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You can find TeliaSonera Group's sustainability report at www.teliaSonera.com/en/sustainability/reports/

*The following companies are part of TeliaSonera Sweden: Cygate AB, Sergel Kreditjänster AB, Svenska Stadsnät AB, TeliaSonera Finans AB, TeliaSonera International Carrier AB, TeliaSonera Network Sales AB, Skanova Access AB.



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**THIS IS WHAT
SUSTAINABILITY MEANS
TO TELIA**

For us, sustainability means developing the business and generating growth, both for ourselves and for our customers, by taking responsibility from an overall perspective – i.e. financially, environmentally and socially.

Good isn't enough – we want to be best!

WHEN SCANDINAVIA'S largest sustainable brands survey, the Sustainable Brand Index, was presented in 2013 we saw that Telia had been voted the best company in the telecom sector for the third consecutive year.

Naturally we're pleased, but if you ask me I'm far from satisfied. Because if we look at the entire list of Sweden's most sustainable companies, we're in 59th place. That's not good enough. Our aim is to become one of Sweden's leading companies in the area of sustainability.

So what can we do to achieve this ambitious goal?

The first thing we need to do is continue along the path we adopted at the end of the 1990s, when we took the decision to reduce our environmental impact by cutting our carbon dioxide emissions and our energy consumption. Since then we have seen our CO₂ emissions drop by 85 percent – and despite considerable expansion of both our communications network and server rooms we have in principle managed to maintain our electricity consumption at a constant level.

The second is to continue to cooperate closely with our suppliers and contractors, so that we can develop our sustainability requirements and they can improve their operations to come in line with those requirements.

The third is to be even more responsive to our customers' needs, while being more proactive and informing them about what they can achieve by using our services. We have access to facts about the impact of IT and telecommunications services on the environment. We have knowledge and experience that we want to share to inspire our customers and make life easier for them – and for their customers.

Last but not least, we need to continue to provide professional development opportunities for our employees and create an environment in which they enjoy working, in order to retain staff and attract new employees. For example, in autumn 2013 all our employees underwent training in our code of conduct.

In the 2013 Sustainability Report* for our Swedish operations you can find out more about how IT contributes to tomorrow's sustainable society, and be inspired by seven good examples of sustainability initiatives in our business.

Happy reading!
Catherine Karagianni
Environment Manager
TeliaSonera Sweden



Catherine's three success factors for sustainability work

1. Draw up a long-term vision and strategy for sustainability.
2. Successful sustainability work demands clear leadership.
3. Achieving results requires perseverance and patience.

* This report does not follow the GRI framework. We have chosen to report data on CO₂ emissions and travel volumes.



New infrastructure for new phase

Up until 2015, TeliaSonera Sweden is investing SEK15 billion in expanding and strengthening its mobile and fixed infrastructure through 4G and fiber networks. We want to get involved and take responsibility through this investment for building the new, sustainable Sweden, where everyone has access to new technology.

New ways of meeting

According to the EU Commission, IT and telecommunication services can reduce Europe's CO₂ emissions by up to 15 percent by 2020. One example is by replacing unnecessary travel with video conferences or teleconferences. Just to give you an idea of the kind of the potential we're talking about, a single flight from Stockholm to Gothenburg produces the same amount of CO₂ emissions as seven years of teleconferences. And we haven't even touched on the amount of time and money that can be saved.

TOMORROW'S sustainable society

The digital age is changing the whole of society from its very roots, and the technical revolution has the potential to create a more sustainable society for people as well as for companies and the environment. The list of sustainable effects is endless, particularly within areas such as schools, healthcare, the transport and construction industries, and energy consumption. **The common denominator is the need for a change in behavior – along with a fast and secure internet connection.**

Equal healthcare, wherever you live

Healthcare is an area with huge potential. The video-conferencing system Gertrud is already linking up Sweden's delivery wards with the country's top cardiologists, so that newborn babies across the country have access to the same level of care. An excellent example of tomorrow's opportunities happening today.

Opportunities for schools

The new digital world has the potential to completely transform our attitudes to knowledge acquisition, teaching materials and in particular, the structure of schools. New technology and new communication patterns help fuel educational development, make teaching more stimulating and most important of all, help pupils increase and improve their knowledge. A sustainability issue as important as any other.

Environmental gains with M2M communication

Environmental gains emerge as more machines become connected. How about power grids that switch to wind power when it's windy? Or cars that find parking spaces without spreading unnecessary exhaust fumes? Or houses that know when you're on your way home, turn on the outside lighting and adapt the indoor temperature. Or ...



THE FUTURE // The sustainable connected society

MALIN FRENNING is Head of TeliaSonera Sweden, and she's focusing all her efforts on building the new sustainable digital society.

COMMUNITY BUILDER

There's a change happening right now in the history of human development which is as far-reaching as the transition from hunter-gatherers to farming. As radical as the industrial revolution. **Malin Frenning** tells us more about this new phase in the sustainable digital society.



»It's about strengthening those technologies that make Sweden the best in the world at taking advantage of the opportunities presented by digitalization.«

In what way is Telia building the society of the future?

“In May last year we decided to make a multi-billion SEK investment in infrastructure. Up until 2015, we're investing five billion SEK a year in expanding and strengthening mobile and fixed infrastructure in Sweden. This move will make us one of the largest investors in Swedish infrastructure. It's about strengthening and developing those access technologies that are essential if Sweden is to be the best in the world at taking advantage of the opportunities presented by digitalization.”

What is the significance of connection in the digital society of the future?

“Fast connection such as fiber and 4G is a prerequisite for the digital society of the future. Communication is a vital feature of society, and our customers all over the country are making demands regarding digital communication. They want services that work and we know that in order to create them, we need increasingly high capacity. It's an issue that is critical to the business – without satisfied customers, we don't exist.”

How is this contributing to sustainable social development?

“There is immense power and potential in IT and telecommunication services. According to the EU Commission, IT and telecommunication services can reduce carbon dioxide emissions within the EU by up to 15 percent by 2020. We

already have experience of this from our own efforts. We have reduced our carbon dioxide emissions by 85 percent since 2001, and travel expenditure has dropped by SEK 240 million on an annual basis as a result of greater use of IT services.”

Are you seeing a demand for these services among customers as well?

“Yes, we're clearly seeing that many of our customers are beginning to change their way of organizing their working day. IT and telecommunication services are eradicating physical distances and allowing people to meet without wasting time and money on travel. Increased efficiency saves time, money and the environment. But sustainability isn't just about savings, it's about identifying those areas that offer your company and your customers the greatest leverage.”

Which sectors will gain the most benefit from IT and communication services in the future?

“Healthcare and schools are two areas with great potential. It's already happening. Elder care in Bromma has improved its logistics through video conferencing. The patient receives comprehensive information and healthcare personnel and relatives can be involved via remote access. Patient welfare is at the

centre and the system gives personnel more time as they avoid having to move from A to B. Another example is job centres, which have actually come closer to job seekers by introducing unmanned offices with video equipment. Time that would have been wasted on travel is instead used for offering advice, so staff are available to help and support more people.”

What effects are you seeing for people and the environment in the digital society?

“I'm seeing a vast number of important effects. We can work in a more flexible way, where we are, as long as we have access to information and an internet connection. We can reduce travel and transportation by meeting and sharing information digitally. That means less impact on the environment, as well as saving

time and money for the

companies and

organizations for which we work.

I'm also convinced that the digital society helps boost gender equality and democracy by

providing information and promoting an

open dialogue. At the same time it's important for everyone

who has access to this kind of technology to also learn to switch off and create a work-life balance in their own lives.” ■

MORE
about Telia's SEK 15-billion investment in the expansion of 4G and fiber on the next page.

How Telia is building

THE NEW SUSTAINABLE SWEDEN

Sweden has long had an infrastructure of world class. But it's well on track to becoming even better. **We're helping build a sustainable future society with a multi-billion Swedish kronor investment in 4G and fiber networks.**

THERE WAS A TIME when roads, bridges and railways were the most important building blocks in Swedish infrastructure. But the new digital age requires another type of investment to maintain and develop infrastructure.

Digitalization is happening all around the world, with the potential to create a more sustainable society for people, the environment and companies as well. To take one example, IT and telecommunication services as virtual meetings can cut unnecessary travel, saving time and money for people and companies – and benefitting the environment by reducing emissions of greenhouse gases.

Another example is the development of machine-to-machine solutions (M2M). As communication between machines becomes increasingly sophisticated, the effects will include more intelligent goods transportation and increased efficiency in the power grid. According to a report from the Carbon War Room, M2M technology has the potential to reduce global emissions of carbon dioxide by 9.1 gigatons a year. That's the equivalent of 18.6 percent of carbon dioxide emissions in 2011.

The list of sustainable effects resulting from this new technology

is endless. The common denominator is fast and secure internet connection.

IT STANDS TO reason that Telia should be involved in this process and promote developments. That's why we're investing SEK 15 billion in mobile and fixed connection through the expansion of the 4G and fiber networks.

"We are strongly committed to social development and are keen to be involved in promoting the digital agenda. One way that we can do our bit is to offer all Swedes access to a good internet connection," says Ulrika Steg, Head of Mobility Services Sweden at Telia.

The investment, which extends over three years, is focused on upgrading networks across Sweden. In 2014, 99 percent of the Swedish population will have access to 4G where they live. By 2015, the 4G network will cover more than 90 percent of Sweden's surface area.

"We want to lay the ground for

people. Everyone is entitled to a good connection. Both companies and individuals rely heavily on the internet and they want to be able to communicate wherever and whenever they want, using the method of their choice. You should be able to use the internet no matter where you live in Sweden," says Ulrika Steg.

INVESTMENT IN THE fiber network is continuing alongside the expansion of the 4G network. Forecasts indicate that internet traffic will quadruple between 2010 and 2015. The expansion of the fiber network will respond to this development.

"There are two things that the telecom industry is bad at. The first is predicting how much bandwidth is required, because we always need more than we think – and at the moment, fiber is the technology that offers the most bandwidth," says

Linda Hernström, Head of Business Management, Telia Fiber Business. She adds:

"The second is predicting what the



»We are strongly committed to social development and are keen to be involved in promoting the digital agenda.«

Ulrika Steg, Head of Mobility Services Sweden at TeliaSonera



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BILLION

Telia's billion-SEK investment in infrastructure

In May last year TeliaSonera's board decided to make a multi-billion SEK investment in infrastructure. We're investing five billion SEK a year in Sweden over three years up until 2015, making us one of the largest investors in Swedish infrastructure. The investment includes the expansion of, and improvements to the 4G and fiber networks.

bandwidth will be used for and the new opportunities for companies, individuals and society. I don't think we're capable of imagining all the possibilities that will open up in the future as a result of digitalization."

Linda Hernström highlights the video-conferencing system Gertrud as an example of opportunities emerging in the new digital age.

Gertrud links Sweden's delivery wards with the country's two specialist hospitals for pediatric cardiology, which are in Stockholm and Uppsala. When the expertise available at the specialist hospitals is needed in other parts of the country, Gertrud is used to save lives.

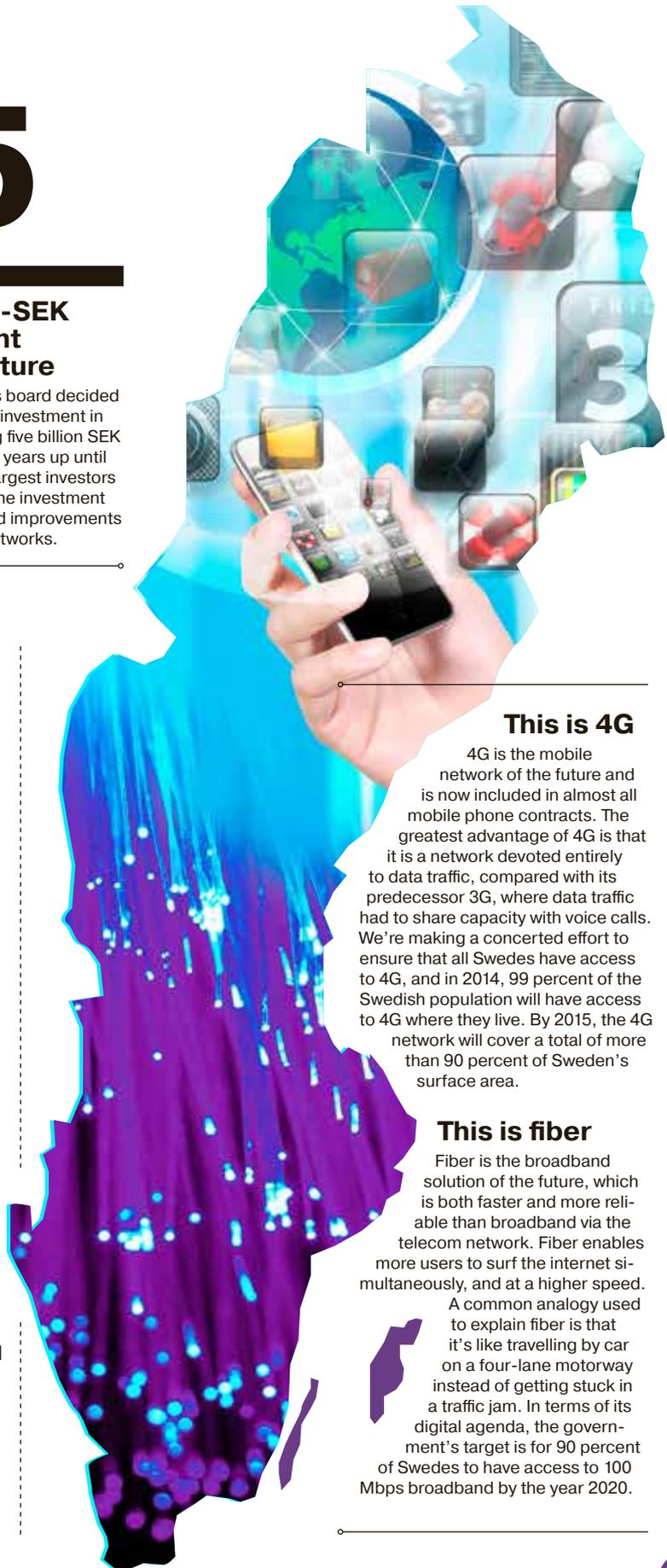
"It's not only in Stockholm and Uppsala that babies are born with heart conditions, but Gertrud means that wherever you live in Sweden you can still have access to

the best healthcare. This type of solution would not have been possible without a fast and secure connection." ■



»I don't think we're capable of imagining **all the possibilities that will open up in the future as a result of digitalization.**«

Linda Hernström,
Head of Business Management,
Telia Fiber Business



This is 4G

4G is the mobile network of the future and is now included in almost all mobile phone contracts. The greatest advantage of 4G is that it is a network devoted entirely to data traffic, compared with its predecessor 3G, where data traffic had to share capacity with voice calls. We're making a concerted effort to ensure that all Swedes have access to 4G, and in 2014, 99 percent of the Swedish population will have access to 4G where they live. By 2015, the 4G network will cover a total of more than 90 percent of Sweden's surface area.

This is fiber

Fiber is the broadband solution of the future, which is both faster and more reliable than broadband via the telecom network. Fiber enables more users to surf the internet simultaneously, and at a higher speed.

A common analogy used to explain fiber is that it's like travelling by car on a four-lane motorway instead of getting stuck in a traffic jam. In terms of its digital agenda, the government's target is for 90 percent of Swedes to have access to 100 Mbps broadband by the year 2020.

7 SUSTAINABLE EXAMPLES from our Swedish operations

What do reduced CO₂ emissions have in common with offering young adults a chance to enter the labor market? And how are climate-friendly cooling systems for data centers linked with ground-breaking commercials for young people?

Since sustainability is an umbrella term covering social, financial and environmental accountability, the answer is that they are all different sustainable examples from our Swedish operations. **In this section of the report you will find seven good examples that are contributing to a more sustainable society in one way or another.**

CO₂ emissions

We reduced our emissions by 85 percent between 2001 and 2013 by replacing physical meetings requiring a lot of travel with teleconferences and video conferences, relying exclusively on green electricity and encouraging our employees to adopt a flexible and efficient approach to working.

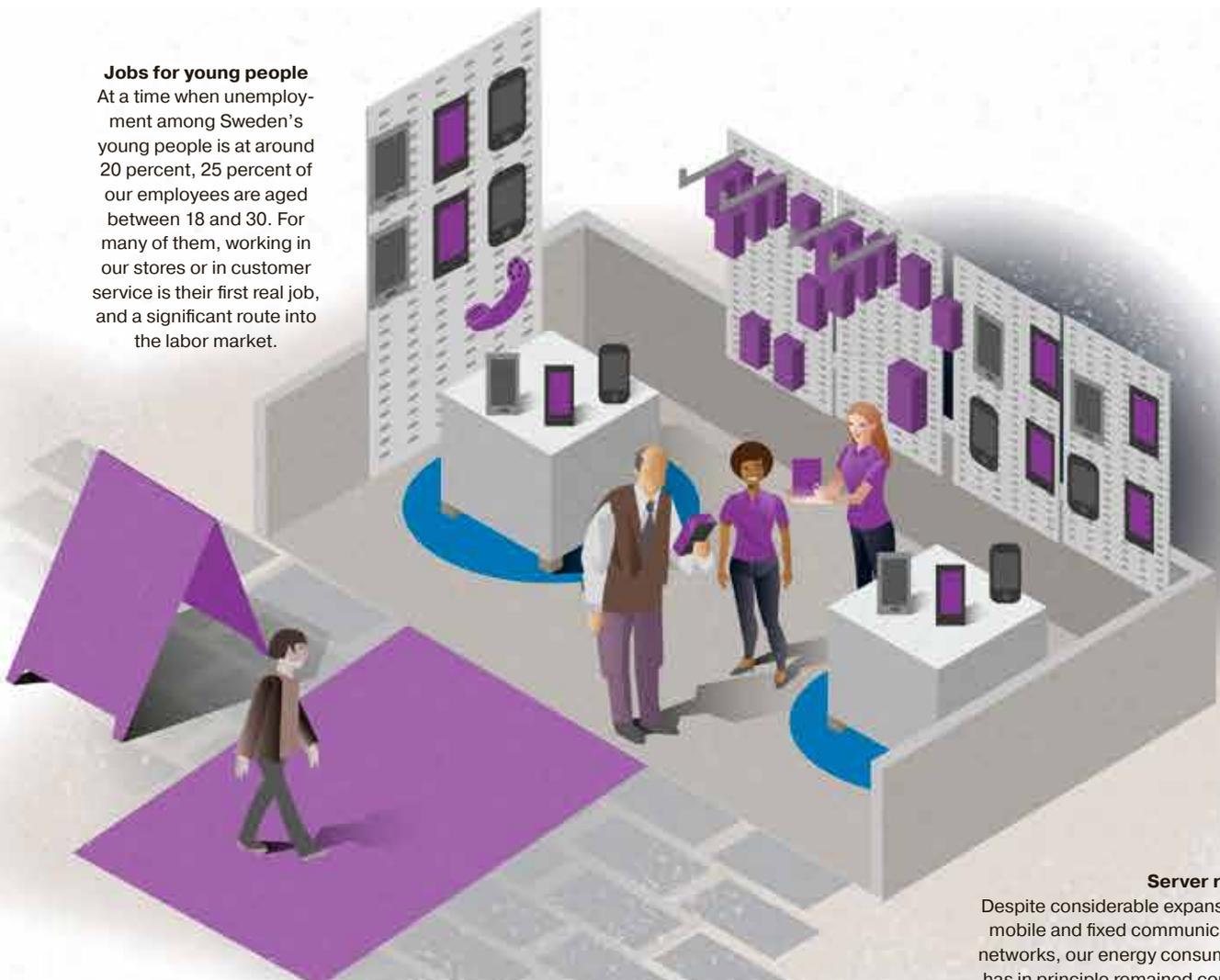


Halebop

Halebop's high-profile commercials challenge tough stereotypes about young people with warmth and kindness. For example, the film in which a young male hockey player is congratulated by his teammates for being together with his boyfriend for a year.

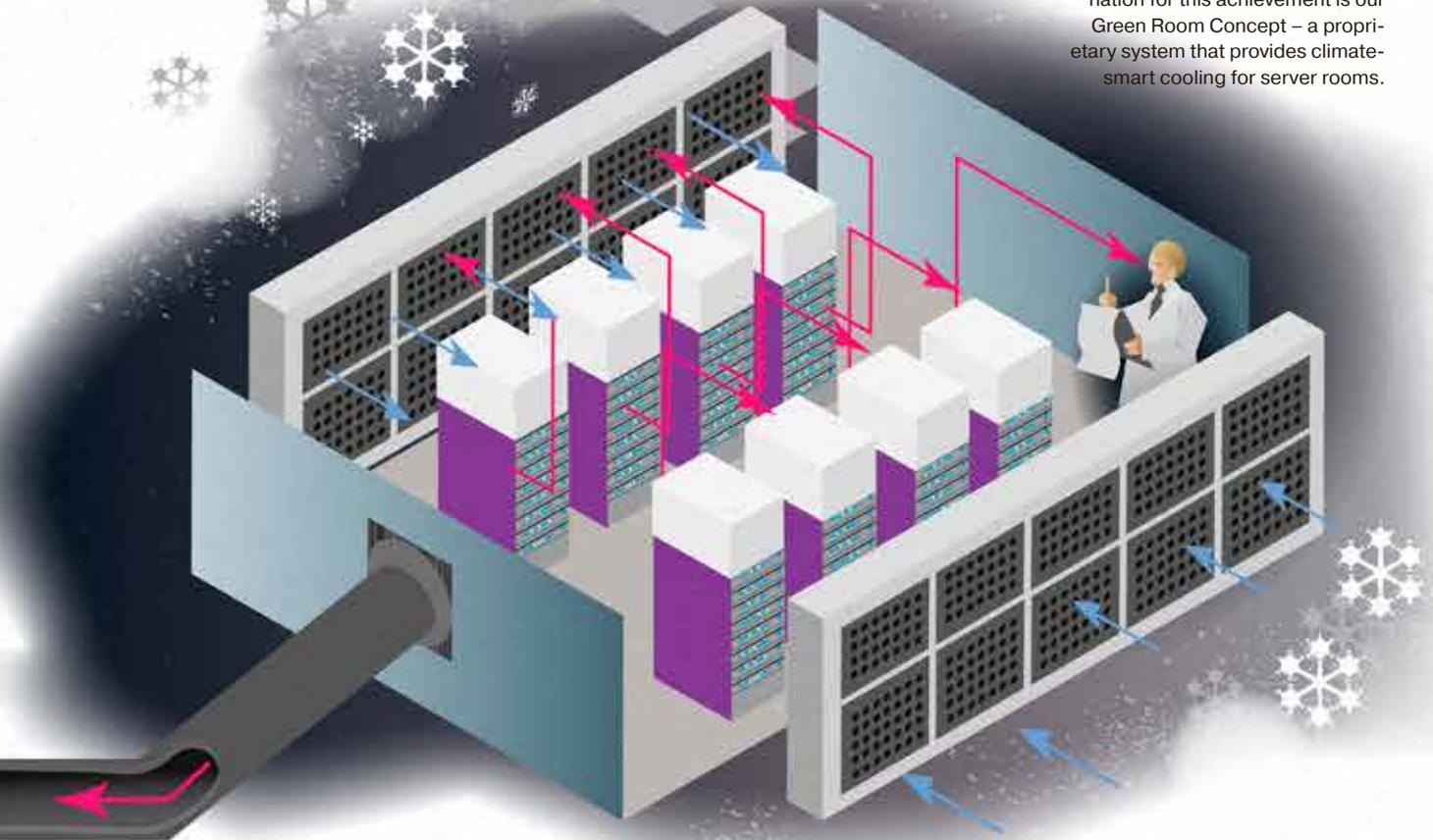
Jobs for young people

At a time when unemployment among Sweden's young people is at around 20 percent, 25 percent of our employees are aged between 18 and 30. For many of them, working in our stores or in customer service is their first real job, and a significant route into the labor market.



Server rooms

Despite considerable expansion of mobile and fixed communications networks, our energy consumption has in principle remained constant over the past ten years. One explanation for this achievement is our Green Room Concept – a proprietary system that provides climate-smart cooling for server rooms.



SUSTAINABLE EXAMPLE 1 // Reduced CO₂ emissions



GOOD FOR THE ENVIRONMENT!
4 flights/employee in 2013 compared with 12 in 2001 = less CO₂ emissions.

GOOD FOR PEOPLE!
22 video and teleconferences/employee in 2013 compared with 7 in 2001 = less travel time, more time for other things.

GOOD FOR THE COMPANY!
SEK 6,764 in travel costs/employee in 2013 compared with SEK 23,823 in 2001 = better financial sense.

The environment. The people. The company.
EVERYONE'S A WINNER

Green electricity, virtual meetings and a more effective way of working.

Since 2001 we have reduced our carbon dioxide emissions by almost 85 percent – and saved billions of Swedish kronor at the same time.

IT'S 1997. Telia is carrying out an environmental assessment to find out exactly how the company can reduce its environmental impact while at the same time boosting business. Two areas are identified that are of particular interest: cutting back on unnecessary travel and reducing electricity consumption. While the first area would require a major transition, the second was resolved fairly simply by switching to electricity with the Good Environmental Choice ecolabel.

"We have been one of the largest buyers of Good Environmental Choice electricity in Sweden since 2005. We only buy green electricity, which means that our carbon

dioxide emissions from electricity consumption are zero," says Dag Lundén, Environmental Manager at TeliaSonera Sweden.

CUTTING BACK on travel would be a tougher challenge. The turning point came with the introduction of a new meeting policy. This meant that whoever was calling a meeting had to first investigate the possibility of hosting it online, which initially sparked protests.



»Eight times out of ten you can ask the question: **Do we really need a physical meeting?«**

Dag Lundén, Environmental Manager, TeliaSonera Sweden

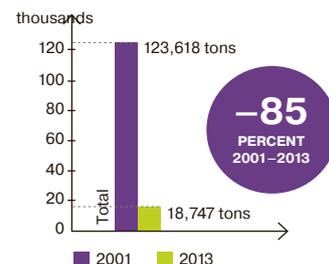
"Many claimed that it was impossible. Our sales representatives insisted that they had to meet the customers. But when we examined the matter more closely we saw that 70 percent of journeys were internal, to ourselves. We wondered whether it was possible to

replace some of these with virtual meetings," explains Dag Lundén.

It took a few years to convince everyone that cutting back on travel would save time and make our work more effective. But once people were on board, it was like opening the floodgates.

"The biggest change came when the senior management teams started regularly using the virtual meeting technique. There was a ripple effect throughout the organization," says Dag Lundén.

Our CO₂e emissions 2001–2013 (tons)



IN 2001 THE TRAVEL BUDGET WAS SEK 300 million. Now it's around SEK 60 million, despite the fact that the business is constantly growing. Of course there are still meetings that cannot be held online, such as initial meetings with a new customer.

"But eight times out of ten you can avoid a journey by asking the question: Do we really need a physical meeting? We operate globally and we can't afford to have our managers hanging around at Arlanda airport," says Dag Lundén.

However, virtual meetings are just one aspect of Telia's investments.

"We've also started imposing tougher requirements on our contractors. They don't get paid for the number of kilometers they drive, only the number of assignments they complete. We set requirements on the cars they use and their emissions. This has enabled us to reduce contractors' emissions by 40–50 percent," says Dag Lundén. ■

How your company can follow in our footsteps

- **Analyse.** Examine which parts of the business have the greatest environmental impact – that's where you can make the biggest difference.
- **Look at travel.** Change the company's travel manager into a meeting organizer, who is responsible for all forms of meetings – both virtual and physical.
- **Opt for ecolabel.** Buy electricity from sources that do not generate carbon dioxide emissions.
- **Integrate environmental and business targets.** Link environmental targets to the business's other targets. Sustainability investments are often a genuinely profitable business.

Flexible working in practice

Less travel and green electricity are two contributing factors to our reduction in CO₂ emissions. A flexible approach to working is another. Jessica Levin, Manager of Corporate Business within mobility services, knows how the latter works in practice.



JESSICA'S FIVE TIPS for flexible success

- 1 TRANSPARENCY** – Clarity regarding expectations and goals for employees.
- 2 PRESENCE** – Not necessarily a physical presence, but there needs to be a dialogue.
- 3 POLICY** – Clear regulations on terms for telecommuting.
- 4 TOOLS** – Connection, file storage areas and systems must function effectively.
- 5 MEETINGS** – Sometimes you need to meet in person, particularly at the start, to establish a relationship.

As a manager, what do you think about a flexible approach – does it work?

It depends on several factors, from the kinds of tasks to the type of business and workplace culture. But generally I believe in personal leadership that is built on dialogue and contact between the manager and employee, and that doesn't mean you have to see one another every day.

What do you mean by that?

Over the past few years many workplaces have made the transition to an open plan office layout. This has its advantages, but it can also get a little noisy at times. Some tasks can be difficult to carry out in the office. In my experience it's important to give employees the freedom to choose where they carry out these tasks. Freedom with responsibility produces goal-oriented and focused employees.

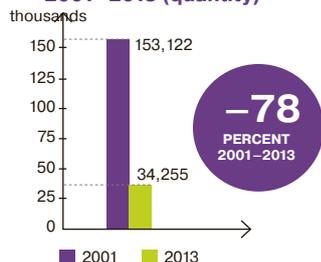
What do managers and employees need to do to make this work successfully?

The first thing you need to do is have a discussion about the terms for this mobile approach. As a manager, it's important to keep in contact and ensure that the work is progressing and that the employee is happy. Employees need to be contactable by e-mail and phone.

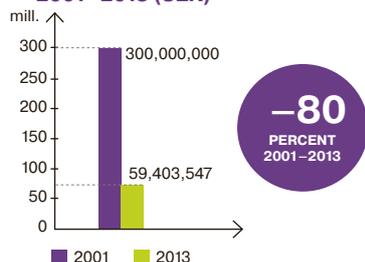
What are the advantages and drawbacks?

The major advantage is motivated employees, who avoid wasting time on unnecessary journeys, which is also a bonus for the company and the environment. The only downside is that you lose opportunities for spontaneous meetings in the corridors, where you talk about other aspects of life besides work. But I have no concerns about flexible working meaning less work gets done. In fact I think the opposite is the case, that many work too much, with the office constantly following them around. Managers need to keep an eye on that. Obviously our employees need to be happy in their job. ■

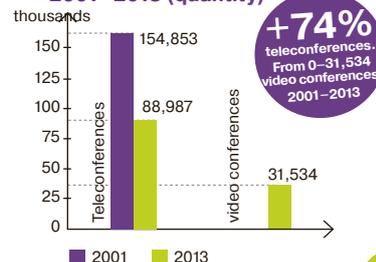
Our flights 2001–2013 (quantity)



Our travel costs 2001–2013 (SEK)



Our interactive meetings 2001–2013 (quantity)



1 YEAR OF TELECONFERENCES corresponds to a one-hour car journey in CO₂ emissions.

7 YEARS of teleconferences correspond to a flight from Stockholm to Gothenburg in CO₂ emissions.

We started the ball rolling back in 2001 – now it's Dalarna's turn!

Our solutions bring municipalities in Dalarna together

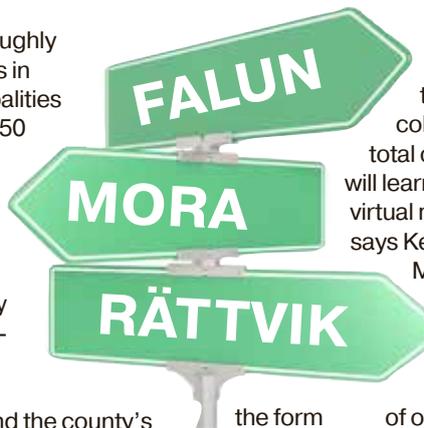
Our systems for video and online meetings enable Dalarna's municipalities to save both time and money, while improving the county's opportunities to join forces and contribute to reducing environmental impact.

EVERY YEAR, the roughly 20,000 employees in Dalarna's municipalities spend SEK 100–250 million on travel. This is a huge expense for both the economy and the environment, which is why the County Administrative Board in Dalarna,

Region Dalarna and the county's 15 municipalities are looking for ways to reduce the number of physical meetings in favor of video conferences and online meetings.

"A quarter of all council journeys are to meetings. Our primary goal is to reduce these by 20 percent by 2015, and 40 percent by 2020," says Kerstin Anberg-Morgården, Energy and Climate Strategist at Dalarna County Administrative Board and Project Manager of "Vi möts resfritt", a project to introduce more ways of meeting without the need for travel.

The project, funded by the Swedish Energy Agency, aims to provide training for municipal employees in virtual meeting techniques.



"We train 'agents', who then train their colleagues. A total of 1,800 people will learn how to hold virtual meetings," says Kerstin Angberg-Morgården.

TELIA PROVIDES both the technology in the form of online and video systems for meetings, and a practical element of the training.

"On top of that I run a session on what we hope to achieve with the investment," says Jan Fors, Project Consultant and former Project Manager of the municipalities' joint telephony project.

Dalarna county covers a large area, so there is a great deal to gain from cutting back on the number of journeys. A forty-percent reduction in travel would save six million SEK a year, based on a conservative estimate. Initially it was these financial and environmental aspects that were the most important, but more benefits have since emerged.

"This approach enables meet-

ings to happen that wouldn't otherwise have taken place – which immediately makes it a democracy issue. For example, we have people in Malung-Sälén, who haven't taken part in meetings because it's too far away and too expensive to travel, but who now get the opportunity to get involved and have a say," explains Kerstin Angberg-Morgården. Jan Fors agrees.

"We often felt that there were a lot of obstacles when we wanted to work together within the county. Someone would say 'we can't travel from Älvdalen just for an hour-long meeting', which meant that we ended up combining several meetings to make a half-day at some point several months later. It becomes a reactive rather than proactive approach," he says.

VIDEO AND ONLINE MEETINGS make it possible to hold more, and shorter progress meetings. This strengthens collaboration between municipalities, which brings additional qualitative and financial gains in addition to saving time and reducing travel costs and emissions. And on top of all that, employees get more time to work effectively instead of travelling away their working day. Just one question remains: Can a video conference really replace a physical meeting?

"Imagine it's winter, snowing, and you've got to drive 150 km to get to a meeting that will take two hours. It's much better to have a video conference instead. But if you're meeting a group of people for the first time, it's more important to see them in person. We don't believe the virtual meetings replace the physical ones, they complement each other," replies Kerstin Angberg-Morgården. ■



THE FIRST REAL JOB

At a time when unemployment among Sweden’s young people is at around 20 percent, **25 percent of our employees are aged between 18 and 30.** We are a significant employer for young adults – and a springboard for entering working life.

IMAGINE YOU’VE just left school. You’re 20, you’re living at home with mum and dad and you don’t want to carry on studying until you’ve thought about what you want to work with in the future.

Imagine the difference, in this situation, between being unemployed without any meaningful kind of occupation and having a job with a monthly salary and the chance to gain real experience. For many young adults, Telia is that difference.

“If we take our customer service, for example, the work doesn’t require a degree or a great deal of professional experience. It’s more about having the right attitude and an understanding of the value of good service. That’s why the average age is around 24, and for many people

it’s their first job. We offer secure employment and the chance to learn about the world of work. It often makes a huge difference,” says Carl Gustafson, HR Manager at Telia’s broadband customer service.



»We offer them the chance to learn about the world of work. **It often makes a huge difference.**«

Carl Gustafson,
HR Manager at Telia’s
broadband customer service

“As a group, young adults are highly talented, but because for some of them it’s their first

AN ANALYSIS OF the areas in which the roughly 25 percent young adults working in Telia’s Swedish business shows that most are employed in stores or customer service. Carl Gustafson is involved in recruitment to customer service. He says that young adults as a group contribute energy and service-mindedness, which when combined with sound technical skills makes them valuable employees.

job they also need support. It may sound odd, but if you come straight from school you don’t necessarily have a natural flair for things like getting in to work on time, for example. But you can learn. Showing how a workplace functions is a responsibility we’re happy to take on.”

ONE GOOD EXAMPLE of the recruitment process for young people is the 400 summer jobs that provide cover for customer service employees on vacation leave. People aged 19–25 are often recruited to these jobs. If they enjoy the work and all goes well, there’s a good chance the job can be extended and made permanent.

“It’s a good example of how we act as an employer to give young adults opportunities. I’m convinced of the importance of investing in this group to enable them to embark on their careers. Everyone benefits: Telia, society and of course, the young people themselves,” says Carl Gustafson. ■

COOL SERVER ROOMS EQUALS WARM BUILDINGS

GREEN ROOM GIVES DUAL BENEFIT

Despite a massive expansion of mobile and fixed communication networks, our energy consumption has in principle remained constant. One major explanation for this achievement is our **Green Room Concept – a proprietary system that provides climate-smart cooling for server rooms.**

LOOKING OUT OVER the busy Es-singeleden motorway, there's a data center that most motorists drive past without a second glance, but which is one of the most important communication hubs for internet and telephony in Sweden. As Svante Enlund, cooling specialist at TeliaSonera Sweden, shows us round amongst the disarray outside the data center it's difficult to imagine that the center is on the verge of becoming one of the most modern and climate-smart facilities in the world.

"We're renovating according to our Green Room Concept, which uses natural geothermal cooling to keep the servers cool. By the time we're finished, energy consumption will be 90 percent lower than the European average," says Svante Enlund.

We are surrounded by hoses poking up out of the ground from 80 drill holes extending 300 meters down into the bedrock. That's how the cooling properties of the rock are used.

"We'll be able to increase the

amount of data we handle in the room by 80–90 percent, while reducing annual cooling costs by 40–50 percent," says Svante Enlund.



»Energy is transported 30 meters, instead of thousands of kilometers.«

Svante Enlund,
cooling specialist at
TeliaSonera Sweden

year," explains Svante Enlund.

AN IMPORTANT KEY RATIO for data centers is PUE – Power Usage Effectiveness. The figure indicates the relationship between total en-

This is how it works

- **Geothermal energy is extracted** from 300-meter deep drill holes and used to cool the servers and other IT equipment at Telia's data centers.
- **The surplus heat** from the data center is captured and delivered to Campus Konradsberg via a heat exchanger to the academic properties.

THE ENTIRE cooling process also generates surplus heat equivalent to the supply for 200 houses. The energy will be used to heat Akademiska Hus' property Campus Konradsberg.

"The energy is transported via a heat exchanger to their heat pumps and covers the heating needs of the entire property. They save a million SEK a year and reduce their carbon dioxide emissions by 300 tons a

ergy consumption in the center relative to the energy used by the computers. If all the energy goes to the computers, the ratio is 1.0. PUE for a typical European data center is 1.8, which means around 80 percent of the energy goes to other things, primarily cooling.

By placing the servers in two closed corridors, forcing cold air to pass horizontally, the Green Room Concept provides more efficient cooling and reduces energy consumption. The PUE ratio therefore drops to 1.12.

"The partnership enables us to get twice the benefit from the energy, because the waste heat can replace 3,600 MWh of electricity that Akademiska Hus would otherwise have bought in via the district heating network," says Svante Enlund.

He continues:

"Instead of burning imported rubbish at Högdalen, we transport energy 30 meters. It benefits the environment, and both Telia and Akademiska Hus save money," says Svante Enlund. ■

NEW KNOWLEDGE BRINGS NEW ENVIRONMENTAL GAINS

RESEARCH INTO GREENER IT

We are continually conducting research that drives developments forward. **The latest in a series of publications is an extensive analysis of the impact of the IT sector on the environment.**

ENVIRONMENTAL RESEARCH is a priority area for TeliaSonera. In collaboration with Ericsson and sustainability researchers at KTH Royal Institute of Technology, a report is being presented shortly on the environmental impact of the IT sector. The study is the first to analyse all elements of the entire IT industry.

Where previous studies have focused on analysing either the operation of the IT network or lifecycle of technical devices, this new study is instead bringing every aspect into the equation. This means that we now know exactly how the environment is affected by the communication equipment that exists in society, both at home and in the workplace, as well as in underground fiber cables. In order to gain an overall picture, the entire lifecycle of each device has been examined, from manufacture to transport and recycling.

The study is the most comprehensive to be carried out in this field, which is why it has sparked a huge amount of interest and even been referred to on Google's environmental conference "How green is the Internet?".

"We hope that through this study we have helped to boost the level of knowledge. What we're anticipating now is other sectors carrying out similar studies going forward," says Dag Lundén, Environmental Manager, TeliaSonera Sweden.

On the right you'll find some important conclusions about green IT. ■

6 key conclusions about green IT

1 Effective gadgets work wonders

Around 70 percent of all IT-related emissions originate from the manu-



facture and use of computers, mobile phones and

tablets – while operating and maintaining IT networks only accounts for a few percent. There are huge environmental gains to be made here. Energy-saving functions and active management of modems and computers could considerably reduce energy consumption at times of the day when there is less traffic.

2 Energy consumption is rising

Energy consumption in the IT sector has doubled in ten years. The



increase is largely due to users acquiring more

devices with internet connection, including everything from computers to laptops, mobile phones, tablets and IPTV. But it could have been worse. These devices have become

more energy efficient during the same period. If technical developments hadn't moved on since the 1980s, energy consumption would have been three times as high.

3 Voice calls just a fraction

Our telephone conversations used to account for all the data volume in the IT network. Today



the figure is well under one percent, despite the

fact that we talk on the phone as much as we used to. The explanation is, of course, increased internet searching and streaming.

4 Cooling is hot

Today, cooling of equipment accounts for around 30 percent of IT's total energy consumption.



Sweden, with its cool climate, is a great

location for cool server rooms, for example, but we can still improve efficiency. Cooling of equipment could account for

just six percent of total IT energy consumption, which would bring about major financial gains – but the biggest winner is the environment.

5 New technology breeds new opportunities

Total energy consumption would be 75 percent lower if overnight we



were able to replace all equipment with the most

modern versions on the market. Although we have come a long way with energy savings, technology ages quickly.

6 We want to be trailblazers

We believe that if 1,000 other Swedish companies go through the same process that our Swedish operations have over the past ten years to reduce its envi-



ronmental impact, total Swedish carbon dioxide

emissions could be reduced by a combined five percent.

The full name of the report is: "Life cycle assessment of ICT – carbon footprint and operational electricity use from the operator, national and subscriber perspective in Sweden" Malmödin J., Lundén D., Moberg Å., Andersson G. and Nilsson M. You can access the entire report at <http://onlinelibrary.wiley.com/journal> and via <http://www.cesc.kth.se/publications>.

SMARTER THAN RECYCLING

Many corporate customers hire mobile phones from us. The mobiles are used for an average of two years before it's time to replace them with newer models. **But what happens to the phones at the end of their useful lives?**

EVERY YEAR AROUND 20,000 used mobile phones are collected. 98 percent of these can be reused, either as complete devices or by using their parts in new phones.

"Reusing is the best alternative, because there are both financial and environmental benefits to giving the phones a second life," says Mattias Johansson, Product Lifecycle Manager at TeliaSonera Finance.



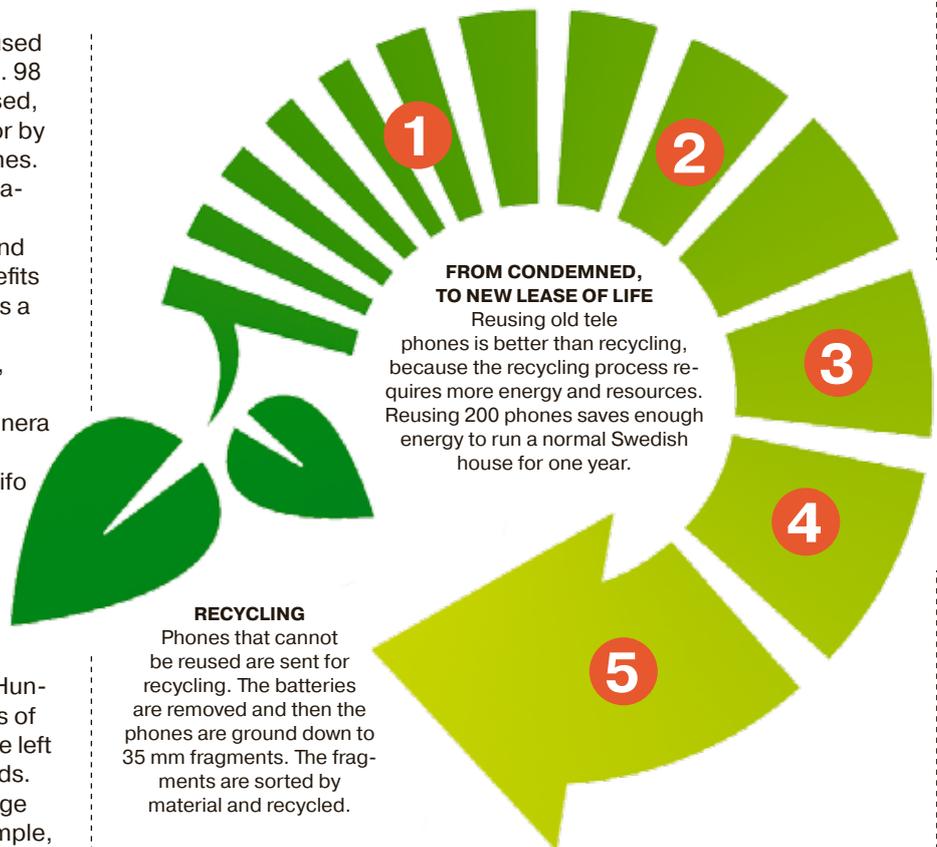
»A reused phone saves the equivalent of almost 30 kg of CO₂.«

Mattias Johansson,
Product Lifecycle Manager at
TeliaSonera Finance

According to a Sifo survey from 2012, 65 percent of Sweden's companies and authorities choose to scrap or store their old mobiles. Hundreds of thousands of working mobiles are left

lying in drawers and cupboards. "There's no doubt it's a huge waste of resources. For example, a two-year-old iPhone can be used for longer if it's reconditioned and the latest software is installed," says Mattias Johansson.

Reusing a phone saves the equivalent of 30 kilos of CO₂ emissions compared with producing a new one. That's a car journey from Stockholm to Gävle. With 20,000 collected mobiles a year, that's a significant environmental saving. ■



RECYCLING

Phones that cannot be reused are sent for recycling. The batteries are removed and then the phones are ground down to 35 mm fragments. The fragments are sorted by material and recycled.

1. TIME TO REPLACE

Many companies replace their rented phones every two years. The old phones are collected and sent to our partners, where they are assigned an individual mobile ID that remains with them throughout the entire process.

2. TESTING, TESTING

The phones are started up and tested to determine the state they are in. Poor batteries are replaced with new

ones and cracked screens are replaced before they go on to the information removal stage.

3. INFO DELETED

Using Blancco (a program that is also used by intelligence services around the world), all information and customer data is deleted from the phone to protect integrity. However, the functions are kept.

4. NEW LIFE

Once the phones have

been tidied up and emptied of personal information, they are sold on for reuse. Individual parts are also reused in new mobiles or as replacement parts.

5. FEEDBACK REPORT

Our partners report back on which mobiles have been reused and which have been sent for recycling. The functionality and value of each mobile is detailed, as is the environmental gain.

IN FRONT OF AND BEHIND THE SCREEN

CHILDPROOFED

The internet can be used for countless good things. But it can also be abused, with disastrous consequences. **We place considerable emphasis on making the internet a better place for children and young people.**

THE INTERNET IS essentially an amazing platform that, with its communication opportunities improves life for the overwhelming majority. At the same time we can't ignore the fact that the internet can create problems. One major problem is the distribution of material depicting sexual abuse of children.

Efforts are underway to stop the distribution of these images to protect vulnerable children and make the internet a better place.

"We have taken a stand against child pornography. If we are involved in tackling this problem then hopefully we can reduce demand for this kind of material. The mere fact that this kind of material exists is unacceptable and what is also unacceptable is that there are forces out there earning big money by distributing images of child sexual abuse," says Patrik Hiselius, Senior Advisor at TeliaSonera.

A PARTNERSHIP with the Swedish police and the Internet Watch Foundation gives Telia access



"We want to team up and help reduce the distribution of child pornography."

Patrik Hiselius,
Senior Advisor TeliaSonera

to lists of web pages containing abuse material. Telia then blocks access to the material for its customers. Otherwise, a wrong click can be all it takes to get child pornography up on the screen. But as a result of Telia's work with this issue, anyone who either deliberately or unwittingly tries to access these websites is instead directed to a block page.

"Blocking internet content is actually an extremely sensitive issue for us. The belief that the internet should be free from regulation and censure is very strongly rooted among our employees and customers.

Enabling communication, not hindering it, is part of our DNA. We are essentially in favor of an

unrestricted internet," says Patrik Hiselius.

TACKLING child pornography is therefore something that is unique for Telia and the only type of content against which Telia takes an active stand. It is a move that is otherwise completely opposed to Telia's business concept, which involves helping people communicate how and where they want.

"Although there's plenty of unwanted material on the internet we have no intention as a private company of policing the internet. Images of child sexual abuse are the only exception. This is the only area where we have taken a stand, but even then it's not Telia that decides what should be blocked. That's the job of the police authorities or the Internet Watch Foundation," says Patrik Hiselius. ■

Telia's efforts to tackle child pornography – how it works

1 A special unit at the Swedish police focuses on identifying material containing images of child pornography. The material is compiled in a black list that is kept regularly updated.

2 When the Swedish police have updated the list with new material the information is forwarded to Telia and other

internet operators. The list comprises information about which sites contain material that the police have classed as abuse images.

3 Telia receives the list and blocks access to these pages for its customers. Anyone who tries to access one of the sites in question will instead be taken to a block

page telling them that the site contains illegal material. The user is not exposed to the material and the distribution is stopped, while demand for new and more abuse images is suppressed.





Telia SÄKER SURF

Children and young people use computers a great deal these days, but safety is rarely their top priority. Telia Säker surf makes the computer a safer place for children.

"We are a company that takes social responsibility. We want to make the internet a safer place for our customers, particularly for children," says Juha Luopa, Product Manager at TeliaSonera.

Säker surf is available both as computer software and as a mobile app and

provides comprehensive protection for users.

It includes antivirus software and a firewall, and as an additional feature it has extended protection with parental control. This allows the user to create different profiles that change depending on who is using the computer. Users can block access to websites containing pornography, violence or other material that is unsuitable for children.

"We strive to supply products and experiences of world class, but there is a need to raise awareness of the positive and negative sides of the internet," says Juha Luopa.

He continues:

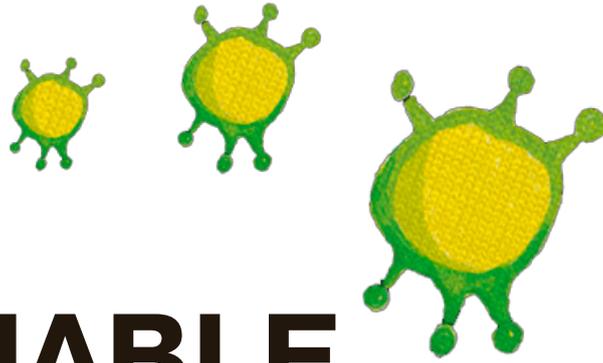
"It's a responsibility that we want to, and must take on, but it is also something that our customers want. Children are often extremely smart when it comes to technology, but they perhaps don't have as much experience of other things in life, so safety isn't the first thing they consider."

Säker surf is currently compatible with PCs, Macs, iOS and Android.



"We want to make the internet a safer place for our customers, particularly for children."

Juha Luopa,
Product Manager at TeliaSonera



SUSTAINABLE HALEBOP NORMS



IN 2013 Halebop released a series of highly-acclaimed commercials. The common theme of the short films is tackling tough stereotypes about young people with unexpected warmth and kindness. In the most high-profile film, a young homosexual hockey-playing lad is congratulated by his teammates after being together with his boyfriend for one year. One of the people behind the films is Halebop's CRM Manager Karin Rosell, who highlights the importance of showing what you stand for as part of the process of building a sustainable brand.

Why did Halebop decide to make these commercials?

Our target group is young and lives in a harsh world – it's tough being young today. We want to show that there is scope for warmth and kindness by dramatizing relationships between

people with unexpectedly warm twists in cold, harsh situations. The hockey commercial went viral because it touched people; it's genuine and honest and has an important and relevant message – that's why it really works.

Is that why your commercials have been so successful?

It's because we're talking about things that are non-commercial, but that everyone can relate to. You don't always have to focus on the fact that you have the best price plan, fastest network or the coolest phones: building a brand is about standing up for your values. We can do that in our

commercials to the full, but it also requires courage.

Why is it important for Halebop to come across as friendly?

The problem with our industry is that it can involve a lot of hassle: customers worried about being conned and things like that. We lay our cards on the table: what you buy is what you get. We're passionate about decency and we're bold about communicating that. For example, when we got 100,000 fans on Facebook, we donated SEK 100,000 to Friends. Before Christmas we donated phones to the organization Stadsmissionen so that homeless people could call their families. We put the brand's values into practice – it feels completely natural for us.

How do you intend to take this work forward?

We will develop our story and work with various warm and welcoming scenarios, but also continue to have an element of surprise. This year we're involved in a partnership with Stockholm's Junior Film Festival. We're also continuing to support efforts to encourage

decent behavior online, where a large section of our target group spend their time. ■



»We want to show that there is scope for warmth and kindness.«

Karin Rosell,
Halebop's CRM Manager



Our tools for sustainable development – and increased profitability

An overview of IT services that offer a win-win situation

SOLUTIONS	FUNCTION	PROFITABILITY GAIN
Contact centers	Enables effective manual or automatic handling of customers' or citizens' cases via telephone, text, chat, e-mail and online.	<ul style="list-style-type: none"> • Lower energy costs. • Lower office running costs. • Increased employee productivity. • Reduced travel costs. • Reduced investment requirement. • Easier to adapt capacity to needs. • Improved customer service and increased customer satisfaction.
Electronic ID	Enables people to confirm their identity and sign documents or transactions online, reducing the need for hard copies of forms.	<ul style="list-style-type: none"> • Less complicated business processes. • Shorter turnaround and downtime. • Significant rationalization gains; e.g. enables self-service solutions.
Location-based services	Real-time tracking of vehicles, employees and other mobile resources.	<ul style="list-style-type: none"> • Lower fuel costs. • Lower maintenance needs. • Better coordination. • Increased opportunity for swift redirection. • Better customer service.
M2M communication	Makes the business more efficient by communication between machines. M2M communication automates processes and helps companies reduce their environmental and climate impact across the entire business.	<ul style="list-style-type: none"> • Eco-driving for lower fuel consumption. • More effective field personnel and service stations mean shorter queues and service schedules. • Connected properties provide more efficient monitoring and control of energy use.
Meeting and cooperation services (teleconferencing, online meetings, video conferencing)	Enables efficient work without the employee having to move to a particular location. 4G enables remote access to business systems and other heavy applications.	<ul style="list-style-type: none"> • Reduced travel costs. • Increased employee productivity as less time is wasted. • Improved cooperation as both colleagues and external contacts are more available.
Mobile applications	Offers mobile employees (service engineers, home helps, sales representatives etc.) access to IT-based business support out in the field. Increased employee productivity as less time is wasted.	<ul style="list-style-type: none"> • Opportunities for increased sales or service production. • Opportunities for completely new business processes and business models.
Mobile and fixed broadband	Enables efficient work without the employee having to move to a particular location. 4G enables remote access to business systems and other heavy applications.	<ul style="list-style-type: none"> • Lower energy costs. • Lower office running costs. • Increased employee productivity as less time is wasted. • Improved monitoring of emergency cases and therefore better internal and external service. • Simpler for employees to organize working day and balance work and private life.
Operational services for data centers and local networks	Gives the company access to hired IT functions produced in energy-efficient data centers.	<ul style="list-style-type: none"> • Lower energy costs. • Reduced investment requirement. • Easier to adapt capacity to needs. • IT staff have more time for advanced work on IT solutions that support the business. • Simpler administrative management.
Product Life Cycle Management	IT equipment that is hired as a function. Enables effective environmental and secure handling and control of the company's IT equipment, including mobiles or PCs, at user level.	<ul style="list-style-type: none"> • Reduced overall cost for IT equipment. • Measurable reduced environmental impact over time. • Secure handling of any corporate information when replacing or upgrading. • Control of used equipment with regard to cost and user. • Access to asset management web interface for follow-up.
Unified communications	Provides unified access to various communication channels and operating systems via mobile and fixed applications and accesses; also displays employee's attendance status.	<ul style="list-style-type: none"> • Simpler to take full advantage of IT support and the organization's combined expertise. • Increased productivity due to shorter downtime and more effective cooperation. • Increased personal effectiveness. • Increased customer satisfaction.

About Teliasonera in Sweden

HAS AN INTEGRATED MANAGEMENT SYSTEM certified in accordance with ISO 9001/14001.

ONLY USES GREEN ELECTRICITY with the “Good Environmental Choice” ecolabel for operation of all facilities, installations, networks, buildings, etc.

CONDUCTS ITS OWN ENVIRONMENTAL RESEARCH AND DEVELOPMENT, including LCA (Life Cycle Assessment).

DOES NOT HAVE ANY OPERATIONS REQUIRING AN ENVIRONMENTAL PERMIT from the authorities in accordance with Chapter 9 of the Swedish Environmental Code.

Links to additional information:

- Go to <http://www.telia.se/foretag/trenderochnytt> to access Telia’s combined resources.
- Visit <http://blogg.telia.se/battreaffarer> for Telia’s blog, which offers inspiration and tips on how to improve your business relationships.
- Visit <http://www.teliasonera.com/en/sustainability/reports/> to access TeliaSonera Group’s sustainability report.

