



CRREM and pathways on the **Deepki Platform**

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REVIEWED AND VALIDATED BY



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Disclaimer: As of today, the Deepki Platform is compliant with the CRREM pathways and adapted to CRREM methodology. This document will be updated with the future major releases of the CRREM pathways and of the Deepki Platform. Reviewed and validated by 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 well below 2°C, with ambition towards 1.5°C.

With the release of the new SBTi-aligned¹ pathways, the CRREM decided to embed in its tool only the 1.5 °C pathways, while the 2°C pathways (not Paris aligned and not SBTi aligned) are provided separately and serve the sole purpose of (transition) risk management.

Deepki is an official partner of the CRREM initiative and, in this context, is in constant communication with regard to data sources and methodology of the CRREM Global Energy and Decarbonization Pathways. These elements can be used by Deepki to build innovative products and offer them to its clients while benefiting from the expertise of CRREM.

Deepki retrieves data from the CRREM Global Pathways 1.5 °C which provides for each country and each building type (Residential and Commercial assets within the CRREM scope) an expected energy, CO₂-only, and Greenhouse Gases (GHG) intensity² (values per square meter) for the next 30 years, to reach the Net-Zero emissions for the Real Estate sector in 2050.

Country	Category	objective_name	Unit	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Spain	Collective Housing	CRREM_v2_scenario_1.5	kgCO2eq/m2	16,4	15,3	14,0	12,8	11,7	10,6	9,6	8,6	7,7	6,8	6,0
Sweden	Collective Housing	CRREM_v2_scenario_1.5	kgCO2eq/m2	3,8	3,6	3,4	3,1	2,9	2,7	2,4	2,2	2,0	1,8	1,7
United Kingdom	Collective Housing	CRREM_v2_scenario_1.5	kgCO2eq/m2	27,3	25,5	23,4	21,5	19,6	17,8	16,0	14,4	12,9	11,5	10,1
Croatia	Collective Housing	CRREM_v2_scenario_1.5	kgCO2eq/m2	21,7	20,5	19,0	17,5	16,0	14,7	13,3	12,0	10,8	9,7	8,6
Switzerland	Collective Housing	CRREM_v2_scenario_1.5	kgCO2eq/m2	23,6	22,0	20,2	18,5	16,8	15,3	13,7	12,3	11,0	9,8	8,6
Norway	Collective Housing	CRREM_v2_scenario_1.5	kgCO2eq/m2	4,1	3,9	3,6	3,3	3,1	2,8	2,6	2,4	2,1	1,9	1,8
Austria	Office	CRREM_v2_scenario_1.5	kgCO2eq/m2	36,0	33,8	31,2	28,6	26,2	24,0	21,7	19,6	17,7	15,8	14,0
Belgium	Office	CRREM_v2_scenario_1.5	kgCO2eq/m2	51,7	48,7	45,2	41,7	38,4	35,3	32,0	29,1	26,2	23,5	20,8
Bulgaria	Office	CRREM_v2_scenario_1.5	kgCO2eq/m2	56,7	52,9	48,5	44,3	40,3	36,6	32,9	29,5	26,4	23,4	20,5
Republic of Cyprus	Office	CRREM_v2_scenario_1.5	kgCO2eq/m2	135,4	125,8	114,7	104,1	94,0	84,8	75,6	67,2	59,5	52,2	45,4
Czech Republic	Office	CRREM_v2_scenario_1.5	kgCO2eq/m2	110,5	103,9	96,1	88,4	81,1	74,2	67,2	60,7	54,6	48,7	43,0
Denmark	Office	CRREM_v2_scenario_1.5	kgCO2eq/m2	31,0	29,0	26,7	24,5	22,4	20,4	18,4	16,6	14,9	13,3	11,7
Estonia	Office	CRREM_v2_scenario_1.5	kgCO2eq/m2	199,0	184,7	168,6	153,2	138,8	125,6	112,3	100,2	89,0	78,5	68,5
Finland	Office	CRREM_v2_scenario_1.5	kgCO2eq/m2	50,6	47,1	43,0	39,2	35,6	32,3	29,0	25,9	23,1	20,5	17,9
France	Office	CRREM_v2_scenario_1.5	kgCO2eq/m2	23,8	22,2	20,5	18,7	17,1	15,6	14,1	12,7	11,4	10,1	9,0
Germany	Office	CRREM_v2_scenario_1.5	kgCO2eq/m2	53,9	50,7	46,9	43,2	39,6	36,3	32,9	29,7	26,8	23,9	21,2
Hungary	Office	CRREM_v2_scenario_1.5	kgCO2eq/m2	54,6	51,2	47,1	43,1	39,2	35,7	32,1	28,8	25,7	22,8	20,0
Ireland	Office	CRREM_v2_scenario_1.5	kgCO2eq/m2	98,7	92,2	84,5	77,2	70,1	63,7	57,1	51,2	45,6	40,4	35,3
Italy	Office	CRREM_v2_scenario_1.5	kgCO2eq/m2	45,4	42,4	39,0	35,7	32,5	29,7	26,7	24,0	21,5	19,2	16,9

Figure 1: Extract of the targets derived from the CRREM Global Pathways (kgCO₂e/sqm).

1 The pathways are aligned at property-type and country level, but the SBTi requires users of its tool to enter information at the company level to derive company-specific pathways by applying the Sectoral Decarbonization Approach (SDA).

2 Within the CRREM tool, CO₂-only intensity takes into consideration only the CO₂ emissions of a building, while the GHG intensity accounts for CO₂ + F-gases (fugitive emissions due to refrigerant losses).

Deepki then matches this data with the country and building type information of the assets in its database in order to show the CRREM trajectories on the Deepki Platform, along with the real and projected energy and CO₂eq emissions intensity for each asset.

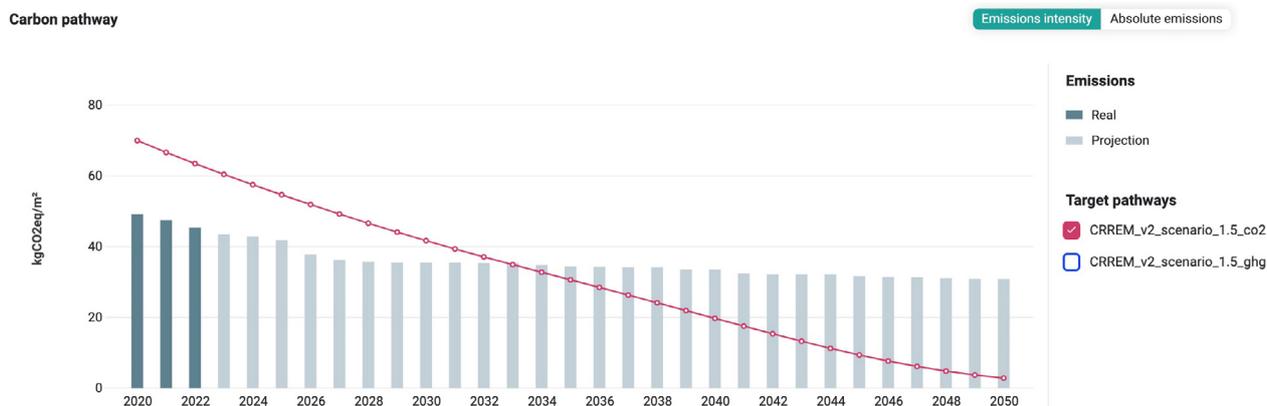


Figure 2: Screenshot from the Deepki Platform: Carbon Pathway

The actual CO₂eq intensity of each asset is calculated on the Deepki Platform from energy consumption according to “location-based” and/or “market-based” approaches. The tool follows the guidelines of internationally recognized standards like the GHG Protocol® and ISO 14064.

The Deepki Platform also allows the collection of the refrigerant losses and the calculation of the corresponding emissions (F-gases) in order to be aligned with the CRREM GHG Pathway.

With regards to the location-based approach, our Platform Deepki has adapted its own model to meet the changes of CRREM v2 electricity emission factors, notably the exclusion of transmission and distribution losses, and allows its users to select, among other possibilities, the CRREM's v2 country specific electricity emission factors. Furthermore, users who want to assess their assets' performance against CRREM v1 pathways still have the chance to use the corresponding emission factors from CRREM v1.

For users who have selected the CRREM electricity emission factors, the Deepki Platform gives the option to choose whether to adjust the projected emissions intensity considering the effect of the electricity grid decarbonization in the coming years. The adjustment based on the effect of climate change is currently under investigation by Deepki and will be discussed with CRREM.

Method to calculate your pathway

- CRREM emission factors - without hypothesis on grid decarbonization
- CRREM emission factors - with hypothesis on grid decarbonization
- Emission factors from carbon accounting methodology

Figure 3: Screenshot from the Deepki Platform: Emission Factors and grid decarbonization selection.

Once the emissions of the building (CO₂-only or GHG) are known, the emissions per square meter (kg CO₂eq/m²) can be calculated using the relevant variable input by the users during the platform set-up.

This will allow to compare the carbon intensity of each asset against the CRREM pathways in order to assess how they perform and evaluate the “risk of stranding³”.

The CRREM’s asset types that can be tracked on the Deepki Platform are as follows:

- Residential (both Single-family and Multi-family)
- Retail High Street
- Retail Shopping Center
- Retail Warehouse
- Office
- Hotel
- Healthcare
- Industrial, Distribution Warehouse (both warm and cold)
- Lodging, Leisure & Recreation

As of today, the Deepki Platform doesn't manage by default “Mixed-use” type, for which CRREM mandates users to state the floor area share of each building type that makes it up, as a percentage of the total gross internal area. Nevertheless, Deepki is able to manage mixed-use assets through a dedicated configuration in the platform.

Assets’ floor area must be reported on the Deepki Platform as total gross internal area, measured in IPMS 2 (which is the international standard for floor area alignment⁴), while the list of the countries for which a carbon/energy pathway is provided by CRREM (and therefore can be implemented in the platform) is as follows (next page):

³ The term ‘stranding risk’ comprises potential write-downs due to direct climate change impacts and devaluations related to the transition to a ‘low-carbon economy’ (<https://www.crrem.eu/wp-content/uploads/2022/12/CRREM-initiative-definition-on-stranding-risk-and-stranded-assets-in-the-build-environment.pdf>)

⁴ For further references visit: <https://www.rics.org/globalassets/rics-website/media/upholding-professional-standards/sector-standards/real-estate/rics-property-measurement/rics-property-measurement-2nd-edition-rics.pdf>

Country codes

AT	Austria	SK	Slovakia
BE	Belgium	SI	Slovenia
BG	Bulgaria	ES	Spain
CY	Republic of Cyprus	SE	Sweden
CZ	Czech Republic	UK	United Kingdom
DK	Denmark	HR	Croatia
EE	Estonia	CH	Switzerland
FI	Finland	NO	Norway
FR	France	AUS	Australia
DE	Germany	BRA	Brazil
EL	Greece	CAN	Canada
HU	Hungary	CHI	China
IE	Ireland	HK	Hong Kong
IT	Italy	IND	India
LV	Latvia	JAP	Japan
LT	Lithuania	MAL	Malaysia
LU	Luxembourg	MEX	Mexico
MT	Malta	NZL	New Zealand
NL	Netherlands	PHI	Philippines
PL	Poland	SGP	Singapore
PT	Portugal	KOR	South Korea
RO	Romania	USA	USA

Figure 4: Screenshot from CRREM Global Pathway tool: List of countries.

Pathways at the sub-regional level are available for the USA, covering the 15 largest cities, while for Australia a specific implementation in the platform is needed to take advantage of the sub-regional pathways (the same occurs in the CRREM tool, which does not provide by default these pathways for Australia).

Furthermore, the expected carbon intensity ($\text{CO}_2\text{eq}/\text{m}^2$) corresponding to the country and building type (CRREM source) is multiplied by the floor area to get the expected CO_2eq emissions of the asset at year N (Absolute emissions). Those figures are then aggregated at the portfolio level to obtain the global CRREM Pathway for our clients.

The same analysis is done for the energy pathway, taking into consideration the real and expected building's energy consumption per square meter (kWh/m^2) and the energy pathways calculated according to the CRREM methodology.

The Deepki Platform also enables users to visualize at a glance their "Stranded Assets", meaning those assets that are at risk of premature write-downs, devaluation, and early

This Key Performance Indicator (KPI) can be shown in terms of floor area (m²), number of assets (count), net asset value (EUR), and list of assets that are considered stranded because of their poor performance.

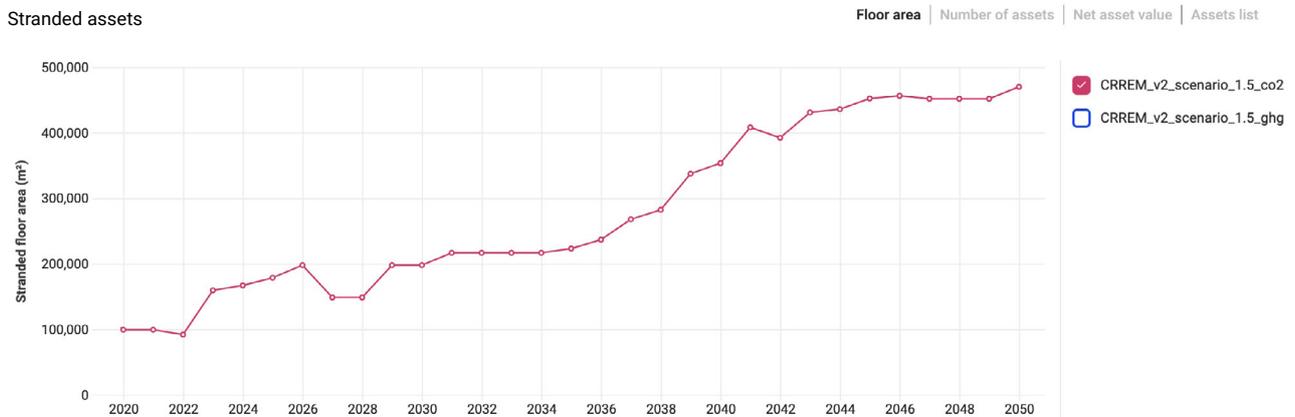


Figure 5: Screenshot from Deepki the Platform: Stranded assets.

To improve the performance of the analyzed assets, Deepki Platform’s users have the choice between a list of alternative actions (building renovation, installation of energy management equipment, choice of energy supply, etc.) with the aim of decreasing the building’s energy consumption and its associated carbon emissions.

This will translate into a drop in the energy and carbon intensities, shifting the point of stranding in the future or even avoiding it – in other words, de-risking the portfolio and making it 1.5 degrees compliant and more resilient.

On the other hand, if no investment plan is declared on the Deepki Platform, the projected energy consumption is equal to the last collected consumption, while for the carbon intensity, the projection will consider the effect of the grid decarbonization.

The economic commitment of the investments done and planned until 2050 is shown through the Investments graph on the Deepki Platform.

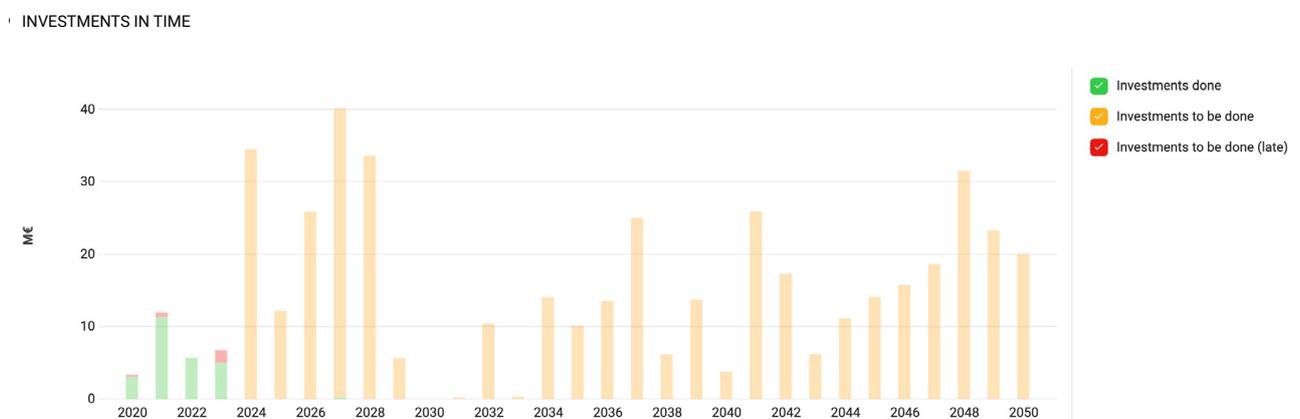
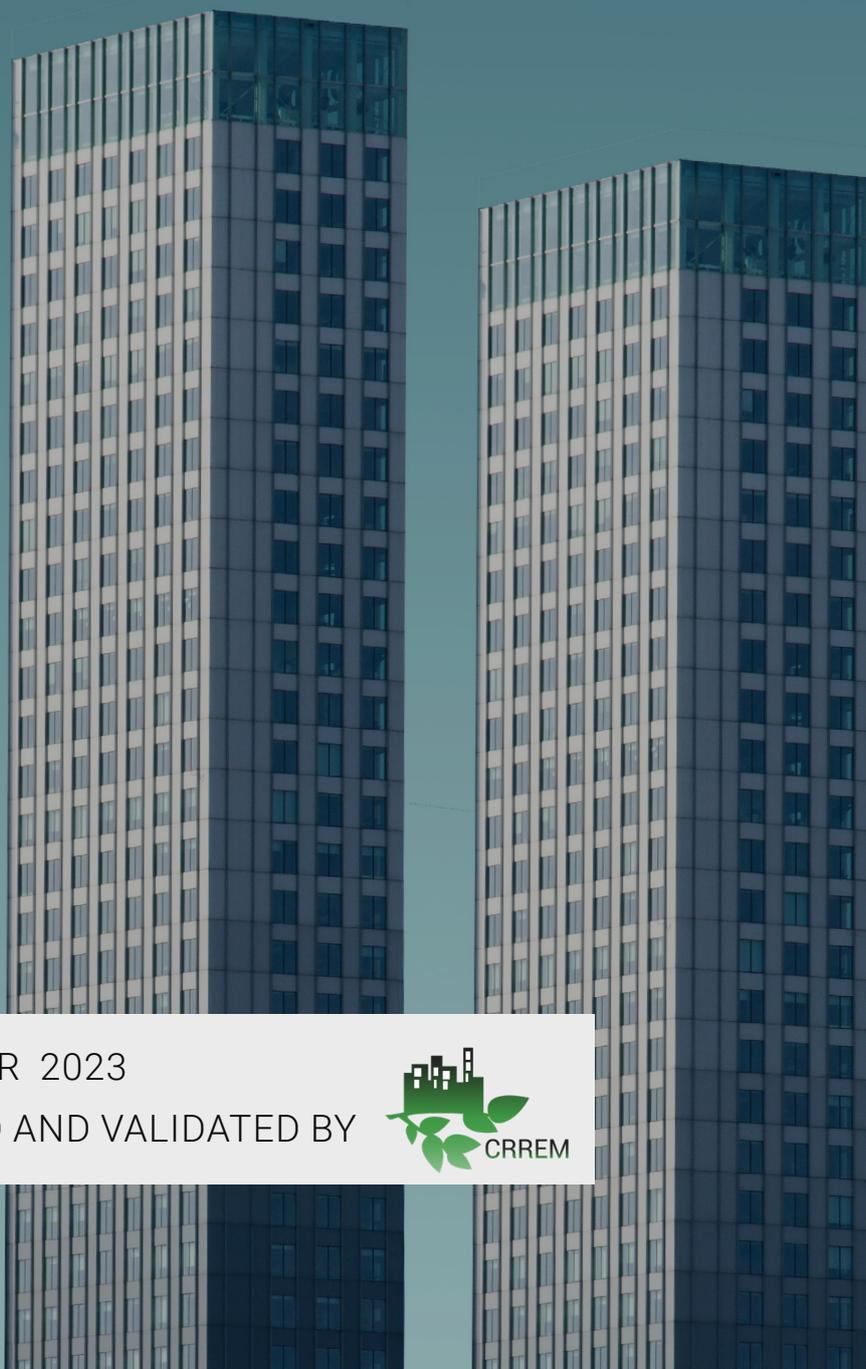


Figure 6: Screenshot from the Deepki Platform: Investments graph.

About Deepki

Founded in 2014, Deepki has developed a SaaS solution that uses data intelligence to guide real estate players in their net zero transition. The solution leverages customer data to improve assets' ESG (Environmental, Social and Governance) performance and maximize asset value. Deepki operates in 60 countries, with over 400 team members across offices in Paris, London, Berlin, Milan and Madrid.

The company serves clients including Generali Real Estate, SwissLife Asset Managers and the French government, helping to make their real estate assets more sustainable at scale. In March 2022 Deepki raised €150 million in a Series C funding round which was jointly led by Highland Europe and One Peak Partners. Other investors include Bpifrance, through their Large Venture fund, and Revaia.



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