

Area of interest Production of wooden pallets.

About the company Palm is a carpentry firm founded in the 60s and now managed by Primo Barzoni. Since its origins, Palm has based its competitive strategy on the pallet and wooden packaging market, focusing on an ecological and innovative approach in both design and production. This approach can be summarised as eco-design, aimed at achieving economic savings while also safeguarding the environment. In other words, the design aims to optimise the weight and volume of the packaging without compromising its performance, in order to consume a lesser quantity of raw materials and, consequently, reduce the total transport weight. Palm has an ongoing commitment to the development of projects that safeguard natural resources (the circular economy), with particular attention to the local context and the origin of the materials.

Relevant business model

Sustainable inputs	End of life	Life Extension	Sharing platforms	Product as service
--------------------	--------------------	----------------	-------------------	--------------------

Business requirement and proposed solution

Wooden pallets are among the most commonly used forms of packaging for the transport and storage of goods. In particular, an estimated 50 million one way pallets were produced in Italy in 2016, using, a significant quantity of natural resources: one pallet weighs on average 6.5 kg so in total approximately 325,000 tonnes of wood were used.

The primary requirement is to safeguard the amount of wood that is used in order to protect its provenance, management and especially what happens to it at the end of its working life.

Palm, in line with its ethical-social policy, has decided to pursue a pathway characterised by environmentally sustainable choices for the production of its one-way pallets.

Selected solution and details

Palm's one-way pallets are made of recycled national poplar wood obtained from plywood processing waste (by-product). The poplar forests are controlled and certified.

During the pallet production process, wood waste, which overall accounts for 3%, is recycled for the production of chipboard panels. The whole supply

chain is very short and the distances involved do not exceed 100 km. The energy used for producing the pallets is 100% renewable, so the amount of natural resources used for the energy component is nil.

Main benefits

About 600 kg of wood can be obtained from a poplar tree weighing around 1200 kg for use in manufacturing goods. The remaining 50% is recovered and used for the production of fuel pellets or directly for energy production. Sawing the wood into planks generates about 3% of waste (about 15 kg), destined in turn to a recycling process for the production of chipboard panels. The waste material obtained from board processing is used to make the stands and the blocks for the production of pallets.

It is estimated that it is possible to produce 91 pallets, each weighing 6.5 kg, including steel nails, from 600 kg of material.

Overall, the material resources used to make the 91 pallets are calculated at 610 kg (600 kg of wood and 10 kg of steel for nails). At the end of their useful life, 68% of the wood recovered from the pallets is recycled and used in the production of chipboard panels.

Key Performance Indicators

The production chain for wooden pallets is certainly virtuous when it comes to safeguarding resources concerning the waste generated during production, while the greatest wastage occurs at the end of the product's life. A 68% proportion of material recovery at the end of life, therefore, can only be seen as very positive.

Potential for roll out and development

The virtuous process that Palm has implemented for its pallets enables the company to optimise the use of a significant quantity of resources, considering also the territorial aspects of the supply chain and the use of materials from renewable sources. The potential to employ pallets as a "service" for certain uses could further improve the circularity of the product and reduce the wastage of resources. This approach can be pursued through specific agreements between Palm and companies using pallets.

Information on the Circularity Index.

We have developed a calculation model, called **CirculAbility Model** ©, which returns a synthetic index, a value indicating the degree of circularity of a certain product/service, called circularity index or Circular Index (CI).

Palm as a case has been analysed both for the production of pallets for the "one way" transport of goods, and for those produced to be used as a service (i.e. pallets that are then recovered and reused for other types of transport). Calculations were made for both cases on the data provided.

The fact that each pallet has been produced with recycled materials, green energy and is in turn recycled at the end of its life with minimum waste, leads to an overall circularity score of 81%, even though there are no circular elements in use (one way pallets). In the case of pallets that are recovered, maintained and reused several times as product as a service, the circularity index reaches as much as 95%.

[Scopri di più sul CirculAbility Model](#) ©