Arpa

SUSTAINABILITY POSITION PAPER 2016

INTRODUCTION

Arpa is a leading manufacturer of HPL panels for interior applications.

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 LTO, which includes topics such as:

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

Sustainability became part of Arpa's LTO strategy in 2010. As an anchor and guideline to our efforts on sustainability, we use the ISO 26000 standard 'Guidance on Social Responsibility'. Many of the topics that we consider to be our LTO priorities are incorporated in this ISO standard under one of the six so-called core subjects, ranging from "Human Rights" to "Community Involvement and Development" [1].

We have selected "The Environment" as a starting point for our sustainability efforts. This core subject covers the next four topics:

- Prevention of pollution
- Sustainable resource use
- Climate change mitigation and adaptation
- Protection and restoration of the natural environment

To measure progress in these four fields we have selected life cycle assessment (LCA) as an objective method to assess environmental impact. A first LCA showed main impact categories were imported raw materials and energy use on site. Consequently Arpa decided to define tangible targets for these two topics to start sustainability efforts. These two parameters were tightly monitored and Arpa reported on progress in previous papers. In this third position paper, Arpa will review the impact of sustainability initiatives during the period 2011-2015.

Meanwhile, an external party (Thinkstep, a leading LCA consultancy firm based in Germany) performed a number of LCA studies to measure progress at an overall company level.
The most recent study (on 2015 data) showed improvements versus 2010. However, is has been difficult to link these results directly to actions in the factory. We believe updated databases and improved accuracy of data have had a big impact on Arpa's LCA – both positive and negative.

To increase transparency with respect to LCA results and modelling thereof Arpa has recruited an in-house LCA capability.

This paper consists of five chapters:

1. Philosophy and Beliefs
2. Sustainability Policy
3. Progress on site efforts (2011-2015)
4. Measuring environmental impact (LCA)
5. Sustainability approach 2017-2020

1) For more information about the ISO 26000 norm, see Appendix 1 and http://www.iso.org/iso/home/standards/iso26000.htm

PHILOSOPHY AND BELIEFS

Sustainability provides Arpa with challenges as well as new opportunities

COMMON SENSE

ARPA will use a common sense approach in addressing the topic of sustainability. Our sustainability strategy is based on thorough assessment of environmental impacts.

OBJECTIVE AND FACT BASED AS WELL AS EFFICIENCY IN USE

ARPA believes in objective and fact based analysis and has executed a cradle-to-gate LCA to map its environmental footprint along all relevant parts of the value chain. ARPA trusts that the LCA according to ISO 14040/44 is currently the most objective and fact based method to assess its environmental footprint. ARPA executed an LCA and will use the results as a basis for new improvement initiatives. ARPA will continue to monitor alternative available methodologies and adopt ones that are understandable, transparent and standardized and that promote lasting improvements.

INTEGRAL PART OF BUSINESS PLANNING AND REVIEW CYCLE

ARPA will set priorities based on the LCA and agree realistic but challenging targets to achieve change. 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 and inclusion of a sustainability paragraph in the annual report.

SUSTAINABILITY POLICY

Any change should start with the company itself. Arpa's approach to sustainabilty is framed by three basic principles.

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 aiming at opportunities to minimize the environmental impact of its operations and products.

DO GOOD

Next, ARPA will support its suppliers and customers to realize their sustainability challenges. ARPA is looking for opportunities that maximize the sustainability contribution of its products in the value chain, including their end-use, e.g. design furniture.

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

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

PHILOSOPHY AND BELIEFS

Progress on site efforts 2011 - 2015
From LCA to tangible results in the factory

To start sustainability efforts in the factory, Arpa performed an LCA survey in 2011. Three clear focal points for Arpa emerged:

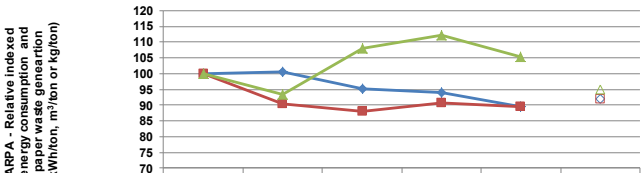
1. Upstream contributions from raw material, production and transport
2. Primary energy use for Arpa's production processes
3. Onsite emissions originating from resin production and impregnation

These topics were made tangible for operations with a goal to reduce scrap / waste and become more energy efficient.
To ensure progress and a positive impact on Arpa's environmental profile, Arpa has added the following list of targets to its business planning.

Reduction of upstream contributions
- Saving on material consumption by reducing the relative amount of paper waste (in kg/ton HPL) by 5% at the end of 2015 compared to end of 2011.

Reduction of primary energy consumption
- Arpa is aiming at reducing energy consumption and has set an energy efficiency improvement target of 8% at the end of 2015 compared to reference year 2011.

The following charts show trends of energy efficiency and relative waste generated.



	2011	2012	2013	2014	2015	Target
Rel. electricity cons.	100,0	100,5	95,3	94,1	89,7	92,0
Rel. gas cons.	100,0	90,4	88,1	90,6	89,5	92,0
Rel. paper waste	100,0	93,5	107,9	112,2	105,2	95,0

Results

Progress for the period 2011-2015, including targets, is depicted above. Arpa has met the energy targets set for 2015. Increased efficiency of some processes (e.g. cooling towers) and installation of new improved motors (e.g. compressed air systems) have positively impacted on electricity consumption. Gas consumption decreased because of more efficient production (e.g. less trials and downtime) and heat recovery from the exhaust of gas burners on lines 8 and 9. Arpa continues to work on improvement plans to realize energy savings.
The trend for 2016 has been stable.
Paper usage initially increased. Tight monitoring and correctional actions as well as a reduction in the number of trial programs for new resin/paper combinations helped reverse the trend in 2015. Specific actions to reduce defects at the impregnation and décor lines also had a positive effect. A further reduction was realized in 2016.
Arpa will continue to focus on stabilizing its production processes and search for further energy efficiency projects.

We see good momentum in the factory towards sustainability and have a coordinated approach in place to follow-up on initiatives in a more structured manner. Increased awareness of material savings at all operational layers of Arpa should lead to continued scrap reduction. The daily waste management system helps to support this.
Next to these day-to-day actions, Arpa puts a lot of effort into improving the accuracy of data. Arpa, with the help of Thinkstep, bi-annually update their energy and mass balances for the HPL manufacturing process.
It is very difficult to quantify gains of these smaller projects without proper understanding of the dependency of the processes. Continued awareness and a disciplined approach create a more solid platform to pursue step changes - providing a positive impact on Arpa's LCA.

MEASURING ENVIRONMENTAL IMPACT

Results of LCA 2015 from cradle to gate perspective

The LCA covers the total impact of the manufacturing footprint including the extraction and processing of raw materials. Transportation of raw materials to the manufacturing site is accounted for. The analysis excludes the effects of the use and end of life phases which have to be analyzed on a specific product level. Results were based on the production of 1 ton of HPL.
In consultation with a leading sustainability consultant (Thinkstep), six key environmental indicators were selected for the LCA. These are impact categories commonly agreed upon as most relevant to include in Environmental Product Declarations. These indicators cover emissions of greenhouse gases that contribute to climate change, emissions of substances with a negative impact on the environment (air, water and soil) and depletion of energy resources both non-renewable and renewable. The LCA indicators are explained in Appendix 2.

Per ton HPL	Environmental impact dimensions	Units	2010 LCA	2012 LCA	2015 LCA	delta 11-15
Climate Change	Carbon footprint (GWP)	Kg CO2-Equiv. per ton	2.800	4.400	3.460	23,6%
Primary energy consumption	Total Primary Energy	GJ total	89,0	94,0	108,0	21,4%
	Renewable energy share	%	29%	22%	33%	15,4%
Emissions to air, water and soil	Acidification (AP)	Kg SO2-Equiv. per ton	12,0	17,8	8,0	-33,7%
	Eutrophication (EP)	Kg P-Equiv. per ton	1,9	1,9	1,5	-18,9%
	Ozone Depletion Potential (ODP)	Kg R11-Equiv. per ton	-	-	6,7E-07	n/m
	Photochemical Ozone creation (POCP)	Kg Ethene-Equiv. per ton	1,4	1,4	0,9	-39,1%

When comparing the results of year 2011 and year 2015, significant differences across all categories can be noticed. Such differences stem from a combination of factors:
1. Main impact changes come from different background data: updated versions of the Gabi database that are used and refinement of the model where supplier's data are used instead of generic data.
2. The 2015 LCA also included more accurate information of Arpa's processes for saturating Kraft paper and paper mix used in the manufacturing process.
3. Some effects could also be related to changed assessment methods: factors used to calculate environmental impacts are based on scientific models, which go through updates.
4. The many smaller actions completed over the period 2011-2015 should have made a positive contribution.

To define the contribution of each of these factors and be able to understand how much of the shown changes are to be attributed to our efforts, the 2011 model should go through a calibration, where the same background data and assessment method as the 2015 study are used. Due to a lack of access to the LCA model, such calibration could not be performed.

SUSTAINABILITY APPROACH 2017-2020

Looking for step-change projects with a serious impact on our sustainability footprint

Structural improvement takes longer to materialize and requires better understanding of the processes with respect to their impact. A dedicated capability was hired to increase the understanding of LCA. Using our own models detailed studies can be performed in a more structural manner. With the capability to understand the impact of our processes, Arpa wants to identify the real factors that impact on the categories as mentioned in our LCA.

Once these factors are identified and an improvement plan is made a new position paper will be published. The paper is expected to be ready early 2018 containing our approach including targets for the next years up to 2022.

Current insight in LCA, taught us that a different functional unit should be used. From now on, Arpa will change the functional unit from tons to m2 as this is a better reflection of the application of the product.

APPENDIX 1: ISO 26000 INFORMATION

Guidance on Social Responsibility from ISO 26000 including the priority areas

Core subjects and issues	Addressed in sub-clause
Core subject: Organizational governance	6.2
Decision-making processes and structures	6.2.3
Core subject: Human rights	6.3
Issue 1: Due diligence	6.3.3
Issue 2: Human rights risk situations	6.3.4
Issue 3: Avoidance of complicity	6.3.5
Issue 4: Resolving grievances	6.3.6
Issue 5: Discrimination and vulnerable groups	6.3.7
Issue 6: Civil and political rights	6.3.8
Issue 7: Economic, social and cultural rights	6.3.9
Issue 8: Fundamental rights at work	6.3.10
Core subject: Labour Practices	6.4
Issue 1: Employment and employment relationships	6.4.3
Issue 2: Conditions of work and social protection	6.4.4
Issue 3: Social dialogue	6.4.5
Issue 5: Human development and training in the workplace	6.4.7
Core subject: The environment	6.5
Issue 1: Prevention of pollution	6.5.3
Issue 2: Sustainable resource use	6.5.4
Issue 3: Climate change mitigation and adaptation	6.5.5
Issue 4: Protection and restoration of the natural environment	6.5.6
Core subject: Fair operating practices	6.6
Issue 1: Anti–corruption	6.6.3
Issue 2: Responsible political involvement	6.6.4
Issue 3: Fair competition	6.6.5
Issue 4: Promoting social responsibility in the sphere of influence	6.6.6
Issue 5: Respect for property rights	6.6.7
Core subject: Consumer issues	6.7
Issue 1: Fair marketing, information and contractual practices	6.7.3
Issue 2: Protecting consumers' health and safety	6.7.4
Issue 3: Sustainable consumption	6.7.5
Issue 4: Consumer service, support, and dispute resolution	6.7.6
Issue 5: Consumer data protection and privacy	6.7.7
Issue 6: Access to essential services	6.7.8
Issue 7: Education and awareness	6.7.9
Core subject: Community involvement and development	6.8
Issue 1: Community involvement	6.8.3
Issue 2: Education and culture	6.8.4
Issue 3: Employment creation and skills development	6.8.5
Issue 4: Technology development	6.8.6
Issue 5: Wealth and income creation	6.8.7
Issue 6: Health	6.8.8
Issue 7: Social investment	6.8.9

APPENDIX 2: KEY ENVIRONMENTAL INDICATORS

Climate change parameters:

GWP: Global Warming Potential
(carbon dioxide equivalents):
In addition to the natural mechanism, the greenhouse effect is increased by human activities. This results in a warming effect at the earth's surface.

Emissions parameters:

AP: Acidification Potential
(sulphur dioxide equivalents):
The acidification of soils and waters occurs predominantly through the transformation of air pollutants intoacids.
This leads to a decrease in the pH-value of rainwater and fog from 5.6 to 4 and below.

EP: Eutrophication Potential
(phosphate equivalents):
Eutrophication is the enrichment of nutrients in a certain place that leads to a sharp decrease in oxygen availability in the local environment system. Eutrophication can be aquatic or terrestrial. Air pollutants, wastewater and fertilization in agriculture all contribute to eutrophication.

ODP: Ozone Depletion Potential
(CFC 11 equivalents):
The ozone layer in the stratosphere (10-50 km height) is essential for life on earth. It absorbs short-length UV radiation which is important for preventing both earth temperature rise and skin cancer risks. Anthropogenic emissions such as CFCs and HCFC emissions contribute to the depletion of ozone in the stratosphere.

POCP: Photochemical Ozone Creation Potential
(ethylene equivalents):
Photochemical ozone creation in the troposphere (closest to the earth's surface), also known as summer smog, is suspected to damage vegetation and material. High concentrations of ozone are also toxic to humans.

Resource depletion parameters:

PED: Primary energy usage
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. It also includes energy stored in the final product.

Share of renewable energy
Renewable primary energy is a part of primary energy that can be naturally replenished (e.g. energy embedded in the wood material or from wind or hydro electricity), while the non-renewable energy comes from non-renewable resources such as fossil fuels or uranium.

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