

**IEA EBC Annex 72:**  
*Assessing life cycle related environmental impacts caused  
by buildings*

***Bewertung von Umweltwirkungen während des gesamten  
Lebenszyklus von Gebäuden***

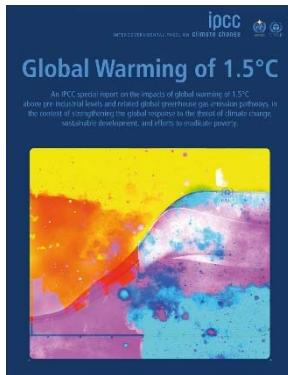
Martin Röck und Alexander Passer, TU Graz

IEA Vernetzungstreffen,  
10.10.2018  
Wien



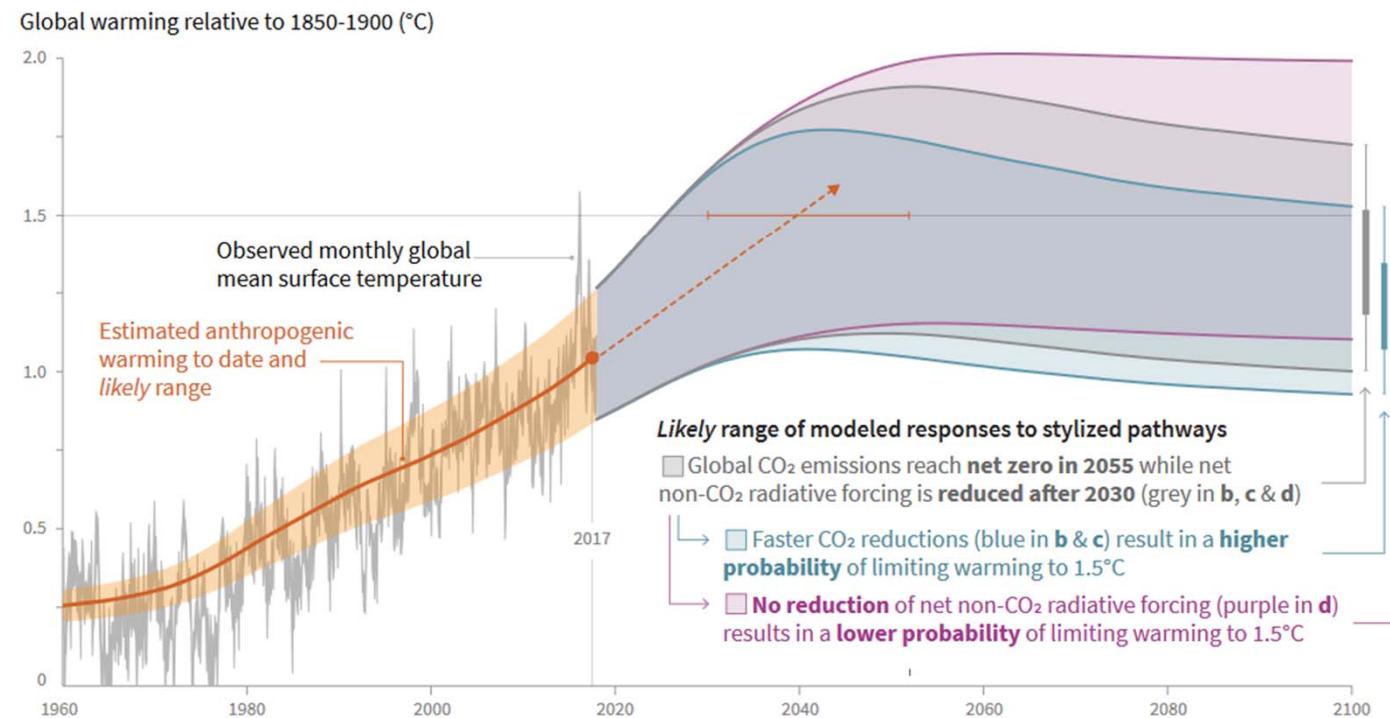
- Ökobilanzierung (LCA) von Gebäuden
- IEA EBC Annex 57 (abgeschlossen)
  - Scope, Ergebnisse, Disseminations-Erfolge
- IEA EBC Annex 72 (laufend)
  - Scope, Ergebnisse, Partizipation & Dissemination

# IPCC 1.5°C Report



## Cumulative emissions of CO<sub>2</sub> and future non-CO<sub>2</sub> radiative forcing determine the probability of limiting warming to 1.5°C

### a) Observed global temperature change and modeled responses to stylized anthropogenic emission and forcing pathways

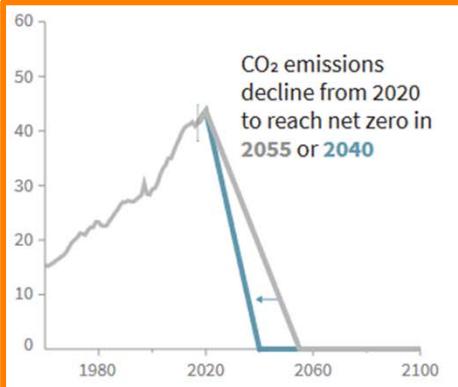


Quelle: IPCC SR1.5 Summary for Policy Makers, 6. Oktober 2018

# IPCC 1.5°C Report

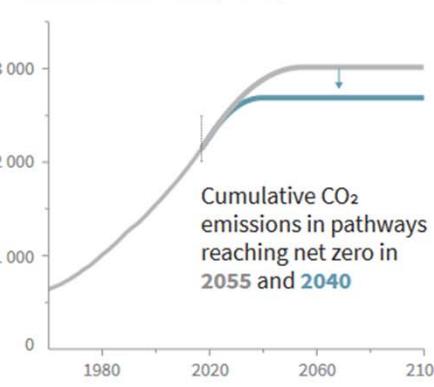


b) Stylized net global CO<sub>2</sub> emission pathways  
Billion tonnes CO<sub>2</sub> per year (GtCO<sub>2</sub>/yr)



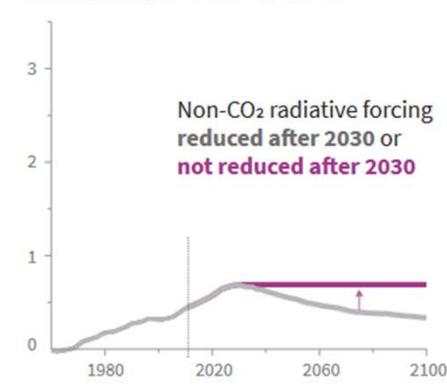
Faster immediate CO<sub>2</sub> emission reductions limit cumulative CO<sub>2</sub> emissions shown in panel (c).

c) Cumulative net CO<sub>2</sub> emissions  
Billion tonnes CO<sub>2</sub> (GtCO<sub>2</sub>)



Maximum temperature rise is determined by cumulative net CO<sub>2</sub> emissions and net non-CO<sub>2</sub> radiative forcing due to methane, nitrous oxide, aerosols and other anthropogenic forcing agents.

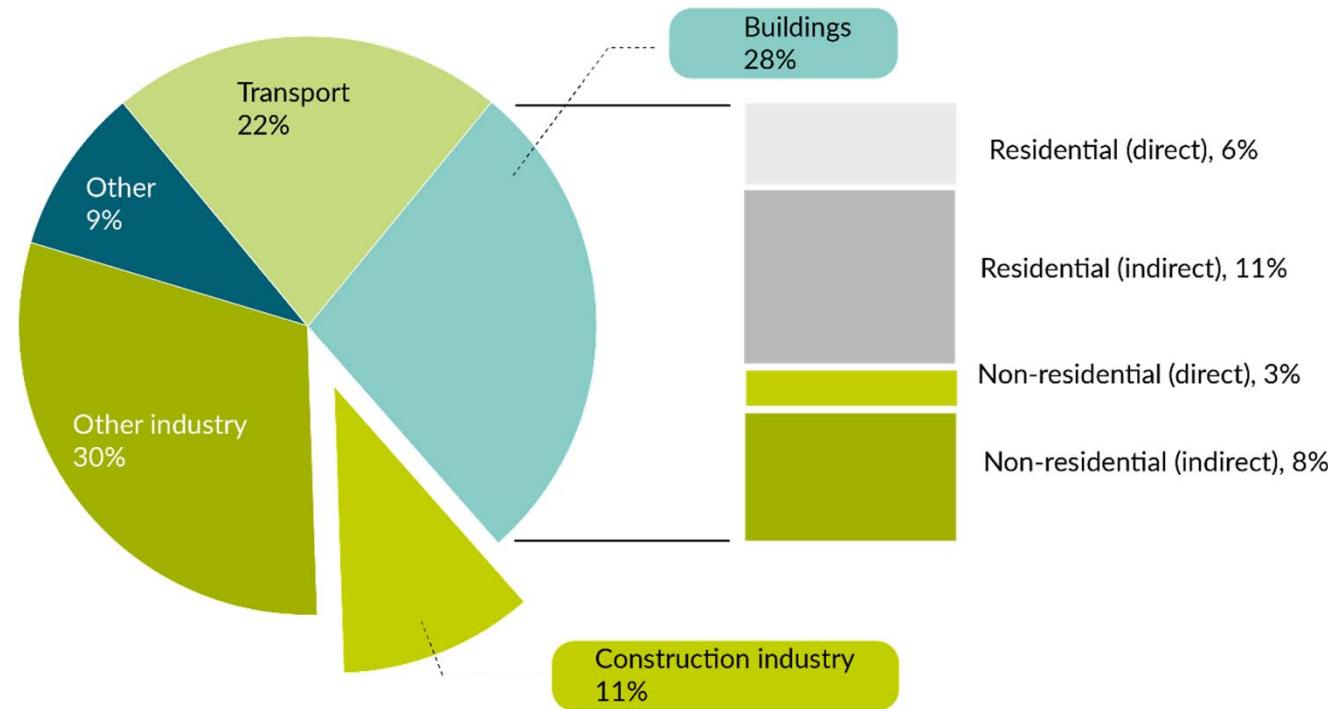
d) Non-CO<sub>2</sub> radiative forcing pathways  
Watts per square metre (W/m<sup>2</sup>)



Quelle: IPCC SR1.5 Summary for Policy Makers, 6. Oktober 2018

- Komplette Dekarbonisierung bis ~2050!
  - Bau und Betrieb von Gebäuden

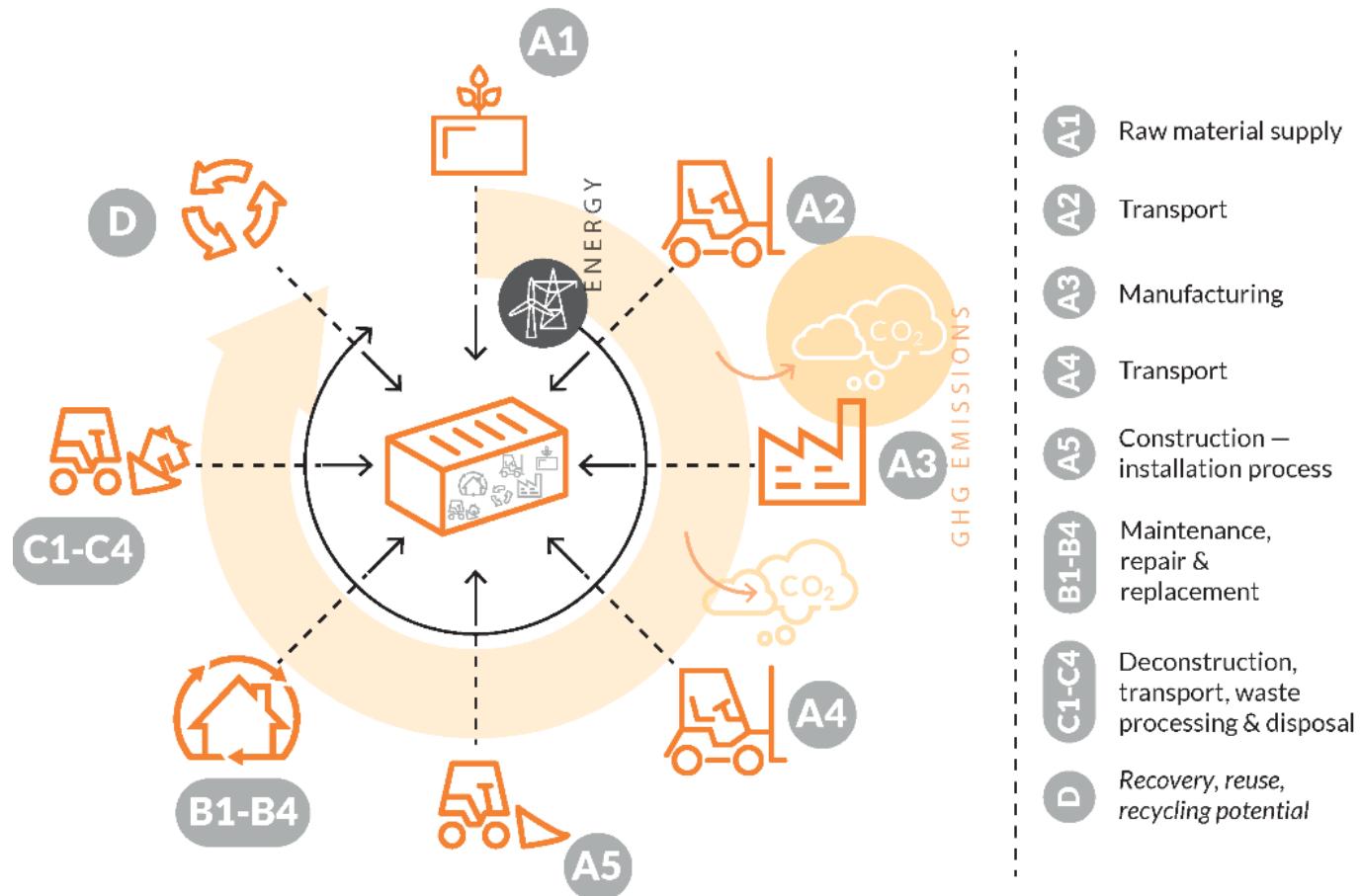
# Relevanz des Bausektors



- Bausektor und Gebäudebetrieb stellen 40% der globalen CO<sub>2</sub> Emissionen dar.

Quelle: GABC Global Status Report 2017 based on IEA World Energy Balances and Statistics

# “Graue Energie”



Quelle: IEA EBC Annex 57, Guideline for Construction Products Manufacturers, 2017

- Evaluation of Embodied Energy and CO<sub>2</sub> Equivalent Emissions for Building Construction
- Evaluierung der konstruktions-spezifischen CO<sub>2</sub>-Emissionen und der grauen Energie

- Harmonisierte Methodik, Empirische Werte von Case Studies, Vorlagen für Ergebnis-Dokumentation
- Leitfäden für Planende und Beratende, Hersteller von Bauprodukten, politische Entscheidungsträger und Lehrende

ISBN (e-book English): 978-3-85125-519-5

<http://dx.doi.org/10.3217/978-3-85125-519-5>

ISBN (e-book German): 978-3-85125-520-1

<http://dx.doi.org/10.3217/978-3-85125-520-1>



The image shows the front cover of a booklet titled "Guidance to including Embodied Energy &amp; Embodied GHG Emissions in the decision-making process for SME's". The cover features a background photograph of a dense urban skyline with various buildings, including a prominent modern skyscraper with a curved glass facade. At the top left, it says "International Energy Agency". At the top right, it has the "EBC" logo with "Energy in Buildings and Communities Programme" underneath. The title is centered in large orange text. Below the title, there is smaller text: "Leitfaden für Hersteller von Bauprodukten | Deutsche Version", "IEA EBC Annex 57", and "Juni 2017". At the bottom left, it says "EBC is a programme of the International Energy Agency". At the bottom right, it has the "iea" logo with "International Energy Agency" underneath.

# Output International



- Website Annex 57:

<http://www.iea-ebc.org/projects/project?AnnexID=57>

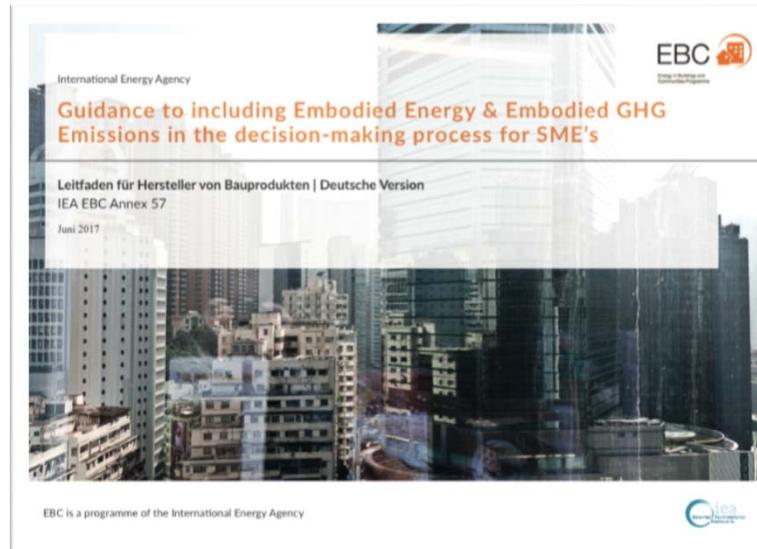
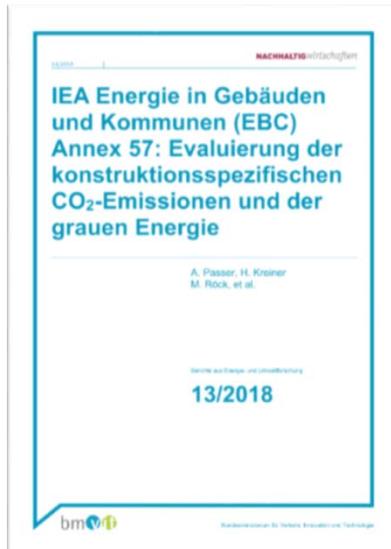


# Output National



- Website Annex 57

<https://nachhaltigwirtschaften.at/de/iea/technologieprogramme/ebc/iea-ebc-annex-57.php>



# Disseminations-Erfolge



- Präsentationen vor Fachpublikum
  - Baukongress, COP23, WSBE17 HK, etc.



# Disseminations-Erfolge



- Lange Nacht der Forschung
- FoE Sustainable Systems

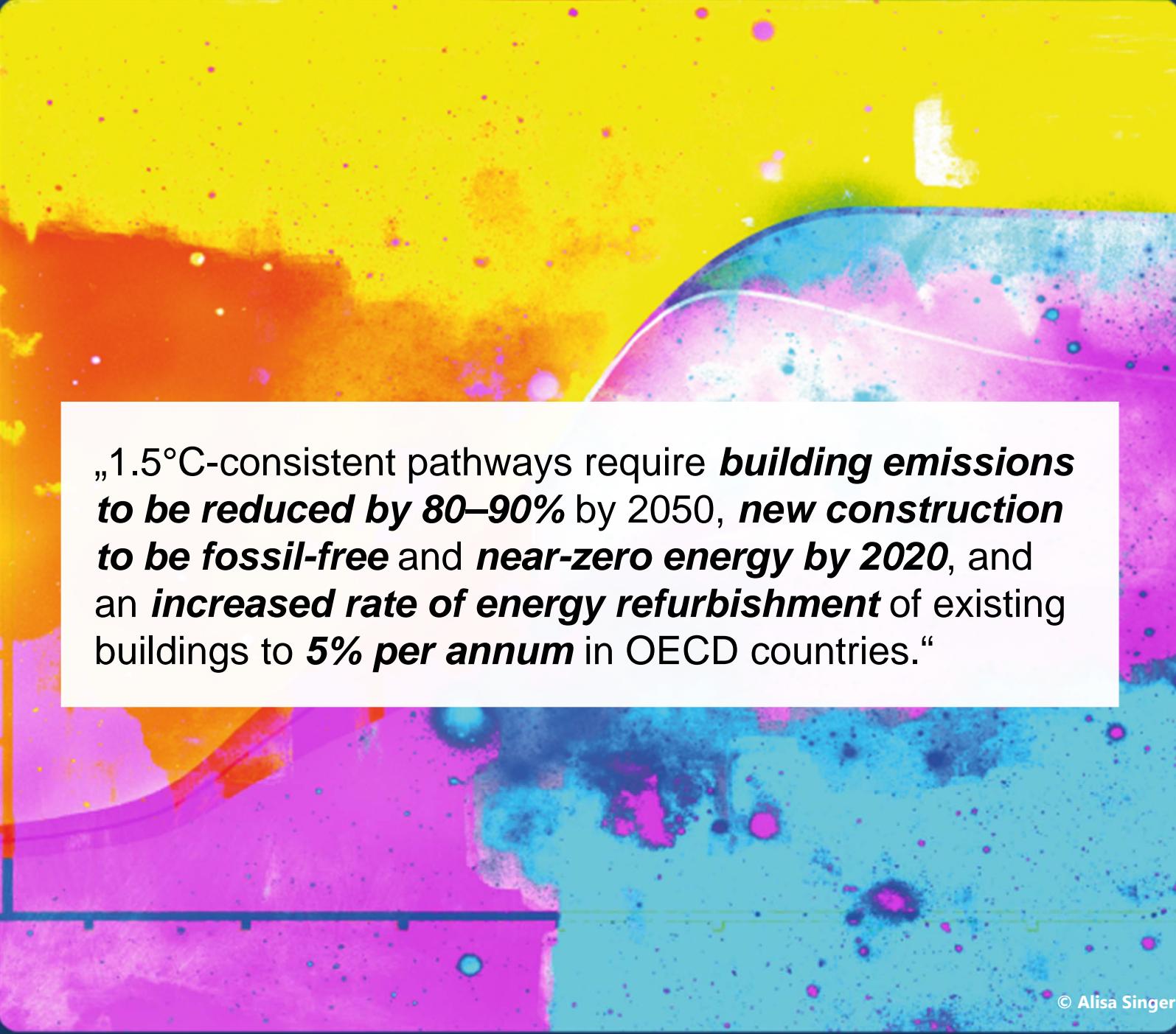


# Disseminations-Erfolge



- Verweise in anderen Projekten
  - Environmental benchmarks for buildings, EC JRC Technical Report, 2018
  - PEF4Buildings - Study on the Application of the PEF Method [to buildings], EC DG ENV, 2018

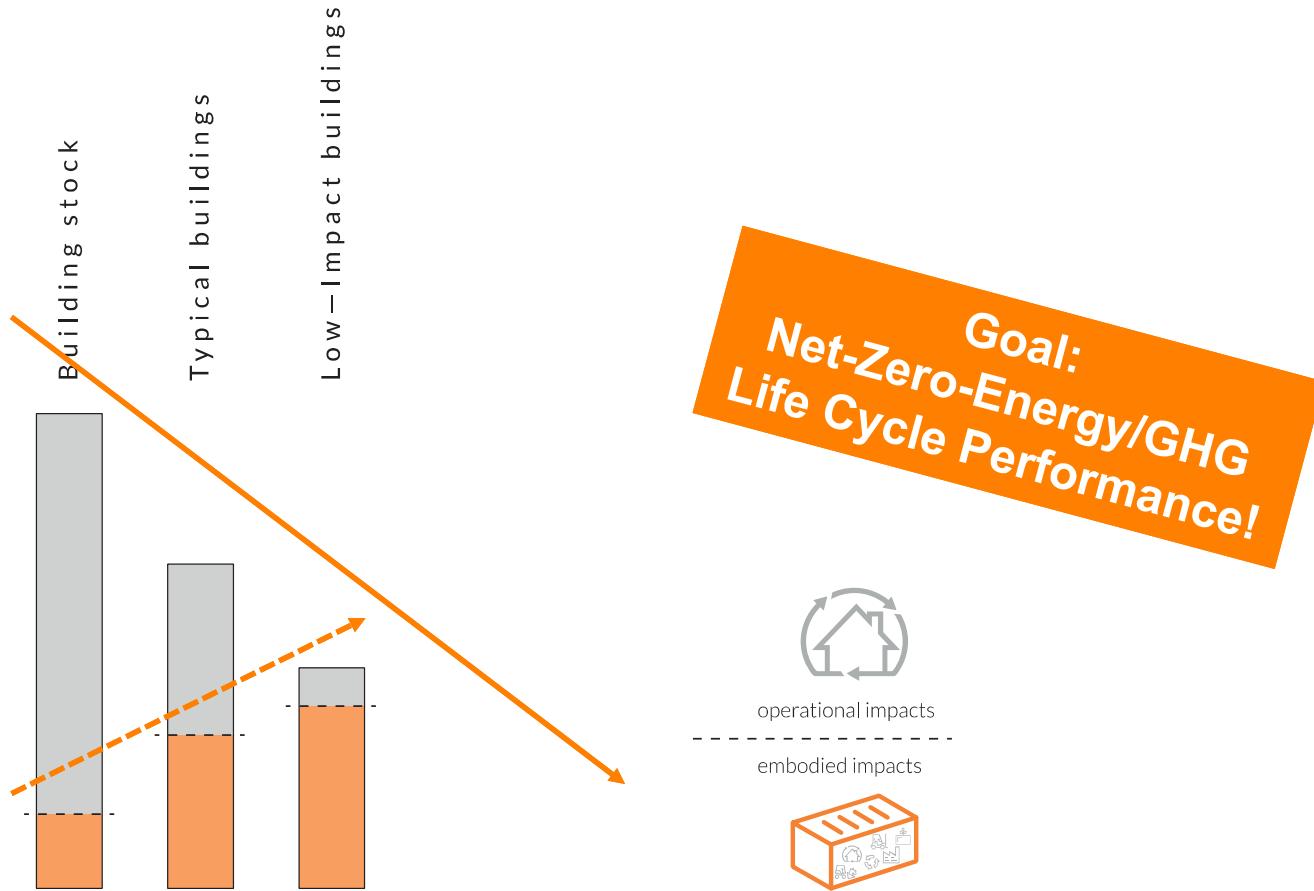




„1.5°C-consistent pathways require ***building emissions to be reduced by 80–90% by 2050, new construction to be fossil-free and near-zero energy by 2020, and an increased rate of energy refurbishment*** of existing buildings to ***5% per annum*** in OECD countries.“

Quelle: IPCC SR1.5 - Chapter 4: Strengthening and Implementing the Global Response, 2018

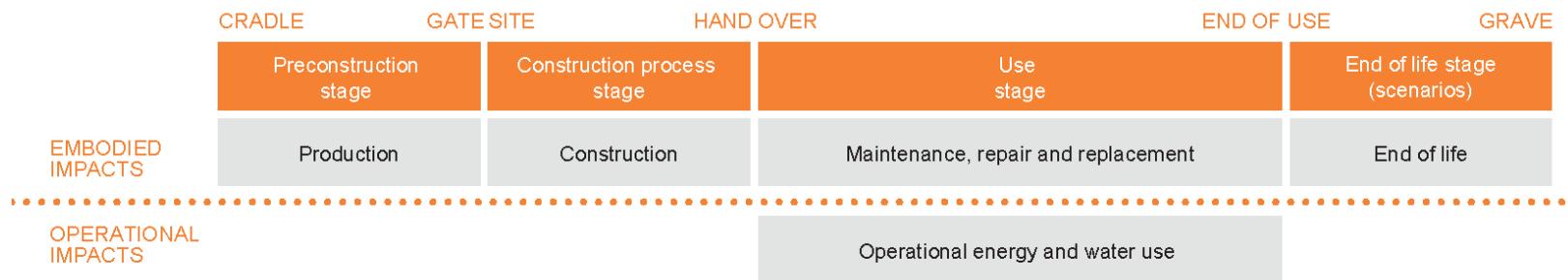
# Lebenszyklus-Optimierung



Quelle: TUG/AGNHB, IEA EBC Annex 72

- Assessing life cycle related environmental impacts caused by buildings
- Bewertung von Umweltwirkungen während des gesamten Lebenszyklus von Gebäuden

- Gesamter Lebenszyklus des Gebäudes
- Umweltwirkungen (mehrere Indikatoren)
- Integration im Planungsprozess



# Participants



- Konsens über Bewertungsmethodik
- Entwicklung von Methoden zur Festlegung umweltspezifischer Benchmarks
- Leitfäden für Planende zur Bewertung im Entwurfs- und Planungsprozess (ST2 AT)
- Auswertung von Case Studies um empirische Kennwerte abzuleiten

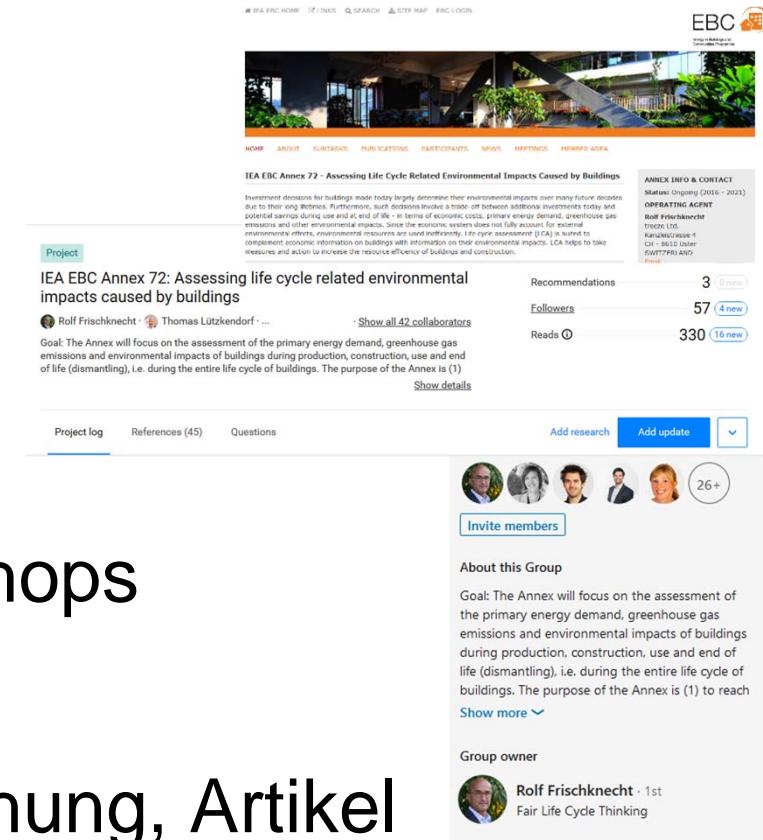
- Leitfäden für Entscheidungsträger
- Leitfäden für Planende
  - Bewertung von Umweltwirkungen im Entwurfs- und Planungsprozess
- Referenz für Policy Maker
  - Embodied impacts of buildings (Annex 57)
  - Hot spots in environmental impacts across the Life Cycle of buildings (Annex 72)



# Disseminations-Strategie



- Fachpublikum
  - Website, Social Media
    - ResearchGate, LinkedIn
  - Spezifische Leitfäden
  - Präsentationen, Workshops
- Breite Öffentlichkeit
  - Lange Nacht der Forschung, Artikel



The screenshot shows a ResearchGate project page for "IEA EBC Annex 72: Assessing life cycle related Environmental Impacts Caused by Buildings". The page includes a banner image of a modern building, navigation links like HOME, ARTICLES, PUBLICATIONS, PARTICIPANTS, NEWS, MEETINGS, and MEMBER AREA, and a sidebar with project info and stats. The main content area displays the project's goal, members, and a summary.

**Project**  
IEA EBC Annex 72: Assessing life cycle related environmental impacts caused by buildings

Rolf Frischknecht · Thomas Lützkendorf · ... · Show all 42 collaborators

Goal: The Annex will focus on the assessment of the primary energy demand, greenhouse gas emissions and environmental impacts of buildings during production, construction, use and end of life (dismantling), i.e. during the entire life cycle of buildings. The purpose of the Annex is (1) to reach

**ANEXX INFO & CONTACT**  
Status: Ongoing (2016 - 2021)  
OPERATING AGENT:  
FIREC Institute  
FIREC LTD  
Karlsruhe Institute of Technology  
UCL - Bartlett School of Environment, Energy and Resources

**Recommendations**: 3 (0 new)

**Followers**: 57 (4 new)

**Reads**: 330 (16 new)

**Project log** · **References (45)** · **Questions** · Add research · Add update

**About this Group**  
Goal: The Annex will focus on the assessment of the primary energy demand, greenhouse gas emissions and environmental impacts of buildings during production, construction, use and end of life (dismantling), i.e. during the entire life cycle of buildings. The purpose of the Annex is (1) to reach

**Group owner**: Rolf Frischknecht · 1st  
Fair Life Cycle Thinking

Invite members

# Aktuell: Weltweite Umfrage!



- Weltweite Umfrage für ArchitektInnen und Planende
  - Anwendung der Bewertung von Umweltwirkungen im Planungs- und Entwurfsprozess
  - Erhebung Status Q und Potentiale
- Gemeinsame Basisfragen & nationale Zusatzfragen

Start der Umfrage  
November 2018!

# SBE19 Graz: Transition for a zero-carbon built environment



## SBE19 Graz

SUSTAINABLE BUILT ENVIRONMENT D-A-CH CONFERENCE 2019  
TRANSITION TOWARDS A NET ZERO CARBON BUILT ENVIRONMENT  
11–14 September 2019, TU Graz, Austria  
> [sbe19.tugraz.at](https://sbe19.tugraz.at)



in cooperation with:  
**ETH zürich**



## Abstract submission open!

> <https://sbe19.tugraz.at> <

# Danke für Ihre Aufmerksamkeit!



Weitere Informationen:

[annex72.iea-ebc.org](http://annex72.iea-ebc.org) | [agnhb.tugraz.at](http://agnhb.tugraz.at) | [sbe19.tugraz.at](http://sbe19.tugraz.at)

Die österreichische Beteiligung am IEA EBC Annex 72  
wird im Rahmen der IEA-Forschungskooperation im  
Auftrag des bmvit durchgeführt.

