

# CARBON RISK REAL ESTATE MONITOR:

A TOOL TO ALIGN ASSET INVESTMENTS WITH THE PARIS  
AGREEMENT OBJECTIVES



Prof. Dr. Sven Bienert 16.06.2021

## 1. INTRODUCTION TO CRREM, PATHWAYS & METHODOLOGY

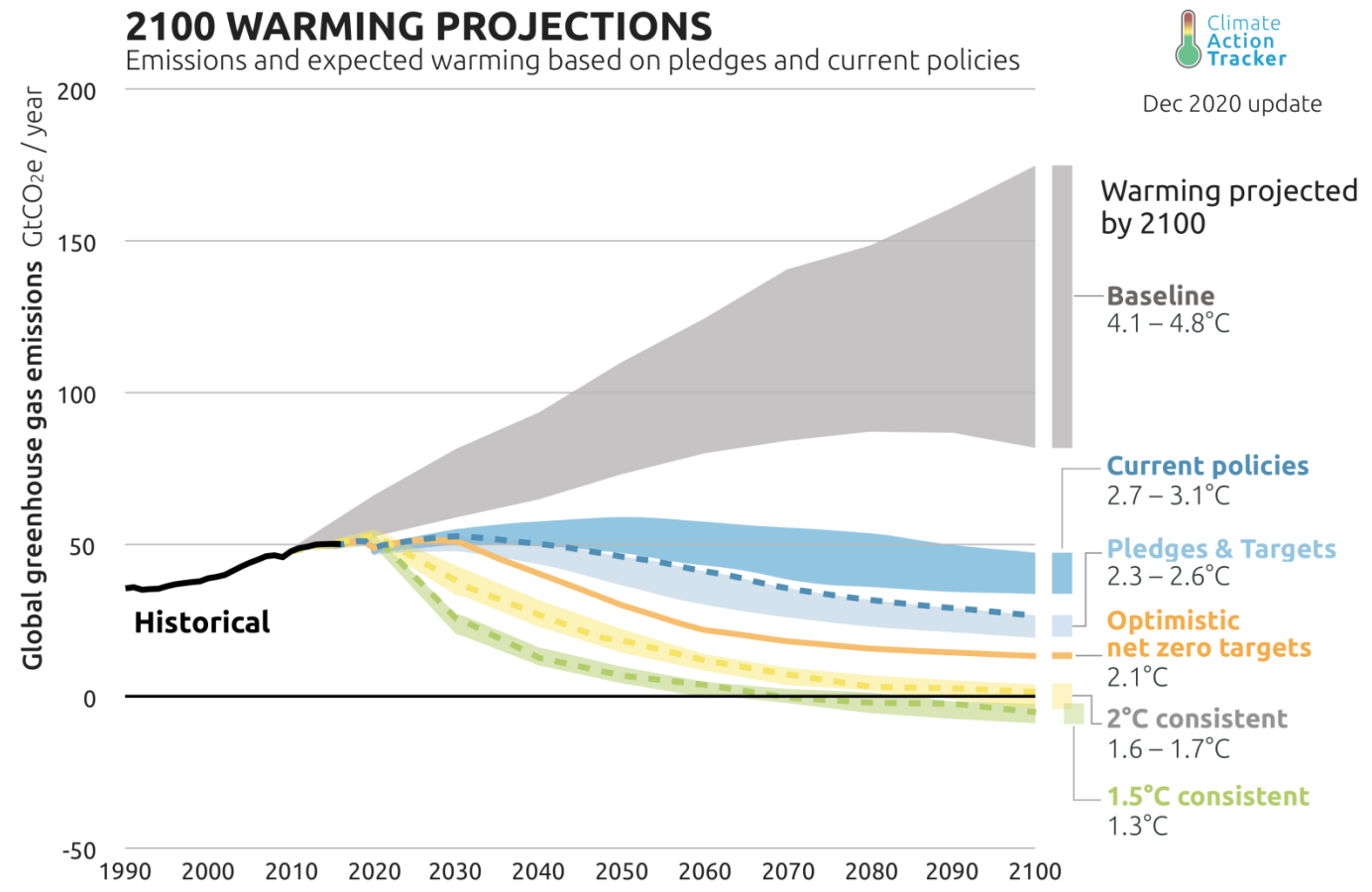
2. THE CRREM RISK ASSESSMENT TOOL

3. CRREM SUCCESS STORY AND SUPPORTERS

4. Q & A



Current NDC pledges will not meet the 2°C target (3.1°C instead, according to Climate Action Tracker)



Source: Climate Action Tracker, Dez 2020



NYC set targets for 2024 and 2030

New York City unveils ambitious plan for local steps to tackle climate change

- New law aims for 40% cut by 2030
- Buildings account for 67% of city's climate change emissions

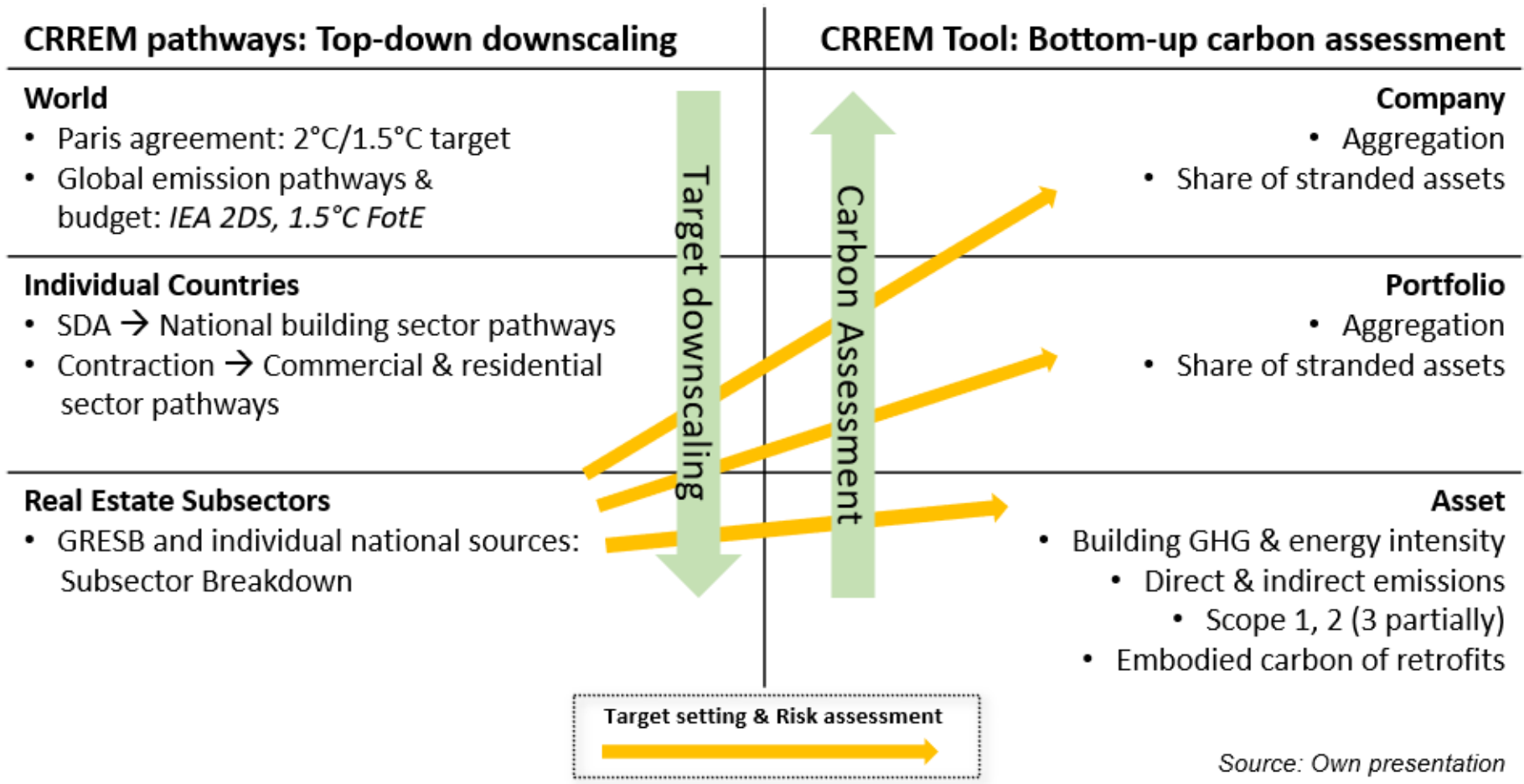
**The Guardian**

Thu 18 Apr 2019



Source: Climate Action Tracker, Dez 2020

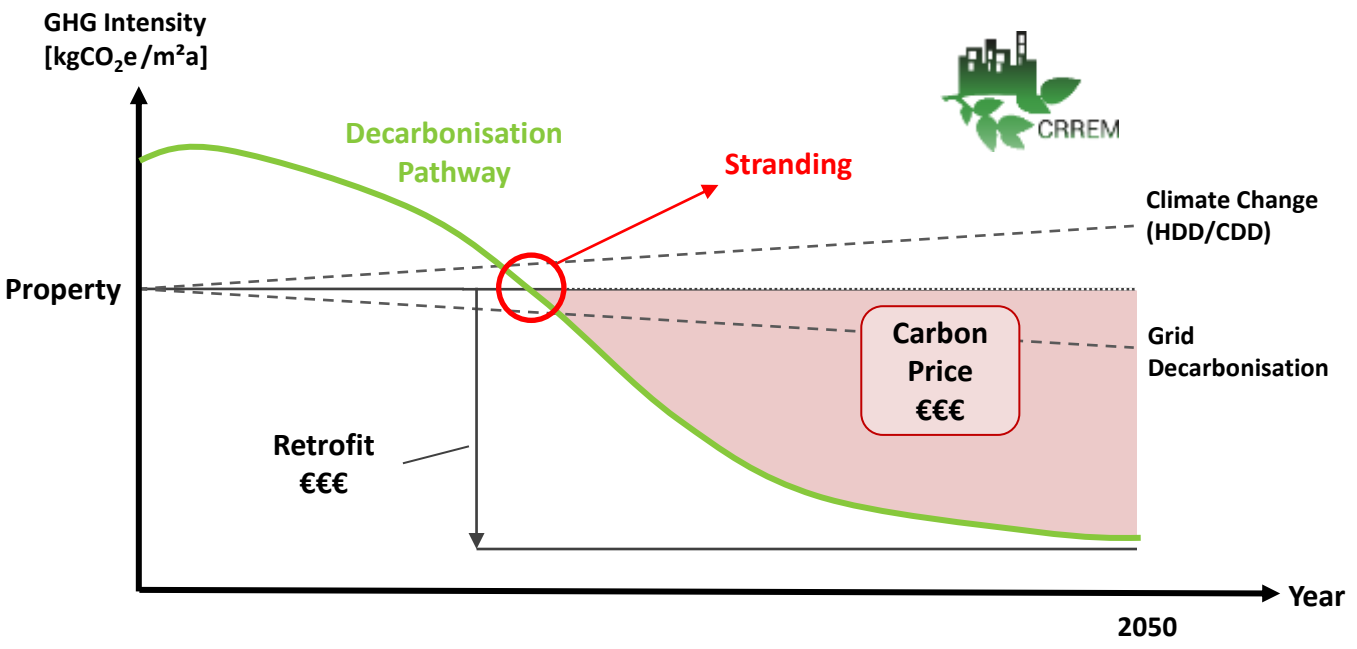
## CRREM PATHWAYS: DOWNSCALING FROM GLOBAL EMISSIONS TO CARBON INTENSITY PATHWAYS



Source: Own presentation

## CARBON RISK ASSESSMENT & MANAGEMENT BASED ON QUANTITATIVE PERFORMANCE DATA AND TARGET SETTING

### ASSET LEVEL STRANDING DIAGRAM



### DECARBONISATION PATHWAYS

Aligned with 1.5°C and 2°C global warming, country- and building type specific

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### BUILDINGS' CARBON PERFORMANCE

Energy consumption, carbon emission factors, grid decarbonisation, changed heating and cooling demand, normalisation..,

=

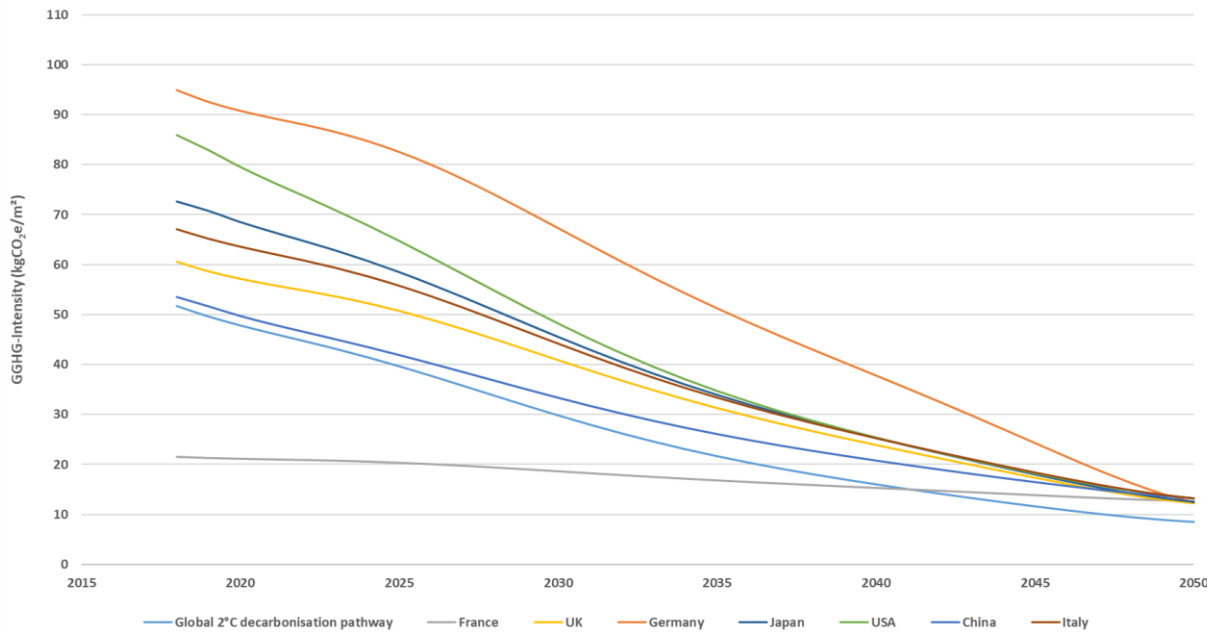
### CARBON RISK ANALYSIS

Year of stranding, excess emissions, carbon costs, energy costs, benchmarking

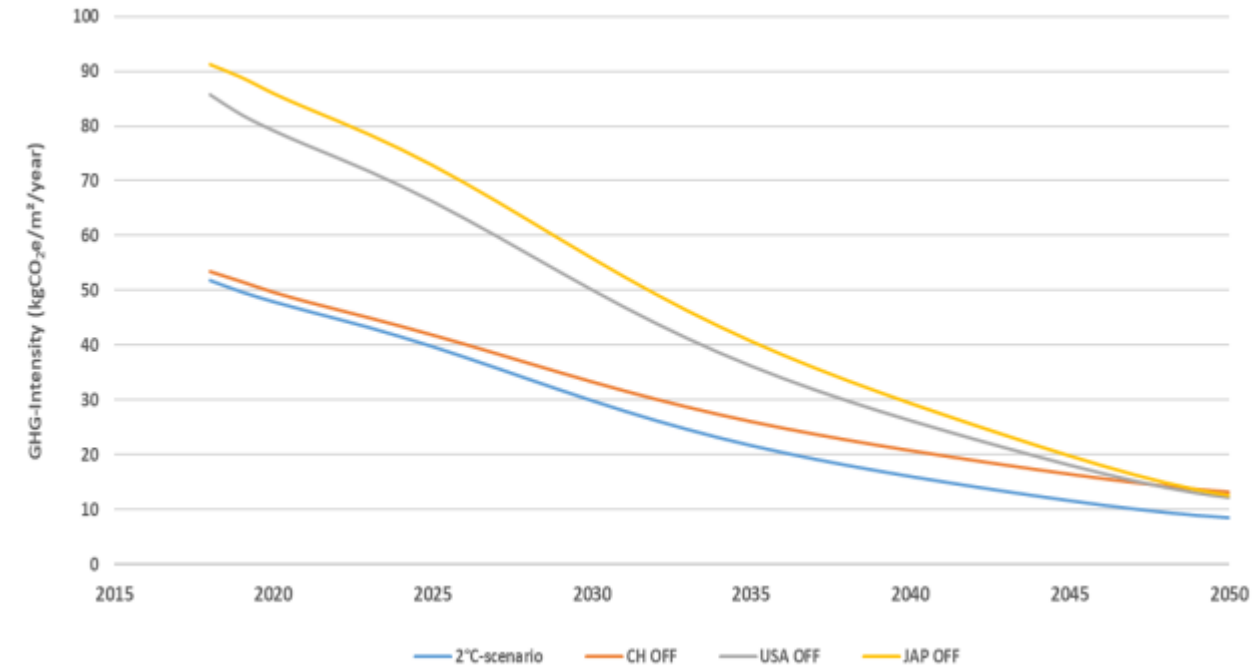
## CRREM PATHWAYS: DOWNSCALING FROM GLOBAL EMISSIONS TO CARBON INTENSITY PATHWAYS

CRREM translates long-term policies (COP21) into clear science-based targets

**National Pathways: Convergence of the carbon intensity pathway of the office building sector in individual countries (2°C target)**



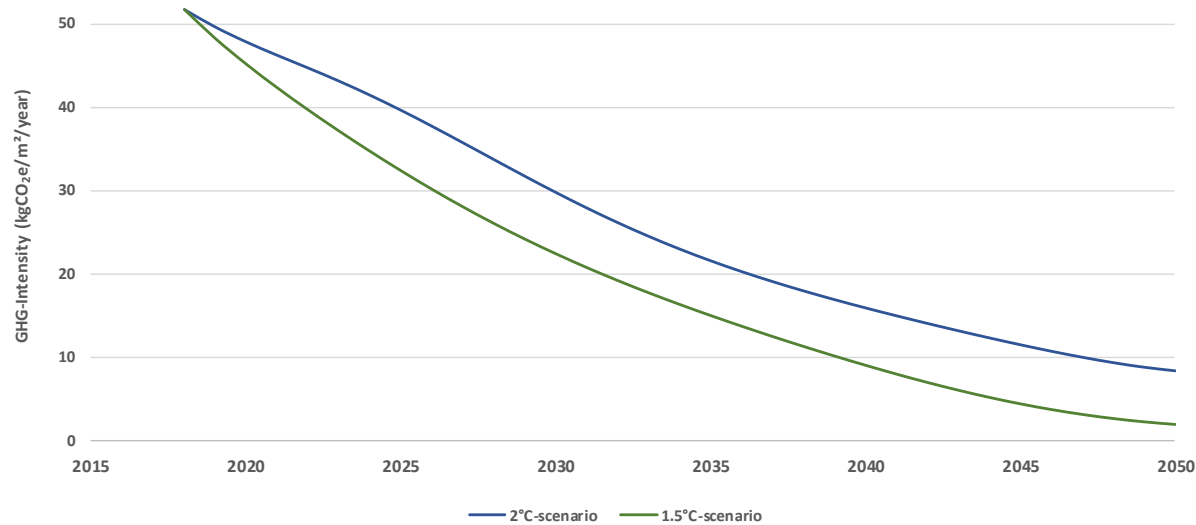
**Office sector: Decarbonisation pathways of global buildings sector, China office vs. USA and Japanese office buildings (2°C target)**



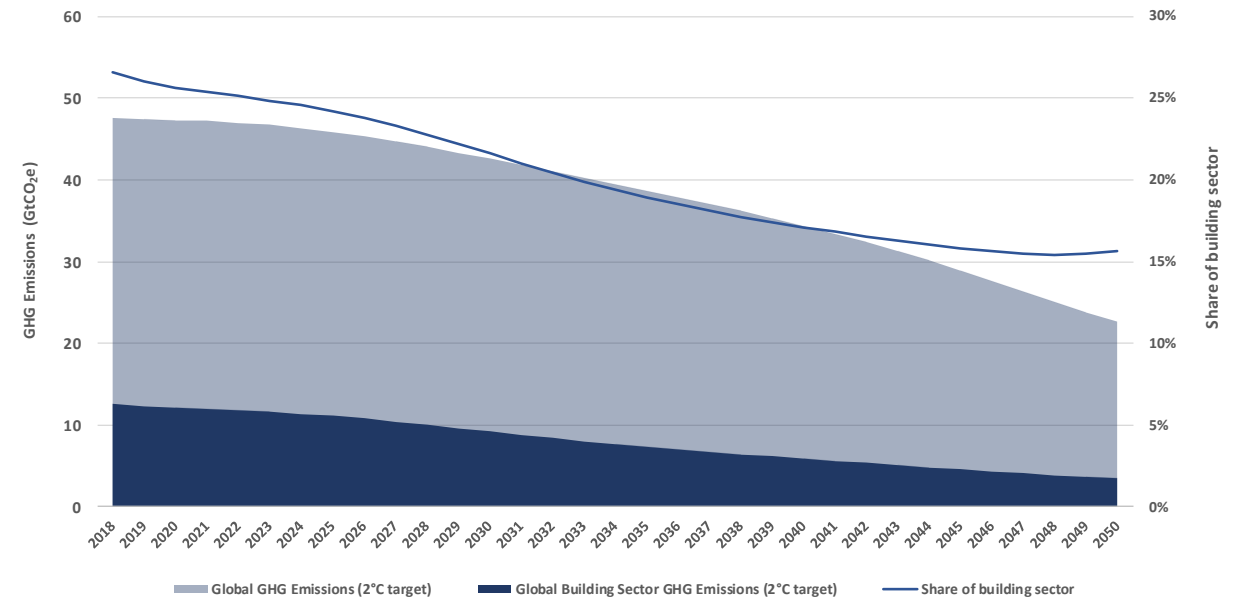
## CRREM PATHWAYS: DOWNSCALING FROM GLOBAL EMISSIONS TO CARBON INTENSITY PATHWAYS

CRREM translates long-term policies (COP21) into clear science-based targets

Global building sector GHG intensity pathway (1.5°C and 2°C target)



Global carbon emissions (2°C target) of all economic sectors and the building sector





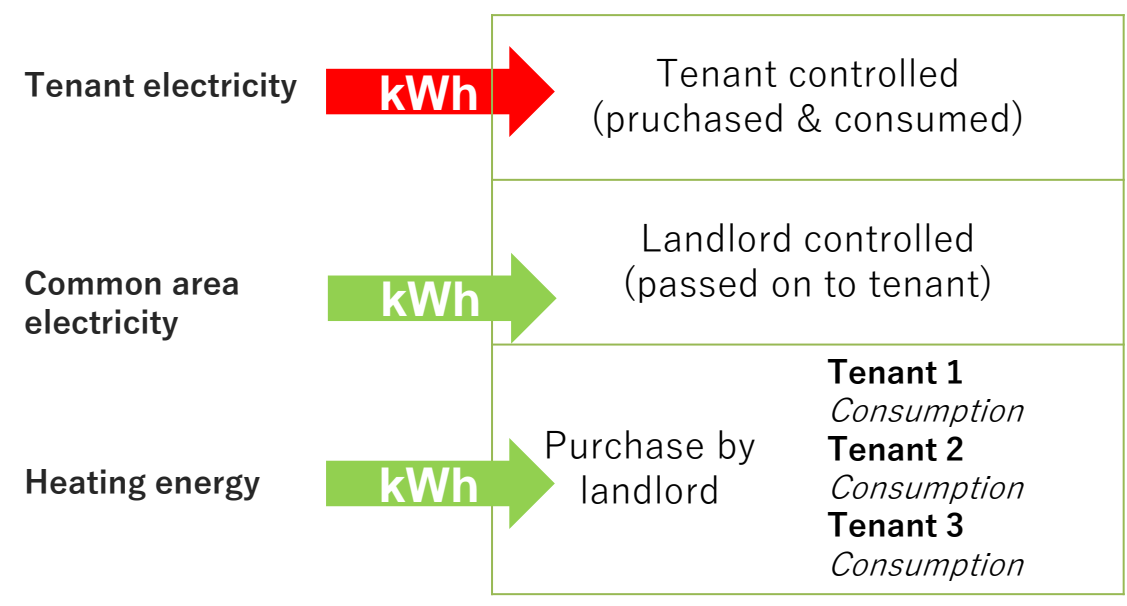
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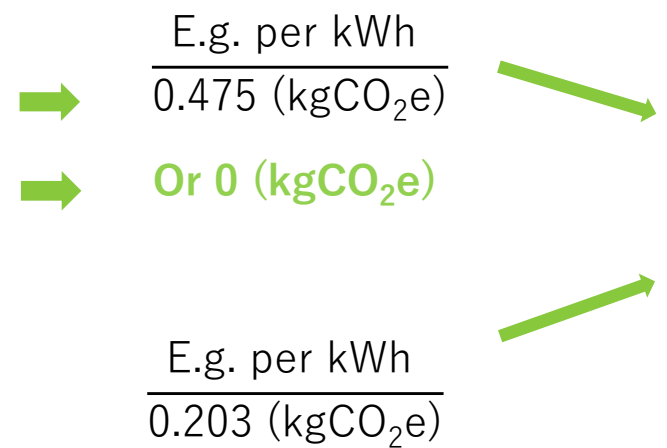
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## WHOLE BUILDING ENERGY

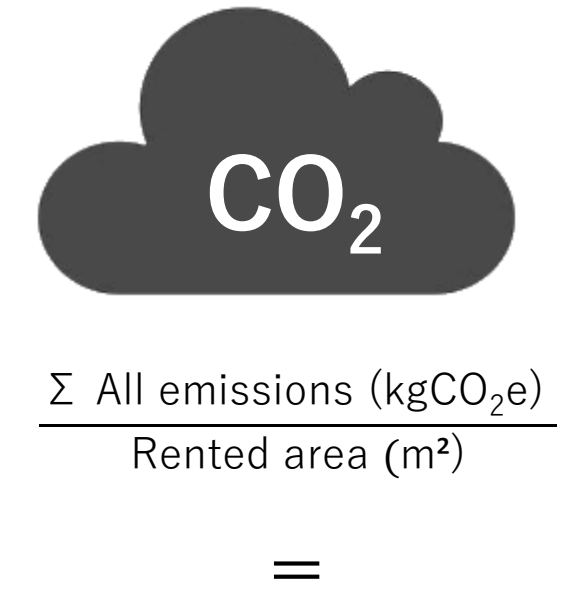


$$\frac{\sum \text{All consumption (kWh)}}{\text{Rented area (m}^2\text{)}} =$$

## CO2 CONVERSION FACTORS



## BUILDING EMISSIONS



**INTENSITY INDICATOR 1**  
Energy consumption per m<sup>2</sup>  
(kWh/m<sup>2</sup>)

**INTENSITY INDICATOR 2**  
CO<sub>2</sub> Emissions per m<sup>2</sup>  
(kgCO<sub>2</sub>e/m<sup>2</sup>)

Source: Alstria, 2020

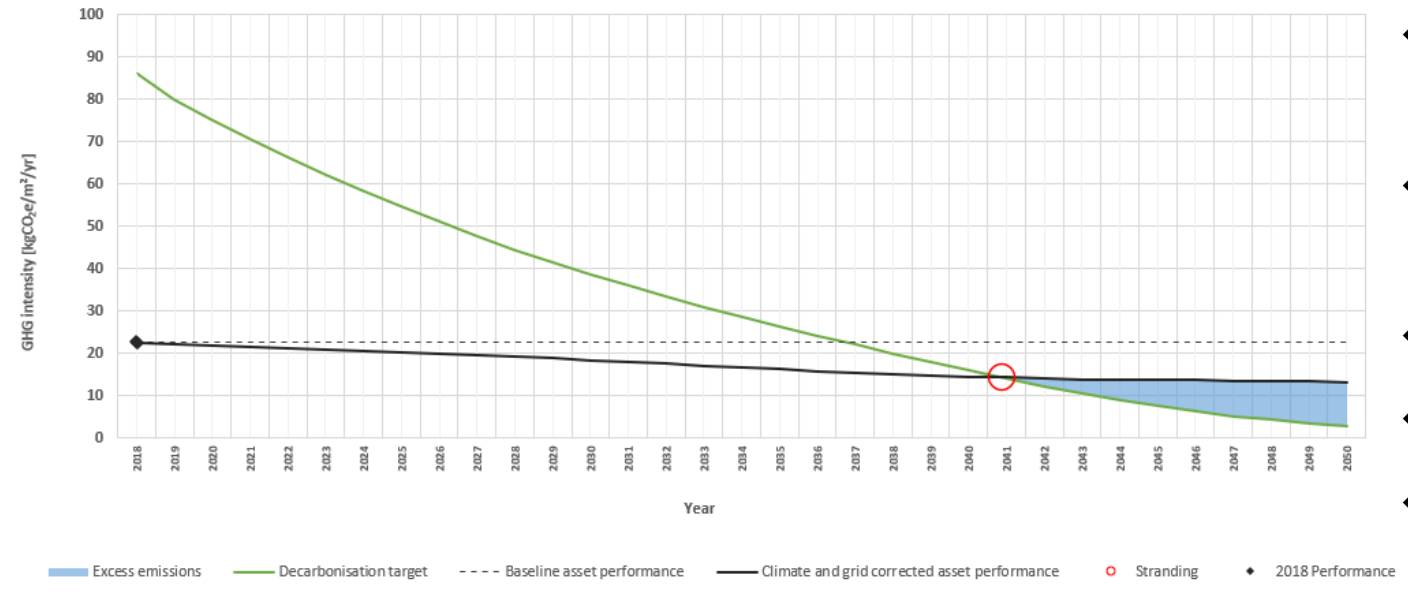
## Key benefits using CRREM:

- ❖ Monetization of transition risk for operational carbon emissions
- ❖ Identification of Paris-alignment on property level & target setting - 1,5 and 2 degree scenario
- ❖ Paris-aligned decarbonization pathways for all countries and use types derived, which can serve as a benchmark
- ❖ Scenario analysis with retrofit
- ❖ Use of default data or own assumptions
- ❖ Vast amount of background data for different metrics (EF, Carbon Price, HDD/CDD, energy mix evolution etc.)
- ❖ Solid downscaling methodology (SDA, Sbti etc.)
- ❖ Kwh and carbon intensities available
- ❖ Aligned with many initiatives (GRESB, INREV, PCAF, etc.)

**STRANDING DIAGRAM (Asset #5 - USA Office)**

Based on global warming target: 1.5°C

Display excess emissions:  Yes

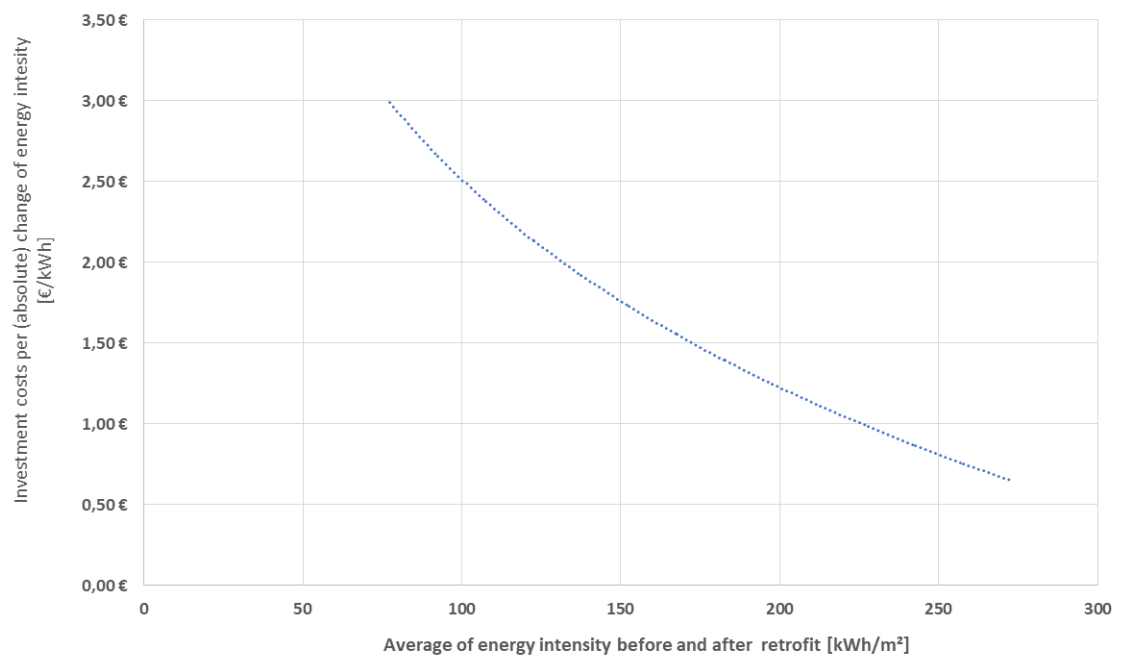


Year of stranding: 2041  
 Carbon value at Risk: GAV input required

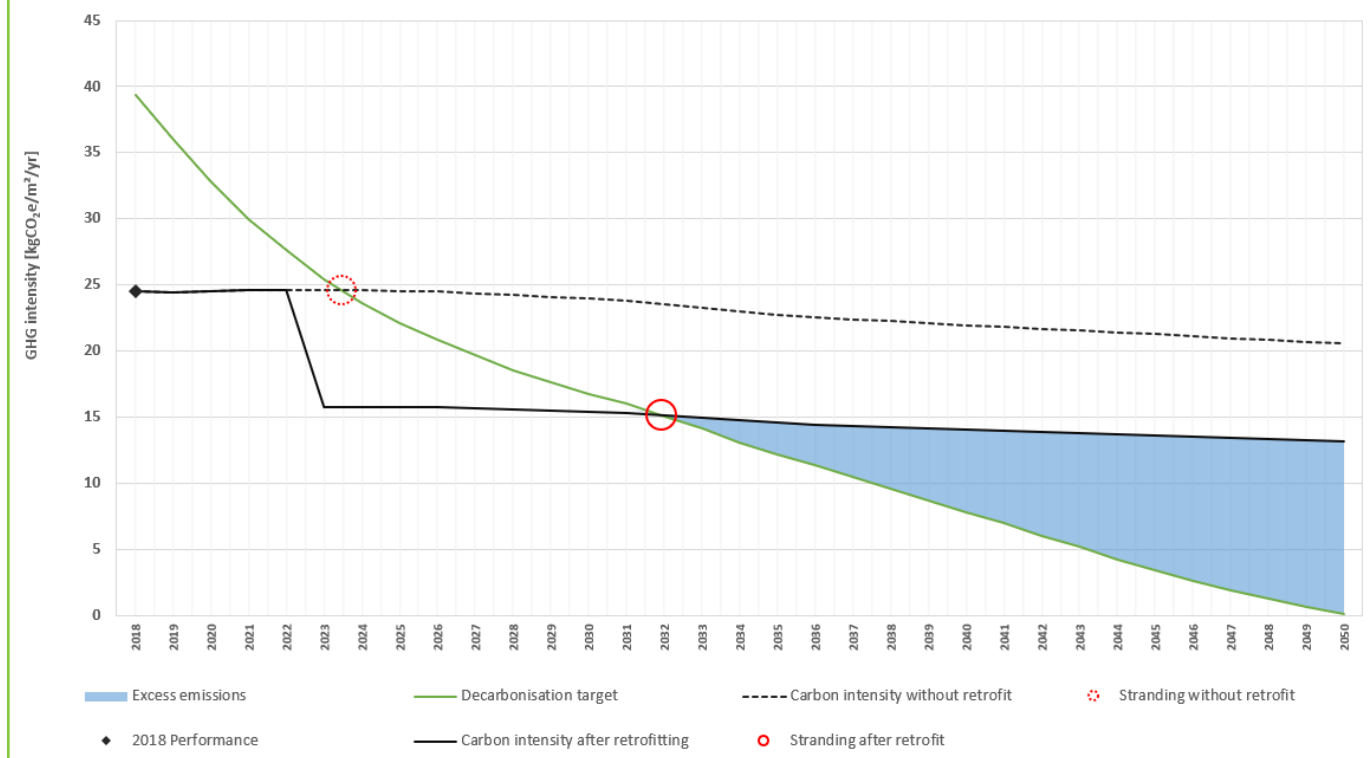
Type of use: Office  
 Country: USA

## QUANTITATIVE CARBON PERFORMANCE AND RISK INDICATORS

### MARGINAL ABATEMENT COST



### RETROFIT SIMULATION: STRANDING DIAGRAM WITH & WITHOUT RETROFIT



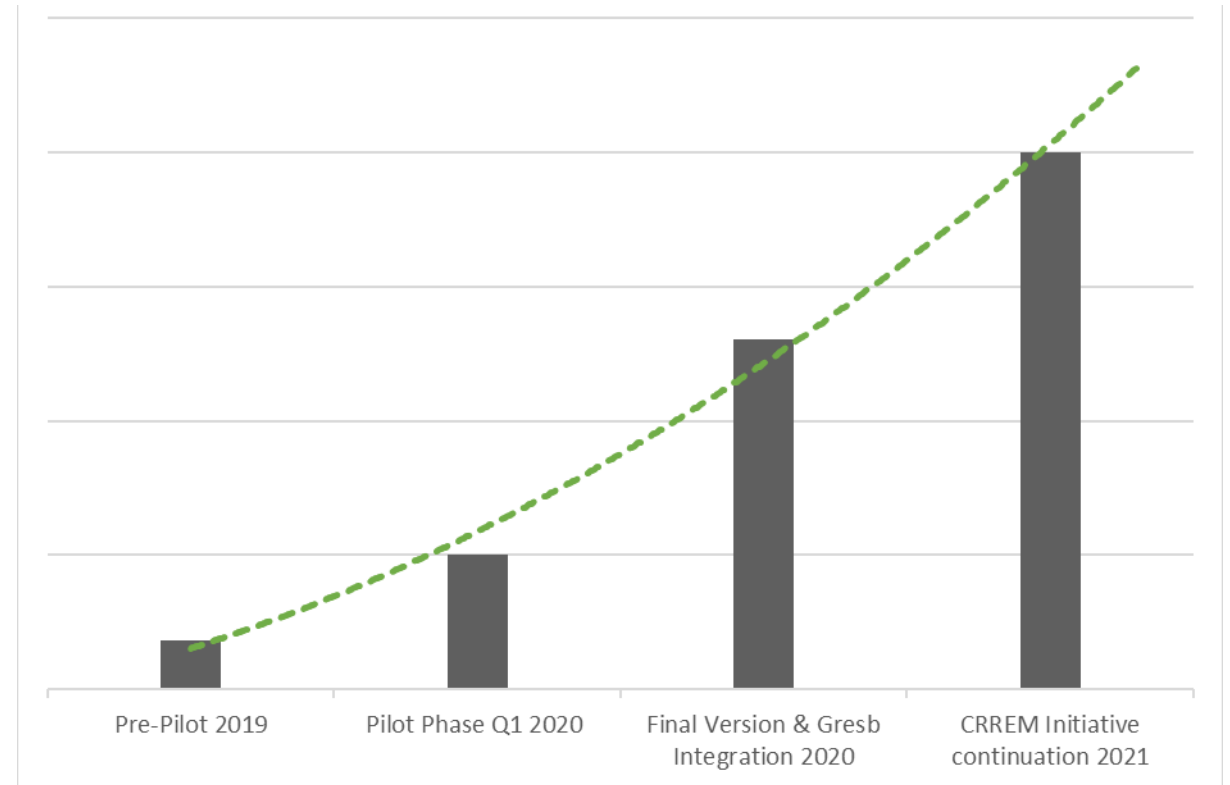
Simulation of investment in energetic retrofit and its effect on carbon risk indicators (based on marginal abatement costs)



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## WIDE INVESTOR & BROADER STAKEHOLDER ENGAGEMENT ACHIEVED TO DATE

- ❖ Over **2.200 assets** optimized.
- ❖ Over **13 million square meters** of lettable space analysed.
- ❖ Total funds of with over **450 bn. Euro Assets under Management** used the tool.



## CRREM Global Scientific & Investor Committee

- ❖ Over **40 active members** ensuring contextual relevancy and alignment to industry expectations
- ❖ **Global** participation & outreach

### ❖ CRREM collaboration & alignment with:

- GRESB
- INREV
- PCAF
- SBTi
- IIGCC
- TCFD
- ULI Greenprint
- NZAOA
- E-CORE etc.

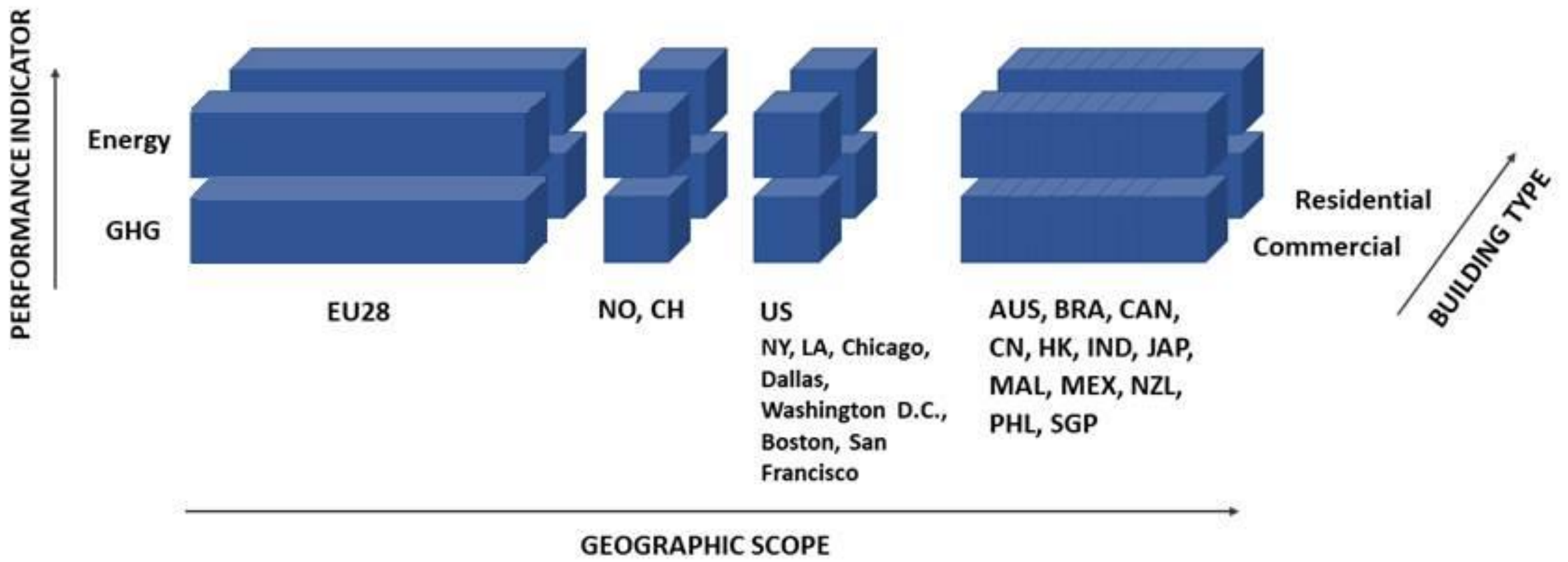
## INSTITUTIONAL INVESTORS & CORPORATE PARTNERS

 <b>Aberdeen Standard Investments</b> Ruairi Revell <i>ESG Manager, Real Estate</i>	 <b>AEW Europe</b> Hans Vresen <i>Managing Director, Head of Research &amp; Strategy</i>	 <b>alstria</b> Alexander Dexe <i>CFO</i> Robert Kitel <i>Head of Sustainability &amp; Future Research</i>
 <b>BNP Paribas Real Estate Consult</b> Hermann Horster <i>Regional Director, Head of Sustainability</i>	 <b>ECE Projektmanagement</b> Maria Hill <i>Director Sustainability &amp; Internal Services</i>	 <b>Savills Investment Management</b> Barbara Linnemann <i>Head of Asset Management Germany</i> Gerhard Lehner <i>Managing Director, Head of Fund Management</i>
 <b>Metro AG</b> Olaf Schulze <i>Director Energy Management, Investments &amp; Technical Solutions</i>	 <b>Nordea L&amp;P</b> Peter Sandahl <i>Head of Sustainability</i>	 <b>PGGM</b> Mathieu Elshout <i>Senior Director Private Real Estate</i>
 <b>Union Investment</b> Mr Jan von Mallinckrodt <i>Head of Sustainability &amp; Head of Segment Development</i>	 <b>DWS Real Estate</b> GmbH, Matthias Neumann CFO	 <b>APG Asset Management</b> Derk Welling <i>Senior Responsible Investment &amp; Governance Specialist</i>

## INDUSTRY BODIES & ACADEMICS

 <b>CDP</b> Alberto Carrillo Pineda <i>Director Science Based Targets and Renewable Energy</i>	 <b>UNEP FI</b> Matthew Ulterino, <i>Principal,</i> UNEP FI
 <b>DGBC</b> Martin Mooij <i>Head of Certification and Project manager DGBC Deltaplan sustainable renovation</i>	 <b>DGNB</b> Dr Anna Braune <i>Director of Research and Development</i>
 <b>PCAF</b> Guidehouse (PCAF) Giel Linthorst	 <b>DEEP</b> EEFIG De-risking Energy Efficiency Platform Carsten Glenting <i>Head of Strategy, Finance, and Economics</i>
 <b>Urban Land Institute</b> Marta Schantz <i>Senior Vice President of 'Greenprint Center for Building Performance'</i>	 <b>INREV</b> Federica Miano <i>Public Affairs Manager</i>

CRREM pathways: [www.CRREM.org](http://www.CRREM.org)  
 INCLUDING RESIDENTIAL BUILDINGS & KEY GLOBAL REAL ESTATE MARKETS







*“CRREM is a very insightful and practical tool that gives us very clear guidance on the environmental performance of our portfolio and supports us in making future investment decisions for both new acquisitions as capex projects.”*

*Ronald van der Waals, fund manager CBRE Dutch Office Fund, managed by CBRE Global Investors*

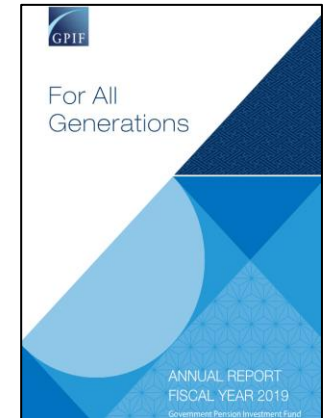
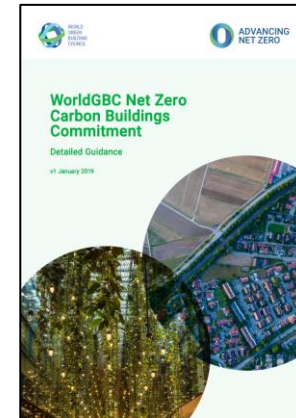
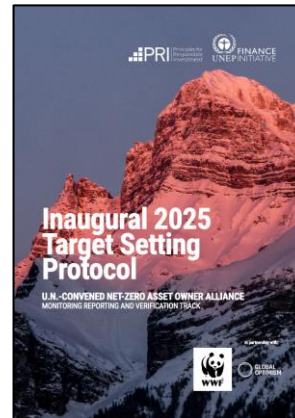
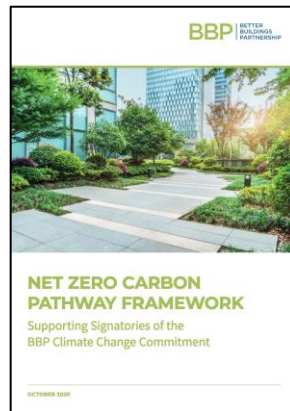
*„CRREM is a helpful tool that can support companies in assessing the required reduction in carbon emissions at asset level.“*

*Fernanda Amemiya, Sustainability Reporting Manager, Landsec*



## LIST OF REPORTS WITH REFERENCE TO CRREM (EXTRACT):

- ❖ ULI: Greenprint Performance Report, Volume 11
- ❖ IIGCC: PARIS ALIGNED INVESTMENT INITIATIVE: Net Zero Investment Framework
- ❖ Alstria: Sustainability report 2029/20
- ❖ EU TEG: Technical Report: Taxonomy: Final report of the Technical Expert Group on Sustainable Finance, March 2020
- ❖ GPIF: ESG Report, Annual Report
- ❖ UNEP FI: Beyond the Horizon, New Tools and Frameworks for transition risk assessments



## CRREM INITIATIVE CONTINUATION FUNDED BY THE LAUDES FOUNDATION!

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—— Foundation

&



### Partners:



G R E S B<sup>®</sup>

### Main Project Targets:

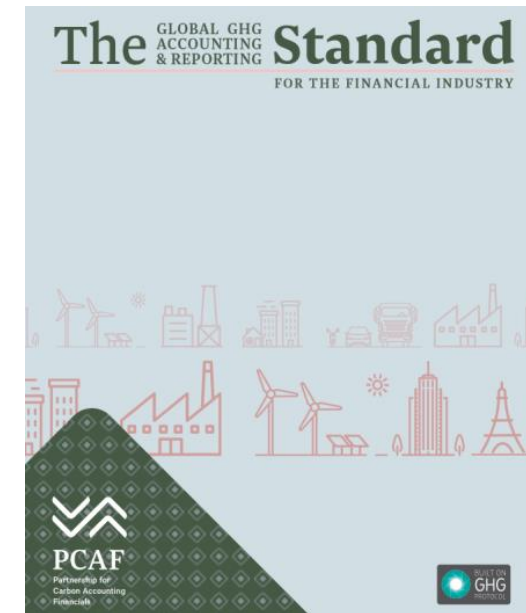
- ❖ Update Pathways/targets for the industry (1x yearly)
- ❖ Update Software (e.g. in respect of embodied carbon) for the industry
- ❖ Produce content via reports, scientific articles
- ❖ Engage with net zero and other initiatives to ensure multipliers
- ❖ Set up a governance structure
- ❖ Engage with local GBCs in order to ensure local data provision

## CRREM & PCAF collaboration

- ❖ Collaboration with the Partnership for Carbon Accounting Financials to measure CO2 in the Real Estate Sector regarding “financed emissions” of banks
- ❖ Ensuring alignment of the CRREM Reporting documents / results for PCAF (Score 1 of data quality for CRE)
- ❖ Upcoming: Establish together „Guidance for Carbon Reporting in Real Estate“

## CRREM & UNEP FI collaboration

- ❖ CRREM collaboration with the UNEP FI Collective Commitment to Climate Action consultancy
- ❖ UNEP-FI CCCA Group: presentation of CRREM work to banks
- ❖ Sub-module: CRREM - UNEP FI - Real Estate transition risk & TCFD





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# Q & A



## CRREM | CARBON RISK REAL ESTATE MONITOR

info@crrem.eu [WWW.CRREM.EU](http://WWW.CRREM.EU) / [WWW.CRREM.ORG](http://WWW.CRREM.ORG)

**iiö**  
INSTITUTE FOR REAL ESTATE  
ECONOMICS

## CRREM & TCFD

- ❖ CRREM reporting templates and best-practice TCFD reporting for real estate
- ❖ CRREM input can be directly used for operational carbon and resulting transition risk reporting
- ❖ Carbon intensities and stranding risk figures relevant



## CRREM & E-CORE

- ❖ CRREM collaboration with the Ecore ESG circle of Real Estate, using CRREM for the alignment of the targets in 2030 & 2050
- ❖ CRREM to assist in the ESG scoring model in cluster II
- ❖ Ecore is using CRREM to show when assets are no longer compliant and become “stranded”



## CRREM & DEEP collaboration

- ❖ DEEP Database already used for the underlying data in the CRREM tool for retrofit costs
- ❖ Further collaboration & data exchange between DEEP & CRREM
- ❖ Promote DEEP uptake via CRREM (and vice versa)
- ❖ Link: <https://deep.eefig.eu/>



## CRREM-GRESB Integration

- ❖ Stepwise integration of CRREM Risk Analysis and GRESB
- ❖ GRESB participants to receive results of CRREM Risk Analysis within GRESB Portal
- ❖ Property types and input parameters are aligned with GRESB ESG Benchmark

