Sustainable Criteria in the Construction process

Circular Economy Approaches in Croatia
Circular Economy

- Natural Resources
- Construction
- Eco-design
- Reuse/Recycling
- Construction and Demolition Waste
- Maintenance
- CDW
- Demolition
- Landfill

Lifecycle

Use and Exploitation

Classification and minimization
Legal frameworks

international

• 2015 Paris Agreement (COP21):
  ➢ CO2- Reduction of 80% until 2050 (baseline 1990)

EU

• 2015 1st circular economy action plan
• 2019 „New Green Deal“:
  ➢ CO2- Reduction of 55% until 2030 (baseline 1990)
  ➢ until 2050 climate - neutral
  ➢ Construction sector > 50% of the CO2-emissions
  ➢ Own chapter for the construction sector
• 2020 new circular economy action plan
• 2020 EU Taxonomy for sustainable finance
Legal frameworks

national

- New Waste directive 2021
- 2021 paper for a circular construction sector (Environment Agency Austria (EAA))
- 2021 national circular economy strategy
  - In force in summer 2022
- naBe criteria: green publich procurement
  - Since autumn 2021
  - (still) optional for public tenders

A lot of other chances of standards
zB: ASI, CEN usw

There is a lot in motion!
C&D Waste and Recycling.
Waste in Austria

- Waste in 2019: 68.4 Mio. tons
- Excavated soil: 42 Mio. tons (61%)
- C&D Waste: 11.5 Mio. tons (17%)
- C&D waste + soil: 53.5 Mio. tons (78%)

green deal: construction sector is adressed
Recycling-Products in Austria
Eckdaten der Abfallwirtschaft

Mengen 2019:
Mineralische Bau- und Abbruchabfälle: 11,5 Mio to
Davon deponiert: 1,3 Mio to
In Recyclinganlagen behandelt 9,4 Mio to
Recyclingmaterial produziert ca. 8,7 Mio to

Jährliche verbaut: ca. 100 Mio to mineralische Baustoffe

Recyclingquoten?
Was bedeutet Kreislaufwirtschaft?

Herstellung

Bauen

Produktionsnormen

Abfallende

Recycling

Nutzung

Abfallrecht

AWG, DVO, RBV ...

Abfall

Rückbau

Rückbau
Sustainable construction.
What means circular economy?

➢ starts with the design!
EU Construction Products Directive (CPD)

Construction Products Directive:

Annex I: „Basic requirements for construction works“
EU Construction Products Directive (CPD)

Basic requirements for construction works:

1. Mechanical resistance and stability
2. Safety in case of fire
3. Hygiene, health and the environment
4. Safety and accessibility in use
5. Protection against noise
6. Energy economy and heat retention
7. Sustainable use of natural resources
EU Construction Products Directive (CPD)

Annex I: „Basic requirements for construction works“
Z 7: „Sustainable use of natural resources“

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:
EU Construction Products Directive (CPD)

Annex I: „Basic requirements for construction works“

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.
OIB 7!
Using excavated soil.
Manual of Recycling

Buildings as sources of materials

Annette Hillebrandt
Petra Riegler-Floors
Anja Rosen
Johanna-Katharina Seggewies

Edition DETAIL

Atlas Recycling

Gebäude als Materialressource

Annette Hillebrandt
Petra Riegler-Floors
Anja Rosen
Johanna-Katharina Seggewies

Edition DETAIL
reduction of transport volume

reduction of waste
dismantling to enable reuse

mobile in-situ concrete plant

mobile preparation plants

Local materials

mobile recycling plants

mechanical demolition

mobile Ortbetonanlage

lokale Baustoffe

mobile Aushubaufbereitung

neubau

erdbau

rückbau
Lessons learned
Recycling Materials Directive
Recycled Aggregates

- 10 Mio. tons per year
Recycling on site
Recycling on site saves transport costs and resources.

<table>
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<th>Mob. Anlage</th>
<th>Stat. Anlage</th>
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<td>Operating hours</td>
<td>29.5 l/h</td>
<td>45 l/100 km</td>
<td>Himberg (24.8km)</td>
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<tr>
<td>Diesel</td>
<td>200 h</td>
<td>120,000 km</td>
<td>Diesel</td>
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<tr>
<td>Tonne</td>
<td>6.000 l</td>
<td>55,000 l</td>
<td>130 t CO₂</td>
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<tr>
<td>Tonne 30.500</td>
<td>30.500 t</td>
<td>H 4.3 €/t</td>
<td>130,000 €</td>
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New approaches: recycling of gypsum products
VERWERTUNG VON GIPSPLATTENVERSCHNITT
Erstinfo für Trockenbauer und Bauherren
Folder für die Sammlung auf der Baustelle und die Verwertung von Verschnitten

Abbildung 1 Systemerklärung (Quelle: Rips)

Abbildung 2 Arten von Gipsplatten (Quelle: Rips)

Stand: 01.04.2022
Next challenges
Recycling topics of tomorrow

- Treatment and recycling of mineral wool
- Treatment and recycling of EPS & XPS
- Recycling of plastic waste
Thanks for the attention!

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