

Bio-based plastics

Case study

Novapet S.A.



Novapet is a Spanish company specialized in the production of plastic PET resins and preforms for the bottling of wide of products (food, soft drinks, mineral water, etc.), including ultralight and barrier bottles. Novapet has decided to use the LCA to go tool in order to improve their knowledge about the LCA of their PET products.

Because of their interest on such analysis, Novapet decided to join the training and case study programme of LCA to go with the support of ITENE. The main driver to join this training was mainly their interest on learning more about the life cycle impacts of the oil-based PET. As a secondary objective, Novapet was also interested in the environmental impacts of new emerging alternatives such as partially bio-based PET.

In this case study, the bio-based plastics LCA to go tool was used to carry out a cradle-to-gate LCA of a clear PET injected moulded preform of 23.5 g produced by Novapet in Barbastro (Huesca). PET pellets are produced at Barbastro plant and are then moulded by injection to produce the preform in the same location. These preforms, are packaged in corrugated board boxes and delivered to a customer located nearby Novapet facilities for bottling of mineral water. Alternatively, it was also analysed the chance to use partially bio-based PET coming from renewable materials like sugar cane, sugar beet, etc.

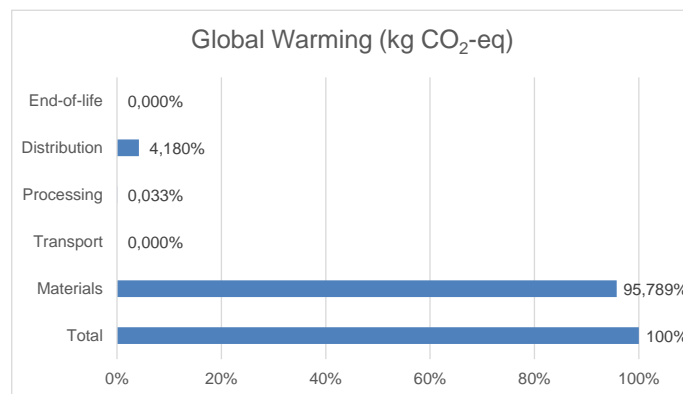


Figure 1. Global Warming results in relative percentage and by life cycle stage for a box of oil-based PET preforms

A first screening cradle-to-gate LCA with the tool shows that the raw materials used in the manufacturing of oil-based PET preforms are the most relevant contribution to carbon footprint impact. On the contrary, the carbon footprint of the manufacturing the preforms is very low. Moreover, the carbon footprint of the delivery to customer of the preforms is even higher than the processing of the preforms, being the second one contribution to this impact. This is mainly due to the contribution to

the carbon footprint of the packaging materials used for the delivery of the preforms to the final customer.

In the case of partially bio-based PET preforms, a reduction of the carbon footprint of raw materials was found. However, there was a significant increase of the impacts coming from the supply transport of pellets to the manufacturing plant.

Clara Santaliestra, from Technical Centre at Novapet said: *“The LCA to go tool is really interesting and easy-to-use. The chance to carry out comparative assessments of our materials with other products can be very useful”.*