



Odpadek je začetek novega!

# About the project ReBirth

How to increase the use of recycled industrial and  
construction waste

Jure Leben<sup>A\*</sup>, Ana Mladenovič<sup>B</sup>, Alenka Mauko<sup>C</sup>, Janja Leban<sup>D</sup>, Zvonko Cotič<sup>E</sup>, Primož Jurjavčič<sup>F</sup>, Mirko Šprinzer<sup>G</sup>

A,B,C, Slovenian National Building and Civil Engineering Institute, Dimičeva 12, 1000 Ljubljana, Slovenia

D Slovenian Chamber of Commerce and Industry of Slovenia, Dimičeva 13, 1504, Ljubljana, Slovenia

E,F Structum d.o.o., Tovarniška cesta 26, 5270 Ajdovščina, Slovenija

G PKG Šprinzer Mirko S.P., Ruška Cesta 7, 2000, Maribor, Slovenia



# What do we have, and what we know?

The present legislation (waste and building products)

## Directive on Waste (2008/98/ES)

## Construction Products Regulation(305/2011)

- Harmonised standard
- Slovenian Technical Approval

### New approach:

**Materials should not be discriminated against with regard to their origin or name, only their properties matter, and their associated useability and environmental footprint.**



# What do we have, and what we know?

## The technical field

**Different types of coal fly ash: as admixture for concretes, and in civil engineering for backfilling (alone, or in combination with other materials)**

**Other types of ash: paper ash, in combination with other materials, for backfilling**

**Steel slag from the steel refining process: for backfilling**

**Steel slag: as an aggregate for asphalt, concrete, and backfilling**

**Building rubble: as an aggregate for backfilling**

**Foundry sand: as an aggregate for backfilling**



# **Future challenges**

## **The normative field**

**Adopt appropriate legislation in order to define the limits for hazardous substances in eluates from materials**

**To update the technical specifications so that they will be confidently able to include alternative waste-based materials**

**Green public procurements – implementing the use of recycled materials**



# Aim and objectives of the project

General aim of the project is to contribute to higher rate for recycling of construction and industrial waste and their increased use in construction sector



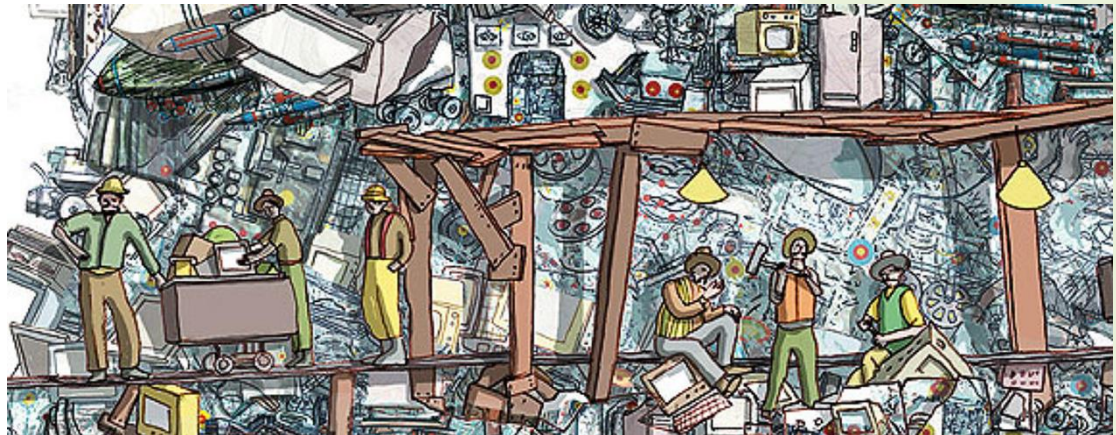
## **PROMOTION ACTIVITIES**

Target groups: expert public at the point of formation, recycling and reuse of waste, local communities, general public, media



# Actions of the project

- Demonstration activities
- Movies
- Illegal waste sites
- Preparation of guidance's
- Mobile exhibition
- Lectures for students
- Expert workshops



# Demonstration of selective demolition and use of recycled construction waste



**ReBirth**  
Odpadek je začetek novega!

**ReBirth**

Odpadek je začetek novega!



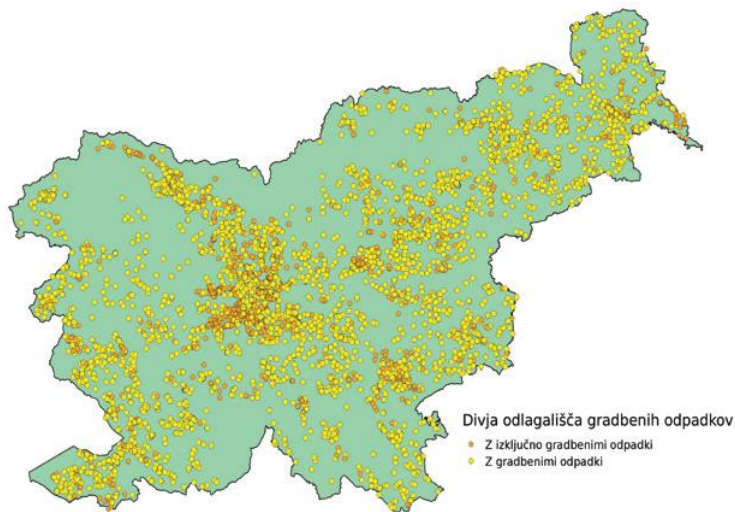
# Movies

- ReBirth – Recycling of waste  
<http://www.youtube.com/watch?v=K7vO9zkeQ2g>
- Construction and Demolition Waste  
<https://www.youtube.com/watch?v=wkSkIivKle0>
- Illegal waste sites of construction material- mines of raw material, <http://youtu.be/JLt6As76QA0>



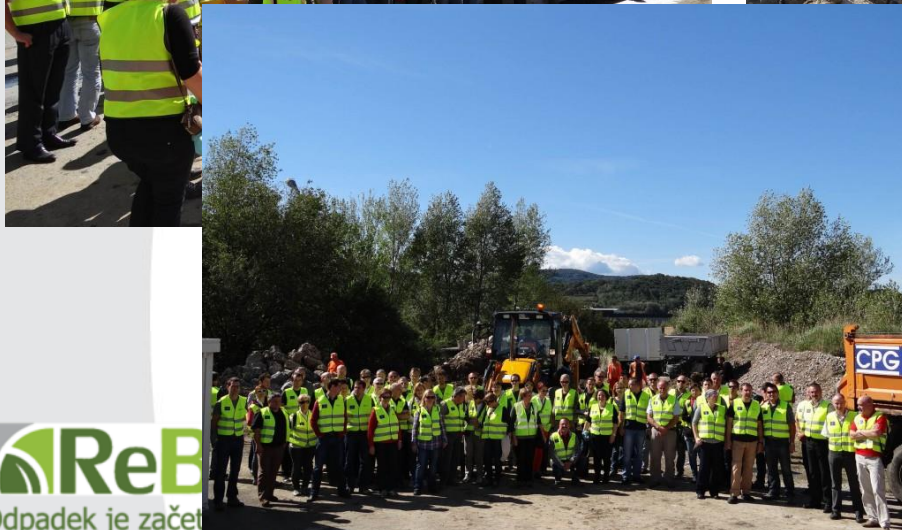
# Problem of illegal waste sites

- Slovenia – 10.700 illegal waste sites, 2/3 of the filled with construction material
- Some of them also dangerous material, asbestos roofing



Vir: Register divjih odlagališč, Društvo Ekologi brez meja





# Demonstration cleaning of illegal construction waste site



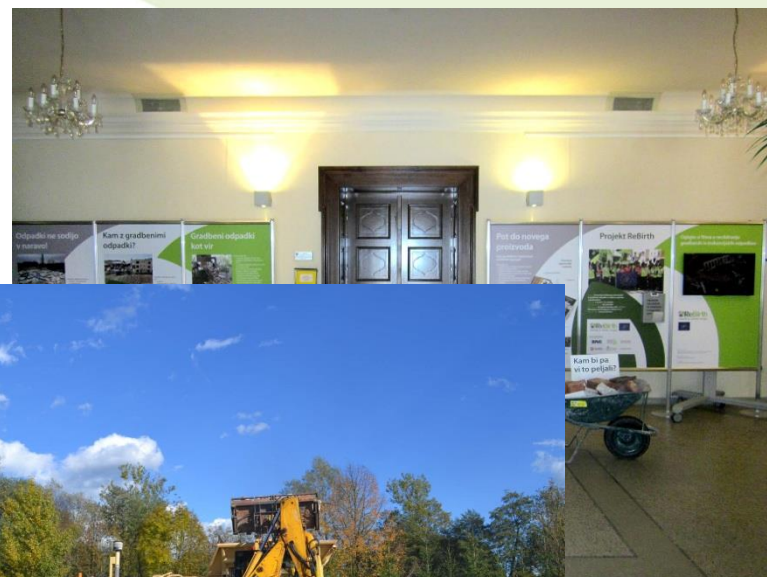
**ReBirth**  
Odpadek je začetek novega!



Odpadek je začetek novega!

# Mobile exhibition

Mobile exhibition: Gospodarska zbornica Slovenije, Zavod za gradbeništvo Slovenije, Občina Šempeter – Vrtojba (Dvorec Coronini), Občina Vrhnika (Cankarjev dom Vrhnika, Komunalno podjetje Vrhnika), Občina Krško (Kostak komunalno stavbno podjetje), ...



Občina Šoštanj, Občina železniki, Občina Jesenice, Občina Škofja loka, Občina Kočevje, Občina Logatec ...



Promotion of the Recycling of Industrial Waste and Building Rubble for the Construction Industry.

# Lectures for students

- Lectures for kindergartens, elementary and high schools and universities

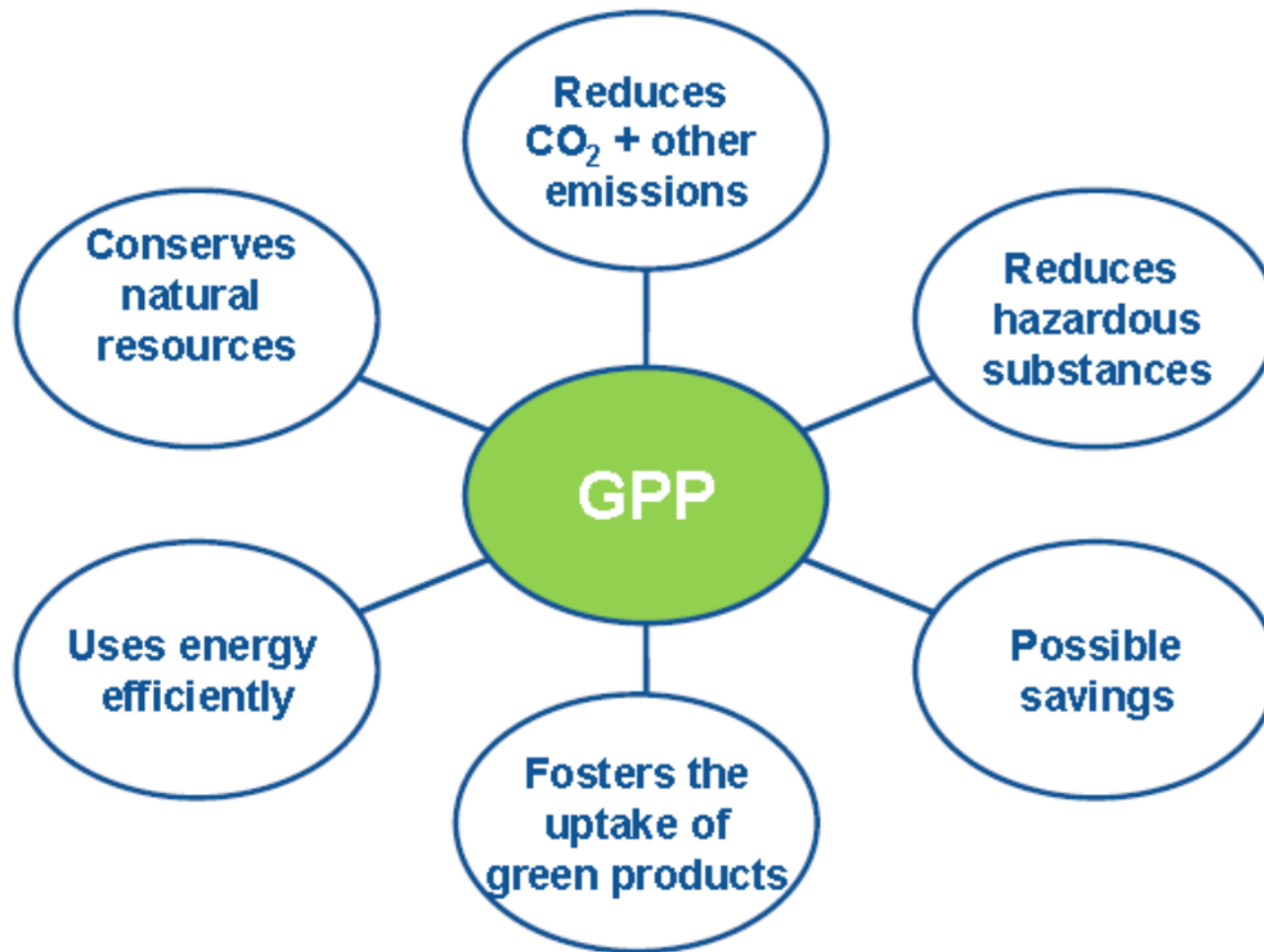


# Expert workshops

- 2 workshops on Green Public Procurement
- 4 workshops on Proper management of construction waste
- 2 workshops: Industrial waste - a source of raw materials for construction



# Green public procurements



# Conclusions 1

- Industrial and C&D wastes are excellent substitutes for the natural materials which are used in construction and can be even advantageous in comparison with natural material
- Waste materials are lost resources which burden the landscape through disposal either at legal landfills or at illegal dump sites
- The technical procedures which can be used to process C&D wastes and industrial nonhazardous waste are well established and have been verified practically .



# Conclusions 2

- Very little is invested in the search for possible reuse and recycling. Most personnel are not aware of standard research and market requirements which can be used to upgrade wastes to materials with a market value.
- Municipalities primarily lack know-how and funds to perform site clean-up, restoration and material/waste management of numerous illegal dump sites.
- Local and state authorities have the power to create/support a market for secondary and recycled materials without compromising environmental or technical quality. There is an abundance of cheap natural materials in Slovenia, typical for SE Europe. No incentive is present to encourage trust and acceptance of recycled and secondary materials



# Conclusions 3

1. Waste recycling is an unavoidable necessity.
2. The construction sector is the most appropriate field for the absorption of waste.

## **Benefits:**

1. Reducing the needs for energy, natural resources, and landfill areas.
2. Greenhouse gasses are reduced.
3. A circular economy is established / new business opportunities and jobs.
4. Ethical progress taking into accounts the limits of our planet.

