





Researchers for a greener Europe

Tue 6, October 2020

11:30 AM - 13:00 AM

Virtual platform: Zoom

SAFERUP! Sustainable, Accessible, Safe, Resilient and Smart Urban Pavements

Cesare Sangiorgi, University of Bologna, Italy



This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 765057













Participants13 Beneficiaries















UNITED KINGDOM · CHINA · MALAYSIA



















17 Partner Organisations









































Objective

"The ultimate objective of SAFERUP! is to train new professionals able to provide future generations with more livable cities by applying solutions developed through cutting-edge research"









SAFERUP!

Thinking Beyond the Pavement

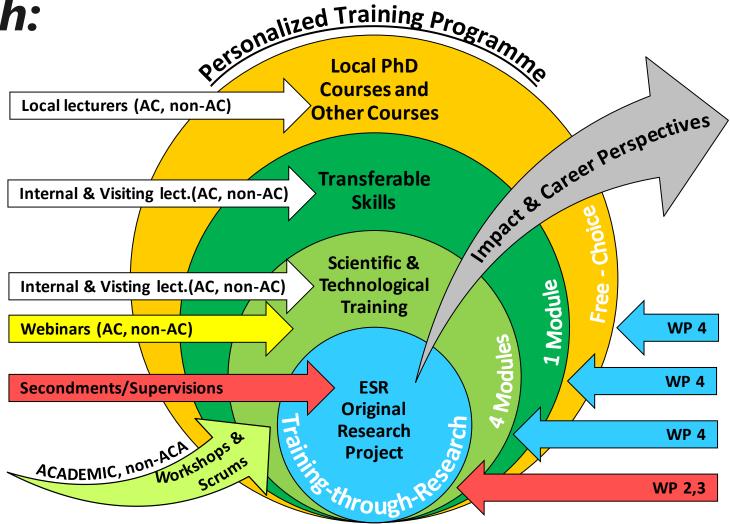






Training and Research:

SAFERUP! training is given both as **Training-through-Research activities** in the ESR Original Research Projects supervision (WP2 & 3), and other transversal training activities (WP4). All forms of training aim to maximize the Impact and Career Prospects of the ESR at the end of their SAFERUP! experience.





18th EUROPEAN WEEK of **REGIONS and CITIES**

12>16 OCTOBER 2020 19>22 OCTOBER 2020





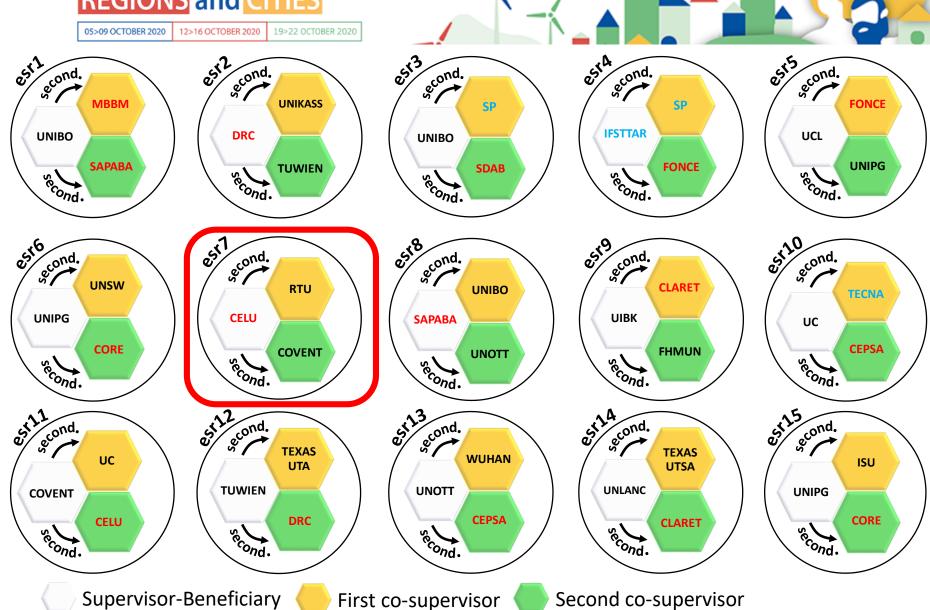


18th EUROPEAN WEEK of





Intersectorality





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Career Development Plan-Year 2

Name of fellow: Mukul Rathore

Recruitment Organization: Celu Eksperts

Name of Supervisor: Dr. Martins Zaumanis

Start Date: September-2020

End Date: August-2021

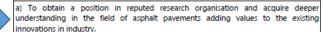
BRIEF OVERVIEW OF RESEARCH PROJECT AND MAJOR ACCOMPLISHMENTS EXPECTED:

This project, "100% Recycled Asphalt (RA) for Urban Surfaces (100% RAUS)" aims to implement "urban mining" approach to re-use 100% of milled asphalt for the production of new hot asphalt mixtures that perform equally to conventional mixes. In this project, special emphasis will be placed on test methods allowing to design and control the quality of the mixtures. A 100% recycled asphalt methodology will be implemented for high performance and context-sensitive urban paving materials. Bitumen characterization will be carried out considering multiple parameters for evaluation of blending between virgin and aged bitumen. Accelerated laboratory testing protocols will be developed for mix design and durability assessment. After data collection, life cycle assessment will be carried out for analysing the benefits of high rate of recycling. A successful 100% recycling methodology is expected to reduce lifecycle emissions, reduce costs, and reduce use of non-renewable natural resources associated with asphalt pavement industry without impacting longevity of the pavements.

The expected results of this project include optimised mixing protocols for high rate of recycling. A model for estimation of blending efficiency and diffusion phenomenon is expected to be developed through binder characterization study. The important parameters involved in the aging process of recycled asphalt mixtures will be identified and effect of various rejuvenators/ modifiers will be evaluated by investigating properties of rejuvenated mixtures and binders. The parameters for characterisation of reclaimed asphalt material will be identified by studying 100% recycled mixtures for estimating the expected performance in mixtures. The life cycle assessment of high rate of recycling will be carried out using to identify its benefits. This will help to gain more confidence in recycled asphalt design and enable to adopt higher percentages of RA in asphalt mixtures. A calculation model will be developed for recycled material re-usage based on properties of material and planned application.

LONG-TERM CAREER OBJECTIVES (over 5 years):

Goals:



b) To work in academia and impart the knowledge to students and help them develop skills in my area of expertise.

What further research activity or other training is needed to attain these goals?

- a) A Ph.D. in the field of pavement engineering.
- b) A post doctorate to acquire deeper knowledge and to expand the horizon in this
- c) Publishing a number of quality research papers in reputed journals.
- d) Presenting the research outcomes in seminars and conferences to develop good communication skills and expand the networking opportunities.

SHORT-TERM OBJECTIVES (1-2 years):

- Research results
- Anticipated publications:
- a) Influence of laboratory parameters on high reclaimed asphalt mixture and binder
- b) A review paper on mixing parameters for high recycled asphalt mixtures
- c) Effect of aging procedures on performance of warm mixtures containing high reclaimed asphalt
- d) A paper on evaluation of aging process in high RA mixtures and binder
- e) A paper on estimating parameters for characterisation of RA material

Other professional training (course work, teaching activity):

- a) Selective subjects for helping a research project at Riga Technical University
- b) Compulsory coursework for PhD requirements at Riga Technical University

Anticipated networking opportunities

- a) Secondment Plans:
- June 2021: Coventry University under Dr. S. Coupe
- b) Road construction companies in Latvia for collaboration and acquiring materials for
- c) Testing samples at Latvian State Roads, Riga.
- d) Staff and students at Department of road and bridge enginineering at Riga Technical
- e) SAFER UP! Week 2. Santander
- f) Latvian association of young scientists

Other activities (community, etc.) with professional relevance:

Date & Signature of fellow:

Date & Signature of supervisor

02.04.2020

















05>09 OCTOBER 2020 12>16 OCTOBER 2020 19>22 OCTOBER 2020



Road noise:



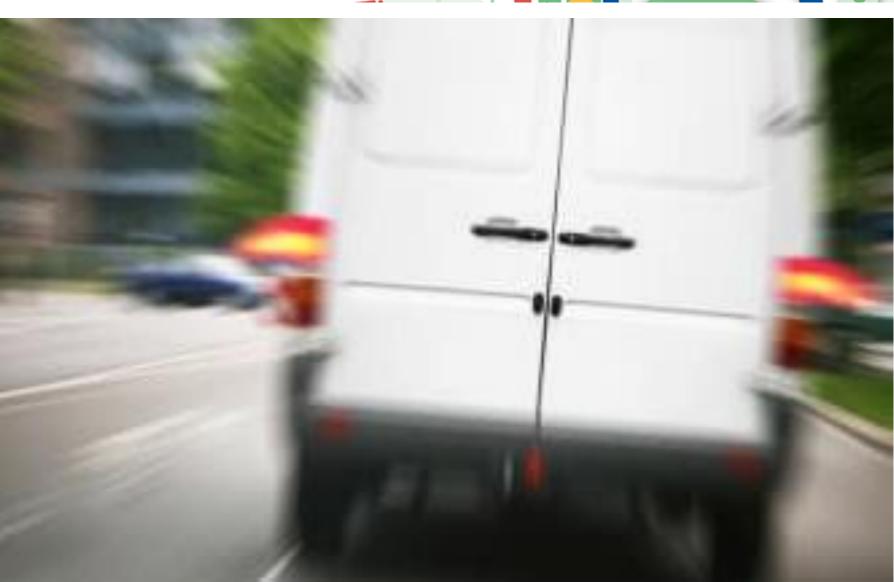




05>09 OCTOBER 2020 12>16 OCTOBER 2020 19>22 OCTOBER 2020



Road safety:





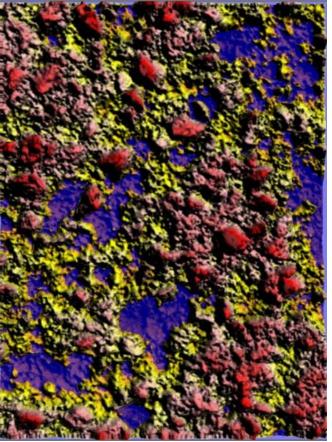


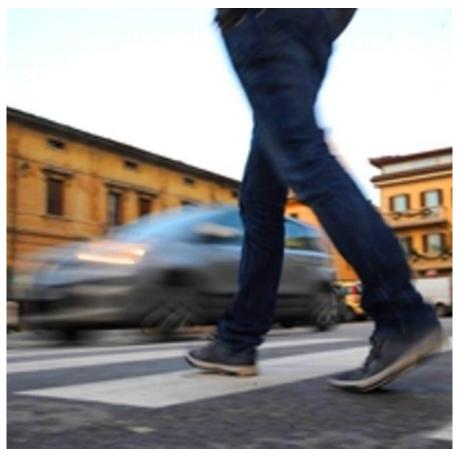




SAFERUP! PROJECT n°1: High Friction & Acoustic **Surfacing for Pavements (Hi-FASP)**













Innovative pavement COLD surfacings:

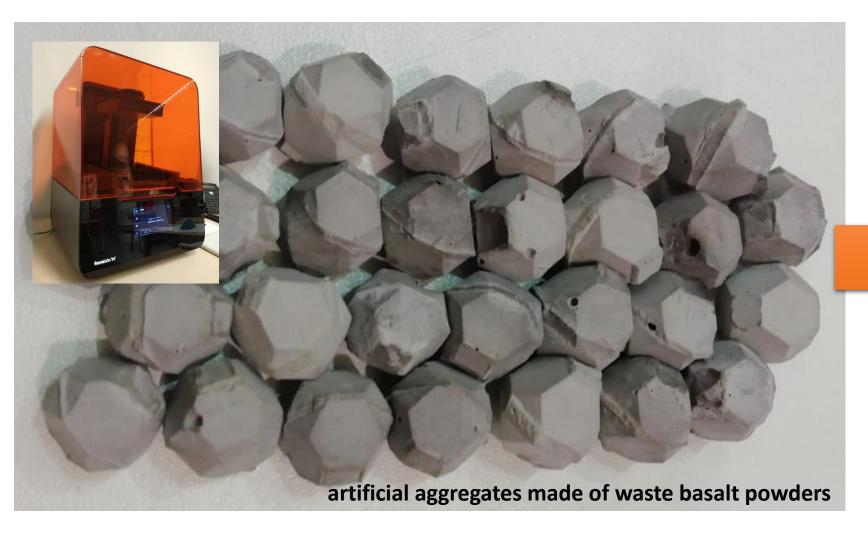








From artificial aggregates to microsurfacing cold laid asphalt pavement

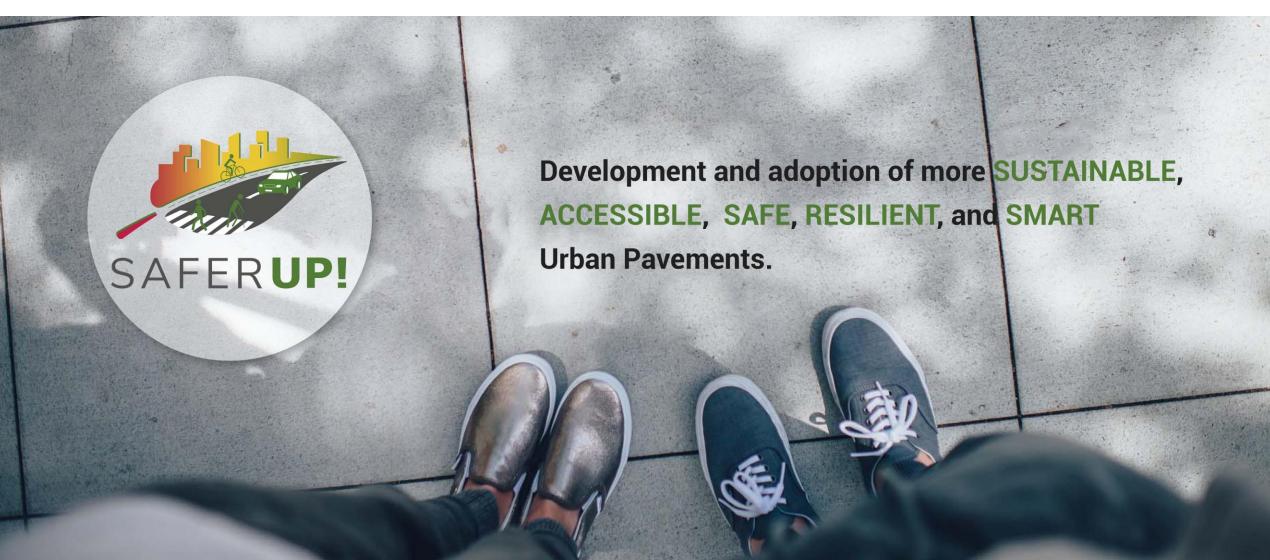








>09 OCTOBER 2020 12>16 OCTOBER 2020 19>22 OCTOBER 2020









Reclaimed Asphalt Pavement (RAP): in all countries













PROJECT n°7: 100% Recycled Asphalt (RA) for Urban Surfaces (100%RAUS)





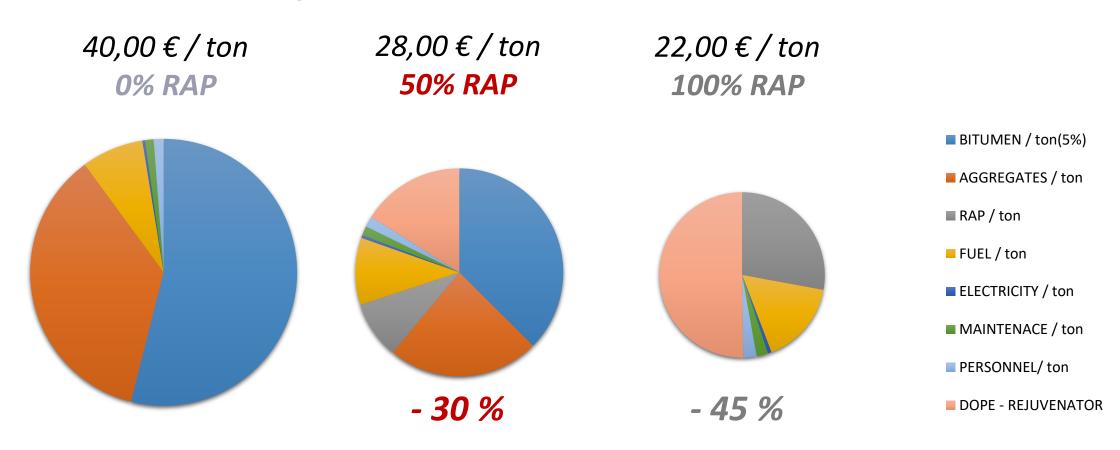
RAP is an important material to meet the objectives of "The European Green Deal".







RAP – Cost savings



The use of RAP means great cost savings (less bitumen and aggregates costs), while the choice of rejuvenator becomes of paramount importance



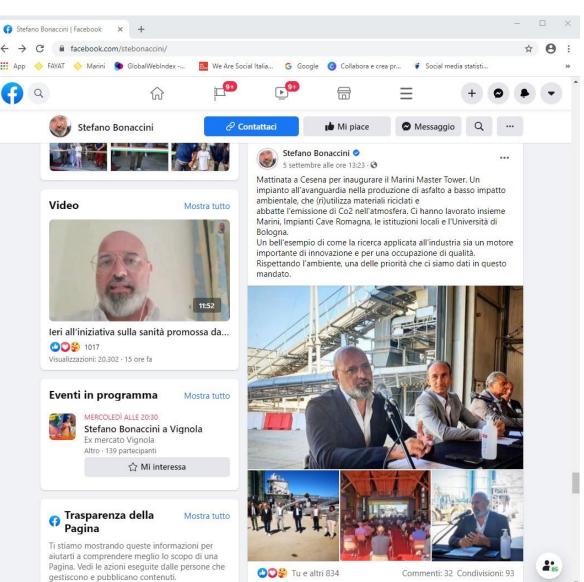
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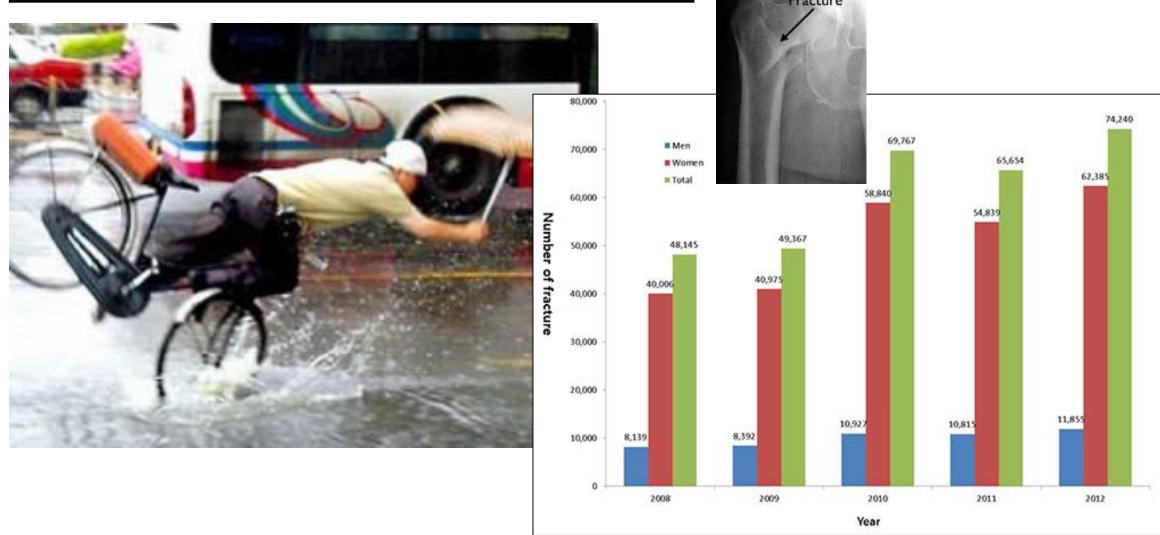




















PROJECT n°3: Vulnerable Users Protection with advanced recycled paving materials (PROTECTVU)











CRUMB RUBBER FROM END-OF-LIFE TYRES

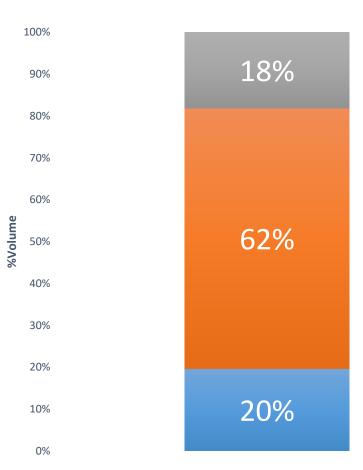


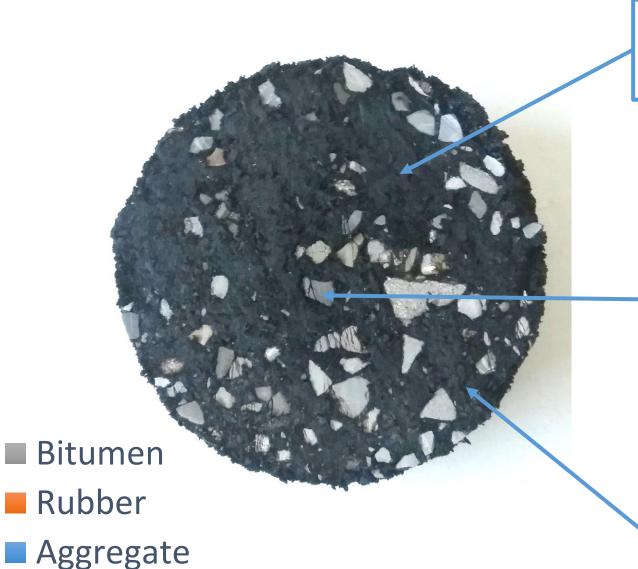






Constituents:





Rubber: 62%Vol

Aggregate: 20%Vol

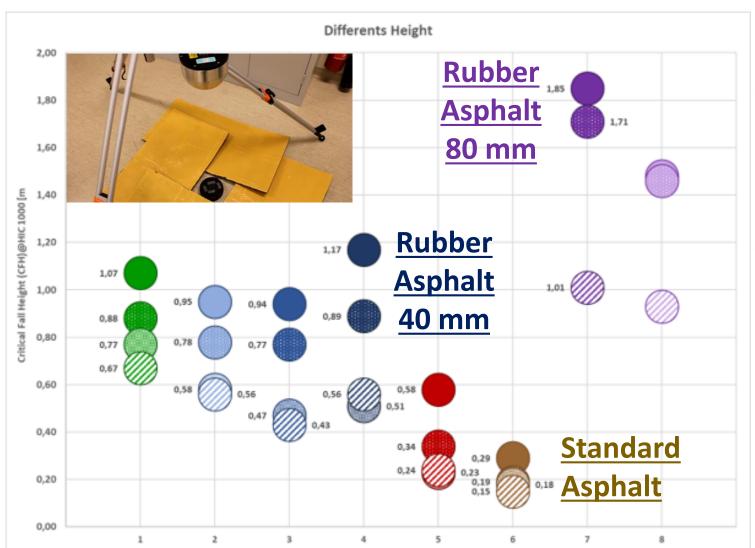
Bitumen: 18%Vol



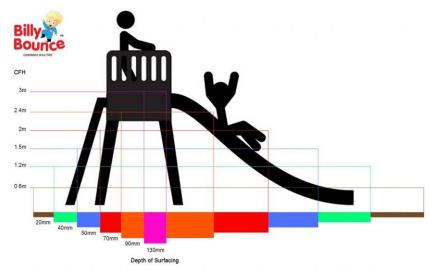
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Critical Falling Height

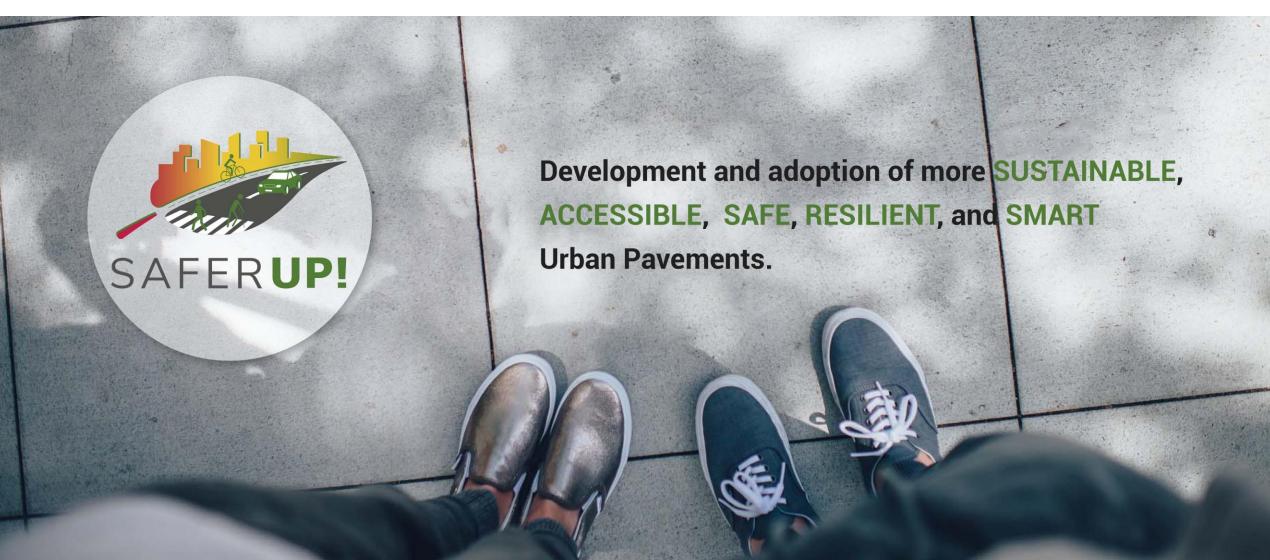








>09 OCTOBER 2020 12>16 OCTOBER 2020 19>22 OCTOBER 2020





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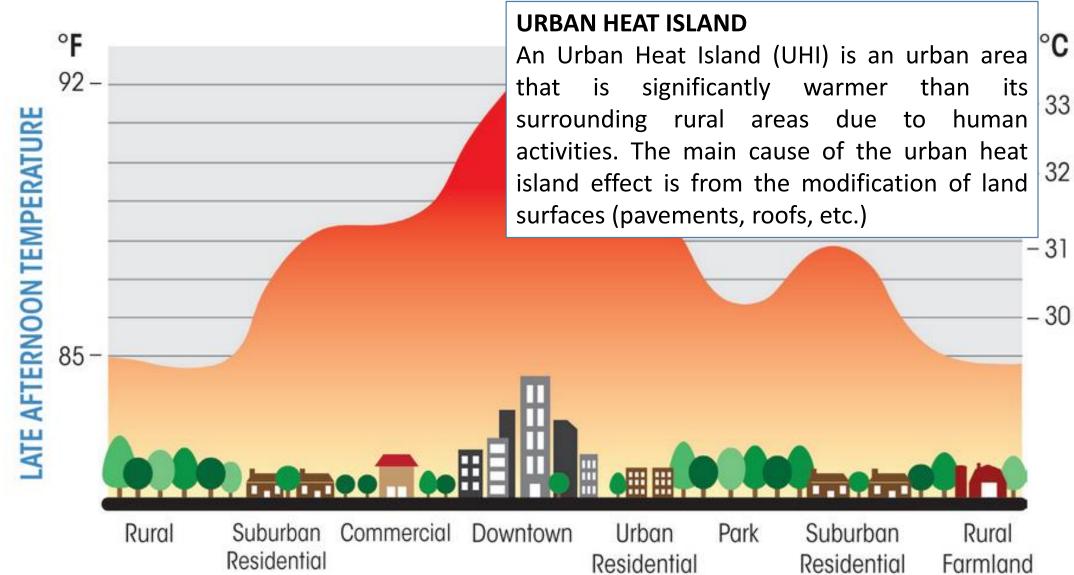
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PROJECT n°6: Cool pavements for Urban heat island effect Mitigation (CoolUM)









Alternative binders for lighter pavements





The transparent binder gives to road paving the natural color of aggregates respecting the environment and the landscape.







MULTI-PAVEMENT TRIAL FIELD AT THE UNIVERSITY OF PERUGIA, IT: PHYSICAL TEST ON A REAL PAVEMENT











Flooding!





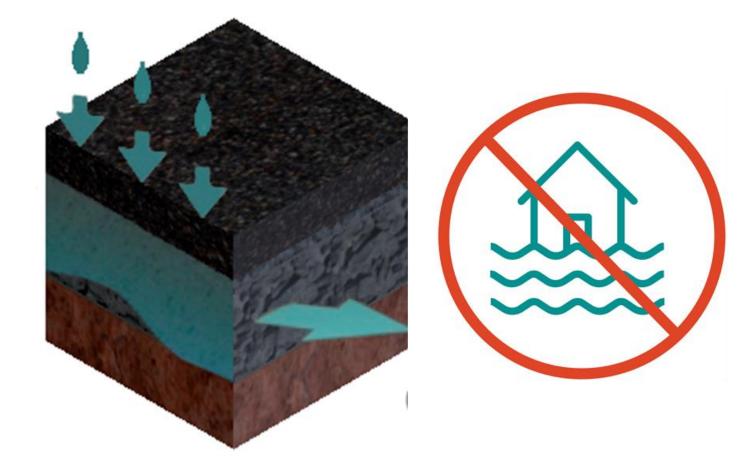






PROJECT n°10: Resilient and sustainable Permeable Pavements For urban Flood Mitigation (RePP4FM)



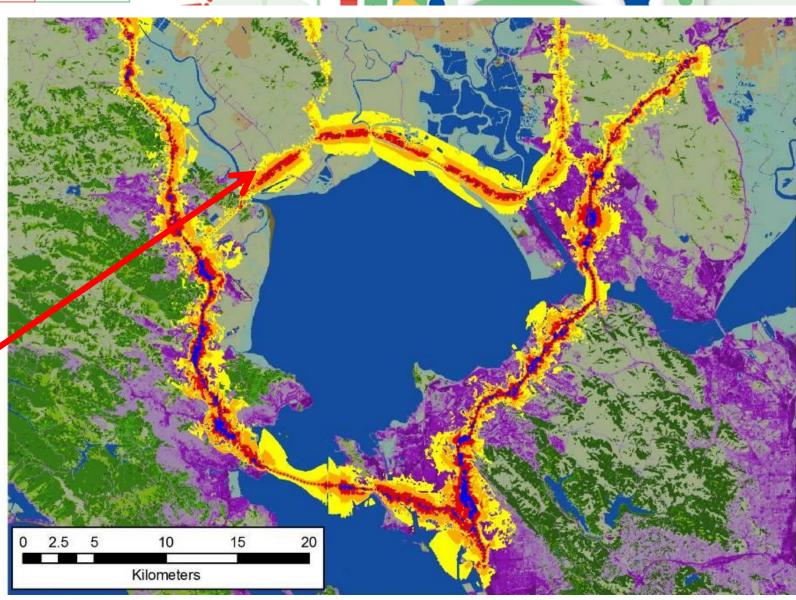






Prioritizing urban areas for Permeable Pavement Systems (PPS)

PPS required





HOME

THE PROJECT *



DISSEMINATION

CONTACT

https://site.unibo.it/saferup

RESEARCH *



PARTICIPANTS

PEOPLE

TRAINING

Close preview

SAFERUP!







Thank You!!! cesare.sangiorgi4@unibo.it University of Bologna, Italy