

Cutting Edge ESG Applications

A dialogue of perspectives in Real Estate



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What is CRREM?



The Carbon Risk Real Estate Monitor (CRREM) provides the real estate industry with **transparent, science-based decarbonization pathways** aligned with the Paris Climate Goals of **limiting global temperature rise to 2°C, with ambition towards 1.5°C**. CRREM considers both **operational carbon and energy intensities**.

CRREM

What is CRREM?

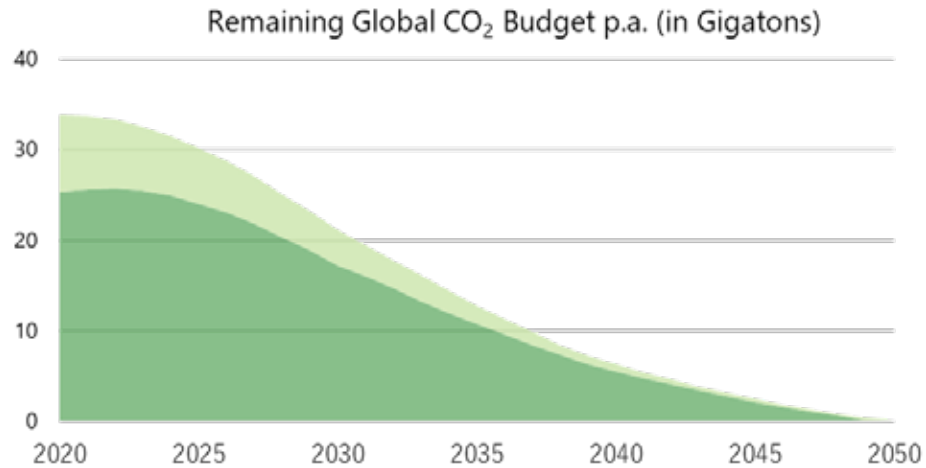


CRREM...

- ... evaluates and tracks **operational** carbon/energy
- ... differentiates performance targets based on **use and location**
- ... provides pathways for both **carbon and energy intensity**
- ... pushes for **global alignment** with other sectors / approaches / initiatives
- ... is a **whole building** approach to holistically evaluation asset decarbonization
- ... uses straightforward **intensity KPIs** (per SqFt, SqM) for tracking

CRREM

Global CO₂ & kWh Intensity Pathways

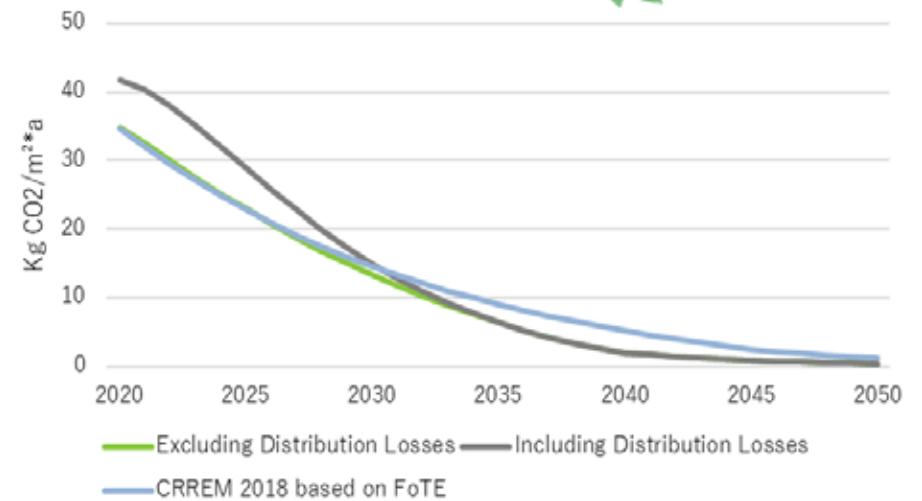
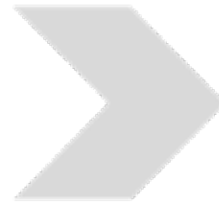


■ Other Sectors ■ Building Operations

ipcc
INTERGOVERNMENTAL PANEL ON
climate change



iea
International
Energy Agency



CRREM

Global CO2 & kWh Intensity Pathways



	GLOBAL DECARBONISATION PATHWAY 2020 - 2050
A	<ol style="list-style-type: none">1. Remaining anthropogenic global budget & ambition level (1.5°C)2. Defining CO2 only and GHG total for global buildings<ul style="list-style-type: none">• Direct combustion• Electricity consumption• District Heating• Other GHG emissions3. Global building floor area projection4. Global building carbon and GHG-intensity pathways

	COUNTRY SPECIFIC DECARBONISATION PATHWAYS
B	<ol style="list-style-type: none">1. Methodology: using the SDA convergence approach2. Define country floor area per segment (Resi / CRE)3. Define country final energy consumption per segment4. Derive CRE / Resi average starting figures in kWh5. Define energy-mix & weighted EF in base year6. Derive CO2 intensity starting figures and apply SDA

	COUNTRY- & PROPERTY-TYPE EUI PATHWAY
D	<ol style="list-style-type: none">1. Derive Energy-intensity pathway via defined country- and property-type specific carbon-intensity pathway2. Starting point for EUI intensity was defined in B & C3. Derive weighted EF development until 20504. Convert carbon intensities in kWh intensities (account for renewables with zero emission)

	USE-TYPE SPECIFIC DECARBONISATION PATHWAYS
C	<ol style="list-style-type: none">1. Define sub use-types (e.g. Retail, Office, Logistic etc.)2. Define kWh/m² starting values3. Define use-type specific energy-mix4. Derive a specific weighted EF in base year5. Derive sub-use decarbonization pathways via CRE pathway

CRREM

Enhancing Granularity

- **More Data partners:** for specific data. Partners include: CSR design, UKGBC, Australia GBC, etc.
- **Year:** New baseline year 2020 (2018 previously).
- **New property-type:** Industrial Dist. Warehouse Cooled & Industrial Dist. Warehouse Warm.
- **Further granularity on regions:** Further sub regions have been included for the USA as well as Australia (due to the country area/size).
- **New GHG-pathway:** New CO₂ & CO₂"e" pathways for correct benchmarking

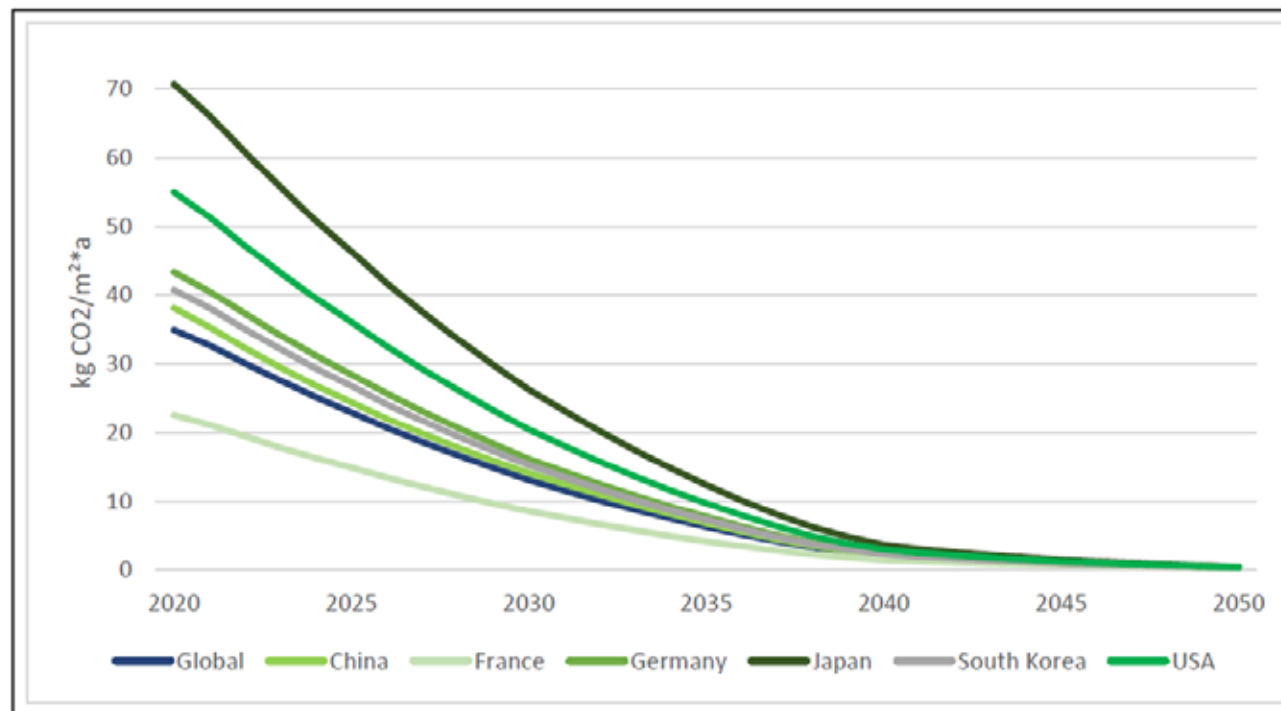


SCIENCE
BASED
TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION



CRREM

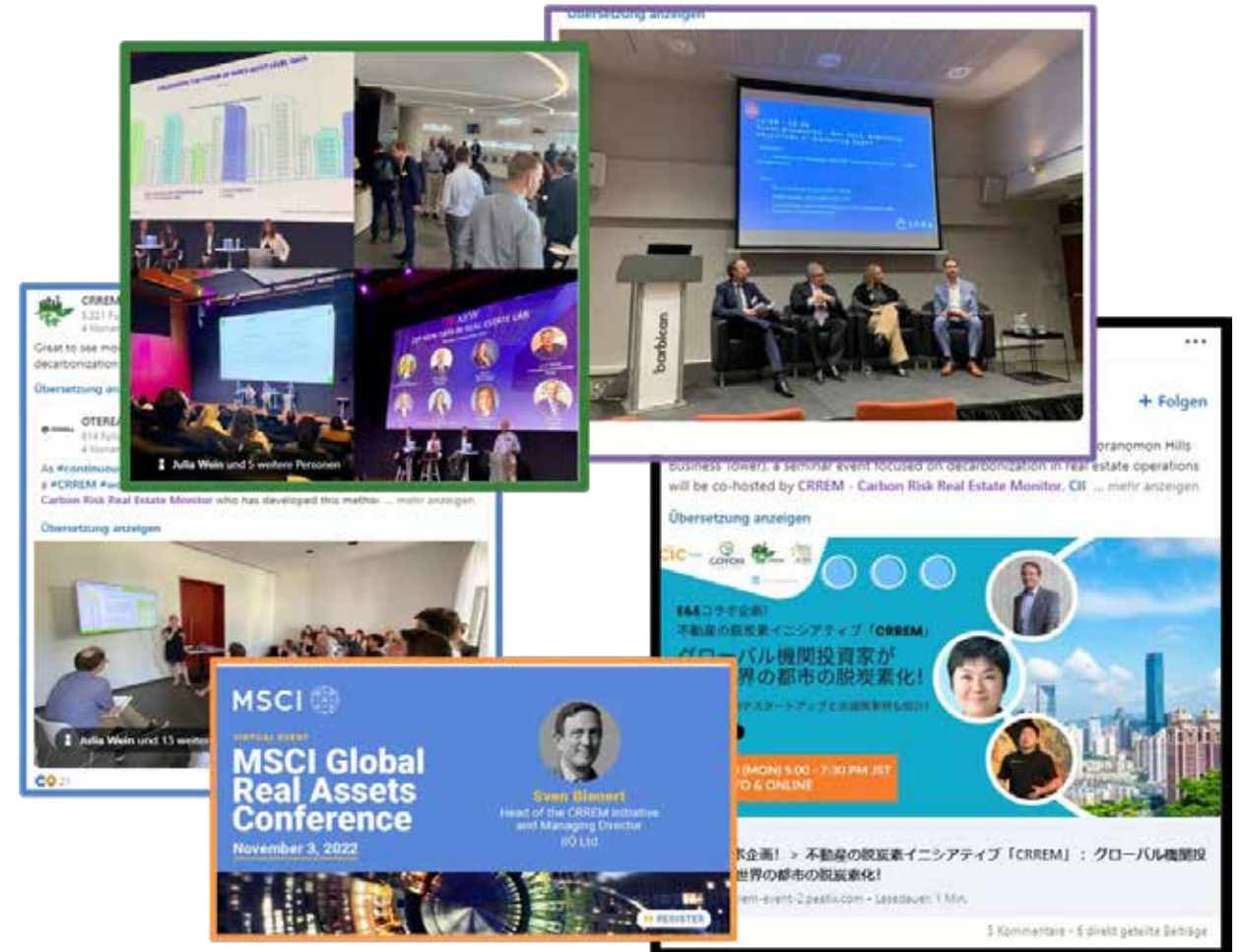


CRREM

Continuous market uptake – becoming the global standard



- ✓ Update of the CRREM Tool with the new pathway
- ✓ Focus on increasing market uptake in Asia Pacific & America
- ✓ Standard setting with reports and publications
- ✓ Many new CRREM partners/service providers: JLL, Evora, Scius, etc.
- ✓ Massive additional international uptake – surpassing the 6.000 bn AuM mark already
- ✓ Numerous paid individual CRREM Workshops given to companies
- ✓ Increased uptake by the banking sector also applying CRREM for their collateral (e.g. OCBC, NAB, Nord LB, ING, PNB Paribas, Deka Bank, UBS, DNB Dutch Central Bank, etc.)
- ✓ Always over 200 participants in the monthly CRREM Training sessions “Basics & Advanced”



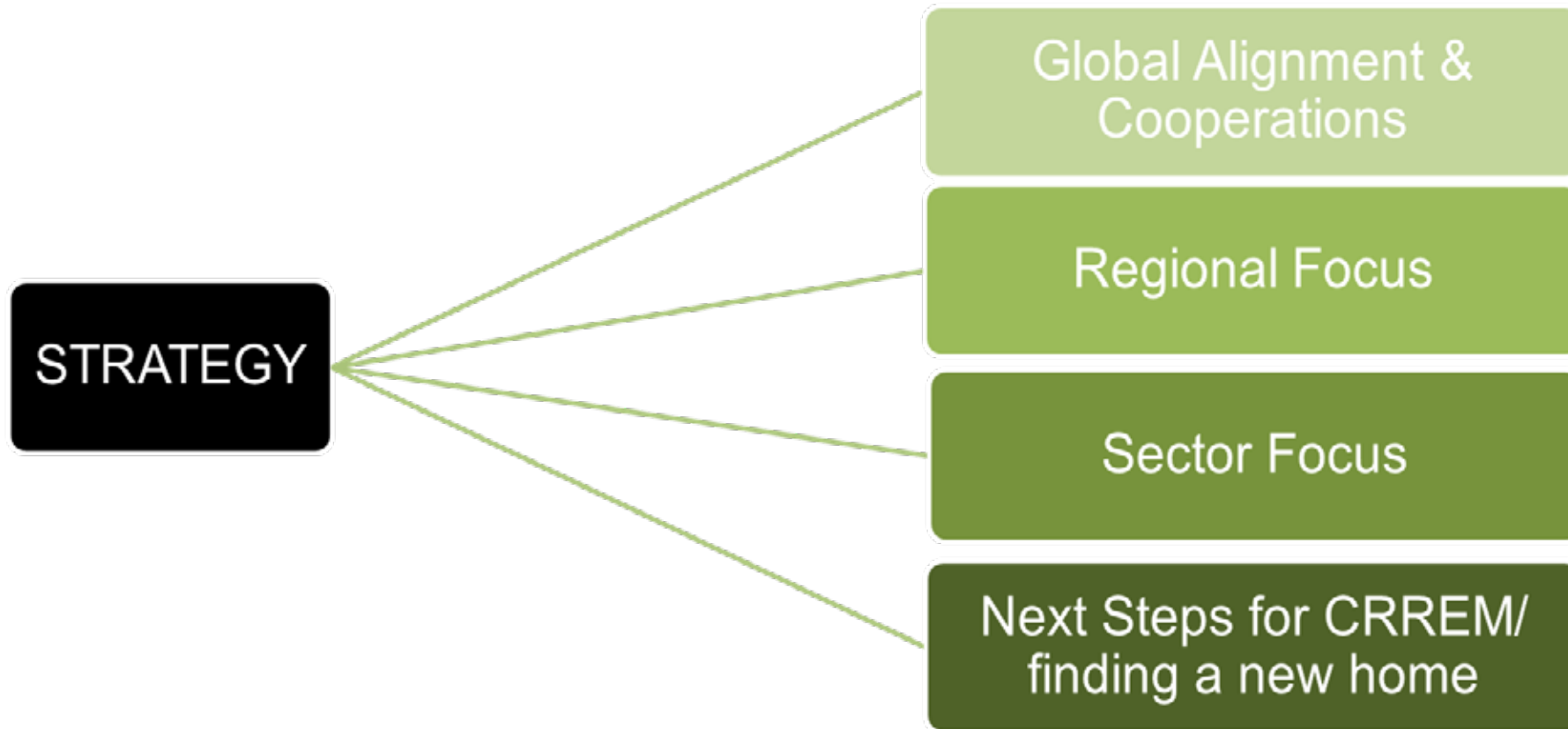
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Global Partners



CRREM

What is next?



Arup

Local expertise in a global network

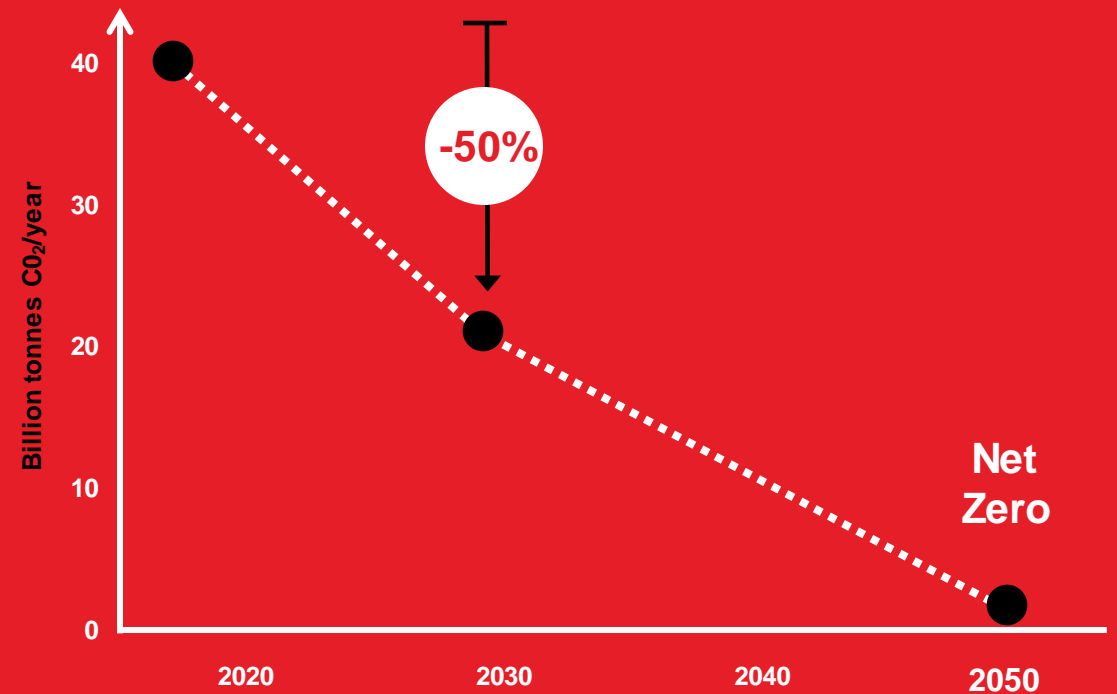


33 Countries

89 Offices

17.000 Staff

This is a critical period to achieving net zero carbon emissions – buildings constructed now will be operational throughout 2030-2050.



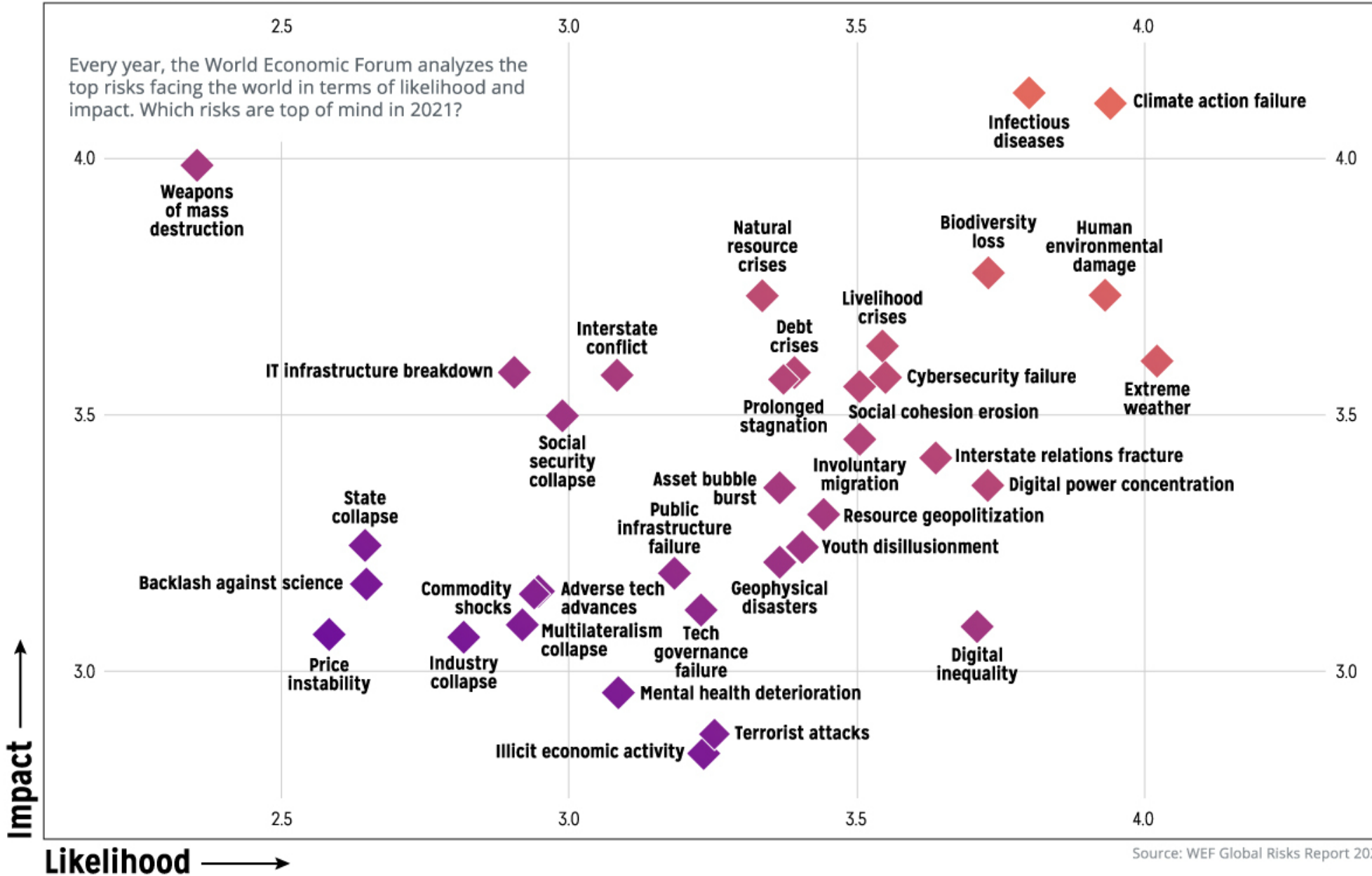
The ESG consultant perspective

Time for action



Delay action is a
business risk

2021 Global Risks Outlook



The ESG consultant perspective

Time for action



Delay action is a
business risk



Do not wait for
perfect data

What we have learnt

Insights from working across asset portfolios

PATRIZIA

lendlease



DWS

BARINGS



OXFORD

ARDIAN
REAL ESTATE



Google
REAL ESTATE
WORKPLACE
SERVICES

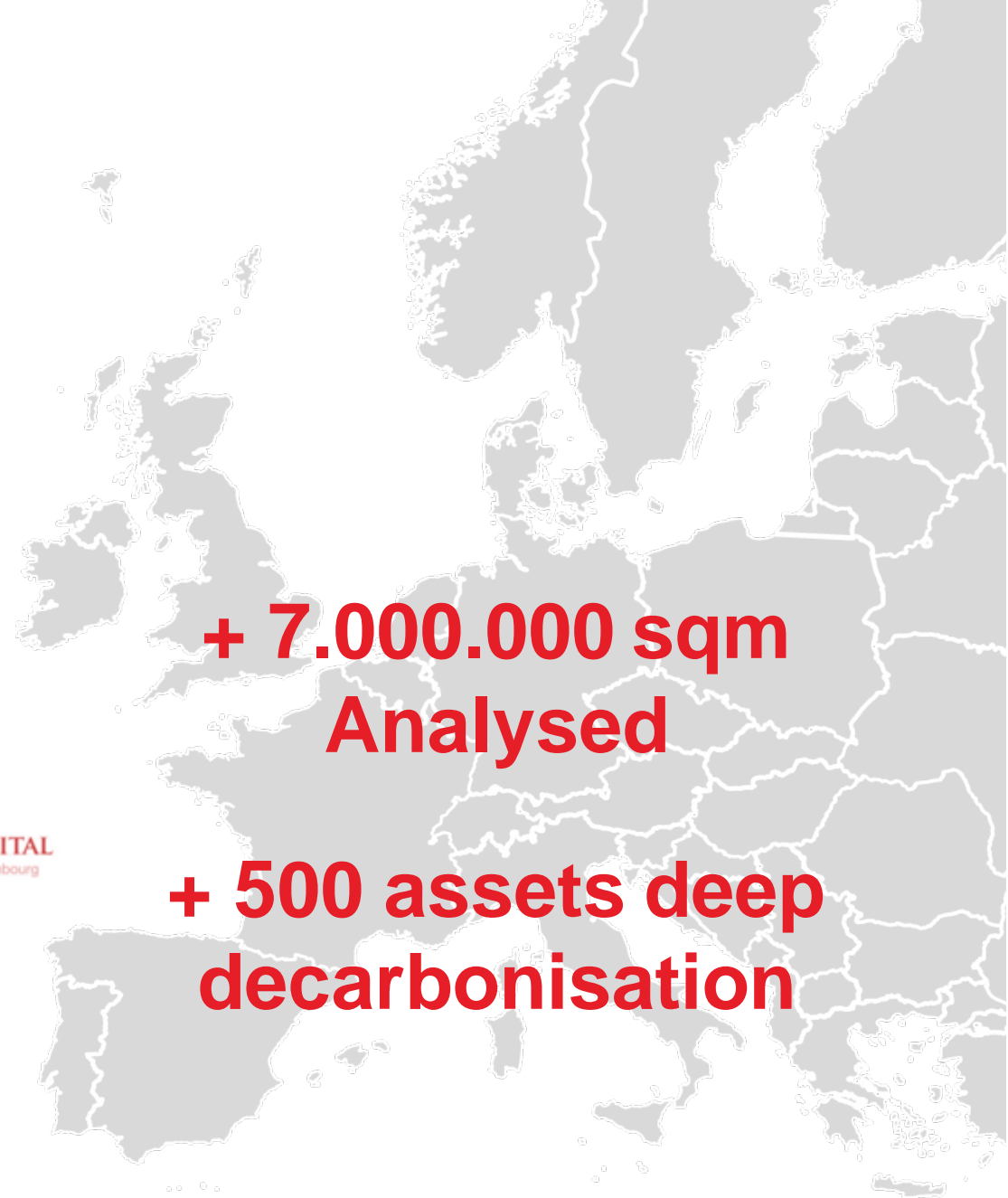


Deka

SIGNA

+ 7.000.000 sqm
Analysed

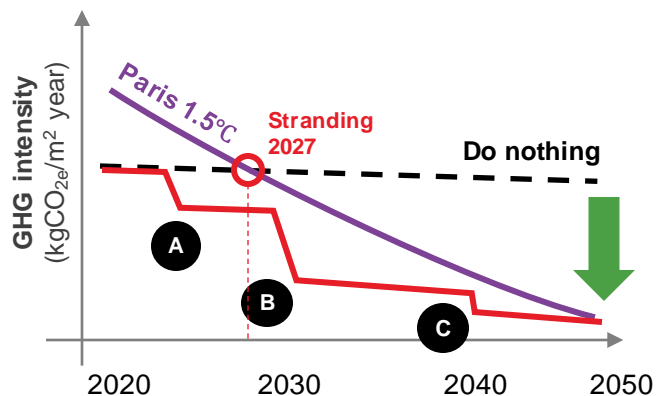
+ 500 assets deep
decarbonisation



Business case of climate action

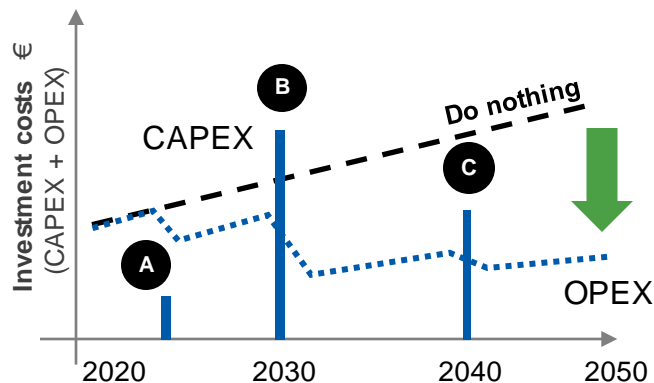
Who pays for and benefits from the savings

Carbon reduction



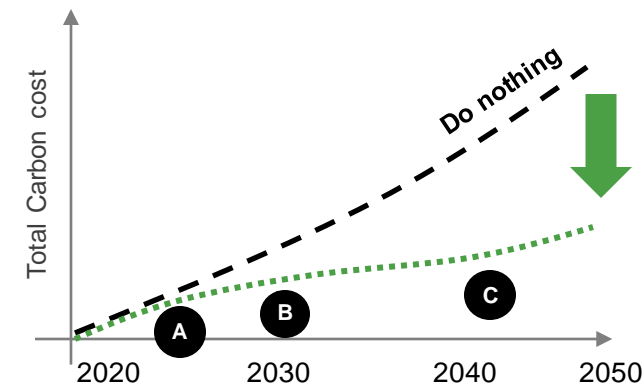
Decarbonisation measures:
balancing energy
efficiency and embodied
carbon (WLCA)

Investment and cost savings



Investment required (CAPEX) and
reduced operational costs thanks
to energy efficiency measures
(OPEX)

Shadow cost of Carbon



Cost of climate impacts (shadow
price by German environmental
ministry, IPCC-aligned cost):

2020: **680** €/tCO_{2e}
2030: **700** €/tCO_{2e}
2050: **765** €/tCO_{2e}

A, B, C= short, medium and long term refurbishment measures

The ESG consultant perspective

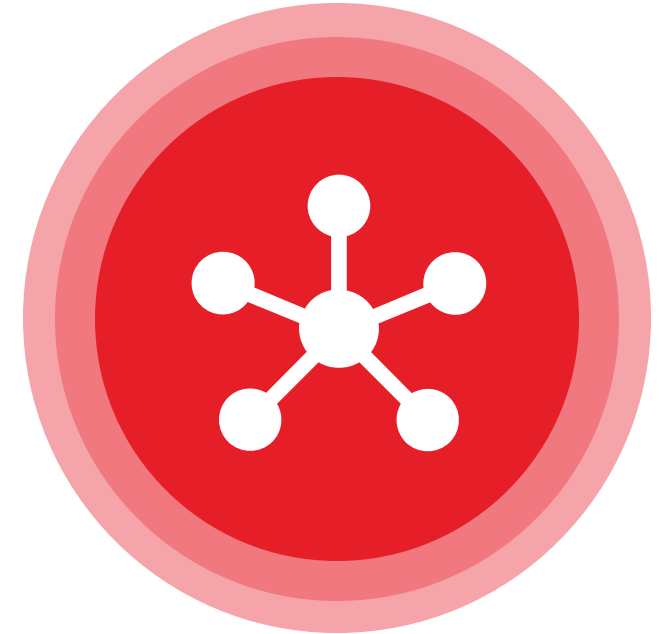
Time for action



Delay action is a
business risk



Do not wait for the
perfect data

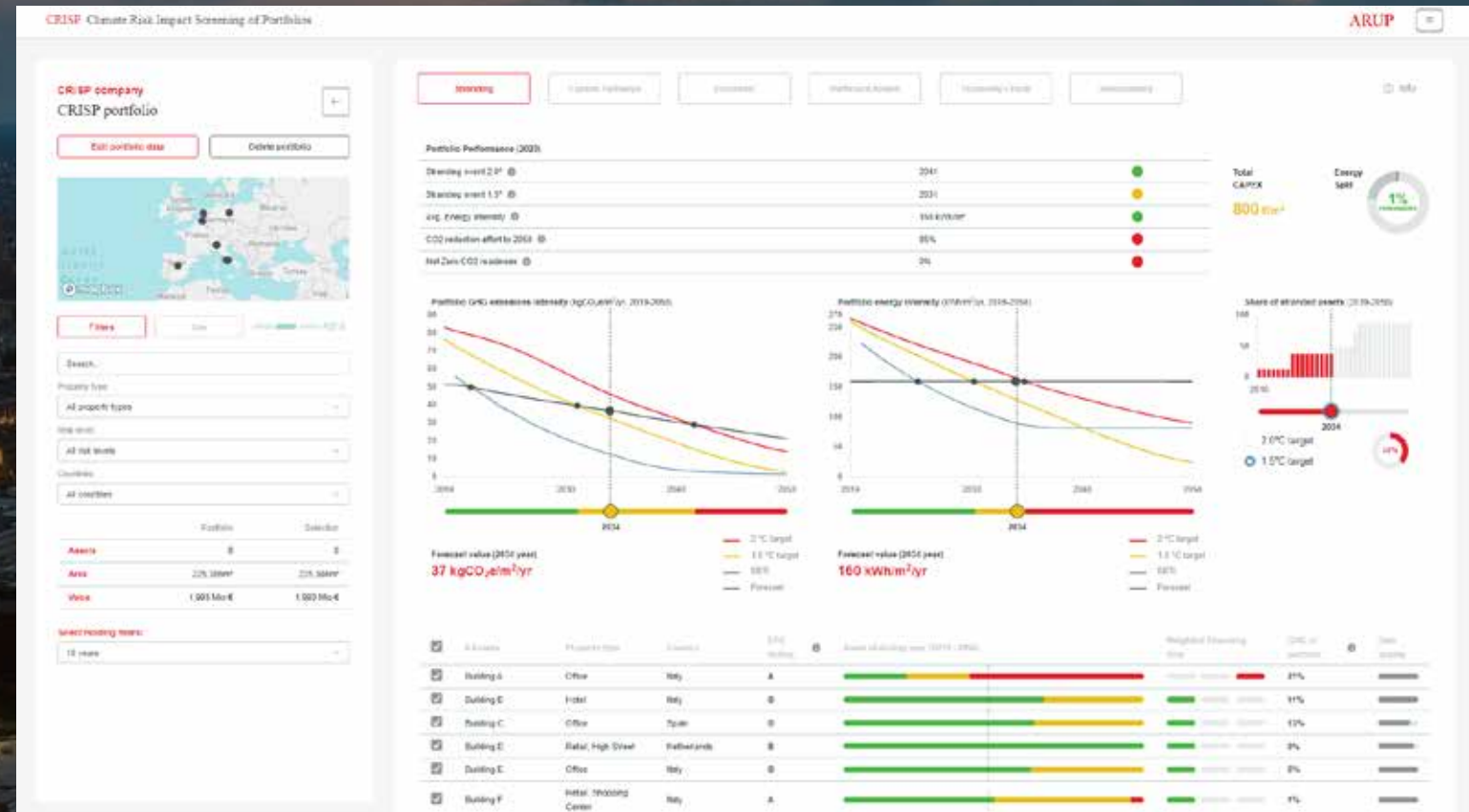


Integrate
solutions

CRISP

Climate Risk Impact Screening of Portfolios

- ü Arup deep technical expertise + dynamic digital solution
- ü Clear visualisations
- ü Carbon related risks
- ü Appropriate decarbonisation measures
- ü Investments and savings, key economic metrics
- ü Bespoke scenarios
- ü Prioritise actions
- ü Monitor and validate progress
- ü Report with confidence



Thank you!

ARUP



Francesca Galeazzi

Europe Decarbonisation Services Leader

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Amundi Real Estate - ESG assessment methodology

A proprietary methodology based on 360° due diligences

Our robust methodology

Built with real estate experts



+ 450

buildings analyzed and rated over time



3

ESG experts dedicated to Real Estate Private Debt



Systematic ESG analysis and rating of the underlying Real Estate asset

360° Due diligences

14 main themes that cover environmental, social and governance criteria

- Energy performance & carbon footprint
- Natural resource preservation
- Health and well-being, Mobility...

In-depth questionnaire of +100 questions

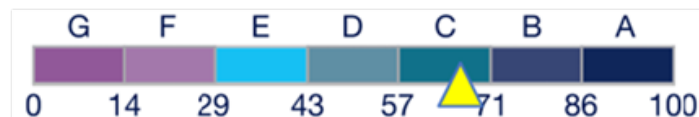
- Energy consumption, Renewable energy,
- Biodiversity, waste management, water efficient equipment's,
- Quality of heating and cooling system, solution to foster soft mobility

A specific Climate risk assessment:

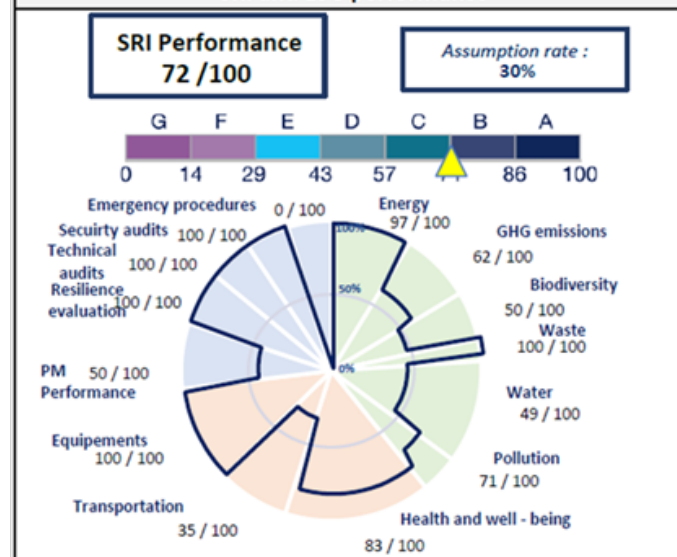
- Analysis covering the most relevant natural hazards located in Europe (rain flooding, rise in temperatures, heat waves, storms, forest fires...)
- Our methodology progressively integrating the EU taxonomy expectations

Grading scale from A to G, with A being the best grade with systematic exclusion of assets rated below D

« ISR Map »



SRI and ESG performance



Equity sponsor qualification

Systematic assessment and rating of equity sponsors' ESG policy

- For the main equity sponsors, an Amundi ESG Score based on ESG data coming from several external data providers
- For other equity sponsors, an In-depth ESG questionnaire with the following characteristics:
 - 4 ESG pillars assessed (Disclosure and transparency, Investment process, Sponsor commitment, Sponsor Global Strategy)
 - In house ESG rating (eliminary key questions)

Amundi Real Estate – ESG rating methodology

Climate risks analysis



Physical risks linked to climate change

The physical risks associated with climate change include chronic (sea level and temperature rise) and exceptional (heat waves, floods, storms) events that can damage the building or its equipment.

Rise in sea level	Floods due to rain	Rise in average temperature	Heatwaves	Storms	Wildfire	Drought
No risk	No risk	Low	Medium	No risk	High	Low