



# Sustainable Real Estate

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2024 Laurea



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## Sustainable Real Estate

Jenni Saarinen  
Leading Transformational Change  
Thesis  
December 2024

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**Sustainable Real Estate**

Year	2024	Number of pages	61
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The aim of this thesis was to create a framework defining a sustainable building via analysing existing sustainability frameworks, regulations and certifications. This thesis was conducted for Granlund Oy to underpin wider market research focusing on trends in sustainable real estate.

The literature review consists of an introduction to sustainability definitions and frameworks including an assessment of the responsibilities of companies through corporate social responsibility, alongside a general overview of sustainable and green finance. An overview of sustainability in the real estate industry is evaluated against existing frameworks. Regulations, sustainability certifications and existing reporting frameworks are introduced. These are compared and analysed for overlapping themes.

The empirical research section has been conducted by survey to gather a comprehensive understanding of industry professionals' opinions regarding the most important sustainability measures. A market perspective was included in the research to assess which measures could have outsized impact on building valuations.

To conclude, a framework consisting of environmental, social and governance (ESG) factors was developed to define a sustainable building, focusing on existing stock. Each measure within was evaluated based on previous usage. It is concluded that environmental sustainability has had the most focus to date and recommends future research to focus on social and governance implications.

Keywords: Sustainability, Real Estate, ESG,

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## 1 Introduction

The world is currently in the middle of a climate crisis and already suffering from environmental degradation (European Commission, 2024), meaning that impactful action must be taken at all levels of human activity to reduce the amount of degradation. Sustainability is not only needed to reduce these impacts on the environment and climate, but also to protect our living environment from the risks that these challenges pose.

According to the Intergovernmental Panel on Climate Change (IPCC), the consequences of rising greenhouse gas emissions will become devastating due to human-induced climate change unless drastic changes to the level of emissions are made. The target of the 2015 Paris Agreement, which is the legally binding treaty on climate change adopted in the UN Climate Change Conference in Paris in December 2015, is to limit global warming to 1.5 degrees Celsius above pre-industrial levels. To achieve this the IPCC has urged world leaders to set targets which will halve emissions by 2030 and see emissions reach net zero by 2050 (IPCC 2023). The UN Biodiversity COP16 has also stated that climate and biodiversity can no longer be treated as independent issues - further increasing compliance complexity and widening the scope of responsibility for any actor following these targets (UN environment programme 2024).

The building and construction sector alone is the root of over a third of all emissions caused by energy use in the European Union (EU) (European Commission, 2024). Thus, it is essential that the sector responds to the need for emissions reductions. The construction of new buildings requires many resources as well as land to build on. It is one of the most resource heavy industries and so has an important role in environmental degradation. There has been a wave of sustainability frameworks developed in an attempt to respond to these challenges and create pathways for the industry to audit itself against these responsibilities. A comprehensive understanding of sustainability in the real estate industry is needed to steer development in the right direction for the sake of the planet.

There are myriad existing frameworks for defining sustainability in the building and construction sector. Most concentrate on the construction phase of the life cycle - understandably, as it is the most resource intensive phase of the process. As it is possible to design new buildings to be energy efficient and considerably more sustainable compared to older buildings, the industry sometimes sees replacing poorly performing buildings with new construction as the solution. However, demolishing an existing building and building a new one to replace it can yield an environmental impact that can take up to eighty years of

operation to make up for the damage (USGBC 2024). It can be concluded that improving the existing building stock is better for the environment than replacing it.

Many of the frameworks do attempt to set a definition of sustainable for existing buildings however, many do not cover all Environmental, Social and Governance aspects. There are many different and overlapping frameworks available - from regulation to building sustainability certificates and reporting standards. However, there is a need for a more dynamic and concise definition for a sustainable building to cover this complexity and underpin these initiatives. To facilitate adoption in the sector, and the downstream environmental benefits, a straightforward definition must be established.

The research problem motivating this thesis emerged from the need of Granlund Oy to evaluate the current market situation of sustainability regarding existing building stock. The research and the survey questionnaire undertaken for this thesis supported and contributed to a separately published market research, acting as a base of that research.

### 1.1 The Research Question

A research problem is described by Williams, Wiggins and Vogt as “simply a statement of what we want to know”. They emphasise that the research problem and the questions based on it must be measurable, to allow an empirical answer to the question. The question is required to be directed and limited to a certain part of a population. Theory can act as a base for the question, which is then tested in the research (2024, 9-10). The research problem this thesis studies is the attributes that can define a sustainably operated an existing building, and specifically trying to ascertain why certain attributes are significant to practitioners and science. It has a clear target which is the real estate sector and specifically sustainability within the sector. The question this research attempts to understand is twofold. The first part of the question looks at what a sustainable building is, and the second part will try to understand why certain themes are crucial. The research question for this thesis is based on theory.

To expand on the first challenge, even though sustainability in the real estate industry is widely accepted as important, the rate of development is fast, and the requirements are evolving at pace, thereby creating an unclear set of demands. This becomes problematic both when the industry struggles to keep up with these changes and when it becomes expensive to implement them. The definition of a sustainable building - especially for those in operation - is often unclear, and this research will attempt to clarify this through the evaluation of existing frameworks and analysis of industry professional opinions.

To elaborate on the second challenge, a pervasive problem in the real estate industry is that businesses are uncertain of the benefits they will receive from implementing sustainability

practises. The core issue of value is currently in focus due to the economic environment and its impact on the real estate industry. The market conditions are and have been challenging for the real estate industry for the past couple of years (Kiinteistöyönantajat 2024). This has created a challenge to businesses in which they recognise the need for sustainability work but simply do not have enough funds to cover anything beyond the mandatory requirement. This is why in the literature review we will evaluate sustainable finance practises and in the empirical research we will attempt to get answers from the industry professionals on what impacts different sustainability measures have in the value of a building. As a result, this thesis creates a sustainability framework based on regulation, existing frameworks and on industry opinions.

The framework includes the most significant subject areas and subject-specific performance evaluation recommendations based on analysis of the currently used methods. Regulation and legislation is introduced in the below literature review, and establishes certain limitations for this research. The operational environment of this research is Finland and regulations relating to the sustainability in the real estate industry in Finland must be closely examined.

For the conclusions and recommended framework, there is a balance that needs to be considered. On the one hand there is a need for there to be enough information to show transparency and ensure comprehensiveness and reliability, while on the other it must be a simple enough tool for real estate sector stakeholders across the value chain to understand and adopt. There are already several different frameworks to describe and measure the sustainability of real estate, but those are often expensive and heavy to implement. The purpose of this thesis is to evaluate the balance between these two challenges and to create a science-based sustainability framework to answer the question - what is a sustainable building?

## 2 Sustainability

Sustainability is a vast concept that has evolved to contain science, ethics and economic justice perspectives. Many private and public organisations have created frameworks around it. Together they all try to respond to the existential challenges of today's society. The goal to recognize all stakeholders as well as the environment is most often the connecting factor shared by these frameworks. Some of the most used frameworks are the Triple Bottom Line, the Environmental, Social, and Governance (ESG) Pillars, sometimes called the 3Ps or three pillars, and the Global Compact. (Read 2023, 1-11.)

After examining the sustainability frameworks, we will explore why and how businesses are required to report on their sustainability. This will be done through discussion on corporate



social responsibility (CSR) and green finance. The European Commission, an institution which draws and proposes laws as well as implementing the decisions of European Parliament and the Council of the EU, defines CSR as a company led integration of social, environmental, ethical, consumer, and human rights concerns into their strategy and operations. Green and sustainable finance, however, is described as taking ESG measures into account in the finance sector investment decisions specifically (2024).

## 2.1 Sustainability Frameworks

According to Read (2023, 31-32), in economics we tend to concentrate on human-made capital as well as human-made factors of production, because these are easy to measure. Natural resources, however, are often taken for granted as those are harder to quantify. In the literature regarding business, it is often observed that if something cannot be measured, it then also cannot be managed. The study of economics has seen new broader definitions in its need to adapt to the changing world, but still requires better consideration of widely different ecosystems. Different sustainability frameworks have been created and developed in response to this need.

As mentioned earlier, most implemented sustainability frameworks are seen to have created the basis for operational definitions of sustainability. The Triple Bottom Line considers the overlapping values of human needs, ecological environment and corporate values. It was one of the first frameworks to have been created, in 1992, to measure and account for sustainability while considering all stakeholders. It emphasises the measurability and highlights the effect of social and environmental factors on corporate values. The Triple Bottom Line combines financial accounting with societal and environmental aspects. The measurability of the cost of our actions on different climate and environmental measures may be difficult, but we can see the development over time and attempt to improve. The same is true for societal challenges. Once these are quantified or narrated in a qualitative way, the approach examines the effects of governance. Thus, the financial and organisational decisions are not considered in isolation but as part of the whole ecosystem. This approach underlines that measurement alone is not sufficient without articulating and implementing goals based on those measurements. The challenge of the Triple Bottom Line approach is that it depends on the economic notion of supply and demand, which attaches a price to all activities. This can cause an imbalance, with the measurable aspects being favoured over the difficult to measure characteristics. (Read 2023, 31-32,39.)

The ESG sees the planet, people and profit as equal, which is why it is sometimes alternatively called the 3Ps or three pillars. The concept is often described as three overlapping circles, in which environment, social and governance unite. The modern view of the ESG paradigm is similar to the Triple Bottom Line approach. However, the ESG approach

is the most used sustainability framework in the finance sector because it is often used to highlight the risks that the social and environmental pillars can cause to the economy. It concentrates on the impact that the degradation of those pillars can have on businesses and organisations, such as their ability to sustain profitability. (Read 2023, 33-34.)

The UN Global Compact is a global corporate sustainability initiative started by the United Nations with the aim of pushing businesses towards sustainable practises. The framework created is based on ten principles around the 4 subject areas of human rights, labour standards, environment and anti-corruption (Read 2023, 38). Its goal is to support businesses to achieve the United Nations (UN) Sustainable Development Goals (SDGs) by 2030, by driving both awareness and action (United Nations Global Compact, 2024). The SDGs are a set of 17 priorities to fulfil the minimum requirements of prosperity for both people and the planet, as shown in Picture 1 (United Nations, 2024). The 2030 Agenda for Sustainable Development, which the Global Compact is accelerating, introduces this blueprint and was adopted by the UN member states in 2015. This framework was developed over decades through cooperation between UN members and more than 50 international and regional organisations. Currently, the SDGs are used by many businesses in different sectors to communicate on their sustainability work. The SDGs do not impose any regulation directly on businesses but have been implemented on some level in the legislation of member states, and thus indirectly guides the operational environment of businesses. (United Nations, 2024.)



Picture 1: United Nations Sustainable Development Goals

Many sustainability frameworks attempt to respond to the problem of “how to keep us inside our planetary boundaries”. At the same time there is a challenge to ensure that people worldwide have the essentials for life and the fulfilment of their basic needs. Kate Raworth

(2017) has attempted to find a balance between these two challenges by creating a new economic model called the doughnut. According to Raworth, the world is framed by the economics and the models created for its use. The goal that most countries strive for, is the growth of Gross Domestic Product (GDP), which is not a sustainable approach, as the world's resources are not exponential. Raworth thus created a new economic model which balances the needs of humanity within the planetary boundaries. The doughnut model is diagrammed in Picture 2 (Raworth, 2017). The diagram shows a ring in which the inner rim represents the social foundation and the minimum needs of society. If we fail in delivering for the social foundation, we suffer a shortfall of the economy. The outer rim represents Earth's ecological ceiling, which we cannot exceed without overshooting. Thus, the doughnut model represents an economic model in which we stay in between the social foundation and the ecological ceiling. Raworth (2017) presents this as the safe and just space for humanity in which the economic model is both regenerative and distributive.



Picture 2: Doughnut economics model by Kate Raworth

## 2.2 Corporate Social Responsibility

Corporate Social Responsibility (CSR) refers to a company's social responsibility, in which the company seeks solutions to societal challenges, and does not only seek to mitigate the

negative effects of its operations. In their book *Yritysvastuu ja oikeus* (2022) Vanhala and Ristaniemi share how, in this context, society can be seen as the company's sphere of influence through its stakeholders. In CSR, environment and nature are often listed among the key stakeholders. The European Commission defines corporate social responsibility as “a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis” (European Commission, 2011). Compliance with applicable laws, and respect for collective agreements between social partners, are prerequisites for fulfilling social responsibility.

This corporate social responsibility ties the company's actions into the social and environmental aspects. Because companies can have a significant impact on people's lives, it is important to attempt to prevent and manage possible negative impacts of business operations. The EU, as a public authority, has an important part in directing companies' actions to conduct their business sustainably. However, CSR should be voluntary and company led, as it affects many different aspects of the company's operations, including risk management, access to capital, stakeholder relationships and profit. (European Commission, 2024.)

Due diligence is at the core of corporate social responsibility. It means that a company does not only seek to comply with the law, but also comprehensively understands the societal impacts of its operations and actively seeks to prevent and reduce negative impacts, regardless of whether these have a legal definition. It is a non-legal concept that covers many areas. The EU itself has utilized the OECD's (Organization for Economic Cooperation and Development) due diligence model in its own corporate responsibility proposals. (Vanhala and Ristaniemi, 2022.)

As Vanhala and Ristaniemi (2022) discuss in their book, the environmental, social, and economic responsibilities have unfortunately become disentangled and siloed, leading to regulations and related approaches that are completely disconnected from each other. According to their assessment, this creates legal uncertainty and makes it difficult to follow and comply with norms. In addition, regulation can also be seen as a constraint for sustainable business operations. As an example, Vanhala and Ristaniemi (2022) discuss how sustainable business operations often require cooperation with competitors but that this cooperation may trigger a conflict with competition law - for example where a set of companies make agreements amongst each other to improve sustainability and thereby cause a price increase, which is then passed onto the consumer. In such situations, corporate responsibility conflicts with legislation. Changes to this type of legislation have already been made in some European countries. For example, Danish legislation states that exceptions to competition law can be made in situations related to sustainability crises. At the same time,

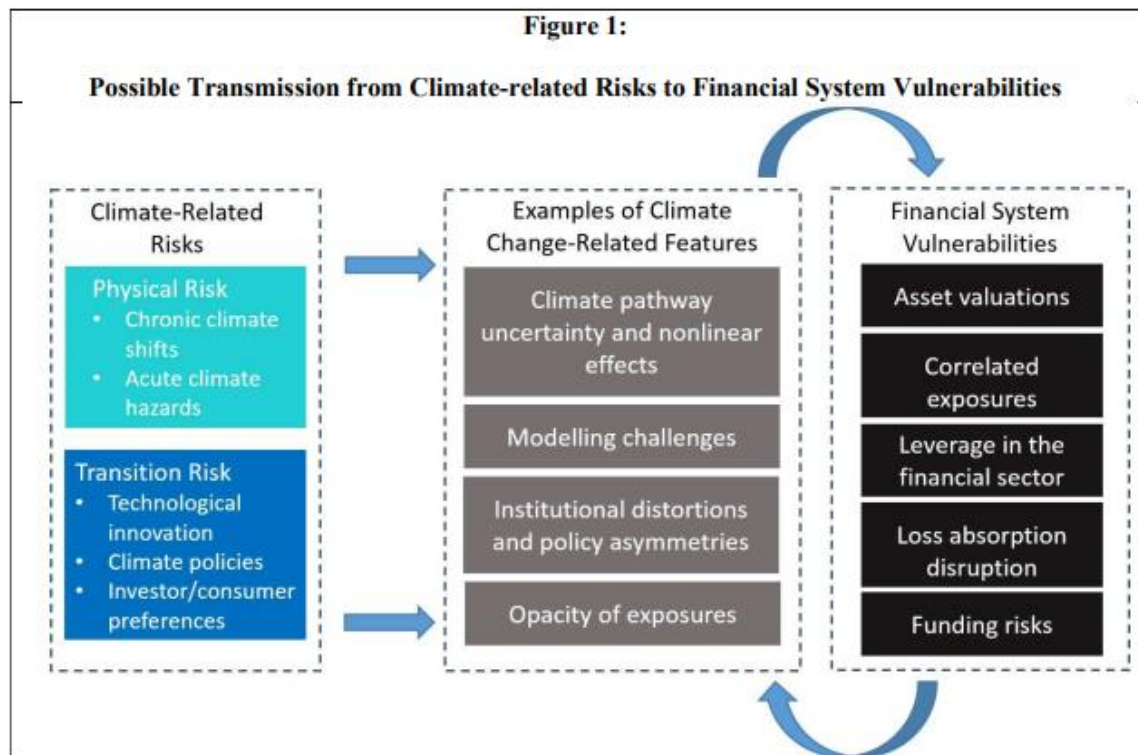
in Finland, establishing similar agreements is still likely to be classified as the formation of an illegal cartel. This forms a challenge for sustainability work.

### 2.3 Sustainable and Green Finance

Sustainable finance covers environmental, social, economic and governance issues. There are many different terms such as responsible investment, ESG, green finance and climate finance, with all covering different aspects of it. Sustainable finance is described by Thompson (2021, 3) as a part of an inclusive and environmentally sustainable economy in which financial assets are created, valued, and transacted to shape real wealth by serving its long-term needs. The European Commission (2024) highlights that sustainable finance includes both green and transition finance.

There are many definitions for what green finance is with certain elements shared amongst them. Thompson (2021, 5) summarises these as allocation of capital for wider and more sustainable purposes, investments that reduce harm or benefit the environment, managing environmental and climate related risks, supporting infrastructure and policies which enable green finance, and certain products or services which are supported by green finance such as retail, commercial or FinTech (financial technology). The European Commission (2024) describes transition finance as financing private investments in transitioning to more environmentally friendly operations or performance levels.

Picture 3 showcases the connection between the climate and the financial system by Brunetti et al. (2022). The picture highlights the need for green finance. The climate related physical and transitional risks highlight the vulnerabilities of the financial system and accentuates the potential negative feedback loop presented with the blue arrows in the picture. There are some frameworks which have been created to respond directly on the stranding risks cause by climate change, such as the CRREM framework which will be introduced later in the thesis.



Picture 3: Climate ecosystem and the financial system relationship

Jean Tirole examines these subjects in his book *Economics for the Common Good* (2017, 185-186) and states that the creation of value and accountability are the two principles all businesses and institutions are based on. Tirole continues to examine the unfinished state of accountability vis-a-vis consideration for businesses stakeholders. He claims that the importance of finance is based on all companies requiring funding to be able to grow and the need to raise money from shareholders or creditors (financiers). However, the financiers will only provide money if there is a clear reassurance on return for that investment (Tirole 2017, 177-178). The need for sustainable finance therefore derives from the drive to protect the company's value through sustainable operations.

The need for change is widely recognised, and many businesses are already using sustainable strategies to respond to challenges as they ensure the success of their organization. In their book *Ilmastouudistajat* (2023, 89) Susanna Perko and Aija Bärlund share their views on the change in the finance sector. They present the change as an opportunity and a place for businesses to assess their mission, vision, strategy, actions and values. The company's owners, government and leadership should share an understanding on how climate change is considered across all aspects of the business.

### 3 Sustainable Real Estate Industry

The built environment has a big impact on the wider environment. In Finland, about 30% of all emissions are created by the real-estate industry (FIGBC, 2024), either in construction or via the energy use of the in-use phase of the building. At the European level, 40% of total energy consumption and 36% of total emissions are caused by buildings (European Commission 2024). The real-estate sector can be said to have a significant role in climate change mitigation due to this outsized impact on energy use and emissions.

The biggest challenge of the industry regarding sustainability is the sheer complexity of the issue - designing and implementing a comprehensive approach that balances all of the different areas of sustainability is a multi-faceted and wide-ranging task. There are currently many ways to report on sustainability or showcase that a building is sustainable. The approach is dependent on the use case. The previous body of research on the subject, which has been identified and considered for the purpose of this thesis, has not been able to codify a clear definition for sustainability of buildings (Isaksson R. & Rosvall M. 2020) and it has found any definition to be especially lacking for judging existing buildings operations and maintenance phases (Lima L., Trindade E., Alencar L., Alencae M. & Silva L. 2021.)

An important consideration in building sustainability is whether the whole value chain should be considered. As Isaksson and Rosvall (2020) assert in their article '*Understanding building sustainability - the case of Sweden*', most companies in Sweden consider only the direct area of their business and disavow the upstream and downstream activities of the value chain. They make the argument that companies *should* in fact consider the whole value chain, as most large companies could cultivate and wield a strong influence on their customers and/or suppliers. Though their article only reviews the Swedish market, their focus on large companies with high potential influence on their supply chain appears to be valid in Finland as well.

The European Union's new Corporate Sustainability Reporting Directive (CSRD) attempts to respond to this value chain challenge and will be introduced in more detail later in this thesis (European Commission, 2024). However, as important as legislation is when it comes to implementing sustainability frameworks, political decision making is slow and thus laws and legislations cannot keep up with the speed that is required to respond effectively to the unfolding climate crisis.

In the construction and real estate sector, a focus on sustainability is not a given. In new construction, as well as renovation of existing buildings, there is always a need for new materials. For the production of these new materials, natural resources and energy use are always required. Both this energy and natural resource use create emissions and require labour to produce the precursor materials for the aforementioned new materials. If these

emissions and work are not monitored and limited, a new building cannot be determined to be sustainable.

### 3.1 Regulation and Directives

The European Union (EU) and its member states work together with the United Nations and other global partners, as climate change and environmental degradation are global threats. The EU has been part of many revolutionary negotiations and signed both the Kyoto Protocol in 1997 and subsequently the Paris Agreement in 2015. These have steered the way for the decision of the EU to become a global leader in climate action. (European Council 2024).

The EU has a target to become carbon neutral by the year 2050, and in doing so, attempting to become the first climate neutral continent. To achieve this target, the EU has approved The European Green Deal, which can best be described as a new ambitious strategy that includes many new policy initiatives. The policies introduced in the Green Deal cover areas such as climate, the environment, energy and sustainable finance. The package was launched by the European Commission in 2019 and has since been extended with several new initiatives. (European Council 2024.) The ambition and scope of the European Green Deal is vast, and the different areas of the initiative are well showcased in Picture 4 (Construction Products Europe 2019).





Picture 4: The European Green Deal 2019

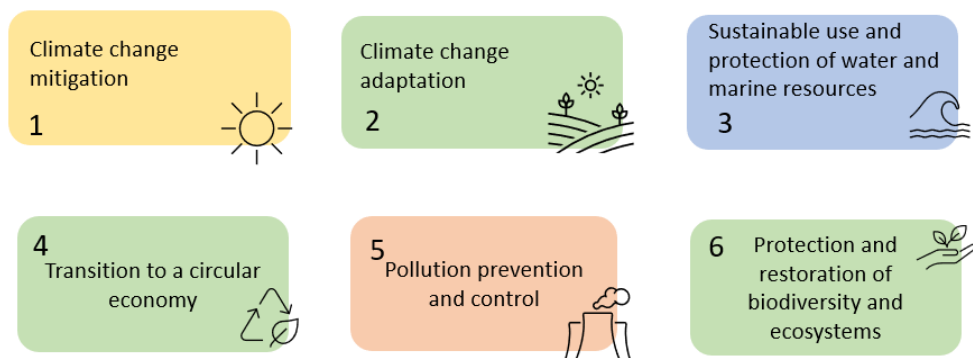
In 2021, the European Council approved the Renovation wave strategy (the green-coloured top-centre branch in Picture 4) which aims to create more sustainable buildings. This has strong implications on the existing building stock in the EU. Its aim is to improve overall living standards for Europeans by renovating 35 million buildings by 2030, thus answering the problem of poor energy efficiency of the existing building stock. As part of the Renovation Wave, the Energy Performance of Buildings Directive (EPBD) was approved and laid out in 2024. The directive sets out many new measures to make the European building stock more sustainable, and thus has been included in this thesis review. (European Commission 2024.)

To achieve the goals of the European Green Deal, it is important to direct investments towards sustainable projects and actions. To achieve this, the EU's Sustainable Finance Action Plan called for the creation of a common classification system for sustainable economic activities, in order to establish a common language and clear definition of what is “sustainable”. The EU Taxonomy was developed to fulfil this goal and will be introduced in this thesis as one of the existing frameworks for determining what sustainable real estate is. (EU Commission, 2024). CSRD is a European Union's reporting directive to standardise sustainability information reported by companies. It is a quantitative reporting standard which only determines what information a company is required to give but does not have any requirements on what they actually do. EU taxonomy on the other hand is the EU's framework

for sustainable activities. It determines how sustainability in different sectors activities is measured.

### 3.1.1 EU Taxonomy

As part of the European Green Deal, the European Union has created a classification system that defines how environmentally friendly different business activities are. The EU Parliament and the European Council approved the taxonomy regulation in the summer of 2020. The purpose of the EU taxonomy is to guide companies and other investors towards choosing more sustainable and responsible investment options. As a classification system it does not sanction where to invest, but rather serves as a recommendation for which investment targets best support the European Union's climate and environmental goals. The taxonomy criteria covers six climate goals, which are described in Picture 5. Delegated acts are defined and adopted as amendments which add context and criteria for these goals. An economic activity is considered in line with the taxonomy when it promotes at least one of these six environmental goals. In addition, it must not harm other environmental goals - this is referred to as the Do No Significant Harm (DNSH) principle - and it must meet minimum social protection measures (European Commission 2024.)



Picture 5: The six climate and environmental goals set in the Taxonomy regulation

A company and its business activities fall within the scope of the EU taxonomy when the industry it represents is defined in the taxonomy regulation. The company first determines its eligible business activities - what proportion of its business is eligible under the taxonomy, i.e. what part of its business is defined in the taxonomy regulation. Next, the company determines what proportion of their eligible business activities are aligned with the taxonomy delegated acts - their aligned eligible business activities. Finally, the company is required to report its turnover, operational expenditure, and capital expenditure for their aligned eligible business activities, as well as their (not-aligned) eligible business activities, and their business operations which fall into neither category.

The real estate and construction sector is covered in the taxonomy regulation, and seven different categories have been defined for its various activities:

- 7.1 Construction of new buildings
- 7.2 Renovation of existing buildings
- 7.3 Installation, maintenance, and repair of energy-efficient equipment
- 7.4 Installation, maintenance and repair of charging stations for electric vehicles in buildings (and parking spaces attached to buildings)
- 7.5 Installation, maintenance, and repair of instruments and devices for measuring, regulation, and controlling energy efficiency of buildings
- 7.6 Installation, maintenance, and repair of renewable energy technologies
- 7.7 Acquisition and ownership of buildings

For each category, its own technical evaluation criteria have been defined to determine compliance with the taxonomy. In the real estate and construction sector, reporting on taxonomy eligibility has been required since January 2022, and compliance with the taxonomy has been required since January 2023 by companies within the scope of the Non-Financial Reporting Directive (NFRD). The technical evaluation criteria is defined for economic activities according to the above seven different categories in the real estate and construction sector. In addition, the regulation defines criteria for assessing the significant harm caused by these categories to other climate goals. (European Commission 2024.)

The EU Commission has separately published delegated acts that more precisely define the criteria for the different goals. For the purposes of this research, the technical criteria for the category **7.7 acquisition and ownership of buildings** will be explored in more detail. For this category the EU taxonomy has defined criteria for only two goals - 1. climate change mitigation and 2. adaptation to climate change. The criteria were defined in the EU Commission's first delegated act in 2021 which came into force at the beginning of 2022. (European Commission 2024.)

In November 2023 the EU published a delegated act which sets out criteria for the non-climate environmental objectives of the EU taxonomy. The published criteria were defined only for four economic sectors, including the real estate and construction sector with the exception of **7.7 acquisition and ownership of buildings**. However, if a building is built after 31.12.2020 it needs to align with the technical criteria set for **7.1 Construction of new**

**buildings.** For this reason, the technical criteria will be introduced for both activities. (European Commission 2024.)

### 3.1.2 CSRD - Corporate Sustainability Reporting Directive

The Corporate Sustainability Reporting Directive (CSRD) is a directive laid out by the European Union that requires companies to report on the impact of their business on the environment and the society. This information is also required to be audited. The EU taxonomy and its requirements are applied to businesses within the CSRD reporting. The directive modernises and strengthens the EU's existing reporting rules on companies' social, environmental and governance reporting. The directive aims to ensure that investors and other stakeholders have access to the information they need to assess companies' impact on people and the environment. In addition, investors can assess the financial risks and opportunities arising from climate change and other sustainability issues. The goal for the standard is also to reduce reporting costs in the long term as the information provided becomes more standardised. (EFRAG 2024.)

The private association EFRAG (European Financial Reporting Advisory Group) has been involved in creating and developing the Sustainability Reporting Directive. EFRAG serves as an advisory group to the European Commission and has provided technical advice on EU sustainability reporting since 2022. The CSRD reporting is based on the EFRAG-created European Sustainability Reporting Standards (ESRS) for sustainable development reporting. The CSRD reporting is done quantitatively and qualitatively for the twelve ESRS standards showcased in Picture 6. (ESRS 2024.)

Category	Identifier	Focus
Cross-cutting	ESRS 1	General requirements
Cross-cutting	ESRS 2	General disclosures
Environment	ESRS E1	Climate
Environment	ESRS E2	Pollution
Environment	ESRS E3	Water and marine resources
Environment	ESRS E4	Biodiversity and ecosystems
Environment	ESRS E5	Resource use and circular economy
Social	ESRS S1	Own workforce
Social	ESRS S2	Workers in the value chain
Social	ESRS S3	Affected communities
Social	ESRS S4	Consumers and end users
Governance	ESRS G1	Business conduct

Picture 6: The ESRS standards of the CSRD

The ESRS standards are split into three categories. The first two standards are multidisciplinary and deal with all the sustainability factors that are considered in the following subject specific standards. There are currently ten subject specific standards which

are split to cover the environment, social and governance factors. All in all, the ESRS contain almost 1200 datapoints to report on. On top of these, industry specific standards are being planned. EFRAG is also in charge of giving guidance on the application of the standards. They have opened a specific website for questions and answers, where anyone can post questions, and everybody is able to follow the process. (Silvola et al. 2024, 97-99.)

From a reporting perspective, if an individual standard is considered material (it has an impact on the company's business or poses risks or opportunities), the qualitative or quantitative information defined in the standard must be reported on. Mandatory information for all reporting, general requirements, and general information are included in the multi-sector standards and are partly derived from EU legislation. Climate change is considered material for all reporting companies and is therefore mandatory. For other topic-specific standards, a double materiality analysis is required. If the materiality analysis determines that the ESRS standard is not material to the company's business, a brief explanation should be provided. (EFRAG 2022, 5, 9-10.)

CSRD creates opportunities for companies to develop their own strategies, with reporting serving as an opportunity to create winners. When company management understands the opportunities of the green transition and utilises the information provided by mandatory ESG reporting internally, the company can create investments and strategic competitive advantage. This advantage presents itself if the company's management understands that external reporting is more than just a cost or administrative burden. Sustainability is no longer an ideological question, but an opportunity for leadership. As sustainability reporting has been integrated into financial reporting and is therefore subject to formal financial oversight, failure to report will result in consequences in the same way as neglecting to report financial information. (Silvola et al. 2024, 14-15, 46.)

### 3.1.3 EPBD - Energy Performance of Buildings Directive

The energy performance of buildings directive (EPBD) has been revised in 2024, to align better with the European Green Deal, by aiming for decarbonization of building stock EU-wide by 2050. The original Energy Performance of Buildings Directive 2010/31/EU was first published in 2010. Together with the revised Energy Efficiency Directive (2023), the directive aims to enable both people and businesses to become more energy efficient, ease the investment decisions in the market, while meeting the above-mentioned goal of building stock decarbonization by 2050. The renewed purpose of the directive is to guide all EU countries to update their laws and regulations within two years from the enforcement date of the directive - 28th May 2024 - in the measures best-suited for their national context. Due to historical factors the building stock across the EU can vary greatly. (European Commission 2024.)

While the EPBD concentrates on making EU wide buildings more energy efficient, it also aims to respond to energy poverty and attempts to improve the quality of life of EU citizens (European Council 2024.)

In Finland, voluntary energy efficiency agreements have been created in response to the EPBD and similar EU energy efficiency directives. In the real estate sector, energy efficiency agreements have been adopted for residential and commercial properties. These agreements have been co-developed between the government and the business sector, with the aim of promoting more efficient energy use between 2017 and 2025. In signing up to the relevant program, companies commit to the agreements and associated activities. The real estate sector agreement was created in collaboration between the Ministry of Economic Affairs and Employment, the Ministry of the Environment, the Energy Authority, and RAKLI thus, is expected to cover upcoming national regulation updates.

Many of the measures introduced in the EPBD complement other European Green Deal policies and therefore continue to reinforce the importance of energy efficiency related measures of a sustainable building. Because of this, the EPBD will be included in the comparison of the existing frameworks.

### 3.2 Sustainability Certifications

Sustainability certifications and assessments are commonly used tools to evaluate and compare properties. Their purpose is to verify and measure environmental efficiency as well as help companies to save long-term costs and preserve the Earth's limited resources. Certifications also serve to communicate the environmentally friendly credentials of the property owners' brand and are used as a trusted verification of sustainability in property transactions. (FIGBC 2022.)

This verification and compatibility are behind the creation of sustainability certifications. As achieving environmental sustainability goals is material to the real-estate industry, certifications serve to provide a common language and standardised evaluation to judge against. Most certifications have separate classes for planning, building and existing buildings. For the purpose of this thesis, only the existing building sustainability certifications will be examined in more detail. Two of the most used environmental sustainability certifications in Finland have been chosen to be examined in more detail, as well as one social sustainability certification. These have been chosen due to their in-use building certifications, geographical scope, as well as their prominent use in the Finnish market. However, I will briefly introduce other notable but excluded certification frameworks.

RTS-ympäristöluokitus is a Finnish certification intended especially for construction projects. It was created by the Finnish foundation Rakennustietosäätiö (RTS) which offers information

services for the construction industry. The certification is intended specifically for national use and evaluates construction projects within Finnish rules and regulations. RTS is currently in the process of investigating property specific sustainability criteria in their KIVA-project. The goal of the project is to highlight the Social and Governance aspects of the ESG in buildings sustainability. The RTS-ympäristöluokitus has been assessed not to be material regarding this research because of its restricted use due to its geographic limitations. At the time of writing this research the existing building certification was not commonly used due to its relevance to foreign investment and difficulty to compare internationally. (RTS 2024.) It is included here for wider context and to highlight these barriers to adoption.

The Nordic Swan Ecolabel is an ecolabel created for products and services first introduced by the Nordic Council of Ministers, an official body for co-operation of the Nordic nations of Denmark, Faroe Islands, Finland, Greenland, Iceland, Norway, Sweden and Åland. The certification was created especially for offices, educational buildings and residential buildings. The New buildings (089) category sets criteria for labelling, which includes the full lifecycle of a building including the construction process (Joutsenmerkki 2024). The Nordic Swan Ecolabel has been assessed not to be material regarding this research because of the limited geographical adoption, being restricted to the Nordics, and the resulting difficulty to compare internationally.

### 3.2.1 BREEAM

Building Research Establishment's Environmental Assessment Method (BREEAM) is a UK based third-party assessed and science-based sustainability certification system. It is the most used certification system in the European market and is currently being used in over 89 countries. The aim of BREEAM is to offer information about the performance of buildings. The BREEAM certification is evaluated by a BREEAM Assessor who checks that the requirements are met and creates a report. Building Research Establishment (BRE) audits this report and, all being well, grants the certifications. BREEAM was initially published in 1990 and is the first sustainability assessment and certification tool in the world. BREEAM has a wide scope to consider sustainability, and it has created different certification programmes to cover the whole life cycle of a building. The latest version of BREEAM, in-use at the time of this research, is version 6 published in 2020.

The BREEAM In-Use standard is a framework for asset performance and management. It validates the operational asset data of an existing building and can be used at an individual or a portfolio level. BREEAM In-Use enables benchmarking both inside a portfolio as well as against other comparable assets globally. The certification is split into Asset performance and Management performance. This determines the scope of the certification. The asset performance covers buildings that are owned by a company as an asset and does not have a

requirement for it to have users at the time of certification, while the management performance requires that the building has been in use for a minimum of 12 months. There are also different criteria for commercial and residential buildings. The BREEAM scoring system is based on categories weighted by their environmental significance, including upstream and downstream considerations including well-being, health, and transport alongside direct environmental impact factors including energy use, water use, and land use. The levels a project can rank on are Pass, Good, Very Good, Excellent and Outstanding. These are measured in percentages. (BREEAM 2024.)

The biggest difference between the Asset and Management performance criteria is their focus. The Management performance criteria highlights and weights the usage of the building, whereas the Asset performance criteria has its focus on holding and owning the building (BREEAM 2024). Table 1 introduces all the environmental categories included in the BREEAM In-Use as well the weighted performance difference between the Asset and Management performance categories. The Management category is weighted only for management performance and ensures that the whole life cycle management of a building is considered, and clear targets are placed. A more detailed table of each of the other categories will be introduced in the comparison of all sustainability certifications later in this research.

Table 1: BREEAM certification categories.

Environmental Category	Weighting	
	1: Asset Performance	2: Management Performance
Management	0%	11%
Health and Wellbeing	20%	17%
Energy	25%	27%
Transport	5%	0%
Water	11%	9%
Resources	13%	11%
Resilience	13%	11%
Land Use and Ecology	4%	7%
Pollution	9%	7%
<b>Total</b>	<b>100%</b>	<b>100%</b>
Exemplary (additional)	10%	9%

BREEAM is committed to being aligned with the EU taxonomy regulation to ensure its customers and stakeholders will benefit from its use as much as possible. The In-Use v6



scheme mapping has already been updated to align with the technical screening criteria of the climate risk assessments (BREEAM 2024). BREEAM In-Use has also announced its alignment with the Global Real Estate Sustainability Benchmark (GRESB) Mapping Resource, allowing for benchmarking with the GRESB's Real Estate Standard and reference guide. Partly due to this reason, the GRESB has been chosen as one of the frameworks that will be used in the evaluation of sustainability criteria. BRE Group, the organisation behind the BREEAM certification reaffirms its position as the market leading sustainability certification with this collaboration. (BRE Group 2024.)

### 3.2.2 LEED

LEED (Leadership in Energy and Environmental Design) is the world's most used buildings certification system. LEED certification is United States based, and the applications are checked and approved by the U.S. Green Building Council which operates under the Green Building Certification Inc credentialing body. The LEED certification system has some American practices at its core but has been applied in more than 130 countries. As with BREEAM certifications, there are several LEED certifications covering different use cases. For the purpose of this research, we will concentrate on the LEED Operations and Maintenance certification (LEED v4.1 O+M Existing buildings). At the time of writing, version 4.1 is in use however the updated v5 programme is being developed and a beta version has been published. We will concentrate on the current v4.1 but also briefly look at the most significant updates on the programme. (USGBC 2024.)

The purpose of the LEED Operations and Management certificate is to certify how sustainable an existing building is. Like BREEAM, having a LEED Operations and Management certificate for real estate is seen to protect the asset. The interpretation of an existing building within the LEED certification covers buildings that have been fully operational and occupied for a minimum of one year and are not undergoing major construction. The scores of the certification criteria are given as credits. The focus of the LEED O+M certification is related to reducing contribution to climate change as most of the LEED credits are related to either operational and embodied carbon. The certification also covers human health, water resources, biodiversity, green economy as well as community and natural resources. (LEED, 2024)

### 3.2.3 WELL

The WELL Building Standard is a science-based standard for occupant well-being established by the International WELL Building Institute (IWBI). The effect of physical and social environments on human health have been studied and the WELL certification has been developed in response to those studies over the last ten years. It defines the comfort and safety of spaces with the aim of improving productivity and quality of work. As clear

definitions for social responsibility in real estate had not been established previously, the WELL certification has become an important factor in determining the social responsibility impact of buildings. (WELL 2024.)

The WELL certification (WELL 2024) emphasises human-centred design in building planning and considers ten different categories:

- High-quality indoor air
- Clean drinking water and hygienic water use
- Healthy nutrition
- Quality and functional lighting, utilising natural light
- Promotion of physical activity and movement
- Thermal comfort, suitable and even temperature
- Pleasant acoustics
- Safe and healthy indoor materials
- Well-being supporting spatial solutions and practices
- Collaboration encouraging spatial solutions and practices

### 3.3 Organisations and existing reporting frameworks

There are many organisations that have created sustainability frameworks in an attempt to determine the sustainability of a building. Most of the already existing frameworks centre around environmental sustainability while overlooking the social and governance sides of the ESG, due to the central and easily-understood impact of environmental measures in the real estate and construction industry. In this chapter some of the most used frameworks will be introduced along with the organisations behind them.

The Science based targets initiative (SBTi) has been chosen due to its prominence in the industry, concentration on existing building stock, and its coverage of buildings' effect on climate (Science Based Targets 2024). The Science Based Targets Network (SBTN) looks at the wider impact of companies on nature (Science Based Targets Network 2014). SBTN is considered to expand on the science-based targets on climate set in the SBTi and supports companies with a wider framework to consider their impact on the natural environment

within. SBTN is included here to expand our consideration of the environmental impact of the real estate sector beyond emissions calculations and into the wider web of potential impact.

The Global Real Estate Sustainability Benchmark GRESB was chosen to gain a deeper understanding of what sustainability measures are regarded as the most important in the market. Due to GRESB being an independent member-based organisation it is widely used in the real estate industry (GRESB 2024). Another widely used measure of sustainability in the real estate sector is The Carbon Risk Real Estate Monitor (CRREM). Because CRREM is widely used in the real estate sector, it was chosen for this evaluation.

Many companies in the real estate sector have been using the Global Reporting Initiative (GRI) as their reporting standard so far. GRI is an independent international organisation which offers a standardized way for businesses to communicate about their sustainability (GRI 2024). GRI reporting standards are widely used however, it operates similarly to the EU's CSRD reporting standards. (GRI 2024.)

### 3.3.1 SBTi - Science Based Targets Initiative

The Science Based Targets initiative (SBTi) facilitates corporate climate action and directs companies, as well as financial institutions, to set greenhouse gas (GHG) emissions targets by providing standards, tools, and guidance. Everything the organisation offers is based on the latest climate science and is in line with the latest regulation. At the time of writing this research, SBTi has published that over 4,000 companies had set targets and had them validated by the organisation as of the end of 2023 (Science Based Targets 2024). SBTi is a charity organisation based in the UK, consisting of the charity itself and a subsidiary which offers services to validate the targets based on their services. They list the following companies as their partners: CDP, the United Nations Global Compact, the We Mean Business Coalition, the World Resources Institute (WRI), and the World Wide Fund for Nature (WWF).

The SBTi set its targets in 2015 based on the Sectoral Decarbonization Approach (SDA) which is a scientifically informed method to set GHG targets in line with achieving a limit of a two-degree temperature rise above pre-industrial levels. Since then, the SBTi has updated and created new targets - based on the 2015 Paris Agreement - attempting to limit the world's average surface temperature to 1.5 degrees above pre-industrial level. The SBTi works in a way where it publishes a target dashboard on their website with all the companies that have set targets with them. The commitment compliance policy came into effect on 31 January 2023 and contains a list of companies alongside their commitments. If a company has failed to submit targets within the SBTi set window of 24 months, they are identified in the dashboard as "Commitment removed". This initiative holds all participants accountable. (Science Based Targets 2024.)

Due to the lethargic speed of political decision-making, the SBTi drives the private sector to take leadership on climate action. It has created tailored approaches to many key sectors and, due to the heavy emissions of the buildings sector, SBTi has completed and published targeted guidance for the sector. This guidance was released in August 2024. The development process of the buildings sector guidance began in October 2021 and has since gone through research, drafting and piloting phases. The goal of the SBTi Buildings project is to establish a pathway to align buildings' in-use emissions as well as embodied emissions with the 1.5-degree target. It also aims to help companies to report and account emissions and help them to set targets as well as validate them. SBTi criteria for buildings guides businesses to use GHG emissions calculation standards when calculating all emissions. It also helps owners, developers and companies that manage or finance real estate to apply criteria for their specific use. (SBTi 2024.)

### 3.3.2 CRREM - The Carbon Risk Real Estate Monitor

The Carbon Risk Real Estate Monitor (CRREM) is a tool that allows investors and property owners to assess their property's susceptibility to stranding risks based on the analysis of energy and emission data as well as official requirements. CRREM's purpose is to help the European Union to achieve its decarbonization goals especially where it comes to the poor energy efficiency of existing building stock. (CRREM 2024.)

CRREM was developed by a consortium of companies and universities and initially funded by the European Union's Horizon 2020 Research and Innovation programme. Since 2021 it has been funded by the Laudes Foundation, a philanthropic family enterprise that supports a transition to a green, fair and inclusive economy (Laudes Foundation 2024). The original members of the consortium consisted of European Universities and other educational institutions, pension funds, and the GRESB organisation. The Global Scientific & Investor Committee (GSIC) works as the advisory board for their industry project partners. The project partners in the CRREM Global Investor Committee consist of real-estate industry in Europe. (CRREM 2024.)

Internationally CRREM is mostly used by investors to evaluate possible stranding risks for individual buildings and portfolios. Its purpose is to compare the operation's carbon intensity to the Paris Climate Agreement and affirm whether the building or portfolio is aligned with the agreement. In 2022, CRREM and the SBTi partnered on a technical collaboration to develop 1.5°C in-use emissions decarbonization pathways for the real estate sector. The SBTi reviewed the CRREM process and assessed the methodology. After the alignment of the methodological choices, the SBTi took the new set of pathways and integrated them into the SBTi target-setting tool. Having CRREM aligned with the SBTi standards allows for more applicability and wider usage. CRREM itself continues to offer real estate investors and

stakeholders decarbonisation and energy intensity pathways as well as financial risk assessment tools. It aims to help with carbon mitigation strategies that are also cost-effective. (CRREM 2024.)

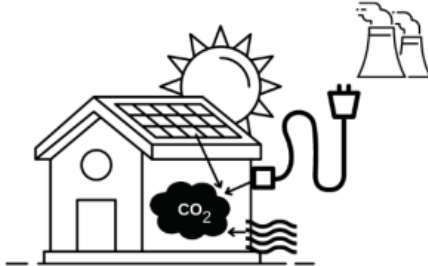
In 2022 CRREM updated the base year for the pathways from 2018 (CRREM First Version) to 2020. As seen in Figure 1, the updated pathway is steeper than in the second version. This is due to the lower remaining global anthropogenic emissions budget - or the amount of emissions humanity can still emit before hitting and exceeding the 1.5 degrees above pre-industrial levels target. As the real estate industry has already overshot its projected emissions since 2018, the budget was reduced from 2020 onwards and the targets in the later years are significantly stricter. In Picture 7 the overview of CRREM's carbon- and energy-footprint are introduced. This will be evaluated against other frameworks later in this thesis. (CRREM 2024.)



Figure 1: Global building sector CO<sub>2</sub>-only pathway (absolute emissions)

**Calculation of an asset's CO<sub>2</sub>**

On-site generated electricity lowers the CO<sub>2</sub> emissions of the electricity consumption

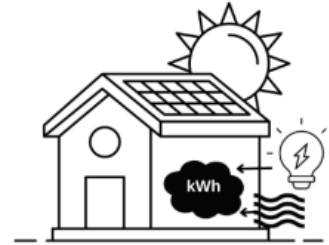


$CO_2 = \text{all emissions from direct combustion } [CO_2] + (\text{all consumed electricity } [kWh] - \text{electricity generated } [kWh]) * EF_{grid} [kg CO_2/kWh] + \text{emissions from district heating purchased } [kg CO_2]$

each summand has to be  $\geq 0$ , in case it isn't use 0

**Calculation of an asset's kWh**

energy-consumption  
All consumed kWh are taken into account



$kWh = \text{all kWh from direct combustion } [kWh] + \text{electricity from the grid } [kWh] + \text{electricity produced and consumed on site } [kWh] + \text{district heat purchased } [kWh]$

vs. previously used methodology

$\text{net energy demand } [kWh] = \text{all kWh consumed } [kWh] - \text{electricity produced on site } [kWh]$

Picture 7: CRREM’s schematic overview of Carbon- and Energy-footprint of an asset

3.3.3 SBTN - Science Based Targets Network

The Science Based Targets Network was launched by the same founding partners as the SBTi and was created to respond to sustainability challenges relating to nature - a wider scope than the SBTi. The SBTN’s targets are a superset of the SBTi. On top of challenges faced by businesses relating to climate change, the SBTN network sets science-based targets also for freshwater preservation, land generation, healthy oceans and biodiversity protection. The SBTN approach is targeted towards companies and cities. (SBTN 2024.)

The Global Biodiversity Framework 2030 targets were set in the Kunming-Montreal Global Biodiversity Framework (GBF) which is an agreement signed in COP15 by 196 countries. This agreement created a roadmap to halt and reverse nature degradation. Even though not legally binding, it attempts to encourage businesses to take leadership in nature related targets. (SBTN, 2024.) Picture 8 showcases the SBTN criteria and compares it against the GBF.

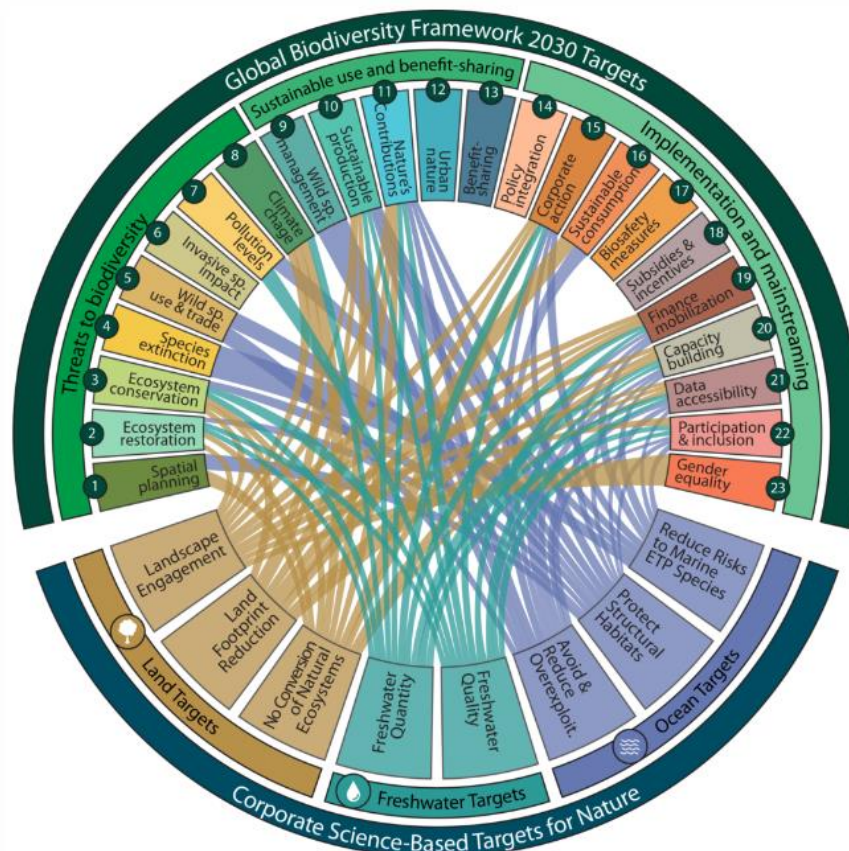


Figure 2: GBF goals and targets that are relevant and aligned to science-based targets for nature, with specific SBTs

#### Picture 8: SBTN versus Global Biodiversity Framework 203 Targets

From the SBTN standards, only the climate targets have been created specifically for the real estate sector, as the SBTN shares the SBTi criteria to set science-based targets for climate. For this reason, the other targets for freshwater, land, ocean and biodiversity will be evaluated on a general level.

#### 3.3.4 GRESB - Global Real Estate Sustainability Benchmark

The Global Real Estate Sustainability Benchmark (GRESB) is an organisation offering ESG performance data and peer reviews for financial markets, investors and managers. GRESB was founded in 2009 with the aim of responding to the international need of net zero emissions by 2050. GRESB collects information from businesses regarding their environmental, social and governance data, validates it, scores it and independently benchmarks it to offer intelligence, tools and reporting solutions. GRESB's goal is to improve sustainability outcomes and create value for stakeholders. (GRESB 2024.)

GRESB aligns with the UN Sustainable Development Goals and the Paris Climate Agreement. It is however based on independently owned and governed standards that are reviewed

annually. However, GRESB also reviews other frameworks and standards to see how it may align with them. Due to GRESB being industry led with a focus on productive stakeholder engagement, they also consider stakeholder feedback in the development process. (GRESB 2024.)

For existing buildings which are not undergoing development, GRESB has two categories available - Management and Performance. The Real Estate Standing Investments Benchmark requires participants to complete both the Management and the Performance components in which the ESG dimensions are structured differently. The scoring is showcased in Picture 9 in which the management aspects are scored weighing more on the governance part of ESG whereas, the performance aspects highlight the environment. (GRESB 2024.)

GRESB Real Estate Benchmark					
	Aspect	Code	Score	Weight	Weight
				Component	Total
Management	Leadership	LE	5	20 %	8,1%
	Policies	PO	4,5	18 %	7,3%
	Reporting	RP	1,8	7 %	2,9%
	Risk Management	RM	3,5	14 %	5,7%
	Stakeholder Engagement	SE	10	40 %	16,2%
	<b>Total</b>		<b>24,8</b>		
Performance	Risk Assessment	RA	8,75	24 %	14,2%
	Targets	T	1,78	5 %	2,9%
	Tenants & Community	TC	3,7	10 %	6,0%
	Energy	EN	9	24 %	14,6%
	GHG	GH	5	14 %	8,1%
	Water	WT	4	11 %	6,5%
	Waste	WS	3	8 %	4,9%
	Data Monitoring & Review	MR	1,8	5 %	2,9%
	Building Certifications	BC	0	0 %	0,0%
	<b>Total</b>		<b>37,03</b>		
<b>GRESB Score</b>			<b>61,83</b>		

Picture 9: GRESB Real Estate Benchmark scoring

### 3.4 Content Analysis

#### 3.4.1 Comparison of EU Regulation

The regulation is compared here as a high-level overview. We are using the European Sustainability Reporting Standards (ESRS) as the base of this comparison in order to keep complexity at a manageable and proportionate level. Other categories have been included which are not considered by the ESRS to ensure that key features of other regulations are included.



Table 2: Comparison of the EU regulations

	EU Taxonomy	EPBD	CSRD
<b>Environment</b>			
<b>CLIMATE CHANGE</b>	x	x	x
Energy efficiency, Energy Performance Certificate (EPC)	x	x	x
Energy efficiency, Energy management system	x		x
Energy efficiency, does not support the use of fossil fuels	x	x	x
Climate risk assessment	x		x
Air-tightness and thermal integrity	x		x
GHG protocol alignment in emissions reporting (including scope 3 emissions)	x**	x***	x
Increased deployment of solar technologies		x	
Further roll-out of recharging points for electric vehicles in buildings and including bike parking		x	
<b>POLLUTION</b>	x*		x
Restrictions on components and materials used in construction	x*		
Brownfield site has been subject to an investigation	x*		
Measures to reduce noise, dust and pollutant emissions during construction or maintenance work	x*		
<b>WATER AND MARINE RESOURCES</b>	x		x
Water efficient equipment	x*		x
Managing material impacts, risks and opportunities related to water and marine resources	x*		x
<b>BIODIVERSITY AND ECOSYSTEMS</b>			x
An Environmental Impact Assessment (EIA) or screening has been completed in accordance with Directive 2011/92/EU334	x*		
Consideration, assessment and mitigation measures if location is near biodiversity sensitive areas necessary mitigation	x*		
Construction location consideration	x*		
<b>RESOURCE USE AND CIRCULAR ECONOMY</b>	x*		x
Minimum requirement of 70% for recycling construction and demolition waste	x*		
Limiting waste generation in construction and demolition	x*		
Buildings designed to be more resource efficient, adaptable, flexible and dismantlable to enable reuse and recycling	x*		
<b>Social</b>			
Own workforce			x
Workers in the value chain			x
Affected communities			x
Consumers and end users			x

	EU Taxonomy	EPBD	CSRD
<b>Governance</b>			
Business Conduct			<b>x</b>
*Requirement for new buildings			
**In taxonomy regulation this considers only buildings which have been built after 31.12.2020 and are larger than 5000 m2 "the life-cycle Global Warming Potential (GWP) of the building resulting from the construction has been calculated for each stage in the life cycle and is disclosed to investors and clients on demand"			
***Whole life cycle emissions calculation			

### 3.4.2 Comparison of Sustainability Certification criteria

Sustainability certifications are a good way to recognise the green building principles, however they do not cover all ESG subject areas. Their focus is often on the environment with less weight given to Social and Governance subjects. BREEAM In-Use and LEED O+M are the most used ESG-certifications in Finland. The biggest differences between them are their geographical scope, meaning their core concentrations are suited for their home markets. This difference extends across their certification and scoring systems.

Even with these differences, the sustainability certificates share several points and measures in their criteria. However, as Table 3 - the continued comparison of the BREEAM and LEED certifications - indicates, their scope is very different. The two certifications presented in the Table 3 concentrate on environmental sustainability, which is why the WELL certification was not included here. However, the WELL certification does offer valuable information on social sustainability criteria which can also be evaluated against the metrics from the regulations table (Table 2) which will be done in the further analysis of these frameworks.

Table 3: Comparison of the BREEAM In-Use and LEED O+M certifications

	BREEAM In-Use v6		LEED v4.1 O+M
	Asset	Management	Existing buildings
<b>Health and Wellbeing</b>			
Good levels of daylight	<b>x</b>		
Internal and external lighting levels and control	<b>x</b>		
Minimising overheating from solar gain (Residential only)	<b>x</b>		
User comfort controls	<b>x</b>		
Ventilation and indoor air quality monitoring	<b>x</b>	<b>x</b>	<b>x</b>
Provision of rest areas and access to indoor/outdoor space	<b>x</b>		

	BREEAM In-Use v6		LEED v4.1 O+M
	Asset	Management	Existing buildings
Inclusive design	x		
Drinking water provision (Commercial only)	x		
Radon risk management (Residential only)	x		
Thermal comfort		x	
Smoking policy		x	x
Acoustic conditions		x	
Legionella risk management		x	
Drinking water management (Commercial only)		x	
Pest Control			x
<b>Energy &amp; Greenhouse Gas Emissions</b>			
Energy efficiency	x		x
Renewable energy generation capacity	x		
Energy monitoring and management capabilities	x		
Energy efficiency of external lighting and elevators	x		
Operational energy performance		x	
Energy audit		x	x
Energy consumption reporting		x	x
Carbon emissions		x	x
Grid Harmonization			x
<b>Transport</b>			
Transformation performance (measured in CO2e)			x
Alternative modes of transport	x		
Proximity to public transport	x		
Proximity to amenities	x		
Pedestrian and cyclist safety	x		
<b>Water</b>			
Water monitoring	x		x
Water efficient equipment: toilets, urinals (Commercial only), taps, showers, baths (Residential only), appliances	x		
Leak detection & prevention	x		
Use of alternative sources of water	x		
Water consumption		x	
Water recycling		x	
Water consumption reporting		x	
Water strategy for maintaining and upgrading water systems		x	
<b>Resources</b>			
Condition survey	x		
Facility Maintenance and Renovation Policy			x
Reuse and recycling facilities	x		x

	BREEAM In-Use v6		LEED v4.1 O+M
	Asset	Management	Existing buildings
Resources inventory	x		x
Future adaptation	x		
Sustainable procurement		x	x
Optimising resource use, reuse and recycling		x	x
<b>Resilience</b>			
Heat Island reduction			x
Rainwater management			x
Flood risk assessment	x		
Surface water run-off impact mitigation	x		
Natural hazards risk assessment	x		
Durable and resilient features	x		
Alarm systems	x		
Emergency plans and climate-related physical risks		x	
Climate-related transition risks and opportunities		x	
Social risks and opportunities		x	
Fire risk management		x	
Security risk assessment		x	
<b>Land Use and Ecology</b>			
Environmentally Sensitive Site management			x
Planted area	x		
Ecological features of planted area	x		
Ecology report		x	
Biodiversity management plan		x	
<b>Pollution</b>			
Minimising watercourse pollution	x		x
Chemical storage	x		
Green cleaning policy			x
Local air quality	x		
Global warming potential of refrigerants	x		
Refrigerant management, leak detection and replacement	x	x	x
Reduction of (night-time) light pollution		x	x
Land contamination mitigation (Commercial only)		x	x
Contamination from invasive plant species (Residential only)		x	x
Response to pollution incidents (Commercial only)		x	

### 3.4.3 Comparison of Existing Sustainability Frameworks by Organizations

Table 4 introduces in more detail all the aforementioned sustainability frameworks, except for the SBTN framework which will be discussed in more detail when considering the biodiversity related area of the recommended sustainability framework.

Table 4: Comparison of the sustainability frameworks

	SBTi	CRREM	GRESB
<b>Environment</b>			
Building's in-use emissions (direct and indirect emissions)	x	x	
Location based approach on emissions calculation on energy	x*	x	
Portfolio improvement targets			x
Science-based targets			x
Energy consumption			x
GHG emissions			x
Water use			x
Waste management			x
Building certifications at the time of design/construction			x
Operational building certifications			x
Energy Ratings			x
Development Indicators - Reporting Characteristics			x
Materials selection requirements			x
Life cycle assessments			x
Embodied carbon disclosure			x
Green building standard requirements			x
Green building certifications			x
Energy efficiency requirements			x
On-site renewable energy			x
Net zero carbon design and standards			x
Water conservation strategy			x
Waste management strategy			x
<b>Social</b>			
Employee training			x
Employee satisfaction survey			x
Employee engagement program			x
Employee health & well-being program			x
Employee health & well-being measures			x
Employee safety indicators			x
Inclusion and diversity			x
Supply chain engagement program			x
Monitoring property/asset managers			x
Monitoring external suppliers/service providers			x

	SBTi	CRREM	GRESB
<b>Social</b>			
Stakeholder grievance process			x
<i>Stakeholder Engagement</i>			x
Health & Well-being			x
On-site safety			x
Safety metrics			x
Contractor ESG requirements			x
Contractor monitoring methods			x
Community engagement program			x
Community impact assessment			x
Community impact monitoring			x
Tenant engagement program			x
Tenant satisfaction survey			x
Program to improve tenant satisfaction			x
Fit-out & refurbishment program for tenants on ESG			x
ESG-specific requirements in lease contracts (green leases)			x
Tenant health & well-being program			x
Tenant health & well-being measures			x
Community engagement program			x
Monitoring impact on community			x
<b>Governance</b>			
<i>Risk Assessments</i>			x
Technical building assessments			x
Energy efficiency measures			x
Water efficiency measures			x
Waste management measures			x
Environmental Management System (EMS)			x
Process to implement governance policies			x
Social risk assessments			x
Governance risk assessments			x
ESG due diligence for new acquisitions			x
Resilience of strategy to climate-related risks			x
Transition risk identification			x
Transition risk impact assessment			x
Physical risk identification			x
Physical risk impact assessment			x
<i>Policies</i>			x
Policy on environmental issues			x
Policy on social issues			x
Policy on governance issues			x

	SBTi	CRREM	GRESB
*Recommended but not required			

#### 4 Research Method

The purpose of this thesis is to recommend a comprehensive framework for sustainability in real estate. Across section 3, we met and evaluated the different frameworks and approaches that exist in the real estate market today. To build on that landscape analysis, we must understand them in the context of the real estate sustainability practitioner. To fulfil this need and ask the question “what is a sustainable building?”, we turn to empirical research by survey to gather the opinions and knowledge of industry specialists for further analysis.

A survey was chosen as the research method because this form of quantitative research allows a comprehensive look and analysis of the real estate sector. The reason quantitative data was needed was to allow the evaluation of the opinions and attitudes of a wider cohort of industry professionals, compared to individual interviews with a smaller sample. Where qualitative research attempts to find subjective reasons and answer the why and the how, a quantitative approach is more objective and focused. The benefits of a survey, over a purely qualitative research method, is that it allows generalisation of concepts and the analysis of interconnections.

A direct survey is an efficient method to gain vast amounts of information on any given subject. It allows many different subjects to be covered and the survey to be sent to as many people as necessary. The data collected from a well-planned survey is also straightforward to gather, analyse and report. However, this type of research method does have weaknesses. (Hirsjärvi, Remes & Sajavaara 2009, 195.) Because of the breadth of the subject, the decision was made to conduct a survey targeted to specialists in the real estate industry. For this research it was required that the results represent a wide opinion of industry specialists, informing our sample. Because this quantitative research method was chosen to get the data required, it was decided that open-ended questions were needed in the survey to capture complex relationships between concepts and use cases. The goal was to ensure that all respondents had a space to share their views on things that the researcher did not consider in the more structured questions.

Hirsjärvi et. al (2009, 202-203) share in their book ‘Tutki ja kirjoita’ the important factors of building a successful survey as seen in the research literature. All eight of their steps and recommendations have been accounted for in the preparation of this survey. First the clarity and specificity of the questions was considered, and ambiguous questions were avoided. The questions were also kept as short as possible and singular interpretation was pursued for

simplified aggregation. All multiple-choice questions included an option for either “don’t know/no opinion” (originally in the survey: “en osaa sanoa”) or “other” (originally in the survey: “muu”). Adding a ‘no opinion’ option to the survey increases the reliability of responses, as responders who do not have an opinion do not end up answering randomly and skewing the final results (Hirsjärvi et. al. 2009, 203). The survey underwent several phases of evaluation where questions were deleted or adjusted to ensure the questionnaire was as efficient to answer as possible. The goal was to ensure that the responding time to the survey would be approximately ten minutes, to maximise the response rate of our working professional sample. The final recommendation was around the words and terms used in the survey - it was decided that some professional language and jargon was required and that the use of such language was justified by the targeted respondents' professions and the context of their responses.

#### 4.1 The Hypothesis

The theory and literature review behind the research topic was completed and analysed thoroughly. The literature review creates a base for the development work of this thesis. In the analysis of the existing frameworks, some assumptions were made which will act as the base of the hypotheses. As Williams et al. (2022, 12) observe in their book *Beginning Quantitative Research*, a research hypothesis is required to allow measurement of variables. A hypothesis tests theory and should propose these variables.

As the review of the theoretical background suggests, many of the existing frameworks already overlap. The comparison tables, represented in part 3.4 of this thesis, showcase some similarities in between them, however, many criteria are not covered by more than one or two of the frameworks. The first hypothesis based on this observation would be that people working in the industry will find it difficult to determine the most valuable measures. The survey will attempt to understand the biggest challenges industry professionals face through multiple choice and open questions.

The second hypothesis would be that the themes and measures introduced in the regulation part of this thesis are going to be the most highly regarded options, which will be chosen as the most important ones. Because the operational environment is Finland, the regulation regarding sustainability in the real estate industry in Finland and thus in the EU would be regarded as most valuable. This will be assessed through questions on the key areas that promote sustainability as well as with more specific individual measure evaluating questions.

To be able to determine the most important themes and measures from the long lists of options and the distance between practitioner perception and prominence in the existing frameworks, it is important to understand how the industry professionals see them. This is incorporated into the value perspective research problem introduced in the beginning of this



thesis. Because businesses are operating with limited operating budgets, their concentration will be on the mandatory parts of the requirements. Thus, the third hypothesis is that the potential return on investment will correlate with the salience of the options in the views of the industry professionals.

## 4.2 The Survey

The research part of this thesis was conducted as a questionnaire directed to industry professionals. The survey was created and conducted in co-operation between the author of this thesis and sustainability specialists from both Granlund Oy, a Finnish building and real-estate industry expert company, and JLL (Jones Lang LaSalle), a global real estate services company founded in the UK. The questionnaire was sent out by both companies to their customers and other real estate professionals in their immediate networks. The questionnaire was made using the Webropol online survey platform and sent to customers by email. The survey was first sent to participants on 29th April 2024 with a reminder sent out on 7th May 2024. The last day allowed for survey responses was 12th May 2024, and in total 134 people responded to the survey in the two-week period that the survey was accepted responses. The reminder email brought in 31% of the responses.

The analysis of the answers of the survey was conducted within the Webropol analysis dashboard, which allows a user to categorise responses easily. Webropol was chosen as the platform to conduct the survey due to its action options. The survey was conducted in Finnish and the original questions can be found within Attachment 1. The research presented in the survey section of this thesis will be translated into English.

In the questionnaire, the first five questions were used to get an indication of each responder's career and background. With the responses, it is possible to segment responses on the job type of the user/owner as well as the region the business is located in. Location was an important detail, as the attitudes and opinions of a representative from a Finnish company are likely to be different to someone who represents an international organisation. With the question regarding the type of user/owner, it was possible to consider the answers and see how many of the responders represented a private company or public organisation, and to separately understand the responses of consultants and construction businesses.

### 4.2.1 Analysis of the survey

First in the analysis of the survey data, the answers were checked for quality, and all responses were confirmed to be fully filled and valid. Most data gathered from the survey can be described as qualitative and descriptive. It was concluded that all responses would be valid to be used in this research. Because it was expected that the participating survey

responders may be from varied parts of the industry, the survey highlighted that, the questions related to the in-use buildings perspective.

From the survey participants, 48% were real estate investors, who are expected to have good knowledge of sustainability in the industry due to the tightening regulation and the importance of sustainability in the market. The other half of participants was split between 21% of owner occupants, 19% public (state or municipality) representatives, 7% construction company representatives and 5% of service providers in the industry. The split in the participants represents well in the answers regarding the participants experience of their own organisation's sustainability level. 44% of participants saw their companies as forerunners, when it comes to sustainability in the industry. 50% saw themselves as medium level, 5% as early stage and 1% were not able to determine their level. The participants also represented companies with different operating environments. For the sake of this research the operating environment was narrowed to be geographical location, which are represented in Figure 2. Geographical location of the company was regarded as material for this thesis due to the differences in the implementations of regulations on national level.

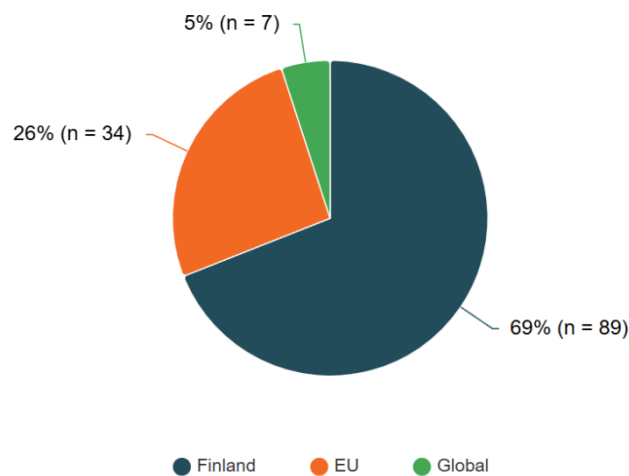


Figure 2: The operating environments of the companies the participants represented

In the analysis of the survey questions, all three of above-mentioned differentiators, will be used to some extent. For the questions regarding specific sustainability measures that are required in the analysis of the framework, all responses are analysed together.

A question about the type of buildings owned by the company the participants represented was included in the survey. After receiving the responses of the survey, it was decided that this question would not be included in the analysis as this would expand the research too

wide. It was regarded as more important to concentrate fully on the main research question of this thesis.

#### 4.2.2 Survey Results

The first question relating to the sustainability themes was asked to understand how the participants thought sustainability in the real estate industry and specifically in building management would evolve in the coming years. The comparison between the importance of sustainability in property management between now and in 5 years' time, saw an increase in all three operational environments (Finland, EU and global) as presented in Figures 3 and 4. Because the quantity of the participants representing global companies was considered to be low, with only 7 responses, the EU and global companies should be considered together for better relevance.

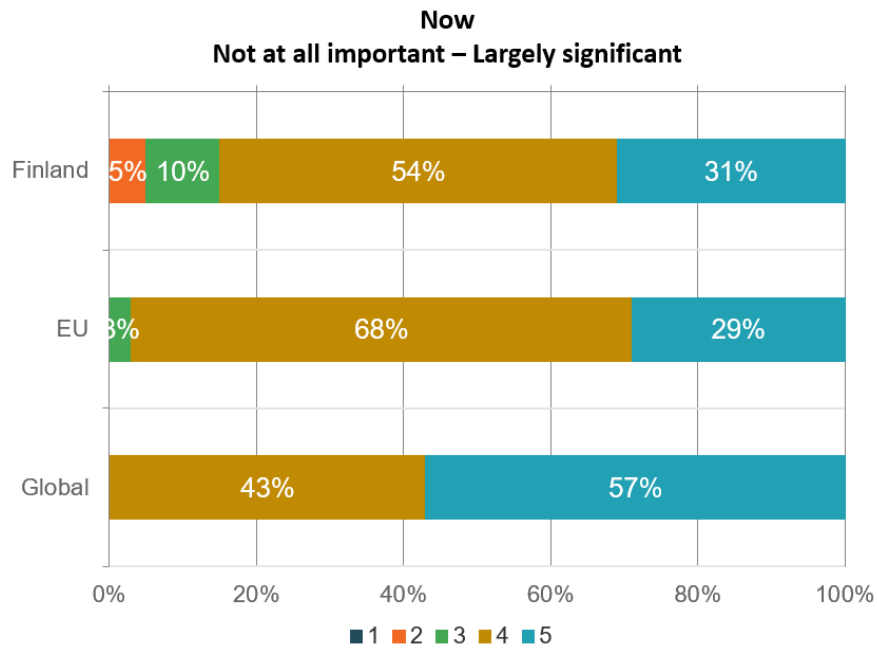


Figure 3: How important part of property management participants thought sustainability is

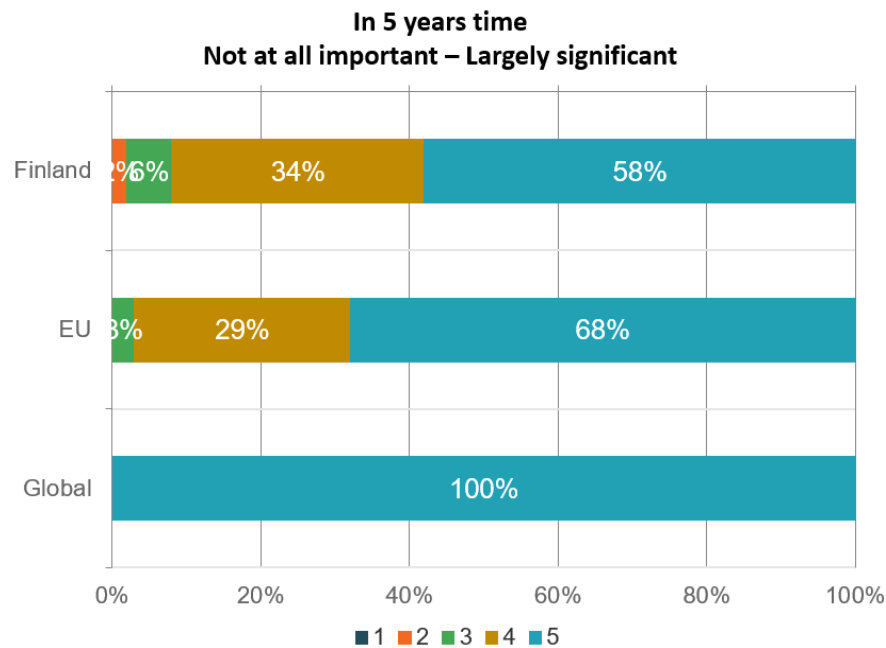


Figure 4: How important part of property management participants thought sustainability will be in five years' time

In an open question, the participants were also asked about the biggest challenges in the real estate and construction sector regarding sustainability. In total 71 participants responded to this question which is almost 53% of all responders. The biggest challenges were seen to be money and increased investment cost, as well as understanding the regulation as it is constantly developing and updating.

In Figure 5 the results demonstrate the key areas the participants of the survey found most important regarding the promotion of sustainability in the sector. The same question was asked after, to see if the responses would change in a five-year time frame. The regulation, renter's expectations and investors' expectations all were seen to increase in the future. However, the company's own ambition and strategy option saw the biggest decrease by 28%.

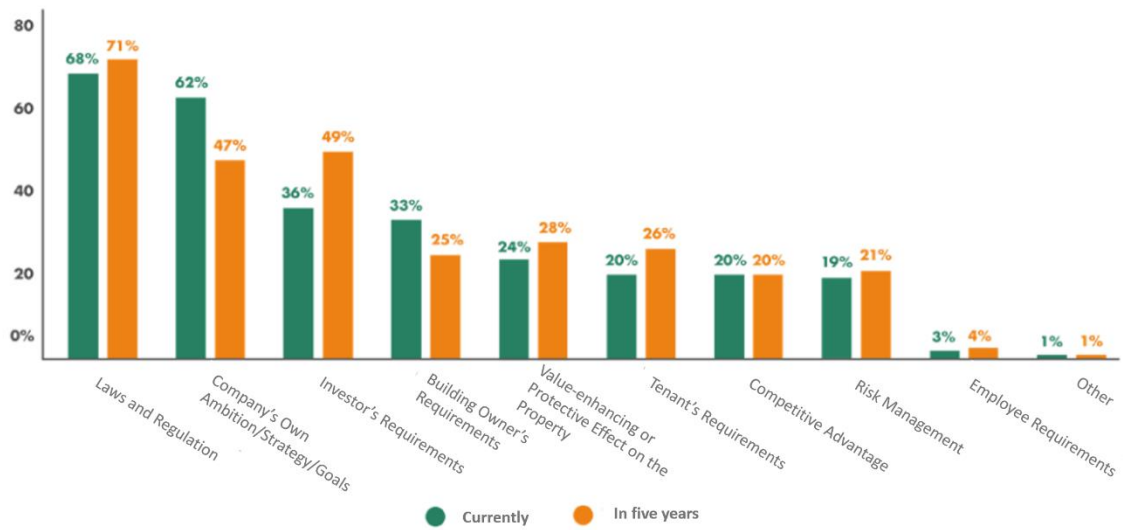


Figure 5: The key areas that guide the promotion of sustainability in the sector

The participants were asked about the most important drivers of sustainability in real estate transactions. The results can be seen in Figure 6. Energy efficiency class of a building, sustainability certificates and the EU taxonomy were seen as the most important drivers. There were also some small differences between the different geographical operational environments when asked about the most important drivers of sustainability in real estate transactions. As seen in Figure 5, companies that operate internationally (EU and global together), saw biodiversity related “green factor” and carbon roadmap as more important than the companies only operating in Finland.

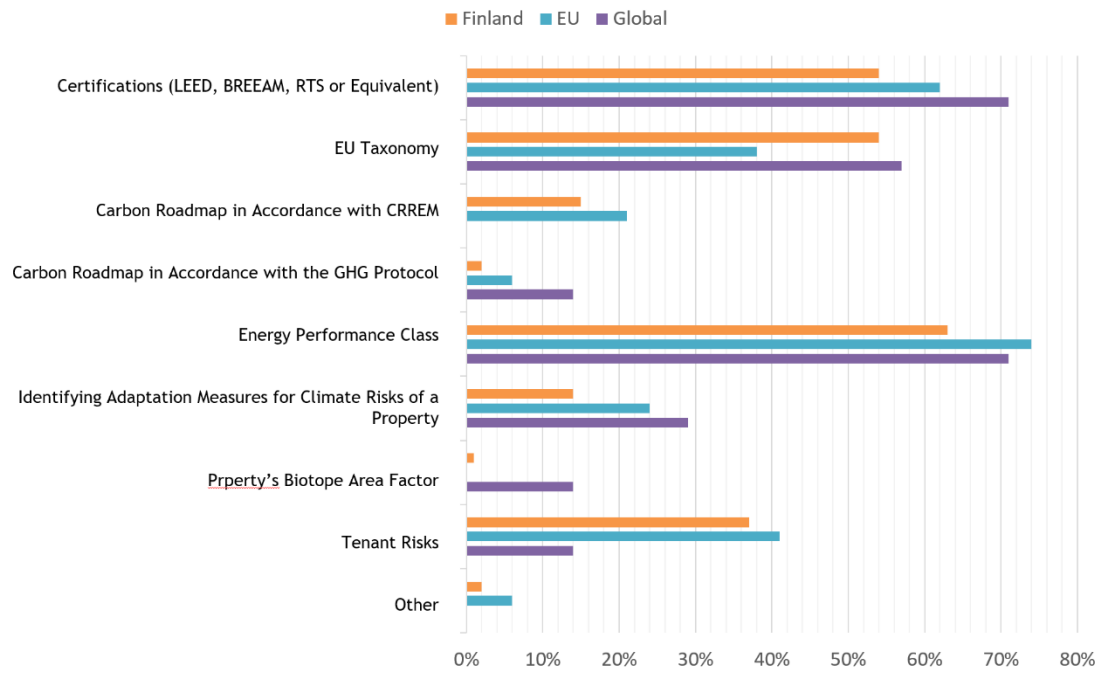


Figure 6: The most important drivers of sustainability in real estate transactions

To understand the current situation, of the companies the survey participants represent, they were asked about the tools and standards that their companies had already implemented. The list included thirteen current tools, standards and regulations as well as an option to share ones that were possibly missing. The results are shown in Figure 7. Over a quarter of all participants were unable to name any. The three most used tools or standards included EU taxonomy and both in-use and building phase sustainability certifications. After these, the three most important ones were CSRD, GRI standard and the GRESB framework.

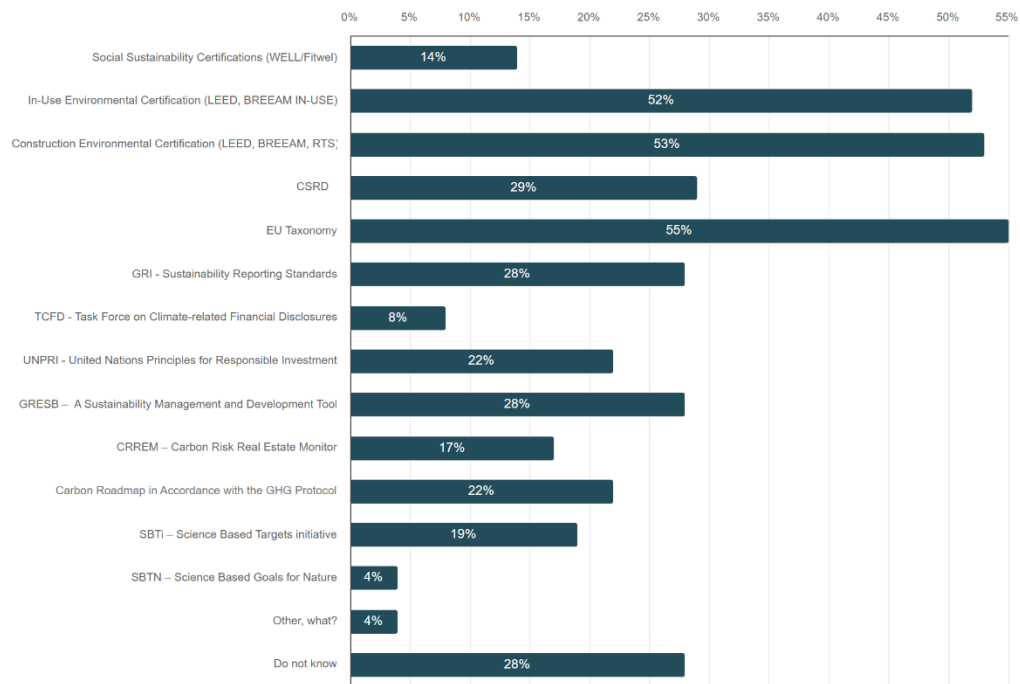


Figure 7: Tools, standards and regulations the companies represented have in use at the moment

Hereafter, the participants were asked about the same sustainability frameworks and their opinion on whether the importance of those tools and standards would grow, decline or stay the same. The results are presented in Figure 8. All participants were given the opportunity to share their opinion on each standard with the option of I cannot say. The regulations, EU taxonomy and CSRD, were clearly seen as having their importance grow in the future, as more and more companies will have to implement them. Participants had most opinions on the in-use and construction phase sustainability certifications. Even though their importance was seen to grow the second most, many participants saw their importance possibly declining in the future.

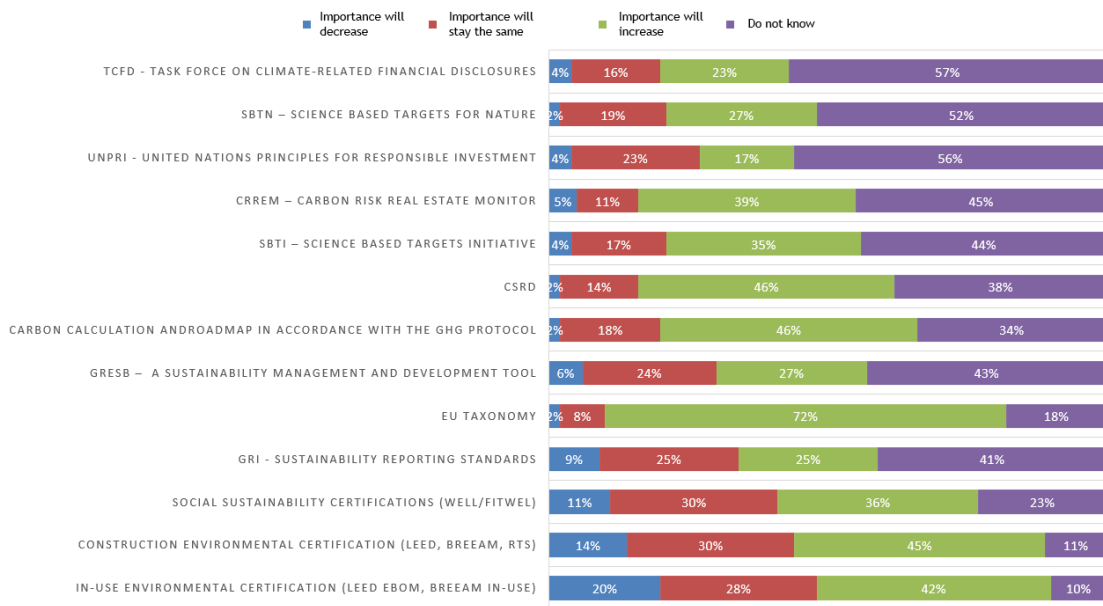


Figure 8: Evaluation of how the importance of each tool, standard or regulation will change in the future

To understand how industry specialists view the different ESG themes, the survey asked them to choose one to three sustainability themes that they see as the most important ones in measuring an existing buildings sustainability. The question was distributed to cover all ESG areas separately. In the Environmental sustainability section, represented in Figure 9, the energy efficiency had the highest response rate at 80%. Carbon emissions had the second highest response rate at 67% and renewable energy at 45%. The chemical pollution option received the least responses, assumably because it is rare and only considered material with businesses handling dangerous chemicals. Climate risks had the second lowest response rate, which is surprising. As discussed earlier in this thesis, climate risks can have a huge impact on the property value. The response rate was very low and did not have a geographical difference as equal number of responders chose it in the Finnish and EU contexts. It is possible that in Europe the probability of risks imposed by climate change are seen as very low.



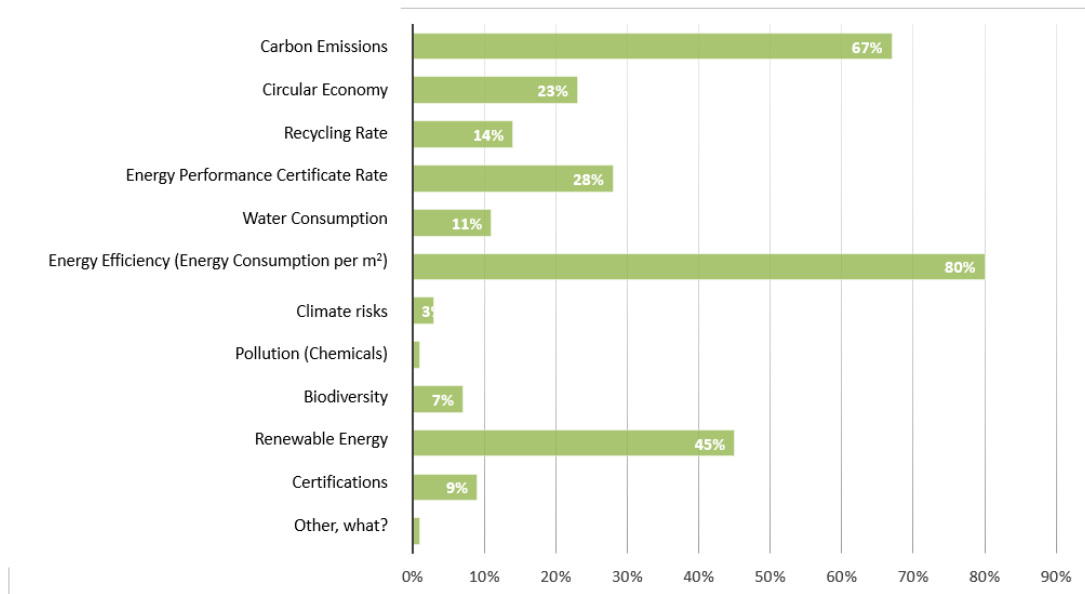


Figure 9: The most significant environmental sustainability measures of in-use building

The responses to the most significant social sustainability measures are presented in Figure 10. The indoor conditions and air quality were given the most responses by the participants at 89%. The second most responses were given to user satisfaction at 75%. The next two received less than half of the responses, the sustainability requirements of service agreements received 36% and the buildings accessibility received 30%. The building accessibility is an important part of buildings sustainability regarding equal opportunities to use the property, however, it does not have as wide of an impact as sustainability in service agreements would have. Not having determined what the sustainability requirements might be in regard to the service agreements, it was left to the respondent to decide on how they view the question.

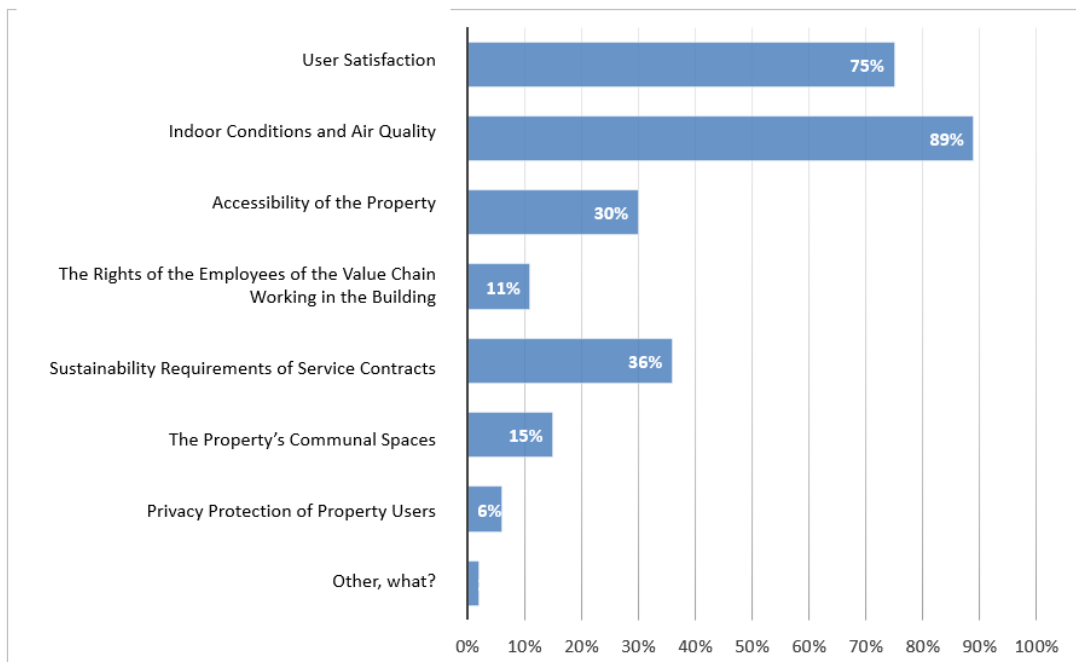


Figure 10: The most significant social sustainability measures of in-use building

Figure 11 showcases the responses on the most significant governance measures. The options represented in this question split the participants responses the most. The operating cost was seen as the most significant measure at 59%, as it can have the largest impact on the property's use. The consideration of sustainability in the property management processes was the second most important at 50% and investments into sustainability were third at 48%. The transparency of sustainability communication received only 18% response, which can be considered very low. It is not possible to determine why so few responders chose this, however the EU is currently bringing in legislation on sustainability communication which would require business to be more transparent. The Green Claims Directive will make communication around sustainability more reliable and attempts to stop misleading claims (European Commission, 2024).

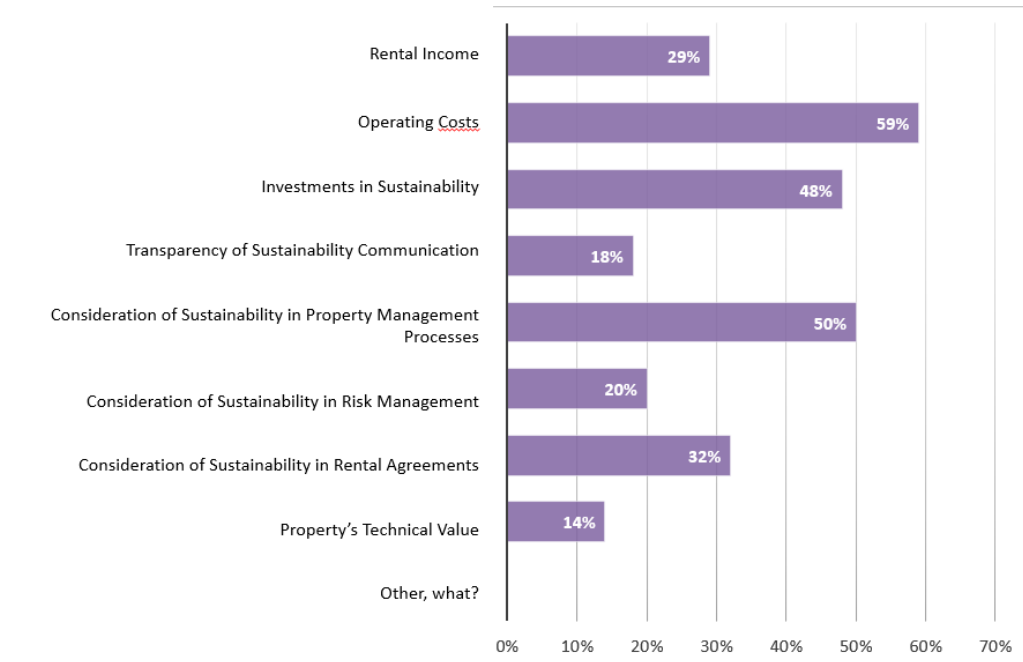


Figure 11: The most significant governance sustainability measures of in-use building

As the last qualitative question, participants were asked to give their open feedback relating to sustainability. In total eleven valid responses were given. All comments written were related to the difficulty and complexity of sustainability in the real-estate industry. 81% of the responses highlighted that there are too many different frameworks and overlapping standards currently. 64% of responses mention the problem of overlap in between all the different ESG frameworks and the responses raised leaning and unifying these standards as a solution. 25% of the responses admitted not recognising or understanding most of the standards.

## 5 The Development Work - Framework for a Sustainable Building

Leveraging the learnings from the content analysis and survey responses, we can design and recommend a common framework to define a sustainable building. This framework is the subject of this section. The framework is introduced as individual measures, which have been concluded to be material for the real-estate sector via the content analysis and have been confirmed to be significant for real estate professionals in the empirical research.

The recommendation for a framework for a sustainable building is as presented in Table 5. Each recommendation will be reviewed and presented alongside suggestions for possible viable ways to measure the criteria. The environmental sustainability measures have been shared into categories according to the EU taxonomy's climate and environmental objectives.

The social sustainability and governance sections are kept at a more general level, because there are very few extant regulation obligations for their measurement. These will be discussed in the context of suggested recommendations which have been distilled from the survey responses and analysis thereof.

Table 5: The recommended sustainability framework

	Regulation	Certificates	Standards
<b>Environment</b>			
<b>Climate Change</b>	x	x	x
Energy management	x	x	x
Energy efficiency	x	x	x
Renewable energy generation capacity	x	x	
Emissions (carbon equivalent)	x	x	x
Climate risk assessment	x	x	x
<b>Pollution</b>	x	x	x
<b>Water</b>	x	x	x
Water management/monitoring		x	x
Water efficient equipment and appliances	x	x	x
<b>Biodiversity and ecosystems</b>	x	x	x
<b>Resource use and circular economy</b>	x	x	x
Reuse and recycling	x	x	x
Sustainable procurement	x	x	x
<b>Social</b>			
<b>Own workforce</b>	x	x	x
<b>Workers in the value chain</b>	x	x	x
<b>Affected communities</b>	x	x	x
<b>Consumers and end users</b>	x	x	x
<b>Governance</b>			
<b>Business Conduct</b>	x	x	x

### 5.1 Environmental

The EU taxonomy defines measures for the sustainability of existing buildings for only two climate objectives: climate change mitigation, and climate change adaptation. The environmental objectives we reviewed in the analysis table account for the new building (7.1) technical screening criteria found in the EU taxonomy. Many of the measures concentrate heavily on the construction phase and thus have not been included in the following analysis due to questionable materiality.

### 5.1.1 Climate Change

Our climate change category contains the widest scope, and longest list, of recommendations. This is due to the aforementioned outsized impact that the real estate industry has on climate change through emissions. The use phase of a building lasts for a long period and ensuring low emissions must be considered essential when evaluating a building's sustainability. Thus, most of this category's recommendations are related to reducing emissions through energy use. Another consideration, climate change adaptation, comes directly from the EU taxonomy regulation.

Energy management is considered essential because reducing energy is easier when it is measured. Operational consumption reduction through monitoring quantifies energy use for business analysts, increases awareness, and can be leveraged to identify changes in the energy consumption in building services and systems. Another benefit is that it enables more realistic improvement targets for consumption, being suited for data-driven decision making. Energy management is also found across the regulation, certificates, and existing sustainability standards. The EU taxonomy defines efficient operation as being part of an "energy efficiency agreement" or "having an energy performance management and operating system" (EU) 2020/852). The EU taxonomy itself only covers large non-residential buildings (over 5000m<sup>2</sup>) for this purpose; however, the certificates and standards reviewed earlier consider energy management to be important for all building sizes. Our framework agrees - management and energy use monitoring should be considered material for all sizes and building types.

Energy efficiency is considered extremely important in measuring a building's sustainability and it had the highest response percentage in the survey. The EU taxonomy regulation introduces the Energy Performance Certificate (EPC) as the key measurement of energy efficiency. A building can be considered taxonomy-aligned by substantially contributing to climate change mitigation if it attains at least an EPC class A or "it is in the top 15% of national or regional building stock expressed as operational Primary Energy Demand (PED)" (European Commission, 2024). Alternatively, if the taxonomy-alignment is achieved through substantially contributing to climate change adaptation, the DNSH criteria for climate change mitigation is as follows: "the building has at least an Energy Performance Certificate (EPC) class C or the building is within the top 30% of the national or regional building stock expressed as operational Primary Energy Demand (PED)" (European Commission 2024). For large non-residential buildings the EU taxonomy regulation defines requirements for an energy efficient management of a building. The EPBD regulation itself directs EU countries to lower the energy efficiency of their building stock on a national level. The sustainability certifications are more detailed in their criteria, and assess energy efficiency of the building fabric, installed service systems and installed renewable energy generation capacity. For our

recommended framework only, renewable energy has been spun out as its own measurement to simplify the framework. When creating thresholds for energy efficiency for a sustainable building, I recommend that the more detailed energy efficiency criteria and levels from the BREEAM In-Use v6 should be considered.

Renewable energy generation capacity is measured differently across regulations, standards and sustainability certifications. All concentrate on solar panels and their effect on buildings energy efficiency once installed. The EPBD demands that all new buildings be ready for solar technology installations, and that there should be a national deployment of solar installations on existing non-residential buildings. In the EPBD regulation, the updated EPCs also require a clear demonstration of renewable energy production on-site compared to the total energy consumption of the building. In the sustainability certifications, renewable energy generation capacity is assessed by determining the assets where there is plausible potential for installing such systems. In the BREEAM assessment, more weight is given to the possibility of installation of solar photovoltaic panels compared to the presence of existing on-site thermal solar panels. When it comes to the standards, the CRREM is unconditional and regards on-site production of renewable energy as the only confirmed way of having zero emissions energy. In the CRREM methodology, renewable energy bought and transferred by the grid is notably not considered to be zero-emission, removing any ambiguity on its aforementioned stance. The 2023 update on the CRREM methodology aims to promote efficiency-first strategies. Previously a building that suffers from high energy consumption was able to reduce its calculated emissions by purchasing certified renewable energy, but this made comparison inefficient as low consumption building with non-renewable energy would have been regarded as less sustainable.

Carbon emissions were found to be the second most important sustainability measure, according to the survey responses, and these emissions are, without fail, directly or indirectly covered by all existing sustainability frameworks. All previously presented energy-related measures tie into the reduction of emissions. It should be highlighted that most existing frameworks account for all the carbon equivalent emissions covered in the GHG protocol. Emissions calculations have been set as the standard for new buildings in the EU, as the EU taxonomy requires life cycle assessments measure and calculate these emissions. For older, existing buildings this is not considered a reasonable methodology - the accuracy of the measurements may be questionable. The CSRD standard has brought in a requirement for companies to consider their stakeholders in their sustainability reporting and are thus required to include scope 3 emissions in the total emissions calculation.

Our framework recommends the methodology for calculating emissions for a building as laid out by SBTi standards, being the most up-to-date science-based method. In the transition towards a more sustainable real estate sector, the 'emissions intensity' figures are a sound

measure for comparing year on year emissions development. If only absolute carbon emissions are calculated, it precludes the possibility for fair comparison between different years and different compositions of portfolios. Thus, if we mean to determine a threshold for emissions calculations, emissions should be reported as buildings emissions intensity. Currently the emissions calculation methods are ever-changing and developing each year, and the calculation methodologies become more accurate as their development advances. It is with this in mind that we recommend alignment with the current scientifically-sound incumbent - the SBTi standards.

Climate risks are among the top three most important environmental sustainability measures by only 3% of the survey responders. As they are however, included in all assessed existing frameworks and threaten severe future consequences, they are also included in this recommendation. Climate risks have been assessed by climate scientists to increase in frequency and severity and recent research has found that climate risks can have at least a partial effect on the value of properties (Contat, Hopkins, Mejia & Suandi 2024). As buildings ideally have a long-life cycle, the long-term impacts of climate change must be considered in any climate risk assessments. The EU taxonomy offers criteria on how these should be measured and a helpful classification of the different hazards. European Commission introduces the climate risk criteria in the Annex 1 (2020/852), Appendix A: generic criteria for DNSH to climate change adaptation. This classification should be completed for a building to be able to define itself as sustainable. This includes an implementation plan to adapt to the most severe risks.

### 5.1.2 Pollution

One of the environmental objectives of EU taxonomy is pollution. In the survey it has been regarded as the least important environmental aspect in defining sustainability measures. The regulation considered in this thesis, in turn, only considers pollution generated during the construction phase of a building. Certifications and standards roll pollution into the wider scopes of biodiversity and water. If pollution is fully ignored, there is a possibility for a framework to unwittingly cause harm to nature, thus we will include the definition of, at least minimal, standards for it. The sustainability certificates offer broad suggestions on what these may include.

### 5.1.3 Water

In the EU taxonomy, water and marine resources are accounted for together. These criteria are once again only defined for the construction phase of a building. The sustainability certifications and standards, however, do highlight water management and water efficient equipment during the operation of existing buildings. In alignment with this tepid consideration, our survey yielded a low 11% response rate for water use as a concern of real

estate professionals. A future survey may show a higher response - as the world's water resources are projected to decrease, and more countries join those struggling for water resources. With a future-facing view, water should surely be considered material for building sustainability. In the Finnish context, the availability of water seems infinite, but an American living in California in the 1800s may have thought the same. The Finnish National Agency for Education (2024) highlights how even though water is a renewable natural resource, there is not enough of it for everyone. The EU taxonomy and sustainability certifications define measures for water efficient equipment and appliances and include different considerations for different building types. Water use and management is also covered by the GRESB standard and sustainability certifications. As with energy management, water management and usage measurement ensure data and awareness around water usage and can guide more accurate targets to be made, thus they are essential for a building to be considered sustainable.

#### 5.1.4 Biodiversity and Ecosystems

Sitra (2022) defines biodiversity as “diversity and abundance on earth” and highlights how there is currently severe biodiversity loss happening around the world. The survey on tackling root causes of biodiversity loss by Sitra (2022) discusses the impact this can have in on our lives as our health, wellbeing and economy are dependent on nature and its resources. Even though there have been attempts to react to the problem, such as Kate Raworth's doughnut economics, these have not been sufficient and have not been taken seriously enough by national and international, public and private organisations.

The survey conducted for this thesis, showed only 7% of participants choosing biodiversity within their three most important sustainability measures. This is partly because biodiversity and ecosystems are the least researched subject around building sustainability. The existing research concentrates on the biggest and most severe impacts, which are inevitably coming from construction - as land is cleared for materials and space - however, there are some considerations we can apply to existing buildings found in the sustainability certificates. They highlight environmentally sensitive site management, planted area, ecological features of planted area, ecology report and biodiversity management plan. The SBTN framework is still being developed but can offer some general considerations.

#### 5.1.5 Resource Use and Circular Economy

Circular economy decreases the dependence on resources, thus improving sustainability and creating growth from already existing material. Circular economy can be seen as a solution to many challenges, including biodiversity loss and climate change. In the survey conducted for this thesis, recycling alone was presented as an option, and it gained 14% of the total response on its importance in measuring buildings sustainability.



Sitra's (2022) study on Halting Biodiversity Loss Through the Circular Economy highlights the importance of circular economy in building and construction sector. It emphasises the extension of building lifetime, optimising active use and reducing, reusing and recycling materials as essential for an existing buildings sustainability. Thus, in the context of an existing building's sustainability, it is assessed that reuse and recycling, as well as sustainable procurement practices, are essential.

In the BREEAM certification, resources category concentrates on physical resources in the buildings. This is measured by considering the integration of sustainability considerations into the procurement of maintenance, operations material and equipment. BREEAM also concentrates on the circular use of waste, which is encouraged to be measured to enable improvement. To ensure longer lifetime for the building, the BREEAM certificate also investigates the condition survey, whether it has been completed in the past 5 years and if the identified defects have been rectified. Another consideration is for the adaptation of the building, and whether its use can meet changing demands.

## 5.2 Social

Social sustainability in existing buildings is essential. However, it is hard to measure, thus there are few definitions for it. The next part will introduce the social aspects of building sustainability through the ESRS S -standards of the CSRD. This review will include the known sustainability certifications and standards which include social aspects.

In the CSRD, the criteria for reporting on businesses' own workforce and the workers in the value chain covers the following aspects: working conditions, equal treatment and opportunities for all, and other work-related rights. For affected communities the reporting objectives are around communities' economic, social and cultural rights, communities' civil and political rights and the rights of indigenous people. Consumers and end users cover information-related impacts, personal safety and the social inclusion of consumers and/or end-users. These have been used to distribute the different social sustainability measures in the following text.

The WELL sustainability certification defines criteria for building's social sustainability. The ten concepts of WELL are shown in Picture 10 (WELL 2024). These are all related to the building design and assess the impact each have on the wellbeing and safety of building's users. According to the survey conducted for this thesis, the indoor conditions and air quality were chosen by participants as the most important measure of social sustainability (by 89%). Depending on the type of a building, for example if it is an office or retail store, this can have an impact on the company's own workforce, and if we are considering a residential building, the biggest impact would be on the end users.



Picture 10: Ten areas covered by the WELL certification

The second most responses in the survey (75%) were given to user satisfaction. User satisfaction is a measurement that enables the comparison and development of the building's user friendliness. Because the building has the largest impact on the users this is valuable information for the business to ensure that the building is operating in a required level.

Some of the more obvious social sustainability measures did not gather quite as high response rates as the two previously mentioned. I would assume, that responders considered options such as the privacy of property users and the rights of a value chain employees working in the property, as given, because of the level of legislation which protects them already in the Finnish and European contexts.

### 5.3 Governance

The governance part of a sustainable building management has not been defined as well as the environmental criteria, as it is harder to measure. The business conduct refers to standards that an organisation has established for itself but can cover many areas of the business. The CSRD reporting standards set out requirements for businesses to report on certain aspects. In this framework the business conduct criteria are not specified for the recommendation. However, the CSRD delegated regulation determines the governance requirements in the ESRS G1 standard, which are shown in Table 6 (Efrag 2022). This should be taken into consideration when determining the criteria for business conduct.

Table 6: The ESRS G1 standards on governance

<b>Business conduct</b>
<b>Corporate culture</b>
<b>Protection of whistle-blowers</b>
<b>Animal welfare</b>
<b>Political engagement and lobbying activities</b>
<b>Management of relationships with suppliers including payment practices</b>
<b>Corruption and bribery (Prevention and detection including training, and incidents)</b>

## 6 Conclusions

The development work created, of the recommended sustainability framework, responds to the research problem presented in the beginning. The literature analysis and survey research create a comprehensive understanding of the challenges sustainability work in the industry is facing. The survey attempted to expose opinions and attitudes of real estate professionals. As the survey part of this research highlights, even the professionals struggle with the current pace of change of sustainability in the industry. Even though sustainability is acknowledged to be important, and many businesses work towards more sustainable practises, it is opaque to them what the actual benefits of this work are. This leaves businesses in a position where it is difficult to choose the most salient options for sustainability practices.

From the analysis of the qualitative questions in the survey, it is clear that part of the industry's struggles are due to the sheer number of existing frameworks and standards. The current situation was described by the survey participants as inefficient, contradictory, confusing and incomplete. The request for this research came from within Granlund Oy to establish a review of sustainability practices in the industry, however, the responses in the survey highlighted the need for increased clarity around the content of these practices. Balancing work while under the shadows of incomplete regulation, overlapping but divergent enough standards, and the unclear definition of what a sustainable building is, clearly causes confusion in the industry.

In the open questions the survey participants highlighted how the sustainability work has no common practises, and companies operate sustainability practises differently. Certifications and legal requirements are described as unclear, which makes practical implementation difficult. Many of the measures that companies do, are not comparable, as different operators measure and interpret things differently. The other highlighted subject in the open answers was money and the unclear investment returns from forwarding building's sustainability.

Though regulation acts as the basis for the recommended framework, it should be noted that alone it is not enough to create a full definition of what a sustainable building is. The sustainability certifications and standards give insight on broader sustainability considerations. The social and governance aspects are mostly covered by regulation, especially in Europe. However, it is especially important to widen the understanding of the social sustainability of a building to consider more than just the minimum requirements.

The reasons why certain aspects have been recommended is mostly based on the analysis of existing frameworks, the research survey, and the regulation demands. The framework has particularly considered the results of the market related questions from the research. It also accounts for the fact that although the sheer impact of some of the sustainability areas recommended in the research may be comparably modest, to choose not to implement them can cause damage to a company's reputation.

The research has attempted to follow the principles of good scientific practice. According to the Finnish Advisory Board on Research Integrity (TENK, 2024) the basic principles of good research integrity are reliability, honesty, appreciation and responsibility. The author of this thesis has reviewed these principles and attempted to consider these throughout the lifecycle of this research.

The purpose of this research was to answer the question of what a sustainable building is and evaluate what sustainability themes should be included in the recommended framework through a market perspective. The research found certain challenges in defining a single definition or framework for a sustainable building. The subject of this research is particularly wide, and so covering all required areas in an appropriate length has been a major challenge. Other challenges come from the varied definitions and contexts of sustainability - for example, one key reason why defining a sustainable building is so difficult is the diversity of use cases for buildings. An office building will require different considerations compared to a residential building or to a retail centre building. These are covered by many of the sustainability certificates and, for example, GRESB offers benchmark data based on different use cases. However, considering the extent of this survey this level of granularity and specificity was excluded in favour of the wider perspective. This could be a future area of research. All in all, the research was able to define a framework with recommendations based on market perspective.

The existing building stock is responsible for a considerable amount of degradation considering the environment and the planet. Many environmental themes tie into the social aspects of a building's influence. For example, older buildings are at risk from challenges caused by climate change, and this in turn can have an impact on peoples living environment. Buildings, and the people that own and manage them, have a sizeable impact, and therefore

responsibility, on the wellbeing of building users, and thus the social aspects are an important part of sustainability in real estate sector. The governance aspect of sustainability supports and enforces the other two, as well as ensuring the business is run sustainably.

This research has taken a very wide scope in attempting to define what a sustainable real estate is. Defining an existing building's sustainability requires consideration of all ESG areas. However, many sustainability measures can have an impact on other areas' sustainability factors. In different types of buildings, some practices can be considered more sustainable than in others. For example, when considering environmental sustainability areas such as water efficient equipment, implementing limits considered sustainable may have a direct impact on the user friendliness of the building. In many cases - like an office building - installing and using water efficient equipment is perfectly sustainable, while in an apartment building, those same limitations can affect the life quality of the residents. If done and communicated properly, they might be able to see the value in the sustainability aspect. However, it may affect a person's decision to rent such a property, thus having an impact on the building's value.

It would be interesting to see how differently some of the sustainability themes would be viewed by the industry professionals if they were considered in different contexts. For example, the climate risk assessment was not considered to be important when presented as part of the environmental sustainability. This could be because in Finland severe climate risks have been considered mild compared to many other countries or continents. However, if climate risks were presented as part of social sustainability and the effects to people was to be considered it would be interesting to see how different these reactions and answers may be.

During the completion of this research many new ideas arose which could benefit the real estate industry during the transition towards more sustainable practises. For future research, the recommended framework for sustainable building can be considered as a foundation for work to create thresholds for a definition of a sustainable building. Research on the impacts of the CSRD and how it and other regulation changes could be used by businesses to create better long-term strategies, could pose interesting future research opportunities.

The current sustainability criteria for example, in the EU taxonomy framework or in the BREEAM and LEED certifications, are very strict and hard to achieve. Therefore, the recommendation resulting from this research is and must be a simplified framework, which can create opportunities for building owners and managers to achieve and maintain sustainable operations within the EU's scope - but this requires greater clarity and streamlining to ensure the adoption we need to fend off the climate emergency.

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## Appendix 1: The Survey



## Vastuullinen kiinteistö

Tämän markkinatutkimuksen tarkoituksena on kartoittaa kiinteistöalan vastuullisuutta, tulevaisuuden trendejä, sekä haasteita ja edellytyksiä tavoitteiden saavuttamisessa. Kyselyssä keskitytään käytönaikaiseen kiinteistöön. Markkinatutkimus toteutetaan yhteistyössä Granlundin ja JLL:n kanssa.

Taustatiedot

**1. Missä roolissa olet edustamassasi yrityksessä?**

Asiantuntija  
 Pääliikö  
 Johtaja  
 Muu, mikä?

**2. Kiinteistön käyttäjän/omistajan tyyppi**

Kiinteistösijoittaja  
 Käyttäjäomistaja  
 Käyttäjä  
 Palveluntuottaja/Konsultti  
 Rakennusliike  
 Valtio/kunta  
 Muu, mikä?

### 3. Koen edustamani yrityksen olevan vastuullisuudessa

- Edelläkävijä
- Keskitasoa
- Alkutekijöissä
- En osaa sanoa

### 4. Edustamani yritys noudattaa seuraavia

- CSRD - Corporate Sustainability Reporting Directive
- SFDR - Sustainable Finance Disclosure Regulation
- EU Taksonomia
- EED - Energy Efficiency Directive
- En tiedä

### 5. Toimintaympäristö

- Suomi
- Kansainvälinen/EU
- Kansainvälinen/Globaali

### 6. Kiinteistötyyppi/käyttötarkoitus

- Toimistokiinteistöt
- Liikekiinteistöt
- Asuinkiinteistöt
- Hotellikiinteistöt
- Logistiikka ja tuotannolliset kiinteistöt
- Yhteiskuntakiinteistöt
- Muut kiinteistöt

[Seuraava](#)

Vastuullisuuden nykytila

**7. Kuinka merkittävänä osana kiinteistöjohtamista näet vastuullisuuden tällä hetkellä?**

	1	2	3	4	5	
Ei lankaan merkittävä	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Todella merkittävä

**8. Kuinka merkittävänä osana kiinteistöjohtamista näet vastuullisuuden viiden vuoden kuluttua?**

	1	2	3	4	5	
Ei lankaan merkittävä	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Todella merkittävä

**9. Mikä seuraavista vastuullisuuden osista koetaan kaikista vaikeimmaksi?**

- Lainsäädännön ymmärtäminen
- Vastuullisuuden vaikutukset kiinteistön arvoon tai tuottoon
- Ristiriitaiset vaatimukset
- Vastuullisuustoiminnan jalkauttaminen käytäntöön
- Muu, mikä?

**10. Mitkä ovat yrityksen suurimmat haasteet vastuullisuuteen liittyen tällä hetkellä?**

**11. NYKYTILANNE**

**Valitse 1-3 tärkeintä osa-aluetta, jotka ohjaavat vastuullisuuden edistämiseen?**

- Lainsäädäntö ja regulaatio
- Yrityksen oma kunnianhimo / strategia / tavoitteet
- Vuokralaisten vaatimukset
- Rahoittajien vaatimukset
- Työntekijöiden vaatimukset
- Omistajien vaatimukset
- Riskienhallinta
- Kilpailuetu
- Sen nähdään parantavan tai suojaavan kiinteistön arvoa
- Muu, mikä?

### 13. NYKYTILANNE

Arvioi miten vastuullisuus vaikuttaa seuraaviin kiinteistön arvoon vaikuttaviin seikkoihin

	Ei vaikutusta	Pieni vaikutus	En osaa sanoa	Melko suuri vaikutus	Merkittävä vaikutus
Kiinteistön kokonaisarvoon	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kiinteistön myynnin helppouteen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kiinteistön tuottovaateeseen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vuokrattavuuteen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rahoituksen saatavuuteen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rahoituksen hintaan	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lisää CAPEX-kustannuksia	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### 14. 5v. AIKAJÄNNE

Arvioi miten vastuullisuus vaikuttaa seuraaviin kiinteistön arvoon vaikuttaviin seikkoihin viiden vuoden päästä

	Ei vaikutusta	Pieni vaikutus	En osaa sanoa	Melko suuri vaikutus	Merkittävä vaikutus
Kiinteistön kokonaisarvoon	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kiinteistön myynnin helppouteen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kiinteistön tuottovaade	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vuokrattavuuteen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rahoituksen saatavuuteen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rahoituksen hintaan	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lisää CAPEX-kustannuksia	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### 15. Valitse 1-3 tärkeintä ajuria kiinteistökaupan yhteydessä?

- Sertifikaatit (LEED, BREEAM, RTS tai vastaava)
- EU Taksonomia
- CRREM mukainen hiilitiekartta
- GHG protokollan mukainen hiilitiekartta
- Energiatodistus luokka
- Kohteen ilmatoriskien ja sopeutumistoimenpiteiden tunnistaminen
- Kohteen viherkerroin
- Vuokralaisriskit
- Muu, mikä?

### 16. Avoin kommentti vastuullisuuden merkityksestä kiinteistökaupan yhteydessä

Vastuullisuus kiinteistötasolla

**17. Onko mielestäsi vastuullisen kiinteistön (käytön aikainen) määritelmä selkeä?**

	1	2	3	4	5	
Todella sekava	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Täysin selkeä

**18. Valitse jokaisessa E-S-G osa-alueessa 1-3 merkittävintä käytön aikaisen kiinteistön vastuullisuuden teemaa.**

**Ympäristö vastuullisuus**

- Hiilipäästöt
- Kiertotalous
- Kierrätysaste
- E-luku
- Vedenkäyttö
- Energiatohokkuus (ominaisenergiankulutus)
- Ilmatoriskit
- Pilaantuminen (kemikaalipäästöt)
- Biodiversiteetti (luontokato ja maankäyttö)
- Uusiutuva energia
- Sertifikaatit
- Muu, mikä?

**19. Sosiaalinen vastuullisuus**

- Käyttäjätyytyväisyys
- Olosuhteet ja sisäilman laatu
- Kiinteistön esteettömyys
- Kiinteistössä työskentelevien arvoketjun työntekijöiden oikeudet
- Palvelusopimusten vastuullisuusvaatimukset
- Kiinteistön sosiaali- ja yhteiskäyttötilat
- Kiinteistön käyttäjien yksityisyydensuoja
- Muu, mikä?



## 20. Hallinnollinen vastuullisuus

- Vuokratuotto
- Käyttökustannukset
- Investoinnit vastuullisuuteen
- Vastuullisuus viestinnän läpinäkyvyys
- Vastuullisuuden huomioiminen kiinteistöjohtamisen prosesseissa
- Vastuullisuuden huomioiminen riskienhallinnassa
- Vastuullisuuden huomioiminen vuokrasopimuksissa
- Kiinteistön tekninen nykyarvo
- Muu, mikä?

## 21. Miten vastuullisuuden tulisi kehittyä kiinteistötasolla?

Edellinen

Seuraava

## Vastuullisuuden standardit

### 22. Mitkä seuraavista työkaluista ja standardeista edustamallasi yrityksellä on käytössä tällä hetkellä?

- Sosiaalista näkökulmaa painottava kolmannen osapuolen sertifikaatti (esim. WELL/Fitwel)
- Käytönaikainen ympäristösertifikaatti (LEED EBOM, BREEAM IN USE, RTS)
- Rakennusvaiheen ympäristösertifikaatti (LEED, BREEAM, RTS)
- CSRD
- EU Taksonomia
- GRI - Sustainability Reporting Standards
- TCFD - Task Force on Climate-related Financial Disclosures
- UNPRI - United Nations Principles for Responsible Investment
- GRESB – Vastuullisuusjohtamisen ja kehityksen työkalu
- CRREM – Carbon Risk Real Estate Monitor
- GHG-protokollan mukainen hiilijalanjälkilaskenta ja tiekartta
- SBTi – Science Based Targets initiative
- SBTN – Tieteeseen perustuvat luontotavoitteet
- Muu, mikä?
- En osaa sanoa

### 23. Arvioi miten seuraavien työkalujen ja standardien merkitys tulee muuttumaan tulevaisuudessa?

	Merkitys laskee	Merkitys pysyy samana	Merkitys kasvaa	En osaa sanoa
Sosiaalista näkökulmaa painottava kolmannen osapuolen sertifikaatti (esim. WELL/Fitwel)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Käytönaikainen ympäristösertifikaatti (LEED EBOM, BREEAM IN USE, RTS)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rakennusvaiheen ympäristösertifikaatti (LEED, BREEAM, RTS)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CSRD	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
EU Taksonomia	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
GRI - Sustainability Reporting Standards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
TCFD - Task Force on Climate-related Financial Disclosures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
UNPRI - United Nations Principles for Responsible Investment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
GRESB – Vastuullisuusjohtamisen ja kehityksen työkalu	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CRREM – Carbon Risk Real Estate Monitor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
GHG-protokollan mukainen hiilijalanjälkilaskenta ja tiekartta	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SBTi – Science Based Targets initiative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SBTN – Tieteeseen perustuvat luontotavoitteet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### 24. Avoin palaute vastuullisuuteen liittyen