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Portugal: Sonae Indústria case study

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 Observatory:
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About

Case study name:

The greening of industries in the EU

Country:

Portugal

Organisation Size:

500+

Sectors:

Furniture

Sonae Indústria produces wood-based panels for the furniture and construction sectors. Sonae Indústria's subsidiary, Ecociclo, implemented a system to recycle wood for the panel factories. This approach represented an overall investment of €6.5 million and has created 20 direct new jobs (with many more additional indirect jobs related with upstream operations and transports – estimated at 90). Workers have received on-the-job training; their skills and experience have allowed them to conduct educational sessions for children in local schools. Ecociclo's operation has improved workers self-esteem and their knowledge about the wood cycle and its recycling process. However, Sonae Indústria also has to deal with the health hazards from airborne wood dust. The case study was conducted between October 2011 and January 2012.

Introduction

In Portugal, [Sonae Indústria](#) has two panel production factories and 1,050 employees. Its base products are particleboards (PB), medium density fibreboards (MDF) and oriented strands boards (OSB), which are used in the furniture and construction industries. Sonae Indústria is responsible for 317,000 of the total 870,000 m³ per year Portuguese wood panel market.

Sonae Indústria panels either use virgin wood – its Portuguese factories have Forest Stewardship Council ([FSC](#)) certificates for using sustainable sources – or used wood from several sources: old furniture, transport crates, construction demolition, industrial leftovers and so on.

One of Sonae Indústria factories is currently using 50% recycled products. Ten years ago, this value would not surpass 20%. This improvement is mostly due to use of transformed materials produced by its subsidiary, Ecociclo (Sonae Indústria is its only customer). Sonae Indústria started its Ecociclo operation in 2000 to fulfil the need to diversify raw material for its factories. Ecociclo implemented a system to collect used wood, reduce it to small particles and separate the non-wood materials. Overall investment reached €6.5 million comprising land, buildings and other infrastructure, machinery and equipment, special containers for wood transportation, and office equipment.

Ecociclo was implemented at national level; the present existing competition is regional and so far smaller. Sonae Indústria and Ecociclo strive to bring old wood into the recycling process, instead of letting it end up in landfills. Using old wood constitutes an environmental asset, either for fewer carbon dioxide (CO₂) emissions, for reducing landfill volume, or even for its social impact.

Ecociclo's approach can be broadcast as a good example among Sonae Indústria practice but it also reaches individual citizens who bring their used wood directly to its facilities. Ecociclo's workers have also gained from having a greener job: higher self-esteem, improved wood cycle knowledge and the ability to pass the word to external agents, including schoolchildren.

Drivers and motivations

Sonae Indústria's green change, through Ecociclo, is based on three main drivers.

First, Sonae Indústria wanted to become more independent from virgin wood so as to reduce the risks related to availability of resources. Forestry has been an agitated market in recent years. EU policy on renewable energy has fostered the use of biomass heat sources for the domestic and industrial sectors. This has increased the cost of virgin wood and therefore driven the sector – and Sonae Indústria in particular – to further grasp opportunities for used wood parts.

Second, the lack of wood recycling operators in the market led Sonae Indústria to seize this opportunity. Ecociclo still has little competition at national level and continues to search for more suppliers.

Third, the importance of the Sonae conglomerate in Portugal pushes Sonae Indústria's ecological visibility and conscience a little further. Ecociclo is clearly a good display of Sonae Indústria's sustainable good practices and improvements for the final consumer, but most of all, for potential investors.

The ongoing economic crisis has slightly reduced the used wood market as people tend to discard less and reuse more. However, Sonae Indústria does not predict major changes in Ecociclo's operation; if some suppliers have less material, new ones are still emerging due to the expanding visibility of the recycling wood process.

Green business practices

By recycling used wood, Sonae Indústria reduces CO₂ emissions. Extending wood's life cycle and integrating it in new wood-based panels delays the freeing of carbon dioxide into the atmosphere.

Sonae Indústria already had a wood recycling centre before starting its Ecociclo operation. The board of directors set up Ecociclo to boost the recycling of wood on a larger and national scale and to better control the market for its raw materials.

Used wood items from different sources in the country (more than 400 regular suppliers), plus occasional individuals, are received by Ecociclo at its three main facilities in the south, centre and north of Portugal. Items from major suppliers are mainly collected on-site in containers supplied by Ecociclo and then moved to the Ecociclo centres. Ecociclo places more than 300 of these 40 m³ containers at its suppliers. Used wood is also collected in regional areas near the Sonae Indústria panel production factories. Some of these materials can be treated directly at the factories, but most is moved through Ecociclo.

Trucks move the used wood to Ecociclo facilities where it is reduced to small particles (that is, wood chips). The same trucks that transport panels to customers are then used to bring back the wood particles to the panel factory. Minimising thus useless truck movement allows for less CO₂ production. Ecociclo maintains a tight contract programme with the truck operators to also ensure cost reduction; truck loading is optimised avoiding circulation of empty trucks. The containers used have yet an interesting detail, they open on the side to load the wood-based panels, and once empty, they will be loaded from above with the wood chips.

At the Ecociclo recycling centres, wood chips are produced using industrial shredding machines. These systems are either installed in open air facilities or within warehouses. Then, the wood particles are separated from metal, plastic or other materials using three distinct systems:

- magnetic for iron alloy metals;
- induction for other metals;
- blown air for plastics.

Of the final product (wood chips), 90% will be formed into wood panels and the remaining 10% will be used as fuel for the wood-based power plants in the panel factories.

All the systems use already available commercial shredding machines.

Anticipation and management of the impact of green change on quantity and quality of jobs

Impact on quantity of jobs

Implementing the Ecociclo recycling process has resulted in 20 new jobs. The human resource (HR) management department is not considering any changes in the number of jobs in the next five years, mainly due to the impact of the current economic crisis on the wood panels industry. These Ecociclo workers are mainly blue-collar and are directly involved with the recycling process; little desk work is performed directly by Ecociclo's staff.

In addition, Ecociclo's small size allows for a simplified hierarchy structure. Its operation has not interfered with the number of jobs at Sonae Indústria and thus no existing jobs were transformed, substituted or eliminated.

Impact on quality of jobs

Skills development

Ecociclo was the first Portuguese company in its sector to obtain an integrated certification in all three areas: environment, quality and hygiene/safety. This achievement represents Sonae Indústria's concern in these areas and an integrated approach at work level. To accomplish this, and along with management changes and investments, workers went through a process of raising awareness about, among other issues, sustainability. Both this input and some formal training were done on-the-job by Sonae Indústria senior engineers. Ecociclo's tasks rely a great deal on experience and less on formal training. Direct experience has been far the most effective training method and has reduced the need to outsource formal training.

One important task at Ecociclo's recycling centres is the visual inspection of used wood parts, where experience plays a major role. By witnessing differing wood parts daily, and having to separate them, Ecociclo's staff has surpassed the factory workers in recognising different types of wood in the parts received for processing. This is important because Sonae Indústria factories need to control the quality of wood introduced into each production line. No special training was needed here. All Ecociclo workers share the same training packages: experience was and is the major factor of skill change. Self-learning and sharing of knowledge between workers were two main tools of skills development at Ecociclo.

Three Ecociclo workers liaise regularly with local and national outlets in searching for potential suppliers of used wood. These workers have received on-the-job training on the wood recycling process, supervised by more experienced colleagues within Ecociclo and by Sonae

Indústria senior staff. Their task is also to induce good practices in the suppliers, mainly by preparing and separating their products properly in an integrated approach with their own workers. The three Ecociclo workers actively brief employees of suppliers about good practices in preparing used wood for recycling. Proper separation of different materials is a key element to success in recycling and these workers strive to make this happen upstream of Ecociclo. These three workers have different backgrounds, with two having already worked in the wood or furniture sector. However, they were the first to integrate the environmental certification programme recently implemented at Ecociclo.

Cultural change

Sonae Indústria strives to motivate its workforce to improve sustainability levels either by specific training, by daily written messages or occasional informal activities. Written messages, often printed sheets hanging on a wall, are a usual method to address the staff with news and recommendations. Ecociclo's centres are mostly a blue-collar environment and these simpler approaches tend to work better.

Environmental concerns are constantly emerging in the daily routines of Ecociclo's workers, either by management decision or by work necessity. These concerns are also transferred to workers' home; for example, introducing good practices at work fosters the use of energy saving measures at home. Ecociclo workers are usually more concerned about the impact of household activities on the global environment than other Sonae Indústria workers. This difference is perceived during regular informal meetings of Sonae Indústria workers. Nevertheless, Sonae Indústria's ongoing energy reduction programme, which transverses the entire company, focused primarily on so-called 'quick wins'. These were mostly direct actions by the workers that could be quantified as to the energy saved, from switching off the lights to better management of running machines. The programme also addressed the relationship between good practices at work and at home.

Within Sonae Indústria, Ecociclo workers are also more efficient in implementing sustainable practices. Sonae Indústria believes that the workers' proximity to a daily recycling process justifies this ranking. These workers share a few features that can add to the equation.

- Their work environment has a lot of open air spaces.
- They actually touch the goods they process.
- They constantly deal and get to discuss the recycling process with different people, external to the company (used wood suppliers range from usual companies to casual individuals with a domestic surplus).

Also, a healthy competition has emerged between the three Ecociclo centres: workers strive to make their centre surpass the others. This evolved from the continuous flow of information to the workers about the role of Ecociclo. The workers started to compare their achievements in the measured productivity indexes and used this information to rank themselves.

The diverse nature of Ecociclo's work in terms of supply variations (in quantity and quality) demands more of tidiness in the work spaces (warehouses and wood parks) and working methods. In this area, the reduced hierarchy structure in Ecociclo is also a clear benefit. These workers can directly and transversally sense the effect of their own practices in maintaining their workplace and in reducing unnecessary costs.

Once or twice a year, workers from Sonae Indústria and Ecociclo attend, along with their families, a one-day event in a green area, somewhere in Portugal, to plant new trees. Sustainability issues are also discussed informally during the day. Through such events Sonae Indústria and Ecociclo's workers and family members also get to better understand the benefits of the wood recycling process undertaken by Ecociclo.

Other job quality dimensions

In Ecociclo's operations, wood dust presents a health hazard and Sonae Indústria has been improving working conditions for the workers in order to minimise the risks. Workers are provided with, and are encouraged to use, individual protection gear. Physical barriers are being built to reduce airborne dust by cutting off wind speed within the compounds.

Ecociclo's also seeks training and advice for its workers from local authorities (city administration, water and sewage authorities, and especially from firefighters) who provide counselling about the training of workers and use of firefighting equipment. A wood recycling process constitutes a significant fire hazard because it combines in the same place wood dust and chips along with running machines, engines and fuel containers.

The impact of green change had another interesting effect on, so far, three Ecociclo workers who have given presentations for young children in local schools. These presentations were about recycling and its benefits for the future. Ecociclo's workers had the knowledge and, along with the centre supervisor and a Sonae Indústria expert, set about preparing these presentations and other information to be used with the children. This was not initially anticipated by HR management: the process started when one school asked for a specific input from Ecociclo. However, it has now become part of the agenda. Sonae Indústria is pleased with the results and the workers themselves are asking to do more of this type of approach. Together with local schools located near Ecociclo's centres, Sonae Indústria is preparing more such interventions. These events clearly boost self-esteem and work satisfaction to much higher levels; a sense of pride about their role in a recycling process is also easily detectable in the workers involved.

Internal Sonae Indústria reports state that Ecociclo workers are among the happiest in the company. Every two years, Sonae Indústria promotes an internal satisfaction assessment; in the outcome, Ecociclo workers always rank as the more content and also the more embedded with the company's values.

Conclusions and recommendations

- Recycling used wood reduces landfill volume, prevents embedded CO₂ from being released and constitutes a social asset for the company – a sustainability image. This green approach also allowed Sonae Indústria to better control the amount and cost of its supply of raw material by reducing its dependence on virgin wood market. In addition, recycled wood is cheaper than virgin wood, and thus the recycling process contributes to reduce operation costs.
- By setting up Ecociclo, Sonae Indústria created 20 new jobs without the need to transform, substitute or reduce any jobs in the main company.
- The need to control the quality of raw material at source level created a permanent flow of information on good practice from Ecociclo to its suppliers, helping to establish Ecociclo as reference of information on wood recycling in Portugal.
- Ecociclo's workers are more naturally involved in good practices than other Sonae Indústria workers, both at work and at home.

- The knowledge embedded in Ecociclo's workers has also created the possibility to spread the word to local schools. This served to motivate the workers and created a positive synergy for the company – happier workers and a better company image within local communities. All in all, it could be considered that a cultural change towards environmental awareness came along with these new jobs.

However, there are some drawbacks.

- This chain of processes depends on having larger facilities to accommodate raw material arriving at unpredictable rates along the year.
- A special production line had to be created at one of the factories to better control and eliminate undesirable materials.
- Fire hazard is a major concern in wood recycling facilities due to the constant presence of wood dust and chips alongside running machines and engines.
- Airborne dust is an environmental and health concern that has to be dealt with; Sonae Indústria has been improving work conditions to tackle this issue.
- A greater effort by public authorities is needed to make wood recycling a more usual process, both at the industrial and domestic level.

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