

Environmental benchmarks for buildings - an introduction

Rolf Frischknecht
treeze Ltd.

71st LCA forum
ETH, Zurich, 18 June 2019

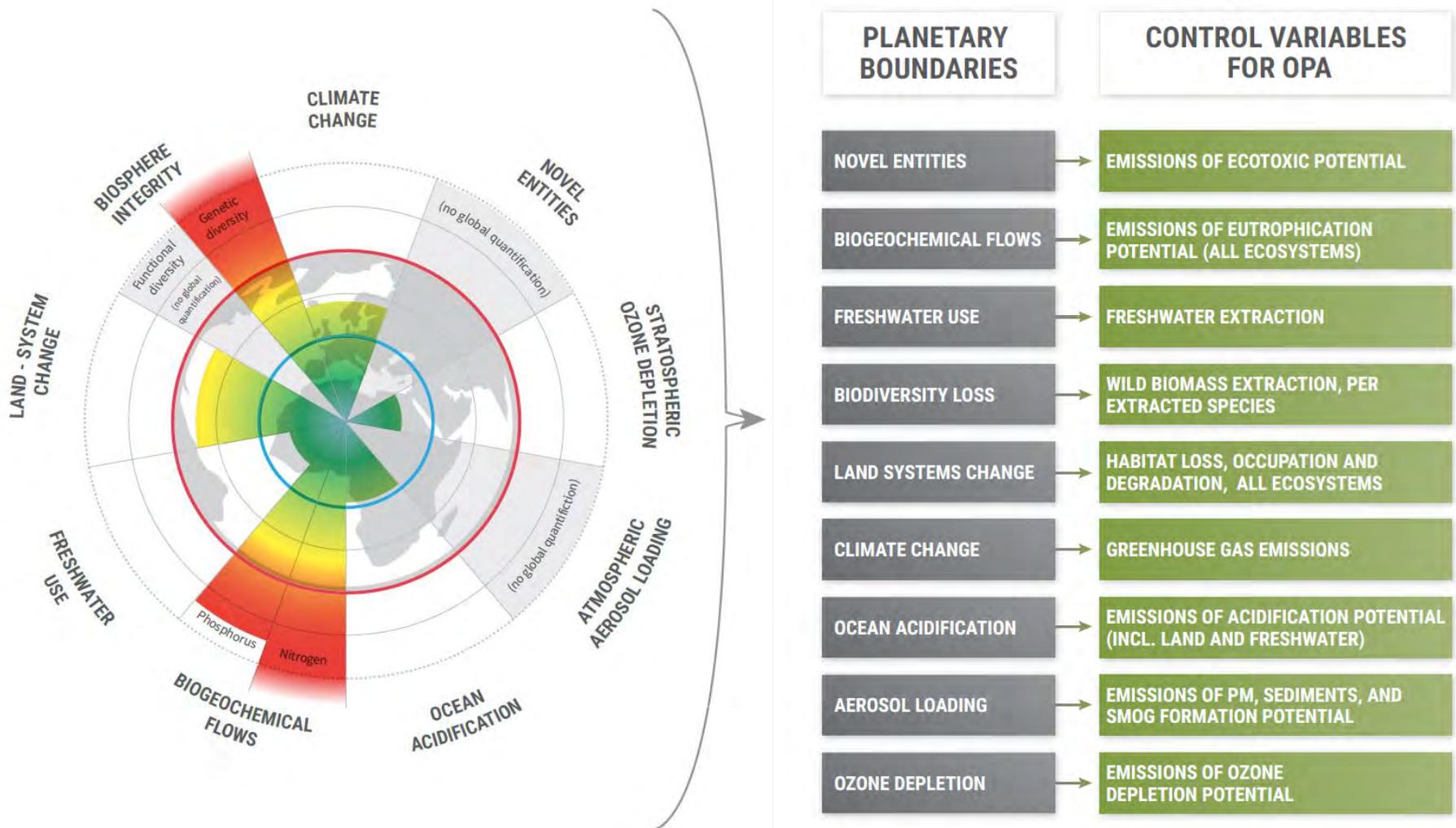


Defining safe operating space: One planet approaches

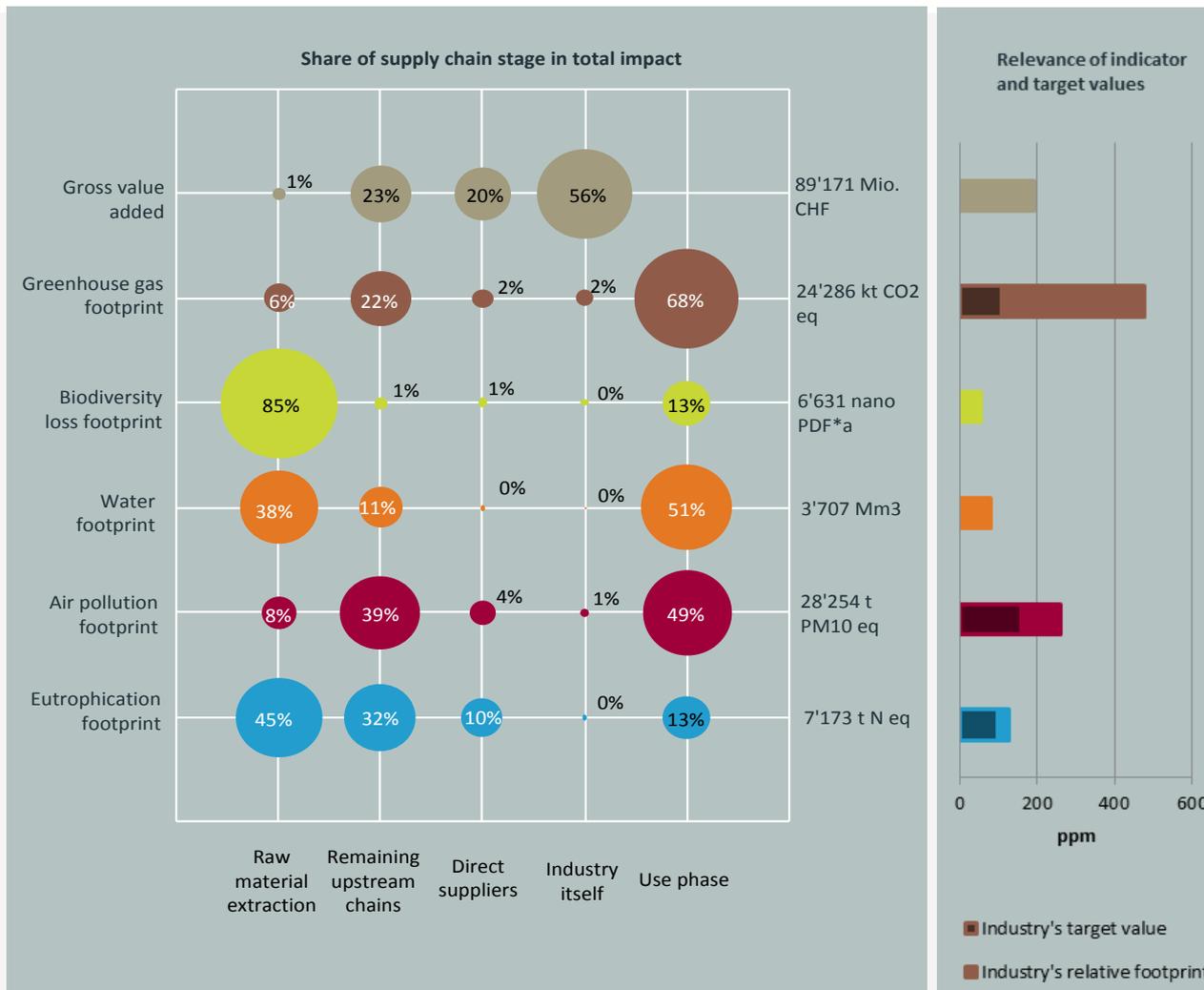
Sabag Muñoz O. and
Gladek E. (2017) One
planet approaches.
Methodology mapping
and pathways forward.
Metabolic, Amsterdam;
supported by WWF
CH&NL, ICUN NL, FOEN



Planetary boundaries and Control variables

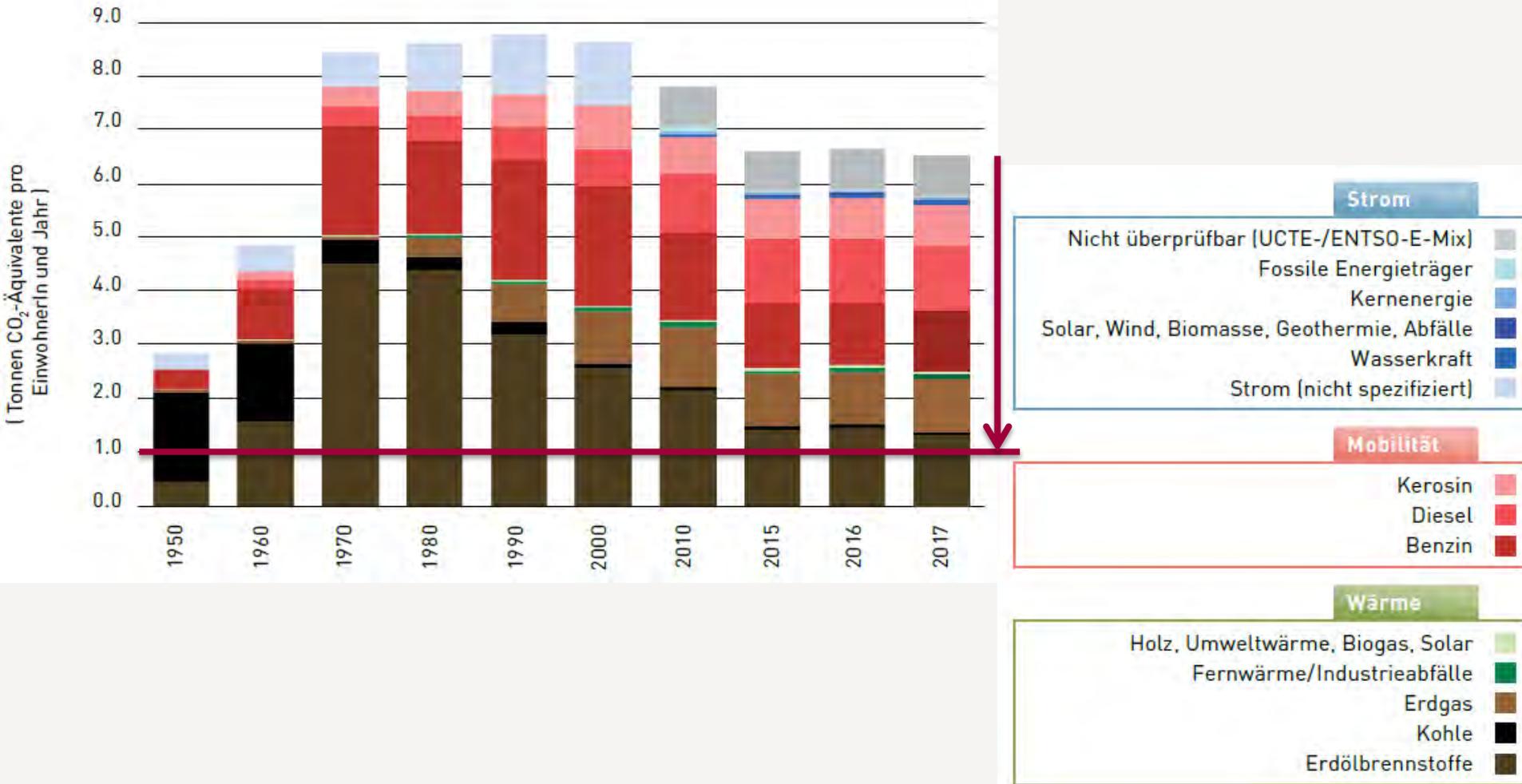


Swiss Real estate sector: hotspots and planetary boundaries

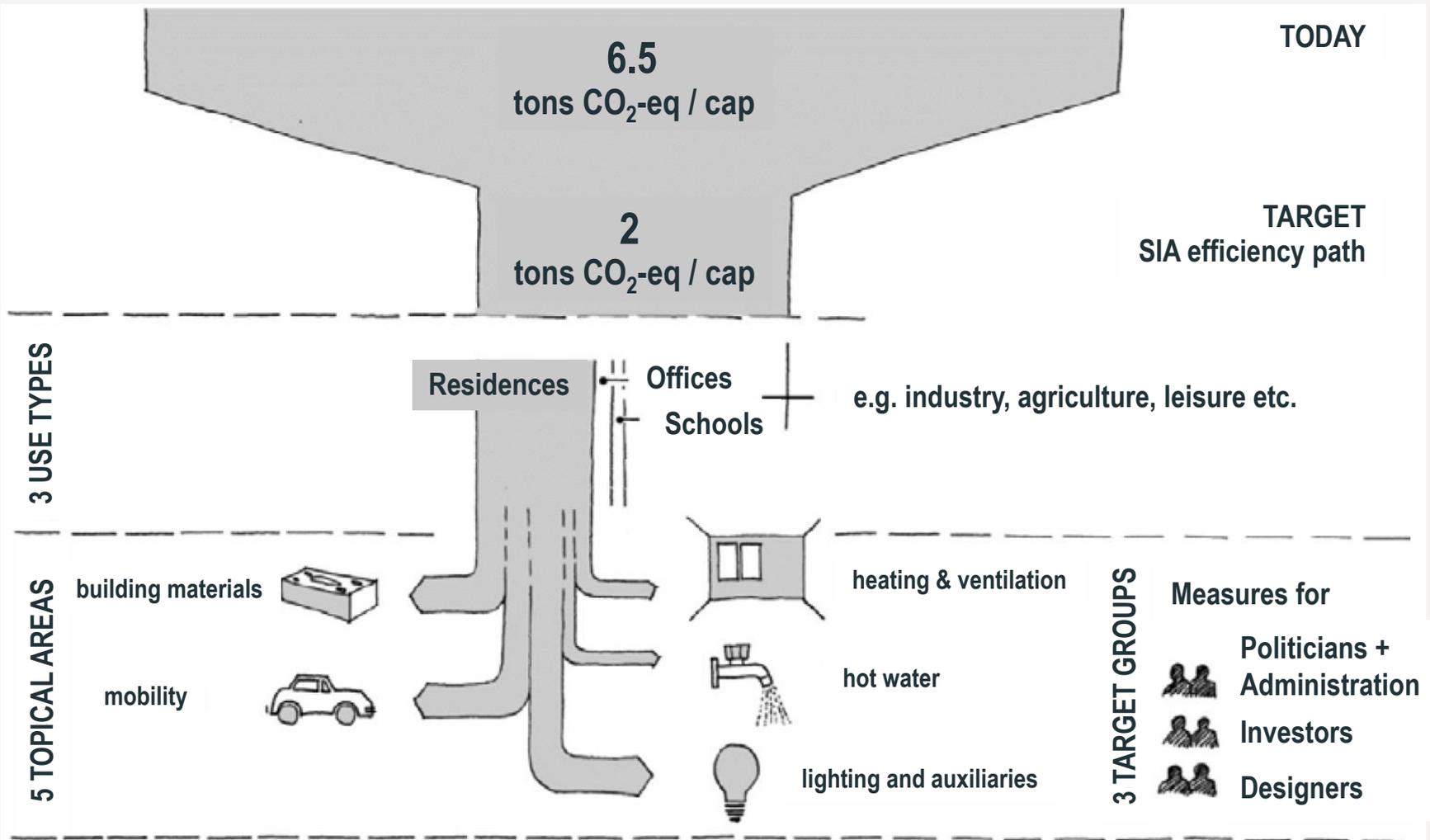


2000 Watt Society:

1 ton CO₂-eq per person & year



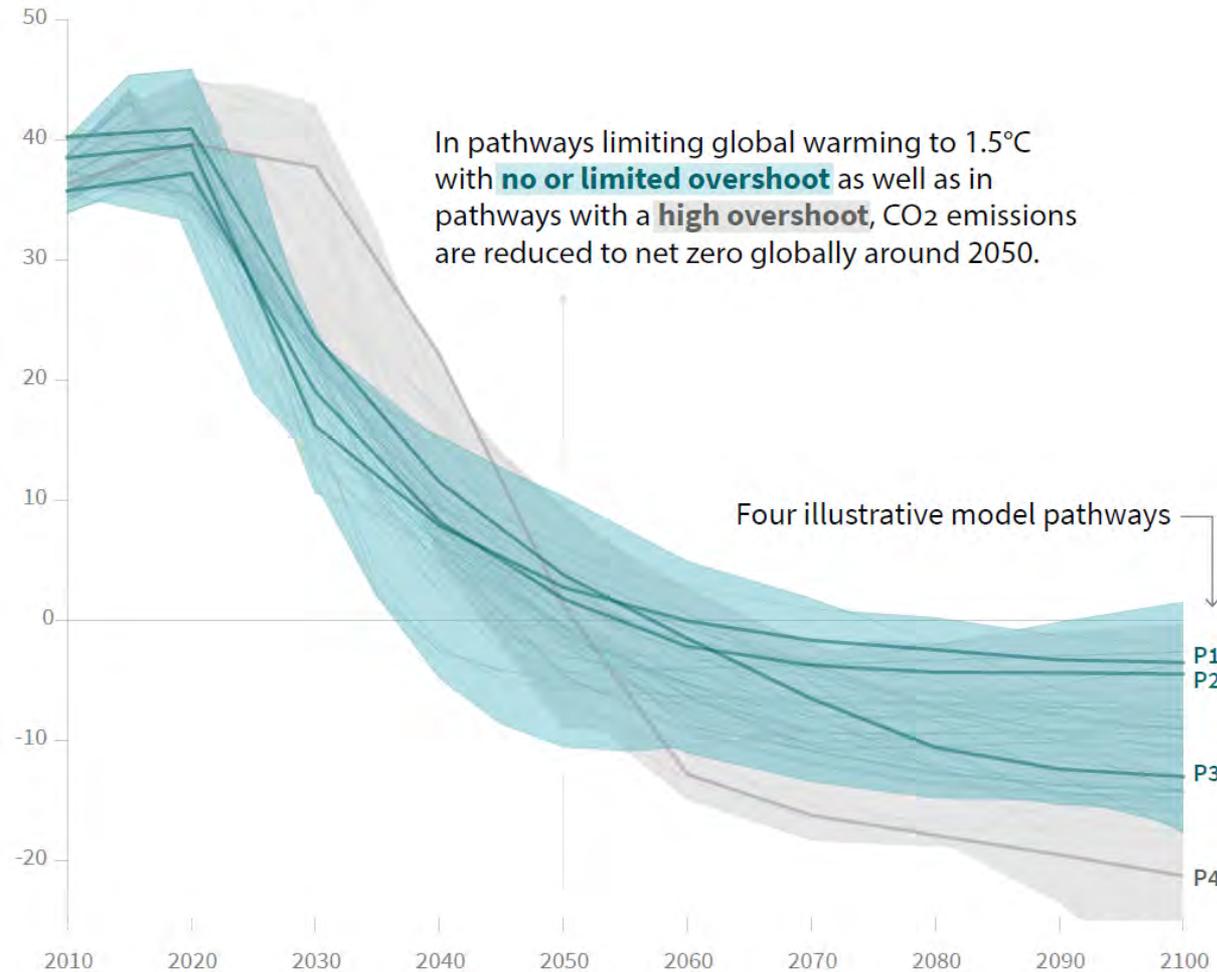
SIA energy efficiency path for “2000-Watt-society”-buildings



IPCC Global warming of 1.5°C

Global total net CO₂ emissions

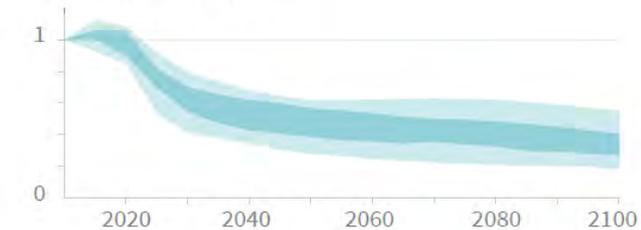
Billion tonnes of CO₂/yr



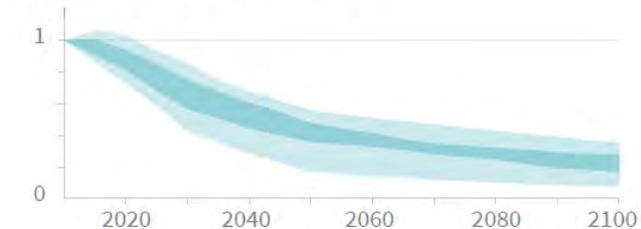
Non-CO₂ emissions relative to 2010

Emissions of non-CO₂ forcings are also reduced or limited in pathways limiting global warming to 1.5°C with **no or limited overshoot**, but they do not reach zero globally.

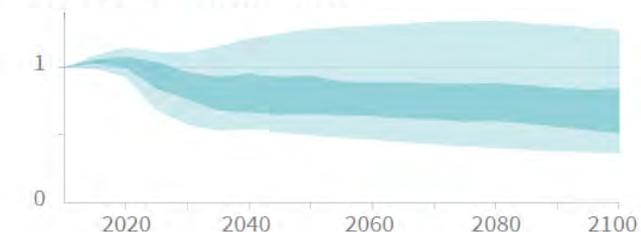
Methane emissions



Black carbon emissions



Nitrous oxide emissions



IEA EBC Annex 72

Assessing Environmental Impacts of Buildings



IEA EBC Annex 72 - Assessing Life Cycle Related Environmental Impacts Caused by Buildings

Investment decisions for buildings made today largely determine their environmental impacts over many future decades due to their long lifetimes. Furthermore, such decisions involve a trade-off between additional investments today and potential savings during use and at end of life - in terms of economic costs, primary energy demand, greenhouse gas emissions and other environmental impacts. Since the economic system does not fully account for external environmental effects, environmental resources are used inefficiently. Life cycle assessment (LCA) is suited to complement economic information on buildings with information on their environmental impacts. LCA helps to take measures and action to increase the resource efficiency of buildings and construction.

ANNEX NEWS

[Questionnaire on the level of application of methods for assessing the environmental performance of buildings across the world](#)

ANNEX INFO & CONTACT

Status: Ongoing (2016 - 2021)

OPERATING AGENT

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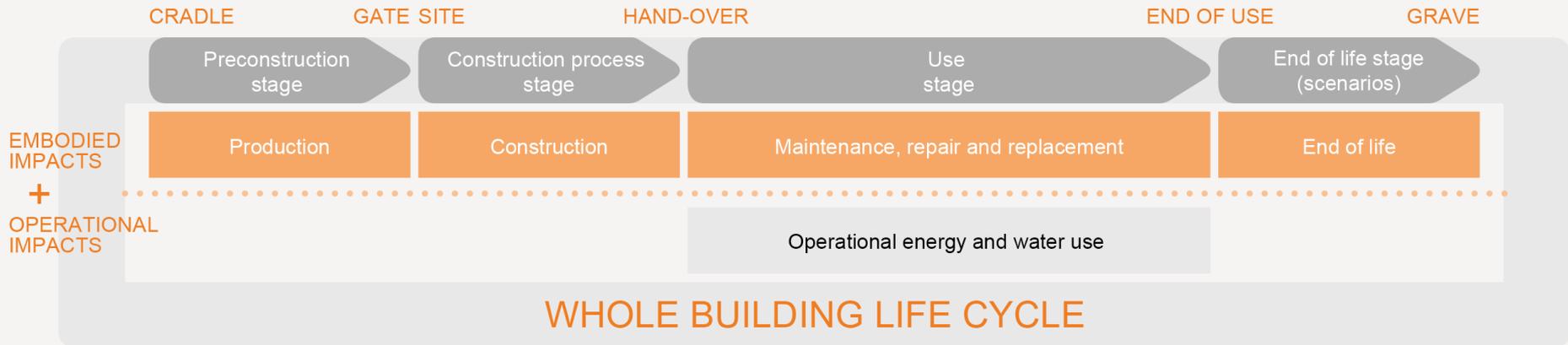
[Email](#)

ANNEX EVENTS

[IEA EBC Annex 72: 6th Expert Meeting](#)

September 25-27, 2019 - Ljubljana,

IEA EBC Annex 72: Environmental life cycle assessment of buildings



IEA EBC Annex 72: Objectives

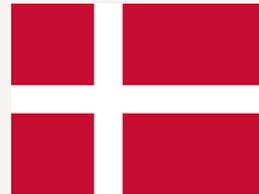
- common methodology guidelines (taking into account ISO/CEN standards, national and regional action plans/activities)
- methods for the development of **environmental benchmarks**
- guidelines how to use building design and planning tools (such as BIM and others)
- case studies for deriving **empirical benchmarks**
- guidelines to establish national/regional databases and share national experiences

IEA EBC Annex 72

Subtasks

- Subtask 1 (Lead Thomas Lützkendorf):
Harmonised methodology guidelines
- Subtask 2 (Lead Alexander Passer):
Building assessment workflows and tools
- Subtask 3 (Lead Harpa Birgisdottir):
Case studies
- Subtask 4 (Lead Chang-U Chae):
Building sector LCA databases
- Subtask 5 (Lead Rolf Frischknecht):
Dissemination

Countries represented in IEA EBC Annex 72



How to get informed: IEA EBC Annex 72 in the web

- Website
 - <http://annex72.iea-ebc.org/>
- LinkedIn
 - www.linkedin.com/groups/13604349
- ResearchGate (660 reads, 80+ followers)
 - <https://www.researchgate.net/project/IEA-EBC-Annex-72-Assessing-life-cycle-related-environmental-impacts-caused-by-buildings>
- Newsletter
 - biannual 2 pager for communication with national funding agencies; No 2 issued in April 2019

Your day today

Morning

- Climate change and the construction sector
- Round robin test “building LCA”
- Environmental benchmarks for buildings I

Afternoon

- Environmental benchmarks for buildings II
- Panel discussion
- Further building related benchmarks