Naturally

active for the climate

ERT

Naturally active for the climate

Climate action is part of our business. We take global warming seriously and made it one of the parameters defining our global strategy.
We want to contribute to solutions for climate change and we believe that when climate policy is set correctly, it can benefit all: the planet, people and companies.

We call for:

- Stable, long-term views on how turning Europe into a low-carbon economy with a globally competitive industry.
- A framework that supports innovation for the climate and that triggers Europe-based investment and business activities.
- Global action by all key economic players to genuinely reduce our society's carbon footprint.
- A resilient, future-proof and cost-efficient energy system connecting Europe.

Discover some of the actions for the climate that we have been implementing.

Climate action

Check out how companies act for the climate and how climate action has become part of their agenda.

Examples

Explore how companies are extending their boundaries and dive into surprising solutions.

We act for the climate

Our greatest contribution to the reduction of greenhouse gas (GHG) emissions has been and will be through our energy-efficient and renewable energy products, systems and services that increase productivity while lowering environmental impact. More than half of ABB's global revenues come from technologies that combat climate change.

We also limit the environmental impact of our own operations:

- **Energy saving plans** up to 2020 cover 95% of ABB's energy use, with a special focus on the largest energy consuming sites. 88 of our sites have a formal energy management system. In 2015, more than 190 individual energy efficiency projects led to energy savings of approximately 32.2 GWh for the year.

- ABB facilities install on-site **photovoltaic (PV) power plants and micro grids** to reduce emissions and to demonstrate ABB's solar capabilities.

- ABB's **Green Building Policy** details policies for the new development, refurbishment, selection and management of rented space.

Example >

Let's be practical

Demonstration of a renewable energy microgrid at our factory in Johannesburg

ABB has commissioned an integrated solar-diesel microgrid installation at its 96,000 square meter Longmeadow facility in Johannesburg, South Africa. This is a world premiere for this innovative solution with fully grid-connected and off-grid functionalities designed to maximise the use of renewable energy and ensure uninterrupted power supply to keep the lights on and the factories running during any planned or unplanned power outages on the main grid supply.

The Microgrid installation comprises ABB's compact and versatile PowerStore™ battery-based grid stabilising system to address frequency and voltage fluctuations. It also includes a Microgrid Plus distributed control system (DCS) to manage the supply of power and balance the fossil-fuel and renewable energy sources in accordance with loads, in a coordinated manner.

We act for the climate

- Air Liquide puts long-term performance and sustainability at the heart of its ambition and has set itself the objectives of improving air quality and the **fight against global warming.**

- **Clean mobility:** Air Liquide operates nearly 50 **NGV (Natural Gas for Vehicles)** or **CNG (Compressed Natural Gas)** stations in Europe to supply taxis, corporate vehicle fleets, buses and passenger cars with fuel that is environmentally friendly and for nearly 70% produced from renewable energy sources.
  Air Liquide's hydrogen stations allow electric vehicles to recharge in less than 5 minutes, offering an extended range capacity of 500 km without greenhouse gases or fine particles emissions.
  75 hydrogen stations have already been designed and installed by Air Liquide worldwide.

- **Energy efficiency:** constant innovation has allowed the Group to **reduce the use of electricity** required to produce air gases at Air Liquide plants by about 12% in the last fifteen years.

- Close to **30% of the Group innovation expenses in 2016 is devoted to reducing CO_2 emissions** (by reducing carbon content of its products or those of its customers).

- The **use of oxygen** in customers' processes (oxygen injection in blast furnaces and use of oxygen in electric arc furnaces) allowed **11.2 million tonnes of GHG emissions** avoided by our customers in 2016.

Example >

Let's be practical

Blueeze™ reduces the carbon footprint of refrigerated transportation by around 85% (France)

The blueeze™ solution developed by Air Liquide offers a reliable way to ensure that the cold chain is not broken in refrigerated transportation while also bringing exceptional environmental benefits to business and local government customers:

- The air that circulates inside the refrigerated container is cooled through the circulation of liquid nitrogen cooled to -196°C in one or more hermetically sealed exchangers before the nitrogen is released as a gas into the atmosphere.
- Zero noise and zero polluting emissions during operation (zero greenhouse gases, no particles, no NOx, etc.), since the only by-product is nitrogen, the principal component of air.
- Sustainable: the carbon footprint is reduced by around 85% (France).

We act for the climate

- We work with key suppliers to **develop carbon footprint improvement plans** across the whole value chain through operational improvements, material substitution and/or specification optimisation. **Renewable energy** and **resource effectiveness** are important factors.
- We aim to continue developing more sustainable solutions: **Eco-Premium Solutions (EPS)** offer an improvement in sustainability, including GHG reduction.
- We report to CDP.

AkzoNobel

- We use a **science-based carbon price** for environmental or sustainability assessments in, for example RD&I projects, as background information for investment decisions and for when we present results from what we call 4 Dimensional Profit & Loss accounting (4D P&L).
- We plan to introduce a **new carbon pricing model** for investment decisions: a cost associated with carbon will be calculated and presented upfront in the financial documents for investment decisions above 1 million euro.

Example >

Let's be practical

A consumer-to-business energy partnership: AkzoNobel commits to buying renewable energy from two Dutch cooperatives

A unique partnership has been set up by AkzoNobel, in which four leading multinational companies have made a long-term agreement to jointly source power from renewable energy projects by two cooperatives together with 4,000 citizen members in the Dutch province of Zeeland and the island of Goeree-Overflakkee.

The four companies have agreed to source a total of 350 million kWh a year for part of their operations in the Netherlands – this is equivalent to the total annual consumption of 100,000 Dutch households. It's the first time that a group of multinational companies in the Netherlands has teamed up with local citizens to create what is effectively a consumer-to-business energy partnership. This collaboration is energy transition on a completely new level bringing the goals of the Paris Climate Agreement closer.

We act for the climate

ArcelorMittal

- We **engage with stakeholders on climate change** to work in close partnership with our customers to advance safe, weight-saving and emissions-reducing steel solutions, to drive further energy efficiency across our steel plants, to develop the multiple contributions steel makes to a circular economy, and to develop breakthrough low-carbon technologies such as Carbon Capture and Utilisation (CCU)

- Climate change is included within the scope of our **risk management process** alongside financial and other non-financial risks.

- Our group **CO_2 reduction target** is to reduce CO_2 emission intensity by 8% by 2020 against a 2007 baseline. We defined 10 **sustainable development outcomes**, including a focus on a low carbon future.

- An internal climate change working group, reporting to the CFO, extensively engaged with 50 external stakeholders, to **assess the carbon reduction potential of our portfolio** of steel plants.

- Our carbon reduction strategy is to pilot the most promising low-carbon **breakthrough technologies** in the medium term - including recycled carbon, whilst continuing to pursue energy efficiency measures relentlessly, wherever they are still available.

- Our high strength steel enables our customers to produce lighter weight cars; 7 million tonnes of CO_2 was avoided in 2016 through our slag reuse in the cement industry; many of our plants export energy to neighbours.

Example >

Let's be practical

Producing bioethanol from steel waste gas: ArcelorMittal builds demonstration plant in Belgium

The "Carbon Capture and Utilisation (CCU)" technology produces bio-ethanol from steel waste gas, enabling the conversion of CO_2 into commercially-viable products such as biofuels and chemicals. ArcelorMittal is installing an industrial pilot of this technology at our steel plant in Ghent, Belgium in partnership with Lanzatech. The production of some 63,000 tonnes of ethanol per year is sufficient to fuel the equivalent of a million cars; it is intended at the end-use, however, to be jet fuel or plastics. The biofuel produced will displace 80% of the greenhouse gases that would be emitted from the fossil fuel it replaces.

The project is expected to commence in 2019. Furthermore, ArcelorMittal is working with partners to explore the use of its bioethanol in jet fuel and chemicals.

We act for the climate

- Since 1997 we have been using proprietary **catalysts** in our plants that decompose the greenhouse gas nitrous oxide (N_2O).
- We have set **voluntary long-term global goals** in many areas to guarantee that sustainable development at BASF is transparent and verifiable. Our GHG reduction goal per metric tonne of sales product for 2020 is 40%. At the end of 2016 we had achieved already 37.2%.
- We generate electricity and steam in highly-efficient **Combined Heat and Power** (CHP) plants.
- By 2020, we want to have introduced a **certified energy management system** (DIN EN ISO 50001) at all relevant product sites globally. Today, 42% of our primary energy demand is already covered by a certificate.

BASF
We create chemistry

- We hold an **open dialogue** with all stakeholders.
- Climate risks and opportunities are identified, assessed and managed as part of **Enterprise Risk Management** (ERM). The central BASF Management Team for Climate Protection, working under the auspices of BASF's **Climate Protection Officer**, governs the climate part of the ERM process.
- **Carbon pricing** plays a role in the internal assessment of capital investments and operational costs of our production facilities; the rationale is that costs from various pricing schemes impact the return on investment and cost-benefit ratio of operations.

Example >

Let's be practical

Boosted energy and resource efficiency throughout the whole value chain with BASF's "Verbund" concept

BASF uses the "Verbund concept" to increase its efficiency by connecting production plants, waste and energy flows, procurement, infrastructure and the employees' know-how.

With approximately 200 production plants, Ludwigshafen is the largest "Verbund" site in BASF. For different processes, the site at the river Rhine needs about 20 million tonnes of steam per year. Almost half the amount is provided by using the waste heat of other plants and the burning of residues. By linking its plants, BASF saved 19 million MWh of energy in 2016. That equals an environmental release of 3.8 million tons CO_2.

In addition, BASF uses worldwide more than 25 Combined Heating and Power (CHP) plants, covering 70 percent of its electricity demand, which saved 2.8 million tons of CO_2 compared to separate power and steam production in 2016.

We act for the climate

- Reducing the amount of energy BP uses helps minimising our GHG emissions and provides economic benefits. For example, at our refineries, we use the Solomon Energy Intensity Index® (EII®) to measure **energy performance.** Each of our refineries sets and tracks progress against an EII® target specific to its circumstances.

- BP is working to reduce emissions from gas production through programmes to **detect and repair methane leaks and to reduce flaring.**

- To anticipate potential future carbon pricing, we require our businesses to use an **internal carbon price for emissions** – currently set at 40 USD per tonne of CO_2 equivalent for industrialised countries – for evaluating large new projects.

- We provide more detail on how BP is preparing for a lower-emissions future in our **annual Sustainability Report** and through presentations and discussions with investors and stakeholders.

Example >

Let's be practical

BP is among the top wind energy producers in the US

In the world today, wind power accounts for over half of all renewable power. And, we expect that – with decreasing production costs – onshore wind will become even more widespread.

BP is among the top wind energy producers in the US. The net generating capacity from our portfolio, based on our financial stake, is 1,452 MW of electricity. That is enough electricity to power almost 400,000 homes. And, we calculate that our wind activities helped avoid around 2.54 million tonnes of CO_2 in 2016.

We act for the climate

centrica

- With around 90% of our carbon emissions arising from customer consumption of energy, the greatest role we can play in tackling climate change is to **empower our customers** to cut their carbon while reducing emissions across our own business. We are helping customers reduce their energy consumption and carbon emissions through energy efficient products and distributed energy. These innovations are giving them greater control and choice.

- In the UK, we calculate that we have enabled customers to save nearly 27 million tCO_2eq from products installed since 2008 – equivalent to the average annual emissions of seven million UK homes.

- To reduce our own carbon footprint, we aim to **cut the carbon intensity** of our power generation fleet. In 2015/16, the power we sold to customers had the lowest carbon intensity among major UK electricity suppliers at 137 gCO_2/kWh; well below the UK average of 290 gCO_2/kWh.

- We also remain on target to secure a 20% reduction in our core internal carbon footprint by 2025, having achieved an 8% reduction compared to 2015.

Example >

Let's be practical

In 2016 Centrica launched the Cornwall Local Energy Market

- The project is a 19 million GBP, 3 year "Smart Grid" programme funded by Centrica and the European Regional Development Fund (ERDF).
- Cornwall has made extraordinary strides for the take-up of renewable generation but that has brought challenges in terms of network capacity.
  The network has a queue of 1.9 GW of stalled renewable generation projects with high associated grid connection costs.
- To address this, Centrica is testing how energy storage, flexible demand and generation can be combined with smart technologies to support the local electricity distribution network and potentially reduce energy costs for homes and businesses.
  The objective is to relieve distribution grid constraints using a local market for flexibility.
- If successful, the local energy market approach could be transferred to other regions facing similar network congestion challenges, leading to significant carbon savings.

We act for the climate

- Eni has been recognised by the CDP as a global leader for its actions and strategies in response to climate change. CDP's "Climate A List" includes companies that have achieved the highest rating (A) following an independent evaluation of performance and strategies in response to climate change. Eni is the only oil & gas major that has achieved this recognition
- With its **long-term integrated strategy** Eni plans to reduce direct GHG emissions by 43% per barrel produced in 2025 (compared to 2014).
- Objective and plans to reach zero routing flaring by 2025 while reducing other flaring.
- Eni will aim for a **low-carbon portfolio** and will promote the use of **natural gas** as a bridge fuel for electricity generation and for transport.
- Eni supports the development of **renewables** in the countries in which it operates and is involved in the research and development of **new technologies.**
- Climate Change is one of the top risks considered in Eni's **Integrated Risk Management** (IRM).
- Eni also adopts an **internal carbon price** of 40 USD/tonne CO_2 price in real terms as a sensitivity to all our development projects.

Example >

Let's be practical

The world's first Green Refinery

Eni's Green Refinery project at Porto Marghera (Venice) is the world's first conversion of a conventional refinery into a bio-refinery able to transform organic raw materials into high quality biofuels. The plant produces green diesel, green naphtha, LPG and potentially jet fuel. Eni is also in the process of converting the Gela Refinery into a Green Refinery.

In 2015, tests confirmed the feasibility of processing second-generation biofuels based on raw materials such as vegetable oils and animal fats that do not compete with food. To do so, Eni will co-operate with waste-collection authorities in the greater Venice area to collect used domestic oil as feedstock for the bio-refinery. The green diesel obtained can then be used to power their collection vehicles, thus providing a positive example of circular economy.

We act for the climate

- ENGIE is committed to **reducing by 20% its CO_{2eq} / kWh** of its power generation portfolio worldwide in 2020 compared to 2012.
- In 2014, ENGIE committed to **doubling its renewable generation capacity** by 2025 in Europe.
- **Energy efficiency:** ENGIE committed to reducing by 40% in 2020 from 2008, the energy consumed in its buildings in France and Belgium (accounting for 60% of its buildings stock).
- ENGIE uses an **internal carbon price** and decided in 2015 not to launch new coal power generation projects.
- **Green bond financing:** in 2014, ENGIE emitted a 2.5 bn euro green bond, to finance renewable energy and energy efficiency projects. In March 2017 it emitted a new 1.5 bn euro Green Bond to finance renewable, efficiency and natural resources preservation projects.

Example >

Let's be practical

In October 2016, ENGIE inaugurated the new marine geothermal power station Thassalia

In Marseille, a new solution has been developed to take advantage of the locally available renewable energy by using the calorific energy held in the Mediterranean Sea. Built at the Marseille-Fos Port, the marine geothermal power station Thassalia is the first in France and in Europe to use sea calories to supply the connected buildings with heating and cooling. An area of about 500,000 m² will be connected to the installation, allowing for reducing greenhouse gas emissions by 70%, requiring an investment of 35 million euro.

The sea water is pumped from 7 meters deep. It is transported to the geothermal facility. The calories from the seawater (in winter 14°C and in summer 22°C), are captured and fed into the installation to supply heat in the winter and coolness in the summer.

Let's be practical

E.ON installs free-of-emissions fuel cells at the Radisson Blu in Frankfurt

E.ON teamed up with Radisson Blu for a low-emission hotel in Frankfurt. As the hotel industry has relatively high energy costs – averaging between 5 and 10 percent of total operating revenue – it possesses huge potential for savings. The fuel cell, which E.ON has installed, generates electricity and heat in a non-combustion process which is virtually absent of pollutants such as nitrous oxide or fine dust particles. The use of fuel cell technology allows the Radisson Blu hotel to generate a large share of the energy needed to run the hotel free of emissions.
The highly efficient technology allows the Radisson Blu to reduce its CO_2 emissions by about 600 tons a year, which equates to the CO_2 emissions from 50,000 cars driving 100 kilometers. Germany's Federal Ministry of Transport subsidised the project with over 800,000 euro.

We act for the climate

- We have set **ambitious targets** to reduce CO_2 per hectolitre produced for scope 1 (direct) and scope 2 and 3 (indirect) emissions: 40% lower emissions in production; 50% lower emissions of our fridges; 20% lower emissions in distribution in Europe and the Americas (e.g. by shifting to less carbon intensive transports such as ocean, rail, alternative fuels for road).

- Action plans at plant level to boost **energy efficiency** on the basis of a gap analysis.

- We have started to review our **sustainability strategy** beyond 2020, based on our stakeholder dialogue and materiality analysis.

HEINEKEN

- **Sustainability** is embedded throughout our business, for example in Supply Chain management (water and CO_2), procurement (sustainable sourcing), HR (health & safety) and marketing & sales (responsible consumption).

- Since 2015, sustainability is governed by the Executive Team, chaired by the CEO.

- Sustainability is built into performance plans of selected senior managers.

- On the road to meeting our 2020 commitments, we report on progress each year. Going forward, this will be **integrated into the annual report** rather than as a separate chapter in our Sustainability Report.

Example >

Let's be practical

Göss in Austria: the world's first carbon neutral brewery

The Göss brewery in Austria produces 1.4 million bottles of zero carbon Gösser beer every day and is helping to achieve HEINEKEN's commitment to a 40% reduction in CO_2 emissions from production, by 2020. The traditional brewery is now powered entirely by renewable and reusable energy sources, including solar, hydropower, biogas and waste heat from a neighbouring saw mill. Through this transformation, it has been able to slash its CO_2 emissions from approximately 3,000 tonnes p/year to zero.

In 2016, this innovative carbon neutral brewery won 2 awards at the EU Sustainable Energy Awards, including the Citizens Choice Award.

We act for the climate

- Hydro's climate strategy is to be carbon-neutral from a life-cycle perspective by 2020. We will achieve **carbon neutrality** by increasing energy efficiency and reducing our GHG emissions in aluminium production processes, increasing recycling and helping our customers develop products that enable CO_2 savings.
- We factor in climate impact into all **strategic decisions** for new investments or developments.
- For Hydro, and the aluminium sector, there is a clear business case for becoming **even more sustainable.**

HYDRO

- The entire value chain is committed to climate: From a strong and growing source base of **hydropower and wind power**, to reduction of **user-phase energy consumption** in transportation and buildings, and to an increasing recycling capacity contributing to **circular economy.** 75% of aluminium ever produced is still in use, and it can be recycled multiple times without loss in quality.

Example >

Let's be practical

A pilot into the future of aluminium production - Hydro's new pilot plant in Karmøy, Norway has the most climate and energy efficient aluminium production technology in the world

- Being a leader in research and development in the aluminium industry, we want to use the technology pilot in Karmøy to roll out the world's most efficient technology for producing aluminium.
- Our researchers in Hydro's technology centres in Årdal, Porsgrunn and Neuss have developed the next generation in electrolysis technology, which will reduce energy consumption and emissions in the aluminium production.
- Starting operations in 2017, our technology is now ready to be tested in a full-scale production plant.
- If we succeed, the new technology can be installed in future aluminium plants, and some technology elements can be implemented in existing plants to improve energy efficiency and operational stability.

We act for the climate

- Iberdrola anticipated the "energy transition" 15 years ago, with a strategy focused on **efficient renewable energy.**
- The company invests in **clean energy**, pumped hydroelectric energy storage, **smart grids and digitisation**, key to integrate renewable energy. Iberdrola promotes the electrification process and enables **consumers to fully participate in energy transition.**
- Iberdrola also contributes to GHG emission reductions by promoting **electromobility and deploying innovation programmes.**

IBERDROLA

- Iberdrola has set a **carbon price** - thus considering the potential long-term updated cost of CO_2 emissions in major investment decisions.
- The company is developing adaptation plans targeting to **minimise the environmental impact of its activities.**
- It monitors the development of climate policy and its performance as regards the **EU roadmap to 2050** and actively engages with policymakers to help inform the setting of climate targets and regulatory required reforms.

Example >

Let's be practical

Iberdrola plans to reduce carbon emissions by 50% in 2030 vs 2007

The company has 67% lower carbon intensity (CO_2 emissions/kWh) than the average of its European peers and 66% of its generation capacity is at present carbon-free (current renewable capacity 28,300 MW).

To reduce our carbon emissions by 50% in 2030 (vs 2007) Iberdrola plans several actions, including:

- Invest 10.5 billion euro in new 4,600 MW wind, hydro and solar capacity (2016-2020) and 210 million euro annually in innovation.
- Operate and develop 4,500 MW pumping storage capacity.
- Deploy over 200,000 km smart networks and 16 million smart meters in Spain and UK by 2020.
- Efficiently integrate solar PV in the grids (some projects): SmartSolar services on solar PV offered to households and SMEs.
- IGREENGrid project (coordinated by Iberdrola) analyses the integration of prosumer variable resources in distribution network.

We act for the climate

- KONE's target is to reduce its operational carbon footprint by 3% annually relative to net sales.
- We focus on **improving energy and material efficiency, lowering our water consumption and waste amounts**, and minimising our use of hazardous substances.
- We strive for continuous improvement in all of our business activities. In addition to complying with or exceeding applicable laws, rules and regulations, we **work with our suppliers and customers** to prevent or reduce business operations-related emissions and waste.

We act for the climate

LafargeHolcim's climate strategy aims at addressing carbon emissions throughout the entire lifecycle of its products and services. It has defined two goals in a 2030 horizon:

- By 2030, reduce CO_2 emissions per tonne of cement by 40% compared to 1990.
- By 2030, avoid every year the emission of 10 Mtonnes of CO_2 during the lifecycle of sold products.

In line with the Paris Agreement, LafargeHolcim will review these targets every five years. By actively working on all levers, LafargeHolcim intends to remain the **most carbon efficient international cement producer.**

- LafargeHolcim is investing in traditional levers (e.g. **energy efficiency, clinker substitution, fossil fuel substitution**) as well innovative **low carbon products** and solutions (e.g. Airium™, Solidia® or Aether®). We are also exploring new strategies and potential **breakthrough technologies**, notably in the field of carbon capture and CO_2 usage.
- We also adopt a pioneering approach in our industry, becoming the first to **measure, monitor and account for CO_2 savings beyond our own operations.**

Example >

Let's be practical

Airium™ - a revolution in construction and insulation

Airium™, an innovative new product from LafargeHolcim, is a **disruptive technology in the insulation market.** Airium™ is a mineral insulating foam that improves energy efficiency for buildings, from floor to ceiling. It addresses the **energy efficiency challenges** facing society today as well as the needs of the construction sector:

- It is entirely mineral based, thereby **healthier.**
- It offers maximum **fire resistance.**
- It exhibits excellent **durability**, as it does not shrink over time (up to **100 years**).
- It is **100% recyclable** with a **low CO_2 impact.**

AIRIUM
Insulation Redefined

We act for the climate

- In line with the UN Paris Agreement on Climate Change, Nestlé is committed to reduce its GHG emissions with the level required by science to limit warming to less than 2°C compared to pre-industrial temperatures.

- Actions include **switching to cleaner fuels, increasing the share of renewable energy** sources, improving **energy efficiency, optimising distribution networks and route planning across all our operations; improving transportation** (e.g. use sea and rail instead of road, expanding driver training both from a safety and environmental efficiency perspective) and support the **development and use of safe and efficient natural refrigerant solutions.**

- Nestlé manages **risks and opportunities** related to climate change and water resources proactively given the impact it may have on agriculture and food production systems.

- We provide **environmental information and dialogue** based on scientific evidence about our products, activities and services.

- We work with our **suppliers** to help them adapt to climate change: both to support their livelihoods and the environment and to reduce the risk to the long-term supply of materials for our business.

Example >

Let's be practical

Nestlé Brazil plant goes to zero on water, waste and net carbon emissions

A Nestlé plant in Brazil has achieved zero environmental impact on water, waste for disposal, and net carbon emissions. The factory uses ground-breaking technologies to ensure a more sustainable resource use.

It doesn't withdraw water in its production as it reuses water from condensed milk manufacturing. This saves more than 66,000 m^3 of water in one year.
The plant also recovers and recycles all materials, meaning no waste is sent to landfills.

Finally, 97% of the energy of the plant comes from renewable sources and the remaining greenhouse gas emissions are neutralised through the purchase of carbon credits.

The plant's performance was certified by Intertek Group, a company specialised in certifications.
The achievement is a step towards Nestlé's ambition of going to zero environmental impact from operations by 2030.

We act for the climate

NOKIA

- Nokia is committed to reducing its own carbon footprint. It **embeds environmental considerations into its operations business planning**, decision-making and monitoring activities to understand the impact and to continuously improve.
- Design and develop **products and services** that help telecoms operators to build low carbon networks.
- **Drive improvements** by working together with our customers and various ICT industry organisations that promote climate change and sustainability goals.
- We annually **revise our sustainability, including climate change, materiality** and risk and opportunity analysis. The energy efficiency of our products is key.
- By **working together with our customers, suppliers and various ICT industry organisations**, we drive improvements that promote climate action.
- We monitor our environmental performance annually, in line with bold environmental targets.
- We use industry/investor platforms such as EcoVadis, CDP and DJSI to increase transparency on our sustainability management and performance.

Example >

Let's be practical

Nokia's "Zero CO_2 emission offering" can decrease energy use by up to 70%

Nokia is a global leader in creating the technologies at the heart of our connected world. We focus on minimising our environmental footprint while maximising our handprint by:

- Reducing the energy usage of the products we deliver to our customers. Our Zero CO_2 emission offering can decrease energy use by up to 70%.
- Minimising our own operations' footprint through continued certification to ISO 14001, reducing our GHG emissions by 14% in 2016.
- Creating and delivering smart solutions that enable our customers and other industries to minimise theirs.

We believe that the implementation of science-based targets would positively contribute to the fight against climate change. Nokia is the first telecommunications equipment vendor to have established and submitted science-based targets, for our products in use and our own operations emissions.

We act for the climate

- The main part of the efforts concerns our networks: it is a question of **investing in less energy-consuming equipment** and of **sharing better infrastructures.**

- Concerning our buildings, setting-up sensors to supervise our consumption and deploying the HQE standards company-wide allowed reducing CO_2 emissions by 37% (2006-2016).

- The transition of our **vehicle fleet** allowed reducing CO_2 emissions by 32% (2006-2016), by limiting the CO_2 level of the vehicle fleet, setting up a car-sharing fleet, introducing electric and hybrid models, by leading a test with Renault/Nissan.

- Our **CSR approach** is an important part of Orange strategic plan: Essentials 2020. Numerous business lines are working to **reduce their energy consumption and CO_2** emissions. We commit to reduce by 50% CO_2 emissions per customer usage in 2020. (base 2006 - Group scope)

- We have implemented **specific procedures for emission accounting** and we are improving data quality and the reporting process every year.
- We **present our approach to climate change** (including our KPIs) during roadshows with investors.

- We also communicate the environmental credentials through **product labelling** whenever appropriate.

Example >

Let's be practical

Orange saved the equivalent of one-year ITN energy consumption over 2010-2016

A broad energy action plan, Green ITN2020, was launched in 2008 to reduce energy consumption related to the operation of Networks and Information Systems. Over the 2010-2016 period, at least 3.5 TWh of electricity and 217 million litres of fuel have already been saved by Orange countries representing one year of ITN energy consumption.

Renewable Energy: in Africa and the Middle East, solar energy deployment continued on the radio sites of the zone with more than 2,800 operational sites in 2016.

Orange Jordan's decision to switch to 100% renewable energy with the finalisation of Solar Farm project will allow to generate the equivalent of Orange Jordan total electricity needs (64 GWh electricity with 34 MW capacity) and save up to 70-80% of total annual electricity bill from the first full year.

We act for the climate

- Roche continues setting **reduction targets** with the long-term goal to reduce energy intensity by 50% and to use nothing but sustainable energies.
- Roche's **Directive on Energy Conservation** (a management system with compulsory **energy efficiency standards**) ensures that all decision-making at Roche supports efficient, appropriate and cost-effective energy use.
- All Roche affiliates are required to implement annual **energy action plans.**
- **Energy audits** help sites to identify and implement energy conservation measures.
- Roche also sets goals to reduce its **ecological footprint** (incl. water consumption).
- Roche applies **clear risk management procedures** related to climate change, which are integrated into the company wide risk management process. Roche systematically analyses and evaluates risks associated with energy-related activities and takes appropriate measures to reduce potential risks to acceptable levels.
- **Energy supply chain risks** that could affect business continuity are also evaluated, and if risks are deemed unacceptable, appropriate back-up solutions are implemented.

Example >

Let's be practical

Complete phase-out of substances that affect the climate

Roche is aggressively phasing out substances that affect the climate or that are persistent in the atmosphere (e.g. “halogenated hydrocarbons” commonly used as refrigerants or as blowing agents or as fire suppressants).

The goal is to completely phase-out such substances. Measures include the substitution with natural refrigerants (for example ammonia and hydrocarbons). We have already accomplished more than 90% for Roche Legacy. New acquisitions are required to phase out according to feasible timelines.

We act for the climate

- Supplying more **natural gas** to replace coal for power generation.
- Progressing **carbon capture and storage** (CCS) technologies.
- Developing **alternative energies.**
- Implementing **energy-efficiency** measures in our operations.
- To support this, we continue to advocate the introduction of effective government-led **carbon pricing** mechanisms.
- We work with governments and industry representatives to help society's transition to a low-carbon energy future.
- We have invested in cleaner-burning natural gas and low-carbon biofuels and are also working on new fuels for transport.
- Shell shapes its portfolio and strategy to take into account the shift to lower-carbon energy, ensuring our company's resilience for the future.

Example >

Let's be practical

Shell is playing a leading role in the demonstration of CCS technology

Shell is playing a leading role in the demonstration of CCS technology. This, we believe, is the only currently available technology that can significantly reduce CO_2 emissions from industrial sectors of the economy.

In November 2015, Shell's Quest CCS project officially opened at our oil sands operations in Canada. Quest successfully stored more than 2 Mtonnes of CO_2 deep underground in its two years of operations. We are involved in the Gorgon CO_2 injection project in Australia, the CCS test centre in Mongstad, Norway, and the Qatar Carbonates and Carbon Storage Research Centre in London, UK.

Shell's investments in CCS projects, as well as Shell's Cansolv CCS technology, mean that together with our partners and customers, we have more than 5 million tonnes of annual CO_2 capture capacity on-stream or under construction.

We act for the climate

In 2014, Saint-Gobain released an **Energy, Atmospheric Emissions and Climate Change policy** which targets all the Group's functions with the purpose of:

- mobilising and raising awareness.
- planning the implementation of measures tailored to all the group's activities.
- measuring progress achieved using common indicators.
- anticipating regulatory changes.
- incorporating these challenges into the Group's strategy for innovation.
- Support from a **network of Energy Managers** from across the company.

An annual **Best Available Techniques and Practices roll-out plan.**

- On 1 January 2016, a new **internal carbon price** (e.g. shadow price) has been introduced. One carbon price is applied to capital expenditure projects above a certain threshold. Another carbon price, markedly higher, is used to drive investments in R&D that will accelerate the delivery of breakthrough technologies.
- Saint-Gobain is **reporting annually on Climate Change through CDP** and is present in several sustainability indexes like DJSI Europe and World.
- **Energy-efficient buildings** are a high-potential segment in which the Group is well-positioned, with its line of solutions favouring energy efficiency.

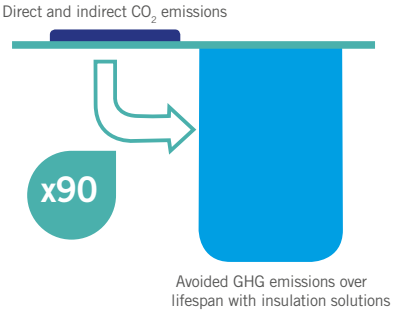
Example >

Let's be practical

Saint-Gobain's methodology for estimating the greenhouse gas emissions avoided by using insulation solutions in Europe

Saint-Gobain's insulating glazing and thermal insulation solutions help reducing CO_2 emissions in the building sector. To highlight this contribution, Saint-Gobain has co-developed with EY's Sustainable Performance & Transformation department a methodology for estimating the greenhouse gas emissions avoided by using these insulation solutions in Europe. After 3 months use on average, these solutions offset the emissions related to their production.

Beyond these three months, the savings continue to accumulate. It is reckoned that the solutions produced and sold in Europe in 2014 will generate, over their whole life, an aggregated net potential avoidance of more than 550 Mtonnes CO_2 eq. This amount corresponds to approximately 90 times the Group's greenhouse gas emissions in 2014 over the same geographic scope.



We act for the climate

SIEMENS

- Siemens ranks **#1 on the 2017 Carbon Clean 200** list.
- Siemens is one of the first major industrial companies aiming to achieve a **worldwide net-zero carbon footprint by 2030.** We firmly believe companies play a pioneering role in the fight against climate change.
- Siemens plans to invest some 100 million euro in **energy efficiency** projects at its production facilities and buildings until 2020. Savings are expected to cut CO_2 emissions by an annual 80,000 metric tonnes and starting from 2020, we expect more than 20 million euro annual savings in operating costs.
- Currently, 50% of our German sites and all of our UK sites are powered by 100% **green energy.**
- After two years, in fiscal 2016, Siemens has already cut its CO_2 emissions by over 20% globally.
- In fiscal year 2016, **Siemens' Environmental Portfolio** generated revenue of 36 billion euro representing 46% of its total revenue. It helped our customers reduce their CO_2 emissions by 521 million tonnes in that year. This amount is equivalent to more than 60% of Germany's annual CO_2 emissions.

Example >

Let's be practical

Siemens has built the world's largest hydrogen electrolysis facility

Together with partners, Siemens has built the world's largest hydrogen electrolysis facility, the Mainz Energy Farm. Its high-pressure PEM electrolyser uses renewable energy, mainly onshore wind, to transform water into hydrogen. The electrolyser can ramp up to its full capacity of up to 6 MW in a matter of seconds, making it ideal to integrate the growing and highly fluctuating output of renewable generation systems. Hydrogen can be converted back into electricity to provide capacity at times renewables don't produce electricity. It can also power vehicles, or be methanised and stored in existing natural gas infrastructures. If produced at competitive costs, green hydrogen could also become an important raw material for the process industries, making it a key enabler for a low-carbon economy.

We act for the climate

Smurfit Kappa

Smurfit Kappa focuses on its paper mills comprising some 80-85% of our GHG emissions. We have a three pronged approach to reach our 25% fossil CO_2 reduction goal:

- **Investing in efficient energy generation** at our sites.
- Investing in **energy reduction** programmes throughout the paper making process.
- Reducing carbon emissions through a **shift to CO_2-friendlier fuels such as biomass and natural gas.**
- Our **robust data** allows us to design solutions that help our customers tackling their product value chain GHG emissions, record their product carbon footprint and track their development over the years.
- Our wood raw material allows us a switch to **bio-based fuels** at our virgin paper mills.
- We communicate to our stakeholders through transparent reporting and participate to **external sustainability assessments** such as DJSI, CDP, FTSE4Good.

Example >

Let's be practical

The journey towards zero fossil emissions

Nature is both Smurfit Kappa's source of raw materials and inspiration for a circular economy. We replace natural resources, reuse materials and close loops. Our Piteå paper mill's example of 99% biogenic energy production is a good example of this.
The Swedish mill moved towards zero fossil CO_2 emissions in 2007 with investment in a biomass boiler, followed by fuelling lime kilns with sawdust. Further efficiency improvements included replacing heavy fuel oil with bio oil.

The project benefits include:

- +90% reduction in fossil CO_2 emissions
- 99% of the mill running on biogenic energy
- Using raw material from sustainable forests
- Delivering biogenic heating to 5,000 households
- Passing on CO_2 emission savings to customers

Optimisation of our supply chain results in eco-friendly packaging with a reduced carbon footprint.

We act for the climate

- Continuously improve our **energy efficiency** through SOLWATT® and Manufacturing Excellence programmes.
- Improve the CO_2 footprint of our **energy mix** through initiatives such as:
  - Primary energy switching and conversion to biomass firing.
  - Renewable electricity sourcing.
- Reduce greenhouse gas emissions released from our **chemical processing** operations.

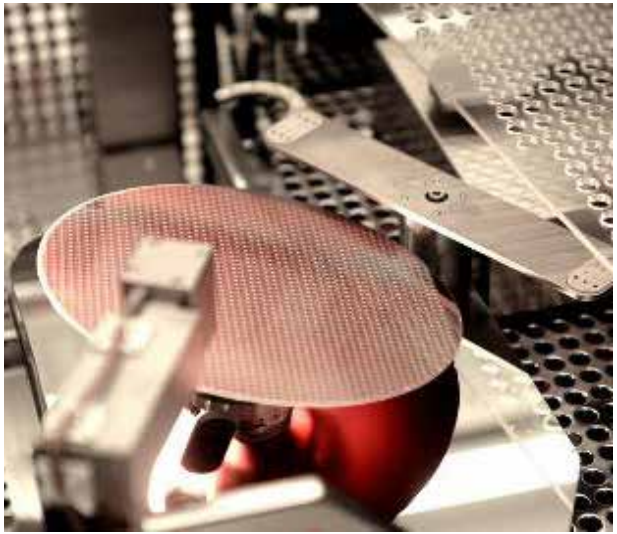
- The **Sustainable Portfolio Management** (SPM) analysis is part of the Group's and the Global Business Units' key business processes. It helps to analyse the portfolio and allocate resource to elevate it. The impact of CO_2 is explicitly taken into account.
- In 2016, we began applying an **internal price** of 25 euro per metric tonne of CO_2eq. in all our investment decisions. Consequently, climate-related impacts are incorporated into our strategic choices. By implementing a "carbon price signal", the Group is clearly establishing its commitment to the transition to a low-carbon economy.

Example >

Let's be practical

Solvay and partners launch the ecoFluor project to test climate-friendly new technology and reduce emissions

Solvay's Global Business Unit (GBU) Special Chem, Texas Instruments, Muegge and Fraunhofer EMFT combine their technology and know-how to reduce greenhouse gas emissions released by thin film tools used in the semiconductor industry by using alternative fluorine gas mixtures. The EcoFluor technology contributes to tackling climate change with a zero GWP - replacing an NF3 technology with a GWP 17,000 times higher than CO_2!



We act for the climate

- thyssenkrupp fosters numerous technology developments such as Carbon2Chem® to use waste gases from steel production to substitute fossil carbon input in chemical plants; RedoxFlow systems to allow storage of renewable energy for well over 4-12 hours and with two digit MW capacities, or advanced water electrolysis to generate green hydrogen, to name just few.

- In fiscal year 2013/2014, we launched a group-wide energy efficiency programme (GEEP) aimed at achieving sustainable efficiency gains of 3.5 TWh by fiscal 2019/2020. The programme is being implemented through concrete projects at the individual sites.

Climate Change is **fully integrated into thyssenkrupp's business strategy, opportunity & risk management.**

Two major channels towards our business strategy:

- Our **Sustainability Committee**, which consists of the Members of the Executive Board, CEOs of the Business Areas and Heads of Corporate Functions, decides for example on the Group's so-called Indirect Financial Targets which are part of the Board's compensation scheme.

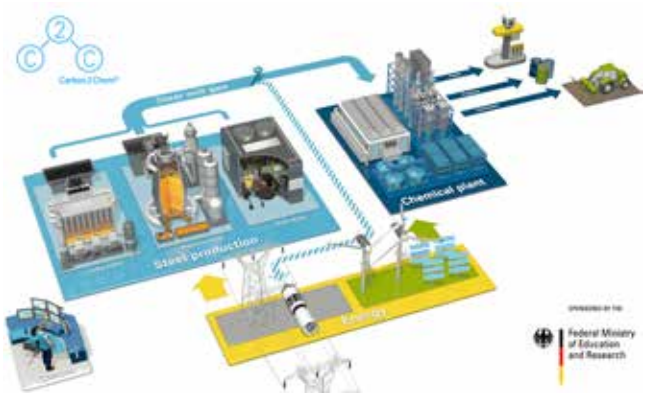
- The **Innovation Dialogue** which is a dedicated process to drive and challenge innovation strategies in each Business Area.

Example >

Let's be practical

A new way of dealing with steel waste gases

For a long time, great importance is attached to recycling in the steel industry. Blast furnace gas was first used to generate energy for steel mills at the end of the 19th century. Now for the first time, Carbon2Chem® is using the gases from the steelmaking process as a raw material for chemical production, which reduces overall CO_2 emissions.



We act for the climate

- Our mitigation actions focus on an **efficient use of thermal and electrical energy**, use of **alternative fuels and materials** and **cement production with lower clinker content.**
- The Group is considering a **"scenarios approach" in our future investment decisions**, incorporating shadow prices and expected carbon costs.
- The Group Sustainability Committee uses the **UN's SDGs (Sustainable Development Goals)** as a reference point for defining our future priorities and areas for further improvement.
- The Group's goals are aligned through a materiality assessment process.

We act for the climate

- Improving the carbon intensity of our production mix by:
  - Deploying an **assertive strategy in gas,** while strictly limiting methane emissions
  - Selecting and developing safe, environmentally responsible, competitive oil and gas projects
  - Innovating and expanding in **carbon capture, use and storage** technologies
  - Publicly supporting the implementation of carbon pricing mechanisms
  - **Exiting the coal business**
  - **Encouraging sector initiatives** and collectively engaging to address climate issues
- **"20% low-carbon businesses in 20 years' time":** Growing as a leading integrated solar player, adding energy storage to our businesses while developing bioenergies
- Improving **energy efficiency** by reduced flaring and by providing solutions to encourage responsible energy use by our customers.
- Total's growth strategy uses as a point of reference the **2°C scenario of IEA** and its impact on energy markets.
- In today's challenging production environment, we focus **on moderately priced production and processing assets** that meet the highest environmental and safety standards. E.g. reducing exposure in Canada's oil sands, no oil exploration or production in the Arctic ice pack.
- To ensure the viability of our projects and our long-term strategy, when evaluating our investments, we apply an **internal CO_2 price** of 30 to 40 USD per tonne.

Example >

Let's be practical

In 2016, Total acquired Saft, the world leader in high-tech batteries for industry

In 2016 we acquired Saft, the world leader in high-tech batteries for industry. Electricity storage is a prerequisite for growth in renewable energies.

Saft Li-ion batteries are an essential component in smart grids: they help improve power grid management and reduce the energy lost during transmission and distribution. In addition to being more energy-efficient, smart grids help operators manage production peaks and troughs, a process known as demand response, so that renewable energies — which are variable by nature — can be integrated into the grid more smoothly.

Saft's high-efficiency batteries will also play a critical role in reducing transportation-related carbon emissions by 40% by 2030. Lightweight, space-saving Li-ion batteries can meet the technical challenges posed by hybrid and electric propulsion, not only in urban environments, but also at ports, airports and industrial sites and in shipping.

We act for the climate

- Vodafone has a strong financial incentive to pursue **energy efficiency** in our operations – as our customers' needs expand, so does the energy required to run our networks. Many of our customers and employees live in parts of the world where their lives and livelihoods are directly threatened by climate change. We believe we have a responsibility to act. We also see the potential of communications technology to help with emissions reduction and the fight against climate change.

We are focusing our efforts on:

- **Continuous innovation** in the design of our networks and technology centres
- Development of options to **replace carbon-intensive energy sources** on-grid and off-grid
- Measures to enhance **energy efficiency** and **reduce emissions** from our general business and administrative activities
- Helping our customers to reduce their carbon emissions through adoption of our **products and services.**

Example >

Let's be practical

Promoting the "Internet of Things" as enabler for GHG emissions reduction

As the 'Internet of Things' (IoT) advances – bringing network intelligence and optimised energy use to a variety of machines, devices and processes – the ICT industry is becoming a major player in helping other sectors to reduce greenhouse gas emissions.

One recent estimate is that the industry could account for a 20% reduction in total global GHG emissions by 2030, in effect maintaining emissions at 2015 levels despite a further 15 years of global population growth and increasing urbanisation and industrialisation in emerging markets.

For Vodafone, the positive effects of our contribution – in terms of reduced emissions for our customers – already exceed the greenhouse gas impact from our own operations by a factor of nearly two to one.

We act for the climate

VOLVO

Volvo Group

Volvo Group is the only automotive industry approved by WWF to participate in their **Climate Savers programme.** The current commitment period (2015-2020) includes:

- Reducing lifetime CO_2 emissions from products sold during the commitment period by 40 Mtonnes.
- Improving energy efficiency in production by implementing energy saving measures giving 150 GWh per year
- Reducing CO_2 emissions from Volvo Group freight transport by 20%
- Run 14 projects supporting development in the whole transport sector

Driving prosperity through transport solutions requires us to create value for the Volvo Group, our stakeholders and society at large. The Volvo Group's approach to sustainability is divided in three parts: our value chain activities, sustainable transport solutions and our role in society. Examples of our activities:

- **Fuel efficiency and alternative fuel** focus in product development
- Activities to **lower energy consumption** and reduce emissions from operations
- Host of the **Construction Climate Change programme**

Example >

Let's be practical

Volvo's first hybrid vehicle for long haul application

With the Volvo Concept Truck, Volvo Trucks has developed its first hybrid vehicle designed for long haul applications. In combination with the vehicle's other improvements in aerodynamics, rolling resistance and reduced weight, the total reduction in fuel consumption and CO_2 is around 30 per cent.

In long haul transportation, it is estimated that the hybrid powertrain will allow the combustion engine to be shut off for up to 30 per cent of the driving time. This will save between 5-10 per cent in fuel. It also offers the ability to drive in full electric mode, enabling the vehicle to operate with zero emissions.

Since the concept vehicle is part of a research project it will not be available on the market. However, some of its aerodynamic features have already been implemented on Volvo Trucks' series-produced vehicles.

ERT Members

CHAIRMAN
Benoît Potier - Air Liquide

VICE-CHAIRMAN
Vittorio Colao - Vodafone Group

Jean-Paul Agon	L'Oréal
José María Álvarez-Pallete	Telefónica
Paulo Azevedo	Sonae
Ben van Beurden	Royal Dutch Shell
Kurt Bock	BASF
Jean-François van Boxmeer	HEINEKEN
Carlo Bozotti	STMicroelectronics
Svein Richard Brandtzaeg	Norsk Hydro
Paul Bulcke	Nestlé
Pierre-André de Chalendar	Saint-Gobain
Jean-Pierre Clamadieu	Solvay
Iain Conn	Centrica
Ian Davis	Rolls-Royce
Rodolfo De Benedetti	CIR
Rafael del Pino	Ferrovial
Volkmar Denner	Robert Bosch
Claudio Descalzi	Eni
Wolfgang Eder	voestalpine
Henrik Ehrnrooth	KONE

John Elkann	FCA
Christoph Franz	F. Hoffmann-La Roche
Ignacio S. Galán	Iberdrola
Moya Greene	Royal Mail Group
Paul Hermelin	Capgemini
Zsolt Hernádi	MOL
Heinrich Hiesinger	thyssenkrupp
Timotheus Höttges	Deutsche Telekom
Frans van Houten	Royal Philips
Pablo Isla	Inditex
Leif Johansson	Ericsson
Joe Kaeser	Siemens
Isabelle Kocher	ENGIE
Harald Krüger	BMW Group
Bruno Lafont	LafargeHolcim
Thomas Leysen	Umicore
Martin Lundstedt	Volvo Group
Bill McDermott	SAP
Nancy McKinstry	Wolters Kluwer

Lakshmi N. Mittal	ArcelorMittal
Dimitri Papalexopoulos	Titan Cement
Jan du Plessis	Rio Tinto
Patrick Pouyanné	TOTAL
Stéphane Richard	Orange
Gianfelice Rocca	Techint Group
Kasper Rorsted	adidas Group
Güler Sabanci	Sabanci Holding
Jean-Dominique Senard	Michelin
Risto Siilasmaa	Nokia
Søren Skou	A.P. Møller-Mærsk
Tony Smurfit	Smurfit Kappa Group
Ulrich Spiesshofer	ABB
Carl-Henric Svanberg	BP
Johannes Teyssen	E.ON
Hans Van Bylen	Henkel
Jacob Wallenberg	Investor AB

Secretary General
Brian Ager - ERT

ERT

European Round Table of Industrialists
Boulevard Brand Whitlocklaan 165
1200 Brussels - Belgium

Tel. +32 2 534 31 00
contact@ert.eu
www.ert.eu
@ert_eu