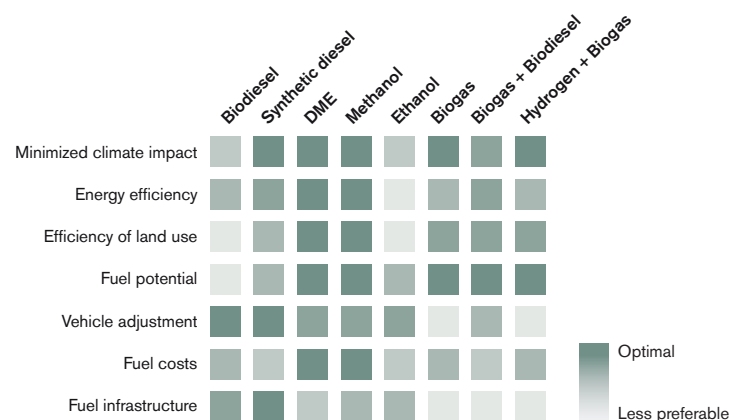
Through various collaborations, the Volvo Group promotes the establishment of infrastructure that will distribute the fuels of the future. DME has grown rapidly in the energy sector in recent years. The BioDME project in Sweden is just one example demonstrating that infrastructure can be established to promote use of this fuel in the transport sector. There are also signs that regional infrastructure for biogas production and distribution will be established during the years to come.

## Assessment of sustainability features of fuel categories

The Volvo Group has conducted research on several renewable fuels assessed from seven aspects and from a well-to-wheel perspective. All of these renewable fuels have the potential to reduce carbon dioxide emissions from transports.

The results may vary for a particular fuel depending on the production process used.

Source: Climate issues in focus, Volvo Group, 2007.







## Electromobility

The Volvo Group is well positioned with a unique solution for hybrid technology for trucks and buses. This technology is best suited for urban operations since the most appropriate vehicles for hybrid drivelines are those operating in continuous stop-go conditions, such as city buses, refuse trucks and distribution trucks.

The Volvo Group has tested various types of hybrid solutions since the 1980s and unveiled the first commercially viable hybrid solution for trucks and buses in 2006.

### Hybrid vehicles

The Group started the serial production of the Volvo Hybrid city bus and the Volvo Hybrid double-decker in 2010 and has offered two models of hybrid trucks, the Volvo FE Hybrid and the Renault Premium Hybrys-Tech, in selected European markets since 2011. Read more about these vehicles under '**Product Development**' in the '**Value Chain**' section of this report.

Other hybrid vehicles are currently being tested.

### Plug-in hybrid trucks

The Volvo Group has demonstrated several hybrid vehicles in North America over the past five years. Between 2012 and 2014 a new project will develop and demonstrate plug-in hybrid technology on a Mack drayage truck in California.

Port drayage refers to the movement of shipping containers between a marine terminal and an inland distribution point. Short average distances, frequent stops and prolonged idling make the drayage truck a good candidate for hybridization and plug-in technologies.

This project is a cooperation between the Volvo Group and South Coast Air Quality Management District, the air pollution control agency for all of Orange County and the urban portions of Los Angeles, Riverside and San Bernardino counties.

### Plug-in hybrid drayage truck project

#### Duration

2.5 years (2012 –2014)

#### Budget

USD 2.4 M (Volvo Group cost share: USD 1.2 M)

#### Key objectives

Demonstrate potential benefits of plug-in technology in a heavy-duty truck, including:

- fully zero-emission electric mode for up to 10-mile at low speeds
- significant reduction of fuel usage and regulated emissions
- engine downsizing

### Plug-in hybrid buses

Volvo Buses has also taken the next step in electrification by commencing the development of a plug-in hybrid bus. The plug-in hybrid has a new type of battery and charging equipment that will make it possible to charge the battery via the electricity network. Simulations have shown a potential for reducing energy consumption by up to 65 percent compared with today's diesel buses. The field tests will start in May 2013.

### Joint venture for drivelines

In 2011 Volvo Buses and the Chinese company SAIC Motors agreed to form a new joint-venture company for the development of driveline systems for electric and hybrid drive. The company conducts research and development, assemble new driveline systems and complete vehicle matching, prototype manufacturing and test new energy driveline systems. The company is based in Shanghai, China and operated by Sunwin Bus.

### Fully electric vehicles

Sunwin Bus, Volvo Buses' Chinese joint venture, has sold more than 800 fully electric buses and the first Renault Maxity delivered – a fully electric 4.5-ton truck – has been driven a total of 100,000 km. Read more about these vehicles under '[Product Development](#)' in the '[Value Chain](#)' section of this report.

### Currently tested

The Volvo Group is currently testing 13-ton and 16-ton fully electric trucks in France and Switzerland in close collaboration with other transport industry actors.

Two 13-ton Renault Midlum trucks were delivered in 2012 to supply stores in the urban areas of Lausanne and Zürich and the 16-ton fully electric Renault Midlum truck is tested by a logistics company supplying fresh products to store chains in the Lyon metropolitan area. The 16-ton vehicle is the largest electric-powered truck to be put on the road for delivering food products in an urban environment. This distribution truck can carry 5.5 tons of goods, has an operating range of 100 km and can be fully recharged in only eight hours. These trucks do not emit any particulate matter, nitrogen oxides or carbon dioxide and noise levels are low.

In 2013 the city of Lyon and Renault Trucks will bring into service a fully electric boom lift truck to be operated by the city's Street Lighting Department for four years. This experimental application is a first in France. The aim is to ascertain the performance of a fully electric boom lift truck under actual working conditions and adapt it as well as possible to operational requirements, particularly in urban areas.



### Driving distance for a bus with 5 l diesel equivalent to 50 kWh





## Intelligent vehicles

The Volvo Group is a leading actor in the development of intelligent vehicles. Modern communication is combined with advanced information technology to develop machines that work without an operator and vehicles that think for themselves.

### Road trains

Driving in a close formation convoy could reduce accidents, improve traffic flow, offer greater comfort to drivers and lower fuel consumption and carbon dioxide emissions.

The EU-financed SARTRE (Safe Road Trains for the Environment) project presented the results of three years of research and trials in 2012. The test fleet included a lead Volvo FH truck followed by three cars driven entirely autonomously at speeds of up to 90 km/h – with no more than six meters gap between the vehicles. By using wireless technology to link the road train, the lead truck, operated by a trained driver, controls a convoy of vehicles driving behind it. The drivers of the vehicles following the lead truck can let go of their steering wheel and relax while the train continues rolling.

The concept could become a reality in the coming years, if challenges regarding legislation, responsibility issues and communications standards are resolved.

### Intelligent machines

Volvo Construction Equipment has developed two demonstration machines – an excavator and a wheel loader – which can operate without an operator on construction sites.

The project is partially financed by public funding and is a close collaboration between the Volvo Group and two universities in Germany and Sweden to develop machines that can think for themselves. Since the beginning of the project in 2008, continuous progress has been made; active safety features have been added and machines have become more and more intelligent. This type of intelli-

gence machines can see the ground and stone piles through vision sensors and perform excavation work and other tasks efficiently.

While the manufacture of autonomous machines is already technically feasible it will still be several years before we will see a lot of machines with this type of intelligence. More development work on sensors and data processing applications is required, not to mention all of the necessary infrastructural development, as well as legislation and public acceptance.

### Automated queue assistance

Traffic congestion is tiresome even for professional drivers and it is a recurring source of accidents. Over the past few years the Volvo Group and other research partners



### SARTRE (Safe Road Trains for the Environment) project

**Duration:** 3 years (September 2009–September 2012)

**Budget:** EUR 6.4 M (60% from EU Commission and 40% from the participating companies)

**Objective:** To develop strategies and technologies that allow road trains which offer significant environmental, safety and comfort benefits on today's motorways, without requiring modifications to road infrastructure.



...

### Autonomous machines project

**Duration:** 7 years (2008–2014/2015)

**Budget:** SEK 29.94 M (15.5% from German and Swedish public funding and approximately 20% from other partners)

**Short-term objective:** to develop fully autonomous machines with high productivity, low fuel consumption and advanced safety features.

**Long-term objective:** to be involved in zero accidents, have zero emissions, 100% availability and approximately 10 times higher energy efficiency.



have developed AQuA – Automated Queue Assistance – a technology that assists the truck driver in traffic congestion. AQuA is part of the EU funded project HAVEit.

When a truck driver activates AQuA, the system regulates speed, direction and driving rhythm through sensors that monitor the area around the truck. It keeps the vehicle in the right lane and at the right distance from the vehicle in front. It also keeps a watch on the driver's attention through camera surveillance, making sure he or she stays alert and is ready to take over. Should the driver not respond to commands, the system can stop the vehicle. AQuA makes travel more comfortable and safe.

There are important benefits with this technology. Today, 20 percent of all truck accidents happen in traffic congestion or similar situations. AQuA will hopefully lower that figure significantly and reduce driver workload. As a direct consequence, accident-bound queues will also be prevented.

### Intelligent Transport Systems

Intelligent Transport Systems (ITS) is a concept that will ultimately contribute to the more efficient use of infrastructure and transport solutions. The combination of new technology with advanced IT and communication technology offers major opportunities to reduce congestion and environmental impact and to increase safety by offering real-time traffic information, remote monitoring, and communication between transport vehicles and the infrastructure.

To date, the focus has been developing vehicles that can “see” – for example, by detecting lane markers and obstacles. The next step is to make the vehicles “talk”. Many accidents could be prevented if vehicles on the road could communicate with each other and with infrastructure.

Cooperative Systems is one area within ITS, which responds to the complexity of managing multimodal traffic systems and provides users with the quality and variety of services necessary to match their mobility demands. The systems can increase the quality and reliability of the information available to drivers about the immediate surroundings. Road operators benefit from cooperative systems by receiving information about the vehicles, their position and road conditions. This will lead to a safer and more efficient use of our roads. Intelligent Cooperative Systems have already been implemented in some of the Volvo Group's research trucks.

At the Intelligent Transport Systems (ITS) World Congress in Vienna in 2012, the Volvo Group conducted two demonstrations, both operated in live Vienna traffic. Both vehicle-2-vehicle and vehicle-2-infrastructure concepts were demonstrated.





## Freight efficiency

The Volvo Group is conducting several projects to improve the freight efficiency of its trucks. The objective is to reduce the fuel consumption calculated per volume of freight transported by looking at the truck from different aspects.

The efficiency of the engine, the length of the trucks and the aerodynamics are some of the dimensions considered.

### Volvo Energy Efficient Vehicle

The Volvo Group is running a bi-lateral project in the US and Sweden with a common goal of significantly improving the freight-moving efficiency of future trucks and reduce their greenhouse gas emissions. The objectives are to improve freight efficiency by 50 percent, measured in ton-kilometer per liter, compared with 2009 truck models, and to increase the efficiency of the engine by 20 percent. The five-year program focuses on the complete vehicle – the truck and the trailer – and Volvo Group researchers, together with some key suppliers, are looking

at many innovative solutions to meet the program's aggressive targets. With constant load this means the fuel consumption and carbon dioxide emissions could be reduced by 33 percent. The team will also demonstrate an engine concept capable of reaching 55 percent brake thermal efficiency.

The final deliverables for the project will be two concept trucks, one in the US and one in Sweden, for evaluation and demonstration of the new technologies. While the selection of technologies for each concept truck will ensure that the unique demands of each market are met, common technologies will be used when possible.

For the US part of the project, called Super Truck, the Volvo Group is closely working with the US Department of Energy and

### Volvo Energy Efficient Vehicle project

**Duration**  
5 years (2011-2016)

**Budget for the US**  
USD 38 M (Volvo Group cost share:  
USD 19 M)

**Budget for Sweden**  
SEK 176 M (Volvo Group cost share:  
SEK 93 M)

**Objective 1**  
Improve freight efficiency by 50%  
(ton-km/liter or ton-mile/Gal)

**Objective 2**  
Demonstrate engine technologies that  
can reach 55% brake thermal efficiency

the National Energy & Technology Laboratory. The partners include Penn State University, Grote and Freight Wing. After only two years into this program, the Super Truck team has already demonstrated freight efficiency improvements for trucks by over 35 percent.

The Swedish part of the project is completed in cooperation with the Swedish Energy Agency (Energimyndigheten) within the Strategic Vehicle Research and Innovation (Fordonsstrategisk Forskning och Innovation, FFI) and is done in partnership with Lund University. Several significant improvements have already been identified and verified in simulations and in engine test cells.

### Duo2

In collaboration with Vinnova, the Swedish Governmental Agency for Innovation Systems, the Volvo Group is testing a truck with a length and weight larger than those available today in Europe.

In the European Union the maximum length and weight of trucks is 18.75 meters and 40 tons, except in Sweden, Finland, Denmark and the Netherlands where the limit is 25.25 meters and 60 tons. In this project, special permission has been attained from traffic authorities to test a 32-meter-long truck weighing up to 80 tons between Gothenburg and Malmö in Sweden (a journey of approximately 300 kilometers).

The vehicle combination is built on standard European modules combined in a new way. The project is also testing a number of new and innovative safety and logistic features. Initial feedback from the project has been positive in every respect, with recorded fuel savings of over 30 percent. The first official reporting of the project will take place during 2013, and the project will continue for at least one more year when additional combinations will be deployed.

The main advantage of using longer vehicle combinations is that fewer vehicles are needed to transport a quantity of goods. As a result there will be a substantial reduction of carbon dioxide emissions – calculated per transported volume of freight.

### One more pile

The Volvo Group has received SEK 13.8 M from the FFI (Strategic Vehicle Research and Innovation) for the 'One more pile' project that aims to develop a modular system for forest transports in cooperation with Volvo Trucks and several other companies. By increasing the amount of timber per load, fuel consumption and carbon dioxide emissions are reduced. At the same time, there are fewer vehicles on the road.

### Duo2 project

- 32-meter-long truck
- Weighing up to 80 tons
- Recorded fuel savings of over 30%



Illustration of the Duo2 truck.



## Volvo Group Venture Capital

Founded in 1997, Volvo Group Venture Capital is an investment company owned by the Volvo Group. The ambition is to be a leading corporate investor in sustainable transport and infrastructure solutions. Each investment should have a positive return in itself while also contributing to the sustainable growth and competitiveness of the Volvo Group.

Volvo Group Venture Capital mainly focuses on businesses with proven business models directly linked to the Volvo Group's activities and also on companies ready to scale up their operations. Two companies in which Volvo Group Venture Capital has invested are I-Tech AB and Steelwrist AB.

### Marine paint

I-Tech is developing a marine biocide called Selektope® which, when used in very small quantities in marine paint, prevents barnacle growth on ship and boat hulls. Selektope® has the potential of revolutionizing the boat paint industry by providing a superior and effective product that has minimal impact on marine surroundings.

### Excavator attachments

Steelwrist develops tiltrotators, quick couplers, accessories, tools and control systems for excavators and backhoe loaders. The company recently designed Front pin lock™, an innovative quick coupler technology, that maintains the attachment in a safe position even if the operator should fail in the connection procedure. The development of this new quick coupler technology responds to increasing quality and safety demands.



## PAGES 37-48

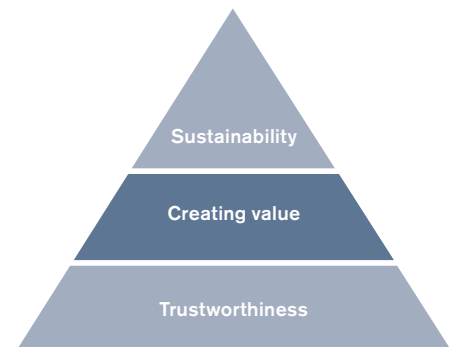
Contributing to the community in which we operate is essential and we believe that our unique set of skills and knowledge can be used to make a difference.

We work together with customers, government officials, local decision makers, non-governmental organizations, universities and other partners.

# Society engagement

### Content

The Volvo Group – a part of society	38
Research partnerships	39
Professional training	41
Traffic safety	44
Commuting	46
Global partnerships	47







## The Volvo Group – a part of society

The Volvo Group is part of society and wants to contribute to the positive development of communities in which it operates. In its new Corporate Social Responsibility and Sustainability strategy the Volvo Group will build its community engagement activities on the concept of 'creating shared value'.

The aim is to create value both for society and for the Volvo Group by matching societies' needs with the Group's business objectives. It results in activities where both society and the company can benefit.

The Volvo Group engages in projects related to its core business and operating context that address societal challenges such as traffic safety, health and education, where the Group's unique expertise and knowledge can be applied. All projects are guided by the company's core values – quality, safety and environmental care. As a rule of thumb, the

Volvo Group should only engage in projects where it believes it has a unique contribution to make.

### **Global approach to local needs**

The Volvo Group operates in countries with different social, political, economic and cultural systems and conditions. While many of the challenges of sustainable development and CSR are similar across the world, priorities and stakeholders' expectations may differ from region to region. Knowledge and understanding of the markets' needs and

conditions are essential to planning and executing successful community projects. Due to its global presence and decentralized structure, the Volvo Group considers the local organizations to be the most suited for identifying, selecting and developing community outreach projects based on local circumstances, expectations or priorities.



## Research partnerships

The complexities in the challenges ahead require collaboration of several actors in society. The aim of developing research partnerships is to create platforms for developing knowledge and innovation for the future.

The research partnerships in which the Volvo Group engages all have long-term ambitions to work towards sustainable transport solutions.

### Academic Partner Program

The Academic Partner Program (APP) is a long-term partnership with selected universities and research institutes in areas of special interest to the Volvo Group. The program aims to cooperate on specific projects, increase the Group's visibility to students and researchers while also securing a pool of potential employees.

In the Academic Partner Program expertise, knowledge and ideas are shared, and the necessary strategies for the future are discussed in a rare form of close cooperation. It is a partnership of trust in which long-term

partners are sought for mutually beneficial projects and other forms of cooperation.

There are two modules in place to date – the Preferred Research Partners program for collaborative research projects and the Preferred Talents Partners program for recruitment purposes. In total, the Volvo Group has ten academic partners worldwide.

In Sweden, the Preferred Talents Partners initiative includes a scholarship program. Every year, the Group pays tuition for four new master's students from China and India at Chalmers University of Technology.

The scholarships cover tuition fees for a two-year master's program in automotive engineering, electric power engineering, computer systems and networks or software engineering. In addition to financial support, the Volvo Group maintains close contact with

### The Volvo Group's academic partners:

Chalmers University of Technology,  
Gothenburg, Sweden (T, R)

University of Skövde, Sweden (R)

School of Business, Economics and Law,  
Gothenburg, Sweden (T)

Mälardalen University, Västerås/Eskilstuna,  
Sweden (R)

INSA Lyon, France (T, R)

EM Lyon, France (T)

North Carolina State University, US (T)

Penn State University, US (T, R)

Tsinghua University, Beijing, China (T)

Tongji University, Shanghai, China (T)

R = Preferred Research Partner

T = Preferred Talent Partner

the students during their time at Chalmers University of Technology by offering summer internships, degree projects and mentorship.

### Research foundations

Volvo Research and Educational Foundations (VREF) is the collective name under which four foundations collaborate: the Volvo Research Foundation, the Volvo Educational Foundation, the Dr Pehr G Gyllenhammar Research Foundation and the Håkan Frisinger Foundation for Transportation Research. The foundations finance research and education in the area of future urban transport mainly in Australia, Chile, China, India, South Africa, the UK and the US.

In 2000 the VREF initiated a program called Future Urban Transport (FUT) to support the development of sustainable transportation systems in large urban areas around the world. The FUT program grants approximately SEK 30 M annually to ten Centers of Excellence fully dedicated to research and educational projects in the area of sustainable urban transport. The Centers, integrated with universities or technology institutes, are cooperating closely through their case studies with key stakeholders responsible for urban transportation systems.

The VREF also finances other research projects to complement the research of the Centers of Excellence and organize regular conferences or symposiums that bring together FUT researchers and key stakeholders. The participants learn from each other and develop new ideas that give rise to papers, articles or publications. The latest

symposium took place in October 2012 in Gothenburg, Sweden gathering over 90 participants around the theme "Urban Freight for Liveable Cities – How to deal with Collaboration and Trade-Offs".

For further information on the research foundations, the Centers and the FUT program, visit [www.vref.se](http://www.vref.se).

### Center for research on traffic safety in China

The Volvo Group is one of five partners behind a new center for research on traffic safety in China that was inaugurated in December 2012 in Beijing.

In China, which is one of the world's biggest markets for cars and heavy trucks, traffic safety has emerged as an increasingly important issue for both the Chinese government and the general public.

The China Sweden Research Center for Traffic Safety will conduct research projects with the aim of improving road safety both in Sweden and in China. Pilot projects are already under way, including some whose focus is on studying accidents in China involving trucks and buses. The research center also aims to boost the exchange of technology and know-how between the two countries and to support the two governments' decisions on issues relating to traffic safety.

In addition to the Volvo Group, the other partners are Volvo Car Group, Chalmers University of Technology, the Chinese Ministry of Transport's Research Institute of Highways and Tongji University.



### Volvo Environment Prize

The Volvo Environment Prize 2012 was awarded to Gretchen Daily, a professor of environmental science at Stanford University in California, who is currently developing methods for valuing nature's various ecosystem services.

Gretchen Daily is one of the pioneers in charting and quantifying the world's natural capital. She is convinced that the only way to generate welfare in the long term is to put a price tag on the ecosystem.

Over the last two decades the Volvo Environment Prize has become one of the scientific world's most respected environmental prizes. Since the first award in 1990, the prize has gone to 39 people. Among them are many well-known names and three Nobel Prize winners.





## Professional training

In the transport and construction industry, there is a shortage of people with the right competencies in some countries. To secure the development of the business and facilitate viable employment opportunities, the Volvo Group conducts a number of professional training programs for technicians, drivers, operators and people working in factories in different parts of the world. The training provides them with the right skills and increases their professional experience.

### The Volvo Step in Sweden

To meet the need for skilled employees in the future, the Volvo Group has launched the Volvo Step, a one-year, paid vocational training program in industrial production for unemployed youth between the ages of 18 and 22. The Volvo Step takes place at 13 plants and sites in Sweden, providing both theoretical and practical learning experiences.

Frequently one of the obstacles for young people looking for employment is their lack of experience. The purpose of the program, which started in November 2012, is to equip young people with the appropriate skills and experience to work in the production sector, either within the Volvo Group or with other employers.

The program is not a guarantee of employ-

ment within the Volvo Group, but it gives the participants better opportunities in the labor market. Successful participants will receive a certificate showing that they are sufficiently qualified to work in industrial production.

Representing an overall investment of SEK 450 M, The Volvo Step is a three-year project that will enable a total of 1,200 young people to participate in a reimbursed training program. Women accounted for 44 percent of the 400 participants in 2012.

### Training of World Food Program technicians in East Africa

To help the World Food Program (WFP) carry out its mission, Renault Trucks deployed a mobile training unit in five East African coun-



The Volvo Step is a three-year project that will enable a total of 1,200 young people to participate in a reimbursed training program.



tries for three months in 2012, to train WFP mechanics in the most advanced maintenance techniques.

The United Nations' World Food Program works to combat hunger by guaranteeing access to food in the poorest parts of the world. Reliable trucks are vital to their logistics system for bringing food to people in emergency situations. More than 100 of these are Renault trucks, which carry food supplies under the most extreme conditions.

Renault Trucks provided a mobile training unit, which together with a team of technicians, was sent out to train the WFP's mechanics in East Africa in maintenance and repair skills. From Uganda to Southern Sudan, Rwanda, the Democratic Republic of Congo and Burundi, Renault Trucks specialists trained the WFP teams on site.

### Training of technicians in Ethiopia

The Volvo Group is confronting a shortage of construction equipment and truck technicians in Sub-Saharan Africa in a joint project with the Swedish International Development Cooperation Agency (SIDA) and the United Nations Industrial Development Organization (UNIDO). The project helps support and modernize technical schools in Ethiopia.

The Group takes a hands-on approach with a project at Selam Technical and Vocational College in Addis Ababa, Ethiopia, providing new equipment, training material, teacher training, ongoing curriculum development and apprenticeship opportunities for students.

Lack of well-trained technicians is a serious problem in much of Africa. As a result, dealers operating in countries like Ethiopia are often compelled to hire expatriate technicians rather than invest in local workers who would remain in the country permanently – and keep more money in the local economy. The few local technicians who are available often have inadequate training, as many technical schools in these countries use outmoded equipment – sometimes dating back to the 1970s or 1980s.

Developing a technical program benefits original equipment manufacturers like the Volvo Group by providing a larger pool of

skilled workers. Though students and apprentices will not be under any obligation to work for the Volvo Group, the project will provide the Group with a very powerful way of building relationships with potential employees.

While the Volvo Group facilitates teacher training and supplies equipment, the school handles administration, re-cruitment of teachers and the selection of students. UNIDO oversees the project.

The project, which will train about 30 students a year, started in February 2013. If the new program works well, the company will consider expanding into other African countries in the future.

### Training of operators in India

The Volvo Group partners with the GMR Varalakshmi Foundation (GMRVF), a non-profit organization, to address the growing demand for skilled operators in India's booming construction equipment industry and make underprivileged youth employable. Together they offer a three-month operator training course.

The course provides basic and advanced technical training on Volvo excavators to youth. The curriculum includes training in operational efficiency, safety and maintenance, but also soft skills training such as speaking and writing in English and computer usage. Most of the training takes place in GMRVF's vocational training center in Shamshabad, except for one week of intense training at the Volvo Construction Equipment customer center in Bangalore.

Volvo facilitates the training, providing course material, curriculum design and appropriate equipment. It also helps with placements through its dealer and customer network after the training is completed.

In December 2012 the first class from the joint training program graduated with a second class following shortly thereafter. Despite popular demand for the course, Volvo and GMRVF intend to keep the class sizes small, to maintain the quality of training. The next step will be to start the training at multiple centers across India to help improve skilled operator availability across the country.



### Professional training in South Africa

Since 2009 the Volvo Group has been conducting a number of professional trainings for employees and the local community in South Africa. The purpose of the 12-to-18-month "learnerships", as they are called in South Africa, is to update the staff on the latest developments within the industry, as well as to provide development opportunities for members of the local community, including unemployed youth and people with disabilities. Learnerships are conducted in various areas such as production, sales, aftermarket, maintenance and literacy skills.

The Volvo Group is closely working with the Manufacturing, Engineering and Related Sector for Education and Training Authorities (MERSETA) to design and implement these training programs.

### Apprenticeship and education on health in South Africa

Several million people are infected with HIV/AIDS in South Africa, the highest number in any country in the world. The disease has decimated the community and continues to do so. It is a threat for the Volvo Group's employees, customers and the local community.

The Volvo Group's efforts to fight the spread of HIV/AIDS began in 2004 and the project has grown ever since. The company is mainly supporting two initiatives: the Star for Life Health and Education and the Skills for Life. The Star for Life Foundation is a non-profit, school-based HIV and AIDS prevention program that informs youth about the disease and helps them make decisions that will reduce infection risks. The Foundation supports schools in South Africa, Namibia and Zambia, and the Volvo Group currently sponsors 24 schools in Durban, Johannesburg and Cape Town. The Skills for Life program aims to alleviate poverty and youth unemployment by linking the Star for Life schools to

businesses in order to provide vocational training and apprenticeships. The Volvo Trucks Center in Pinetown, Durban, employs a number of apprentices recruited and trained through the Skills for Life program.

In order to raise money for the Star for Life program, the Volvo Group donated the world's first series-manufactured new Volvo FH truck to be sold to the highest bidder on eBay in September 2012. All proceeds were donated to the program.





## Traffic safety

Road traffic accidents are the most common cause of death among young people in many parts of the world. Through educational programs and sponsorships the Volvo Group participates in different initiatives to increase traffic safety and minimize the number of accidents.

### Traffic safety program in Brazil

In the late 1980s, the Volvo Group launched the Volvo Traffic Safety Program (VTSP) to help lower traffic accidents and death rates in Brazil which are among the highest in the world. According to statistics from companies linked to the freight carrier segment and insurance companies, close to 91,000 accident involving freight vehicles occur every year in Brazil. In these accidents, 12,000 people die, approximately 4,000 of them are truck drivers.

The VTSP program has involved thousands of people and is based on conferences, symposiums, seminars, training for professional drivers and interaction with schools, cities and communities.

VTSP has become the country's longest running traffic alleviation program, mobilizing

governments, traffic agencies, businesses, schools and universities as well as the media and the general public.

One of the primary projects undertaken in recent years is the TransFORM Program where professional truck drivers are trained in safe driving skills. As a result, better trained drivers, reduced operational and truck maintenance costs, and fewer road accidents have been realized, leading to fewer deaths and reduced financial losses linked to accidents.

The course is an intensive five-day training with an average of ten students per class. Two instructors work together to teach about vehicle technology and driving safety. The classes take place in the Volvo facilities, at the dealerships or at the carrier's own premises.



Since the first training in 2008, over 180 freight carrier companies have been involved and over 700 professional drivers have been trained via the TransFORM Program.

Since the first training in 2008, over 180 freight carrier companies have been involved and over 700 professional drivers have been trained. In 2012 approximately 100 truck drivers were given the training.

### Road team in the US

America's Road Team is a national public outreach program led by a small group of professional truck drivers who share superior driving skills, remarkable safety records and a strong desire to spread the word about safety on the highway.

American Trucking Associations (ATA), the voice of the trucking industry, created America's Road Team in 1986 to reach out to the trucking industry and the motoring public.

Every two years, ATA searches for professional truck drivers, both men and women, who are willing to take time away from the cab of the truck to serve as a Captain. As Road Team Captains, these professional drivers take a few days each month to meet with the motoring public, the news media, students, transportation officials and government leaders to demonstrate the trucking industry's commitment to safety and promote trucking as a sustainable and essential part of the US economy. In addition, Road Team Captains appear at events ranging from driver safety meetings to National Truck Driving Championships to reinforce the importance of safety and professionalism in our industry.

The Volvo Group has supported the America's Road Team for more than a decade.

### Traffic safety campaign in Denmark

Sixty percent of all accidents in which a truck collides with a pedestrian or cyclist is the result of driver's blind spot. Many of the people injured are children.

In Denmark Volvo Trucks and several other organizations have therefore joined forces in a project designed to teach children how to behave when they approach trucks.

The Traffic Safety at Eye Level campaign was launched in 2003 and so far, more than 60,000 children throughout Denmark have participated in the course.

### Safe & Sober campaign in Europe

The Safe & Sober campaign is run by the independent, non-profit European Transport Safety Council (ETSC) with active support from Volvo Trucks. The campaign focuses primarily on politicians, opinion leaders, safety organizations and the transport industry.

The aim is to reduce the number of deaths and injuries in Europe that are caused by drunk driving. A series of debates known as the Safe & Sober Talks were held in selected member states throughout Europe in 2012. As part of the campaign, the Volvo Group and ETSC also aim to identify and support good practices and carry out training programs and educational activities.







## Commuting

The Volvo Group works to develop solutions that enhance mobility while reducing the impact on the environment. Commute Greener is a mobile-based application that calculates and keeps track of carbon dioxide emissions. The application transforms a cell phone into a tool to measure carbon dioxide emissions generated during every day commuting, including traveling by bus, car, train, bicycle or other means of transport.

The application not only calculates carbon dioxide emissions, but also financial savings and gives proactive suggestions on how to commute greener. The program challenges users to reduce carbon dioxide emissions and traffic congestion while contributing to better health and quality of life.

The Commute Greener application has been developed by the Volvo Group. Users include corporations, cities, organizations and individuals. In addition to the application itself, Commute Greener provides a community website where commuters can challenge each other to reduce their individual carbon dioxide footprint.

### Successful commuting in Mexico

Mexico City has been using Commute Greener since 2010 with the objective to

involve 200,000 government employees and use the results as part of their Environmental Management System. So far, the project has obtained encouraging results with dedicated groups showing a potential carbon dioxide emission reduction of up to 40 percent.

### Reduced emissions in India

Volvo India started using Commute Greener in 2012 and after 10 weeks, it is estimated that 2,300 employees and business partners reduced their carbon dioxide emissions by 12 percent, an equivalent of 6,000 kg of carbon dioxide. Additionally there were large time and financial savings, since more than 16,000 car trips which used to cause congestion in traffic were replaced by the use of buses.

The initiative's success was not only due to the greater awareness it created among participants but also changes in their lifestyle.



The free and public version of Commute Greener can be downloaded from the App Store and [www.commutegreener.com](http://www.commutegreener.com)



Photo: Jane Beesley

## Global partnerships

The Volvo Group cooperates with many different stakeholders, including non-governmental organizations. The Group has participated in WWF's Climate Savers Program since 2010, and in 2012 the Group entered a partnership with the global charity organization Oxfam.

### WWF Climate Savers

WWF is one of the world's largest and most respected environmental organizations, whose vision is to stop the degradation of the planet's natural environment and build a future in which humans live in harmony with nature.

WWF's Climate Savers Program involves multinational companies in the effort to reduce carbon dioxide emissions. These companies pledge to reduce their carbon dioxide emissions pursuant to an agreement between WWF and the company. The results are reviewed by independent technical experts. The agreed target must be more ambitious than the company would have set on its own, and must also signify that the company is leading its sector in the reduction of greenhouse gas emissions.

The Volvo Group became the world's first manufacturer in the automotive industry to be approved by WWF to participate in the Climate Savers Program in 2010, in an agreement whereby the Group's truck brands committed to reduce the amount of carbon dioxide emissions from production facilities and trucks manufactured from 2009 to 2014.

In 2012 Volvo Construction Equipment and Volvo Bus Cooperation also joined the Climate Savers program, and Volvo Group's joint-venture company, SDLG, which manufactures construction equipment in China, became the first Chinese company to be approved as a partner of the program.

The objective for the Volvo Group is to reduce the total amount of carbon dioxide emitted by trucks, construction equipment and buses manufactured by the Group by more than 30 million tons by 2014, compared with vehicles manufactured in 2008.

As part of the commitment, Volvo Construction Equipment will prepare a new prototype with considerably improved fuel efficiency, compared with existing models and Volvo Buses will expand the number of field tests with plug-in hybrid buses. The plug-in technology has excellent fuel-savings potential for city buses.

The agreement between the Volvo Group and WWF also states that:

- The Volvo Group will develop a new truck prototype with 20 percent lower fuel consumption than a corresponding truck manufactured in 2008.
- Prior to 2014, the Volvo Group will offer commercial trucks that operate on renewable gas.
- The Volvo Group will reduce carbon dioxide emissions from its production plants by 0.2 million tons (12 percent) before 2014, compared with 2008.

Independent technical experts will verify that the Volvo Group is complying with its commitments.

#### Half-time results

The Volvo Group communicated its half-time results for the period of 2009–2011 and is ahead of target.

The carbon dioxide emissions from the Group's facilities in 2011 were 16 percent lower than in 2008. They were reduced by 0.3 million tons between 2009 and 2011, which already exceeds the goal for the whole period from 2009–2014. The total lifetime emissions of the Group's products were reduced by 18 million tons, with a goal of 30 million tons by 2014.

#### Volvo Ocean Race seminars

During 2012 the Volvo Group organized seminars together with WWF to talk about the Climate Savers Program and the Volvo Group's commitment with the purpose to inspire others. The seminars took place in Abu Dhabi (UAE), Sanya (China), Miami (US) and Lisbon (Portugal) during the Volvo Ocean Race event and were attended by customers, business partners and government representatives.

#### Oxfam

Access to clean water and sanitation is vital for people's survival, particularly children, and reduces their risk of suffering from life-threatening diseases.

In December 2012 the Volvo Group entered a partnership with the global charity organization Oxfam by making a donation to three projects designed to improve access to clean water and sanitation for communities in Haiti, Indonesia and Ethiopia who are impacted by natural disasters.

Oxfam is an international confederation of 17 organizations networked together in more than 90 countries. For over 70 years, Oxfam has led the way in responding to disasters and has become a world authority on emergency water and sanitation.

With the support of the Volvo Group, Oxfam initiated a project in Haiti that will help 1,750 families relocate to safe neighborhoods following the devastating earthquake of January 2010. In Indonesia, the Volvo Group's support contributes to the implementation of community based disaster risk management in targeted villages, empowering local communities through capacity building and advocacy. Finally, in Ethiopia Oxfam will use the Volvo Group's contribution to manage water and sanitation infrastructure and services for 31,000 people.

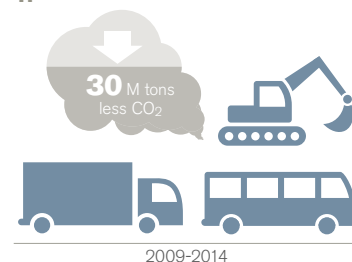
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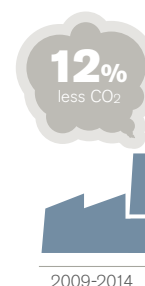
In 2010 the Volvo Group became the world's first manufacturer in the automotive industry to be approved by the WWF to participate in the Climate Savers Program.



1.



2.



1. The objective is to reduce the total amount of carbon dioxide emitted by trucks, construction equipment and buses manufactured by the Group through 2014 by more than 30 million tons, compared with vehicles manufactured in 2008.

2. The Volvo Group will also reduce carbon dioxide emissions from its production plants by 0.2 million tons (12 percent) before 2014, compared with 2008.



## PAGES 49–81

Taking responsibility for what we produce, how we produce it and how we act is at the core of the Volvo Group's Corporate Social Responsibility and sustainability commitment. We look at the entire value chain and manage sustainability issues at every stage of the lifecycle of our products – from the product development to recycling.

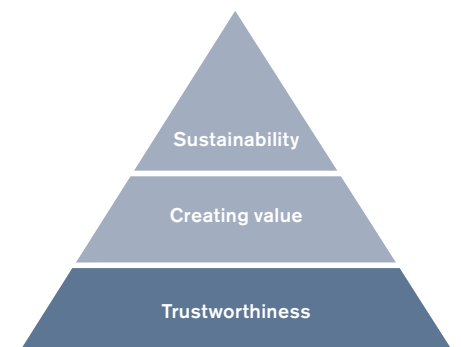


# Value chain



### Content

Product development	50	Distribution and service	71
Product development process	50	Product range	72
Fuel consumption and exhaust emissions	51	Dealers	74
Noise	55	Supporting the customers	75
Hazardous substances	56	Transparent communication	75
Safety	56	Anti-corruption	75
Purchasing	58	Fair competition	76
Sourcing process	58	Product in use	77
Requirements on suppliers	59	Fuel consumption	77
Assessments	59	Safety	79
Production	60	Re-use	80
Global industrial structure	61	Remanufacturing	80
Employees	62	Recycling	80
Environmental management	67		
Transports and logistics	69		







## Product development

The Volvo Group has a long history of developing pioneering products and services for the transport and the construction industries. Its research has resulted in cutting-edge technologies in the areas of safety, energy efficiency and emission reductions.

Approximately 60 percent of the people working in research and development (R&D) are located in Sweden, with the rest in Europe, the US, Asia and South America.

In 2012 investments in R&D amounted to SEK 14.8 billion, compared with SEK 13.3 billion in 2011, which corresponds to 5.0 percent of net sales compared with 4.4 percent

in 2011. A large part of the investments were related to reducing exhaust emissions, lowering fuel consumption and developing hybrid technologies.

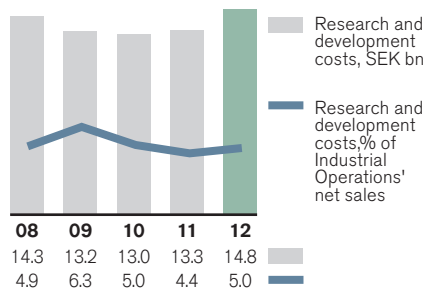
In 2012 government grants amounting to SEK 675 M (783) were received, of which SEK 525 M (775) was reported in the income statement. Tax credits are included at SEK 348 M (545), related to product development in France and India.

Other grants were mainly from the European Commission and the Swedish Government.

take up to four years, sometimes longer if a new powertrain is included. Customers are actively involved in the project providing input through surveys, clinics and field tests. For each new vehicle developed the Volvo Group keeps track of the project experience in a white book so that the learnings can serve as a basis for future projects.

During the development of the products

**Research and development costs**



### Product development process

There are six stages to the Volvo Group product development cycle. Each stage has different environmental, quality and safety objectives that are followed up at each project gate and need to be met before proceeding to the next stage.

Developing a completely new vehicle can

### Three areas of focus

**Energy-efficient drivelines**

**Hybrid and electric drivelines**

**Renewable fuels**



#### Product development cycle

1. Definition of the project scope
2. Choice of the concept
3. Technical feasibility study
4. Development phase including building, verifying and validating the product solution
5. Industrialization and commercialization phase to enable production
6. Launch of the product and aftermarket products

the ergonomics for the driver and the accessibility of the parts for the technician are taken into account, as well as the ergonomic aspects for employees working on the assembly line.

#### Life cycle assessment

In the 1990s the Volvo Group was one of the first companies in the automotive industry to use Life Cycle Assessment (LCA). It maps a product's environmental impact in order to make informed decisions in the development process.

According to these LCAs approximately 90 percent of the environmental impact of a Volvo truck results from its use. Each new product from the Volvo Group should have less environmental impact than the product it replaces. Thus the focus of the Volvo Group's efforts is on reducing the environmental impact of its products during their use.

#### Fuel consumption and exhaust emissions

Climate change is very much a global issue which requires global action. According to the Intergovernmental Panel on Climate Change (IPCC), greenhouse gas emissions must be reduced by 50–80 percent between 2000 and 2050 if we are to avoid the most serious consequences of climate change.

Research shows that transport is responsible for approximately 13 percent of the total greenhouse gas emissions caused by humans. Goods movement on roads accounts for about four percent globally.

For this reason the Volvo Group puts significant effort into developing products running on alternative fuels, or with significantly reduced fuel consumption. The target for 2014 is to reduce the total lifetime emissions of the Group's products by 30 million tons (with 2008 as a baseline). Between 2009 and 2011, the reduction amounts to 18 million tons. This is part of the Volvo Group's commitment within the WWF Climate Savers

Program. Read more about this commitment under the '[Society Engagement](#)' section of this report.

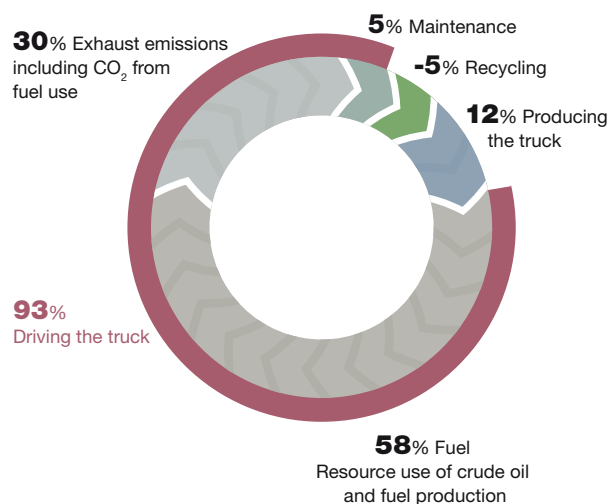
#### Greenhouse gas-related regulations

The Volvo Group is closely monitoring and participating in the development of forthcoming greenhouse gas-related regulations for heavy-duty vehicles. Fuel consumption has already been regulated in China, and Japan will follow in 2015. Taiwan and South Korea are also considering regulations.

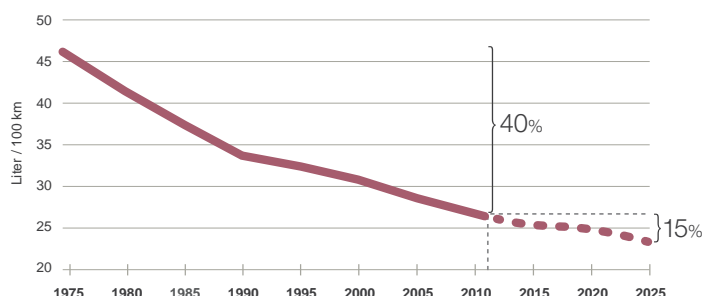
The US will introduce a greenhouse gas-emission regulation in 2014, and a corresponding fuel consumption regulation in 2016. Volvo and Mack trucks have already received certifications for meeting the 2014 greenhouse gas regulation.

The Group is also monitoring and participating in the EU debate regarding greenhouse gas and fuel consumption certification of heavy-duty vehicles. There is no legislation for buses and trucks yet, but there are targets for the transport sector as a whole.

#### Environmental impact of a Volvo truck



#### Fuel consumption of a Volvo truck



#### Life Cycle Assessment

Each new product from the Volvo Group should have less environmental impact than the product it replaces. Findings from analyses indicate approximately 90% of the environmental impact results from the use of the truck.

The European Union targets a reduction of greenhouse gases of 20 percent by 2030, based on 2008 levels, and at least 60 percent by 2050, with 1990 as the baseline. In urban transport, the target is to achieve essentially carbon dioxide-neutral city logistics in major urban centers by 2030.

The European Union has stated that new technologies for vehicles including engines, material and design, and traffic management features as well as cleaner energy use through new fuels and drivelines are necessary to reduce transportation related emissions. These are all prioritized research areas within the Volvo Group with significant resources dedicated to them.

### Regulated exhaust emissions

Authorities around the world are imposing stringent requirements on emissions of nitrogen oxides (NO<sub>x</sub>) and particulate matter (PM) from on and off-road vehicles because of their negative impact on local air quality and health.

These regulations affect the Volvo Group's trucks, buses, machines and Volvo Penta's products.

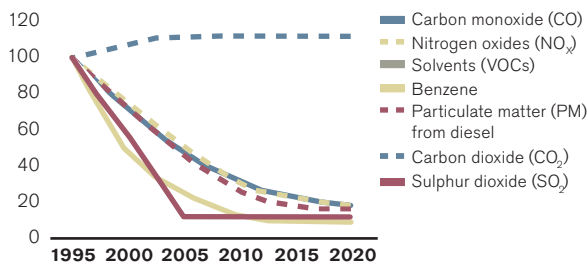
Volvo Construction Equipment and Volvo Penta were among the first to offer products compliant with the Tier 4 Interim emission regulation in the US and Stage IIIB in Europe. Particulate matter emissions are reduced by 90 percent in these products compared with the previous emission regulations.

As for trucks and buses, the latest regulation in the EU is Euro V, which was introduced in October 2009. The most recent regulation in the US, EPA 2010, became effective in 2010. The Euro VI regulation which comes into effect on January 1, 2013 for new type approvals and January 1, 2014 for all registration of new vehicles in the EU, reduces nitrogen oxides and particulate matter emissions by 97 percent from the level of the early 1990s, thereby setting very low levels.

### Diesel engine

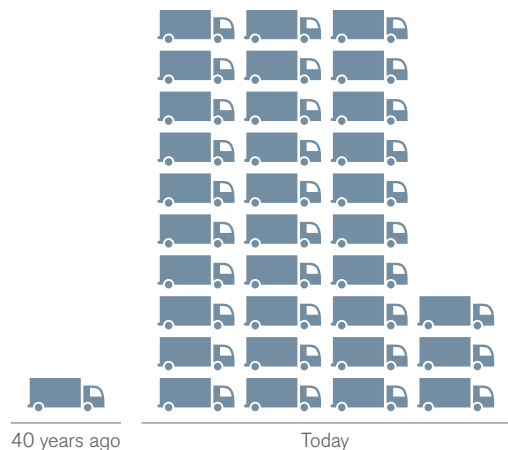
The diesel engine represents the focus of the Volvo Group as it is currently the most efficient energy converter for commercial vehi-

### Significantly reduced emissions

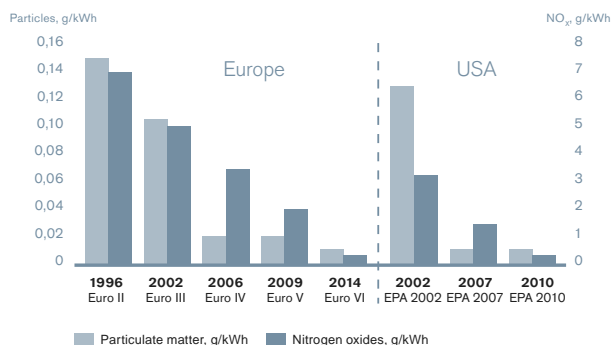


Within the EU all road transport emissions except for CO<sub>2</sub> are expected to decrease in the future. This is the result of stringent emission regulations.

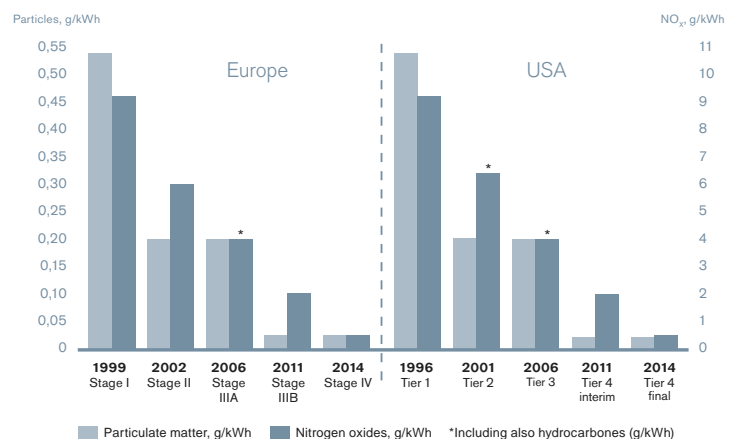
Source: ACEA – European Automobile Manufacturers' Association.



### Emission regulations for trucks and buses



### Emission regulations for non-road machinery<sup>1</sup>



<sup>1</sup> These regulations affects both Volvo Penta's industrial engines and Volvo Construction Equipment's products.





#### Facts about Euro VI

- One-fifth the nitrogen oxide emissions of a Euro V engine.
- Half the particulate emissions of a Euro V engine.
- It will be compulsory to meet emissions legislation down to an ambient temperature of at least -7° C.
- Emissions legislation encompasses nitrogen oxides (NO<sub>x</sub>), particulates (mass), particulates (quantity), ammonia (NH<sub>3</sub>), carbon monoxide (CO) and hydrocarbons (HC).

• • •

The new Volvo FH truck introduced on the market in 2012 already complies with the Euro VI legislation when fitted with the D13 460 hp engine.

• • •

With the introduction of the Euro VI emission regulation, NO<sub>x</sub> will decrease by 77% and PM will be halved compared to Euro V.

cles. Volvo Trucks and Mack Trucks were the first manufacturers to have their engines certified by the US Environmental Protection Agency and the California Air Resources Board as meeting the EPA 2010 emissions regulation, which is currently the most stringent standard in the world.

The vehicles that meet the demanding requirements of EPA 2010 are equipped with both Exhaust Gas Recirculation (EGR) and Selective Catalytic Reduction (SCR).

EGR lowers the amount of oxygen in the combustion chamber, which reduces combustion peak temperature and, in doing so, lowers the formation of nitrogen oxides. With SCR technology, diesel exhaust fluid, a water solution of urea, is injected into the exhaust stream to convert nitrogen oxides into harmless nitrogen and water vapor. It is necessary to use both techniques to achieve low emissions as well as high fuel efficiency in vehicles.

This unique technology has proven fuel savings of up to 5 percent compared with the previous engine model.

#### Carbon dioxide-neutral fuels

Switching to renewable fuels is one of the keys to reducing the climate impact of the transportation industry. Renewable fuels are produced from a renewable source, such as biomass, hydro, wind or solar energy, and production processes that add no excess carbon dioxide to the atmosphere.

The Volvo Group demonstrated its ability to produce carbon dioxide-neutral vehicles already in 2007 when it produced seven demonstration trucks each running on a different renewable fuel. The technology for achieving carbon dioxide-neutral transport is already available, leaving the main challenge in the availability of the fuels.

In the foreseeable future there will not be a single successor to fossil fuel but a range of alternative and renewable fuels, with different fuels being used in different parts of the world.

#### Methane diesel truck

In February 2012 the Volvo Group began series production of the Volvo FM Methane Diesel truck.

The Volvo Group is the first manufacturer to have an efficient diesel engine fuelled by a mixture of methane and diesel, and the first manufacturer in Europe to start selling gas-powered trucks for long-haul operations.

It can use up to 75 percent methane and considerably reduce carbon dioxide emissions from heavy and long-distance transport operations. Compared with traditional diesel operations, carbon dioxide emissions can be cut by up to 70 percent when powered with biomethane.

The first markets to receive this new technology truck were Sweden, the Netherlands and the UK – where the infrastructure and distribution for methane is established. Sales in other parts of the world will follow. There are very ambitious targets set for the methane distribution in several countries including the US and some parts of Europe.

#### Methane diesel snow sweepers

Volvo Construction Equipment has, together with ABEI Schmidt, developed an airport snow sweeper powered by a Volvo engine using methane diesel technology. It is the first snow sweeper that uses biogas as the primary fuel source in an energy-efficient way.



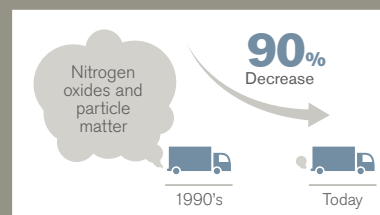
In 2007 the Volvo Group presented seven trucks that can all be operated on a different renewable fuel.

• • •

Volvo Trucks and Mack Trucks were the first manufacturers to have their engines certified by the US Environmental Protection Agency and the California Air Resources Board as meeting the EPA 2010 emissions regulation, which is currently the most stringent standard in the world.

• • •

Since the early 1990s, emissions of nitrogen oxides and particulate matter from a Volvo truck have been cut by more than 90%.



The snow sweeper consists of a Volvo A25 articulated hauler front unit with a snow plow and a rear machine with a brush and blower driven by a Volvo Penta engine. The methane diesel technology has been transferred from the Volvo truck business and combines the high energy efficiency of a regular diesel engine and the use of renewable biogas as the primary fuel.

By the end of 2012 Volvo Construction Equipment had delivered close to 50 articulated hauler front units for snow sweepers.

#### Fuel-saving potential

Operating costs for customers include driver salaries, fuel costs, vehicle capital costs (depreciation and interest), service and insurance. Fuel accounts for one of the highest costs for all customers and any measure that can reduce fuel consumption will help to improve profitability while reducing environmental impact.

The estimated fuel savings for a standard Volvo truck will be 15 percent greater in 2025 compared with fuel consumption in 2010. This can be achieved by further improving the driveline, design, weight and tires. New technology can be used to achieve more significant savings. For instance, the use of a hybrid driveline in a truck has a fuel saving potential of 15–20 percent in distribution applications. For certain city bus operations the fuel saving potential is up to 39 percent.

#### IPS propulsion system for boats

Volvo Penta's Inboard Performance System (IPS) is a propulsion system that reduces fuel consumption by up to 30 percent at cruising

speed compared to conventional technologies. In total over 14,000 IPS units have been delivered worldwide, mainly in leisure applications, but is now also becoming an important propulsion alternative in commercial applications to save fuel and reduce environmental impact with regard to exhaust emissions and noise.

The IPS propulsion system selected by the Swedish Coast Guard in 2012 to equip five new vessels already meets the EPA marine Tier 3 emission regulation which will come into effect in 2014.

#### Electromobility

The Volvo Group is expanding its range of hybrid vehicles as well as fully electric vehi-

cles, while exploring plug-in technology. The products already on the market are described in this section and the products under testing and development are described in the **'Future transports'** section of this report.

#### Hybrid vehicles

The Volvo Group is a leading player in hybrid technology for buses and trucks. Various types of hybrid solutions have been tested within the Group since the 1980s, and the first commercially viable hybrid solution for bus and truck was unveiled in 2006. The solution is based on a unique Volvo Group concept known as I-SAM (Integrated Starter Alternator Motor).

#### Fuel-saving potential

The estimated fuel savings for a standard Volvo truck will be 15 percent greater in 2025 compared with fuel consumption in 2010. This can be achieved by further improving the driveline, design, weight and tires and adding new technology. Below are different examples of activities and features with significant fuel-saving potential. It is not possible however to add all the figures together.

##### -5% Intelligent cruise control

I-See is a new feature where the truck learns the topography of the road and memorizes the curves and slopes. The next time it drives along the same road it adapts automatically the brakes and gears in the most optimal way. This new technology can save up to 5% fuel.

##### -5% Fuel efficient driving

As an alternative to intelligent cruise control, a driver trained in fuel-efficient driving can lower the fuel consumption by 5% to 10%.

##### -5% Design

Improving the cab and trailer design can reduce air resistance and contribute to a fuel saving of 5 to 10%.

##### -15% 25.25 meters

With a vehicle length of 25.25 meters instead of the current 18 meters in the EU, three truck-trailer sets can be replaced by two. EU-level legislation permits longer vehicles, but the legislation has not yet been implemented in all EU countries.

##### -5% Low weight

Thanks to a weight-optimized design, each vehicle can carry higher loads.

##### -4% Efficient engines

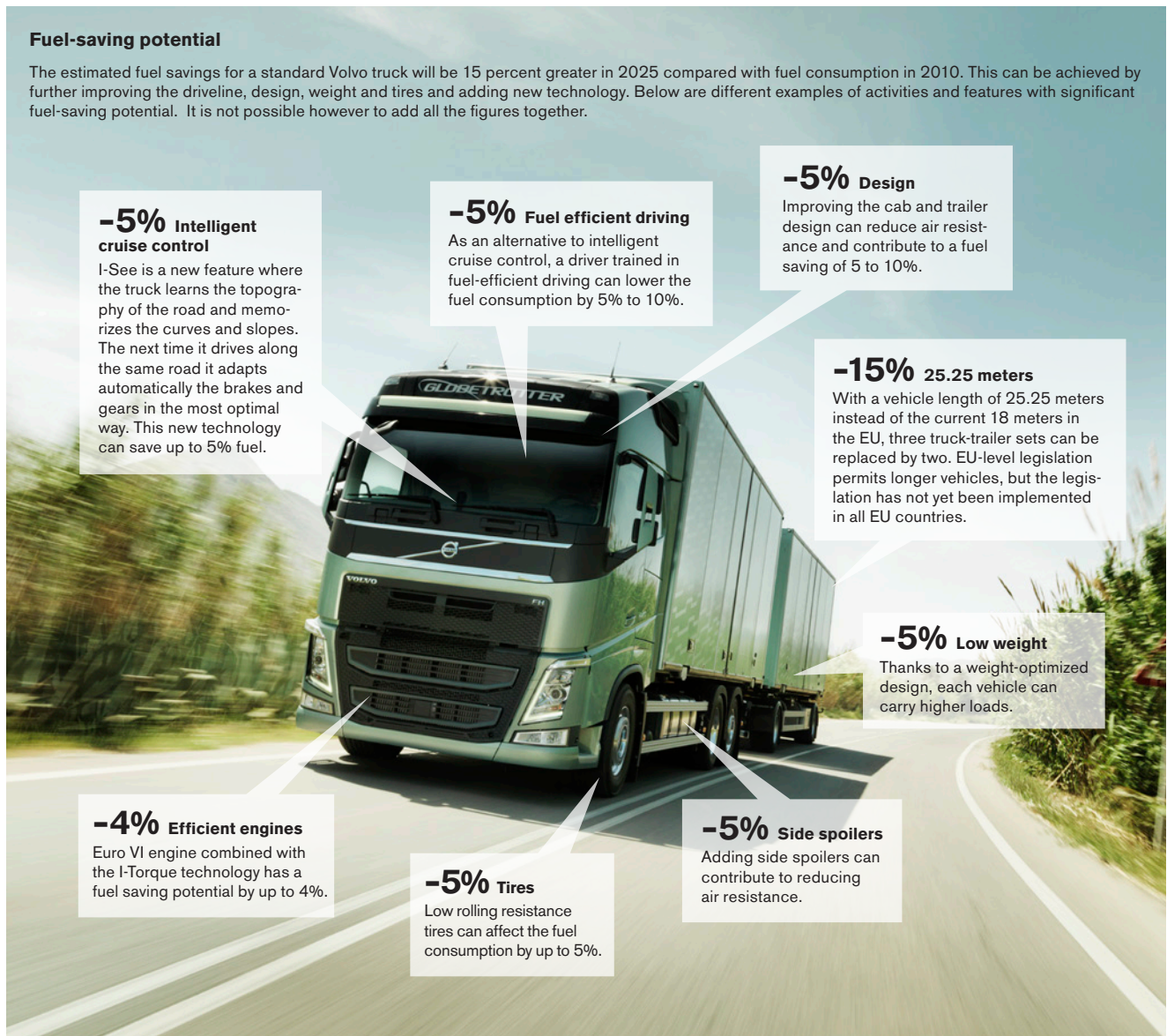
Euro VI engine combined with the I-Torque technology has a fuel saving potential by up to 4%.

##### -5% Tires

Low rolling resistance tires can affect the fuel consumption by up to 5%.

##### -5% Side spoilers

Adding side spoilers can contribute to reducing air resistance.



### *I-SAM*

The Volvo Group's I-SAM concept consists of an electric motor and a diesel engine working in parallel, whereby each of them can be used where they are most effective.

The solution can be used for different Volvo Group products and applications, thus reducing production costs and facilitating large-scale manufacturing. The most appropriate vehicles for hybrid drivelines are those operating in continuous stop-go conditions, such as city buses, refuse trucks and distribution trucks.

### *Hybrid buses*

Serial production of the Volvo Hybrid city bus and the Volvo Hybrid double-decker started in 2010. Significant fuel savings of up to 39 percent make this bus a commercially viable option compared with many other hybrid technologies.

The technology functions equally well when there is greater distance between bus stops, not only in highly congested traffic situations. The diesel engine does not start until the bus reaches 15–20 km/hour, which ensures a quiet and exhaust-free environment at bus stops.

A total of approximately 1,000 hybrid city buses with Volvo in-house technology have been sold to customers by the end of 2012.

### *Hybrid trucks*

The Volvo Group has offered two models of hybrid trucks in selected European markets since 2011 – the Volvo FE Hybrid and the Renault Premium Hybrys-Tech. The Volvo FE Hybrid has a fuel saving potential of 15–20 percent in distribution applications.

In 2012 the Renault Premium Hybrys entered the Spanish market in a refuse truck configuration. The Volvo Group also joined forces with French partners to develop the first hybrid vehicle in the world featuring cryogenic refrigeration and the Piek label – the world's most stringent noise certification.

### *Semi-hybrid tanker*

The world's first semi-hybrid for inland waterway tanker was presented in 2012. This ship was built by Shipyard Trico B.V. and is equipped with two different types of Volvo Penta diesel engines. The combination of reduced size standard propulsion engines

and electricity generator engines saves up to 30 percent in fuel consumption.

### **Fully electric vehicles**

#### *Fully electric buses*

In China there is a huge interest for alternative drivelines and fuels. Sunwin Bus, the Chinese joint venture of Volvo Bus, is the world leading supplier of fully electric buses longer than 10 meters. A total of more than 800 buses have been sold by the end of 2012.

The fully electric buses emit no particulate matter, nitrogen oxides or carbon dioxide during use, and have very low noise levels.

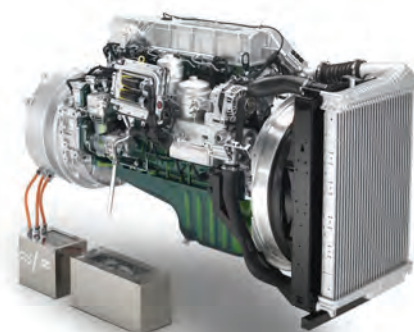
#### *Fully electric trucks*

Renault Trucks has developed a fully electric 4.5-ton truck, Renault Maxity Electric, in partnership with electric commercial vehicle manufacturer PVI. This vehicle, like the fully electric buses, emits no particulate matter, nitrogen oxides or carbon dioxide. It also emits very low noise levels, which makes it suitable for operations at night and in restricted low-emission zones.

The Renault Maxity Electric is available for long-term rental on the French market. Twenty units are being operated and the very first one, delivered in 2010, has registered a total of 100,000 km.

### **Lower weight**

Lighter vehicles can contribute to reducing fuel consumption and carbon dioxide emissions. In 2011, Volvo Buses launched a new low-floor bus, the Volvo 7900. The bus is lighter than its predecessor Volvo 7700, which is made of steel. With the body structure and roof made of aluminum, the weight has been significantly reduced by 550 kg resulting in 1.5 percent lower fuel consumption.



In 2006, the Volvo Group was the first manufacturer to present commercially viable hybrid trucks and buses, which enable highly efficient transports.

...

The Renault Maxity truck emits no particulate matter, nitrogen oxides or carbon dioxide when operating on electricity. Its low noise levels make it suitable for operations at night and in restricted low-emission zones.



...

A total of approximately 1,000 hybrid city buses with Volvo in-house technology have been sold to customers by the end of 2012.



### **Noise**

Noise is a growing problem in urban areas. The European Union estimates that some 20 percent of its population suffers from noise levels that scientists and health experts consider unacceptable.

There are different regulations around the world for noise for the transport sector. The current noise emission limit for heavy trucks in most parts of the world including the EU, India and South Korea is 80 decibels (dB).

### **Sound engineering**

The Volvo Group is continuously working to measure noise and vibration characteristics in engine and driveline components. Sound engineers use both insulation and alternative design solutions to make everything from engines and transmissions to axles, fans and air intakes quieter.



### Next step: trailer and body

At speeds from 50 km/h, it is the vehicle's tires rather than the driveline that make the most noise. This means that the entire vehicle, including tractor, superstructure, trailer and tires, must be worked on in order to efficiently eliminate noise at all speeds. In an EU project called FIDEUS, a Renault Midlum distribution truck underwent trials in the cities of Lyon and Barcelona, with a particular focus on night deliveries in the latter.

### Hazardous substances

To restrict the use of chemicals and hazardous substances the Volvo Group closely monitors all parts and components used in the vehicles produced.

In 2009 the Global Automotive Declarable Substance List (GADSL) was introduced as a basic requirement for the reduction of hazardous substances in product components, besides the Volvo Black and Grey lists. The GADSL list includes substances designated as prohibited and/or declarable within the industry and was originally drawn up in collaboration between global automotive manufacturers and subcontractors.

Substances present in parts and components are controlled through a system called Subtrack, under which Volvo Group suppliers can report the material composition through the International Material Data System (IMDS). Using the Subtrack system, the Volvo Group can secure compliance with global material and chemical regulations. For instance, the European REACH regulation includes special control measures for substances in articles.

### Safety

Safety has been a guiding star for the Volvo Group since 1927. The ultimate goal is zero accidents with the Group's products. To work towards this goal, systems that prevent accidents from happening in the first place and reducing the consequences if an accident does occur, are continuously developed.

The Volvo Group's future product development focuses on active safety features and passive safety features, such as vehicle stability, visibility support, lane keeping support and body protection in the cab.

Ninety percent of all traffic accidents are caused by human factors. One of the most common causes of accidents is the lack of driver attention to the road. Finding ways of reducing the risk of accidents caused by fatigue or inattention can have a large impact. Today's Advanced Driver Assistance Systems (ADAS) include, for example, warning systems and driver awareness support. In most cases the driver is simply warned when something is wrong.

A number of traffic safety issues can probably never be solved by product development. Working actively with information, driver education and other ways of changing behaviors will therefore be a vital part in the ongoing work to improve traffic safety.

### A Decade of Action for Road Safety

The Volvo Group strongly supports the decision of the United Nations General Assembly to proclaim 2011–2020 a Decade of Action for Road Safety, which aims to save five million lives over a ten-year period.

### Road Traffic Safety Management System

The Volvo Group has been active in the development of an international Road Traffic Safety Management System (ISO 39001). This is a voluntary tool, complementary to legislation, and can be used by all organizations that directly or indirectly use roads. The ultimate goal is the elimination of deaths and serious injuries in the road transport system.

### Traffic accident research team

Volvo Truck's Accident Research Team has investigated trucks accidents onsite for 40 years in Sweden – building up a unique bank of knowledge and experience from more than 1,500 accidents. The team focuses its work on understanding causes and consequences of traffic accidents. These experiences combined with the Group's own research and test programs have given solid insight into the causes of accidents and injuries – and what can be done to prevent them.

### Pioneering technologies

Several solutions that assist the driver of the vehicles are developed and used by the Volvo Group.

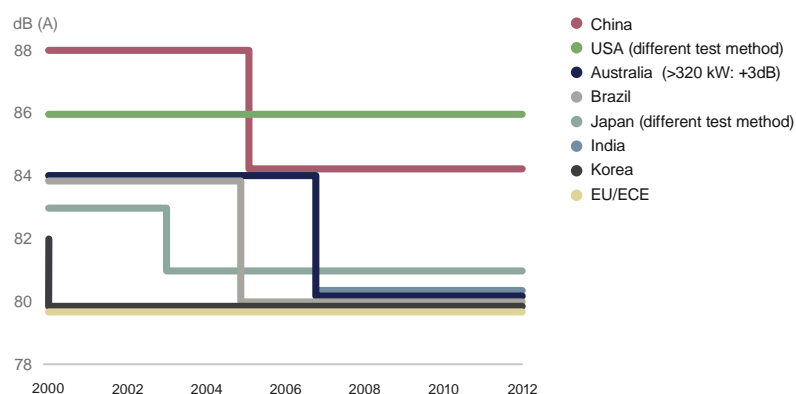
### Enhanced braking systems

The collision warning with emergency brake and the stretch brake are two safety features developed by the Volvo Group in 2012.

The first one is a cutting edge emergency braking system that is equipped with an early collision warning. It automatically assists the driver in emergency braking if an impact is imminent, thus reducing the risk of severe injuries. Emergency braking systems will become mandatory by 2015 in heavy-duty trucks, however the Volvo Group's new system already meet those requirements. Most systems only have one sensor, but this system has two, a radar and a camera, which provides much greater ability to accurately identify vehicles. The display, which flashes red lights on the windshield when a potential collision is identified, is another unique feature, which is designed to alert the driver before emergency braking is necessary.

The technology used in the stretch brake feature is also a first in the industry. In certain situations, such as turning or driving downhill on a slippery road, the trailer risks catching up with the truck, creating a hazardous jack-

### Noise emission requirements for heavy-duty vehicles



Research and development by the Volvo Group has resulted in many innovative safety solutions, such as Driver Alert Support (DAS), Adaptive Cruise Control (ACC), collision warning with emergency brake and Front Underrun Protection System (FUPS).

• • •

In the EU the number of fatalities in traffic has declined by approximately by 50% since 1990 and safer vehicles have been a major contributing factor.

knife effect. The stretch brake is a feature designed to stop that from happening. By pulse braking the trailer, the vehicle combination is stretched and the danger reduced. The system can be automatically activated in risky situations at speeds up to 50 km/h.

Both safety features are available for the new Volvo FH truck. The collision warning with emergency brake is optional, while the stretch brake is standard on rigid trucks.

#### **Safe and simple vessel control**

Accessories based on the Volvo Penta electronic vessel control system offer a number of features to assist the driver of a boat. One example is the Dynamic Positioning System that lets you hold and keep your boat's position and heading within a very limited area. This assists the driver when preparing for docking, waiting for refueling or firefighting from a fixed position.

#### **European Transport Safety Council**

Since 2011 the Volvo Group has supported the European Transport Safety Council's pan-European project called PIN (Performance Index in road safety). The PIN program was launched in 2006 and is intended to compare and benchmark country performance in road

safety. It currently includes all the 27 Member States of the EU as well as Israel, Norway, Republic of Serbia and Switzerland.

Cross-country comparisons are published three times a year in the series of Road Safety PIN Flashes. Once a year, a PIN Report summarizing the findings in key areas studied during that year is launched at an annual PIN Event. During that event the European Transport Safety Council publicizes the results of the annual report and awards the PIN Award to a high level policymaker responsible for the best performing country's road safety policy.



## Purchasing

In 2012 the Group purchased goods and services for SEK 211 billion, including direct material for SEK 101 billion. Since 1996 the Volvo Group has gradually increased requirements on suppliers regarding environmental issues, business ethics and social responsibility aspects.

The Volvo Group responsible sourcing program aims to manage risk, promoting responsible behaviour and building long-term relationships with suppliers to improve social, environmental and business ethics in the supply chain. The CSR requirements on suppliers are based on the principles contained in the Group's Code of Conduct and international norms of behavior such as the United Nations Global Compact.

### Sourcing process

Applying good standards in the supply chain is important to the Volvo Group to ensure that unethical values are not built into the Group's products.

Responsible supply chain management enables the Volvo Group to meet growing customer expectations, reduce risk of inci-

dents that may damage the Group brand or interrupt the supply flow.

### Supplier base

The Volvo Group's suppliers can be divided into two groups:

- suppliers of automotive products
  - suppliers of indirect products and services.
- Automotive products are materials used in products such as trucks, buses and construction equipment. Indirect products and services include any products or services that are not used in the automotive products. This encompasses everything from cleaning services to office furniture, travel, education or training, communication services and corporate merchandise.

As a rule of thumb, sales to the Volvo Group should account for less than 30 per-

cent of a supplier's turnover to decrease a supplier's exposure when delivering to a cyclical industry.

In 2012 more than 36,000 suppliers delivered products and services to the Volvo Group and approximately 6,000 of them supplied automotive products. This number is based on site level data, meaning that one company delivering to the Volvo Group can deliver from several sites, and therefore be counted more than once.

The Volvo Group generally sources close to its production sites to ensure efficient flow of supplies. This means that most suppliers are located in Europe and North America. At the same time, the Group's expansion in Asia has led to an increased number of new suppliers located in Asia.



### Risk evaluation

Approximately eight percent of the automotive products suppliers are located in countries assessed as 'high risk'. Risk assessments are based on analyses conducted by internationally recognized institutions and include factors such as human rights, labor standards and perceived corruption. For indirect products and services, the Volvo Group also takes into account the risk level of each product or service segment. For instance, merchandise, personal safety equipment, construction work and waste management are associated with high risks.

### Requirements on suppliers

The Volvo Group imposes requirements on suppliers regarding environmental standards, business ethics and social performance. These requirements are based on the principles in the Volvo Group's Code of Conduct.

All suppliers are requested to appoint a senior executive in their organization, who is the contact person for the Volvo Group. They are also responsible for deploying the same requirements on their own suppliers.

The requirements and information about the evaluation process and the Volvo Group's Code of Conduct are available on the Volvo Supplier Portal website.

Regarding environmental standards, in most cases the Volvo Group requires suppliers to be certified by a third-party environmental management system (ISO 14001) and be compliant with the Volvo Group's position on hazardous substances and continuous improvement.

During 2011 the Volvo Group's environmental requirements were reviewed and updated to comply with the European Union's new legislation on chemicals, REACH.

### CSR supply chain network

Each purchasing organization within the Group is represented in the CSR Supply Chain Network. The representatives are responsible for implementing the procedures and ensuring the requirements are applied in their organization.

The network is coordinated by a purchasing representative who reports to the Volvo Group CSR and Sustainability Committee as well as to a decision-making forum with the purchasing organization.

In order to support implementation, purchasers have been provided with information and training material, including e-learning on general CSR issues.

### Assessments

The Volvo Group uses a self-assessment approach to evaluate supplier performance and compliance with the Group's requirements.

The supplier assessment poses approximately 40 questions on such issues as:

- Social performance
- Work environment and conditions
- Workforce rights including freedom of association and non-discrimination
- Child and forced labor
- Environmental care
- Business ethics.

The assessment includes minimum standards of performance and a requirement for an action plan if the supplier does not achieve the critical aspects.

Potential suppliers of automotive products are evaluated by a quality engineer using the Group's Supplier Evaluation Model. Since 2009 most new suppliers must be approved by the Global Sourcing Committee.

### Results from the assessments

#### Suppliers of automotive products

Some 66 percent of the Volvo Group purchasing spend derives from suppliers that completed the self-assessment during 2010–2012. Eighty percent of the suppliers that completed the assessment passed. The main reason for not passing the requirements is lack of adequate systems at the supplier to enforce the requirements on to their sub-suppliers. The rest failed due to lack of other processes to comply with the requirements. Sixty-four percent of the suppliers from countries considered to be 'high risk' from a CSR perspective completed the self-assessment. In terms of volume this corresponds to a share of 84 percent. Of the suppliers in high-risk countries that completed the assessment 74 passed.

More than 90 percent of spending on automotive products comes from suppliers that are certified in accordance with ISO 14001 or equivalent.

### Suppliers of indirect products and services

Because of the large number of suppliers in this category, more than 30,000, the focus is on suppliers in high and medium-risk countries, but also on high-risk segments, according to the Volvo Group's risk model. Approximately 1,200 requests to fill in the self-assessment have been sent out from the Volvo Group to prioritized suppliers, suppliers in high risk countries or suppliers operating in high risk segments. All of these suppliers completed the assessment, 66 percent of which passed.

### Continued work

In 2013 the Volvo Group will continue with suppliers self-assessments in identified high and medium risk countries and work with the non-approved suppliers to ensure that the Group's requirements are met.

More training will be given to employees working in purchasing to further increase the awareness on how to integrate CSR requirements in the sourcing process.



## Production

For more than 85 years the Volvo Group has produced trucks, buses, machines, engines and drivelines. The Group has 61 wholly owned production sites in 18 countries around the world, and 98,717 permanent employees and 16,548 temporary employees at the end of 2012. Of these, 48,152 permanent employees and 7,548 temporary employees and consultants work within production.

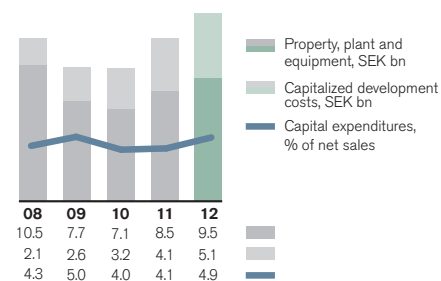
In 2012 the Volvo Group produced 224,000 trucks, 10,700 buses, 78,500 units of construction equipment, 17,200 marine engines and 17,600 engines for industrial applications.

All wholly owned production facilities are certified by a third-party auditor in accordance with the ISO 9001 quality management system and 97 percent of them are certified in accordance with the ISO 14001 environmental management system.

Seventeen production sites also have certified management systems for occupational health and safety, OHSAS 18001.

During 2012, investments in property, plant and equipment amounted to SEK 9.5 billion, compared with SEK 8.5 billion in 2011. Major investments related to new product programs, development costs and adapting production facilities.

### Capital expenditures, industrial operations



## Global industrial structure

The Volvo Group has a strong position in Europe, North America and South America. Through the acquisitions of UD Trucks and Lingong and the cooperation within trucks

and buses with India-based Eicher Motors the position has been strengthened in many markets in Asia. The Volvo Group has established a global industrial structure with manu-

facturing as well as sales and distribution channels on all continents.



	Major production facilities	North America	South America	Europe	Asia	Rest of the world
Group Trucks Operations	Eicher*				Pithampur* (IN)	
	Mack	Macungie (US)	Las Tejerias (VE)			Brisbane (AU)
	Renault Trucks			Blainville, Bourgen-Bresse, Limoges, Vénissieux (FR), Kaluga (RU)		
	UD Trucks				Ageo (JP), Hangzhou* (CN)	Johannesburg* (ZA)
	Volvo	New River Valley (US)	Curitiba (BR)	Göteborg, Umeå (SE), Gent (BE), Kaluga (RU)	Bangalore (IN), Bangkok (TH)	Durban (ZA), Brisbane (AU)
	Engines and transmissions	Hagerstown (US)	Curitiba (BR)	Köping, Skövde (SE), Vénissieux (FR)	Ageo, Kounosu, Hanyu (JP)	
	Construction Equipment	Mexico City (MX), Shippensburg (US)	Pederneiras (BR)	Arvika, Braås, Eskilstuna, Hallsberg (SE), Konz-Köthen, Hameln (DE), Belley (FR), Wrocław (PL)	Changwon (KR), Shanghai, Linyi* (CN), Bangalore (IN)	
	Buses	St Claire, St Eustache (CA), Mexico City (MX), Plattsburgh (US)	Curitiba (BR)	Borås, Säfle, Uddevalla (SE), Wrocław (PL)	Bangalore (IN), Shanghai* (CN)	
	Volvo Penta	Lexington (US)		Göteborg, Vara (SE)	Shanghai (CN)	

\* Ownership ≥ 50%



## Employees

Investing in employees is a fundamental part of staying competitive, sustainable and profitable. The Volvo Group's employees are key to the Group's success. The goal is to offer interesting opportunities and a unique corporate culture that attract and retain the best individuals.

In order to be an attractive and responsible employer of choice for both current and future employees, efforts are being made in a variety of areas such as competence development, talent planning, health, wellbeing and work environment.

At the end of 2012, the Volvo Group had 98,717 employees and 16,548 temporary employees and consultants. This can be compared with 98,162 employees and 19,675 temporary employees and consultants at the end of 2011.

A new organizational structure for the Volvo Group, effective as of January 1, 2012, has been implemented during 2012.

## Human rights in operations

The Volvo Group's position on Human rights is reflected in the Code of Conduct. Human rights principles relevant to the Volvo Group's operations are covered in the Code of Conduct trainings and include:

- Non-discrimination
- Non-tolerance of forced labor
- Non-tolerance of compulsory or child labor
- Freedom of association
- The right to collective bargaining
- The right of all employees to a healthy and safe work environment
- Working hours and compensation.

## Competence development

Career development programs, self-managed learning methods and performance reviews are essential elements for the competence development of the Volvo Group employees. Approximately 500,000 training days are conducted every year.

## Performance and career development reviews

All white collar employees have a personal business plan that is reviewed annually with their manager. The plan translates the corporate strategic objectives into individual objectives and contributions. The purpose is to

facilitate dialogue between individuals and their managers and to ensure that employees clearly understand their role in the team and what is expected of them. It includes business-related and competence development targets, and provides essential feedback for both short and long-term career paths, as well as individual competence development.

During 2012 the personal business plan has also been extended to blue collar employees, and at the end of the year the plan had been implemented for all of Volvo Group's employees.

## Talent Review

The Talent Review is an established management process to systematically and transparently identify, assess and develop talent throughout the company. The process covers leaders and key positions at all levels, aimed at ensuring a sufficient supply of talent and skills, based on the Leadership Pipeline model.

The talent review meetings start from a unit level, meaning a market company, a plant, a site or a function and moves up level by level in the organization. All managers in a management team participate and the Volvo Group Executive management team concludes and reviews top key talent and succession planning.

## Career opportunities and development programs

The Volvo Group offers various career opportunities and career paths across the company. There are training programs at all levels for employees, in specific professional areas and to promote personal growth. The activities range from traditional and e-based training to individual coaching and mentoring.

## Leaders

The Leadership Pipeline develops and prepares the Volvo Group's present leaders as well as potential leaders for future roles. The Leadership Pipeline has been set up jointly with research institutes.

The Pipeline is divided into four leadership levels and each of them has a specific development program: the Exploration, the Foundation, the Looking Glass Experience and the Edge.

The Exploration program targets employees identified by their managers as emerging

leaders and interested in taking their first leadership position. The Foundation program is for newly appointed managers. The Looking Glass Experience looks at one level above – leaders with higher responsibility who manage other leaders. The last level, the Edge, is for key talents who are in a position to lead the business.

In 2012 the Leadership Pipeline programs were successfully launched in all major countries of operation, with around 650 employees participating.

Based on the business needs a similar number of training sessions are planned for in 2013.

## Project managers

During 2012 the Volvo Group Institute for Project Management (VGIPM) was established as a permanent function. The objective of the institute is to establish a clear career path for project managers at all levels and ensure that all future project managers are equipped with the necessary skills.

The institute provides a standard training set, assessments and a forum to share best practices and experiences. In 2012 some 1,250 employees attended VGIPM trainings and by the end of the year 330 employees were certified project management professionals by the PMI, one of the world's leading professional associations for project management.

VGIPM also developed a knowledge database and an assessment center that will be rolled out in 2013. The database will support knowledge sharing across the Volvo Group, while the assessment center will support recruitments and personal development.

## Specialists

The aim of the Specialist Recognition Program is to give visibility and offer career perspectives to engineers with extensive experience and expertise in their field. The appointed strategic specialists will develop their field of expertise to support Volvo Group strategies and to transform discoveries into increased business value for and throughout the Group.

All specialists are appointed for three years. The appointed specialists will advance knowledge progress and development of the field in order to secure the implementation of cutting-edge technology. The specialist has a

lead role as internal and external technology consultant, counterpart and mentor. Networking, both internally and externally, is a basic tool for the specialist to retrieve and drive forward progress and development. The specialist can also be made available for lectures, seminars and training courses in his/her field of expertise.

### *Globetrotters*

The most effective development comes from different forms of work assignments, such as international projects. Motivated employees are encouraged to move between roles and companies within the Volvo Group. In 2011 a program was launched for global mobility, aimed at making mobility between countries, functions and companies a productive and enriching experience for employees, their families and the Volvo Group.

### *New graduates*

In 2011 the Volvo Group International Graduate Program recommenced after a break during the recession. Nearly 3,000 university graduates applied to the 12-month training program that started in September 2011. The next program begins in January 2013 with 21 selected graduates from Sweden, France, Germany, China, Japan, the UK and the US.

### *Mentors-mentees*

Mentorship is strongly encouraged at the Volvo Group and is considered to be one of the most crucial development tools for leaders.

The Group defines mentoring as a learning partnership between two individuals, a mentor and a mentee. The mentor is, in general, senior in the organization and helps the mentee by sharing his/her professional and personal skills and experiences. This partnership, however, is outside of the normal line management organization, meaning that managers would not act as mentors for their subordinates.

Mentoring is used specifically as a long-term, tailored development for the individual, which also benefits the organization. It builds a visible talent pool, increases loyalty and commitment and supports organizational development.

A guide is available online to support mentees and mentors in their learning partnership.

### **Self-managed learning method**

The Volvo Group's learning strategy emphasizes that most learning takes place while working. Accordingly, a number of manuals have been created, to support managers and employees to find ways of learning in addition to classical training courses. The self-managed learning method is also a tool supporting employees and managers in their development.

### **Safety, health and wellbeing**

The Volvo Group applies a holistic approach to workplace safety, health and wellbeing. Increased employee wellbeing leads to raised productivity, reduced costs and increased competitiveness.

### **Systematic approach to health and safety**

A safe workplace creates the foundation for stimulating and efficient work. In accordance with the principles of the Volvo Group's Code of Conduct, all employees have the right to a safe and healthy working environment and the conditions required shall be made available to all. All employees should also be provided access to information, support and other tools to reduce or eradicate health risks associated with work, lifestyle or emotional stress.

The Volvo Group strives not only to eradicate workplace risks and refine a safety culture – but also to establish health promotion as a core component of the company culture. The health coaches in Sweden are an inspiring example of this. Health coaches are employees who allocate part of their time to support and stimulate their colleagues to adopt healthy behaviors. All health coaches in Sweden (83 in 2012) are offered basic training and an annual update on knowledge, skills and experience.

In the US the Volvo Group has collaborated with Staywell on the Health for Life program since 2004. The award-winning program promotes health and wellness through weight management and nutrition programs, stress management campaigns with clinicians and experts, preventive health screenings, customized health coaching and healthy meal days.

Managers at all levels share the responsibility of guaranteeing the high level of safety expected by employees, suppliers and visitors. Managers are responsible for safety pre-



### **Health coaches**

83 health coaches are spread all over Sweden. They are Volvo Group employees who occupy this role on top of their regular job. They are properly trained, have regular phone meetings and meet on a yearly basis.

Since 2005 they have organized activities in the areas of diet, movement/exercise, recovery/relax/sleep, joy and mind set. One example of 2012 was the training for the half marathon in Gothenburg.

cautions, but workplace safety is also subject to national requirements and regulations; hence the adaption of policies, guidelines and training material to national laws and regulations.

The Volvo Group's global health and wellbeing work may include, for example, medical examinations, rehabilitation support, ergonomics, different health promotion programs and activities and various employee assistance programs such as support to quit smoking. Sometimes such programs and activities also include the family of the employee, in addition to what is provided by the social security system of respective countries.

### **Global policy for workplace safety, health and wellbeing**

The policy for workplace safety, health and wellbeing provides guidance on how to ensure and continuously develop a safe and healthy workplace. It encourages employees to voice concern about physical, behavioral or emotional risks to be addressed.

In 2012 aligned reporting and analysis of safety related data was advanced further to establish discussions on real working life facts and figures.

### **New Group function**

In December 2012 the Group Executive Team approved the establishment of a Group function for workplace safety, health and wellbeing. The



Since 2012, all Volvo Construction Equipment sites are OHSAS 18001-certified under one global certificate.

human resources department at corporate level will have the responsibility for the strategic direction while the Group function for workplace safety, health and wellbeing will focus on the tactical level.

The new function will drive development activities and support all units in the Group with tools and methods. The units will participate in development activities and be responsible for the execution and implementation.

### Examples of recent achievements

#### *First-aid training in Poland*

In 2012 the Volvo Group rescue team in Poland obtained the best results in the nation-wide Safe Company competition. It is the third time, since first participating in 2006, that the Volvo team won first place in the first-aid competition.

A one-hour theoretical first-aid training is mandatory for all new Volvo Group employees in Poland and since 2010 an intensive training program is offered to any employee who is interested in first aid. So far 134 people have taken the 24-hour intensive training and an additional 32 employees have participated in a professional training certified by an external agency to become qualified medical rescuers. In a situation where somebody's health or life is in danger at the workplace or elsewhere, the trained employees are able to provide help before an ambulance arrives.

#### *Employees with medical restrictions in France*

In France the Volvo Group has developed a structured approach to keep employees with medical restrictions in their jobs. Medical restrictions can be the result of an accident, musculoskeletal disorders or chronic health issues.

Safety advisors, occupational doctors, ergonomists, managers and human resources representatives work closely together to improve and adapt the working environment of employees with specific medical needs. Most solutions are found on a case by case basis.

In 2012 the logistics center in Lyon identified a number of jobs that can be adapted and dedicated, in the long term, to various types of medical restrictions and do not negatively affect the job of co-workers. Under this initiative 26 adapted jobs were created and ten are in progress.

### Management systems

The Volvo Production System provides tools including occupational risk assessment, indicators to measure safety and health, and methodology for ergonomic workplace assessment.

Since 2012 all Volvo Construction Equipment sites have been OHSAS 18001-certified under a single global certificate. It represents 25 sites that are both production and administrative sites. Two production sites from Volvo Penta are also certified. OHSAS 18001 (Occupational Health and Safety Assessment Scheme) is an international standard for processes that control and improve company workplace safety and health performance.

The Environmental Data Reporting Tool (ERT) has been extended to include occupational health and safety issues, making it the Sustainability Data Reporting Tool (SDRT). The system will initially be used to report workplace safety data including numbers of work-related accidents (a reactive measure) and near misses (a proactive measure). This data is transformed to key performance indicators (KPIs), to be followed per site and per country as a means of keeping track of development. The aim is to reduce risks and accidents to a minimum. During 2012 the system has been tested and fine-tuned, and therefore no figures are yet reported.

### Reporting and remedial action

Employees are responsible for reporting all work related accidents and incidents to enable the investigation and identification of root causes so that immediate corrective action can be taken. Depending on the conditions,

a detailed analysis of the incident may conclude in specific long-term measures. In 2012 zero fatalities were reported.

Data relating to absences due to illness is collected on a country level based on national legislation, and followed, but not aggregated, on a Group level. The difference in definitions and national requirements when reporting makes it currently difficult to aggregate the information on a corporate level.

### Labor relations

The Volvo Group respects the right of all employees to join an association to represent their interests as employees, to organize and to bargain collectively or individually. We respect the recognized unions and maintain a close relationship with a number of unions that represent employees. An employee's right to refrain from joining a union is equally respected.

As stated in the Code of Conduct the Volvo Group shall notify employees' representatives and relevant government authorities of major changes in our operations as required by law.

### International forums

The Volvo European Dialogue was formed in Europe in 1996 as a forum for employer-employee dialogue. The forum meets once a year and the chairman is the CEO of the Volvo Group. Representatives from outside Europe are invited every second year to the forum, and as of 2013 they will meet every year and the forum will be renamed the Volvo Global Dialogue to mirror the expansion and globalization of the Volvo Group.

In addition to this forum, European employee representatives have two meetings each year in the European Works Council.

A Global Works Council meeting was held in Poland in November 2012 and The Code of Conduct was part of the agenda.

### Freedom of association and collective bargaining

Collective bargaining agreements are used in many places, including the ten countries where the Volvo Group has its largest operations.

In several countries the automotive industry has a long tradition of union cooperation. Based on a study on seven countries where the Group has its largest operations, corresponding to 58 percent of the employees, 81 percent of perma-



nent employees are covered by collective bargaining agreements and 62 percent are members in an independent trade union.

#### Board representation

There are three employee representatives on the Volvo Group Board of Directors and two deputies are appointed by the labor organizations.

#### Remuneration and benefits

The Volvo Group aims to be a competitive and attractive employer. Remuneration and benefits are important drivers, as are career opportunities, personal development, culture and values, leadership, company performance and reputation. Equal pay for work of equal value is the guiding principle. Individual salaries are based on position, the market and the employee's performance, and comply with the salary practice in each country.

As stated in the Code of Conduct, the Volvo Group shall comply with applicable laws, agreements and industry standards on working hours and compensation.

In addition to fixed salaries and variable remuneration, other customary benefits are usually offered such as pension plans, health plans, company cars or car allowances, recreation facilities, insurance and so forth. The benefits programs are country-specific. The purpose of the benefits programs is to:

- Offer total remuneration packages relevant to the specific country and employee category
- Offer basic protection through insurance arrangements for areas such as sickness benefit and pensions.

#### Diversity

The Volvo Group is a large, multinational company and as such diversity and inclusion are fundamental to long-term success.

The Volvo Group seeks to recruit and retain a broad spectrum of employees with different backgrounds, experiences and perspectives. The long-term target is that the Group's employee and management pool at all levels and in all operations should reflect the diversity of the world in which the Volvo Group does business.

Working with diversity is about increasing awareness of the advantages diversity brings and the often subtle reasons why human systems can consciously or unconsciously exclude people who are different from the accepted norm. It is about working with attitudes, which can require different approaches in different cultural contexts.

The Volvo Group has a three-pronged approach; targets are set, training resources are developed and the work with diversity is coordinated on a global scale. Because diversity is a key factor in business performance, the diversity targets are set as a part of the corporate strategic objective process and broken down by division. Finally, the country organizations develop additional plans to promote diversity and inclusion which are tailored to the specific local context and which support corporate and division goals.

#### Diversity and inclusion policy

As a matter of policy, discrimination with regard to gender, gender identity, race, religion, age, sexual orientation, nationality, political opinion, union affiliation, disabilities and social or ethnic origin is not tolerated.

Diversity and inclusion are promoted in the Code of Conduct and in the Diversity and Inclusion Policy which underlines the managerial responsibility of working to increase diversity and create an inclusive environment.

#### Training for managers

One of the key initiatives to ensure a culture of diversity and inclusiveness is to train managers. In 2012 the Volvo Group continued to conduct Diversity and Inclusive Leadership (DIL) training courses for managers. The interactive DIL training program focuses on the importance of inclusion, which is mandatory in order to take advantage of the benefits of diversity. The training is run by in-house trainers, meaning employees who have completed a certification process. By the end of 2012, the Volvo Group had 120 certified facilitators located across the globe.

#### Employee diversity networks

For nearly 10 years the Volvo Group has used

Employee Diversity Networks to help empower minorities and provide feedback to management on how to best increase inclusiveness and remove roadblocks. Since 2011 the number of groups increased from 8 to 10, working either locally or globally covering women employees, women managers, women in technical fields, multi-cultural issues and LGBT (lesbian, gay, bisexual and transgender) employees, and the door is open for other groups addressing additional aspects of diversity.

#### Examples of recent initiatives

##### *Battle of the Numbers*

The Volvo Group is one of ten large companies headquartered in Sweden which are participating in the Battle of the Numbers program – a unique project aiming to get more women into operative management positions. The project started at the end of 2012 and runs over a period of one year.

Instead of the management analyzing how the company should work to attract, recruit, develop and retain more female talent to operating and decision making roles, the participating companies use the best consultants within this area – the women themselves.

For the Battle of the Numbers, each company has selected ten soon-to-be or existing female managers. These 100 women will identify obstacles and opportunities when it comes to getting women into operative management positions. They will examine how the management roles are designed, what career paths look like, how women are recognized and treated within the organizations, as well as other issues that are relevant for creating an environment conducive to getting more women into management positions.

Conclusions and experiences from the project will be made public at the end of the project in 2013.

##### *Sign language courses in Brazil*

Since 2007 sign language courses have been offered to all Volvo Group employees in Brazil who are interested in learning this language and becoming more familiar with the culture and dynamics of hearing-impaired individuals.

Gender diversity	2012	2011
Share of women, %	17	18
Share of women, presidents and other senior executives; %	19	17

The Group currently has 82 hearing-impaired employees in Brazil, which represent 47 percent of the employees with physical disabilities.

The course is offered during normal working hours and has three levels – basic, intermediate and advanced. So far 160 employees have participated in the courses. The attendance for the medical staff is mandatory.

One recent project is the production of training materials for hearing-impaired employees. Thanks to the collaboration between technical training experts, hearing-impaired employees and two deaf students, the Volvo Group was the first company in the State of Paraná and one of the first in Brazil to create special material to train employees with special learning needs.

### Gender balance

It is a challenge for the automotive industry to attract women. One way of overcoming this challenge is to focus on diversity at the recruitment stage.

The Volvo Group requires at least one woman and one man on each recruitment panel and that all white collar positions should be openly posted for at least ten business days. This transparency helps prevent recruitment through exclusive networks.

Over the last five years the percentage of female employees has remained mostly constant. In 2012 17 percent of the Group's global workforce were women, compared with 18 percent in 2011.

During the 2011 reorganization, the number of women in the Group Executive Team was increased to 20 percent or 3 out of 15, where it stands today. Concerning women in senior executive positions, they represented 19 percent in 2012, up from 17 percent in 2011.

The Volvo Group has a long-term ambition to increase the number of women in executive teams, while also striving to take into account other important parameters in terms of diversity, such as educational background, professional experience, age and nationality.

### Measurements

Two key performance indicators are used to

measure diversity: the Balanced Team Indicator and the Inclusiveness index.

The Balanced Team Indicator is a quantitative measure for diversity covering nationality, gender, age and experience from different Volvo Group companies.

The Inclusiveness index is designed to follow up qualitative aspects, meaning the extent to which employees judge their work place to be inclusive.

The results of the indicators, as well as improvement action plans are followed up in management forums. The results for 2012 show mixed results with improvements in certain areas and remaining challenges in others.

### Company culture

#### Volvo Way

The Volvo Way is a fundamental Volvo Group policy that defines the company culture.

The values and principles contained in The Volvo Way guide the daily efforts to effectively realize the Group's business strategies. The purpose is to set a standard of excellence in building a high commitment and high performance organization. The Volvo Way addresses business critical issues such as putting customers first, enhancing the alignment of culture with the business strategy, creating people alignment and developing global leadership qualities. The core principle is about enabling people.

Every manager within the Volvo Group is responsible for informing their team and discussing how the values and principles affect the team's daily work.

#### Operational Development and Volvo Production System

Operational Development (OD) and Volvo Production System (VPS) are complementary and reinforce each other.

Operational Development (OD) is a process with clear steps that is used by the management and employees to change or improve a situation. It provides tools to formulate objectives, set targets and define an action plan. One of the basic principles is to

value individual initiatives and capture employees' ideas. In time of a crisis, OD helps the teams react quickly and can shift the focus and activities of an entire organization. The OD community comprises approximately 19,000 leaders and employees worldwide.

Volvo Production System (VPS) was initially a system to improve the production flow of the assembly line, but is also now used for many business processes throughout the organization, such as product development, business services and logistics. VPS is a way of working with just the resources needed. It is also about making sure everyone understands his/her role and how he/she can affect the quality of the products and services delivered to the end customer. Transparency and clear communication to employees working cross-functionally is essential.

#### Employee survey

The Volvo Group has conducted an annual employee survey, the Volvo Group Attitude Survey (VGAS), every year since 1999 with the exception of 2010. In 2012 a new index – the Performance Excellence Index (PEI) – was added to the Employee Engagement Index (EEI).

The PEI measures customer satisfaction, speed and quality of results while the EEI measures pride, satisfaction, commitment and referral level of employees. The combination of the two indexes ensures that we are evaluating the performance of the business and the organization's capacity to change, learn and grow.

Employee engagement and performance excellence are compared against an international database of approximately 14 million employees, representing over 80 countries. In 2012 the Volvo Group was in the top quartile of companies surveyed for the employee engagement index. The EEI reached 76 percent which is above the global norm of 70 percent and on the same level as the High Performing Company norm. The Performance Excellence result was 74 percent, between the global norm of 71 percent and the High Performing Company norm of 77 percent.

Employee survey 2012	Volvo Group	Global norm	High performing company norm
EEI (Employee Engagement Index), %	76	70	76
PEI (Performance Excellence Index), %	74	71	77

The results from the 2012 employee survey show that 75% of the employees believe their "immediate supervisor is actively working to promote diversity", compared to 70% in 2011. Compared to 2011, this question had the most improved score of all the survey questions.

Managers are responsible for analyzing the results of their team and, together with the team, establishing and following through on action plans to further improve employee engagement and performance excellence.

The response frequency in 2012 year's VGAS was 92 percent.

## Environmental management

Environmental care is one of the Volvo Group's core values. The Group was one of the first companies in the world to have an environmental management system certified according to ISO 14001 and today all but two production facilities are certified.

In 1972 during the United Nations Conference on the Human Environment in Stockholm, Sweden, the Volvo Group launched its first environmental position on Mobility and the environment. Since then, training of employees and managers on environmental responsibility issues have been conducted continuously. Today environmental issues are an integral part of the Volvo Group's vision, business strategy and daily work. The work of implementing environmental management systems covers the Volvo Group's processes, including product development, purchasing, distribution and service.

The Volvo Group has production sites in 18 countries. Regardless of size and location, all of the production units must comply with the Group's minimum requirements for environmental performance and have an improvement program. The requirements include monitoring of energy consumption, waste levels and emissions to air and water, as well as specifying maximum emission levels to air and water.

In accordance with Volvo Group's global environmental standard for production plants, all production facilities shall define environmental goals and follow up on these, implement environmental management system assessing the environmental impact of new projects and examine ways of reducing such impact, and apply the Group's environmental requirements to suppliers and contractors.

Today 97 percent of the production is certified in accordance with ISO 14001.

As part of its commitment under the WWF Climate Savers Program, the Volvo Group has pledged to reduce carbon dioxide emissions from its production plants by 0.2 million tons (12 percent) before 2014, compared with 2008.

In 2012 net sales declined by 2 percent and the number of delivered products declined

which has affected the Group's emissions, energy consumption and use of resources.

## Carbon dioxide-neutral production

In 2012 emissions of carbon dioxide from Volvo Group's production facilities decreased from 255,000 tons to 234,800 tons.

The Group's long-term ambition is to make all production facilities carbon dioxide-neutral, which means only having facilities using energy produced from renewable sources, for example solar, hydro, wind and biomass.

Volvo Trucks presented the automotive industry's first carbon dioxide-neutral plant in Ghent, Belgium in 2007. The plant invested in wind power and a biofuel plant to produce electricity and heat, which resulted in an annual reduction in carbon dioxide emissions of 10,000 tons.

Since May 2011 Volvo Penta's engine plant in Vara, Sweden has been powered without using any fossil fuel and is considered to be carbon dioxide-neutral. Volvo Trucks' plant in Tuve, Sweden also became carbon dioxide-neutral in 2011.

The focus for the coming year on identifying more energy savings outside production hours will continue. This includes for example optimizing ventilation and lighting, to avoid unnecessary use.

## Energy consumption

The Volvo Group's energy consumption was 2,518 GWh in 2012, an increase of 47 GWh compared with 2,471 GWh in 2011. The use of energy was less efficient last year and the energy efficiency index is 8.5 MWh/SEK M, compared with 8.1 MWh/SEK M in 2011. But the 2012 efficiency index is still lower compared to the previous years, following the reduction trend over a longer period. The energy efficiency index in 2011 was exceptionally low mainly due to very high production volumes. Most of the recorded energy usage is for heating and production processes, and approximately 20 percent of energy usage is used at the engine and driveline production facilities.

Emissions of carbon dioxide, nitrogen oxides and sulphur oxides are dependent on the fuel used. The decrease of carbon dioxide emissions despite increasing energy use is a result of change in energy sources.

Reducing energy usage per manufactured unit is a priority target which means



In 2007 Volvo Trucks presented the world's first carbon dioxide-neutral automotive plant in Ghent, Belgium, where the electricity derives from wind power. The long-term objective is to make all facilities carbon dioxide-neutral.

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The Volvo Group's assembly plant in New River Valley Virginia, is the first US facility to be certified according to the ISO 50001 standard. This achievement has been done under a pilot program supported by the US Department of Energy (DOE). ISO 50001 is a voluntary international standard on energy management system which outlines the framework for energy management.

• • •

The Shippensburg manufacturing expansion received Silver LEED certification from the US Green Building Council.

both reduced costs and lower emissions. Between 2004 and 2012, energy consumption has decreased by 36 percent and the carbon dioxide emissions by 47 percent per unit produced. Energy efficiency initiatives, such as controlled lighting and ventilation, turning off equipment from idle running and replacing old machinery have contributed to the result.

The environmental requirements for the plants include a mapping of all energy consuming processes, implementation of efficiency utilization on a continuous basis and a focus on energy usage in new projects.

## Other emissions to air

The Volvo Group has a minimum standard for emissions of sulphur dioxide, nitrogen oxides and solvents stating that no oil and coal shall be used for heating purposes.

The amount of sulphur dioxide and nitrogen oxides emissions are largely affected by the use of energy for heating. Emissions of sulphur dioxide decreased from 34 tons in 2011 to approximately 26 tons in 2012. The availability of low sulphur fuels determines the emissions. Nitrogen oxides decreased from 474 tons to 413 tons. Relative to net sales, emissions of both nitrogen oxides and sulphur dioxide emis-



sions decreased. The strategy to decrease emissions of sulphur dioxide and nitrogen oxides involves using low-sulphur fuels and/or purification equipment. Nitrogen oxides are very much dependent on the use of energy and amount of product testing.

Emissions of organic solvents stem mainly from painting and surface treatment processes, and is a high priority issue that is subject to regulatory control in most countries. Solvent emissions totaled 2,358 tons in 2012, representing a slight decrease of 196 tons. Emissions of solvents also decreased in relation to net sales. The minimum standard is that all plants shall work continuously to reduce solvent emissions.

### Water

Since 2010 each plant establishes targets related to water use, which will eventually lead to aggregated targets at a Group level.

The main issues in relation to water include inefficient water use and industrial wastewater treatment systems. Water consumption and emissions to water have been measured since 1990. Water is also included in the Group's minimum environmental requirements for production, with regard to substances in process water and that process water with organic content must be treated chemically or by an equivalent method. The standard also requires that all plants shall address sustainable usage of water resources.

Water consumption compared with net sales has decreased every year, with the exception of 2009, which was due to very low production volumes. Water consumption decreased from 7,970,000 m<sup>3</sup> in 2011 to 7,372,200 m<sup>3</sup> in 2012.

All of Volvo Group's majority-owned plants have either installed their own water treatment facilities or discharge their effluents to external treatment plants. An increasing number of plants are also installing closed process water systems.

### Chemicals

To restrict the use of chemicals, the Volvo Group has maintained a 'Black list' of prohibited chemicals and a 'Grey list' of products whose use must be limited since 1996.

The lists serve as a tool for substituting hazardous substances from the production processes. A database (called MOTIV) is maintained to make it easier to choose chemicals that are going to be handled. The database contains detailed information on more than 6,000 chemical products.

Projects for ensuring compliance with the European REACH (Registration, Evaluation, Authorization and Restriction of Chemicals) legislation have been conducted and Volvo Group has a process in place to fulfill the REACH legislation. REACH aims to evaluate and limit risks of chemicals to health and to the environment through the implementation of control measures such as registration, restrictions, prohibitions and communication requirements. The Volvo Group is continuing its work to streamline the internal processes for REACH compliance and adapt existing tools to reflect the content of REACH.

The global environmental standard for production plants determines that there shall be processes for health and environmental assessments of all chemicals, including efforts to the Black list and replace the chemicals on the Grey list.

### Waste

In an effort to improve material efficiency, resource usage and accounting for waste related to specific raw materials, a system for assessing key material usage was implemented in 2009.

Waste is usually classified as either hazardous or non-hazardous, although definitions vary from country to country and change over time. Although the Volvo Group's total amount of waste has decreased over time, changes in defini-

Between 2004 and 2012, the Volvo Group has decreased energy consumption in its own production processes by 36% and the carbon dioxide emissions by 47% per produced unit.

...

The energy saving challenges for 2010–2012 were:

- To reduce idling losses, i.e. energy use outside production, by 50%
  - To reduce energy consumption by 15% per produced unit in 2012 compared with 2008
  - To continue to investigate the possibility of making the Group's facilities carbon neutral.
- The total energy use on Volvo Group level has only slightly decreased measured in MWh per MSEK between 2010 and 2012. However the emission of carbon dioxide decreased with about 20% measured in ton per MSEK. Individual plants have been able to considerably reduce energy use during no production (idling losses), for example, the Renault Truck production plant in France and the Penta engine plant in Vara, Sweden.

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The Volvo Penta factory in Vara, Sweden reduced its level of energy consumption at nights and weekends by approximately 70% since 2008 by carefully tracking and shutting down all unnecessary energy consuming equipment.

itions have resulted in an increase in the amount of hazardous waste in recent years. The total amount of hazardous waste in 2012 was 32,547 tons, compared with 25,943 tons in 2011. A significant part (56 percent) of this increase is due to off-site treatment of hazardous industrial water emulsions at the refurbishment of the internal treatment plant for industrial waste water at the Skövde engine plant and due to new legal definitions of hazardous waste.

The Volvo Group's minimum requirements on production plants includes sorting and quantifying all waste at the source and implementation of measures to reduce the quantity of waste, increase reuse, material recycling and energy recovery as well as reduce the quantity of waste consigned to landfill.

### Environmental performance of Volvo Group production plants, Industrial operations<sup>1</sup>

Absolute values related to net sales	2012	2011	2010	2009
Energy consumption (GWh; MWh/SEK M)	<b>2,518; 8.5</b>	2,471; 8.1	2,315; 9.0	1,888; 9.1
CO <sub>2</sub> emissions (1,000 ton; ton/SEK M)	<b>235; 0.8</b>	255; 0.8	279; 1.1	213; 1.0
Water consumption (1,000 m <sup>3</sup> ; m <sup>3</sup> /SEK M)	<b>7,372; 24.9</b>	7,970; 26.2	7,519; 29.2	6,637; 31.8
NO <sub>x</sub> emissions (ton; kg/SEK M)	<b>413; 1.4</b>	474; 1.6	719; 2.8	322; 1.5
Solvent emissions (ton; kg/SEK M)	<b>2,358; 8.0</b>	2,554; 8.4	2,294; 8.9	1,435; 6.9
Sulphur dioxide emissions (ton; kg/SEK M)	<b>26; 0.1</b>	34; 0.1	33; 0.1	38; 0.2
Hazardous waste (ton; kg/SEK M)	<b>32,547; 109.9</b>	25,943; 85.5	22,730; 88	17,558; 84
Net sales, SEK bn	<b>296.0</b>	303.6	257.4	208.5

<sup>1</sup> Based on data from 67 majority owned production plants in relation to net sales in industrial operations.

The full Volvo Group Environmental Data Report includes about 40 indicators and will be available on [www.volvogroup.com/responsibility](http://www.volvogroup.com/responsibility) from mid April, 2013.

### Noise

Noise levels from most of the Volvo Group's plants are generally very low. The target is to ensure that the external noise level from plant operations, measured at the nearest residential property, does not exceed 60 dB(A).

### Incidents in Sweden

In 2012 there were 15 licensable facilities in Sweden. During 2012 there was one major environmental incident which occurred in Eskilstuna, Sweden. A spillage of oil was discovered, in time for it to be stopped before it reached a nearby stream. No environmental disputes are in progress.

### Environmental risk management

The consideration of environmental risk represents a component of the Volvo Group's risk process. When assessing potential acquisitions of companies and real estate, audits consider environmental and social factors in addition to financial, legal and other aspects. The information provides the basis for action plans, if required.

### Remediation programs

Audits may reveal a need for remedial work at contaminated properties used for former or current operations. Through an ongoing program of remedial measures, contamination discovered in refurbishment or rebuilding projects are dealt with immediately. Installations that pose the greatest risk of causing soil and groundwater contamination, such as underground storage tanks and underground piping systems, have been targeted for rebuilding work under an internal directive focusing on such installations.

### Audits

The Volvo Group has conducted internal environmental audits since 1989 to ensure adherence to the environmental policy. The audits monitor the environmental activities and examine the data. Priority is given to auditing newly acquired operations, or operations where the improvements in environmental performance has ceased.

### Data collection

The Volvo Group had 67 majority-owned production plants around the world at the end of 2012 for which detailed environmental data will be disclosed in a separate environmental data report from mid April on [www.volvogroup.com/responsibility](http://www.volvogroup.com/responsibility).

The Volvo Group has reported detailed environmental data since 1991 and has continually developed indicators and tools since that time. The indicators can be found in the following areas:

- Use of chemicals
- Energy consumption
- Water consumption
- Emissions to air and water
- Waste
- Noise.

### Transports and logistics

The Volvo Group aims at reducing the emissions of carbon dioxide from the transportation of the goods to and from the Volvo Group plants, as well as from business travel.

Between 2009 and 2011, emissions of carbon dioxide from road, rail and sea transportation of goods to and from the Volvo Group's plants were reduced by 18 percent.

In 2011 88 percent of the major transport suppliers were certified in accordance with the environmental standard ISO 14001 or equivalent. Data for 2012 will be presented during the second quarter of 2013.

Social and ethical requirements are also

included in supplier requirements specifications, in accordance with the Group's requirements.

### Calculating the environmental impact of transports

Volvo Group Logistics Services is responsible for the material logistics flows from suppliers to Volvo Group's plants and the distribution of new vehicles from plants to dealers.

The EnvCalc tool is used to calculate emissions to air for new or changed transport routes. The calculation is based on the volume of goods, the distance and the mode of transport. The result is presented to the customer as Environmental Load Units (ELU) or broken down into the amounts of carbon dioxide, nitrogen oxides, sulphur oxide and particle matter emissions.

Volvo Group Logistics Service also offers customers a Logistics Emission Report for a specified transport scope, such as all material supply transports and distribution transports for finished vehicles, for a specific plant over one year.

In 2012 Logistics Emission Reports were supplied to seven of the Volvo Construction Equipment plants in North America, South America and Asia. These reports include a one-year compilation of all emissions from material transports to the production plants, as well as an analysis and recommendations of changes to reduce the emissions.

### Road

The Volvo Group requires suppliers of road transportation to comply with engine class requirements and have their drivers trained in fuel efficient driving. These requirements are followed up by an annual supplier survey.

The data from the 2011 survey shows that 57 percent of the trucks used in Europe are compliant with Euro V, 21 percent with Euro IV and 22 percent with Euro III. In North

2008	2007 <sup>2</sup>	2006	2005	2004	2003	2002
2,530; 8.6	2,426; 9.6	2,612; 10.5	2,683; 11.6	2,695; 13.3	2,607; 14.9	2,564; 14.5
291; 1.0	242; 1.0	282; 11.4	292; 1.3	293; 1.5	298; 1.7	307; 1.7
8,205; 27.8	7,067; 27.9	7,596; 30.6	7,419; 32.1	8,495; 42.2	8,687; 49.1	9,202; 52.0
800; 2.7	542; 2.1	606; 2.4	672; 2.9	645; 3.2	570; 3.3	726; 4.1
1,945; 6.6	1,979; 7.8	2,048; 8.3	1,960; 8.5	2,085; 10.3	1,965; 11.2	1,896; 10.7
64; 0.2	58; 0.2	69; 0.3	209; 0.9	184; 0.9	200; 1.1	173; 1.0
27,675; 94	27,120; 107	26,987; 108.8	23,590; 102	24,675; 122.1	21,613; 124	20,531; 116
294.9	253.2	248.1	231.2	202.1	174.8	177.1

<sup>2</sup> Excluding UD Trucks and Ingersoll Rand Road Development.

America, 22 percent are US07, 9 percent US04 and 68 percent US98 engine classified. In South America, 3 percent of the trucks are Euro IV, 86 percent Euro III and 10 percent Euro II engine classified. And in Asia Pacific (China, India, Japan, Korea and Australia), 32 percent of the trucks are Euro IV, 54 percent Euro III and 14 percent Euro II engine classified.

### Sea

A significant portion of the Volvo Group's transports is conveyed by sea. Since 2010 all contracted sea carriers are required to report the environmental impact of each of their vessels.

The Volvo Group is a member of the Clean Shipping Index – a network of large export and import companies in Scandinavia, Germany and the Netherlands.

The aim for the Clean Shipping Index is to enhance environmental development in the maritime industry by providing buyers of sea transport with a tool to evaluate the environmental performance of ships and shipping companies.

### Train

The Volvo Group's objective is to maintain the same level of emissions per tonkilometer for goods transported on rail overtime. 2011 showed a small increase in emissions from rail.

### Packaging system

The Volvo Group uses a reusable packaging system to transport goods from material suppliers to the plants, and all the way to the production line. When empty, the packaging can be stacked, taking minimal space when freighted. The system comprises over 100 types of packaging in different materials such as wood, plastics, cardboard and metal.

The Volvo Group has terminals around the

world for collecting and cleaning packaging materials, which are reused until they no longer meet quality standards. All packaging is ultimately scrapped, with most parts being recycled into new materials or energy.

Environmental impact is a vital aspect in the development of new packaging. The Volvo Group uses a Life Cycle Assessment tool to compare the environmental impact of different packaging materials.

### Business travel

The environmental impact of business trips should not be underestimated. It might actually account for a substantial percentage of a global company's carbon dioxide emissions. In 2011 the Volvo Group initiated a project to reduce the carbon dioxide emissions from business travel.

The Volvo Group approaches the issue from different angles and looks at the flights, hotels, rental cars, trains and virtual meetings.

Since 2012 employees can see the carbon dioxide emissions for all the flights proposed when they book a flight online, and agreements have been made with some of the major rental car suppliers to increase their fleet of environmentally enhanced cars and encourage employees to rent these cars. The number of video conferencing facilities also increased.

The Volvo Group is at an early stage of the project and is still gathering data before setting targets.

The figures already available show positive trends, for instance in the number of environmentally enhanced cars in the rental car companies' fleet and the use of these cars by Volvo Group employees.

Despite an increase in the number of flights booked in 2012, the carbon dioxide emissions level resulting from those flights is proportionally lower than in 2011. The amount of rail travel compared to air travel also increased.





## Distribution and service

The Volvo Group is present in more than 190 markets and sells over 300,000 trucks, buses, construction equipment machines and engines every year through both wholly-owned and independent dealerships. Net sales amounted to SEK 303.6 billion in 2012 and selling expenses amounted to SEK 7.5 billion.

The Volvo Group products are sold under different brands, and each brand focuses on different industries and market segments. Some brands are sold globally, while others are marketed in specific regions of the world.

Over the last decade the Volvo Group has significantly strengthened its position outside the traditionally large markets of Western Europe and North America through acquisitions,

primarily in Asia, and by the expansion of the distribution and service networks in for instance Eastern Europe and South America. In 2000, the markets outside of Western Europe and North America accounted for 12 percent of Group sales. In 2012 that share had grown to 47 percent.

The Volvo Group's customers are professionals dependent on reliable products and

24/7 support if something happens. To support the Group's customers, an extensive network of dealerships and workshops are available along the main roads. These are both Group owned and independent dealers.

## Product range

All of the Volvo Group's products have been developed to contribute to efficient transport and infrastructure solutions in all parts of society.

### Trucks

All brands in the Volvo Group's truck operations have a unique and distinct brand-specific character that attracts customers in their market segments.

The trucks are sold and marketed under the brands Eicher, Mack, Renault Trucks, UD Trucks and Volvo, which all offer customers a broad range of products and services for efficient and economic transports.

Long-haul

Regional distribution

City distribution

Construction

#### Eicher



#### Mack



#### Renault Trucks



#### UD Trucks



#### Volvo



### Special-purpose vehicles

The Volvo Group manufactures special-purpose vehicles for use by for instance government, defense, peace-keeping and relief organizations.



### Buses

Volvo Buses' product range includes complete buses and bus chassis for city, intercity and coach traffic. The company has a total offering that, in addition to buses, includes a global service network, efficient spare parts handling, service and repair contracts, financial services and traffic information systems.

Volvo Buses



Nova Bus



Prevost



This information is extracted from the Volvo Group Annual Report 2012.



### Construction equipment

Volvo Construction Equipment develops, manufactures and markets equipment for construction and related industries under the brands Volvo and SDLG. Its products are leaders in many world markets, and include a comprehensive range of wheel loaders, hydraulic wheeled and crawler excavators, articulated haulers, road machinery and a wide range of compact equipment.

Compact construction equipment



Wheel loaders



Backhoe loaders



Crawler excavators



Skidsteer loaders

Heavy construction equipment



Crawler excavators



Wheeled excavators



SDLG crawler excavators



Articulated haulers



Wheel loaders



SDLG wheel loaders

Road machinery



Motor graders



Compaction equipment



Pavers



Asphalt milling machines

### Engines for boats and industrial applications

Volvo Penta manufactures engines and drive systems for both leisure boats and commercial craft, with an engine range of 10 to 900 hp and has a global service network of approximately 4,000 dealers. Volvo Penta also supplies industrial engines ranging from 75 kW to 640 kW for container handling, mining equipment and other industrial applications.

Marine engines



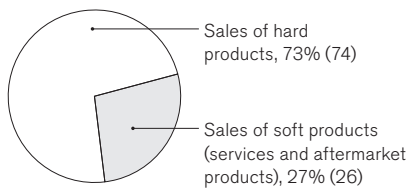
Industrial engines



### Financial services

Financial solutions such as customer financing and leasing, dealer financing, and other fee-based products such as insurance, contribute to the Volvo Group total solution offering by creating customer value such as convenience, speed and peace of mind. Providing attractive financial solutions and other support services is essential to meeting today's high customer demands, and to attracting and retaining Volvo Group customers.



**Soft product share of net sales 2012****Dealers**

A strong dealer network is essential to provide the Volvo Group's customers with the best parts availability and service. Significant investments in this area have been made over the years.

**Global competitions for aftermarket personnel**

The Volvo Group organizes local, regional and global competitions to encourage and showcase best practices among the aftermarket personnel.

**Volvo International Service Training Award (VISTA)**

VISTA, a Volvo Trucks competition for aftermarket personnel, started in 1957 and has taken place every second year for over 50 years. Today it is the biggest competition for aftermarket personnel in the world and attracts authorized Volvo dealers from all over the world.

In 2011, 3,740 teams – a total of 13,700 contestants – from 75 different countries joined the competition and this was the first time an all-female team participated. The VISTA 2012-2013 world final will be held the last week of June 2013.

The objective for VISTA is to encourage teamwork and build team spirit and pride. Since the start it has also served as a great way for aftermarket personnel to increase their knowledge and the quality of their work. Through VISTA thousands of people across the world train themselves to become better at what they do every day.

**Volvo Construction Equipment Masters**

Volvo Construction Equipment also organizes a global competition every second year for aftermarket personnel – the Volvo CE Masters.

The Volvo CE Masters 2011 final was the culmination of a two-year odyssey to find the most skilled construction equipment technicians in the world. Six teams from different countries competed in the final in Eskilstuna, Sweden after having advanced through a series of local, national, sub-regional and regional finals; this process pared down the competition from more than 2,000 entrants to eighteen technicians.

The teams of four consist of a team leader and three technicians – two service technicians and a spare parts technician.

**Carbon dioxide-neutral dealerships**

With solar power and other green energy alternatives, the Volvo Group is working on making its dealerships carbon dioxide-neutral. The first carbon dioxide-neutral dealership was presented in Verona, Italy in 2008. Solar panels on the roof of the building produce energy for the entire Volvo Trucks facility, and since more energy is produced than needed, the surplus is sold as green energy. The ambition is for more dealers to follow this initiative.

To reach this ambition the Group looks at two different dimensions. The first one is to reduce the energy consumption of the dealerships and the second one is to increase the use of renewable energy.

Since 2008 two comprehensive energy mappings were done for Volvo Trucks dealers in the UK and Sweden to evaluate the energy saving potential. The mapping is a detailed study conducted on site by in-house energy experts that review the heating and electricity use (lighting, compressed air, office equipment, ventilation and cooling) for a period of one year. The survey results suggested an average energy saving potential of 30 percent.

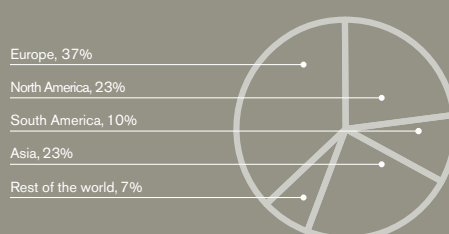
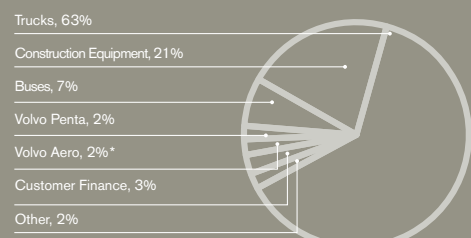
In 2012 the Volvo Group established a reporting system to gather environmental data from approximately 300 owned Volvo Trucks dealerships in Europe. The system reports two types of figures: the energy consumption in MWh and energy cost in Euro. The aim is to analyze the data in order to find ways to reduce the energy consumption by using the experience of the Group's production facilities and to extend the reporting to dealers outside of Europe as well as independent dealers.

In addition to reducing energy consumption, the Volvo Group also aims to increase the usage of energy from renewable sources in the dealership network. The Verona dealer was the first example using solar panels for generating electricity. This has been followed by dealers using wood pellets for heating in Switzerland and solar panels for warm water in Slovakia.

All the Volvo Group owned dealers work according to the Volvo Group environmental requirements for dealers and towards fulfill-

**Strong positions**

- One of the world's largest manufacturers of trucks
- One of the world's largest within construction equipment
- One of the world's largest manufacturers of heavy-duty diesel engines
- Good market presence globally

**Distribution of net sales by geography 2012****Distribution of Group's net sales 2012**

\* Volvo Aero was divested on October 1, 2012.

The Volvo Group sold defense material, as defined in the Swedish Military Equipment Ordinance (1992:1303) section A, amounting to 0.66 percent (0.41) of net sales in 2012.



ing the ISO 14001 standard. This means that they receive, for example, detailed instructions on how used oils and other fluids are to be handled.

### Supporting the customers

The Volvo Group's customers play an important role in everyday life in society. Buses take children to school, trucks distribute food to stores, gensets provide electricity to rural hospitals, machines build roads and garbage trucks collect the waste.

The competition in the transport sector is very tough and the margins are small. This is why the Volvo Group places a lot of effort into supporting the customers to be successful in their business. In addition to vehicles and machines, the Volvo Group's offering includes various types of financing solutions, insurance, rental services, spare parts, preventive maintenance, service agreements, assistance services and IT services. The range and flexibility of the offering means that the solutions can be customized for each customer.

### Financial services

The Volvo Group understands the specifics of the transport and infrastructure business better than a standard finance company. For this reason many customers choose to finance their truck, bus or machine purchase through the Volvo Group's finance company. Apart from financing, the financial solution can also include service and maintenance agreements, leasing agreements and insurance.

### 24/7 assistance

If something happens on the road, such as a flat tire or a broken windshield, Volvo Action Service, the road assistance service for Volvo trucks customers, is available 24 hours a day, seven days a week. The customer will get support via a case manager that speaks the customer's language and supports the customer until the issue has been solved. This service does not just include problems with the vehicle; it can also involve financial assistance, translation assistance, trailer repair, driver repatriation or legal assistance.

Renault Trucks also offers 24/7 assistance to its customers in case of a breakdown anywhere in Europe. With the GO24 agreement, Renault Trucks compensates its long-distance customers if the vehicle in question is

not back on the road in less than 12 hours after the breakdown.

### Customer satisfaction

The Volvo Group aims to be number one in customer satisfaction and to be the customers' closest business partner. All companies in the Group measure customer satisfaction. The success of our business partnerships with customers is based on being best at solving the customers' problems and strengthening their operational performance. This is a key factor to building customer loyalty. The Volvo Group will achieve this by focusing on high product availability, which requires high product quality, measures to avoid unplanned stops, rapid product repair, and optimized preventive maintenance to reduce downtime.

### Transparent communication

#### Anti-greenwashing

The Volvo Group has developed a directive on how to communicate about environmentally enhanced products such as hybrid solutions and vehicles that can operate on renewable fuels. The purpose is to ensure that the communication about the environmental performance of the Group's products is accurate, substantiated and does not mislead customers and other stakeholders.

### Environmental product declaration

For many products the customers receive an Environmental Product Declaration (EPD), based on the results from the Life Cycle Assessment. The purpose is to help customers better understand the environmental impact of the product and help them to make more informed choices when choosing vehicles. The EPD is divided into three sections:

- 'Production' provides information about energy consumption, emissions and waste during the production of the products
- 'Use' presents fuel consumption, emissions and spare parts utilization during the use phase of the products
- 'End of Life' deals with the scrapping and recycling of the products.

### Anti-corruption

The Volvo Group does not accept corruption in any part of its business.

The work on anti-corruption is guided by

the following principles contained in the Code of Conduct, which applies to all employees and Boards of Directors:

- The Volvo Group shall not participate in or endorse any corrupt practices.
- Representatives of the Volvo Group shall not offer customers, potential customers, suppliers, consultants, governments, agencies of governments, or any representative of such entities, any rewards or benefits in violation of applicable laws or established business practices stricter than applicable laws, in order to obtain or retain business or to gain any other improper advantage.
- Volvo Group employees shall not accept payments, gifts or other kinds of reimbursement from a third party that could affect or appear to affect their objectivity in their business decisions.

The Volvo Group shall also take reasonable steps to prevent its business partners from taking part in practices that violate the principles in the Code of Conduct.

The responsibility for compliance with the anti-corruption policy rests with line management.

### Policy and program

The Volvo Group has an Anti-Corruption Compliance Policy that has been adopted by the Audit Committee. In addition to the policy, the Group's Anti-Corruption Compliance Program is based on a number of steering documents and a handbook.

The Anti-Corruption Compliance Program consists of a number of actions aimed at preventing the Volvo Group or any of its business partners from participating in corrupt activities. The program fundamentally consists of three parts:

- Preventing corruption
- Detecting corruption
- Responding to corruption.

### Implementation

All white collar employees (approximately 50,000 employees) are expected to participate in an e-learning course related to anti-corruption every three years. On site training for selected groups is conducted every year. Face-to-face meetings and discussions are important for creating awareness. In the past year and in years to come, thousands of employees have received and will receive

on-site training through the Chief Compliance Officer or other members of the compliance network. In 2012, 3,601 employees were trained in anti-corruption both via e-learning and face-to-face training. Since 2010, when the e-learning course was launched, 31,952 have completed the training online.

An updated e-learning course on anti-corruption will be rolled out during the spring of 2013.

### Report on non-compliance

The Audit Committee monitors compliance with the anti-corruption policy.

The Chief Compliance Officer is responsible for overseeing the implementation of the program, leading and participating in training and audits and leading investigations into alleged non-compliance. The Chief Compliance Officer reports to the Audit Committee on current incidents and investigations three times a year. In addition, annual reports are submitted to the Audit Committee on activities in the Anti-Corruption Program. Regular reports are also made to the Group management. The General Counsel of each division or business area is responsible for the activities in his/her respective business aimed at ensuring compliance to the policy.

### Fair competition

The Volvo Group's work with regard to ensuring fair competition is guided by the following principles contained in the Code of Conduct, which apply to all employees and members of Boards of Directors:

- The Volvo Group shall comply with the laws and regulations of each country in which it operates and compete in a fair manner and with integrity.
  - The Volvo Group shall not exchange information or enter into agreements or understandings with competitors, customers or suppliers in a way that improperly influences the market place or the outcome of a bidding process.
  - The Volvo Group shall use legitimate methods to gather information about its competitors.
- The responsibility for compliance rests with line management.

### Policy and program

The Competition Law Compliance Policy outlines the principles of behavior in relation to competitors, distributors, customers and suppliers, both regarding the Volvo Group's employees and the company. All employees who are in contact with the Volvo Group's competitors are expected to be familiar with the policy and to apply it.

The Group's Competition Law Compliance Program includes detailed guidance, handbooks and related tools which aim at supporting all employees and at preventing the Volvo Group from participating in activities that are contrary to competition law. The purpose is to provide the employees with an overall understanding of what is acceptable and what is not, which has the added advantage of promoting free and open competition in the markets where the Group is present.

The Chief Compliance Officer, under the supervision of the General Counsel of AB Volvo, supports the Volvo Group management on competition law compliance issues as well as other compliance related matters. The divisions and business areas are responsible for their compliance with competition law as well as with the program. The respective division or business area General Counsels are responsible for counseling on competition law issues and for the program activities within their respective division or business area.

### Implementation

In order to increase awareness among employees about the policy, all white collar employees are expected to participate in an e-learning course on the subject. In addition, all employees working in sales and marketing, as well as managers within purchasing, research and development and product development have been requested to participate in a mandatory face-to-face training.

In 2012, 31,025 employees completed the competition law compliance e-learning course and 5,685 employees were trained face-to-face.



## Product in use

Developing engines with innovative technologies to reduce fuel consumption is not enough. Driver and operator behavior also has a direct impact on the fuel consumption of vehicles, and plays a key role when it comes to preventing accidents from happening.

More than 2 million trucks and 100,000 buses, which the Group manufactured in the past ten years, operates on roads worldwide. At construction sites, there are more than half a million units of construction equipment that we manufactured the past ten years.

### Fuel consumption

Fuel costs represent between 25 percent and 35 percent of total haulage firm costs. At the same time, the hauliers' profit margins are often very small, which means that all savings make an important difference. In order to succeed in cutting the haulage firm's overall fuel consumption, the part played by the drivers is vital.

### Eco driving

The Volvo Group has launched several initiatives and offers a variety of training programs

to optimize the skills of drivers and operators around the world, to improve vehicle knowledge and reduce fuel consumption. On average, drivers can save 5 to 10 percent in fuel consumption after participating in a course on fuel efficient driving.

This reduces costs and environmental impact. In addition to this, the risk of accidents is also reduced through the better planning of routes.

### Fuel challenges

The Volvo Group organizes fuel challenges worldwide to stimulate fuel efficient driving and reward especially skilled drivers and operators.

### *Optifuel Challenge 2012*

In 2012 Renault Trucks hosted its first European eco driving competition with 33 drivers

from 16 countries participating in the final in Seville, Spain.

The Optifuel Challenge 2012 included a theoretical test of 35 questions and a 40-minute ride on board the 430 hp Premium Optifuel truck. All participants competed under the same conditions and were assessed on fuel consumption and average speed, both measured by Optifuel Infomax, the Renault Trucks' fuel consumption measurement and analysis software.

The 2012 contest was won by a driver from Spain, followed by drivers from Finland and France.

### The Drivers Fuel Challenge

Volvo Trucks' global fuel challenge competition, held in 2011, was also about driving as economically as possible on a specified route. More than 3,600 drivers from all over the world competed to see who could drive in the most fuel efficient manner and clearly demonstrated just how important driving skills are when it comes to using minimum amounts of fuel. At the end of 2011, the best drivers from 17 countries travelled to the Volvo Group's hometown of Gothenburg to compete for the world title. After fierce competition, a driver from South Korea won the first global Volvo Trucks' Drivers' Fuel Challenge.

### Fuel efficiency challenge for operators in China

After the success of the first contest to find China's most fuel efficient excavator operator in 2011, Volvo Construction Equipment organized its second nationwide Operator Idol competition in 2012.

Run in conjunction with the China Construction Machinery Association (CCMA), the Operator Idol competition includes a series of training in fuel efficient operator techniques that optimizes driving and reduces the fuel consumption. More than 6,800 people have directly participated in 34 city contests nationwide; nearly 10,000 people have participated in fuel efficient operating skills training both online and at competition sites; and over 100,000 people have participated in the festivities via the Operator Idol Club and other online platforms.

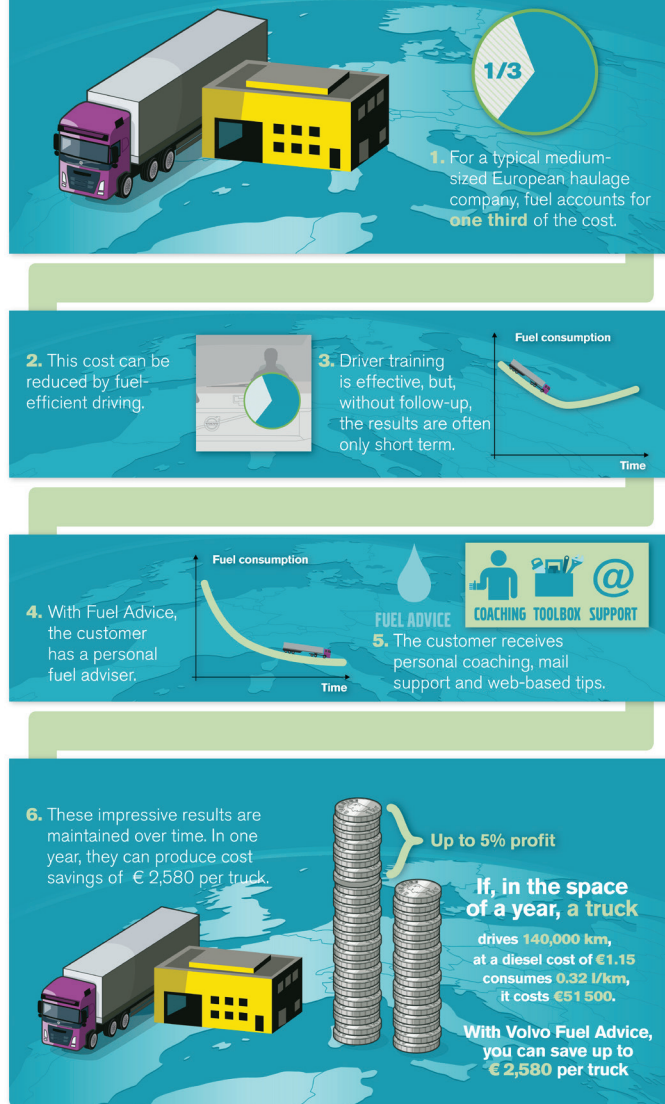
The contest raises awareness of the impact that fuel efficient operating can have on the environment, as well as on a company's profits.

At the end of the six-month contest, twenty-four operators competed for the top three titles in the Operator Idol final in Shanghai, and the grand prize winner received one year's free use of a Volvo excavator.

### Software and telematics

Today information is a means of competitiveness in the transportation and construction business. Keeping track of a fleet is necessary to maintain a clear overview of the operations, and exact information makes it easier for everybody involved in the transport chain to make the right decisions. Software and telematics are also used to monitor fuel consumption and find ways to reduce it.

Using Volvo Trucks' new fuel service, Fuel Advice, haulage companies can reduce their fuel consumption by up to **five per cent**.



### Dynafleet and Trip Manager

Transport information systems, like Dynafleet, Volvo Link and Volvo Trip manager, give the customer better control of the fleet in order to improve utilization, and consequently lower operating expenses, through fuel control and optimized administration. The systems help the fleet manager to connect to the fleet and keep track of deliveries, vehicles and drivers.

Dynafleet was introduced in 1994 and is an umbrella of a number of services that enable reduced fuel consumption, by means of truck optimization, fuel saving maintenance,

upgrades, transport information systems and driver training.

Trip Manager is a fleet management software for downloading, tracking and reporting of vehicle performance. Trip Manager allows fleets or other trucking companies to monitor and manage key vehicle data such as fuel consumption, idle time, top gear usage, cruise control usage, vehicle overspeed and engine overspeed.



According to the World Health Organization, more than 1.2 million people are killed and 50 million are injured in traffic every year. Road traffic accidents are the most common cause of death among young people in many parts of the world.

### Optifuel Infomax and Nav'Truck

In 1997 Renault Trucks was the first truck manufacturer to offer software for measuring and analyzing fuel consumption. In 2012 Optifuel Infomax, Renault truck's software for measuring and analyzing fuel consumption, added new functionalities to help its users even further. It offers the option of defining individual targets, comparing results and carrying out analyses over a specific period of time. The software helps all users improve - whether they are instructors, fleet managers or drivers.

Thanks to the accuracy of the data it provides, Optifuel Infomax can explain differences in fuel consumption between two identical trucks driven by two different drivers. It can also reveal key elements which increase consumption. Once these have been identified, drivers can change their driving style to consume less fuel. If the drivers are working for a fleet, they can also talk about the data with their managers, who will be able to take into account the route followed and the difficulties it entailed.

Nav'Truck, the first GPS application for smartphones dedicated to heavy-duty vehicles, was launched in 2011 by Renault Trucks. Its 2.0 version keeps drivers constantly updated with advice on economic driving and information on the road profile ahead as well as offering the option of adjusting the truck's maximum speed. All of this is designed to guide the driver and reduce journey times, while at the same time providing real-time assistance in reducing fuel consumption.

### CareTrack

CareTrack is a telematics system used to manage the productivity and work availability of heavy machines. The operation and utilization of the machine can be optimized by monitoring fuel consumption, location, hours, speed and upcoming service intervals by using GPRS (cellular) or satellite technology to transmit information that is secure and instantly available wherever there is an online connection.

### Vehicle Management and Fleet Management

In 2011 Volvo Buses launched new solutions for reducing fuel consumption based on telematics. The new technology makes it easier to monitor fuel consumption and track when the vehicle needs service. The Volvo Bus Telematics together with a course in efficient driving can deliver fuel savings of about 10 percent.

### Package solutions

The Volvo Group offers package solutions that help customers use products in the most efficient way possible. Research shows that fuel savings of between 5 and 15 percent are possible, which reduces both costs and environmental impact.

### Fuelwatch

Fuelwatch is a concept for fuel saving management for Volvo Trucks' customers. With the Fuel Advice service, a personal coach helps the customer cut fuel consumption by up to five percent. Regular follow-up and professional guidance helps maintain the fuel savings over time.

### Optifuel Solutions

Renault Trucks offers Optifuel Solutions - a set of products and services providing up to 15 percent of additional fuel savings. The offer makes it possible to optimally configure and equip vehicles, instruct drivers in eco-driving, and measure and analyze truck consumption over a long period via specialized software. All this allows customers to upgrade performance over the course of the vehicle operational life.

In 2009 the Renault Premium Optifuel model was introduced on the market. The solution consists of a long distance truck fitted with all the options for reducing fuel together with eco driving instructions and specialized software. Comparative trials under actual operating conditions, in which the fuel consumption of a standard vehicle driven by untrained drivers was compared with a Renault Premium Optifuel truck driven by eco driving certified drivers, revealed a drop in consumption of 6.4 percent. The result was confirmed by the German TÜV certifying organization.

### Safety

The human factor is decisive in more than 90 percent of all traffic accidents. Tired or distracted drivers represent a major part of the problem. The most advanced safety technology cannot fully compensate for human errors and therefore it can also work to improve drivers' awareness, attitudes and behavior. The Volvo Group cooperates with different stakeholders on safety awareness issues like alertness, use of alcohol, speed and the use of seat belts.

One example is driver training. In India at least two customer drivers are trained for every Volvo truck sold. Drivers need to pass a test to qualify for the training program. More than 23,000 Indian drivers have been trained to date. Training segments include driver responsibility, fuel efficient driving and traffic safety.

Read more about Volvo Group's activities related to traffic safety under the '**Society Engagement**' section of this report.



## Re-use

Recycling of material and remanufacturing of spare parts is a growing part of the Volvo Group's activities. It minimizes the need for raw material and limits the depletion of earth's mineral resources.

### Remanufacturing

Giving a second life to used engines and components is the mission of the Volvo Group's remanufacturing centers. The Group has more than 50 years' experience and has six centers spread all over the world. They handle the used components from the whole range of Volvo Group's products and are located in Sweden, France, Japan, Brazil and the US. In the coming months two more centers will be inaugurated in Asia: one in China and one in India.

### Good for the business

The first remanufacturing center was opened in 1960 in Flen, Sweden and the business has grown steadily ever since. In 2012 the sales increased by eight percent compared with the previous year and the growth potential is considerable.

### Good for the customer

Engines, gearboxes, filters and rear axle transmissions are some examples of components that are remanufactured. The remanufacturing program is offered to all our customers worldwide and the range of remanufactured products continues to increase over the years.

Remanufactured components are renovated to the same condition as new ones and the customers are able to buy components with the same quality standard as new ones and with full warranty, for a considerably lower price.

### Good for the environment

At the early stage of the design phase of components their level of recyclability and re-use is already taken into account. For example, up to 80 percent of an engine can be re-

used. It minimizes the need for raw material.

The need for foundry activities is also reduced significantly. Compared with the production of a new engine, the remanufactured engine saves up to 80 percent of the energy needed to build a new engine and dramatically cuts the emissions of nitrogen oxides and carbon dioxide to the atmosphere.

### Recycling

A truck produced by the Volvo Group is largely recyclable, since almost 85 percent of its weight it consists of metal – mostly iron, steel and aluminum. The additional materials are mainly plastic, rubber and material from electronics components.

Today approximately 30 percent of a truck is produced from recycled material. Despite the large recyclability of the prod-

At the early stage of the design phase of components their level of recyclability and re-use is taken into account. An engine, for instance, can be re-used by 80%.

• • •

The total weight of a truck, such as a Volvo FH tractor, is approximately 7,000 kg, of which approximately one third is made of recycled material.

ucts, virgin material is needed to ensure quality and solidity. Disassembly facilities are available where trucks and buses can be disassembled for recycling and where reusable product parts can be harvested. Dismantling manuals to support this are available.

At the remanufacturing centers, material that is damaged and does not meet the quality standard to be reused is sorted, recycled or destroyed. Metallic materials are

sent to local recycling centers. Some of the steel and iron is sent directly to one of the Volvo Group's foundry in Skövde, Sweden. Oil spill and chemical solid waste are gathered to be used as an energy resource. Old packaging material, plastic, carbon boxes and paper are gathered and either sold to recycling centers or used as an energy resource. Untreatable wastes are sent to an external contractor, and then handled in accordance with legally valid regulations.

In some of the centers the recycling process has been further developed. Smoke emitted from engine test cells, burning operations, paint booths, suction tables for brushing and battery charging zones are filtered through a gas washer. Water from washing machines is cleaned by using an evaporator or ultra-filtration. The water is then reused in washers again and is clean enough to be distributed to the public sanitary network if needed.



## PAGES 82–92

The aim of the Volvo Group Sustainability Report 2012 is to present our work in a transparent way. The report is based on the GRI framework for sustainability reporting and is our Communication On Progress report to the United Nations Global Compact. We also present a selection of awards received for 2012 in the area of sustainability.



# Additional information

### Content

About this report	83
Standards	86
Memberships	87
Independent recognition	88
Contact	91





## About this report

The Volvo Group's Sustainability Report 2012 describes how we address economic, environmental and social challenges and opportunities to contribute to sustainable development. This report is structured in accordance with our CSR and sustainability approach.

Based on the ten principles in United Nations Global Compact initiative, other internationally recognized norms of behavior, and on interviews with internal and external stakeholders, the Volvo Group has developed a model that describes how we approach Corporate Social Responsibility and sustainability. The Sustainability Report 2012 is based on this model visualized as a pyramid. The strategic approach is described in the '**Strategic Approach**' section of this report.

The Volvo Group is a member of the International Integrated Reporting Council (IIRC) pilot program on integrated reporting and the Annual Report 2012 has been influenced by the Integrated Reporting framework which is under development. The Sustainability Report gives deepened and additional information related to CSR and sustainability issues to the Annual Report.

The main purpose of this report is to answer the most frequent questions we have received from our stakeholders and to make the information publicly available. This report is based on the voluntary framework provided by Global Reporting Initiative (GRI). The full GRI Index can be found on the web based Sustainability Report ([www.volvogroup.com/sustainabilityreport](http://www.volvogroup.com/sustainabilityreport)) and includes references to where the information may be found.

Our aim is to present our work in a straightforward, transparent and informative way for a wide audience.

This report is a platform for internal and external dialogues with investors, customers, suppliers, employees, the general public and other stakeholders.

### Dialogue with stakeholders and issues in focus

The Volvo Group is a global company and we are committed to include all our majority owned companies in our CSR and sustainability work and have a dialogue with those who are impacted by our operations. We have various processes in place to map stakeholders' expectations and address these issues in our business. Based on our business model, business environment and our operational context we have identified the issues of significant impact to address in this report by conducting interviews with internal and external stakeholders and analyses on global trends and challenges.

We believe that our Sustainability Report is an efficient channel for providing information about our practices, and we seek to cover the most frequently asked questions from investors and other stakeholders in this report.

### Accounting principles

For the financial statement of the Volvo Group, find the accounting principles in note 1 in the Annual Report 2012.

In this section we give further guidance on some of the data which are also described in the Annual Report.

### Financial data

The financial data is based on the accounting principles described in the Annual Report.

### Employees data

The HR data is based on principles described in the Annual report.

### Number of employees completing e-learning

The Volvo Group has an IT-based system for distributing and following up of electronic trainings for our employees. Several mandatory Group-wide training programs are offered, like the e-learning programs on anti-corruption, Code of Conduct and Competition law. The results from those trainings, which are presented in this report, are collected from our internal IT-system which reaches only approximately 50 percent of our employees. Additional employees have been trained by their managers in other manner and those results are not included in the statistics.

### Supplier assessments data

The performance data from supplier assessment has been calculated based on data reported to IT-support system VSIB (Volvo Supplier Information Base). The assessment is done on a plant level, i.e. on the actual location where the supplier deliver from. The volume performance is calculated based on the purchased value of goods used in the products if nothing else is stated.

The Volvo Group's risk assessment is based on index and data from international recognized institutions and is used to identify and prioritize our efforts on suppliers considered to be facing higher risk due to their location.

### Environmental data

At the end of 2012 the Volvo Group had 67 majority-owned production plants around the world that are included in the environmental data reporting. In addition, data from all Parts and Logistics facilities are included. The environmental performance for industrial operation is reported in absolute values related to new sales.

The implementation of environmental management systems helps to assure the quality of the reported data. Internal monitoring and control are important elements of this activity.

Environmental audits are also carried out under the direction of the Group's environmental auditor as a means of monitoring environmental activities. In addition, the auditor is responsible for the examination of environmental data. This is carried out as part of the normal plant audits and when reporting environmental data for the Group's Annual Report.

### Energy consumption

Energy consumption (direct and indirect) is measured in both direct supply of energy and indirect supply of energy (energy produced by other than the Volvo Group). All energy used at the plant, except internally recovered, are included.

The consumption is based on meter reading and invoices.

### Carbon dioxide emissions

The total amount of energy, including energy used for heating and cooling, processes, product testing and internal transportation is used to calculate the energy index. Carbon dioxide emissions from inbound and outbound transports as well as business travel are not included. The consumption is based on meter reading and invoices.

### Water consumption

The water consumption includes drinking water, industrial water and steam. The consumption is based on meter reading and invoices.

### Emissions of sulphur dioxide and nitrogen oxides

These emissions are based on the use of energy and the amount of product testing in test rigs. The consumption is based on meter reading and invoices.

### Hazardous waste

The national regulations are used to divide the generated waste into hazardous and non-hazardous. The consumption is based on invoices.

### Emissions of solvents (VOCs)

The emission of solvents mainly comes from painting and surface treatment processes. The consumption is based on invoices.

### Scope and boundary of the report

Unless otherwise stated, the Sustainability Report encompasses companies fully consolidated in the Volvo Group. Our financial performance and information regarding the Volvo Group's Corporate Governance is available in the [Annual Report 2012](#) and at [www.volvogroup.com/investors](http://www.volvogroup.com/investors).

### Data collection and verification

This report was not audited by a third party. Although we acknowledge the value of an audit, we have opted to give priority to developing our in-house process in an effort to further improve our work. A lot of data in this report is also presented in our [Annual Report 2012](#), see the section '[Audit Report for AB Volvo](#)'. In addition the process for collecting environmental data is audited by a third party and certified in accordance with ISO 14001. Due to the reorganization of the Volvo Group, some data on an aggregated level for the Group is not available.

## References

### Annual sustainability reports available on website

The Volvo Group publishes annual Sustainability reports since 2007. The Sustainability Report 2012 was published end of March 2013 on [www.volvogroup.com/sustainabilityreport](http://www.volvogroup.com/sustainabilityreport). More information on sustainability and previous reports are available on the Volvo Group's website: [www.volvogroup.com/responsibility](http://www.volvogroup.com/responsibility).

### Environmental Data report

The Volvo Group has published Environmental Reports since 1991. These reports are available on [www.volvogroup.com/responsibility](http://www.volvogroup.com/responsibility) and contain the environmental performance of our industrial operations. The 2012 report will be available in April 2013.

### Annual Report

The Annual Report 2012 was published on March 13, 2013 and includes the **Corporate Governance Report**. The report is available on [www.volvogroup.com/investors](http://www.volvogroup.com/investors).

## Disclaimer

Any links to external or third party web sites in the Volvo Group Sustainability Report 2012 are included solely for the reader's convenience. You make use of any links, and rely on the information contained on such external web sites at your own risk. The Volvo Group does not give any representation regarding, nor accepts any liability for the quality, safety, suitability or reliability of any external web sites or any of the content or materials contained therein.

This report contains forward looking statements. Such statements reflect management's current expectations. Although management believe such statements to be reasonable, no assurance can be given that such expectations will prove correct. Such statements are subject to risks and uncertainties and such future events could differ materially from those set out in the forward looking statements as a result of, among other factors (i) changes in economic, market and competitive conditions, (ii) success of business and operating initiatives, including research projects, (iii) changes in the regulatory environment and other government actions and (iv) business risk management. This report does not imply that the company will revise the forward looking statements.

Audrey Grandjean was the project leader for the Sustainability Report 2012.



## Standards

The Volvo Group's Sustainability Report for 2012 adheres to the following internationally recognized voluntary standards and principles: Global Reporting Initiative, the United Nations Global Compacts principles for Communication On Progress and ISO 26000 Self-declaration for the implementation and reporting of the Group's sustainability work. The GRI index and the self-declaration according to ISO 26000 can both be found on [www.volvogroup.com/sustainabilityreport](http://www.volvogroup.com/sustainabilityreport).

GRI is the most widely used sustainability reporting framework which seeks to promote greater transparency.

ISO 26000 is a standard that provides guidance on how businesses and organizations can operate in a socially responsible way.

The Volvo Group uses both of these standards to implement and report the Group's work within sustainability. The report addresses issues that have been identified as important both internally and through stakeholder dialogues.

### Communication On Progress

The Volvo Group is a signatory to United Nations Global Compact since 2001 and annually submits its Communication On Progress report. This Sustainability Report describes our work to advance the Global Compact's ten principles in our daily operations as well as in our strategies.

### GRI index

The Volvo Group applies the GRI (Global Reporting Initiative) guideline for sustainability reporting. This framework (G3) sets out principles and indicators for measuring and reporting economic, environmental and social performance. The table provides references to where the indicated GRI-information can be found in the Sustainability Report 2012. In some cases,

reference is made to content in the Volvo Group **Annual Report** or the **Corporate Governance Report** for 2012. The Volvo Group has chosen to self-declare the report as meeting the GRI Application Level B.

### ISO 26000 Self-declaration

The Volvo Group applies the ISO 26000 guidance document for social responsibility. There is no official certification for this standard, but SIS, the Swedish Standards Institute, issued in November 2012 a guideline for self-declaration of the fulfillment of the standard.

The Volvo Group has completed this self-declaration with the contents of this report, and the references for where information can be found are outlined in the table ISO 26000 Self-declaration.





## Memberships

The Volvo Group places a great deal of effort into being aware of legislative trends and actively participating in society in relation to matters relevant to our industry. Knowledge of the surrounding world is essential to our ability to identify new business opportunities.

In order to do this, the Group participates in a number of industry forums. The Group is also a signatory of Global Compact and a member of the WWF Climate Savers Program.

### Industry forums

The Volvo Group participates in different trade organizations and forums such as:

- European Automobile Manufacturers' Association (ACEA)
- Committee for European Construction Equipment (CECE)
- Engine Manufacturers Association (EMA) and Truck Manufacturers Association (TMA) in the US
- Japan Automobile Manufacturers Association (JAMA)
- Association of Equipment Manufacturers in the US
- American Trucking Associations
- American Public Transportation Association
- National Marine Manufacturers Association
- American Bus Association
- International Council of Marine Industry Associations – ICOMIA
- European Association of Internal Combustion Engine Manufacturers (Euromot)

### Global Compact

The Volvo Group became one of the first companies to sign the United Nations Global Compact initiative in 2001. The Global Compact aims to align business practices with internationally accepted principles on human rights, labor practice, the environment and anti-corruption.

#### The Global Compact

In 2001, the Volvo Group signed Global Compact, UN's initiative on socially responsible business practices.





## Independent recognition

The Volvo Group has received external recognition in the area of sustainability during 2012. The awards and recognition have been at both global and local level.

An increasing number of long-term investors prioritize companies that are aligned with trends and capture the opportunities in sustainability. We are very proud of the external recognition that has been awarded to the Volvo Group in 2012.

### **Dow Jones Sustainability World Index 2012**

The Volvo Group has qualified for inclusion in the Dow Jones Sustainability World Index (DJSI World) as well as DJSI Euro Stoxx and Nordic. DJSI assesses the world's 2,500 largest companies on the basis of economic, environmental and social criteria, focusing on long-term shareholder value.



The DJSI World includes approximately 300 of the highest ranked companies, one of which is the Volvo Group. The annual assessment includes areas such as corporate governance, risk management, climate change management, sourcing and work environment. The Volvo Group received special recognition for its handling of environmental issues.

### **STOXX® Global ESG Leaders**

The Volvo Group is included in the STOXX Global ESG Leaders index, which offers a representation of the leading global companies in terms of environmental, social and governance criteria, based on ESG indicators provided by Sustainalytics. The index is made of the following three ESG sub-indices: the STOXX Global ESG Environmental Leaders, the STOXX Global ESG Social Leaders and

the STOXX Global ESG Governance Leaders indices.

### **Storebrand Tripple Smart and SPP Global Topp 100**

The Storebrand Tripple Smart/SPP Global Topp 100 fund is a global equity fund which invests in the 100 most sustainable companies in the world according to the company's analysis methodology. Storebrand has included the Volvo Group in this fund. Storebrand is the Nordic region's leading provider of life insurance and pensions with a strong engagement within sustainability since many years. The companies in the fund are selected from the MSCI All Countries Index. The fund is sector neutral and some adjustments are made regarding region representation to ensure that emerging markets companies are also included.

## Sustainable Value Creation

The Volvo Group has gained top ranking in the survey on responsible business practices conducted by Sweden's largest institutional investors. The survey studied the 100 largest corporations listed on the NASDAQ OMX Nordic Exchange in Sweden. The investors manage a total capital of SEK 5,000 billion. The Volvo Group was ranked as one of the top companies in both 2009 and 2011.

## OMX GES Sustainability Index series

The Volvo Group is included in the OMX GES Sustainability Index series and the OMX GES Ethical Index series for the Nordic region. The OMX GES Sustainability indexes comprise the leading companies in the region in terms of sustainability. The analyses cover criteria for environmental, social and governance (ESG) issues, and are based on international guidelines for ESG issues.

## Oekom rating

Oekom research assessed the Volvo Group's performance to be "Prime" and therefore qualifies the Group's tradable bonds and shares to qualify for ecologically and socially based investment. The assessment of the social and environmental performance of a company as part of the Corporate Rating is carried out with the aid of over 100 social and environmental criteria, selected specifically for each industry.

## Folksam

Folksam, a major Swedish insurance company with 4 million customers, uses a company's performance in environmental issues and human rights as criteria for their investments. In the assessment for 2012 they evaluated the Volvo Group's ability to handle environmentally related risks. On a scale from 1 to 7, with 7 being the highest, the Volvo Group received a rating of 7 for management of environmentally related risks in accordance with relevant policies and programs.

## ECPI Indexes

The Volvo Group is included in the ECPI Euro Ethical Equity and ECPI Global Ethical Equity. The global index selects the 300 top capitalized companies in the global market with eligible investments according to ECPI Ethical screening Methodology and the Euro index selects the 150 top in European market.

Carbon Equity Index is an investable index that selects the companies best equipped to tackle a world of rising carbon emissions and tougher climate legislation from carbon intensive sectors such as utilities, basic materials, industrial and energy.

## Generali Investment Europe

In the 2012 Socially Responsible Investments (SRI) benchmark for the Electrical Equipment, Machinery and Industrial Conglomerates sector the companies were assessed by a best-in-class risk management and positioning on sustainable opportunities. The companies that fulfilled more than 50 percent of the criteria, including the Volvo Group, are qualified for the authorized buy-list of SRI funds.

Generali Investments Europe is wholly owned by Generali Group, a leading player in the global insurance and financial markets and one of Europe's largest insurance providers.

## Other awards for 2012

### Environmental Excellence Award

The Volvo Trucks' plant in New River Valley, Virginia, received the Virginia Governor's Environmental Excellence Award in recognition of the efforts to reduce its energy use. It is the third time the plant has earned this honor.

### Liberty Mutual Silver Safety Award

Mack's factory in Macungie, Pennsylvania, received the Liberty Mutual Silver Safety Award for its outstanding workplace safety record. In 2011 Macungie achieved a DART (Days Away, Restricted and Transferred) rate of less than 1.5, which is 53 per cent lower than the US heavy duty truck manufacturing industry average of 3.2.

### People Development Award

Every year Revista Você S/A, the most important publication in Brazil in the area of career management and human resources, publishes a list of the 150 best companies to work for. Volvo do Brasil was ranked first in 2008 and 2011. In 2012 Volvo do Brasil came in 4th position overall, but first in the People Development category.

### Carbon dioxide reduction award

Volvo Trucks in Belgium received a carbon dioxide reduction award for its effort to reduce the impact on the environment with its carbon dioxide-neutral plant in Ghent.

## Diversity award

The Volvo Group in France was presented an award for its diversity initiatives regarding gender equality. More than 200 company representatives attended the event where the Minister of Women's Rights recognized five companies for their achievements.

In France the Volvo Group has taken a number of concrete actions towards gender equality including the launch of Women Inclusive Network (WIN), training in Diversity and Inclusion, and the promotion of equal opportunities and salaries.

## Sustainability Leadership Award

Volvo India received the Parivartan Sustainability Leadership Award for 2012 under the category 'Sustainability Innovation Award for Energy Management Tools' for implementing its global initiative 'Commute Greener' in India, which guides individuals and companies towards greener commuting.

## Quality Award

Volvo do Brasil won its second PNQ (National Quality Award), the highest recognition for excellence in management of organizations in Brazil. The Volvo Group is the only automotive manufacturer to receive this prize more than once.

Imprensa Magazine, a major Brazilian news magazine, has also selected the Volvo Group as the most sustainable company in the Brazilian commercial transport sector. The acknowledgement was given in recognition of Volvo do Brasil's emission reduction programs and the continued technological advancement of its vehicles.

## Green award

Volvo Bus, in partnership with Arriva, has been awarded the prestigious Green Award at the routeONE Operator Excellence Awards. The award is in recognition of the joint Volvo Bus-Arriva initiatives towards improving the carbon footprint of public transport in London.

## Innovation Award

Maskinentreprenören (a Swedish magazine) awarded Volvo Construction Equipment for OptiShift – a system that delivers 15 percent improved fuel efficiency and increased performance in wheel loaders.



### Quality Innovation of the Year

The Swedish Institute for Quality has granted Volvo Construction Equipment the 2012 Quality Innovation of the Year award for the business model enabling new environmental technology to be transferred to third party products, such as the snow sweeper. The business model allows Volvo Construction Equipment to offer tailored solutions to Original Equipment Manufacturers like ABEI Schmidt that want partial machines for integration into their own product development.

### European Sustainable Development Transport award

Renault Trucks' Optifuel Solutions won the European Sustainable Development Transport award for 2012 in Germany in the 'Services' category. The jury was particularly impressed by their efficiency in reducing fuel consumption and the impact of transport activities on the environment.

### UIM Environmental Award

The Union Internationale Motonautique (UIM) has since 2010 annually awarded engine manufacturers, boat builders and researchers with environmental awards to recognize unique innovations in the world's boating industry. In 2012 Volvo Penta received a special mention for innovation for its IPS system.

### North American Customer Value Enhancement Award

Volvo Trucks' Remote Diagnostics aftermarket service received the 2012 North American Customer Value Enhancement Award in Commercial Vehicle Repair and Maintenance from global growth company Frost & Sullivan.

Volvo's Remote Diagnostics, a standard feature on every Volvo-powered VN model highway truck, helps maximize vehicle uptime through proactive diagnostic and repair planning assistance with detailed analysis of critical diagnostic trouble codes.

### Large Goods Vehicle Manufacturer of the Year

Volvo Trucks was named the 'Large Goods Vehicle Manufacturer of the Year' by the GreenFleet magazine for the 5th time in six years. The magazine is dedicated to promoting a cleaner environment and recognizes every year pioneers in environmental transport and green fleet management.





## Contact

If you have questions regarding this report or Volvo Group's CSR and sustainability work, please contact:

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