



ZAVOD ZA
GRADBENIŠTVO
SLOVENIJE

SLOVENIAN
NATIONAL BUILDING
AND CIVIL ENGINEERING
INSTITUTE



REPAIR

CINDERELA – Urban construction and circular economy

Beyond REPAIR: making the transition of the circular economy happen


Alenka Mauko Pranjić, Ana
Mladenovič, Sebastjan Meža
Department of Materials

On-line final event, 13/10/2020

ZAG is public institute with 220 employees



ZAG

An aerial photograph of a city at night. In the foreground, a large, ornate building with a green roof is visible. The roof is divided into several sections, each with different types of vegetation. The building's facade is lit up, and its windows are glowing. In the background, other skyscrapers of the city are visible, their lights reflecting on the dark sky.

**Construction (building and infrastructure
consumes almost ½ of all extracted raw
materials and 1/3 of water therefore...**

**SUSTAINABLE CONSTRUCTION
SUSTAINABLE SOCIETY**

**Waste is important
raw material once
recycled.**



**Different waste are appropriate to
be recycled into construction
sector, e.g.:**

- **Construction and demolition waste;**
- **Different industrial waste (slags, ashes,...);**
- **Waste treatment remainings (e.g. sewage sludge...)**

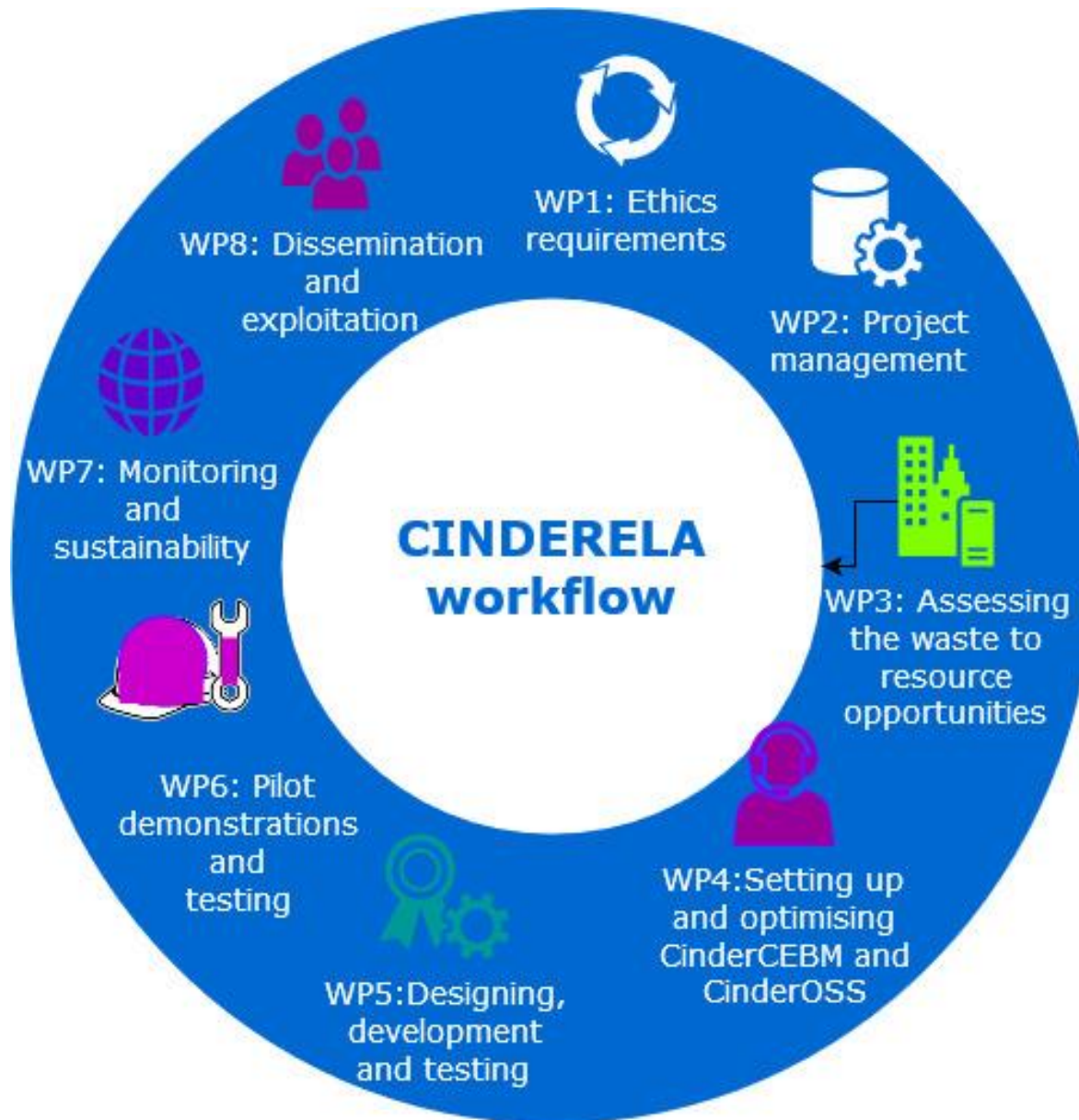


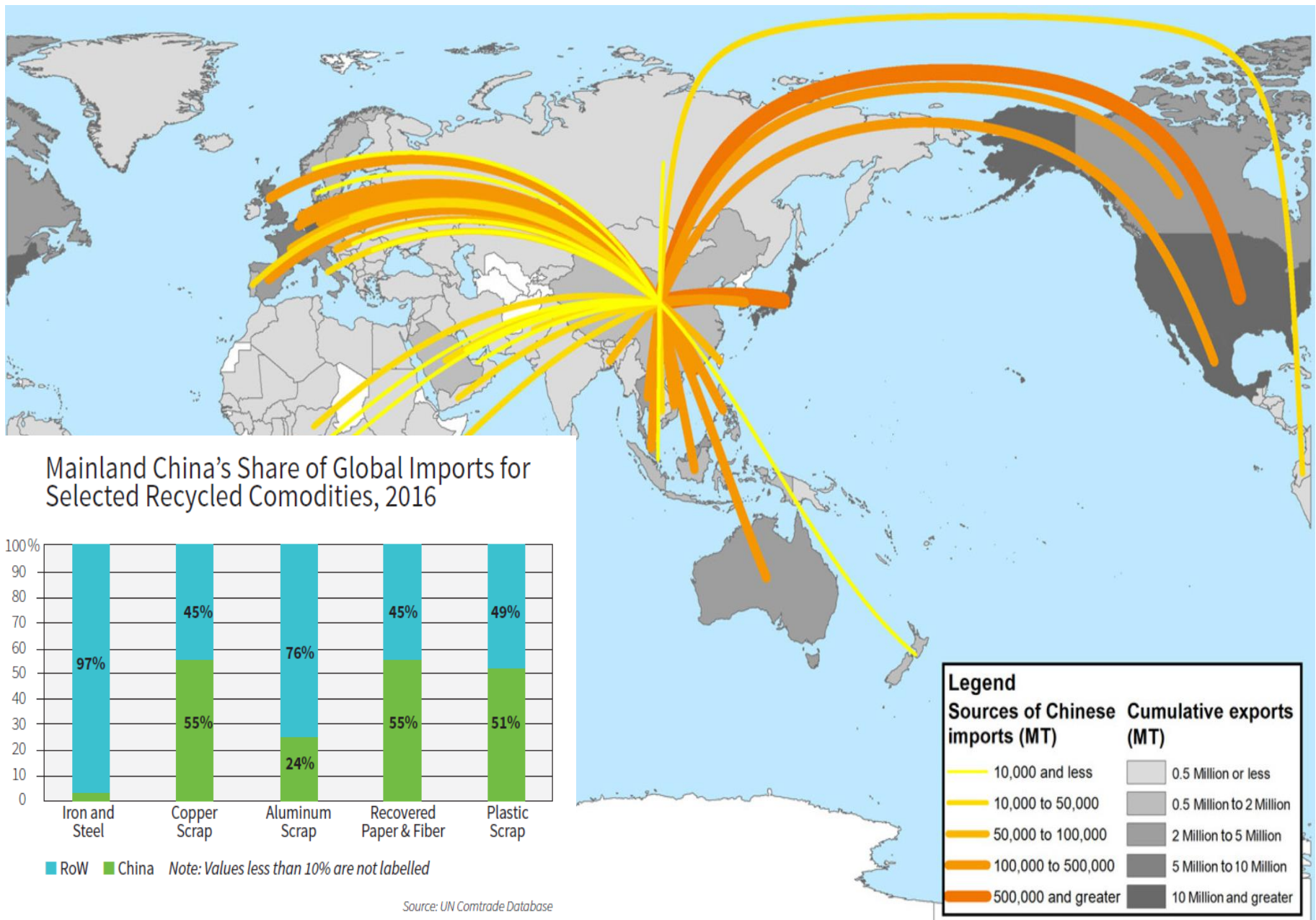
New Circular Economy Business Model for More Sustainable Urban Construction

H2020 project



This project has received funding from the **European Union's Horizon 2020** research and innovation Programme under grant agreement N° 776751





Source: Waste 360. China's Changing Import Regulations—What Does It All Mean?

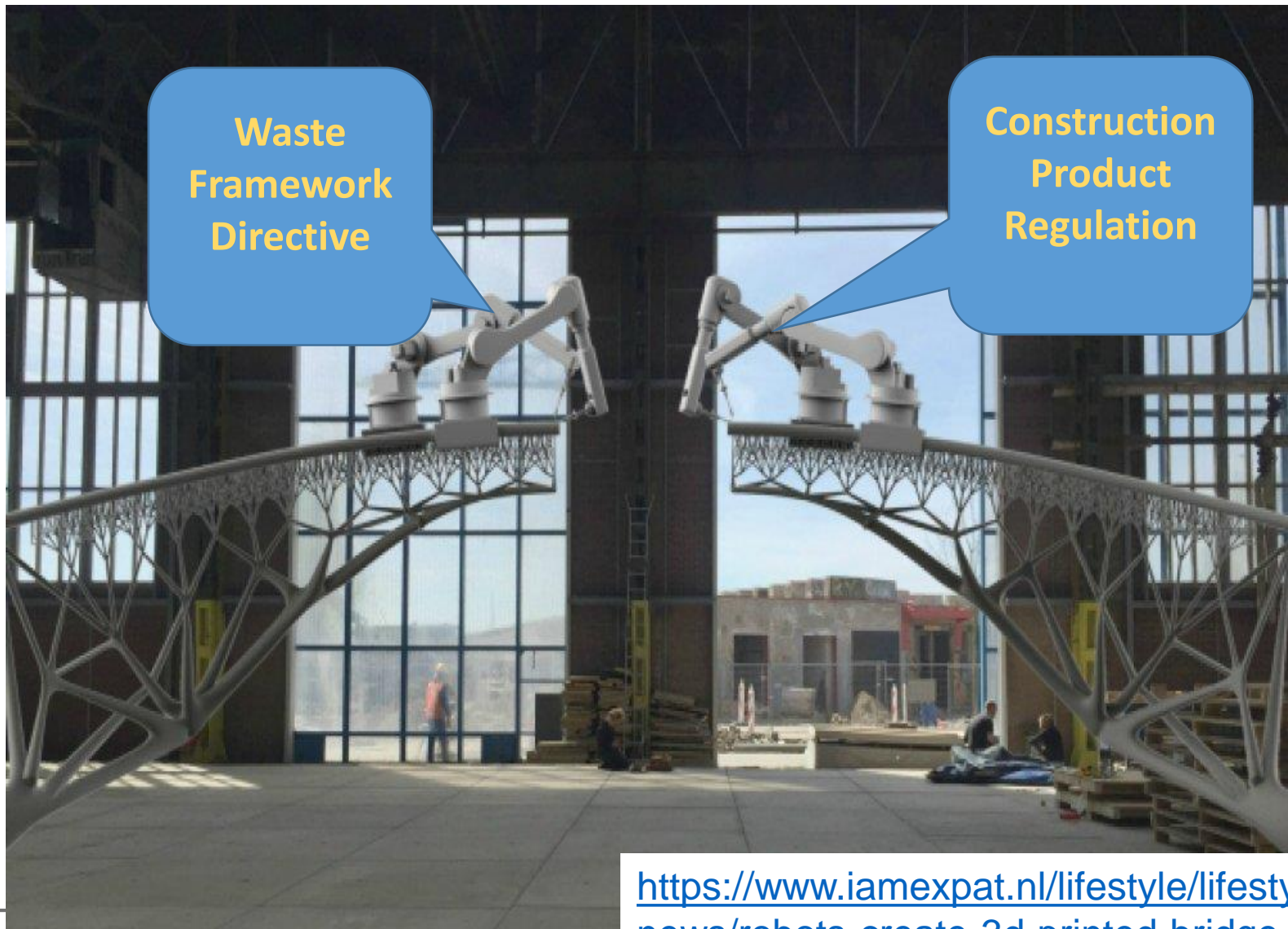


HOW TO TURN MATERIAL FLOWS IN CLOSED REGIONAL/LOCAL LOOPS?

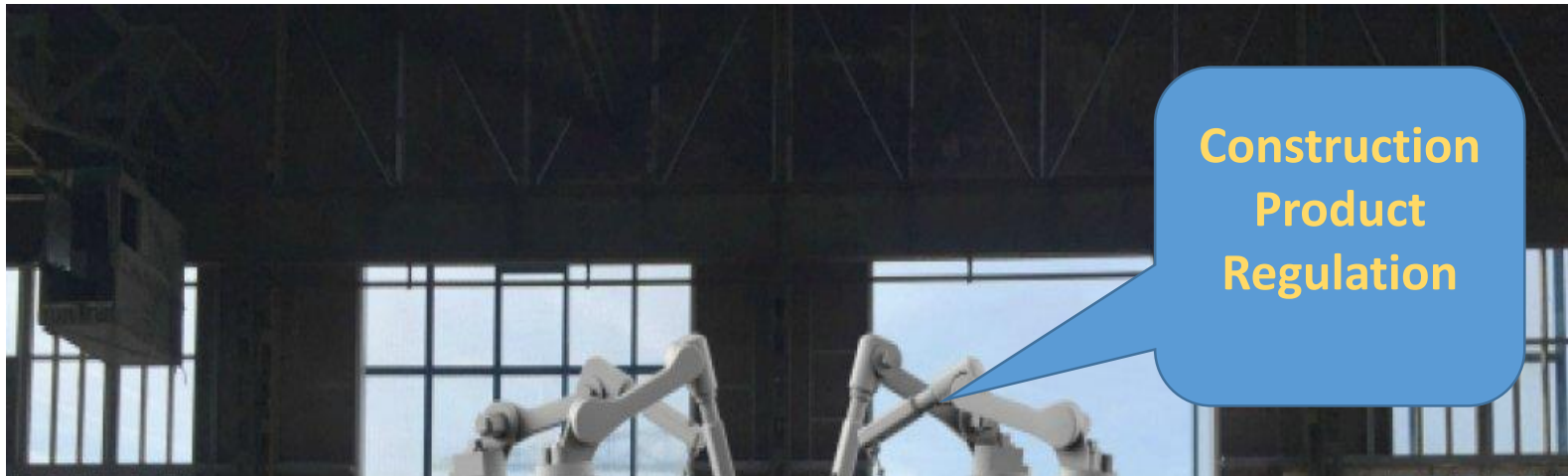
**Maribor case: Regional flows of
waste (GDSE tool*).**

<http://h2020repair.eu/gdse-software-package/>

No obstacles in legislation



<https://www.iamexpat.nl/lifestyle/lifestyle-news/robots-create-3d-printed-bridge-amsterdam>



The construction works must be designed, built and demolished in such a way that the use of natural resources is sustainable and in particular ensure the following:

- (a) reuse or recyclability of the construction works, their materials and parts after demolition;
- (b) durability of the construction works;
- (c) **use of environmentally compatible raw and secondary materials in the construction works**



JRC SCIENCE FOR POLICY REPORT

Revision of Green Public Procurement Criteria for Road Design, Construction and Maintenance

*Procurement practice
guidance document*

Elena Garbarino, Rocío Rodríguez Quintero,
Shane Donatello, Oliver Wolf (JRC)

June 2016



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JRC SCIENCE FOR POLICY REPORT

Green Public Procurement Criteria for Office Building Design, Construction and Management

*Procurement practice
guidance document*

Nicholas Dodd, Elena Garbarino,
Miguel Gama Caldas (JRC)

June 2016

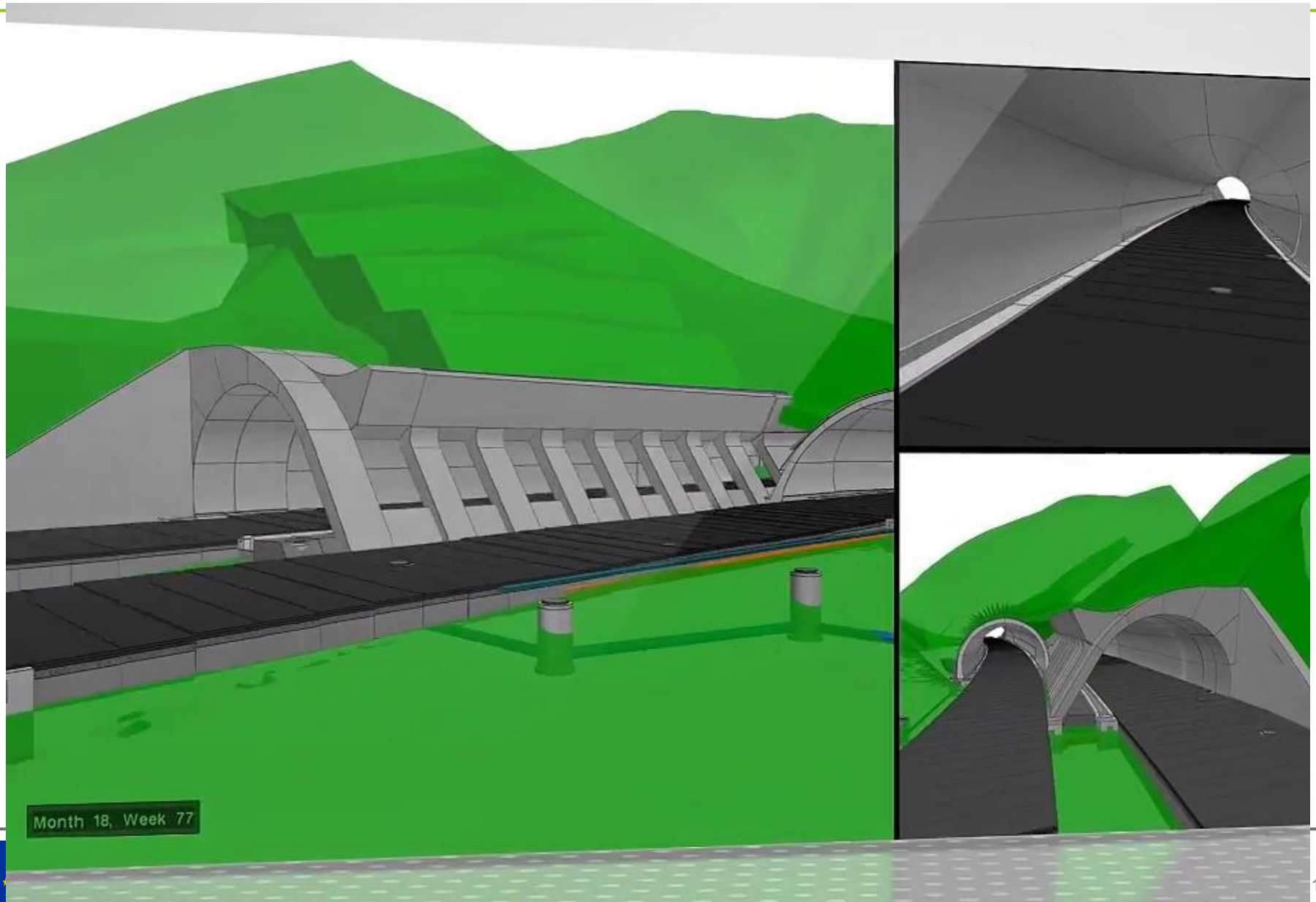


CINDERELA

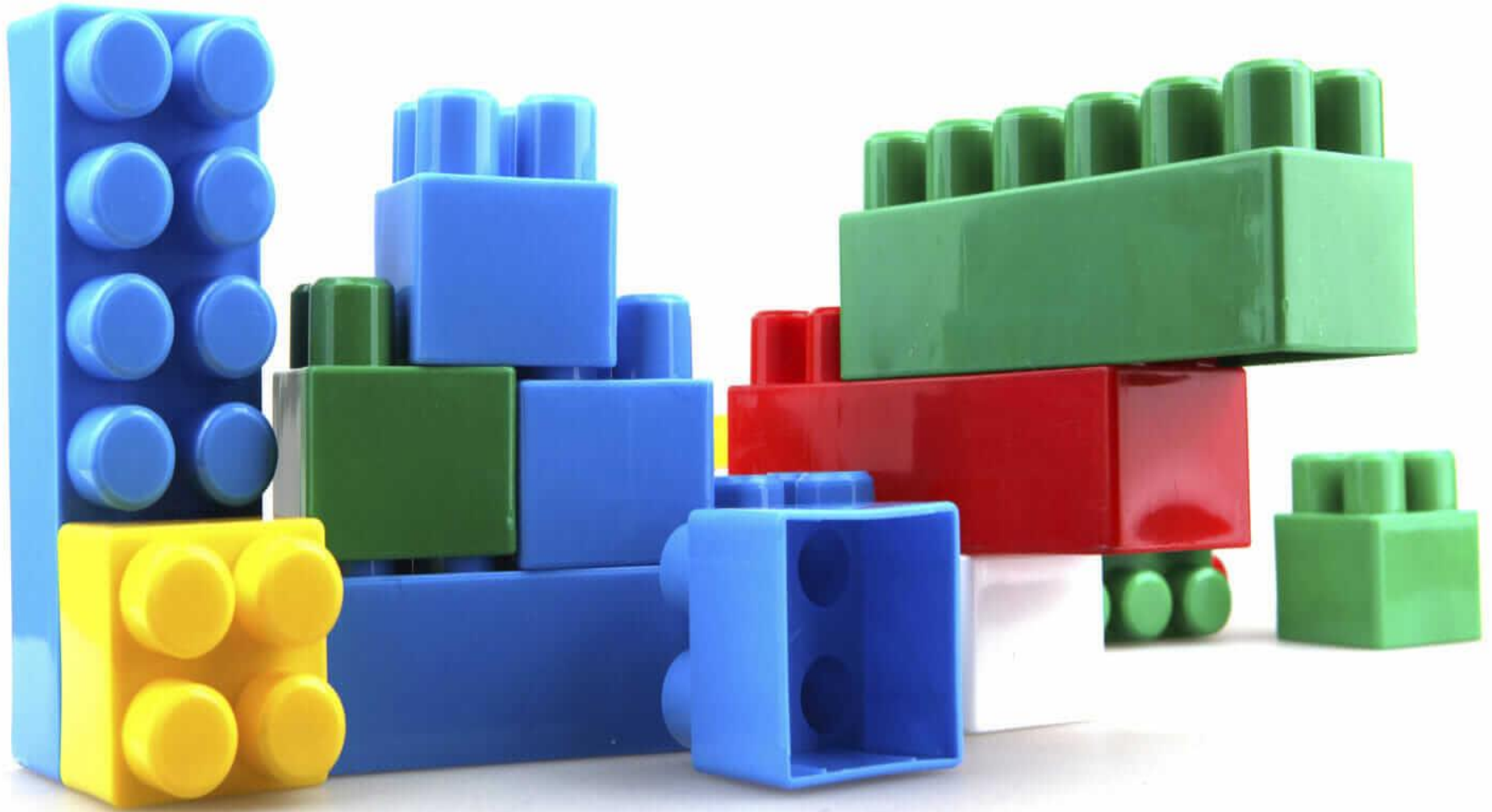
Digitalisation (CinderOSS)



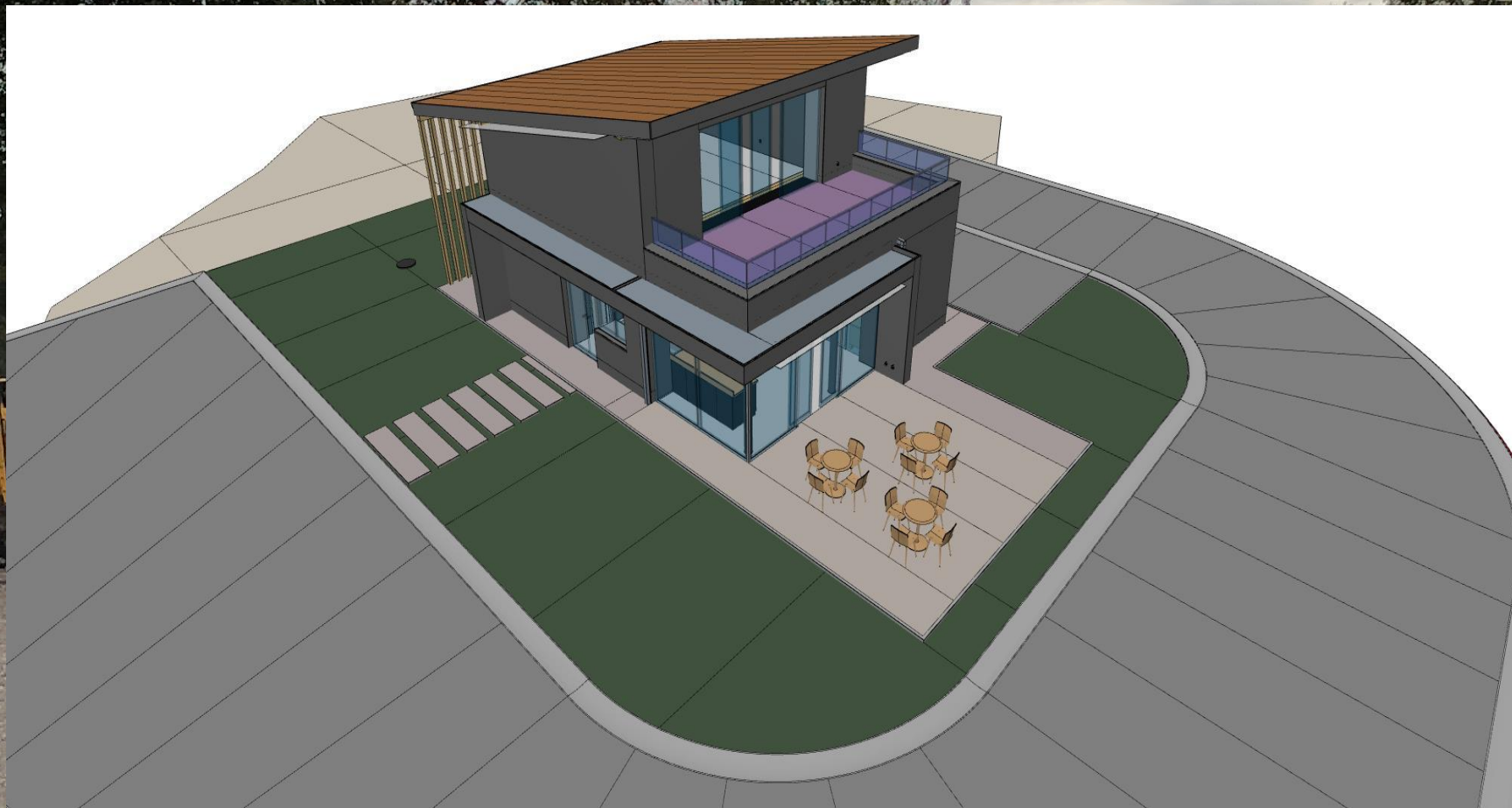
Building Information Modelling (BIM)

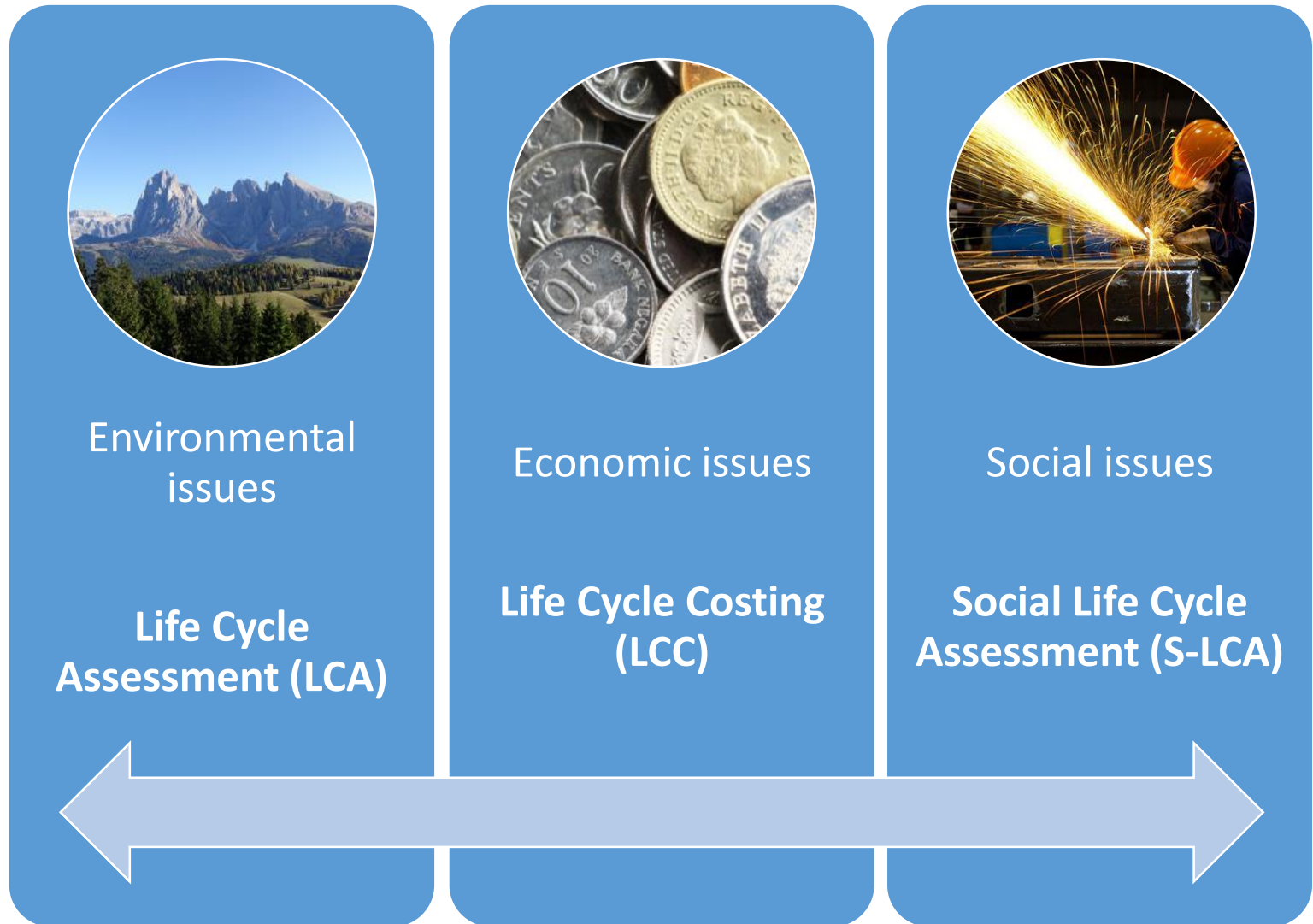


3D printing, modular construction









- **Identified obstacles:**

- Distrusts among end-users and other stakeholders, low interest on demand side
- High costs of initial testing and quality control of SRM-based construction products due to their heterogeneity and additional procedures in production (separation, recycling, etc.).
- Large opposition from the virgin material sector, especially in areas where there is abundance of natural materials.
- Easy accessible and low price of virgin materials.
- No real incentives for use of recycled materials.

UNFAMILIAR



Thank you very much for your attention!

Alenka Mauko Pranjić

CINDERELA project coordinator

alenka.mauko@zag.si

“A goccia a goccia si scava la roccia.” Italian proverb