



International Real Estate Business School  
Universität Regensburg



## **Carbon Risk Real Estate Monitor *CRREM***

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*34<sup>th</sup> Annual Meeting of the American Real Estate Society, Bonita Springs, April 10<sup>th</sup> – 14<sup>th</sup> 2018*



# Carbon Risk Real Estate Monitor *CRREM*

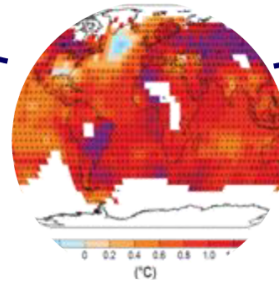
## Downside Risks of Climate Change

### Upside „Risk“

*Positive impact*



### *Climate change = Climate risk?*



### Downside „Risk“

*Negative impact*

*Positive Willingness to pay for Energy Efficiency and Sustainability*

#### 1. Portfolio level

- diversification
- investment alternative with special risk-return profile
- Green Funds, SRI and RPI „en vogue“

*Geiger, Cajias, Bienert (2013): The Asset Allocation of Sustainable Real Estate: A Chance for a Green Contribution?*

#### 2. Corporate level

- Sustainability as production factor
- Positive Impact on Yields, Tobin's Q, Asset Turnover and risk measures
- CSR-strategy

*Ansari, Cajias, Bienert (2015): The Value contribution of Sustainability Reporting – an empirical evidence for real estate companies.*

#### 3. Property level

- Sustainability is impacting rents, vacancies and values
- Green Building certificates

*Cajias, Fürst, Bienert (2016): Is energy efficiency priced in the German housing market? – Large sample evidence from Germany.*

Intensive research with hedonic pricing (regression)

*Increase of intensity and frequency of Extreme Weather Events*

Direct and indirect costs of negative long-term changes in the climate system:

Impact of “creeping” climate changes like sea level rise or increased extreme weather events (drought, heat, bushfires, flood, storms...) on real estate markets

- *Bienert (2014): Extreme Weather Events and Property Values. Assessing New Investment Frameworks for the Decades Ahead.*
- *Hirsch, Braun, Bienert (2015): Assessment of Climatic Risks for Real Estate.*
- *Bienert (2016): Climate change implications for real estate portfolio allocation*

Limited Real estate research

**Stranded assets and portfolios**

- Assets not meeting future regulatory requirements and future market expectations - loss of value + costs for retrofitting
- Not or insufficiently decarbonized real estate
- Real estate with high use costs and significant carbon footprint due to high energy use from non-renewable sources

CRREM



# Carbon Risk Real Estate Monitor *CRREM*

## Objectives

***CRREM: Carbon Risk Real Estate Monitor - Framework for science based decarbonisation pathways, toolkit to identify stranded assets and push sustainable investments***

***(February 2018 – January 2021)***

*The project is funded by the Horizon 2020 Framework Programme of the European Union.*

### **General Objectives:**

- Objective 1 – Downscaling & transparency: Breaking down INDCs by sector, company and property level for more transparency and capacity building
- Objective 2 – Strategic implication of “Stranded assets”: Defining areas for improvement and strategic options
- Objective 3 – Framework, Toolkits & Methods: Making decarbonisation in the commercial real estate sector measurable



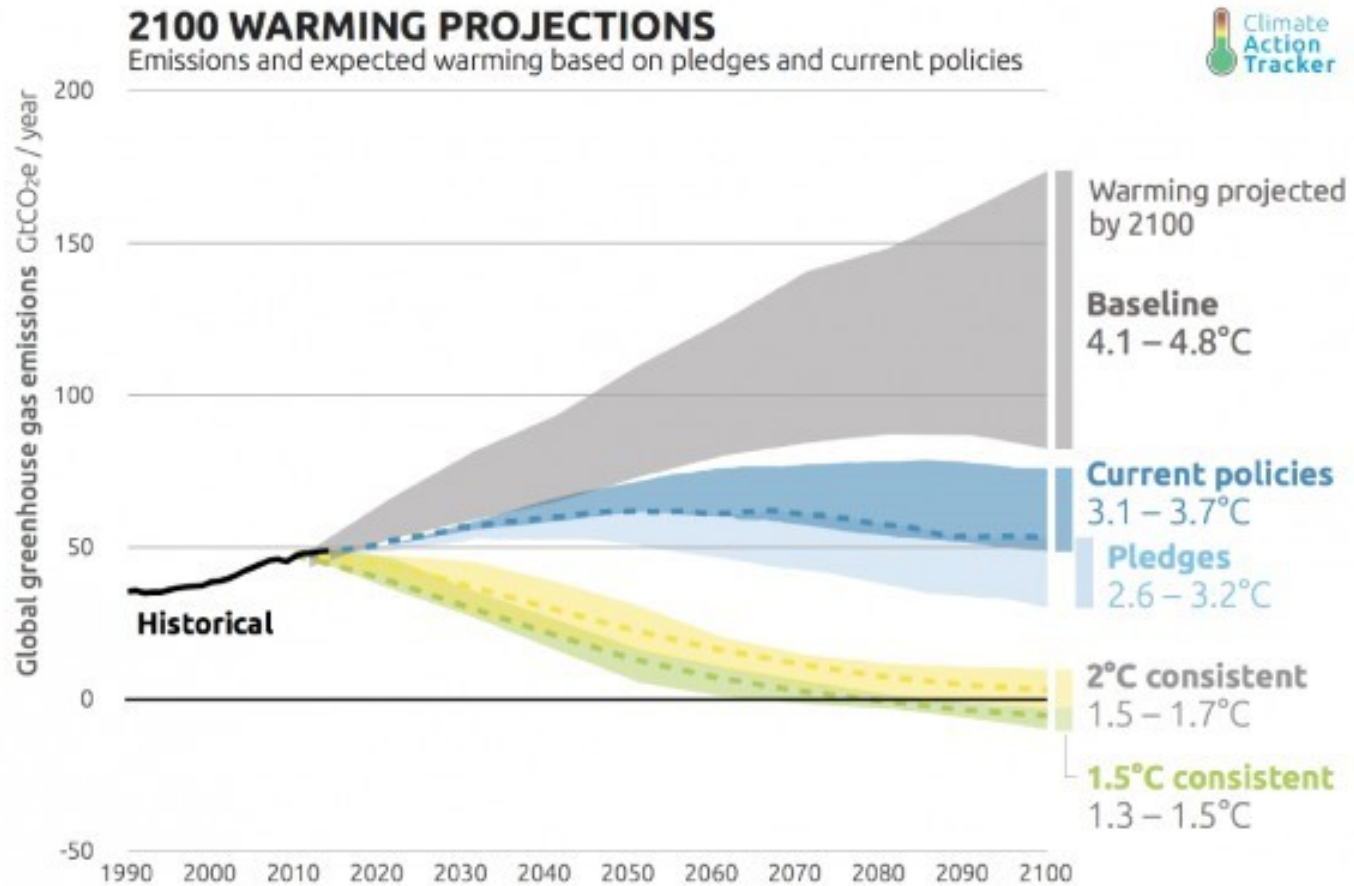
# Carbon Risk Real Estate Monitor *CRREM*

## Science Based Targets (SBT)



SCIENCE  
BASED  
TARGETS

**Current INDC pledges will not meet the 2°C aim (3.2°C instead, according to *Climate Action Tracker*)**



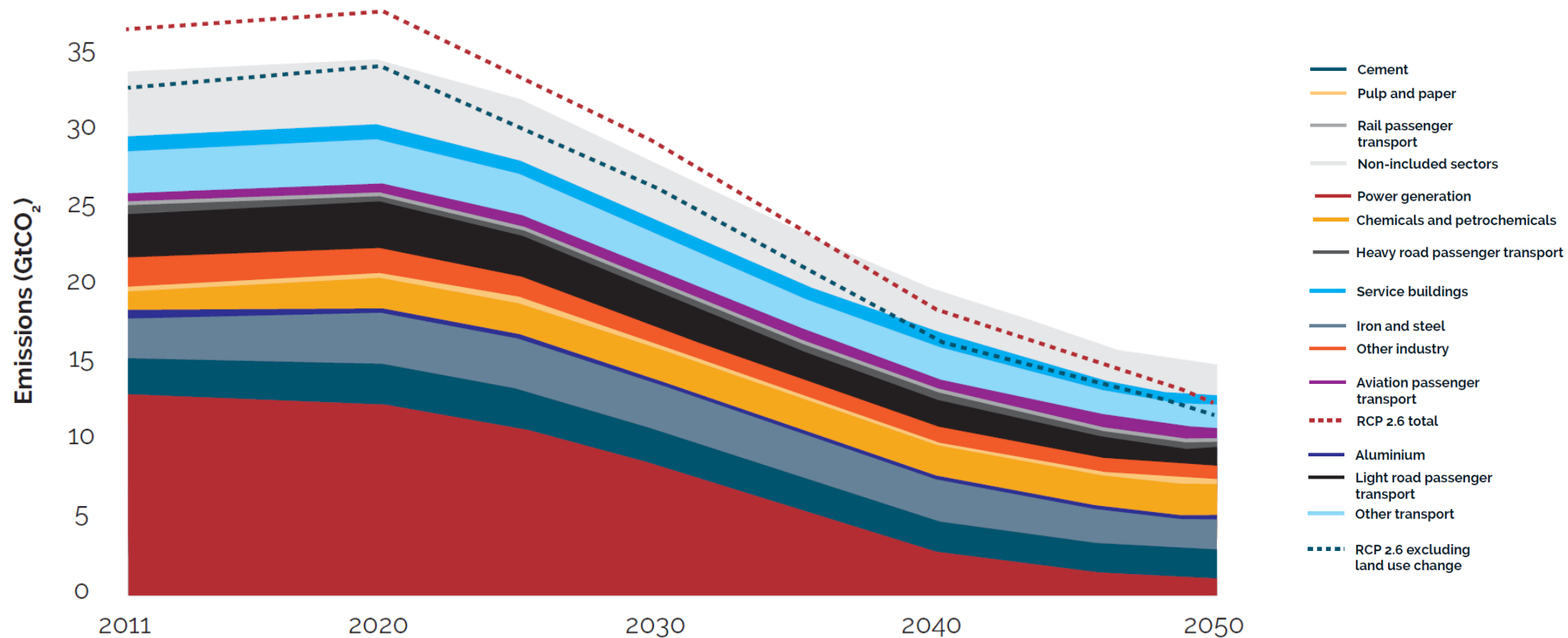
Source: Climate Action Tracker, 2017



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## Sectoral decarbonization approach (SDA)

### Sectoral breakdown of absolute CO2 emissions budget, 2011–50



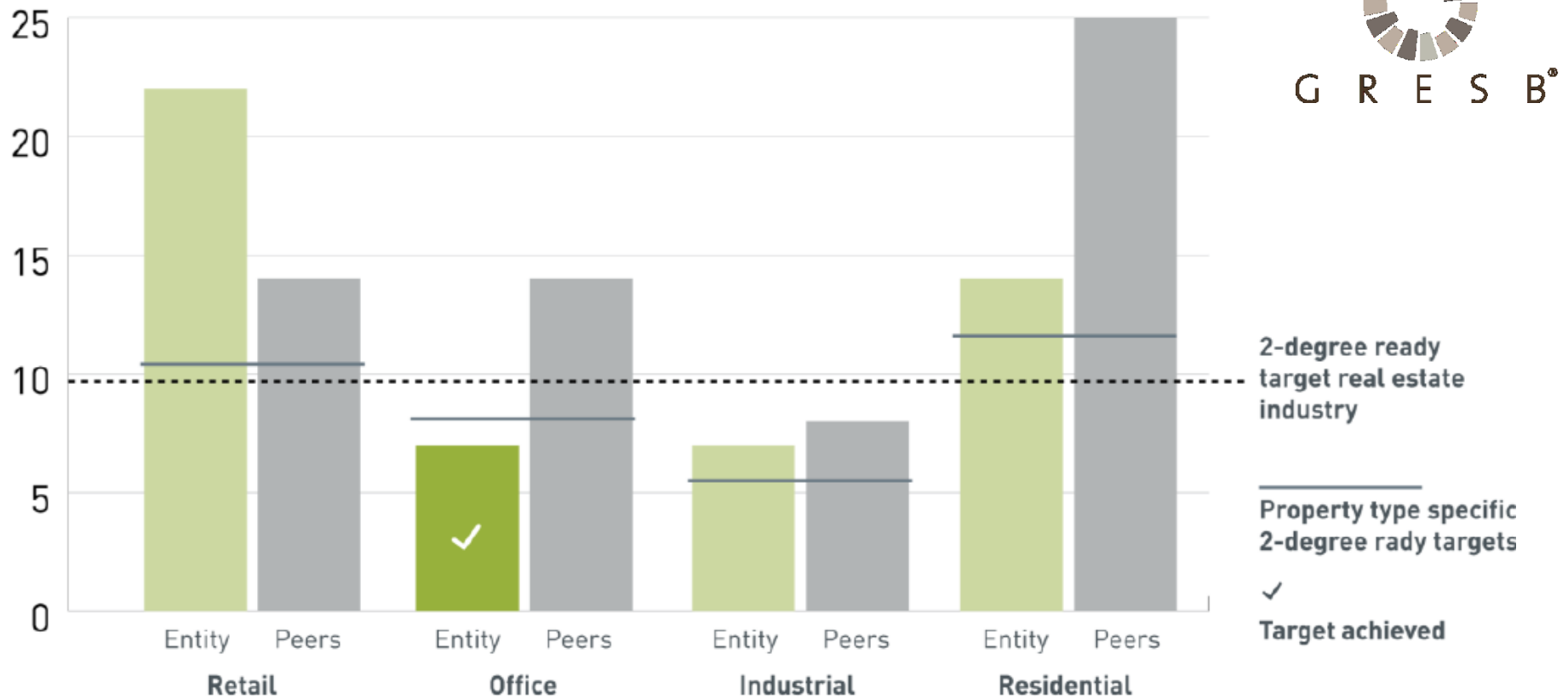
Source: SBT, 2015



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## Emission breakdown according to types of use

### Breakdown to different types of use: Cooperation with GRESB



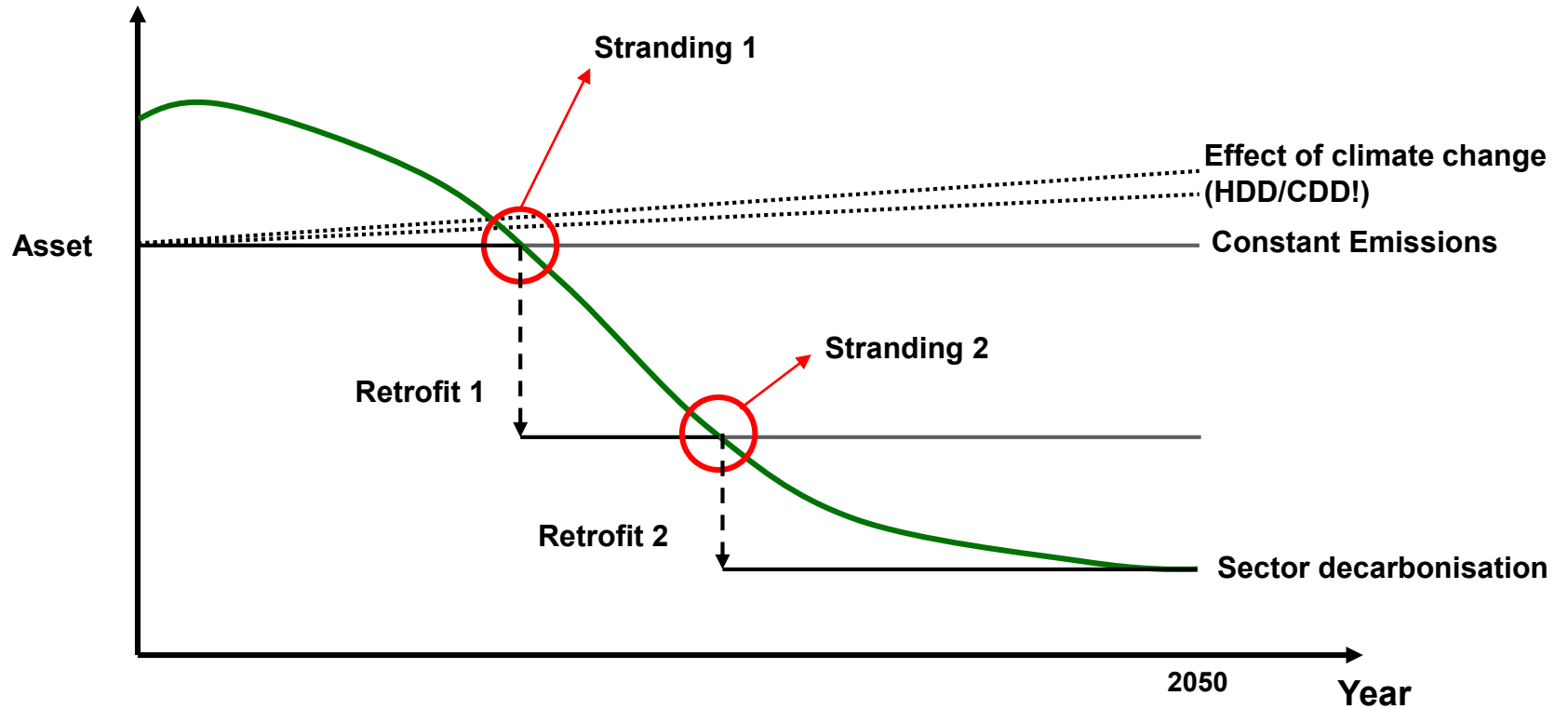
Source: GRESB



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## Stranding Risk

Emission intensity  
[kgCO<sub>2e</sub>/m<sup>2</sup>a]



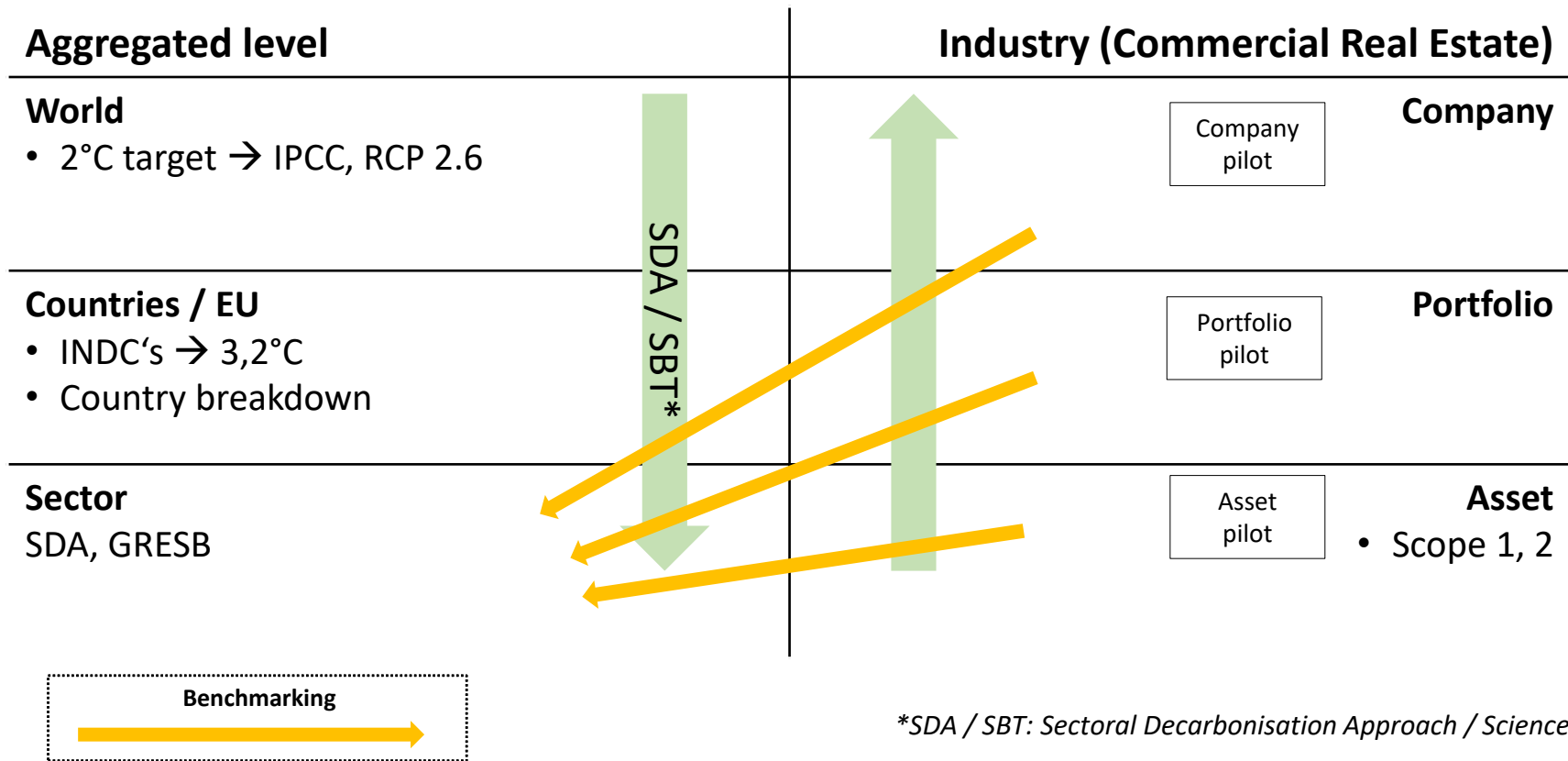
Source: Own presentation



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## General approach

### Main objective: Development of the *CRREM-Tool*



\*SDA / SBT: Sectoral Decarbonisation Approach / Science Based Targets

Source: Own presentation

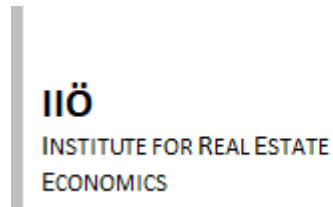




# Carbon Risk Real Estate Monitor *CRREM*

## Project partners

### IIÖ / Austria



### University of Alicante / Spain



### Ulster University / UK



### TIAS / Tilburg University / NL



### Sturgis Carbon Profiling / UK

### GRESB





# Carbon Risk Real Estate Monitor *CRREM*

## Contact

***Thanks for your attention!***



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