





E CODESIGN

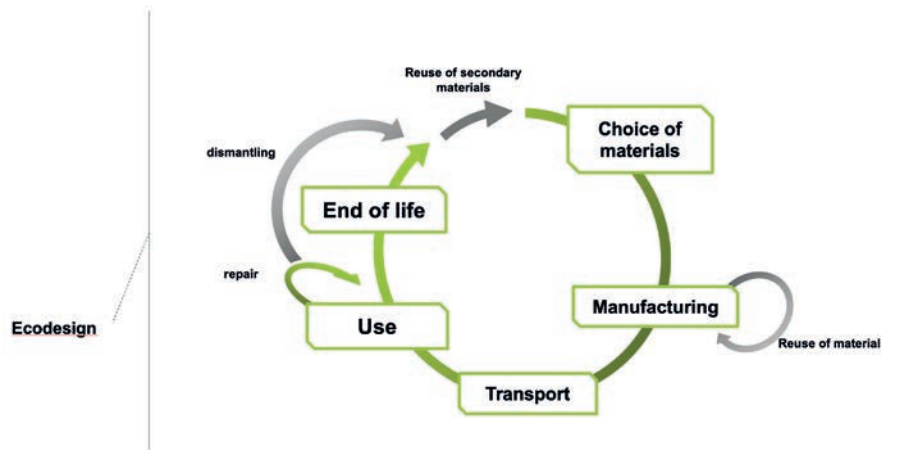


Ecodesign is a process in its own right, integrated into Sagemcom's project management. Each phase of a project, from launch, to design, qualification and production start-up, is subject to a series of tests that apply to the ecodesign of the product.

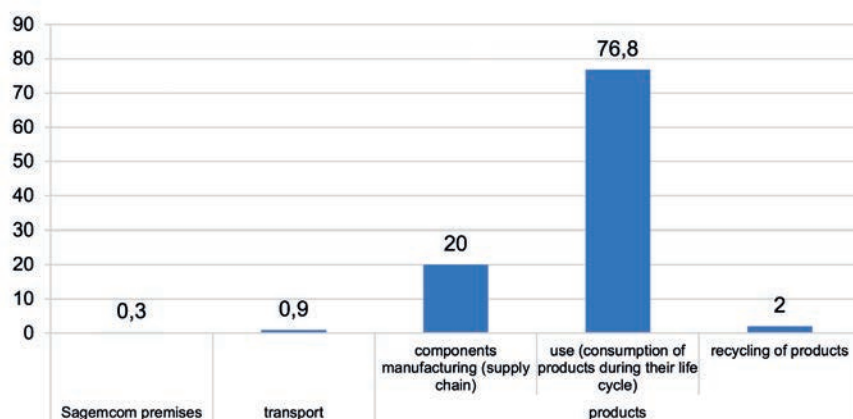


For more than 10 years, Sagemcom has also been developing the capacity to conduct internal life cycle analyses, in line with the protocols in ISO 14044 and the GHG protocol. Any analyses that have to be released outside the company are verified by an independent third party in order to guarantee that 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, because the impact of our products is far greater than the impact of our sites, if we consider their entire life cycle. This difference is illustrated below: while the operation of our sites represents only 0.3% of our impact, the manufacturing of products represents 20%, their use more than 75% and their end of life around 2%.



Breakdown of Sagemcom's annual carbon impact

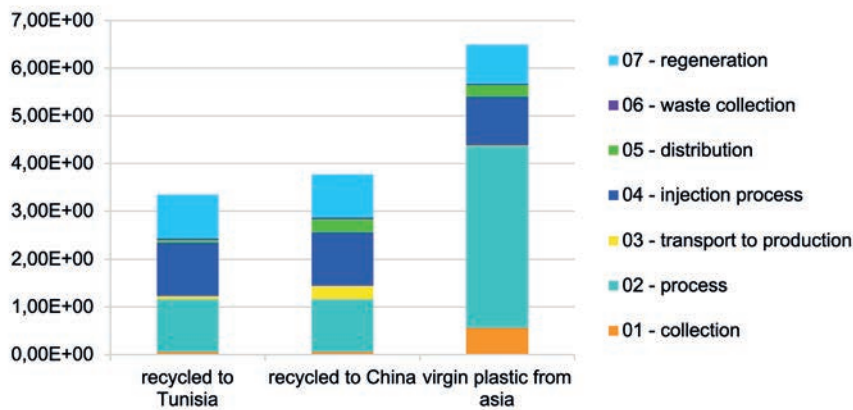
Using alternative materials

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 assessed according to two criteria: their environmental impact, but also their "technical" practicality. The Group cannot use materials that may have a low environmental impact, but whose technical properties are insufficient to meet our the quality requirements of our customers.

After several years of study, since 2018 we have been integrating recycled plastic into our 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.

Thanks to our industrial expertise with this type of plastic, we have been able to produce very large ranges by using alternative materials. As a result, several hundred thousand units have been produced both in our factory in Tunisia and in the factories of our partners around the world.



Comparison of the impacts between virgin and recycled plastic, depending on the place of manufacture of the finished products (Kg eq. CO2 / kg of plastic)

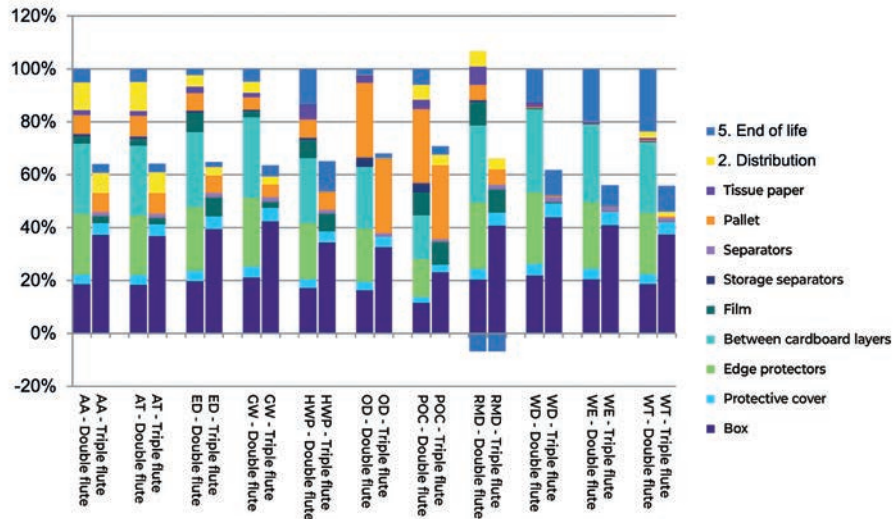
Packaging

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.

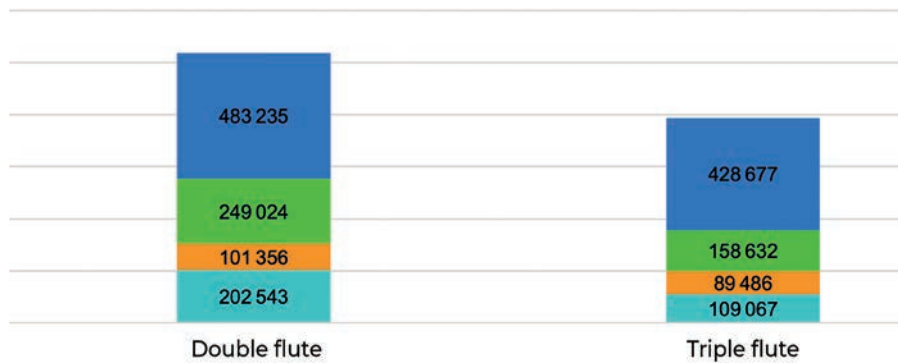
The replacement of our pallets with a lighter structure, guaranteeing the same performance during transportation, has reduced the environmental impact of every pallet, by spreading its mechanical resistance across different parts. We have thus resulted in a significant reduction in the weight of tertiary packaging (up to 8 kg per pallet) while increasing the number of products transported per pallet.

This dual optimisation, both of the material and of the filling rate, has generated a reduction of approximately 24% in the transport impact in relation to the product transported.

This performance was achieved in the case of manufacturing distributed between the sites in Tunisia and Asia using transport by boat and then by truck to France.



Reduced impacts by switching from a twin- to a triple-grooved pallet box (twin-grooved box taken as reference at 100%)



Reduced transport impact linked to the optimisation of palletization (kg eqCO2, for two million products; manufacturing split 50/50 between Tunisia and China)

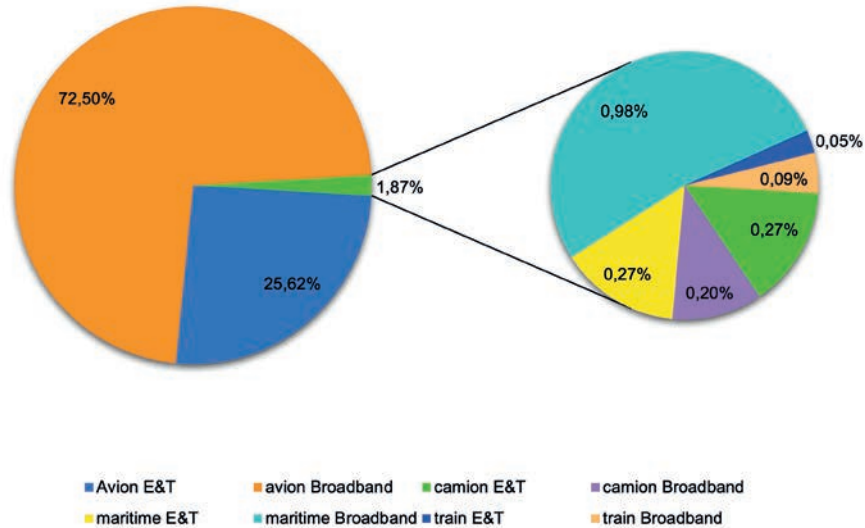
Batteries

Batteries and accumulators can present a danger to the environment during their disposal 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).

In addition, batteries are the only possible power source for some of our smart meters, in particular gas, because they are not connected to any external power source. The capacity and robustness of these batteries is therefore a vital factor in ensuring the lifespan of our products. At the same time, we take care not to oversize them to avoid any waste of resource.

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. If the plane only transports 5% of our goods, it is responsible for 98% of the carbon impact of our logistics! We try to avoid these situations by improving our forecasting processes and the corresponding manufacturing schedules. We put particular emphasis on local deliveries using reusable packaging materials. This avoids wasting pallets and cardboard boxes. We are also working on optimising component packaging in partnership with our suppliers.



2019 transport impact by type and by BU

Consumption of products

Energy consumption during the use phase is the most significant environmental aspect of our products. Our strategy therefore consists above all in making them more efficient in all their operating modes, and in particular in standby mode.

We pay particular attention to our broadband products. These devices are central to a home network and if we are not careful, they can consume continuously and unnecessarily. We therefore make sure that their operation is as dynamic as possible, by putting unused interfaces on standby for example, to consume as efficiently as possible.

Our goal is to respect the European code of conduct for broadband products, which is intended to represent the most efficient products on the market. All of our power supplies comply with the European v5 Third Party Code of Conduct 2.

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.

Recyclability report

Product designation: T210-D
 Model reference: 210 891 174
 Model number: 21 902 137 - A

Author: Florian TREIBL, JF
 Date: 07/02/2018

Method of evaluation: ECOCORE
 Recyclability rate: weight % of recycled materials using the current efficiency of WEEE treatment

Validation date: 08/17/2018
 Validity: 1 year. For material updates, parts information at 02/15/19 is between today and 02/15/19.

Source of information: Sagemcom (depending on location) reference: 000-000-000
 T210-D-LCA-01 (06-480)

Material	Quantity	Recyclability	Weight %
Steel	120	100%	100%
Aluminum	100	100%	100%
Plastic	100	100%	100%
Electronic components	100	100%	100%
WEEE	100	100%	100%
Other	100	100%	100%

Category	Parts	Quantity	Weight %	Recyclability
Metals	Steel	120	100%	100%
	Aluminum	100	100%	100%
	Other	100	100%	100%
Mixed metals with plastic	Plastic	100	100%	100%
	Steel	100	100%	100%
	Aluminum	100	100%	100%
Plastic	Plastic	100	100%	100%
	Steel	100	100%	100%
	Aluminum	100	100%	100%
With non-metals	Plastic	100	100%	100%
	Steel	100	100%	100%
	Aluminum	100	100%	100%
FIB	Plastic	100	100%	100%
	Steel	100	100%	100%
	Aluminum	100	100%	100%
Cables	Plastic	100	100%	100%
	Steel	100	100%	100%
	Aluminum	100	100%	100%
Others	Plastic	100	100%	100%
	Steel	100	100%	100%
	Aluminum	100	100%	100%

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.)

SAGEMCOM (Sheet reference: 000020993)

Product (for family product): T210 | Reference: 1778

Designation: T210-D

Comments: T210 is a kind of three phases meter, which are composed with plastic cover, equipped terminal with support mounted parts and electronic board.

Identify components and materials with respect to WEEE - Location:
 1 - 2: Three phase meter with an area greater than 610 cm²
 3 - Plastic containing brominated flame retardants

Operator risks:
 1 - Sharp metal edges

Composition:

Material	Weight (kg)	Volume (L)
Plastic	120	120
Electronic board	100	100
Aluminum metal	100	100
Steel metal	100	100
Other	100	100

Use of tools:
 1 - Torx screwdriver
 2 - Flat screwdriver
 3 - Hex key
 4 - Pliers

Dismantling sequence:
 Picture 1: Cut the cables and unscrew the screws 1, then take off Distributor cover 2.
 Picture 2: Remove the back cover 3.
 Picture 3: Cut the top cover 4.
 Picture 4: Remove the top cover 4.
 Picture 5: Remove the top cover 4.

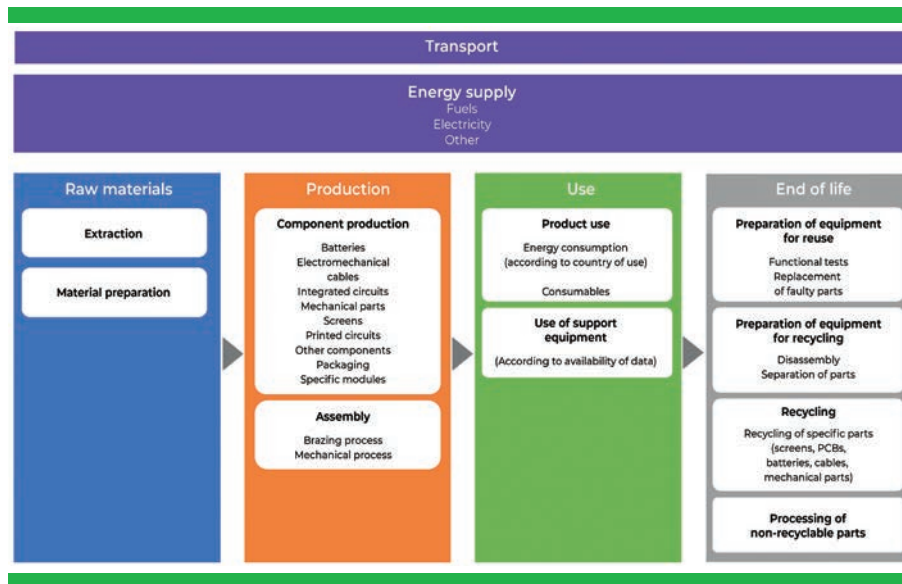
Life cycle analysis

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.

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.

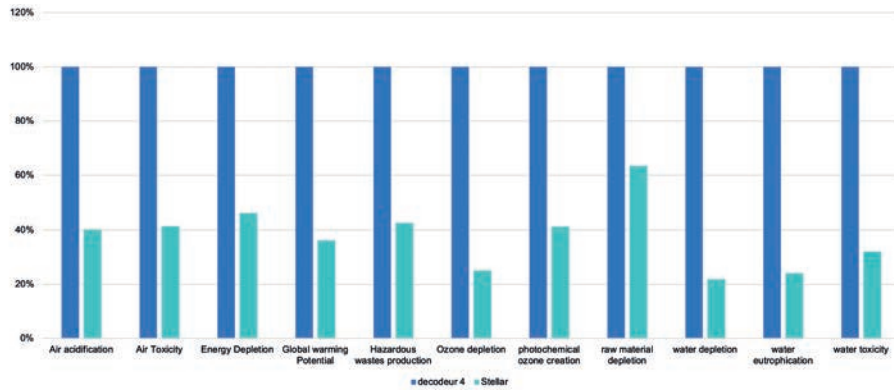
Our internal life cycle analyses are conducted in accordance with the ISO 14044 standard and within the following boundaries:



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 3.0 - 2015	AP	Potential acidification	Kg SO ₂ eq.
	ADPe for EN15804	Abiotic depletion (elements, ultimate reserves)	Kg Sb eq.
	ADPf for EN15804	Abiotic depletion (fossil fuels)	MJ
	AP for DHUP	Air Pollution	m ³
	EP for EN15804	Eutrophication (fate not included)	Kg PO ₄ eq.
	GWP for EN15804	Global Warming (GWPI100)	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	m ³
PEP ecopassport® - PCR 2.1 - 2014	AA	Air acidification	kg H+ eq.
	AT	Air Toxicity	m ³
	DW	Energy Depletion	MJ
	CW	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	m ³
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	m ³
	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 (GWPI100)	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	m ³

These studies allow us to demonstrate the progress made on the environmental impacts of products, generation after generation. For example, our DCIW385 set-top box platform shows a 64% drop in impact compared with its predecessor on the market:

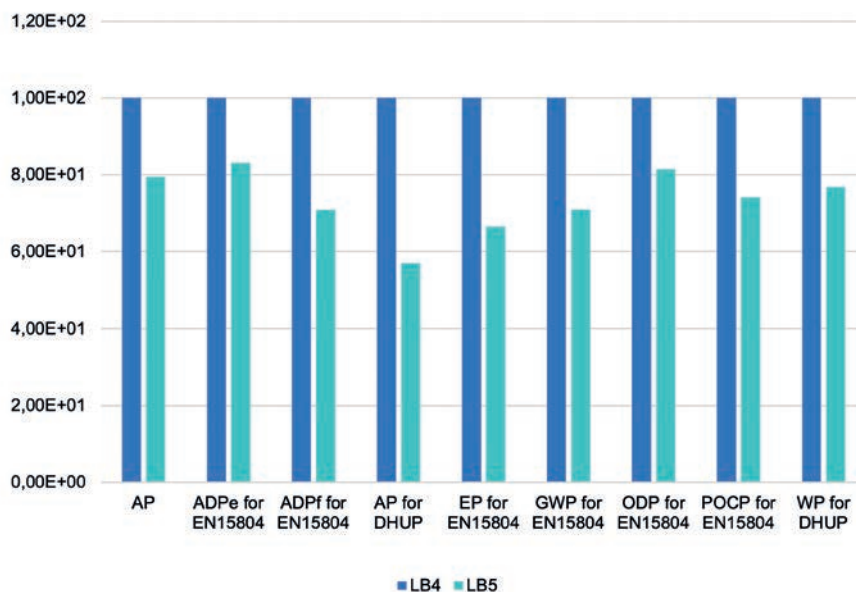


Impact comparison between DCIW385 (in green) and RTIW383 (in grey - 100% reference impacts)

All of the impact indicators are down. This shows that our innovations to reduce the carbon impact do not cause any displacement of pollution (“Global Warming Potential” indicator).

It is by miniaturising our products and reducing their consumption in standby mode that we have achieved this performance. The result is that our new products go into deep standby, unlike their predecessors which only went into connected standby.

In terms of residential gateways, significant work has been carried out in partnership with our client, Orange to produce the most ecologically designed box on the market. The Livebox 5 benefits from all of Sagemcom’s know-how in eco-design, with optimised electronics, reduced consumption, compliant with the European code of conduct (version 7), and recycled plastic shells from European WEEE channels. Its carbon impact has been reduced by 29%. (data reviewed by an independent third party)



Change in impacts (% impact)

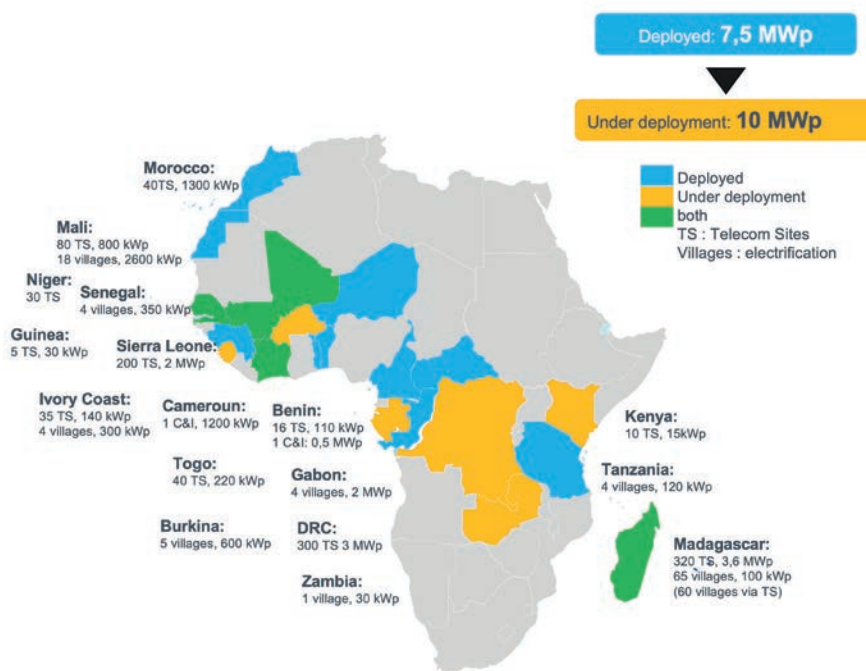
Grid and Infrastructure

Sagemcom Energy & Telecom develops solutions to bring and deploy electricity and telecoms networks in African countries.

Against this backdrop, WeLight, created in partnership with Axian was designed to offer reliable, accessible and renewable energy to the populations of rural areas of Madagascar and sub-Saharan African countries, thanks to the deployment of innovative technology and the setting-up of payment means accessible to all.



In all, Sagemcom Energy and Telecom has deployed 7.5 MWp of solar production in Africa, and plans to deploy 10 more by the end of 2020.



GIS business helps the development of Africa by reducing the digital divide, by providing network access everywhere with the installation of fibre networks and the construction of telecommunication sites.

The activity of these Telecom stations helps to supply energy to off-grid villages, offering new possibilities to residents:

- Better health conditions
- Food preservation
- Increase in local production for agriculture
- Business development
- Improved safety