



ECODESIGN

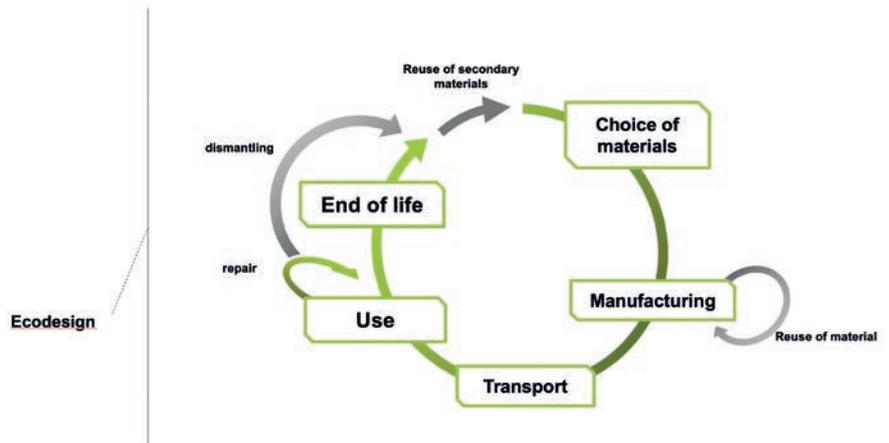


Ecodesign is a process in its own right that is described in Sagemcom's project management documents. Every phase of a project, from launch to qualification and the start of production, is subject to a series of checks that examine the product's ecodesign.

For more than 10 years, Sagemcom has also been developing the capacity to conduct internal life cycle analyses, in line with the protocols in ISO 14044 and the GHG protocol. Any analyses that have to be released outside the company are verified by an independent third party in order to guarantee that the results are accurate. These measurements allow us, and our customers, to direct our design options for our future product generations.

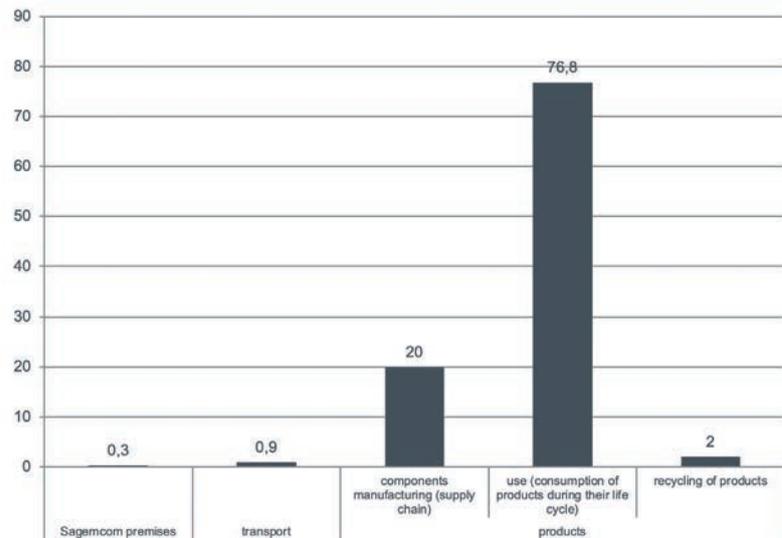
In these ways, throughout the product life cycle, Sagemcom undertakes a number of measures.

These ecodesign measures are at the heart of our environmental initiative



These ecodesign measures are at the heart of our environmental initiative, because the impact of our products is far greater than the impact of our sites, if we consider their entire life cycle. This gap is illustrated opposite. The operation of our sites accounts for just 0.3% of our impact, the manufacturing of our products represents 20%, the use of our products represents 76.8% and their end of life 2%.

Repartition of Sagemcom Carbon footprint (%)



USING ALTERNATIVE MATERIALS

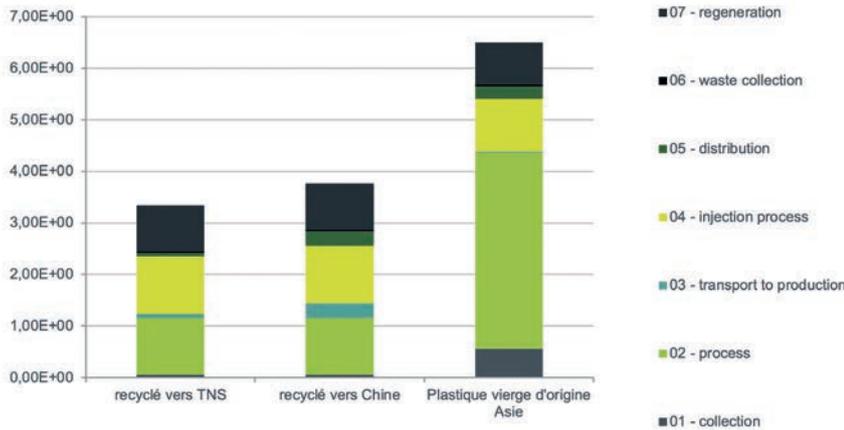
The Sagemcom group considers the use of alternative materials as a permanent source of progress. In the same way that we strive to characterise the environmental impact of our materials, we make sure to qualify our products on the basis of plastics with high potential for recycling (end-of-life management). The materials we use are evaluated according to two criteria: their environmental impact, but also their "technical" practicality. The Group cannot use materials that may have a positive environmental impact,



but whose technical properties are insufficient to meet the quality requirements of our customers.

After several years of studies, in 2018 we introduced a 100% recycled plastic reference in our non-cosmetic plastic parts. The low impact of this secondary material, made in Europe from electronic waste produced on the old continent, also enables us to use it in our partner production plants in Asia. The global impact remains below that of the equivalent virgin plastic. Several hundred tonnes will be used in the years to come, as the initiative is gradually deployed.

Comparison of impact - virgin material compared to recycled plastic according to the link of use (Kg CO2eq / kilo of plastic)



Packaging

In addition to meeting its obligations, Sagemcom constantly strives to reduce quantities of packaging. Individual packaging is optimised to reduce transportation at equivalent quantities. We also prefer packaging made of recycled or PEFC cardboard, printed with vegetable-based inks.

The replacement of our pallets with a lighter structure, guaranteeing the same performance during transportation, has reduced the environmental impact of every pallet.

Batteries

Batteries can represent a danger to the environment when they are disposed of, due to the hazardous substances they contain. We abide by the European Directive 2006/66/EC, which banned the most polluting batteries (limits on lead, mercury and cadmium).

Transport

Transport is a major source of greenhouse gas emissions. And for urgent deliveries, the transportation of our finished products by air weighs heavily in the carbon balance. While aircraft only represent about 12% of the tonne-kilometres transported, they are responsible for 98% of the logistical carbon footprint. We try to avoid these situations by improving our forecasting processes and the corresponding manufacturing schedules. We pay close attention to local deliveries using reusable packaging materials. This avoids wasting pallets and cardboard boxes. We also try to optimise the packaging of components in partnership with our suppliers.

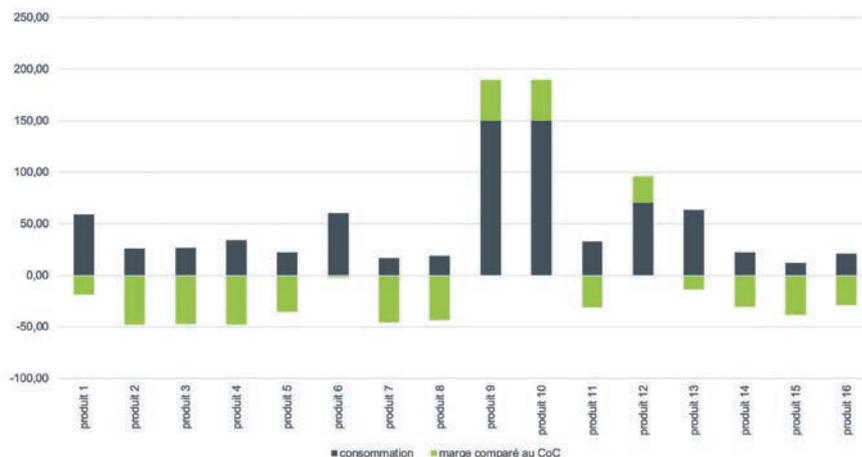
Consumption of products

Sagemcom is a member of the voluntary European agreement on the consumption of STBs that obliges manufacturers to remain within consumption limits applying to at least 90% of the products marketed in Europe.

During the 2017-2018 reporting period, 91% of Sagemcom's products sold in Europe followed this code of conduct with a comfortable margin.

**WE PAY CLOSE
attention to LOCAL
deliveries using
REUSABLE PACKAGING
materials. This
avoids wasting
pallets and
cardboard boxes**

Consumption of set-top boxes compared to the limits of voluntary European agreement



**The First Step
Affecting the
Recycling of our
Products is the
Choice of the
Materials used to
Build them**

On the basis of the code of conduct, the complete installed base of Sagemcom STBs represents a consumption of 224 GWh (224,000,374 kWh). We have reduced this consumption by about 20% to 180.8 GWh (180,795,337 kWh) by optimising our STBs.

FACILITATING THE RECYCLING OF OUR PRODUCTS RIGHT FROM THE DESIGN PHASE

The first step affecting the recycling of our products is the choice of the materials used to build them. Combinations of different types of materials can impact the capacity of the product to be recycled. We take care to choose materials that are compatible in the recycling phases. Our products are then assembled in a way that facilitates their deconstruction and the separation of the various components.

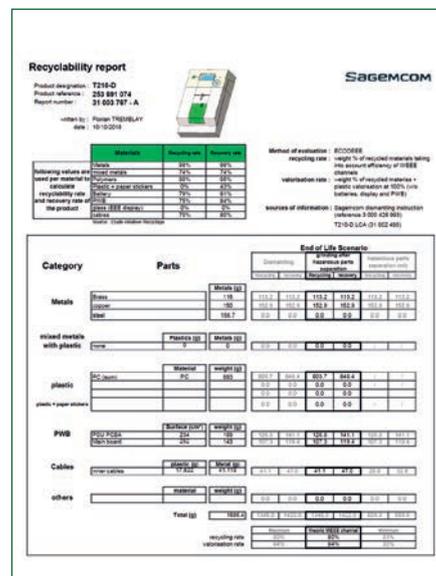
Calculating product recyclability

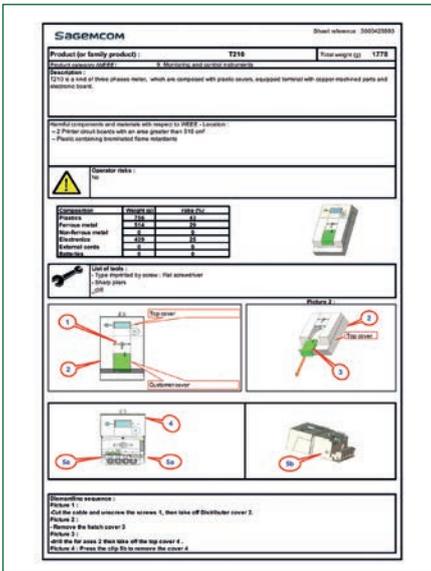
We have built on our experience in design and our partnerships with recycling operators to introduce the measurement of the recyclability of our products in order to evaluate the benefits of our end-of-life oriented design methods.

This evaluation takes account of several parameters:

- The materials used
- The assembly techniques
- The known results of the WEEE processing channels

The evaluation attempts to be realistic, with three possible processing scenarios, ranging from refurbishing to direct destruction.





Dismantling guides for easier recycling

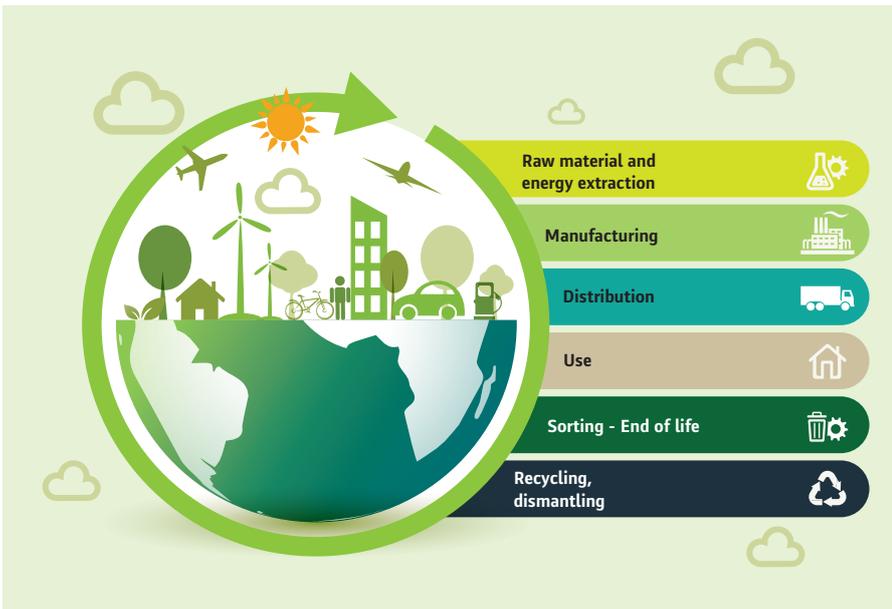
On request, Sagemcom provides recycling operators with dismantling guides in a bid to encourage the recycling of its old products. These guides contain all the information required to optimally recycle and reuse the machines:

- a bill of materials (metals, plastics, electronic circuit boards, etc.)
- the location of the components to be separated (as per the WEEE directive)
- the dismantling steps
- the potential risks for recycling operators (sharp metal edges, etc.)



LIFE CYCLE ANALYSIS

To identify opportunities for improvement, we analyse our legacy products from both a qualitative (means of assembly, etc.) and a quantitative perspective, by modelling the product lines with a simplified life cycle analysis tool: EIME software, developed by CODDE Bureau Veritas. These analyses guide our strategic development options in order to reduce energy consumption, because it is the phase when the product is in use that has the greatest impact on our products' life cycles, no matter where they are used.



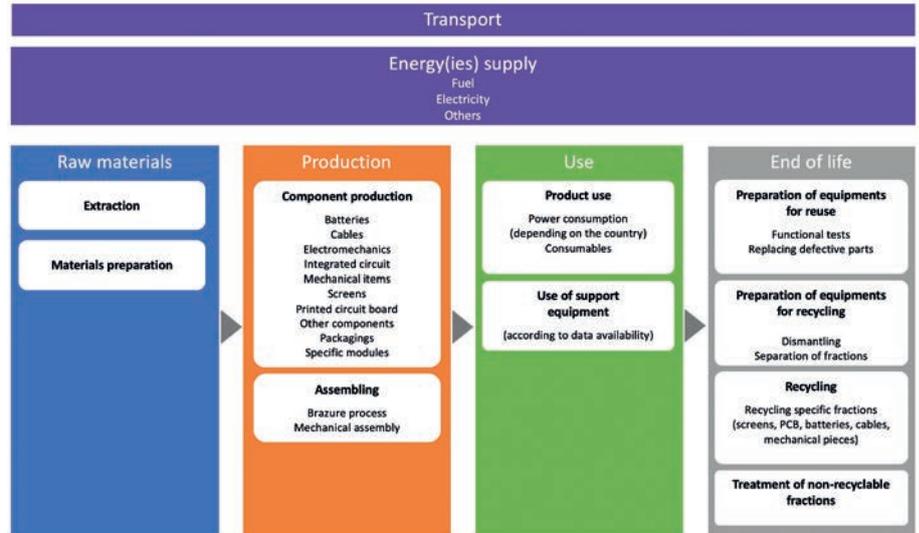
THE GOAL IS TO ESTIMATE THE ENVIRONMENTAL IMPACT OF A PRODUCT, IN ORDER TO HELP OUR CUSTOMERS TO CHOOSE BETWEEN SEVERAL POSSIBLE SCENARIOS

This expert knowledge also enables us to make preliminary life cycle analyses in an advanced operation conducted during the call for tender phases. The goal is to estimate the environmental impact of a product, in order to help our customers to choose between several possible scenarios, particularly regarding the logistical phase and the choice of materials. It also enables us to decide on the communications mechanisms between products and networks in advance, in order to anticipate cases where one of them would prevent the other one from switching to standby mode.

Major projects are all analysed to assess their impact and the associated gains. Analyses can be customised when requested by customers as of the product design stage. Every product family has a specific approach to the reduction of its environmental impact.

Our internal life cycle analyses are conducted in accordance with the ISO 14044 stan-

standard and within the following boundaries:



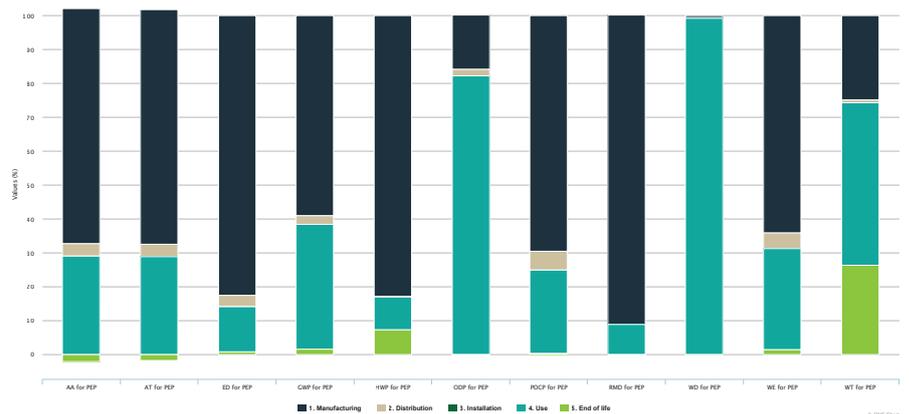
**OUR INTERNAL LIFE
CYCLE ANALYSES
ARE CONDUCTED
IN ACCORDANCE
WITH THE ISO 14044
STANDARD**

These analyses are described in detail in reports specific to each product model. The reports illustrate the main impacts during the different phases of the product's life cycle using several indicators.

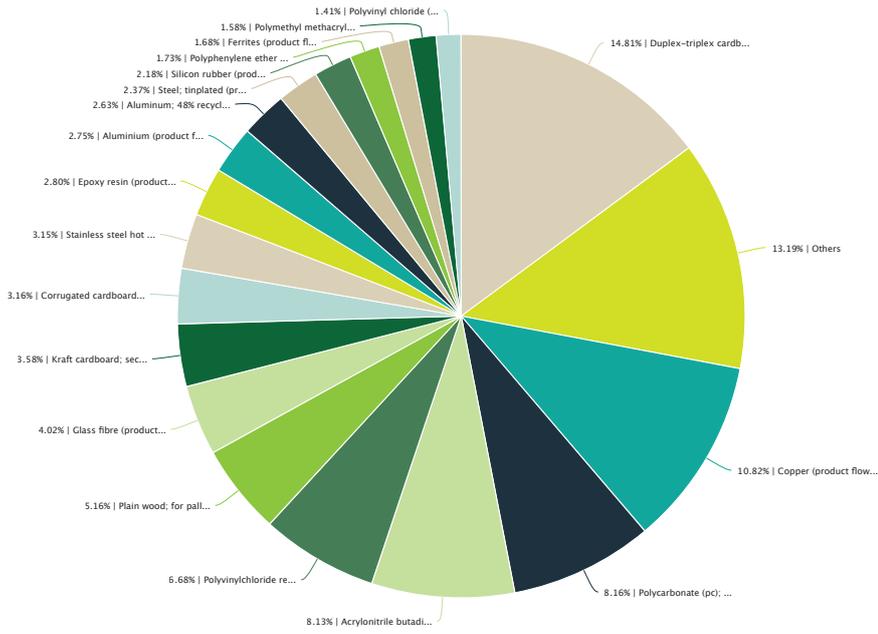
	Short name	Indicator	Unit
PEP ecopassport® - PCR 2.1 - 2014	AA	Air acidification	kg H+ eq.
	AT	Air Toxicity	m³
	ED	Energy Depletion	MJ
	GW	Global Warming Potential	kg CO ₂ eq.
	HWP	Hazardous Wastes Production	kg
	OD	Ozone Depletion	kg CFC-11 eq.
	POC	Photochemical ozone creation	kg C ₂ H ₄ eq.
	RMD	Raw Material Depletion	Y-1
	WD	Water Depletion	dm ³
	WE	Water Eutrophication	kg PO ₄ eq.
	WT	Water Toxicity	m³
DHUP decree n°2013-1264 compliant declaration	ADPe for EN15804	Abiotic depletion (elements, ultimate reserves)	Kg Sb eq.
	ADPF for EN15804	Abiotic depletion (fossil fuels)	MJ
	AP for DHUP	Air Pollution	m³
	AP for EN15804	Acidification (including fate, average Europe total, A&B)	kg SO ₂ eq.
	EP for EN15804	Eutrophication (fate not included)	kg PO ₄ eq.
	GWP for EN15804	Global Warming (GWP100)	kgCO ₂ eq.
	ODP for EN15804	Ozone layer Depletion ODP Steady state	kg CFC-11 eq.
	POCP for EN15804	Photochemical oxidation (high NOx)	kg C ₂ H ₄ eq.
	WP for DHUP	Water Pollution	m³

Example of data from a life cycle analysis report on the DCIW385 STB:

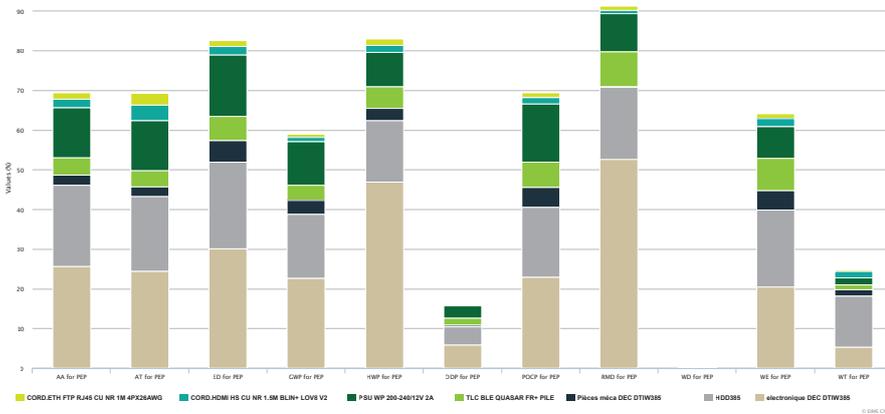
Global impacts by life cycle phase



Material balance based on the database using modelled components

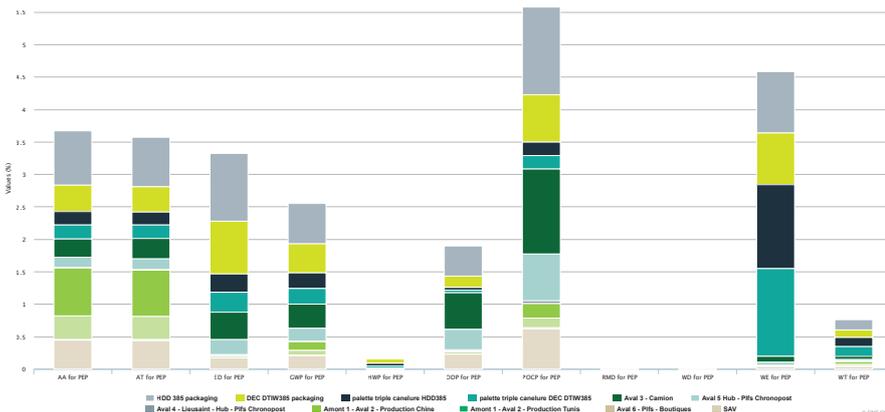


Details of the impacts of manufacturing



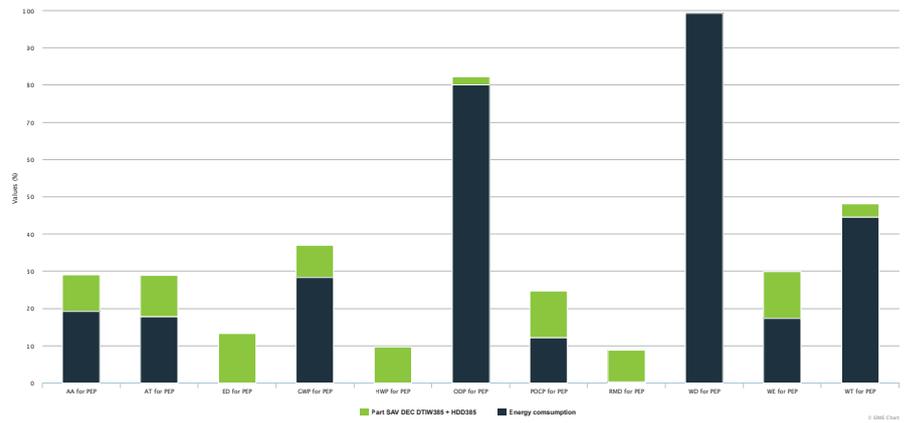
**MAJOR PROJECTS
ARE ALL ANALYSED
TO ASSESS THEIR
IMPACT AND THE
ASSOCIATED GAINS**

Details of the impacts of transport

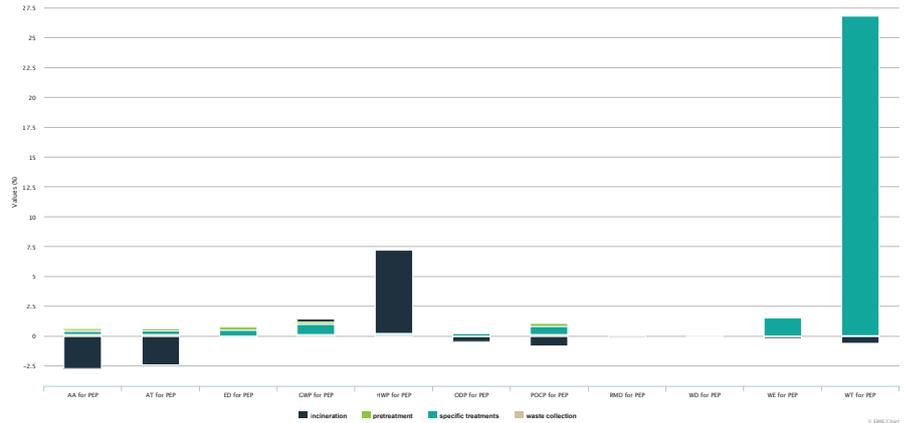


EVERY PRODUCT FAMILY HAS A SPECIFIC APPROACH TO THE REDUCTION OF ITS ENVIRONMENTAL IMPACT

Details of the impacts of use



Details of the impacts at end of life



These analyses can also be used to compare several scenarios, in particular to measure the gains of a refurbishing system that extends the product lifespan, and to make comparisons with the preceding generation of products.

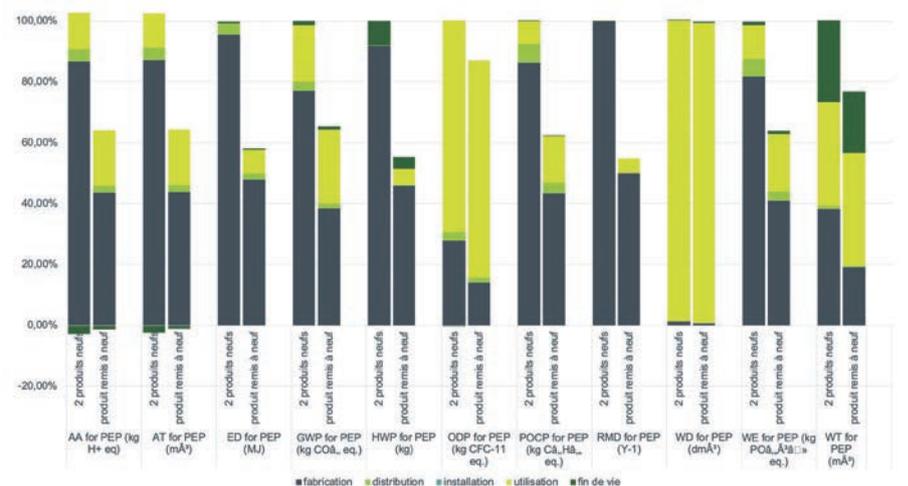
Comparison of the impact of a product with and without a refurbishing system

In most cases, our products can be refurbished at the end of a rental contract, because they are still fully functional. This is made possible by a design that makes it easy to separate the components of the product, so that only what needs to be replaced can be replaced (cosmetic parts, accessories, etc.) and the operation is made economically and environmentally viable by significantly extending the product's lifespan.

The environmental gains of this option are measured by comparing two scenarios:

- without refurbishing. Only new products are supplied, for an average rental period of two and a half years. Therefore, two products are used for five years.
- with refurbishing at the end of the rental contract. One product is rented for two and a half years, then refurbished and rented again for the same period.

These two scenarios are compared in terms of their environmental impacts in the visual below.



Refurbishing achieves an environmental gain of 35% of the product's GWP impact, in comparison with systematic replacement with a new product.

Gain produced by refurbishing by phase:

- Manufacturing: 50% (15.6 kg CO2 eq)
- Transport: 46% (0.57 kg CO2 eq)
- Use: -30% (-2.28 kg CO2 eq)
- End of life: 47% (0.23 kg CO2 eq)

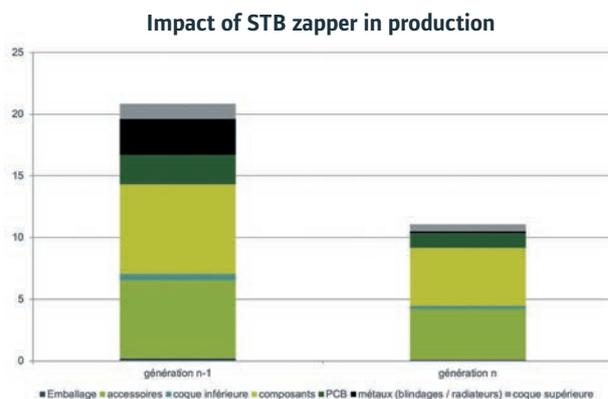
The additional environmental costs due to the use of spare parts by Customer Service explains the rise in the impact during the use phase, which is more than offset by the gains achieved in the manufacturing, transport and end-of-life phases.

The benefits are even greater if more than one refurbishment cycle is considered during the product's lifespan.

CONCRETE CASE: STBS

The finalisation of our latest 4K STB platform enabled us to make some extremely significant gains.

With like-for-like functionality, the impact of the product in the manufacturing phase was slashed by 47% by miniaturising the PCB.

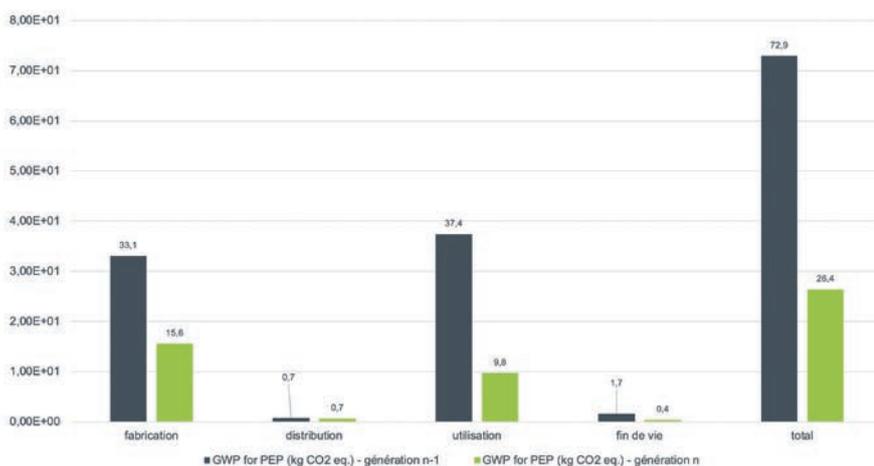


In 2018, about 900,000 products based on this new platform were deployed.

The largest customer deployment (720,000 products in 2018) replaced an even older model. The savings were evaluated by conducting a complete life cycle analysis, followed by a critical review by an independent third party. A gain of 46.5 kg CO2 eq. was achieved for every product replaced, thanks to the reduced impact in manufacturing, but also to the optimisation of energy consumption.

**THE FINALISATION OF
OUR LATEST 4K STB
PLATFORM ENABLED
US TO MAKE
SOME EXTREMELY
SIGNIFICANT GAINS**

Comparison of impacts - roll out of the new STB platform compared to existing products

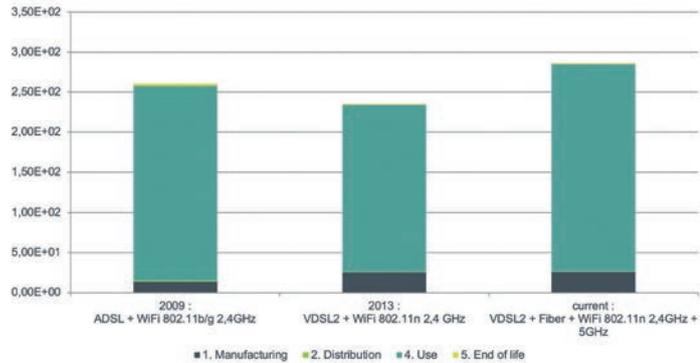


CONCRETE CASE: BROADBAND PRODUCTS

Internet gateways are becoming ever more powerful, with more functions and greater connectivity. This means that the impact increases from one generation to the next. However, this impact can be rationalised and stabilised thanks to new technologies and an ambitious ecodesign strategy. The visual opposite illustrates the changes in the environmental impact of three generations of boxes, according to the technological development of the market.

**BY their very
essence, the smart
meters must have
the smallest
POSSIBLE IMPACT**

Product impact over 3 generations of Gateway (kg eqCO2)



CONCRETE CASE: SMART METERS

Smart meters are remarkable tools that enable energy utilities to control their energy production more efficiently. They also enable users to track and reduce their consumption more easily.

By their very essence, these products must have the smallest possible impact and they are optimised whenever possible in order to reduce their environmental impact.



To reduce the impact and to improve the sustainability of our products even more, we pursue three lines of work as part of our eco-efficiency approach:

