

WWF Climate Savers innovation cases: Volvo

UNIVERSITY OF
EXETER | BUSINESS
SCHOOL



碳减排先锋
Defensores do Clima
クライメート・セイバーズ
Climate Savers

Anna Trifilova
Managing Innovation

Towards sustainable mobility with Volvo Group



For the first time there is now a commercially viable hybrid bus on the market, the **Volvo 7700 Hybrid**. With up to 30% lower fuel consumption and hybrid components from Volvo, bus operators can earn a payback on the extra cost in only five to seven years. The lower fuel consumption reduces the emission of the greenhouse gas CO₂ by up to 30%. The discharge of particles and nitrous oxides declines by up to 40-50% compared with the diesel version (Volvo news release)

Efficient transport plays a crucial role in the development of most societies and economies. At the same time, however, transport has a negative impact on society, not least in the form of emissions. The Volvo Group has made the reduction of negative environmental impact a priority. Volvo does this by taking environmental impact into account at all stages of the product life-cycle, from the first sketches on the drawing board throughout the product's service life and on until the product has fulfilled its purpose and is recycled.

The Volvo hybrid bus mentioned above is an example of this. A significant reason why fuel savings of up to 30 per cent can be achieved is that all hybrid components are developed by Volvo itself. "The common approach has been that bus manufacturers purchased hybrid components externally and attempted to adapt them to their own bus, but this is difficult", says Håkan Karlsson, President of Volvo Bus Corporation:

We developed the components internally, and therefore we have been able to optimize the bus's fuel consumption fully. This also ensures very high reliability".

Another feature of Volvo's hybrid technology is that the diesel engine is switched off at bus stops and traffic lights. "When the bus then starts moving it is driven by the electric motor", says Karlsson, "and when the bus reaches 15-20 kph, the diesel engine starts up automatically". This means that in cities, passengers, pedestrians and fellow road-users alike are spared from noise and exhaust fumes.

This case discusses how Volvo is finding new innovative solutions to create sustainable transport systems. It focuses particularly on the corporate challenges and achievements of Volvo in China, where the 12th Five-Year Plan has a strong focus on energy saving, climate change and environmental issues.

Volvo group

Volvo is a Swedish automobile manufacturer founded in 1927, in Gothenburg, Sweden. *“Cars are driven by people. The guiding principle behind everything we make at Volvo, therefore, is and must remain, safety”*, declared the founders Assar Gabrielsson and Gustav Larson.¹

Today the Volvo Group has more than 100,000 employees in 58 countries. After the sale of Volvo Cars in 1999, the group has focused on its commercial vehicles business. Trucks are a large part of that vehicle business. Volvo Group has acquired Renault Truck and Mack and the Japanese company UD trucks, and has established a joint venture with India Eicher to manufacture trucks in India. Other products include construction equipment, vehicles on site, coaches, buses and special marine and industrial engines.

Volvo is continually evolving new engine technology which reduces emissions, especially those of nitrogen oxide and particulate matter. The policy is that each new product developed should be more sustainable than the one it replaces. Volvo is also aiming to reduce the impact of its production operations by reducing energy consumption and CO₂ emission. In 2007, Volvo opened the world’s first carbon dioxide neutral automotive plant in Ghent, Belgium. The long-term ambition is to make all plants CO₂ neutral. *“This is not an easy undertaking”*, said former Volvo CEO Leif Johansson,² *“but we are prepared to try different alternatives to achieve our goal for CO₂-free production in our plants”*.

For the Ghent plant, it was decided to construct three wind power plants on the site. These supply half of the plant’s electricity requirements. The remainder is certified green energy supplied by the Belgium energy company Electrabel. A new pellet-fired biomass plant supplies 70 per cent of the heating requirements for the Ghent plant and energy for the combustion process is provided by solar cells on the roof of the building. The remaining 30 percent is provided by an oil-fired boiler converted to burn bio-oil. The Ghent plant has an annual production of 35,000 trucks and employs 2,500 people. Other plants including truck plants in Gothenburg, Tuve and Umeå, all in Sweden, have followed or are preparing to follow the Ghent example.

Even during the world financial crisis of 2008, Volvo did not reduce investment on R&D in environmental protection. The company reduced spending on advertising, travel and promotion, focusing instead on its three core values, quality, safety and environmental protection. Annually, 3-4 per cent of the group’s sales are invested in R&D, and most of this R&D investment has been focused on improvements in engines and engine-related technologies and in alternative fuel sources.

Volvo’s Diverse Business Development in China

Volvo entered the Chinese market by establishing a representative office in Beijing in 1992. At the end of the 1990s, corporate investment in China was strengthened and joint ventures were established. Today Volvo China is a very diverse business with nearly 5,000 employees.

Although the truck business accounts for the part of the Volvo Group’s global business, in China the strong local demand for basic infrastructure construction means that construction equipment accounts

¹ Volvo is famous for its high safety standards. Owners are proud of achieving high mileage; one well-documented 1966 Volvo P1800 has been driven over 2.8 million miles, a Guinness World Record for most miles driven by a single owner in a non-commercial vehicle. According to some figures, the average age of a Volvo at time of being scrapped is 19.8 years (second only to Mercedes).

² Leif Johansson left Volvo in September 2011.

for more than 80 per cent of Volvo's business there. In Shandong Province, Volvo invested in the local company Shandong Lingong Construction Machinery. The plant in Shanghai employs 430 people and manufactures excavators. Since establishment in 2003, capacity has increased fourfold from the original design. Volvo also has a wholly owned production factory in Shanghai Pudong, a joint venture enterprise in Linyi and a production base in Shandong Lingong. The plant in Linyi employs 220-230 people and produces road-building equipment.

Robert Li, General Manager and Vice President of Operations for Volvo China, explains that Volvo chose to set up plants in and near Shanghai because the infrastructure and logistics systems were better developed there than elsewhere in China, and there was also a 'talent pool' of potential employees. "In terms of cost, Shanghai was not expensive at all", he says.

In addition to the 3 construction machinery plants, Volvo has two joint venture companies engaged in bus production in China: Silverbus, based in Xi'an and making long-distance coaches, and Sunwin bus, based in Shanghai. Volvo Penta, which also has its factory in Shanghai, makes and sells industrial and marine engines. The truck business consists mostly of a sales office located in Beijing, though there is a joint venture company part-owned by Volvo subsidiary UD Truck in Hangzhou. There is also an R&D centre in Jinan, Shandong and a purchasing centre in Shanghai. This case focuses on the construction machinery, as it is the largest and most important part of Volvo China's portfolio.

Volvo China's Environmental Solutions

For all of its plants in China, Volvo has set very high sustainability standards. It is a general rule that even in joint ventures all members of the Volvo Group must meet corporate environmental protection standards. These standards are higher than those set by the Chinese government.

Volvo Group has a special organisational system consisting of Business Areas and Business Units. Business Areas working face-to-face with customers. "These include truck brands such as Volvo Truck, Renault and UD Truck", explains Stella Ye, Chassis Group Purchasing Manager. "Apart from the truck brands, we also have Volvo Construction, Volvo Bus, Volvo Financial Services and Volvo Penta, all of which also face end users. Each of these is a Business Area." Volvo Business Units are responsible for supporting the Business Areas through the 3Ps, product development, product planning and purchasing. Stella Ye, for example, is in charge of supporting all product development and product R&D related to truck brands, including costs and the choice of suppliers. Volvo has also had a Quality, Environment and Safety (QES) department which includes specialised engineers responsible for solving problems. If any problem cannot be solved in-house, Volvo will seek help and cooperation from environmental institutions.

As part of its vendor evaluation process, Volvo focuses strongly on environmental protection. Volvo is one of the first truck companies to require suppliers to provide environment-related certification for areas such as energy saving. If suppliers cannot provide certificates, Volvo asks them to provide action plans and confirm when they will reach certification. Volvo also asked suppliers to do environmental self-assessment. "Environmental care is an important part of our mission. If a potential supplier cannot meet our requirements, then we will not choose him as a supplier", says Stella Ye.

Volvo China is noteworthy for three particular types of innovation in recent years. These are (1) innovations in logistics to reduce CO₂ emissions; (2) innovations in packaging to reduce waste.

Innovations in logistics to reduce CO₂ emissions

*Volvo global practice in packaging: Volvo emballage*³

The fundamental solution to the above challenges lies in the implementation of a standardized system in logistics (e.g., packaging, certification, ICT and best practice like milk run). Among them, standardized packaging poses the greatest challenge but could have a great impact on environment. Volvo has been attempting to implement the standardized packaging in China since its first entry into China.

Volvo has been an innovator in packaging since the 1950s. At that time, Volvo truck and car plants were individually responsible for packaging with a special department to manage the recycling of packaging. Volvo Logistics has since taken on responsibility for all packaging and now uses a waste reduction system called ‘Volvo emballage’ which uses recyclable wooden pallets.⁴ Emballage may be stored in Volvo’s major plants and by suppliers in different countries. After those emballage are transported to the plants, they can be either returned or reused. If the plants want to continue using the emballage, they can hire them from Volvo Logistics China. In this way, suppliers will not have to use additional carton packaging. “This is an obvious example of Volvo’s environmental protection and emissions reduction procedures”, says Stella Ye. “Originally, the making, scrapping and disposal of wooden boxes all had costs, and all had an impact on environment. Emballage is cheaper. But the positive impact on environment is more important than cost.”

Emballage system is described as follows: planar dimensions of packages are designed according to the product. For each component, there is a corresponding detailed standard packaging specification. If it is a big product, the planar dimension of the package would be twice that of the pallet. If it is a small part, the planar dimension could be one-half, one-quarter even one-eighth that of the pallet. This design is convenient for stacking. The height of the packaging is also very flexible. Normal plastic boxes are all rectangular, but Volvo plastic boxes are trapezoidal, which makes them easier to warehouse and transport. This reduces delivery costs and maximizes use of the storage space. Volvo packaging can be circulated and used globally, which saves on packaging materials.

The situation in China: logistics challenges

Logistics in Volvo China comprises three major activities: warehousing, delivery and land transportation. The company uses agents for the importation of raw materials, and logistics is only responsible for delivering parts to the factory. Volvo China has its own fleet of vehicles to deliver to the various sites. After being repackaged, finished products are shipped. “We’ve got the logistics planning capacity in-house but outsourced operational activities.” says Lansi Jiang, Vice President for Corporate Communications and Brand for Volvo China.

Volvo Logistics is the subsidiary of the Volvo Group which provides automotive logistic services to internal and external departments. Volvo China Logistic Services is divided into three areas of activity. One is “inbound logistics”, the delivery of parts from suppliers to Volvo. The second is “outbound logistics”, the warehousing and logistics of the whole vehicle and related items. The third one is “recyclable packages”. This packaging system uses wood, metal or plastic packaging which can be recycled many times and circulated globally. Volvo China Logistics Services has its headquarters in

³ ‘Emballage’ is a Swedish word which means ‘pallet’.

⁴ In Swedish emballage literally means pallet.

Shanghai with offices in Beijing, Linyi and Chongqing. It employs around fifty people, most based in Shanghai.

Ying Wang, Purchasing Manager of Volvo Logistics China who was in the Volvo China packaging department from 2004 to 2009, explained that “Although we are the Logistics Company within the Volvo Group, we do not handle real logistics operations such as shipping and air transport. We have such departments as customs, risk management, accounting and finance, but otherwise we outsource to professional transportation companies. My job is to purchase these transportation services.”

In Volvo, Packaging is distributed to suppliers according to their requirements. If the suppliers want to continue to use the packaging, they in turn can package parts to delivery to the assembly plants. If the packaging is no longer needed, it is sent back to Volvo’s warehouse.

In China, Volvo found that some of its suppliers were not totally comfortable with Volvo’s packaging system. Volvo China does not charge for its packaging but suppliers have to guarantee that company’s packaging will be stored and operated in the right way to avoid excessive loss and damage. To find effective solutions and to solve problems, Volvo China assigned a quality inspector. If a supplier makes many mistakes, the inspector will visit more frequently in order to assess the situation and provide training. Volvo tries to improve suppliers’ operational procedures step-by-step and explains what benefits they might gain by using Volvo’s packaging.

We take an example from one of the suppliers to the Volvo Construction Machinery Plant in Linyi. This supplier is relatively small; it manufactures cast iron parts and welding components. The component it supplies is not particularly large but is quite heavy. Volvo China invited this supplier to its premises to explain the procedures. As Ying Wang stated:

During the early stages of the process, it seemed there were no problems. They came to learn how we operate, and then we sent the packaging according to the agreement signed. During the trial period, everything was fine. However, after a few months, we found that the packaging came back from this supplier was suffering very high damage rates, more than maximum limit we had expected.

To solve the problem, Volvo China sent inspectors to the supplier’s factory. The inspector discovered that some of the operations including parts loading had not met Volvo’s requirements. As the weight of a single part was relatively high, the packaging was more likely to be damaged during loading. The inspectors listed all the improper operations and gave suggestions. As a result, performance improved and damage rates declined.

The underlying reason for the difficulty detailed in above story lay in the fact that the logistics standardisation level in China was very low including the standardisation of wooden and plastic packaging (some suppliers used their own packaging) and the standardisation of loading them into trucks. Volvo had to train workers and suppliers on how to use the packaging more effectively. Assembly workers felt uncomfortable with the changes. “In the EU and USA the level of standardisation is high, but this is not the case in China. We have to educate one supplier after another. This is time-consuming and difficult to do. This is the biggest challenge we face in packaging”, says Ying Wang.

More generally, packaging is a societal issue for Volvo China. When the Volvo Group starts working with a new supplier in Europe, the company might find out that this supplier collaborates also with

Mercedes and Evco. Those companies have their own requirements for standardisation, which may be different from Volvo. Volvo would then invite a number of suppliers to sit down together and talk them through corporate requirements and procedures. In Europe, Volvo has fewer than 60 people managing 2700 suppliers. However, in China the same principle does not apply. Volvo needs not only to invite suppliers to its own plants but also go to visit them at theirs. “We couldn’t disseminate standardisation among so many suppliers. We simply don’t have enough people to do this. That’s why it is difficult to implement in China”, says Ying Wang. “There is a huge gap between Europe and China. In China, we only have over 70 suppliers that use this packaging. We only spread this to 10-20 suppliers per year. When the plant in Linyi was relocated, we had to implement our procedures among 18 suppliers. It took us a year and a half to reach the level we expected.”

Related to the standardization of packaging, there is a low level of standardization of logistics industry practice in general. Volvo China found there is a big issue on the route set and on time rate implementing milk-run (regular collection and delivery from suppliers). Since as road conditions in China are difficult to predict, traffic jams make punctuality difficult. Also, suppliers’ on time stocking rates tend to be low. If vehicles go to pick up the parts but the supplier is not ready yet to hand them over, this affects the pickup from the next supplier. To encourage ‘on time delivery’ Volvo China applies special local penalty rates. For example, the company tell suppliers that “if you cannot deliver on time and affect our production, we would charge you for example eight thousand yuan per minute or 1.5 million per hour”. Yet there are still large numbers of delays.

A second challenges lies in the Internet interface system. Suppliers need a user password to log into the system. They can then search the information they want, make orders and exchange inventory information. When they are ready to deliver, they can input data through this internet interface. However, since the Volvo interface is designed in English, Chinese suppliers encounter communication problems. Volvo experience shows that for those suppliers who are at a low level of English comprehension, it takes around half a year to understand all the functions.

The last but not the least challenge is related to the compliance with international quality, safety and environmental certification let along Volvo’s. Very few Chinese suppliers can reach the standards set by Volvo. For example, Volvo requires its European suppliers to have ISO 9000 and ISO 14000 certificates and have special requirements for suppliers’ trucks and emissions. Volvo’s suppliers all have monitoring system and then provide the Volvo Group with their emission reports regularly. This way, Volvo can ensure that they can work together to reduce CO₂ emission. Some Chinese companies can achieve ISO 9000, but very few can address ISO 14000. “If you talk to Chinese suppliers about emission reduction, they treat it as a joke. They have no idea about how much emission they even produce now”, says Ying Wang.

Volvo gives its suppliers time to achieve certification in China. As long as a supplier can achieve the certification at some point Volvo will sign a contract, because the company is aware that many suppliers actively apply for ISO certificates only after they have signed contracts. But this has still been a major challenge for Volvo. As part of finding a solution, Volvo is doing a pilot with a Chinese supplier requiring daily reporting on the supplier’s mileage, fuel consumption and load capacity to calculate its CO₂ emission. If this project proves successful within two years then Volvo will gradually apply this policy to other suppliers.

China solution for packaging

The recycling of cartons and non-metal waste was another important environmental issue in the early days when Volvo started penetrating into China's market. Before 2009 there were lots of parts coming from overseas, which needed to be unpacked. The discarded packaging included cartons, iron sheet, timbers and plastics, which were treated as solid waste. This contradicts to one of Volvo's three core values: protection for the environment. "Environmental protection is our responsibility", said Robert Li.



But now we have used returnable racks for domestically manufactured parts since 2009. The racks are made of metal and have wheels, conducive to movement on site. For example, pipes can be put either in wooden crates or in cartons. These items of packaging were formerly removed and treated as waste. We realised that if we used returnable racks, we could put the pipes on the racks and send them to the plants. The racks could then be returned to suppliers after use. We didn't need packaging at all, described Robert Li.

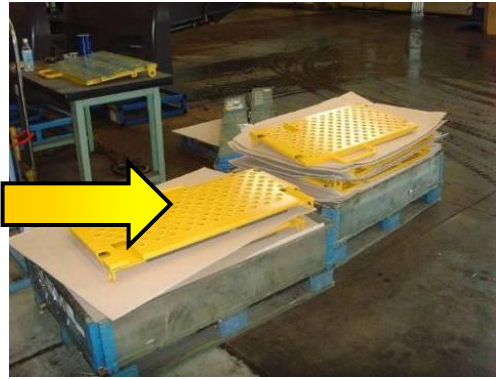


This approach to packaging had a number of impacts on the company. For example:

- The trucks used to transport the waste for recycling produced CO₂ emissions. The packaging waste also occupied space when being stored while awaiting recycling, thus reducing warehouse and site efficiency.
- The disposal of waste incurred costs in terms of human resources.
- Packaging increased the space occupied by parts at

the warehouse, and there were also labour costs involved in removing the packaging.

In order to reduce unnecessary packaging or get rid of packaging completely, after careful assessment and research Volvo China came up with an effective solution. Solid waste packaging was replaced with returnable (tote) racks, which comply with the parts protection, movement and production rules and remove waste completely.



Guided by this principle, Volvo China set up a returnable shelf improvement team with members from engineering, logistics, purchasing, quality and production. They used parts manufactured by local suppliers to test this idea. The purchasing department communicated the packaging requirements with parts suppliers. The suppliers and Volvo China engineering staff then worked together designing the tote shelf and slip groove for different parts to make sure the racks could protect the parts during transportation. The newly designed racks were then tested for their feasibility and the effectiveness.



Cooperation with WWF ‘Climate Savers’



Volvo signed agreements with WWF and became a ‘Climate Saver’ in October 2010. Currently, there are four brands of trucks within the Volvo Group who have entered Climate Savers. The next step is to add Volvo’s construction machinery business to the project. This decision policy of carbon reduction at plants around the world, referred to earlier. “This is going to be a huge investment. To create a zero emission plant needs vast investment”, comments Lanshi Jiang.

Volvo has also worked hard to increase employee and public awareness. For example, Volvo IT has developed special software which can be connected with staff mobile phones to calculate their daily carbon footprint. At the 2011 Auto Show in Shanghai, Volvo China distributed small gifts to promote the idea of carbon emissions.

Impact on societies: educating customers

The 2011 Volvo Trucks Fuelwatch Competition Final Award Ceremony was held at The Palace in Beijing on August 27, along with the Volvo Trucks Family Day carnival-themed “Environmental Protection” drive. During the event, Volvo Trucks officially announced that Chinese customers now are welcome to order trucks equipped with Volvo’s state-of-the art Euro IV engines. This industry-first

announcement yet again emphasizes Volvo Trucks' commitment to China – to promote a healthy and sustainable development of the Chinese transport and logistics industry.

Volvo Trucks is the first commercial vehicle company to conduct such an event to popularise advanced technology and product, including energy-saving and hybrid technology. In addition, fuel-efficient driving and the concept of environmental care were also promoted amongst drivers and logistics companies.

The Volvo Trucks Fuelwatch Competition advances drivers' skills and supports them to achieve optimum fuel consumption, thereby allowing customers to improve efficiency and strengthen their economic returns. Since its debut in 2009, the Volvo Trucks Fuelwatch Competition has been widely recognized across the Chinese truck industry for its energy-saving efforts and humanitarian care for drivers.

In 2012, the Volvo Trucks Fuelwatch Competition reached a record level of participation. In the first five months, almost one thousand drivers from around the country were involved in more than 40 training programmes. Peng, Chunlei from Beijing Botong Meida Logistics Ltd. won the championship and will represent China in the world championships in Sweden which this year will be held on October.

As one of the core values of Volvo Trucks, environmental care and the importance of the same is the lasting message of this event. Volvo Trucks not only shared advanced technology with the public, but also called for community efforts for a low-carbon life. Volvo Trucks believe that close connections among individuals, family and society can stimulate an eco-friendly environment and a green community across China.

Volvo Trucks is aware of the environmental impact transportation and logistics can cause and it has made significant efforts in different areas to lead the industry in a more eco-friendly direction, including total transport solutions, driver training programmes and R&D of new-energy products.

As an expert on road transport, Volvo Trucks has adopted a "Total Transportation Solutions" strategy in China since 1999. This is a sophisticated programme to improve the efficiency of logistics, including consulting, maintenance and training. The promotion and application of eco-friendly technology and concepts are among the solutions. Volvo Trucks is the field leader in the research and development of hybrid and fuel efficiency products, and has achieved good results. In some developed countries, Volvo Trucks has already started to market Euro IV and V products. With the entry of its Euro IV products in China, Volvo Trucks' total solutions will gather pace in the market.

Mr. Joachim Rosenberg, President of Volvo (China) Investment Co., Ltd, said at the event: "Environmental care is one of our three core values at Volvo Trucks and it has been this way for almost 40 years already. We do not shy away from that our industry is a part of the global greenhouse gas issues and therefore it is even more important for us as a company to be part of the solution. When it comes to fuel consumption – for us at Volvo Trucks – every drop counts. During events like this, it is usually the trucks, engines and transmissions that get all the attention and we are of course proud of the fact that we have the most efficient vehicles on the market. More importantly, however, we have also created a holistic approach based on the customer's operations covering big and small ways of achieving fuel savings. This is good for the customer, for the environment and for the society. Our Fuelwatch competition, run for several years now across all major Asian countries, is just one example".

The event was a journey into experiencing Volvo Trucks culture, showing the public Volvo's core values of "Quality, Safety, Environmental Care", and their connotations. Interactive activities were designed for the public to learn more about the close relationship between trucks and humans regarding safety, the environment and daily life.

Volvo Trucks Drivers Club invites its members and their families to experience the program and to help them better understand drivers' work and values. Volvo Trucks wants to spread its green ideas all through society, to form a greater force in environmental protection which will require everybody's contribution.

Mr. Eric Labat, President of Volvo Trucks in China said: "In the last years, we have developed this approach in China and we can proudly say that we are one of the industry leaders. Volvo has a very clear strategy, a long-term commitment and high ambitions concerning the booming Chinese market. Our idea is to work with government and transport companies to realize sustainable development in R&D, manufacturing, application, and recycling. We hope that more and more people will join us as we try to build a brighter future for us all".

Volvo China Sustainable Innovation: Barriers, Enablers and Lessons Learned

While introducing sustainable innovations in China, the Volvo Group encountered a number of different barriers and enablers. Some of them have already been described. As Lansi Jiang sums up:

Supply chain members, scholars and experts need to work together to get things done. Industry associations in China are also considered part of the government. Media are also important, because they are channels to promote good practice. Industry associations are more willing to elect the greenest company and greenest products and assume positive roles to promote environmental protection activities. Furthermore, China's Development and Reform Commission (CDRC) and Ministry of Commerce will make plans according to domestic situation.

The challenges are relatively small. One is the rigid standard of "you have to do this". Volvo's core value (protecting the environment) has already "melted in members' blood" according to Lansi Jiang. In each process, from raw material to manufacturing, this value is always present in all Volvo people's mind. Thus from the mindset point of view, there is very little resistance. Also important is the fact that in recent years the Volvo Group has developed steadily, both in China or globally. This means that Volvo has the financial resources and capabilities to invest in environmental protection activities.

One of the lessons learned so far by Volvo is that everybody needs to be committed. Volvo has put it a lot of resources as part of a strategy to implement. In doing so, Volvo has provided more promotion and education at employees' level and suppliers' levels to increase environmental awareness. It is not a verbal commitment; Volvo takes action and supplies much investment. There is also a realisation that, in order to address its environmental targets, the Volvo Group has to operate efficiently and effectively; otherwise there would be no enough capacity and financial resources to meet the targets.

Perhaps surprisingly, one factor that favours Volvo in China is, as Yun Jiang, WWF Climate Savers Senior Programme Officer puts it, "some of the elements [such as protecting the environment] are in the blood of Nordic companies. You feel that they are not only financially successful, but are also investing a lot on environmental protection. This is sometimes what you don't understand from an Asian perspective as it is not the priority."

Lansi Jiang echoes this view.

Sometimes you will feel they have done too much. But if you stay in a Nordic country for some time, you will understand. When President Hu Jintao of China visited Sweden, he insisted visiting Volvo with two questions: first why does a small country like this have so many companies listed in Fortune 500? Second, in a small country like Sweden, how has it been possible to invest so hugely on environmental protection and achieve so much?

When you visit these countries, you'll find the people there are so natural. They lack of natural resources and many would find their living environment to be harsh. Therefore they cherish the resources they have. Second, they have such a small population. Once a company is set up, the first thing on their list is exporting as they don't have a large home market to appeal to. So the spirit of Viking pirates is in their blood. They don't think doing environmental protection is something extra. They want to do this from the bottom of their hearts. They think this is how this should be done.

However, Vicki Ni warns of another barrier. "Being environmental friendly is one of big advantages of our products and a unique selling point. However, in China we have also met a lot of price competition. If we want to reach a strict environmental protection standard, the price of our products would surely have no advantage in comparison with domestic products."

....and the last word....

Lansi Jiang recollects a well-known saying by a former Volvo CEO:

We do manufacture automotives and may have an impact on environment and carbon emissions. We are part of the problem, but we also want to be an active player in solving the problem. Of course, we hope that we can influence government through our work. Government should provide some incentive policies such tax benefits to the customers who are willing to purchase environmental friendly products. After all, the costs of environmental friendly products are very high. Although our truck may save 30 per cent in fuel, the price also increase by 20 per cent, even 30 per cent. So, to encourage investment in environmental friendly products, I think some positive policies should be introduced in China.