

CARBON ACCOUNTING IN REAL ESTATE

A guide towards a common definition of a building's carbon footprint.

Executive summary

As the 2050 deadline for net zero approaches, it is getting increasingly challenging to deliver a solid decarbonization policy that will delve into a universe of data, carbon accounting methodologies, and reporting options.

Effectively, the ultimate goal has been set in 2015 by the Paris Agreement, and major challenges lie ahead, like choosing the right pathway and monitoring it along the way at the asset or portfolio level.

Therefore, the only possible way to succeed is to consider the assets' boundaries rather than the reporting entity's.

In this piece, we intend to lay down the major carbon accounting approaches available, analyze them through a comparative study, and conclude what the way forward should be.

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Introduction

Sustainability has been a key focus in recent months in the real estate industry, and within this broad topic, CO₂ is the key indicator.

However, the decarbonization journey is arduous, encompassing multiple methodologies and strategies that actors need to do research on and design carefully: from the precise scope of a company or country's CO₂ emissions to the selection of the most pragmatic and efficient roadmap of actions to reduce the overall impact.

In all cases, the very first step of this decarbonization journey consists in setting a goal.

And in fact, across the latest UN Climate Change Conferences, more than 136 countries have already committed to achieving net zero carbon emissions by 2050, covering nearly 25% of global CO₂

emissions and over 50% of global GDP¹.

Once this overarching goal is agreed on and communicated - internally or externally - it needs to be drilled down at the fund, cluster, and - eventually - asset level.

There lies the true challenge, as you will want to gather all the vital information available in order to choose wisely and in alignment with your company and investor's requirements. **They need to make sure that the total emissions associated with the assets within their funds are surveyed and that a pathway is set in place to accomplish their reduction.**

In this piece, we intend to lay down the major carbon accounting approaches proposed by different initiatives, analyze them through a comparative study, and conclude what, in Deepki's opinion, should be the way forward.

¹ [Climate Ambition Alliance: Net Zero 2050](#)

Critical principles of carbon accounting

Due to the increased collective awareness of climate change issues over the past decades, institutions, companies, and collectives have been encouraged to monitor their greenhouse gas emissions to reduce them. Several methodologies have emerged to guide organizations in this exercise, and the GHG Protocol² is now the most used worldwide.

The rules proposed by the GHG Protocol, compatible with other initiatives such as the ISO 14064 standard, classify emissions within three scopes:

1

Scope 1. Direct GHG emissions from sources owned or controlled by the entity. For real estate, it corresponds, for example, to the gas burned in the building's boiler. Scope 1 emissions physically occur in assets owned or controlled by the reporting company.

2

Scope 2. GHG emissions from the production of electricity, steam, heat, and cooling purchased or acquired and consumed by the entity. These emissions are released at the facility where the electricity is generated (i.e., the power plant).

3

Scope 3. All other indirect emissions occurring in the entity's value chain as a result of the entity's activities from sources that are not controlled.

In general, only Scope 1 and 2 emissions are reported on, and Scope 3 emissions are not mandatory.

When we address carbon accounting, there are two positionings of control: financial and operational. Operational control, which stipulates that the reporting entity or one of its subsidiaries has the full authority to introduce and implement its operating policies at the operation, is the methodology that is mainly used and widely recommended in real estate.

² <https://ghgprotocol.org/corporate-standard> consulted on November 30, 2022.

Carbon accounting in real estate

Applying these key principles to a real estate entity is not a simple task, as they entail various activities such as managing, buying, selling, investing, and developing properties.

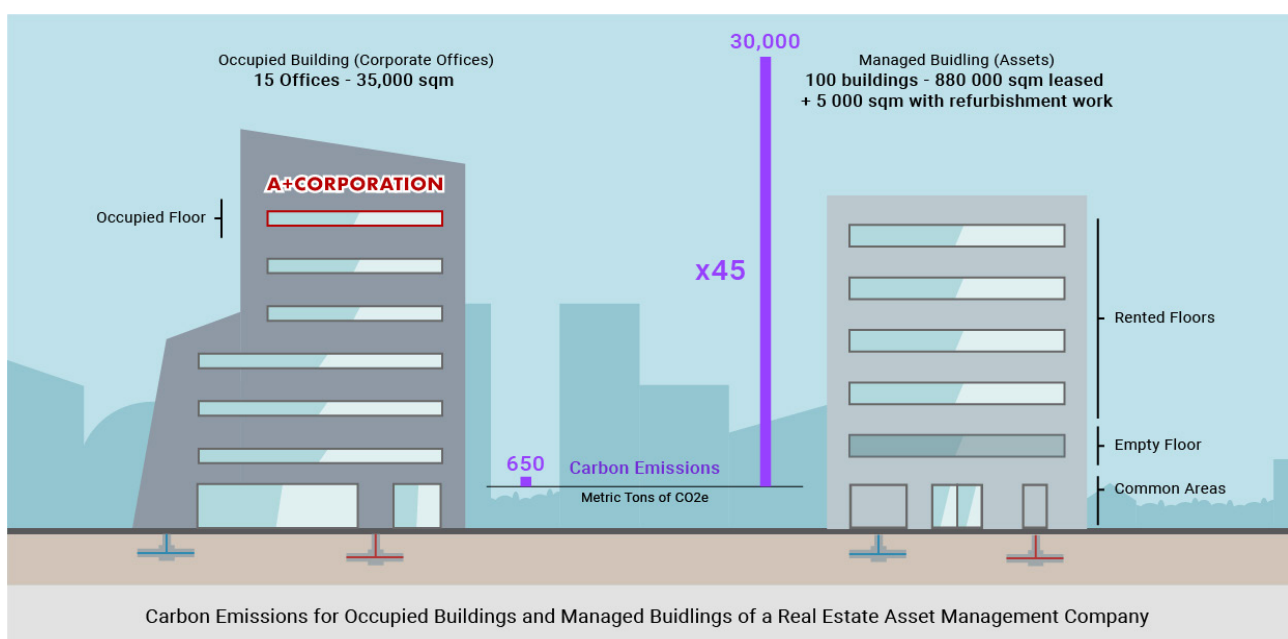
Various financial arrangements (Joint ventures, REITs, investment partnerships) and tenancy agreements (finance/capital lease, operating lease) bring complexity to defining the boundaries of the reporting entity.

Besides, depending on who is reporting and on the objective, the different sources of emissions won't be reported in the same scope.

We have set up a case example to highlight the analysis: a real estate company **occupying 15 offices (35 000 sqm)** and **managing 100 buildings (880 000 sqm leased + 5 000 sqm with refurbishment work)**.

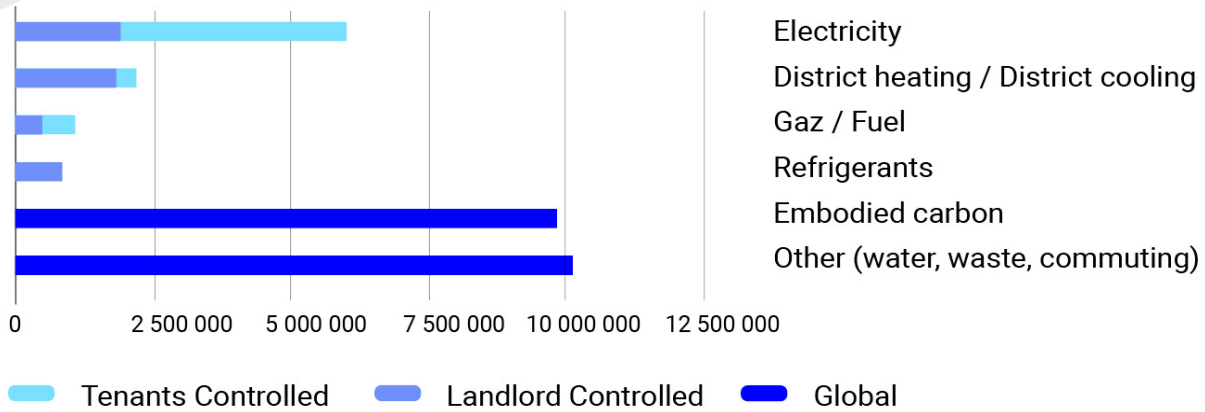
The graph below shows the weight of the different carbon emissions sources for assets occupied (on the left) and managed (on the right) by this real estate company.

The primary sources of emissions come from the managed assets and energy (electricity, gas/fuel, district heating and cooling, refrigerants, etc.), embodied carbon from refurbishment works, and transport of occupants (commuting).



Real estate company portfolio

(100 buildings - 880 000 sqm- 5 000 sqm renovated).



Graph 1: carbon emissions categories, comparison by weighting.

This company may report emissions for different purposes:

- Either for the company sustainability report, in which case it will adopt a so-called «corporate approach» (the reporting entity is the company),
- Or to follow the emissions of a fund and or commit its assets to a net zero trajectory, the so-called «whole-building approach» or «portfolio approach» (the reporting entity is the fund(s)).

We will elaborate on the different approaches, highlighting related objectives, risks, and reporting details.

Current initiatives of the real estate industry - State of the art

Several initiatives give real estate actors reporting guidelines on how to classify emissions within scopes. Different industry players lead them, but they are not yet all aligned.

The following table summarizes the different protocols and existing approaches, detailed hereafter, and how they classify emissions by scope.

	CORPORATE					WHOLE BUILDING		REAL ESTATE
	SBTi (coming soon)	GRESB	GHG	EPRA	UKGBC	Collab PCAF / GRESB / CRREM	Collab PCAF / GRESB / CRREM	Deepki
Company perimeter								
Fuel / gas consumption	-	1	1	1	1	1	-	1
F-gas	-	1	1	1	1	1	-	1
Elec/DH/DC consumption	-	2	2	2	2	2	-	2
Purchases/waste/water	-	3	-	-	-	-	-	3
Transport of employees	-	(3 or 1)	-	-	-	-	-	3 (or 1)
Asset perimeter								
Fuel/Gas/F-gas landlord controlled	1 (or 3 if tenant spaces)	1 (or 3)	1	3				1
Fuel/Gas/F-gas PM controlled	3	3	3	3				1
Fuel/Gas/F-gas tenant controlled	3	3	3	3				1
Elec/DH/DC landlord controlled	2 (or 3 if tenant spaces)	2 (or 3)	2	3	Depends on the lease type & consolidation approach	Whole building	Whole building	2
Elec/DH/DC PM controlled	3	3	3	3				2
Elec/DH/DC tenant controlled	3	3	3	3				2
Waste/Water/Non-energy fluids	3	3	3	3				3
Embodied carbon	-	3	3	3				3
Transport of Occupiers	-	3	-	-				3

Table 1: overview of existing policies for real estate carbon accounting and their distribution of emission sources in scopes.

The Corporate Approach

This approach was described initially in the **GHG Protocol** Corporate Accounting and Reporting Standard, which provides requirements and guidance for companies preparing a corporate GHG emissions inventory. It is universal and not broken down by sector. The vision of this standard is to focus on the entity that is reporting.

Some initiatives, such as the **GRESB**³ reporting framework and the **EPRA**, apply the GHG Protocol principles to the real estate industry. They both require real estate companies to report all in-use emissions related to the energy consumption of their asset portfolios with the following classification:

Emissions of the company itself (not reported in GRESB):

- **Company office's emissions in Scope 1 and 2.**
- **Other company emissions** (employees traveling, for example) **in Scope 3.**

Emissions of the real estate portfolio

- **Landlord-controlled emissions in Scope 1 and 2**, as well as shared services and common areas.
- **Tenants-controlled emissions in Scope 3.**

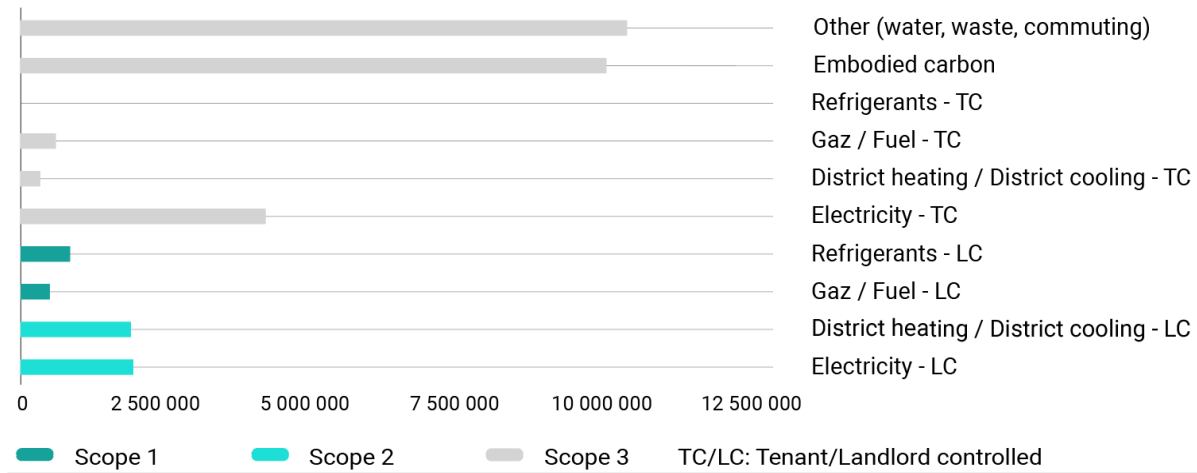
However, when the landlord delegates the management of a building to a property manager, none of these frameworks specify if those emissions fall within Scope 1 or 2. From a strict corporate vision, they should fall in Scope 3 as a third party controls them.

There is a risk that landlords will deny responsibility for all the emissions from their properties, as companies usually only set targets and action plans for Scope 1 and 2 emissions. Moreover, as the turnover of tenants can be significant, the responsibility for the consumption and emissions cannot be allocated to them entirely without the owner's control. This approach is relevant only if considerable Scope 3 emissions are monitored.

³ <https://www.gresb.com/nl-en/products/real-estate-assessments/> consulted on November 30, 2022.

Real estate company portfolio

(100 buildings - 880 000 sqm- 5 000 sqm renovated).

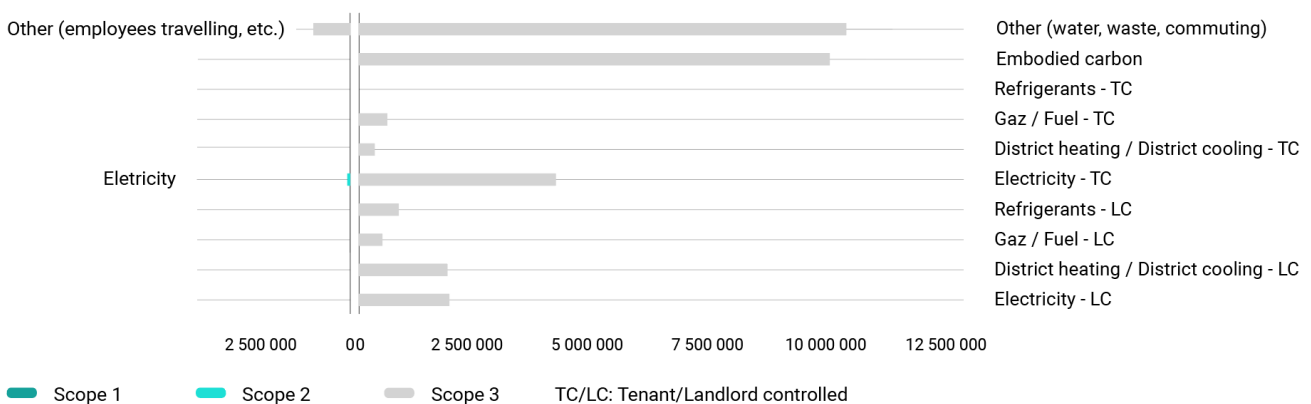


Graph 2: GRESB and EPRA (GHG protocol applied) distribution of carbon emissions categories.

The **UK Green Business Council** goes further by classifying all the energy-related emissions of a real estate Portfolio in Scope 3 - Category 13: Downstream leased assets. With this view, only energy-related emissions of the occupied offices are accounted for within Scope 1 and 2 (negligible).

The Partnership for Carbon Accounting Financials (PCAF), which helps financial institutions assess and disclose the emissions from their loans and investments, is in line, encouraging Investors to classify all energy-related emissions in Scope 3 - Category 15: Investment.

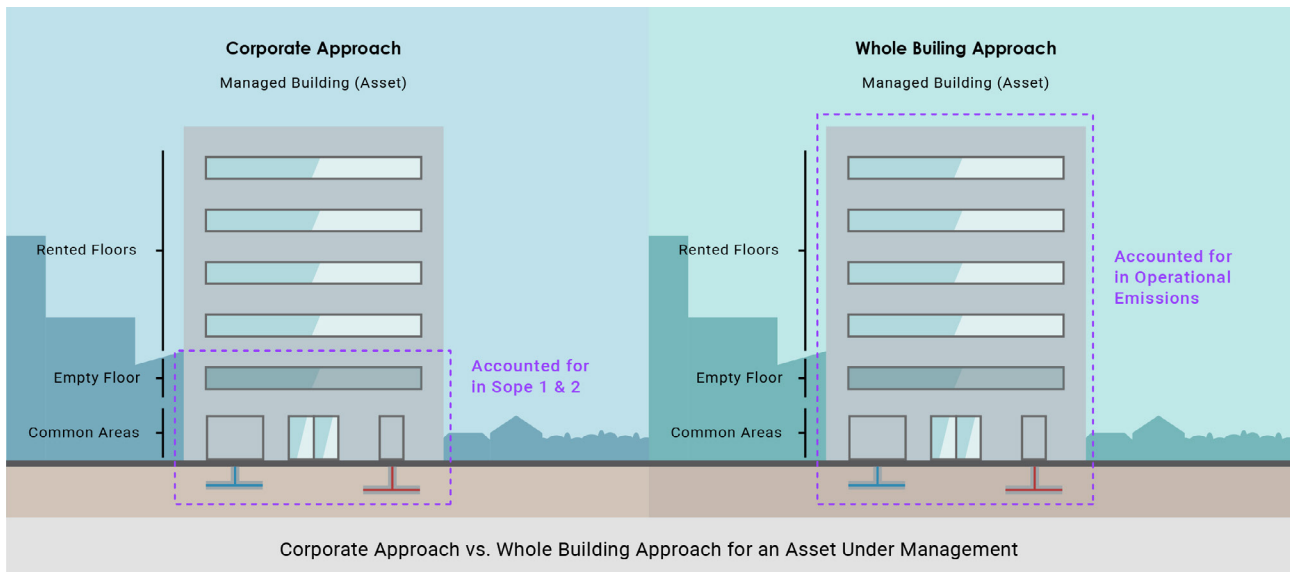
Real estate company offices (to the left: 15 offices - 35 000 sqm) & **portfolio** (to the right: 100 buildings - 880 000 sqm- 5 000 sqm renovated).



Graph 3: distribution of carbon emissions categories between Scopes 1, 2 & 3 in a corporate approach. Same scale for portfolio & offices.

The Whole-Building Approach

The **Carbon Risk Real Estate Monitor (CRREM⁴)** supports a **whole-building approach for in-use emissions**. According to the CRREM, the distinction between Scopes 1, 2, and 3 is irrelevant since **all the property's operational emissions must be considered, including tenant and landlord-controlled space**. The CRREM doesn't apply to the emissions of the company itself.



Towards a new approach?

A consensus is emerging by bringing together the various actors into the drafting of the declaration for real estate of the GHG Protocol: “**Accounting and reporting of financed GHG emissions from real estate operations**”, released in March 2023.

They are pushing for a «whole-building approach,» making the **accounting of tenants-controlled emissions mandatory** for risk assessment and decarbonization strategies.

“To decarbonize an entire property or benchmark a building’s operational emissions profile against that of its peers, it is **crucial** to have a **complete understanding of all emissions of an asset**”.

For reporting purposes, these emissions could still be reported in Scope 3, category 13 of the GHG Protocol, «Leased assets» or Category 15, «Investment», depending on the entity that is reporting (Investor, lessor), the type of lease (financial or operational lease) and the consolidation approach (equity share, financial control, operational control).

⁴ <https://www.crrem.eu/tool/reference-guide/> consulted on November 30, 2022.

Deepki's approach towards a common framework for real estate on the road to net zero.

At Deepki, we believe that one of the most essential actions for a real estate company is to prepare for a **net zero** future by setting objectives and building an action plan to **reduce the overall operating emissions** of its real estate portfolio.

This vision is aligned with the European Regulations (SFDR and EU Taxonomy) ambition to mitigate climate change, as the philosophy of those regulations is to decarbonate the assets.

The Taxonomy criteria for the activity "Acquisition and ownership" **applies to the assets' operating consumptions** and doesn't distinguish between landlord and tenants' controlled spaces.

In the same way, the SFDR requires reporting sustainability indicators at the entity and product levels (i.e., fund). Scope 1, 2, and 3 GHG emissions are one indicator that can be chosen. Even if the SFDR does not define the scopes, the philosophy of the European regulation is that the emissions from operations are not to be separated when looking at the product level.

Indeed, **in the logic of financial risk assessment, the whole building must be taken into account**. It is the performance of the entire building that will determine the risk of loss of value of an asset and not only the common parts.

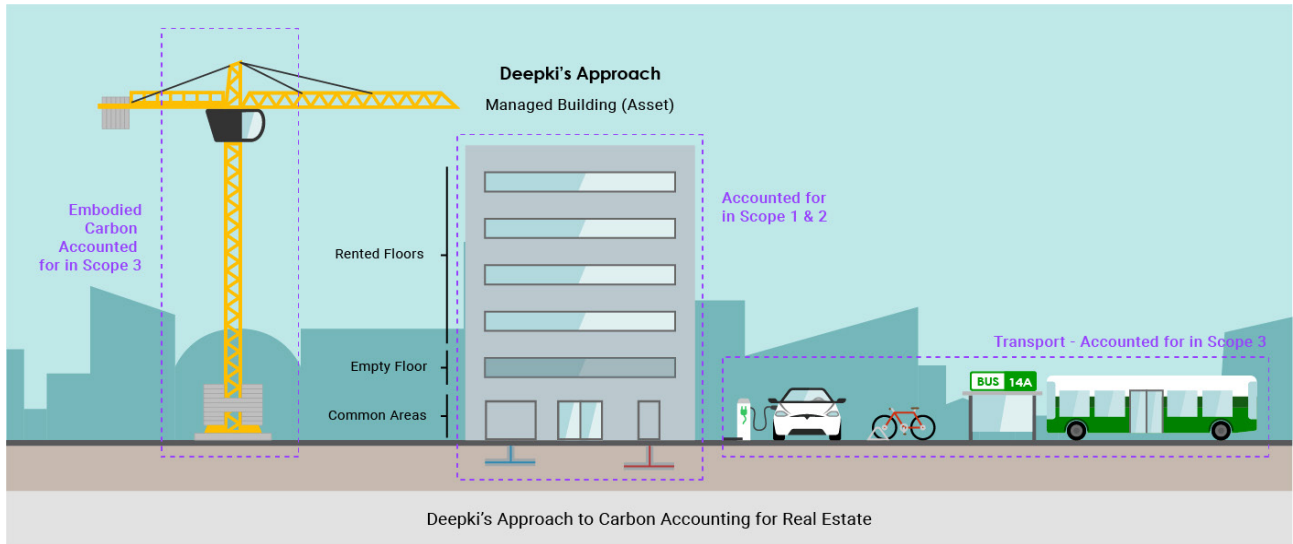
From an investor's point of view, saying that a real estate fund is following a net zero pathway means that all the emissions related to the assets within this fund are monitored and that actions are taken to reduce them. In this case, the mandatory scope of accounting should follow a whole-building approach, as recommended by the CRREM.

All initiatives, such as the net zero Asset Managers initiative or the net zero Investment Framework, agree that all assets' emissions must be included in the net zero target.

Thus, Deepki believes that the scopes shouldn't be defined by the boundaries of the reporting entity but rather by the boundaries of the assets within the portfolio (or "the product" to keep the SFDR terminology). This way, the scopes should reflect the on-site and off-site emissions of the assets under management.

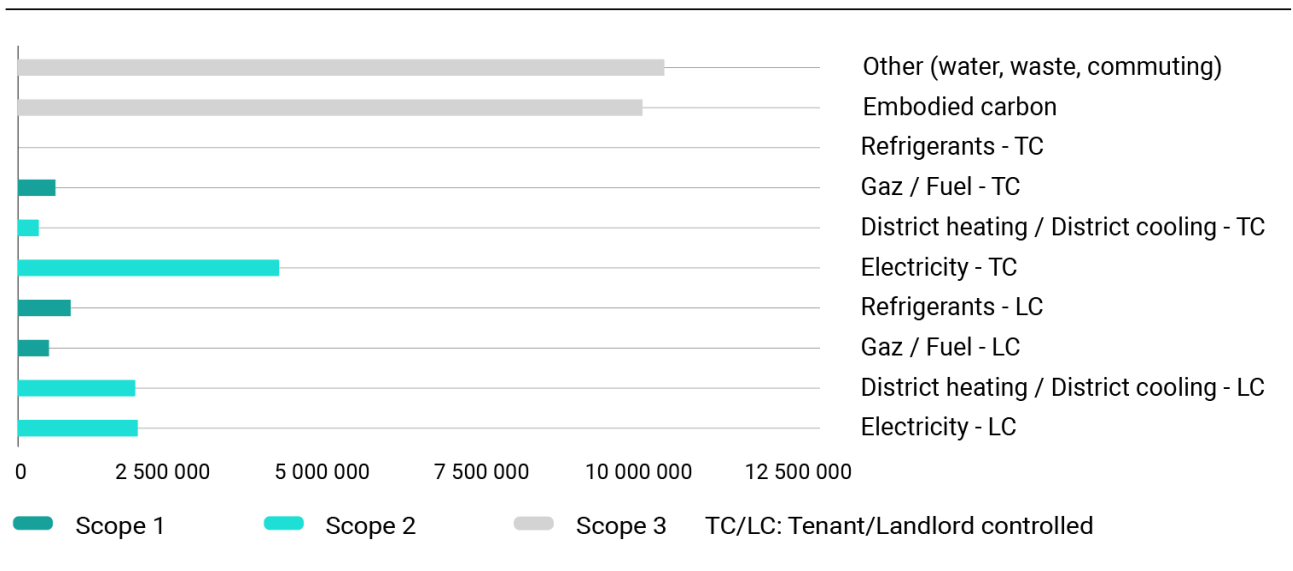
This implies that tenant-controlled and landlord-controlled emissions are not accounted for separately and must be included in Scopes 1 and 2 and in the net zero targets.

In the Deepki Ready™ platform, we propose a **real estate portfolio vision** that displays all energy-related assets emissions in Scopes 1 and 2 and includes them in calculating carbon reduction targets towards net zero.



Real estate company portfolio

(100 buildings - 880 000 sqm- 5 000 sqm renovated)



Graph 4: Deepki's real estate portfolio vision.

Deepki is also working on the **measurement and reduction of major Scope 3 emissions** included in the Real Estate Approach:



Embodied carbon, which refers to emissions resulting from the non-operational phase, represents roughly 30%⁵ of a building's life cycle carbon footprint. Emissions can be significantly reduced during the construction and refurbishment of the building if the real estate owners apply circular economy principles.

Emissions related to the **transport of users** commuting to and from the building, who are dependent on the location of the building and the surrounding amenities (bicycle garage, electric charging stations, public transport).



We still provide our customers with all the exports compatible with the reporting frameworks to which they respond (GRESB, for example), hoping that these frameworks will continue to evolve in the right direction in the coming months.

This position is aligned with our ambition to accelerate the environmental transition of real estate.

⁵ <https://www.gresb.com/nl-en/faqs-about-embodied-carbon/>

Conclusion

Deepki is fully aware of the diversity of actors within the real estate investment world. We aim to always support every player in their reporting and towards net zero alignments while proposing a clear practice of carbon accounting for real estate entities. Indeed, the main question is independent of the delineation of emissions per scope but lies with the responsibility of these emissions and the associated risk incumbent on each actor.

Scope delineation, the Whole-Building Approach, or the Real Estate Approach do not change the responsibility and the existence of emissions. Concerning reporting on carbon emissions, Deepki invites its customers to follow the different

entities' requirements (GRESB, EPRA, etc.), adapted to their typology (funds, listed companies, Asset Managers, REITs).

However, **to build a net zero future, every carbon emission related to an asset shall be considered by every actor involved** (managing, investing, etc.).

While waiting for any - very expected - move from the European Union in the context of the SFDR & Taxonomy regulations, this note aims at illustrating and providing guidance and hopes to open discussions on a very complex topic. This way, the sector will find a common ground on which to build a sustainable future.

[Get in touch](#)
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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 52 countries, with +300 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 round of funding which Highland Europe and One Peak Partners jointly led. Other investors include Bpifrance, through their Large Venture fund, and Revaia.



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