

ZEB China – Chancen und Herausforderungen

...die Rolle der HSLU

20. IGE-Seminar

Technik & Architektur
12. März 2024

FH Zentralschweiz



卢塞恩应用科学和艺术大学 建筑技术和能源研究所

PRESENTATION OF HSLU
SWITZERLAND
22nd AUGUST 2022
GIANRICO SETTEMBRINI

The HSLU Institute for building technology and energy

Research Topic Climate Change

研究主题 气候变化

Projects: 项目

- Residential buildings in climate change –
Energy and Comfort
气候变化中的住宅建筑 – 能耗与舒适性
- Ready for Climate Change? Recommendations
for building owners and planners 为气候变化做好
准备好了吗? 给建筑业主和设计人员的建议
- Air conditioning in the context of climate change
气候变化前提下的空调措施
- Efficient cooling concepts 有效的致冷方案
- Building labels and the climate change
建筑认证标签和气候变化
- SIA Climate data of the future
瑞士工程师与建筑师协会SIA的未来数据

Further research topics 更多研究主题

- Climate-friendly planning with low-tech 低技术有
利气候的设计手法
- Same comfort with less energy demand 在能耗减
少情况下达到同样的舒适度



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Research Topic 研究主题

Materials and Embodied Emissions

材料和隐含排放

Projects: 项目

- Optimal insulation thicknesses in buildings
- Building envelope of high-rise façades
- Wood hybrid in high-rise buildings
- Homogeneous brick façade
- "GreenPV" – Green and PV in façades

- 建筑物的最佳保温层厚度
- 高层建筑外立面的建筑围护结构
- 高层建筑中的木质混合结构
- 均质砖外墙
- "GreenPV"--绿色和光伏外墙



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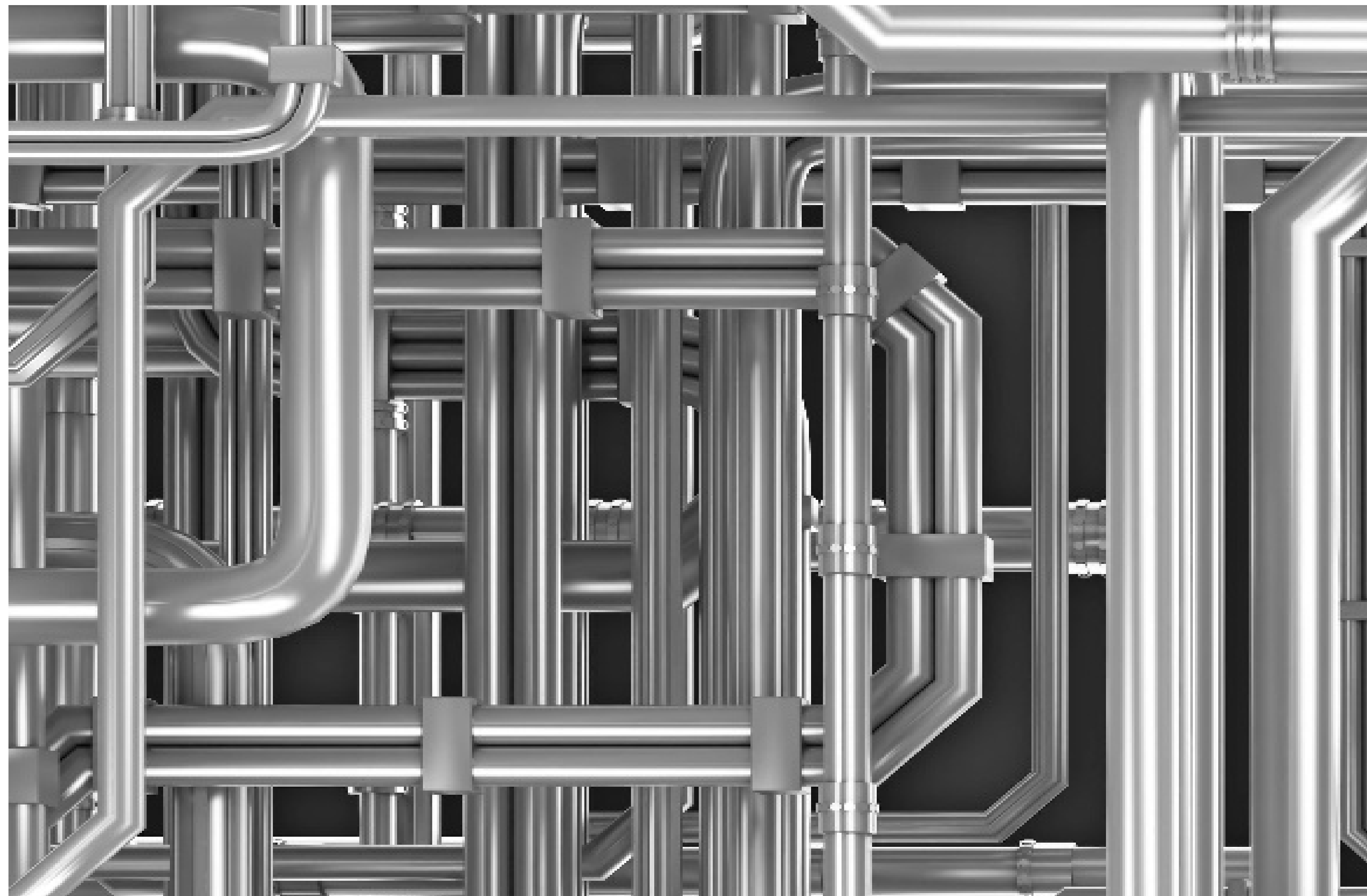
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Research Project 研究项目 „Zero Emissions Buildings“ – Minimising Embodied Emissions

“零排放建筑” - 最大限度地减少隐含
排放

Projects examples : 项目实例

- Characteristic values for embodied energy of building technologies
- Ventilation systems: Alternative materials and Re-Use potential
- Analysis of low-tech ventilation concepts
- 16cm concrete ceiling is enough – Analysis of visible ventilation ducts in residential buildings
- 建筑技术隐含能耗的特征值
- 通风系统：替代材料和再使用潜力
- 低技术通风方案的分析
- 16厘米的混凝土天花板就足够了 – 住宅楼内可见通风管道的分析



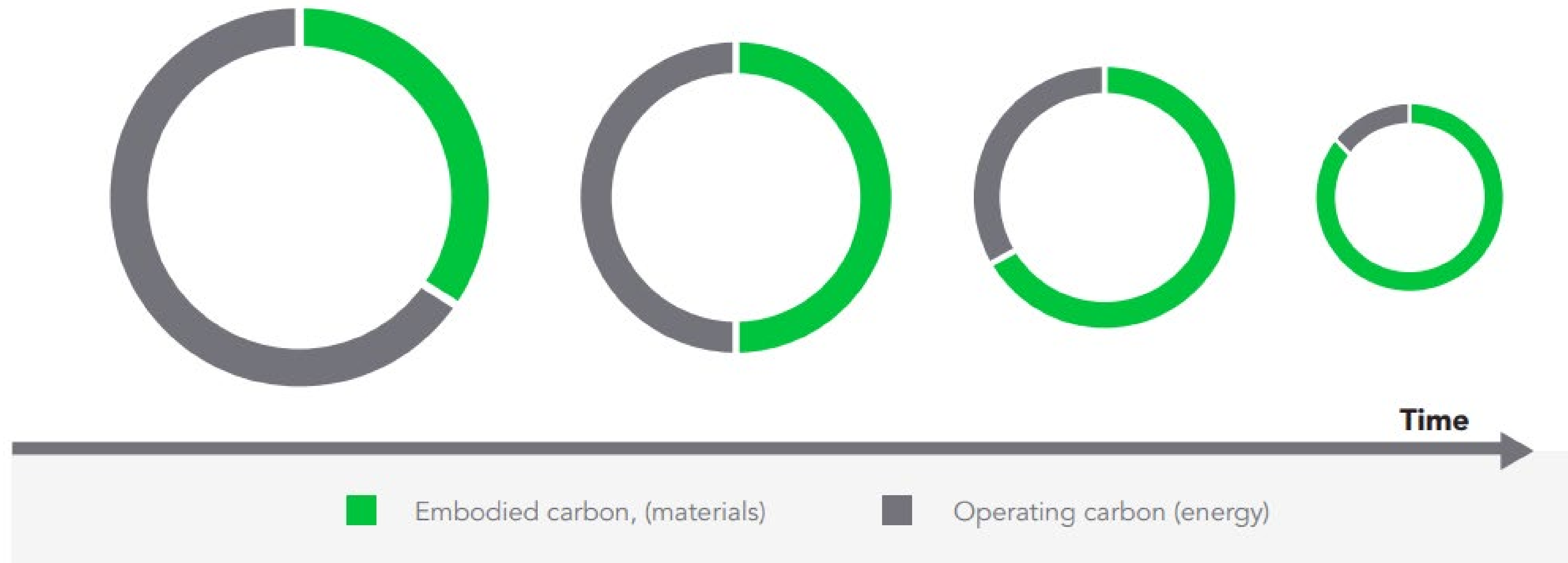
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Kurz zusammengefasst...

„macht nicht die selben Fehler, die wir gemacht haben nochmals!“

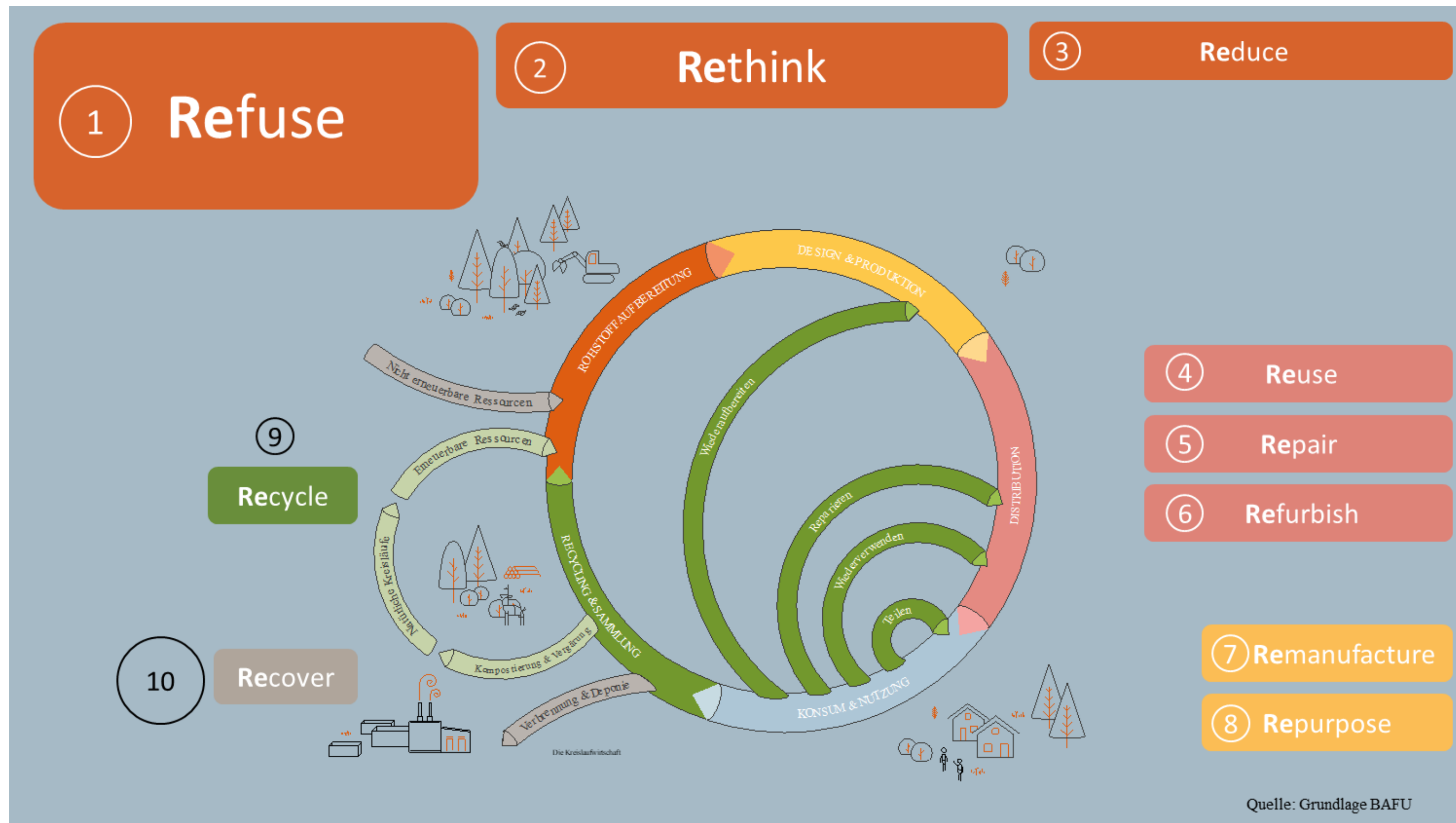
Embodied carbon importance grows constantly



Development and trend of greenhouse gas emissions over the life cycle of buildings, broken down by operation and construction.
Source: The Embodied Carbon Review, One Click LCA Ltd, 2018

Kurz zusammengefasst...

„macht nicht die selben Fehler, die wir gemacht haben nochmals!“



Priorities of the 10 Rs in the circular economy
Graphic: M. King based on BAFU

Beispiele: Präsentationen und Broschüren

低碳建材的ZEB设计

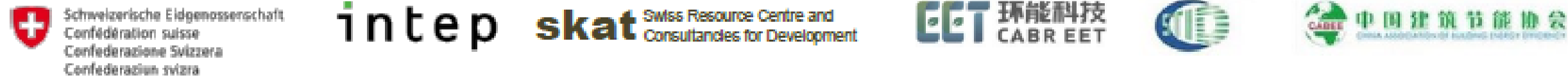
ZEB Design with Low Carbon Building Material

EXPERIENCES FROM SWITZERLAND

A short introduction to Circular Construction

EXPERIENCES FROM SWITZERLAND

Beispiele: Präsentationen und Broschüren



THE ZEB-CHINA PROJECT - ZERO-EMISSION BUILDING

中瑞零碳建筑合作项目,

Swiss Technical Expert Input No XX
 Demonstration Project Wuxi:
 Date: March 15th 2023, April 12nd 2023

Swiss Input: Greenery and PV

Relevant facts on the context or event:

ZEB Demonstration Projects in China have the objective to reach net CO₂-emissions by avoiding operation related emissions at one hand, and to reduce embodied carbon emissions of the applied building materials at the other hand. Both shall be addressed by developing an efficient architectural and technical design and by selecting climate responsive building materials. Photovoltaics play a central role in reducing the operating energy demand by generating electricity from renewable energy on site. Greenery in the neighborhoods, on the other hand, is particularly important for the quality of life and comfort and should therefore not be neglected.

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Eidgenössisches Departement für
 Umwelt, Verkehr, Energie und Kommunikation UVEK
 Bundesamt für Energie BFE
 Swiss Energy Research and Innovation

Zwischenbericht vom 25. August 2022

GreenPV

Potential Gebäudehülle - Lösungsansätze zur optimalen Fassadengestaltung mit PV und Begrünung im Hinblick auf den Klimawandel



Quelle: © StockPhoto

The GreenPV project deals with the potential of the design of the building envelope regarding climate change. In particular, it shows on which surfaces greening and on which PV systems are particularly suitable.



Design Fassaden

Studiengang «Farbige Photovoltaik-Module» der Hochschule Luzern: www.hslu.ch

Danke!

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