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Infravation
An Infrastructure Innovation Programme

The ERA-NET Plus Infravation 2014 Call has been initiated as a pooled research fund to develop transport infrastructure innovations which address the challenges identified in the European Commission's White Paper on Transport: Smart, Green and Integrated transport.

www.infravation.net

PROJECT COORDINATOR



ASSOCIATED BENEFICIARIES



WesternResearch
INSTITUTE



USE OF END-OF-LIFE MATERIALS, WASTE AND
ALTERNATIVE BINDERS AS USEFUL RAW MATERIALS
FOR PAVEMENTS CONSTRUCTION AND REHABILITATION



This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 1109806.0006.

CHALLENGES

Natural aggregates are, right after the water, the most consumed resource worldwide with a shocking 11 ton/person-year rate. If only road construction is considered, about 30.000 tons of aggregates are needed per kilometre of two-lane road.

Although the use of natural aggregates as road materials is certainly the cause of important impacts, the employ of virgin binders is actually a higher burden in terms of the environmental and economic repercussions. Actually, even if bitumen normally accounts for only 5% of a conventional mixture, its global GHG emissions and energy consumptions are always higher than those of the aggregates.

It is obvious that an ambitious approach to the efficient use of these materials is required.



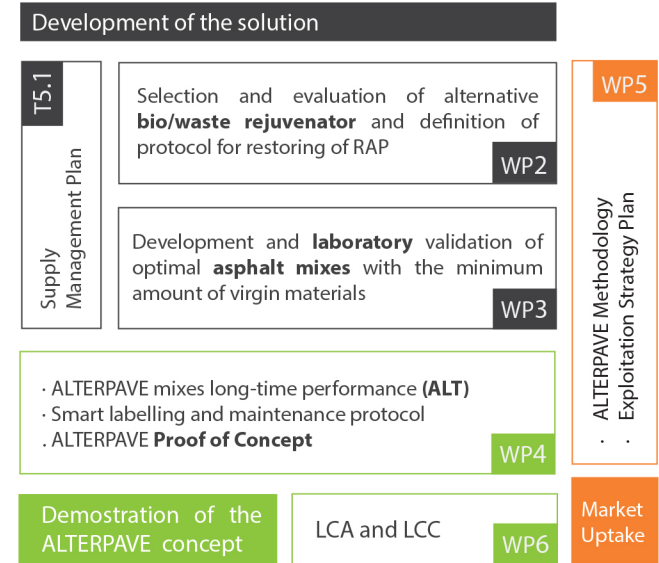
THE PROJECT

The ALTERPAVE project will **demonstrate the technical and economic and environmental feasibility** of different combinations of sustainable asphalt mixes that will replace virgin materials by recycled and renewable alternatives. The project will focus on two main components of the pavements. On the one side, it will look for the replacement of the virgin aggregates by **recycled materials** and **by products**. On the other side, considering the higher impact of the bitumen when compared to the aggregates, **alternative binders** such as waste engine oils and bio-fluxing agents will be integrated in the mixes to reduce the amount of oil-based binders.

Following a **Circular Economy approach**, a **supply Management Plan** will be assessed in which availability and potential exploitation of RAP, by-products and bio-binders in the countries of the Consortium will be considered.

In addition, the ALTERPAVE project will not only look to the construction phase of the road itself but also to its reuse and recycling after the end of the service life of the infrastructure. Thus, the project will integrate the **“Design for reuse”** concept maximizing the recyclability rates of the new mixes and also a **smart labelling solution** will be developed to facilitate and enhance future road maintenance and rehabilitation works.

PROJECT STRUCTURE



BENEFITS & IMPACTS

- 1 Reduction of virgin aggregates
- 2 Reduction of virgin bitumen
- 3 Use of secondary materials
- 4 RFID smart labelling
- 5 Circular economy approach
- 6 Design for reuse