PROJECT

BIOREPAVATION

BIOREPAVATION - Innovation in Bio-Recycling of Old Asphalt Pavements

Funding: European
Duration: Nov 2015 - Dec 2020
Status: Ongoing

Background & policy context:
The proposed project is to investigate the merits of application of bio-materials from bio-mass in reuse of asphalt pavements.

Objectives:
The project aims to demonstrate that reuse of asphaltic materials from pavements can be facilitated using bio-materials. To do so, this BioRePavation consortium will assess three technical solutions aiming to reduce the use of virgin aggregates and petroleum bitumen for road maintenance and construction. Successful technical solutions not only will have the advantage of using organic viscoelastic binder but also it will provide equivalent performances in comparison to conventional asphaltic materials.

The overall goal is to provide the opportunity for road authorities, or more generally for countries with mature networks, to be self-sufficient in materials via “BioRePavation” using bio-products locally produced and used along with asphalt pavement recycling. The main scientific and technical objective is to prove that alternative binders can be used to recycle asphaltic pavement with the same level of performance in comparison to conventional solutions with petroleum bitumen. To do so, the research team proposes to build a demonstration where three innovative pavement solutions using bio-materials will be tested using an accelerated pavement testing facility. Performances will be evaluated by both measuring the time (or traffic level) needed for the pavement solution to reach a distress mechanism (cracking, rutting, etc.) and investigating the binder physico-chemical evolution using an innovative non-destructive method. Biorepavation will also assess the environmental impacts of the combined use of bio-binders and high-content of RA in asphalt mixes. Special attention will be given to airborne emissions that will be directly measured at laboratory. Obtained data will be used to perform a risk assessment, as well as a Life Cycle Assessment (LCA) for the aforementioned Biorepavation technologies.

Main Goals:
- Innovation in bio-recycling of old asphalt pavements (Towards safe cost effective renewable pavement)
- Aims to evaluate innovations in pavement recycling techniques using alternative binders from renewable biomass.
- From a societal point of view, the target is to save natural resources in line with international movement toward non petroleum industries

Expected Outcomes:
- Assessment of solutions using alternative binders to recycle asphaltic pavement
- Design guides for these non-conventional materials
- Mechanical and ageing performance
- Environmental impacts (LCA)
- Assessment of a non-destructive method from the US applied to non-conventional materials
- Comparison between US / EU / advanced mix and structural design methods

Parent Programmes:
**Funding type:** Public (EU)

**Partners:**
French institute of science and technology for transport, development and networks (IFSTTAR) France; EIFFAGE Infrastructures Gestion et Développement France; Iowa State University USA; Arizona chemical The Netherlands; Western Research Institute USA; University of Nottingham UK;

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**STRIA Roadmaps:** Infrastructure

**Transport mode:** Road transport

**Transport sectors:** Passenger transport, Freight transport

**Geo-spatial type:** Other