Arpa

SUSTAINABILITY POSITION PAPER

MATERIALIZING SUSTAINABILITY

ARPA. MATERIALIZING SUSTAINABILITY

Introduction

Sustainability is not something you dream about, but something you do. It's about acting. This is why Arpa always takes actions that provide a 'win' for the environment, our business, our company and our clients. This is how we continuously improve and materialize sustainability.
Sustainability at Arpa is about common sense, a fact-based approach and complete integration in the business planning. It is not about achieving zero impact in the production process but about durability and a cradle-to-gate approach. Especially, sustainability is about creating the products and materials that are so important to people that there is no need to replace them.
In this 4th Arpa sustainability position paper, as a kick off of a new series of publications, we want to share our past, present and future on sustainability. We hope it inspires you to materialize sustainability every day too.

The company

Since 1954, Arpa Industriale has been designing and producing panels with high-quality HPL technology for the most varied end uses: from architecture to interior design, from health care to naval shipbuilding, from transportation to hospitality, from retail to kitchens. In 2013 Arpa launched FENIX, an innovative material for interiors which was developed by an international, multidisciplinary team based on proprietary technologies. Arpa's products are manufactured in the 150,000-square-metre plant in Bra, in the Piedmont area of Italy. More than 60 years of investment in research, advanced technology and personnel training have allowed the company to achieve a position of primary importance and a reputation for great reliability in international markets; an industry characterised by competent staff, varied and excellent offerings, production flexibility and fast service.
Arpa uses a strategic framework to steer its business towards durable long-term growth. This framework has four key elements: license to operate (LTO), market, cash & cost and capabilities. The thinking behind these elements is to control non-business risk, grow the business, maximize the contribution of growth and ensure that the right skills are on board for successful execution of all plans. Within these elements, the priority lies with our License To Operate, which includes topics such as:

- Health and Safety of employees and the local community
- Sustainability and the preservation of the Environment
- Product compliance to meet regulatory requirements
- Transparent (financial) reporting and appropriate behaviour by employees

Sustainability became key part of Arpa's LTO strategy in 2010 and a lot of effort has been put in since then to improve our environmental performance through the implementation of a number of projects and activities.

SUSTAINABILITY INSIDE

Arpa's sustainability policy is based on a deeply felt motivation to shift from 'being less bad' for the environment to being 'good' and creating new value.

Do No Harm

Arpa will comply with safety, product and sustainability regulations and guidelines set by the countries in which it operates. In addition, Arpa is focused on materializing opportunities that minimize the environmental impact of its operations and products.

Do Good

Arpa will support its suppliers and customers in realizing their sustainability challenges. Moreover, Arpa will continue to look for opportunities and initiatives to support and promote longer-term sustainability beyond the direct scope of its current operations.

Do Better

Arpa believes that investing in sustainability should be beneficial to the long-term position of the company. Many sustainability challenges constitute good business opportunities that will allow the company to continue to grow.

Materializing sustainability requires a realistic vision, hands on action and integrated approach in the entire company. Arpa has defined 3 principles that shape the way of thinking and acting.

Common Sense

Arpa will use a common sense approach in addressing the topic of sustainability.
A product can never have a zero environmental footprint as certain interferences with the environment are unavoidable. By acknowledging that, it goes without saying that the pursuit of “zero impact” products is not the realistic answer to our sustainability challenges. On the other hand merely focusing on functionality does not lead to sustainable improvement.
We believe in sensible middle ground: sustainability is a balancing act between “zero impact” and over-functionality. In other words: it means working to reduce the impacts without losing sight of functionality.

COMMON SENSE IN SUSTAINABILITY:

It is not about ‘zero’. It is about the perfect balance between impact and longevity / functionality

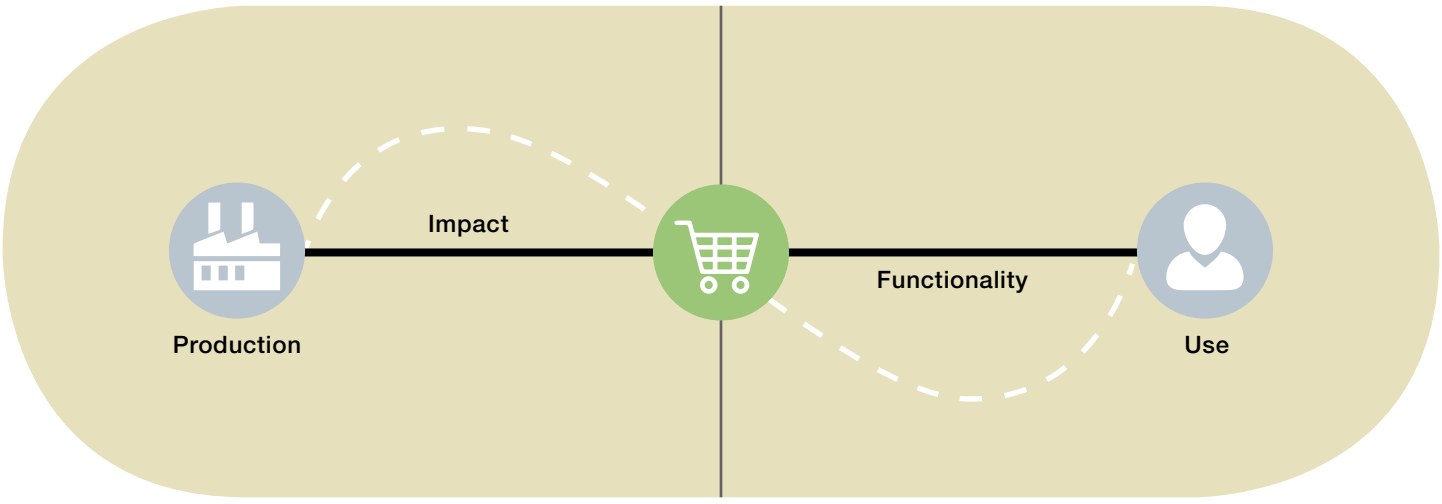


Figure 1. Sustainability as a balancing act

Fact-based approach

At Arpa we firmly believe that you cannot manage what you do not measure. Addressing sustainability and environmental protection starts with the quantification of the impacts. How? The Life Cycle Assessment (LCA) methodology represents the most reliable and fact-based tool available to help companies, institutions and governments to systematically incorporate sustainability into their decision making process. LCA is defined as a process to evaluate the environmental burdens associated with the entire life cycle of a product, process, or activity. This is done through the identification and quantification of the energy and materials used and the wastes and emissions released into the environment.

By using a product life-cycle approach, Arpa constantly gets a clearer understanding of the actual impact we have on the environment. We identify the drivers of sustainability and prioritize initiatives across the entire value chain all the way down to the consumer's use of the product.

The unit of scale or reference to which the LCA results refer relates to the given function of the product and it is called functional unit. For quantifying the functional unit, two aspects of the extent of the provided function are to be taken into consideration: the duration of use (in time) and the quantity of actual function provided. Based on the function of our product, the functional unit of 1 m2 of material has been selected.

To express the results of the LCA assessment, three key environmental indicators (compared to the six of the past) have been selected based on the current global environmental challenges and what is relevant to our business: water footprint (introduced here for the first time), global warming and primary energy demand. Though the impacts of eutrophication, acidification, photochemical oxidant formation and ozone depletion considered in the previous studies are still assessed, we narrowed focus based on the twofold criterion of global-urgency and product-relevance. This choice has been made for the sake of clear communication and of the efficiency of our decision-making process.

Integral part of business planning and review cycle

Arpa sets its priorities based on LCA studies and on realistic but challenging targets. All sustainability initiatives have been integrated into Arpa's rolling business planning and review cycle. The review cycle comprises annual target setting in the budgeting process, a monthly management review of progress measured in key performance indicators. In addition we have standardized the sustainability paragraph in the annual report. Each year new sustainability targets are set and formalized in a detailed sustainability target agreement. Progresses are closely monitored and discussed within the top management team of Arpa on a monthly basis during the regularly-held sustainability meetings. The latter were institutionalized already in 2011 and are now the well-established tool for tracking activities and brainstorming on new sustainability initiatives.

THE DRIVERS TO ARPA'S PRODUCTS SUSTAINABILITY

The main driver to sustainability: durability

As the sustainability performance of products is evaluated throughout their entire lifetime, durability, defined as reliability and long service life, is one of the major features of sustainable products. The longer the product lasts, the longer the period of time to spread the environmental impact associated with the production of those raw materials and the environmental costs that incurred in the product's manufacturing, such as energy, waste, and emissions. Furthermore, by implying fewer replacements, long-lasting products entail less use of resources, lower emissions of pollutants and a smaller amount of waste than short life-span goods, even when their production turns out to be more resource and energy-intensive. When prolonging the useful life-time of a product, the environmental impact decreases according the following equation:

$$LCimpacts_{LLT} = \frac{LCimpacts_{SLT}}{LLT / SLT}$$

Where:

- *$LCimpacts_{LLT}$ are the environmental life-cycle impacts associated with long (or longer) life-time (impacts per year of life-time);*
- *$LCimpacts_{SLT}$ are the environmental life-cycle impacts associated with short (or shorter) life-time (impacts per year of life-time);*
- *LLT is the length in years of long (or longer) life-time; and*
- *SLT is the length in years of short (or shorter) life-time.*

Durability represents the very starting point of our sustainability strategy and is the main driver to sustainable development in the long run. The effects of reducing the impact associated with goods' manufacturing are watered down by short life-cycles.
The maximization of such effects arises from their combination with products' longevity.
The transition from short-lived and disposable items to long-lived and long-lasting products will mark an important point in the battle for a sustainable society. All of our products and their exceptional quality are a result of this vision, as they are, by definition, very durable, long lasting materials.

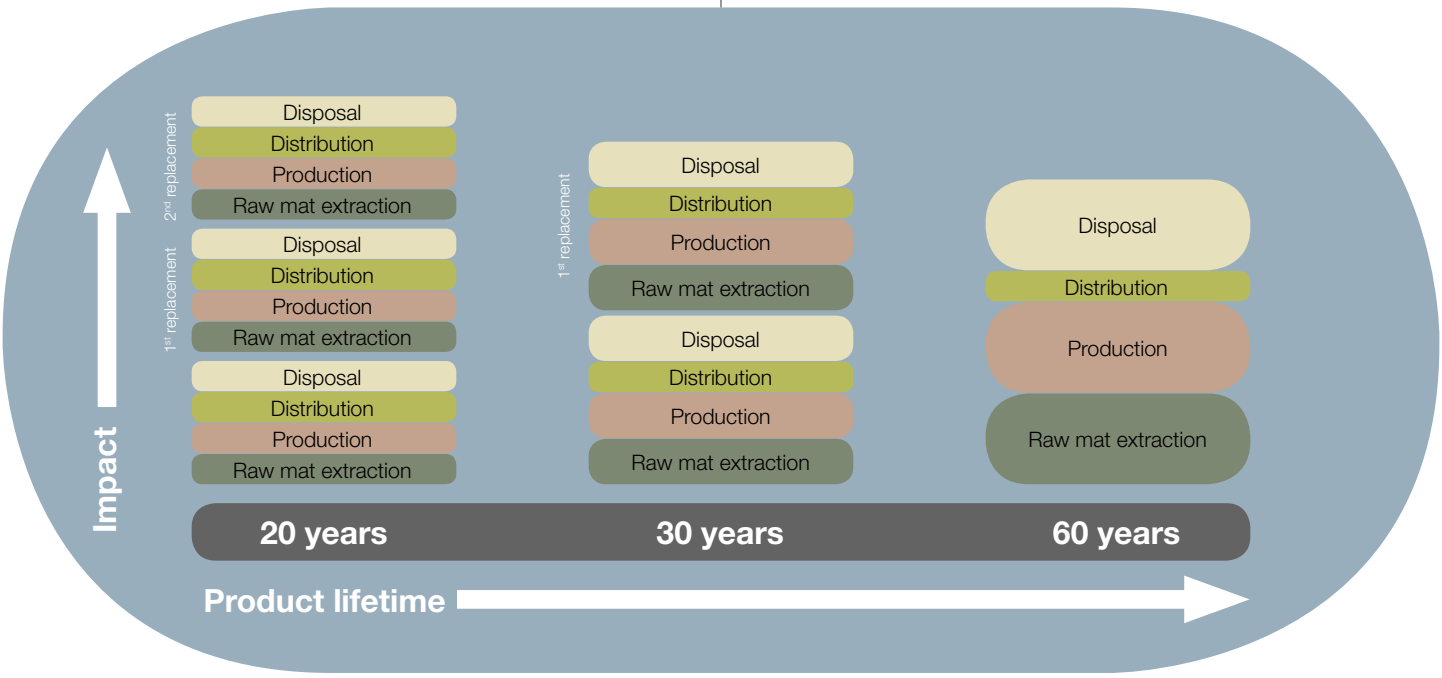


Figure 2. How product lifetime affects the environmental impacts

THE DRIVERS TO ARPA'S PRODUCTS SUSTAINABILITY

Building up on durability: cradle-to-gate approach

Durability is the solid ground for Arpa's sustainability vision and approach. Still, we aim to further build on those foundations by making the manufacturing of our products more and more sustainable through the reduction of the impacts arising from the cradle-to-gate part of our materials life cycle.
Our guiding principle is "do more with less", enhancing the functionality of our products and at the same time reducing the inputs required to manufacture them.
Despite its simplicity, the implementation of such a principle is far from easy and its successful adoption relies on the firm commitment of the Company towards the protection of the environment.

The integration of sustainability within our LTO reflects our full engagement and commitment in this sense. This is the key for addressing the big challenge of "doing more with less" effectively and ultimately becoming more and more sustainable.
Additionally, a further step towards lowering our environmental burden is the replacement of the most impacting materials and processes with innovative solutions characterized by better performances. Being a technology-driven Company helps us a great deal in moving with agility in this direction.

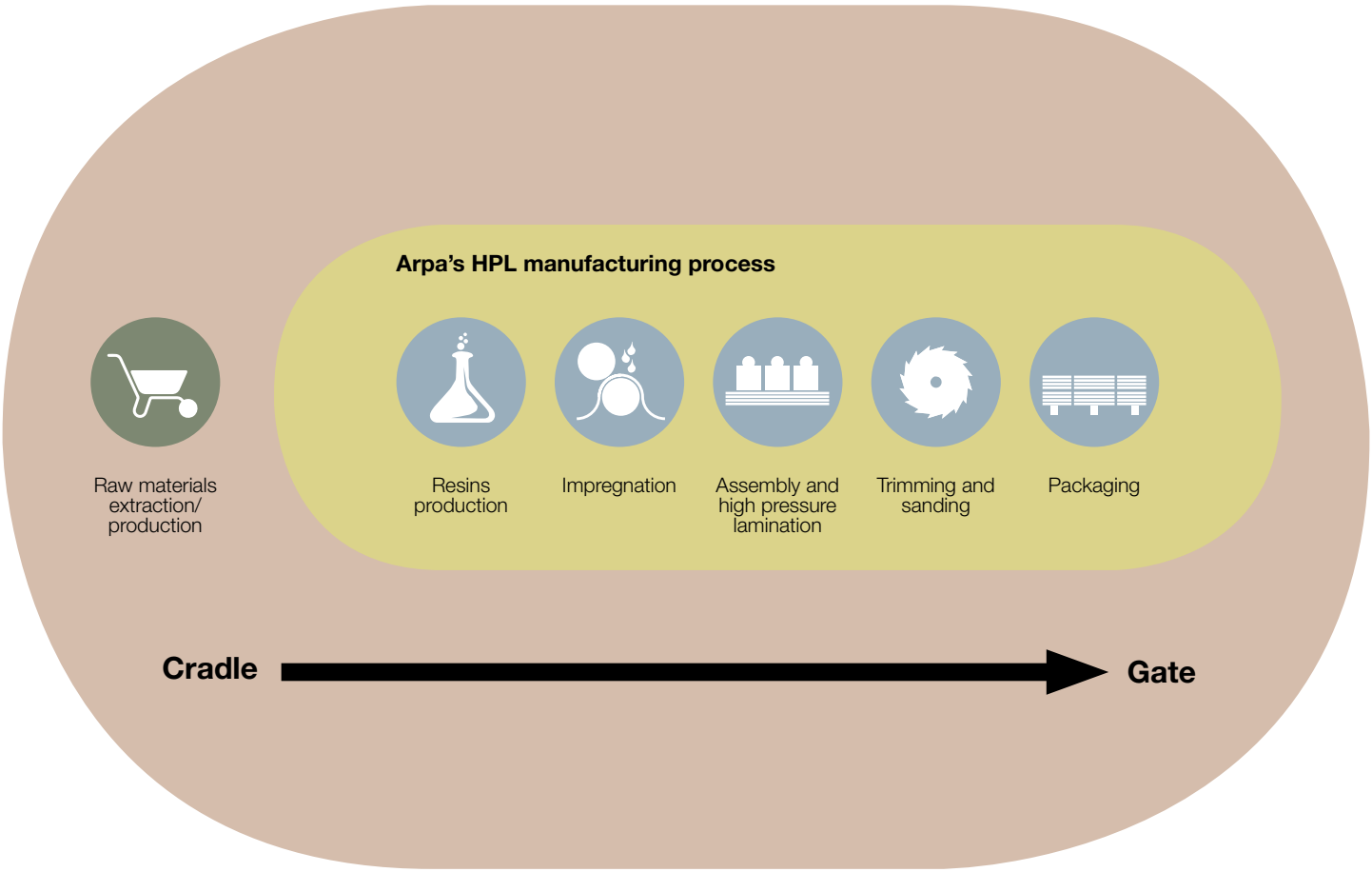


Figure 3. Cradle-to-gate boundaries of Arpa's products life-cycle.

WHAT WE DID SO FAR: OUR LEARNINGS AND PROGRESS

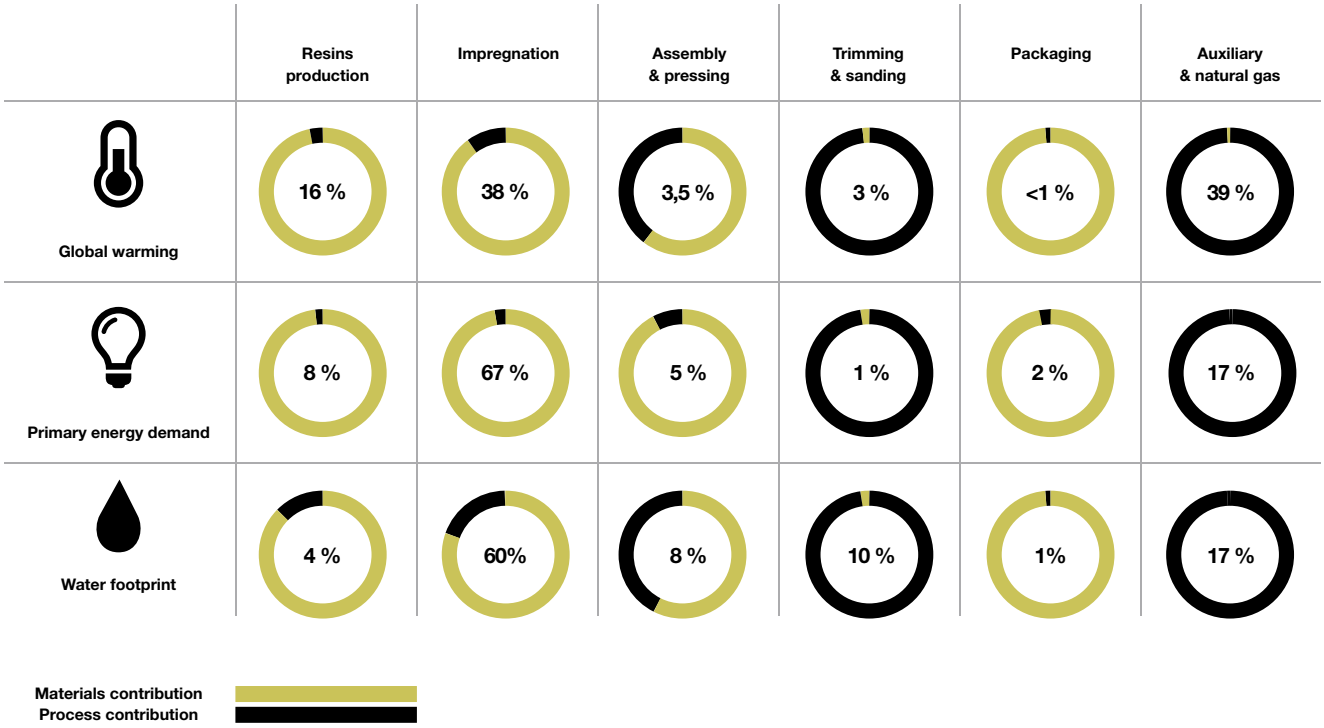
Over the past years Arpa put a lot of effort in embracing a sustainable approach by measuring and improving its environmental impacts.

The undertaken LCA studies enabled us to:
1) Better understand our mass and energy flows/balances
2) Identify the major contributors to our impact
3) Put in place a number of improvement activities aimed at reducing the energy consumed and the waste generated on site.

Concerning this last point, important progresses have been achieved over the years, with energy and water being reduced since 2010 by approximately 20% and 48% respectively. Waste generation is now closely monitored and the share of landfilled waste has dropped from 58% to15% since 2010.

Given its strategic relevance, the sustainability and LCA function was brought in-house starting from end 2016. Having more grip on and control of sustainability and LCA enables us to efficiently build a consistent sustainability culture within the Company, to radiate such culture across all our stakeholders even beyond the Company boundaries and of course to better track our progresses. The LCA scores of the last LCA study outsourced and the one performed in house were compared and found consistent.

Each of the manufacturing steps described in Figure 3 above contributes to a different extent to the total environmental impact of our laminates. Such impact originates from the manufacturing process itself (the energy and water consumed, waste produced and emissions generated) and from the production of the materials our panels are made of. In the table below, the contribution of the main manufacturing stages is indicated as a percentage over the total materials production's impact. Such contribution is in turn split (doughnut charts) into the share attributable to process itself - energy consumed, waste and emissions occurring at that specific manufacturing stage – and the one due to the materials used. Since it is currently not possible to "assign" the required amount of natural gas to each manufacturing step, its consumption is shown as a separate stage of the production process together with the auxiliary services (e.g. pumps, chiller etc.).



WHAT IS AHEAD:
SUSTAINABILITY ROAD MAP TO 2022

Cradle-to-gate targets

Over the next 5 years, we plan to implement a series of activities and projects which will probably reduce our environmental impact (compared to the 2016 results) as follows:
- Global warming: -11%
- Primary energy demand: -10%
- Water footprint: -8%

The 2016 in-house LCA results used as a reference for setting these targets are consistent, as specified earlier, with the scores found by the external consultant company for the same year.

The activities

We identified three different and intertwined roads leading to sustainability and we plan to travel along all three of them in order to make our process more and more sustainable in the coming years. Education and measurements are the pillars of this three-fold approach, whose routes are: engagement of our stakeholders in our (and their) sustainability challenge, improvement of our LCA model to get sounder results and reduction of our cradle-to-gate impacts through the implementation of resource-efficiency activities and replacement of the most impactful factors.

Engaging our stakeholders

Each and every one of us can contribute to make the world more sustainable and the same principle applies to our Company: every employee, supplier and customer plays a role in the sustainability challenge that lies before us. That is why we aim to educate our stakeholders in sustainability and encourage them to embrace a consistent approach to sustainability. In the next 5 years, we will reach out to the suppliers that contribute the most to our impact, to explain them our ambitions and goals and to find with them opportunities that will help us to meet our targets.
Moreover, trainings and regular updates will be given to our top management, R&D team, production coordinators and sales department, our sustainability philosophy and approach will be explained to every new employee coming aboard. We commit ourselves to informing all our people of the initiatives we undertake to lower our impact and to enhance our efforts towards environment protection.

Improving our LCA model

The accuracy of LCA models is very much dependent on the data available. Data quality is at the forefront of our priorities. In LCA a clear distinction is made between data collected on site (primary data) and generic average data (secondary data), with the former being preferred over the latter. We plan to start collecting inputs for our LCA model from our suppliers directly instead of retrieving average data from databases. In the next 5 years, we aim at getting data from our paper and chemicals suppliers. At the same time, we will put continuous efforts to increase the accuracy of data collected in our plant.

Cradle-to-gate impact reduction

As mentioned earlier in this paper, Arpa aims to work on the cradle-to-gate portion of its products' life cycle to reduce its environmental impact, while keeping the bar straight on the product's functionality.
From a practical point of view, Arpa is putting a lot of effort into reducing the amount of raw materials required to produce its laminates, while keeping constant - or enhance even - their functionality and characteristics. This will be achieved both by decreasing the amount of waste generated during the manufacturing process and, to a greater extent, by reducing the thickness of the laminates themselves. In this efficiency framework, investments have been made to build a new factory which became fully operative in September 2018. This factory, representing the new technological frontier in laminates production, grants the manufacturing of superior quality products with reduced thickness while saving energy and generating less scraps.
We also intend to use and develop, wherever possible, bio-based chemicals and to choose the least energy-intensive cellulose-based products. To move in that direction, we will increase the use of wood chips at the expense of the more energy consuming paper, affecting - and lowering - the impact associated with raw materials production (cradle of the life cycle).
As Arpa believes in materials improvement and development as part of its sustainability strategy, it is relevant to mention in this document that a new research centre, named Next Material House (Nemho), will be created in 2020 expanding further our technological capabilities.

APPENDIX: WHAT DO GLOBAL WARMING, PRIMARY ENERGY DEMAND AND WATER FOOTPRINT MEAN?

Global warming

This indicator expresses how much heat greenhouse gases trap in the atmosphere. Greenhouse gases are a group of compounds that are able to absorb the infrared radiation released by the Earth surface heated up by the sun. So the more greenhouse gases in the atmosphere, the more heat stays on Earth. The main greenhouse gases are carbon dioxide, which is also the most abundant greenhouse gas, methane, nitrous oxide and fluorinate gases. The global warming indicator is calculated in terms of carbon dioxide equivalents.

Primary energy demand

Primary energy is energy found in nature that has not been subjected to any conversion or transformation process (such as primary energy content in crude oil, natural gas, and biomass). Energy that is already converted is e.g. steam or other thermal energy derived in any technical process, or electricity will require primary energy to provide this “delivered energy”. Primary energy demand indicates amount of energy that system under assessment has extracted from the natural environment.

Water footprint

In this paper the water scarcity footprint has been evaluated. This indicator assesses the amount of water consumed weighted by a scarcity indicator, hence accounting for differences in potential environmental impact of water use based on given regional differences in water scarcity.

LCA scores

In this section, the LCA absolute values for the assessed impact categories are specified. These values are expressed per m2 of material (weighting on average 6.4 kg), which represents our unit of reference.

Impact category	Unit	Score
Global warming	kg CO_2 eq./m^2	13.8
Primary energy demand	MJ/m^2	631
Water depletion	m^3/m^2	10.8

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Arpa Industriale is a single member company under the direction and coordination of Broadview Industries B.V.