



# CARBON RISK REAL ESTATE MONITOR

DR. JENS HIRSCH

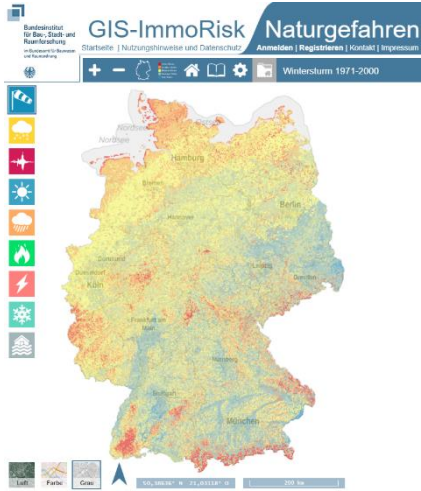
HEAD OF RESEARCH | IIÖ INSTITUTE FOR REAL ESTATE ECONOMICS

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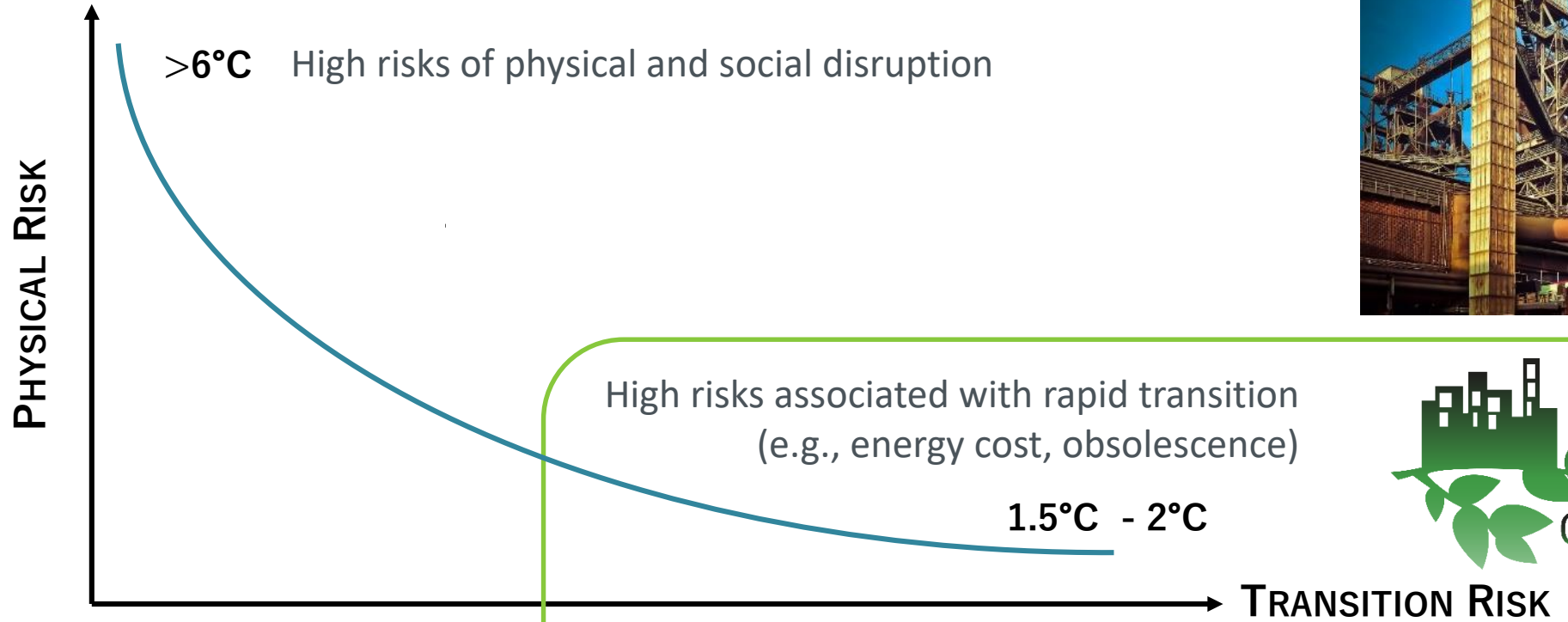
UNEP Property Working Group in-person meeting | Luxembourg City | 27.11.2019

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## PHYSICAL RISK + TRANSITION RISK



**“STRANDED ASSETS** are properties that will be exposed to the risk of early economic obsolescence due to climate change because they will not meet future regulatory efficiency standards or market expectations.” (CRREM, 2019)

**Climate science:** Climate impact and carbon emission budgets/pathways compatible with limiting global warming to  $x.x^{\circ}\text{C}$



**Politics:** Commitment to limit global warming to  $2^{\circ}\text{C}$  or better  $1.5^{\circ}\text{C}$



**New mandatory and voluntary requirements to (sustainable) finance & carbon risk**



## CARBON RISK REAL ESTATE MONITOR

### CRREM pathways

- Paris-aligned decarbonisation & energy reduction pathways
- Per country and building type

### CRREM Tool

- Assess the carbon and energy performance of buildings and portfolios
- Benchmark against CRREM pathways and peers
- Derive indicators for risk management, reporting, disclosure

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

DOWNSCALING

Global GHG budget and emissions pathway (consistent with a certain amount of global warming)



EU emission pathway (convergence of per capita emissions until 2050)



EU commercial real estate (CRE) sector



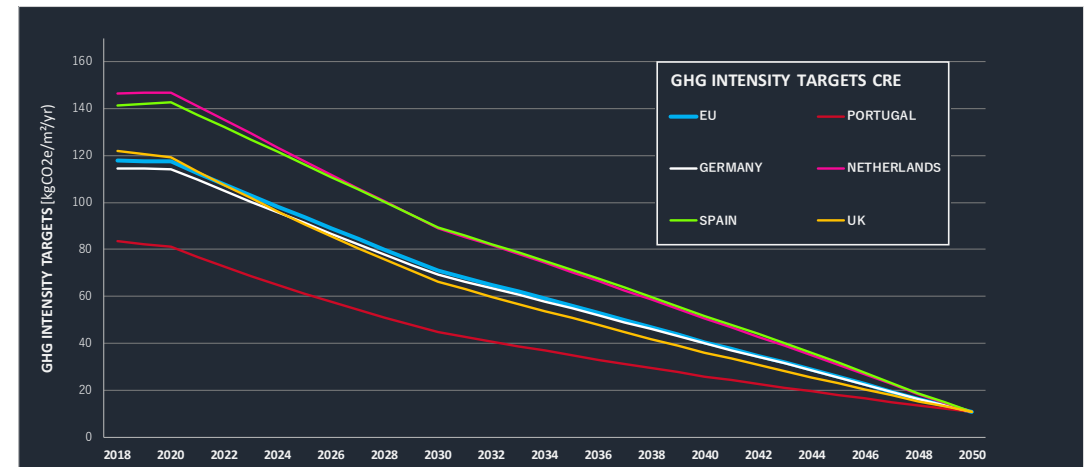
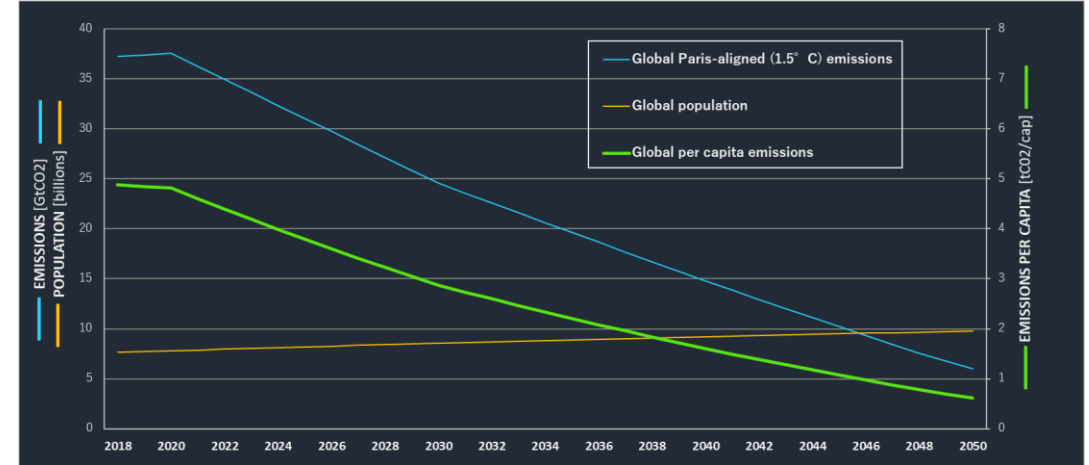
Country-specific targets (convergence of GHG intensity)



Sector-specific GHG targets for each country



Energy reduction pathway

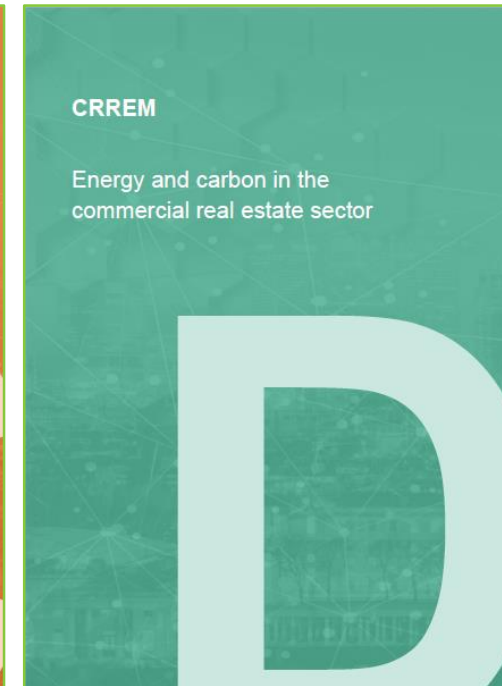
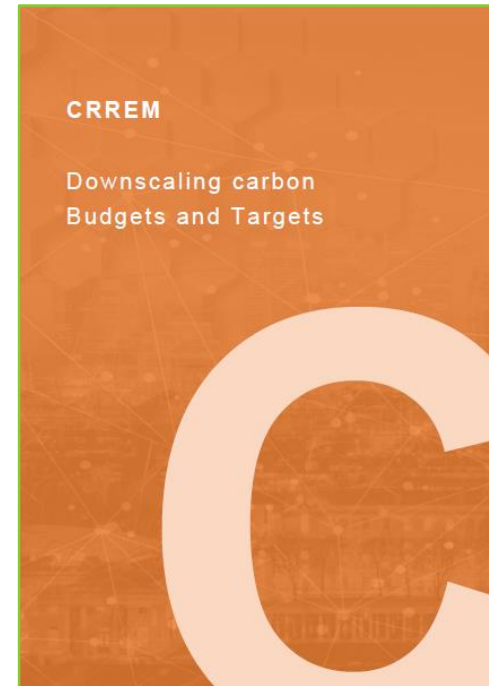
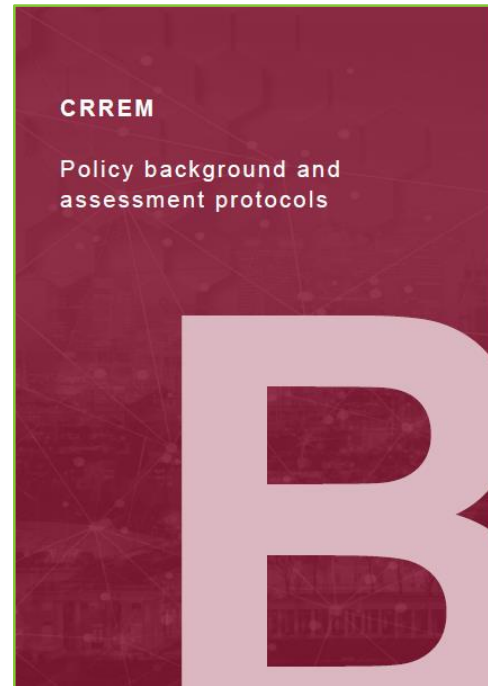
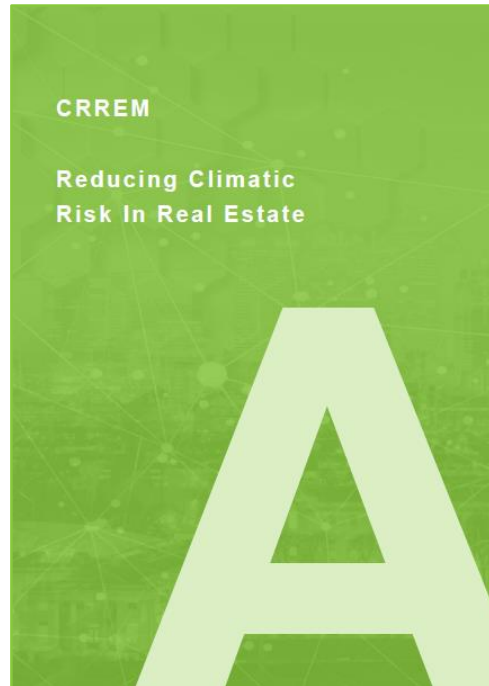
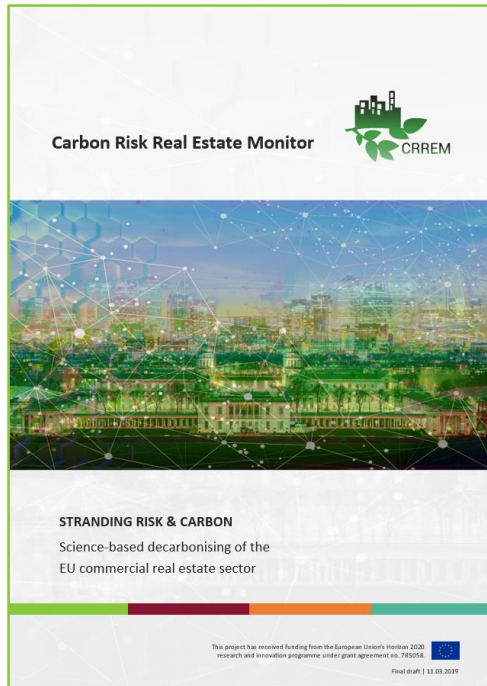


## STRANDING RISKS & CARBON

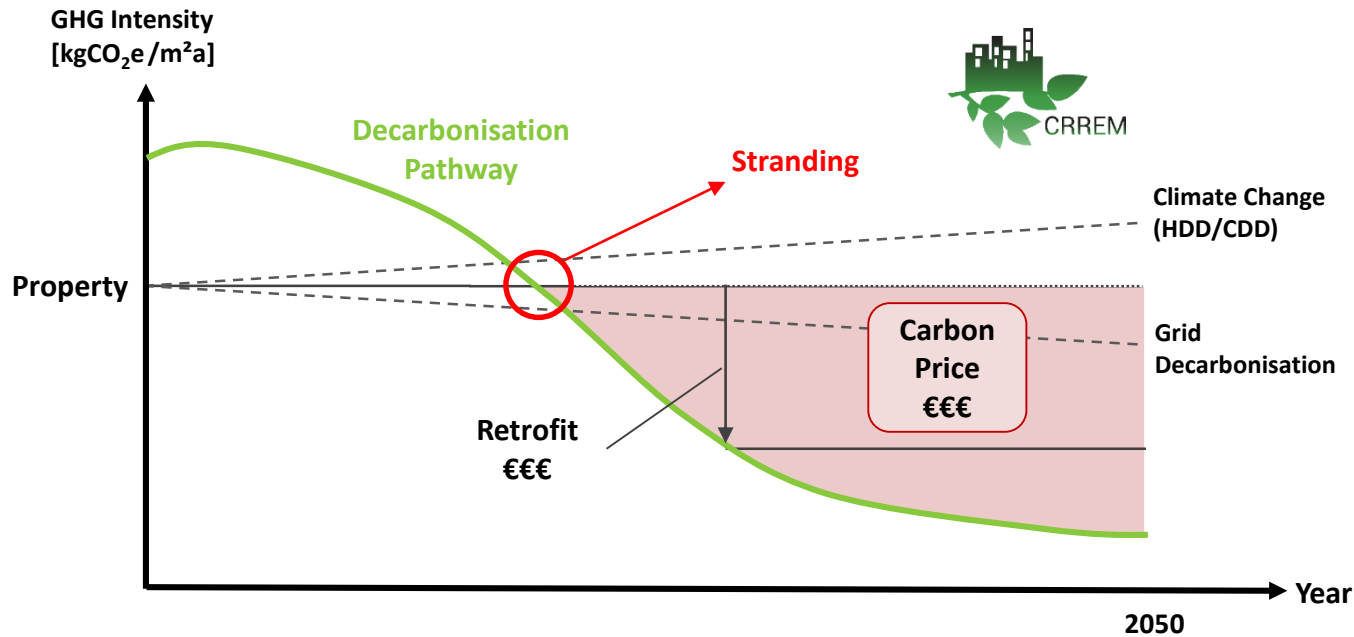
available on  
[www.CRREM.eu](http://www.CRREM.eu)

### Science-based decarbonising of the EU commercial real estate sector

available on  
[www.CRREM.eu](http://www.CRREM.eu)



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



### DECARBONISATION PATHWAYS

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

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### BUILDING'S CARBON PERFORMANCE

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

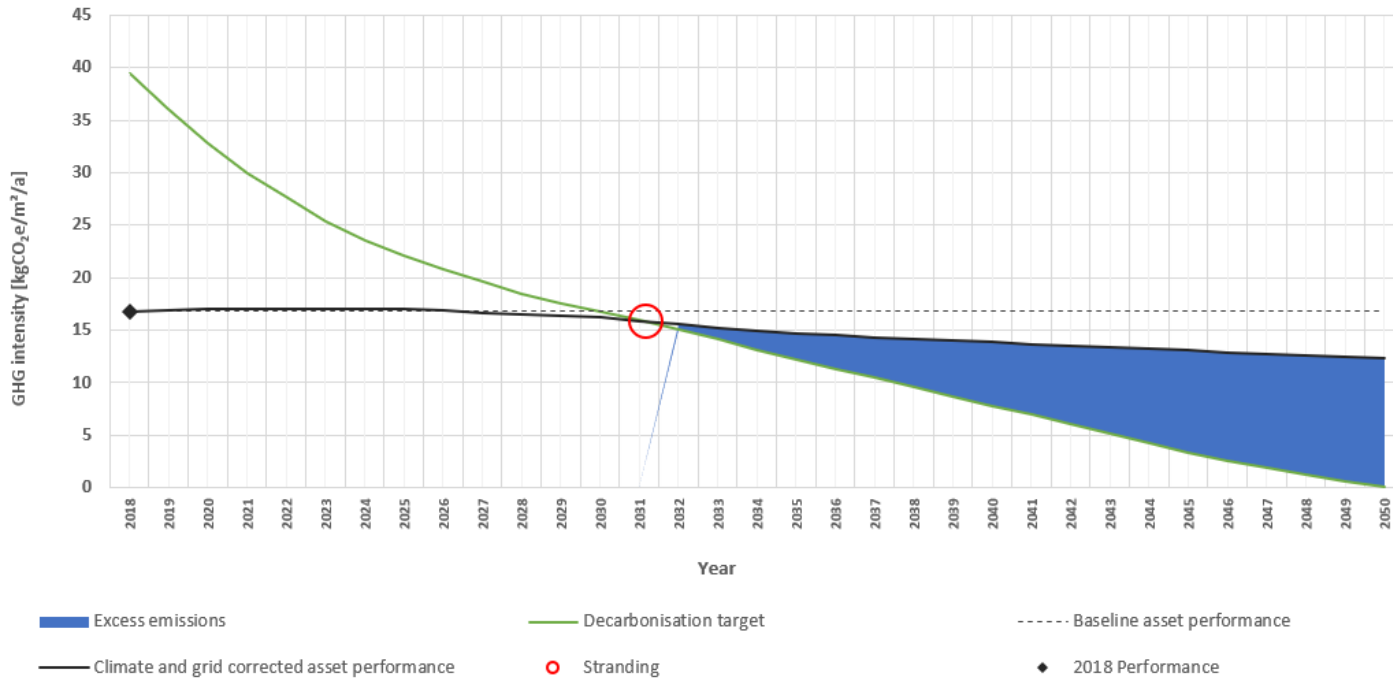
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### CARBON RISK ANALYSIS

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

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

CRREM TOOL STRANDING DIAGRAM



Year of stranding: 2032

Type of use: Office

Country: Austria

### DECARBONISATION PATHWAYS

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

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

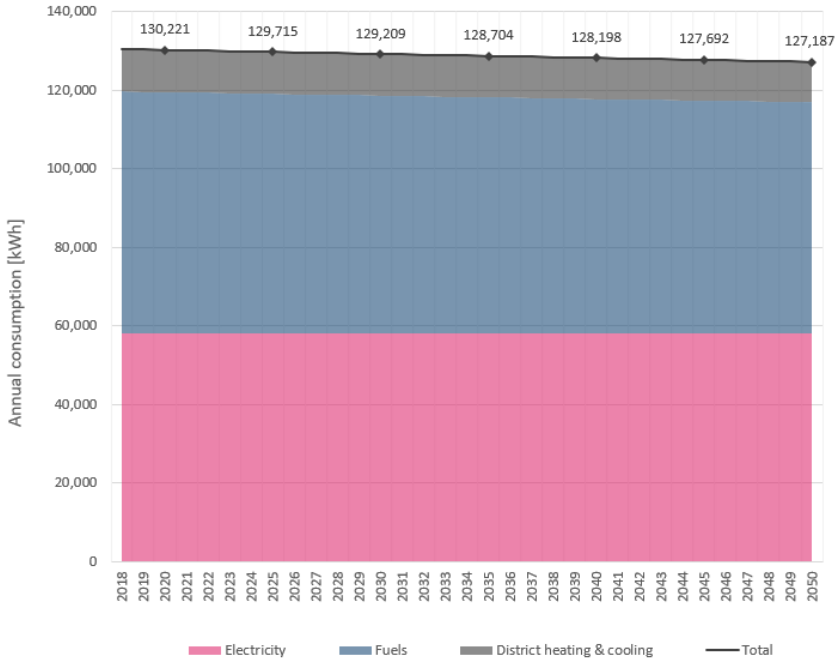
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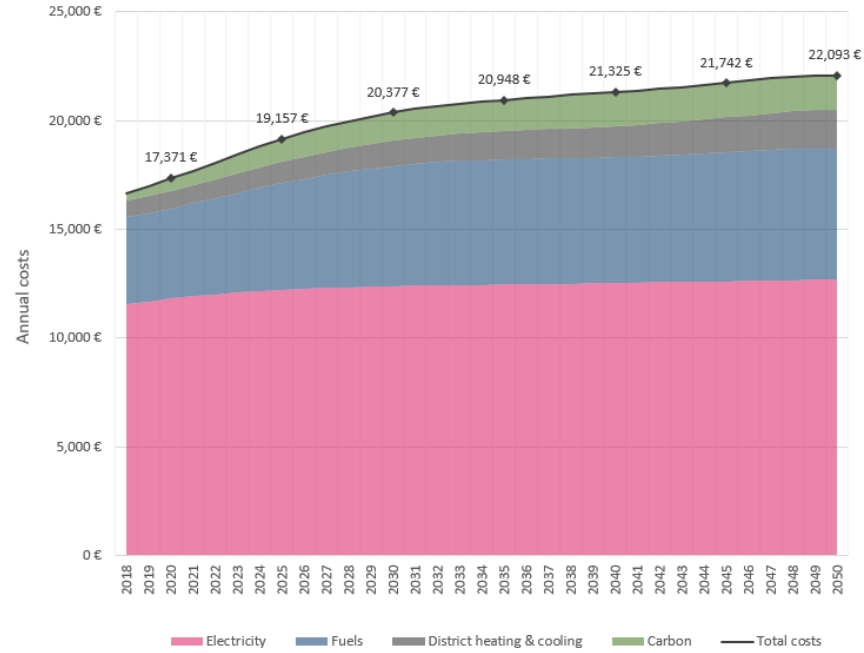
## QUANTITATIVE CARBON PERFORMANCE AND RISK INDICATORS

### ENERGY CONSUMPTION



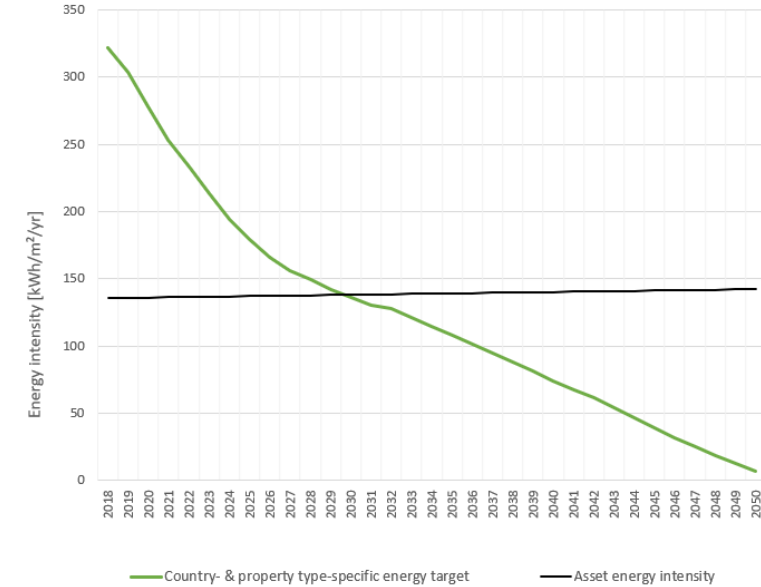
Based on (optionally) normalised baseline consumption and projected data considering changed heating and cooling demand

### COSTS OF ENERGY AND CARBON



Based on energy and carbon price projections (IEA, EU etc.)

### ENERGY REDUCTION PATHWAYS

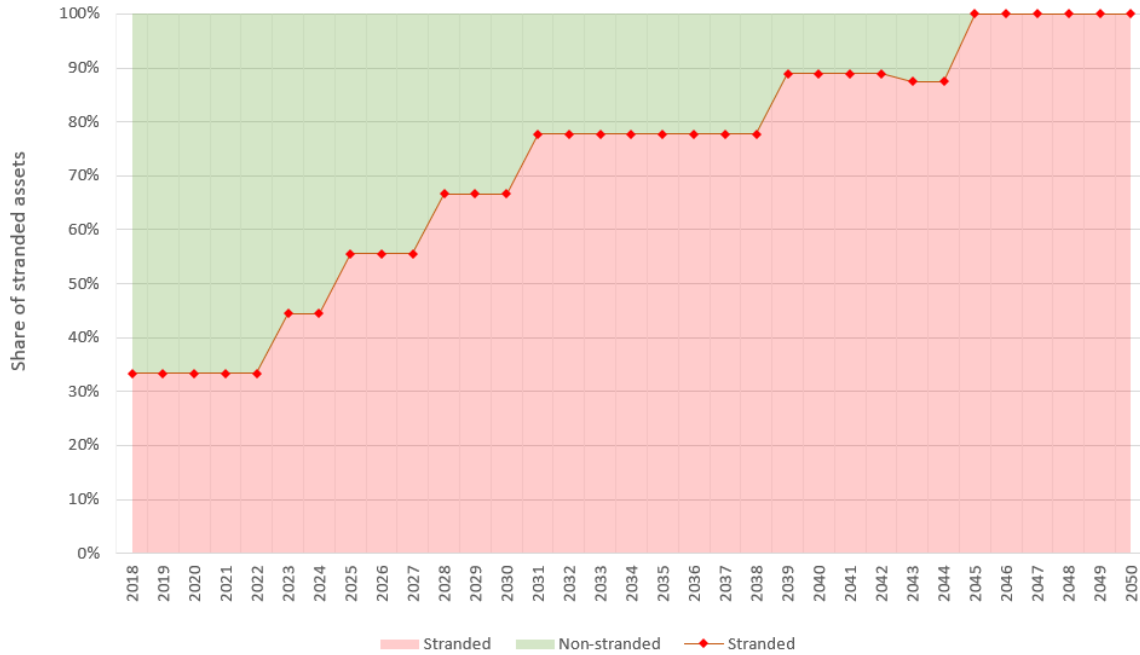


Energy targets based on country-specific sector-wide emission factor reflecting energy mix and evolving grid decarbonisation



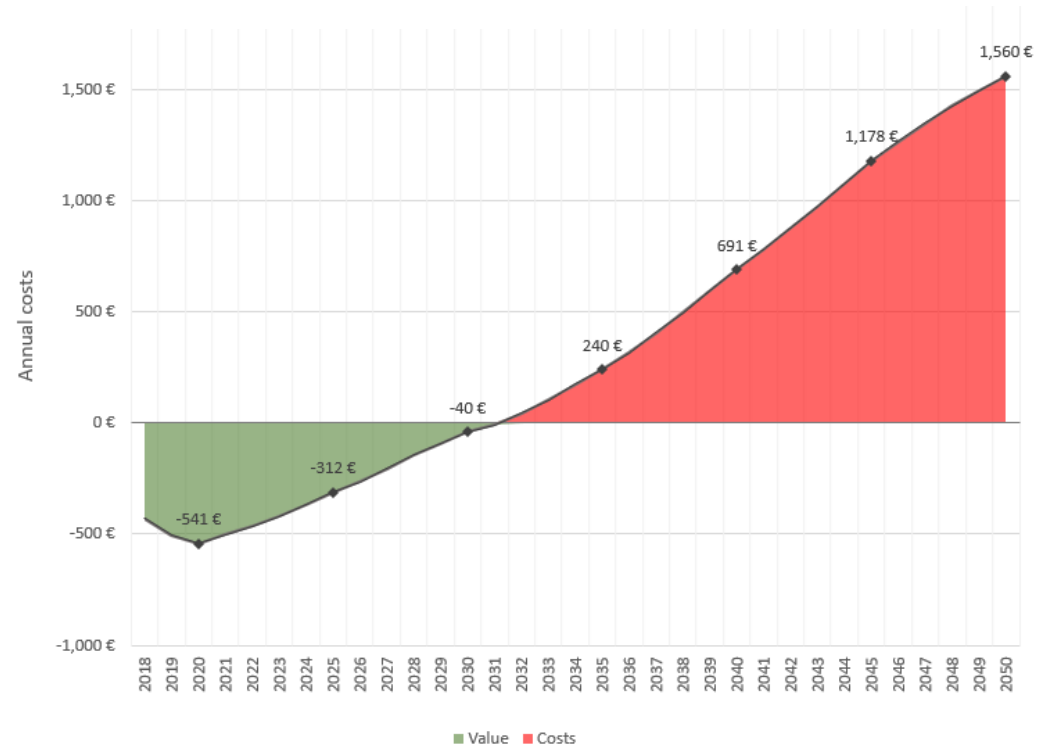
## QUANTITATIVE CARBON PERFORMANCE AND RISK INDICATORS

### SHARE OF STRANDED ASSETS OVER TIME



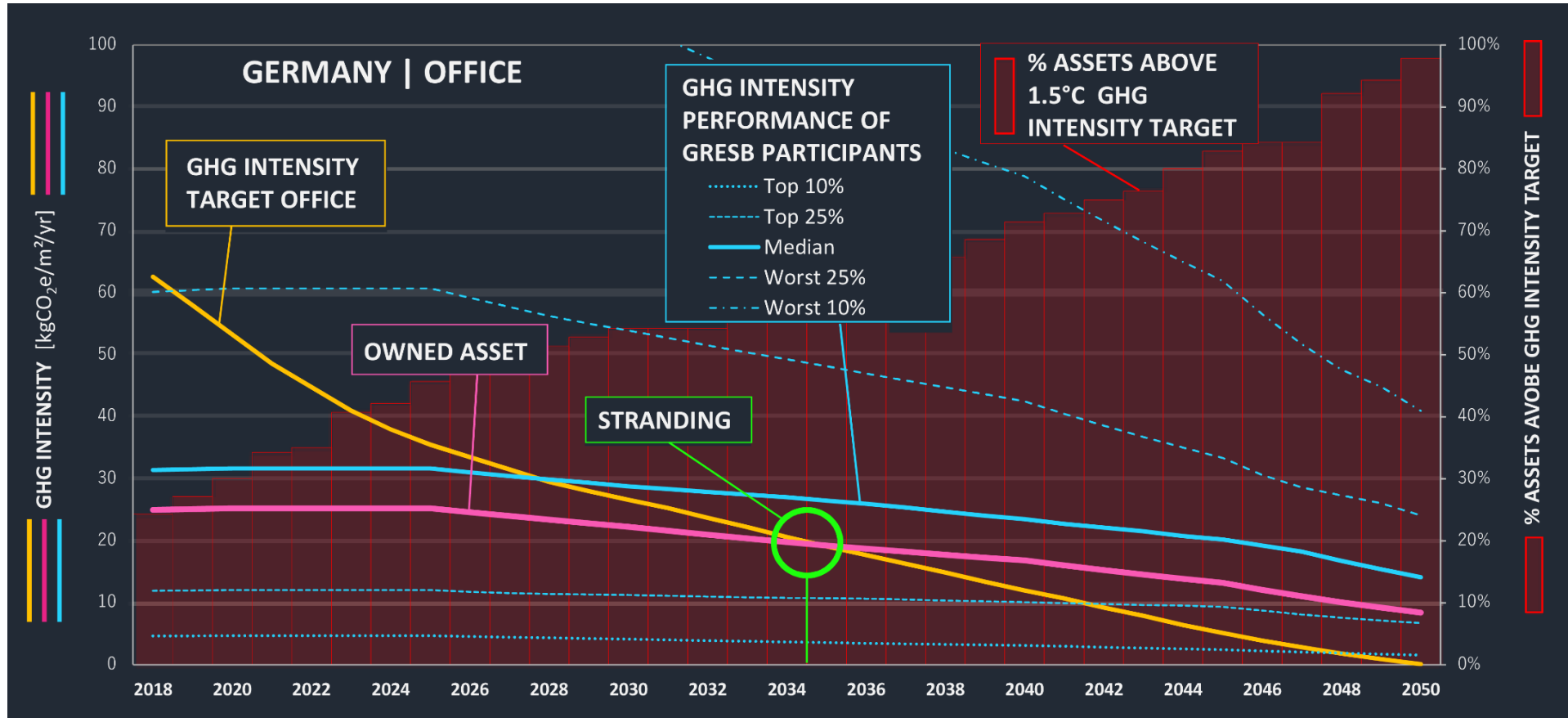
Shares based on number of buildings, floor area or asset value.

### COSTS OF EXCESS EMISSIONS ABOVE TARGET



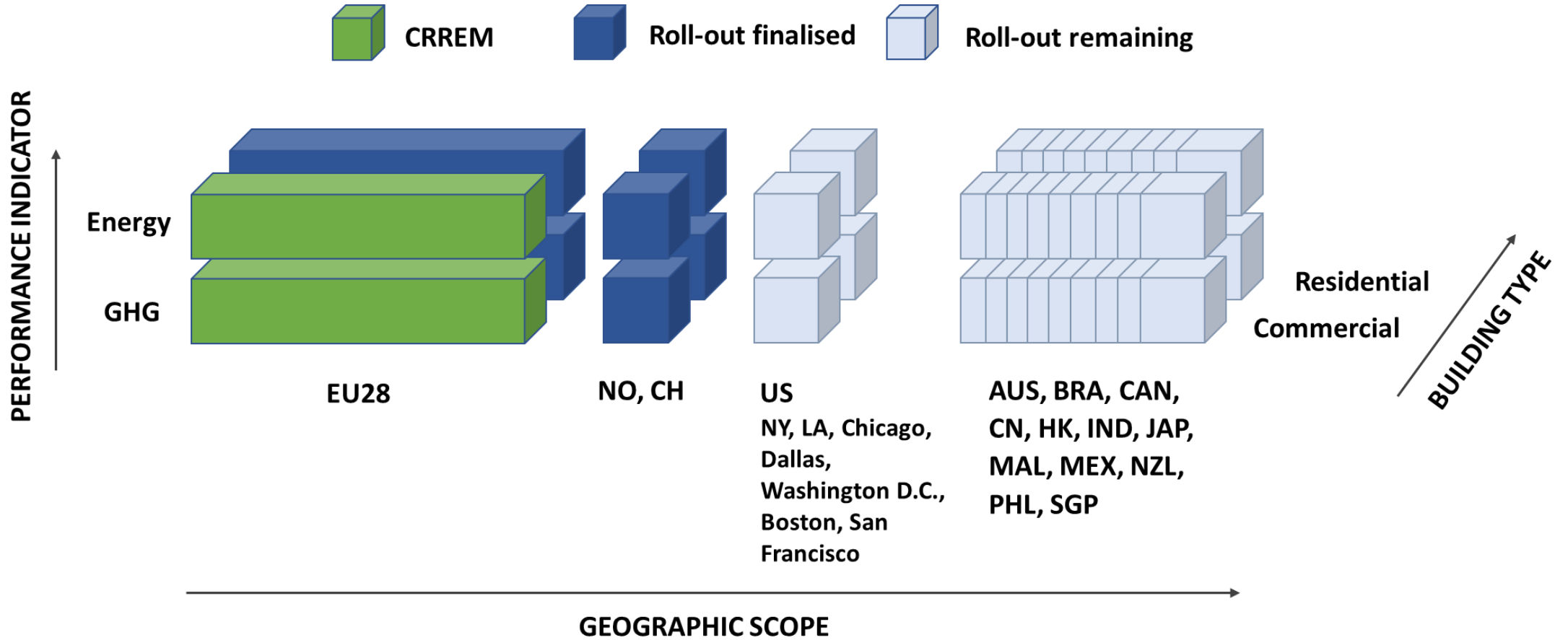
Analogous to the NY City model with penalties for each ton of emission above emission limit (and possibility of trading emission credits)

Visualise your long-term decarbonisation pathway together with individual assets or portfolios performance until 2050  
 Current and projected future position compared with peers from the annual GRESB assessment



Aligned...  
 Property types  
 Input parameters

## RECENT EXTENSION OF SCOPE THANKS TO FUNDING BY MAJOR GLOBAL INVESTORS:



## NEXT STEPS:

- Pilot Testing with Members of CRREM European Investor Committee
- Publication of pathways on [www.crrem.eu](http://www.crrem.eu)
- Public consultation

## INTENDEND EXTENSION OF SCOPE:

- Further regional exstension of pathways (with regional initiatives)
- Pathways for further property types (e.g. infrastructure)
- Extension of CRREM Tool beyond EU commercial real estate
- Refinement of CRREM Tool functionality (abatement costs, embodied carbon, online tool...)





CRREM | CARBON RISK REAL ESTATE MONITOR

[WWW.CRREM.EU](http://WWW.CRREM.EU)

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