

Environmental conclusions

When comparing the RECTYRE model where end of life tyres are used as lightweight filler for the construction of an embankment, with the traditional technology where end of life tyres are used as fuel for the production of cement clinker, an overall advantage was observed for the RECTYRE model which has a lower energy and material resources demand, as well as significantly lower environmental impacts.

The use of end of life tyres, as lightweight filler, for the construction of the RECTYRE embankment results in having a minor environmental impact with respect to the use of used tyres as a fuel, for the production of cement clinker, in a cement kiln.

The results obtained in the project allow determining that the replication of the RECTYRE model has many environmental benefits due to reduce both the waste generated and the consumption of natural soil. The main results are described as follow.

- The innovative RECTYRE model, using shred tyres as lightweight filler, requires 91% less total resources and releases 58% less total emissions with respect to the traditional treatment.
- The use of the shred tyres in embankments has a significant reduction of more than 50% resulted in the impact categories of Global Warming Potential (GWP), Acidification Potential (AP), Photochemical Ozone Creation Potential (POCP), Ozone Depletion Potential (ODP), Human Toxicity Potential (HTP), Freshwater Aquatic Eco-Toxicity Potential (FAETP), and Marine Aquatic Eco-Toxicity Potential (MAETP). Eutrophication Potential (EP) had a decrease of 7% while Abiotic Depletion Potential (ADP) showed no difference.
- The material procurement for the RECTYRE embankment leads to lower environmental impacts thanks to the use of end of life tyres as lightweight filler material, thus avoiding additional processes for the production of new products/materials as in the case of the traditional treatment.
- The RECTYRE embankment Life Cycle demonstrates to release fewer emissions, constituting an advantage with respect to the typical treatments.
- With good networking and organization of all stakeholders involved from collecting the end of life tyres to their use in the embankments, and regulatory requirements (incentives) all wasted tyres could be used to build civil projects. In this case, all emissions related to disposal of tyres can be totally reduced.