

TIME FOR CLIMATE IMPACT DISCLOSURE

Introducing a new standard to disclose and measure
climate impact for capital goods and consumer durables

Life Is On

Schneider
Electric

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LOOKING AHEAD TO A LOW-CARBON WORLD

When it comes to sustainability and especially climate change, at Schneider Electric, we are neither pessimists nor optimists: We are activists. Sustainability is at the heart of everything we do, **empowering all to do more with less, ensuring Life is On™, everywhere, for everyone, at every moment.**

Our main commitment is to take action for ourselves and to support our customers in their journey toward a more sustainable world. Our solutions span from buildings to industry, from cities to data centers, and from large grids to interlinked mini grids, to drive energy and operational efficiency across all core sectors of the global economy. What we need is better, not more!

ENABLING OUR CUSTOMERS TO MEET THE ENERGY CHALLENGE

Serving the two major transitions toward a more electric, decentralized, decarbonized, and digitized energy world, and Industry 4.0, **we provide energy and automation digital solutions to our partners and customers, for efficiency and sustainability.** We combine world-leading energy technologies, real-time automation, software, services, leveraging our digital platform, EcoStruxure™, to support our customers' and partners' accelerated transitions toward a sustainable future.

Low-carbon solutions enable businesses to reduce their exposure to volatile energy markets, comply with increasingly stringent climate regulations, decrease their energy and process costs, and organize more circularity. **We are supporting business differentiation, impact, and sustainability:** from increased business opportunities, to lower risk, long-term growth, and a positive contribution to the society. Energy and resource efficiency are critical to ensure progress for all while preserving our planet, thus delivering truly sustainable development.

OUR PROMISE: OUR CUSTOMERS WILL SAVE OVER 120 MILLION TONS OF CO₂ EMISSIONS BY 2020

The time has come for full disclosure on our climate impact. Customers expect increased transparency through environmental information available at their fingertips. They also increasingly want to choose offers and services that have a positive impact on the planet. Investors expect full transparency on the environmental impact of their portfolios so they can bet on sustainable opportunities and reduce risks.

We first created a low-carbon strategy for ourselves, to decrease our own emissions (by 10 percent every three years), eliminate landfill waste, gain efficiencies, and lower costs. We designed a core tool, the Schneider Sustainability Impact, that measures and accelerates our contribution to sustainability and prosperity, as a compass to the United Nations Sustainable Development Goals. Our results are measured quarterly by independent third parties and impact twenty percent of all the variable compensations of our managers around the world. This strategy also became a source of pride among our teams.

We are now working to share our experience with our partners and customers and support their own efforts on a daily basis through our digital technologies. To demonstrate our positive impact on climate, we have further developed a robust and forward-looking methodology to compute holistic lifetime carbon dioxide (CO₂) savings. We want to share it broadly in order for it to become an industry standard for CO₂ quantification within the capital goods and consumer durables sectors. By 2020, we will have helped our customers save 120 million metric tons of CO₂ emissions.

It is time to act. Full impact disclosure is a key step: you start improving when you start measuring. **Join us and make a difference.**



Jean-Pascal Tricoire
Chairman & CEO

By 2020, we will help
our customers save
120 million metric tons
of CO₂ emissions

SCHNEIDER TAKES ON THE ENERGY EFFICIENCY CHALLENGE

How can we satisfy exponential growth in energy demand together with the necessity to reduce by half our CO₂ emissions?

1

Billion people have no access to electricity

63

Million people live in fuel poverty in Europe



More people, achieving more

Power and digitize life of everyone in the world, enable innovative ideas **collaborating with public and private actors**

The facts

x1.5

Energy demand

The need

÷2

CO₂ emissions



While using less of our resources

Energy efficiency and resources efficiency are a must **for the planet and business bottom-line**

EcoStruxure contributes to the shift towards a low-carbon economy, by helping customers reduce their CO₂ emissions

Life Is **On** when life is...

POWERED

x2

Worldwide power capacity by 2040 (BNEF, 2017)

+80%

New capacity additions in renewables by 2040 (BNEF)

Power leads

Global investment in electricity overtakes Oil & Gas for the first time in 2016 (IEA 2017)

30%

Of vehicle stock running electric by 2040 (BNEF)

DIGITAL

10x more

Incremental connected devices than incremental connected people by 2020 (IHS, March 2016; UN population stats)

+25%

CAGR YoY growth of IP traffic

+40%

Productivity by 2035 thanks to new automation techniques (EPSC 2018)

THE TIME HAS COME FOR CLIMATE IMPACT DISCLOSURE

The case for transparent disclosure of end-to-end impact

To demonstrate the positive climate impact of our offers, we have developed a transparent and transversal methodology to measure induced, saved and avoided CO₂ emissions during the use phase of our products, software and services.



MEASURING CLIMATE IMPACT

Companies that embrace the climate transition increasingly appear as more likely to succeed in the long-term. The shift of markets to low-CO₂ challenges the competitive landscape and triggers disruptive innovation. Energy and resource efficient companies are more resilient to volatile commodity prices and reduce their exposure to future supply chain risks. A focus on sustainability is also a must to attract talent, especially as millennials grow in the workforce. As per a recent Deloitte survey, millennials will account for two-thirds of the world population by 2020.



From increased profitability opportunities to lower risk, long-term growth, and a greater affiliation among the incoming generation it is clear that **sustainability generates value**.

If you invested in a value-weighted portfolio of high-sustainability companies in 1993, your investment would have outperformed a portfolio of low-sustainability companies by 46% by 2010¹.

Investors are increasingly focusing on evaluating the sustainability performance of companies, and the sustainable value delivered to the business. With **Impact Investing**, investors are targeting to deliver **intentional and identifiable impact alongside financial results**.

It is time to go one step ahead with **transparent climate impact disclosure**, focusing on strategic impact metrics. For the **capital goods and consumer durables sector**, a priority is to **quantify the CO₂ impact of offers** during their lifetime, as solutions sold today will be used for decades to come. Emissions from the use-phase typically represent over 80% of end-to-end CO₂ footprint and CO₂ savings opportunities.

"Adoption of strategic sustainability practices is significantly and positively associated with both return on capital and expectations of future performance as reflected in price to book valuation multiples, whereas the adoption of common sustainability practices is reliably correlated only with expectations of future performance."

Corporate Sustainability: A Strategy? – Harvard Business School - 2019

1. Bonini, S. & Swartz S., "Profits with purpose: How organizing for sustainability can benefit the bottom line," McKinsey & Company, 2014

OUR PROMISE: 120 MtCO₂ SAVED OVER 3 YEARS

Demonstrating the positive climate impact of our offers

Our ambition is to demonstrate **120 MtCO₂** SAVED by
Schneider Electric's customers with EcoStruxure over 3 years (2018 to 2020 sales)

The equivalent of annual CO₂ emissions of



14.9 million
people in EU

The equivalent of annual CO₂ sequestered by



144,000,000
acres of US forest



415,000 flights
around the Earth on
a full Boeing 747



The city of **Tokyo**
(Japan)



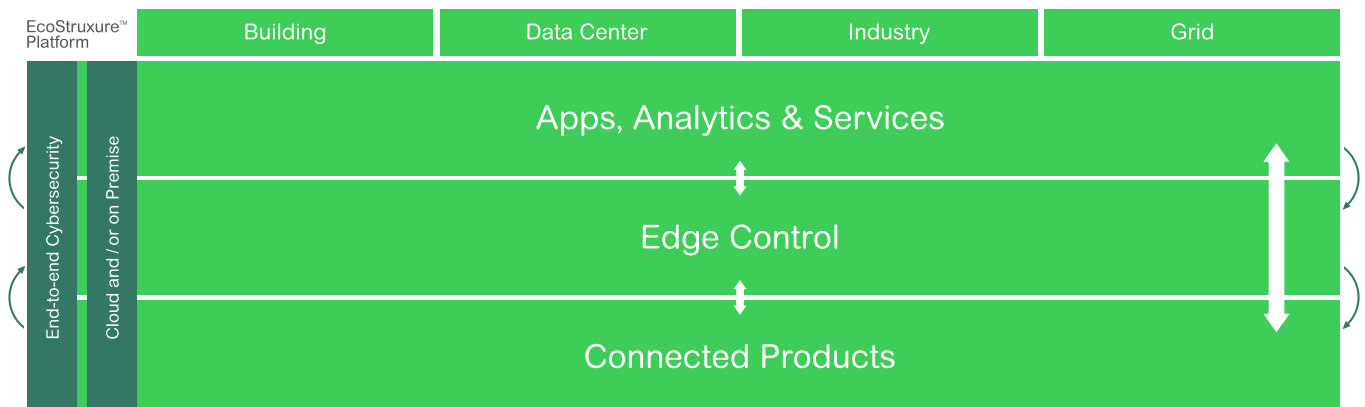
The whole surface of France

Progress is reported externally quarterly in [Schneider Sustainability Impacts](#).

2018 – 2020
SCHNEIDER
SUSTAINABILITY
IMPAIRTS

EcoStruxure™

Our IOT architecture and platform delivers efficiency at every level



Our engagement concerns solely saved emission, which are calculated on Brownfield² projects, therefore not accounting for avoided emissions of Greenfield² projects. The methodology covers a wide variety of offers, including products, software and services.

OUR BOLD IDEA: AN INNOVATIVE METHODOLOGY FOR INDUSTRY

Consistent CO₂ impact disclosure is just a small step away

Standardized definitions and quantification methodologies are essential to assess climate impact and build trust, both on corporate and investors' sides.

Schneider Electric has been part of companies leading the fight against climate change for years, and is committed to cut CO₂ emissions from its own operations in line with the guiding principles of the Science Based Targets initiative and with SDG 13 for Climate Action. By 2030, we will switch to 100% renewable electricity, use 100% recyclable or reusable packaging, recover 100% of industrial waste and double energy productivity against a 2005 baseline.

Besides being the only industrial company on CDP A List for 8 years in a row, Schneider Electric also helps more than 100 clients to reach the same score with [Energy and Sustainability Services](#).



The challenge is to improve the ability to quantify CO₂ impact of products & services.



Customers demand increased transparency, with environmental information available at a fingertip and the ability to distinguish offers with a positive impact on climate. Investors demand full overview of the climate impact of investee companies, to reduce risks and capture opportunities in their portfolio. Both needs should be answered in a consistent manner.

The following table illustrates how the three main standardised methodologies used for CO₂ quantification fail to answer the need to for a comprehensive methodology. As a result, claims made by economical actors are often inconsistent and lack transparency, reinforcing the need for a shared methodology.

	LCA (life cycle analysis)	CO ₂ e Project Accounting	CO ₂ e Corporate Accounting
Applicable at offer / single project level	✓	✓	✗
Applicable at aggregated line of business / corporate level	✗	✗	✓
CO ₂ savings or avoidance compared to a reference situation	✗	✓	✗

Our ambition is to develop a shared industry standard for CO₂ quantification within the capital goods and consumer durables sectors. This white paper, together with the methodology guide, is an effort to collaborate transparently on principles and calculation rules, so that all companies can disclose consistently the CO₂ impact of their offers. The methodology is pragmatic, robust and flexible, to allow fast adoption in the industry.

A CONSERVATIVE, TRANSPARENT, VERIFIED METHODOLOGY

Pragmatic and flexible calculation rules should enable fast adoption by the industry



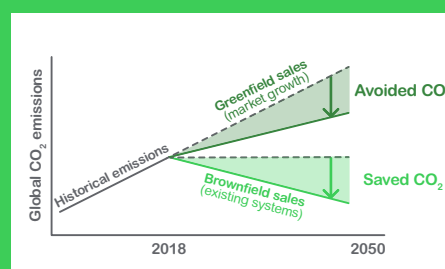
SAVED AND AVOIDED EMISSIONS

A needed distinction between the reduction of historical emissions and the limitation of increasing emissions

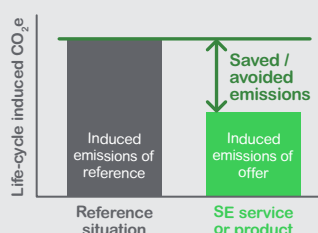
Why is it important to differentiate saved and avoided emissions?

Brownfield sales enable reduction of global CO₂ emissions compared to previous years (saved CO₂). Greenfield sales enable a limitation of the increase of global emissions (avoided CO₂).

As illustrated, this distinction is crucial to demonstrate the double leverage of action on climate change, with robust reference scenarios and conservative results.



	BROWNFIELD (BF)	GREENFIELD (GF)
What is the definition of BF/GF offer sales?	Is the situation in which the product or service sold replaces or upgrades an existing system (retrofit projects).	Is the situation in which the product or service sold equips a new infrastructure to answer demand growth (new projects).
How to define the reference situation?	The Brownfield reference situation is defined as the solutions in place prior to the sale of the offer. For instance, the product or service used in the past to fulfil the same objective.	The Greenfield reference situation is defined as the most likely alternative to fulfill the same output or service of the offer. For instance, the alternative offer from competitors or an alternative technology.
Saved or avoided emissions?	<p>SAVED EMISSIONS</p> <p>correspond to the reduction of CO₂ emission compared to previous situation</p>	<p>SAVED / AVOIDED EMISSIONS</p> <p>correspond to the reduction of CO₂ emission compared to the most likely alternative</p>



Forward-looking emission factors

This methodology uses the yearly accounting methodology: induced, avoided and saved emissions of offers sold within the year, cumulated over their expected lifetime.

When relevant, **emission factors are adjusted to consider the future “decarbonization” of the world**. Indeed, offers sold today have life expectancies of several decades and emissions of the environment will evolve in time. In particular, using current electricity emission factors would lead to a systematic overestimation of emissions. Therefore, we use the “Reference Technology Scenario” by IEA to adjust electricity emission factors with expected future reduction of CO₂e emissions.

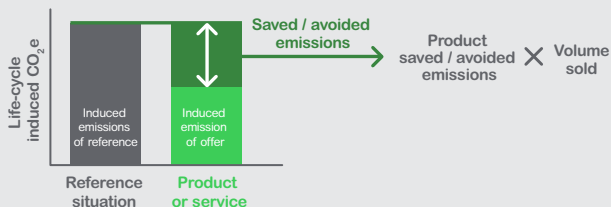
A FLEXIBLE CALCULATION METHODOLOGY

Calculation rules are top-down, using aggregated sales data, to ensure data availability, reproducibility and consistency. Depending on the offer and available data, four main calculation rules can be used.

1 Based on the volume sold during the year

This methodology is applicable to homogeneous lines of business for which it is possible to count sales with a “physical unit”, such as a number of units, MW, kWh of energy, etc.

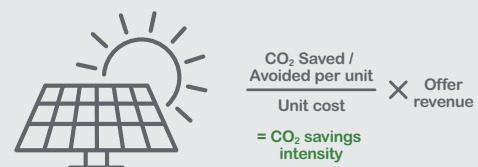
Examples: VSD, transformers, renewable projects etc.



2 Based on CO₂ saving intensity

This methodology is applicable for lines of business for which typical ratios of saved and avoided emissions in kgCO₂/€ of sales can be created. This is the case in industries in which CO₂ savings per € of investment can be estimated, based on market studies.

Examples: Process automation, renewables etc.

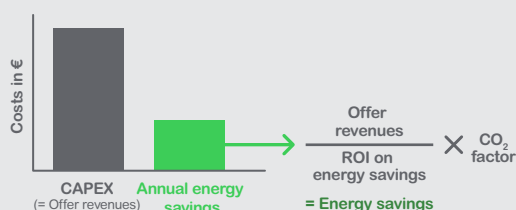


= Total Saved or Avoided Emissions

3 Based on the ROI from energy savings enabled by the offer

This methodology is applicable for lines of business that enable energy savings in a system, and that have negligible or no use-phase emissions.

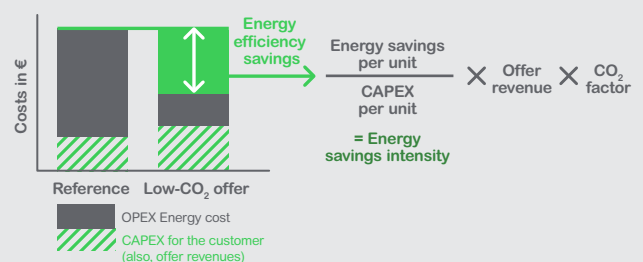
Examples: VSD, building management systems, power management systems etc.



4 Based on the share of energy costs in the offers' total lifecycle costs

This methodology is applicable for lines of business that generate significant use-phase emissions, while enabling use-phase emission savings compared to the reference situation.

Examples: Electric motors, data centers



REQUIREMENTS FOR ACCURATE CLIMATE IMPACT DISCLOSURE

A conservative, transparent and widely applicable methodology that aims to set a new business standard

Rigorous and Conservative

This methodology, developed with the support of independent, expert consultant firm, **Carbone 4**, is both rigorous and conservative. It specifically accounts for:

- **Detailed calculation rules** per offer/technology, leveraging in each case the best available data
- **Distinction between Brownfield sales** (enabling emissions savings compared to previous years - saved CO₂) **and Greenfield sales** (enabling a limitation of emissions increase - avoided CO₂)
- **Forward-looking emission factors**, to account for the future decarbonization of the world (as technologies sold today will be used for decades)

Transparent

The choice of reference situation and emission factors can lead to important variability of results between actors. It is therefore paramount to disclose transparently calculation rules to build trust and to enable further alignment between peers. This is why **Schneider Electric chose to publish the full and detailed methodology** and to make it available for the market. All calculation rules and data sources are disclosed transparently for each offer.

Compliant and Verified

The methodology is **aligned with Greenhouse Gas Protocol accounting and reporting principles, ISO 14067 and ISO 14021**. Notably, results are expressed in tonnes of CO₂ equivalent (tCO₂e) and include scope 1, 2 and 3 emissions as defined by GHG Protocol Standard.

For each offer the methodology specifies transparently the scope, the sources of emissions, the calculation formulas, the values, sources and frequency of update of data and the emission factors. As an independent verifier, **EY** reviewed the methodology prepared by Schneider Electric with regards to its consistency, accuracy, understandability, neutrality, completeness and relevance.



Pragmatic and widely applicable, a shared industry standard

This methodology has been designed to be applicable across the capital goods and equipment sectors.

- **Key principles are transversal** to all long-lasting equipment manufacturers, software and service providers in the capital goods and equipment sectors
- **Pragmatic and flexible** calculation rules can easily be adapted to a wide variety of activities, leveraging existing financial and business reporting

EMISSION SAVINGS AT EVERY LEVEL AND ACROSS SECTORS



EMISSION SAVINGS AT EVERY LEVEL WITH ECOSTRUXURE™

Savings can be calculated within different boundaries – product, system or ecosystem – to capture all CO₂ savings delivered by the solution

Ecosystem level boundaries

Apps, Analytics & Services

Apps, Analytics & Services **leverages IoT** data to identify additional **energy efficiency** opportunities, increase the **lifetime** of assets, optimize maintenance services and boost demand **flexibility** and **renewable** electricity.

CO₂ calculation boundaries can be defined as an ecosystem when the offer enables a superior quality of service and operation to a network, thanks to increased connectivity and managing capabilities.

Power purchase agreements (PPAs)

For instance, PPAs allow to commission new renewables power plants in the energy mix, generating a positive impact at national level.

Given the complexity of ecosystems, the calculation formula can typically be based either on the ROI from energy savings enabled by the offer or on specific ecosystem impact analysis (such as for PPA).

System level boundaries

Edge Control

The Edge Control layer gives the capability to **manage** on-site operations, with day-to-day **optimization** of energy consumption through **remote access** and advanced **automation**.

CO₂ calculation boundaries are defined as the system in which the product is included, for instance a building or an industrial process.

Building Management System (BMS)

For instance, a BMS delivers energy and occupancy efficiency in buildings through the coordinated control of all connected products in the system.

Calculation formula can typically be based on the quantity of edge control software sold, looking at average savings delivered at the system level.

Ecosystem level boundaries

Connected Products

Connected products are **“eco-designed”** to improve their efficiency and deliver electricity savings.

CO₂ calculation boundaries are set to the product itself, looking at the energy consumed and dissipated (joule effect) over the product's lifetime.

Transformers

For instance, energy efficient transformers enable to reduce electricity distribution losses.

Calculation formula is typically based on the quantity of products sold and the efficiency of the product.

POSITIVE IMPACTS ACROSS SECTORS

EcoStruxure™ solutions show significant improvements in productivity and efficiency, enabling our customers to reduce their CO₂ emissions

Water and Wastewater



Improving sustainability & water conservation – Atotonilco, Mexico

The upgraded systems reduce energy and operational costs, help to improve water quality and preserve the water resources of Mexico. The plant is able to produce its own energy through a cogeneration system, biosolids are used as fertilizers in agriculture, and the treated water is reused for the irrigation of 80,000 hectares of land.

145 000

tCO₂ saved

60%

Electrical autonomy



Removal of up to 90% of pollutants

Building



Improving energy efficiency - Ampere e+ Headquarter, Société Générale

Ampere e+ headquarter building was a crazy bet: transforming a building from the 1980s into a building that resonates with the human and with the needs of a contemporary company. The result : a smart and connected building, with digital services to occupants and improved energy efficiency.

CO₂

Footprint reduction of 662kgeq CO₂/m²

>40%

Energy consumption savings



Occupant comfort with mobile app

Logistics and Retail



First commercial industrial microgrid solution in Finland - Lidl Finland Logistics Center

Thanks to microgrid solution, designed in collaboration with Ramboll, Sweco, Fortum and Fingrid, the center is able to optimize heating and cooling and to participate in demand response markets for energy. The logistics center uses 50% less energy than previous two operational centers and received BREEAM excellence award.

CO₂

Emissions reduced by 40%

BREEAM

Excellence award

100%

Renewable electricity

Utilities



Enhancing advanced distribution management system (ADMS) - Enel, Italy

Through the installation of EcoStruxure™ ADMS*, Enel was able to achieve significant cost and energy savings, a complete visibility on distribution system, optimize voltage profile and enable peak sharing and established a system able to predict the impact of power outage, generation and voltage variation.

75 000

tCO₂ saved per year



Energy savings of 4%



144GWh of energy saved annually

Mining Minerals and Metals



Improving energy efficiency with Energy Management System (EMS) - China National Building Material, China

Reduced energy consumption and accessible energy saving solutions: Overall energy efficiency improved by 10%. High production efficiency & operation optimization. Full life cycle digital management and asset contribution optimization.



CO₂ emissions

ROI

Achieved in less than 2 years



Energy savings of 3 to 5% per unit produced

Industry



Compressing the time frame of ROI - Ingersoll Rand, Italy

While the company had developed software to monitor their proprietary equipment, customers were also asking for a way to control compressors from other vendors as well. The company notes that the solution has helped save the release of 15,000 tons of CO₂ into the atmosphere. One customer reported a return on investment of just nine months, and energy cost savings of approximately €8,000 per month, year on year.

€8,000/mo.

Energy cost savings



Gained real-time visibility of installed equipment



Avoided 15,000 tons of CO₂ emissions



Saved ~€8,000 / month on energy bills

KEY TAKEAWAYS

- 
- 1 The time has come for climate impact disclosure. Companies that embrace the climate transition appear more likely to succeed in the long-term.
 - 2 The current lack of standardization creates ambiguous and unclear messages for investors. This methodology aims at becoming an industry standard applicable across capital goods and equipment sectors. The methodology is pragmatic, robust and flexible to enable fast adoption by the industry.
 - 3 Schneider Electric aims to demonstrate the positive CO₂ impact of EcoStruxure offers, with 120 MtCO₂ saved by customers over 3 years.
 - 4 The methodology is robust and conservative: distinguishing saved from avoided emissions and using forward-looking emission factors.
 - 5 The methodology is transparent and has been verified by an independent organization.

Life Is On

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