EU TAXONOMY STUDY

Evaluating the market-readiness of the EU taxonomy criteria for buildings

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ABSTRACT

For this study, four of Europe's most renowned Green Building Councils were joined by 23 financial and real estate organisations. The proposed Taxonomy criteria for building activities were applied to 62 real building case studies. The study gives insights into challenges the market participants faced and provides practical solutions and recommendations for applying sustainability criteria in financial transactions.

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Executive Summary

BACKGROUND

In March 2020, the EU Technical Expert Group for Sustainable Finance (TEG), published a set of technical screening criteria for economic activities that could make a substantial contribution to climate change mitigation and adaptation while not doing significant harm in relation to four additional environmental objectives. In view of their undeniable climate impact, the so-called 'EU Taxonomy' covers screening criteria for four construction and real estate sector activities: 1. Construction of New Buildings, 2. Building Renovations, 3, Individual Measures and Professional Services and 4. Acquisition and Ownership.

TESTING THE MARKET-READINESS

This study undertaken by Green Building Council España (GBCe), the German Sustainable Building Council (DGNB), the Danish Green Building Council (DK-GBC), and the Austrian Sustainable Building Council (ÖGNI) evaluates the market-readiness of the TEG screening criteria for all except activity 3 on the basis of 62 buildings across Europe, while also commenting on feasibility of the amended criteria as proposed by the European Commission in November 2020.
The study was carried out in collaboration with 23 market participants covering mortgage banks, financial services institutions, real estate developers, insurance companies, investment funds, pension funds, institutional investors and valuation companies. All buildings and their respective eligibility were assessed according to building typology, i.e. residential or non-residential, location, asset size, construction year or phase and their green building certification status.

KEY STUDY TAKE-AWAYS

When comparing the different business activities related to buildings, newly constructed buildings scored highest in terms of Taxonomy eligibility and also had the least difficulty in demonstrating eligibility for the Do No Significant Harm (DNSH) criteria.
For all 3 activities, the study found a strong correlation between eligibility and certification. Certified projects had a higher rate of eligibility in comparison with non-certified projects, both for the climate change mitigation and the Do No Significant Harm (DNSH) criteria.

The study concludes with a set of recommendations regarding key aspects for successful future implementation of the Taxonomy criteria from the industry and the policy perspective.

Optimisation of building data capture and management

Availability and reliability of building level data is seen as an absolutely core factor by market participants, not only in terms of participants' ability to provide evidence of eligibility but also in terms of resources and time needed to do so. Unsurprisingly, across all examined Taxonomy activities, DNSH data gaps were significantly higher than for climate change mitigation.
There was unanimity amongst study participants that current efforts by various stakeholders across Europe and beyond to develop and roll out whole life cycle building data and information repositories need to be stepped up and supported by policy-makers and the industry.

Adopting a strategic approach to portfolio performance

Owners of large building portfolios need to develop strategic plans with a view of improving sustainability-related performance and management across portfolios. This could be achieved through systematic green certification seeing that the study clearly found that that certification tools, such as the DGNB, play a significant role in applying the Taxonomy criteria to individual assets and enable portfolio owners to streamline their sustainable development strategies across the entire portfolio.

Improvement of Energy Performance Certificates (EPCs)

While EPCs are cited as the main source of information in relation to the climate mitigation criteria, study participants ranked the reliability of EPCs as low and stated and called for next generation-EPCs to be improved in terms of compliance, usability and reliability.

Introduction of a transitional climate action roadmap approach

Paris-aligned building specific climate action roadmaps should be specified and in operation for buildings reporting against the Acquisition and Ownership criteria. A climate action roadmap would be listing all necessary improvement measures and their realisation dates, based on carbon metrics thus limiting carbon emissions over time by applying an emission trajectory that shall not be exceeded and resulting in net zero carbon emissions at the latest by 2050 or in line with a recognised science-based targets approach.

1. Introduction

Being responsible for 40 % of global energy consumption and emitting about the same amount in total greenhouse gas emissions, the construction and real estate is crucial for the successful transition to a low-carbon economy. To stay on a global warming path below 2°C, building-related emissions need to decrease by nearly 80 % from 2015 Paris Agreement levels by 2050.

Cognisant of the fact that this can only be achieved by consistently integrating environmental externalities and risks into financial decision making, the EU released its 2018 Sustainable Finance Action Plan which includes a series of recommendations, such as introducing an EU label for environmentally friendly financial products, enhancing transparency through reporting obligations, introducing measures to clarify obligations of asset managers and institutional investors and establishing a clear and detailed EU classification system for sustainable activities, the so-called EU Taxonomy, defining a common language for all stakeholders within the financial system.
In March 2020, the EU Technical Expert Group for Sustainable Finance (TEG) proposed building-related Taxonomy screening criteria for four sectoral economic activities: Construction of New Buildings, Building Renovations, Individual Measures and Professional services and Acquisition and Ownership.

In July 2020, Green Building Council España (GBCe), the German Sustainable Building Council (DGNB), the Danish Green Building Council (DK-GBC), and the Austrian Sustainable Building Council (ÖGNI) initiated this study for evaluating the market-readiness of the proposed EU Taxonomy screening criteria for construction and real estate activities. The Green Building Councils were joined by 23 financial market participants, who provided relevant information on applying the proposed Taxonomy criteria to real buildings and contributed with their expertise and market know-how. Together, the market participants from Spain, Germany, Austria and Denmark applied the Taxonomy criteria to a total of 62 buildings. Basis of the evaluation of the market-readiness of the Taxonomy are the criteria recommended by the Technical Expert Group in their Final Report to the European Commission in March 2020.

1.1. Study rationale

Current challenges for financial institutions are not only related to getting prepared for the growing demand for green investments and for establishing processes to avoid misallocations of funds for non-resilient investments but also for associated future regulations.

Consensus on the market-readiness of the criteria is not in sight. Actors from the financial sector are judging the proposed Taxonomy criteria very differently and the question whether organisations are prepared for working with the proposed Taxonomy screening criteria is creating great uncertainty within the market.

By gaining insights through testing the Taxonomy criteria on real case studies, the study intended to derive recommendations for the European Commission and to guide the transition of the Taxonomy screening criteria from a technical proposal into a functioning system at the very core of a future-proof European economy.

Simultaneously, the study aimed to develop practical recommendations for participating companies by providing them with company-specific Taxonomy criteria checks, supporting them in preparing for future disclosure requirements by increasing their understanding of the Taxonomy criteria in the context of their own business activities. Based on individual interviews, the company specific report summarises the current status of sustainability-focused efforts of the respective participants, information on the organisational structure and the company's motivation for participating in the study.

1.2. Objectives

The market-readiness study had three core objectives:

Objective 1:
Through practical application of the Taxonomy criteria to real buildings and projects, the overarching goal of the study was to test the strength of the planned criteria in delivering the envisaged impacts of the Taxonomy and to identify costs and benefits of the implementation of related processes for both the European Commission and financial market participants.

In addition, the study aimed to enable participants to gain invaluable insights regarding data quality and verification with regards to the greening of their respective portfolios. These insights now form the basis of capacity building within the participating organisations and will help foster the implementation of sustainability criteria into their processes.

Objective 3:
Finally, the study set out to understand the process of data collection in relation to the buildings' sustainability aspects to determine how the critical information for financial decision-making can be collected.

1.3. Methodology

1.3.1. INTRODUCTION TO THE TAXONOMY CRITERIA

» The Taxonomy is envisaged as a tool to clarify what should be considered a sustainable activity and what should not and identify those key activities that contribute the most. The building sector is an important one that needs this kind of clarification. The EU Taxonomy is a great work for all economic and financial players and policy developers. It will help all of us to speed up action and reduce transaction costs. «

Ricardo Pedraz, Academic Coordinator at AFI

Policy background
The European Green Deal envisages to transform Europe to become the first climate neutral global region. One crucial work stream to support successful implementation of the European Green Deal is channelling private investments towards the transition to a climate-neutral economy by 2050.

To clearly define what constitutes sustainable activities, the European Commission set out to establish a common classification system for sustainable economic activities – the EU Taxonomy, a list of environmentally sustainable economic activities that would enable an upscaling of sustainable investments, supporting the implementation of the European Green Deal.

Developing the Taxonomy
To help with the drafting of a first version of technical assessment criteria, in July 2018 a dedicated Technical Expert Group (TEG) was asked to develop this classification system, ensuring that the associated criteria correspond with the EU's climate protection goals. A first proposal for the EU Taxonomy was submitted in March 2020 in the TEG's Final Report to the Commission.
The Taxonomy proposal includes six environmental objectives:

1. Climate change mitigation
2. Climate change adaptation
3. Sustainable use and protection of water and marine resources
4. The transition to a circular economy
5. Prevention and reduction of environmental pollution
6. Protection and recovery of biological diversity and ecosystems.

To qualify as being environmentally sustainable in keeping with the Taxonomy, economic activities must make substantial contribution to at least one of these six objectives. At the same time they must have no significant detrimental impact on the other five. The term used for this principle is 'Do No Significant Harm' (DNSH). Technical assessment criteria are being developed for all six environmental objectives and these will make it possible to holistically assess the environmental sustainability of all economic activities that are covered by the Taxonomy.

At present, the Taxonomy covers industry sectors that are collectively responsible for 93.5 % of all directly caused greenhouse gas emissions in the EU. At the time of writing, technical screening criteria have been defined for climate change mitigation and climate change adaptation and respective 'Do No Significant Harm' (DNSH) criteria in relation to the other four environmental objectives.

On 12th July, 2020 the Taxonomy Regulation came into force, which established the framework for the EU Taxonomy. This regulation requires the Commission to establish the technical assessment criteria for the EU Taxonomy.

The European Commission published the draft of the Delegated Act on November 20th, 2020, opening a four week public consultation phase for the first two sets of criteria. The European Commission is now preparing the first Delegated Act, taking into account the feedback received during the consultation phase, the final recommendations of the Technical Expert Group and the requirement of the Taxonomy Regulation. The finalised Taxonomy criteria will then be subject to the scrutiny of the European Parliament and the Council, before coming into effect on 1st of January, 2022.

Buildings and the Taxonomy

Given their significant impact on global and regional GHG emissions, the construction and real estate sector was identified as crucial in terms of potential substantial contribution and subsequently, the TEG developed Taxonomy screening criteria for four sectoral economic activities:

- Construction of new buildings
- Building renovation
- Individual measures and professional services
- Acquisition and ownership

» **Real Estate lenders are one of the key accelerators of the transformation towards a Net-Zero-Carbon Real Estate industry. But when it comes to data, banks are at the receiving end in that process. To be able to steer the lending activities into the right 'sustainable' direction and to avoid 'green washing' - aligned, accepted and communicated benchmarks amongst all players in the value chain are key. The EU Taxonomy is the next level of standardization and transparency and will also trigger the development of new sustainability linked finance products. However, the framework is quite complex and data intense, which leads to one of my major concerns: Acceptance of the Taxonomy in the Real Estate sector. By participating in the study, my major takeaways to make the EU Taxonomy a success are: clear definitions and benchmarks, easy accessibility of data and finally - the right support and trainings as exemplified by the collaborative work of the study group. «**

Alexander Piur, Head of Sustainability and Innovation at ING Wholesale Banking Real Estate Finance

1.3.2. TAXONOMY ELIGIBILITY CHECK QUESTIONNAIRES

For evaluating the market-readiness of the proposed Taxonomy screening criteria, the project team developed three questionnaires (see Annex 1) for the each of the three economic activities examined as part of the study. The questionnaires focus on the requirements for the environmental objective climate change mitigation derived from the Technical Annex to the Final Report of the Technical Expert Group as published in March 2020. In addition, the questionnaires also covered the requirements for the 'Do No Significant Harm' criteria and the minimum requirement for acting in compliance with the OECD Guidelines for Multinational Enterprises and the UN Guiding Principles on Business and Human Rights as well as the question of whether acquisition or ownership activities were serving the extraction, storage, production or transport of fossil fuels.

The questionnaires included comments and hints from the project group as to where documentation for the criteria could be found and also included future requirements of the proposed screening criteria, e.g. the greenhouse gas emission intensity in the climate change mitigation criteria and an additional section on effort of data collection, data sourcing aspects and on the evaluation of the reliability of the provided answers (see Chapter 1.3.3 on Rating the data reliability).

In some cases, completed questionnaires were supported by sampling documentation. On the basis of this documentation, the project team was able to check the projects for their eligibility.

Feedback sessions

The project was initiated with a multi-stakeholder kick-off meeting with participants from the financial and building sector as well as the four GBCs. The participants were informed that data for the study would be collected in two phases, with the aim of gaining insights at the accessibility of information relevant to prove the Taxonomy eligibility of the projects within the participants' company. For phase 1, the participants had only two weeks in October 2020 to submit completed questionnaires. For phase 2 of the data collection, market participants or their assigned consultants were given more time and support in gathering relevant data to prove Taxonomy eligibility.

The project team offered weekly Q&A sessions to all participants. During these sessions, there was frequent and insightful exchange between all participants, indicating once more the need for and willingness to exchange ideas and challenges related to the alignment of projects with the proposed Taxonomy criteria.

Targeted interviews
Participating companies were also interviewed in order to gain deeper insights regarding companies' status quo in dealing with impact data in relation to sustainability aspects, their interest in green financing, their engagement in following the development of the Taxonomy criteria and their internal targets and strategies regarding the development of financial products dedicated to reflecting environmentally sustainable choices in the real estate sector.

The interviews assisted the project team in understanding participants' motivation for participating in the study and the companies' organisational structure. Furthermore, it helped the project team to formulate company-speciic recommendations for enabling a company-wide roll-out of Taxonomy eligibility. The company-specific report includes a descriptive summary of the taxonomy check, insights about the data quality and tailored recommendations for each of the participating companies. Centrepiece of the company-specific report is the graphical depiction of the assessment of eligibility of each submitted project. Presentation of the results mirrors the questionnaires used during the phase of data collection. For an example of the company-specific reports, please see Annex 2.

Reactions to the November 2020 EU Commission Delegated Act proposal
Prior to the intermediate project meeting at the end of November, the European Commission published the Delegated Act on 20th November, 2020. The Delegated Act contained the new draft for the environmental objectives climate change mitigation and climate change adaptation. Seeing that the study was examining the market-readiness of the Taxonomy screening criteria, the project team informed the participants of the Delegated Act and highlighted changes between the proposed criteria by the TEG and those within the Delegated Act. The changes were discussed intensely during the subsequent weeks.

The feedback and recommendations gathered from the application of the March 2020 Taxonomy criteria and the participant's insights were summarised in a recommendation submitted to the European Commission and the Sustainable Finance Platform during the public consultation on the Delegated Act in December 2020 (see Annex 4).

1.3.3. RATING THE DATA RELIABILITY

Evidence regarding the positive link between a buildings' sustainability performance (including energy consumption levels and GHG emissions) and its financial performance is increasingly compelling and much work has gone into developing corresponding frameworks and tools for the industry. This includes efforts to develop dedicated sustainability metrics to support practitioners with the integration of ESG (Environmental, Social and Governance) risks and climate related aspects into their financial decision-making.

The importance of data reliability
Increasing the reliability of information on the energy and environmental performance of buildings is a fundamental building block in the broader global effort to demonstrate and integrate the correlation between environmental and financial performance.

However, the current lack of methodologies and procedures hinders assessments about the reliability of the underlying information when assessing a project's sustainability performance and its Taxonomy eligibility.

This also means that existing energy and environmental data are still being insufficiently considered within risk assessments and resulting investment decisions because the data ´is often not deemed a reliable and accurate enough proxy for the translation into financial performance. The resulting uncertainty undermines the trust needed for investments and underwriting of loans channelled towards sustainable and energy efficiency projects.

Applying a data quality indicator
The project team therefore recommended to determine a data quality indicator to be able to estimate the quality of the results, or rather the quality and reliability of the data provided. This indicator was applied in addition to determining a project's overall Taxonomy eligibility. In this way, by analysing and verifying how the eligibility with the Taxonomy criteria was defined, an assessment and disclosure of the quality level and certainty of the data is facilitated.

This data analytics process enhances trust in the data and facilitate its integration into valuation, risk analysis and financing decisions across the banking, investment and insurance industries. Ultimately, it will help scaling up of financial flows towards sustainable properties.

The proposed process for determining the quality indicator is a semi-quantitative method and is based on the EU Level(s) framework and was further refined and adapted by the DGNB.

For a high degree of reliability, the following aspects were assessed:

1. Basis for the eligibility evaluation:
The evaluation aspect is used to determine how representative the method used was, whereby the eligibility rating was evaluated on an integer scale from 0 to 3. The evaluation of "0" thereby stating no representativity and "3" stating a high representativity.

2. Level of competence:
The level of competence of the person evaluating the eligibility is determined in the second evaluation aspect. The level of competence was evaluated on an integer scale from 0 to 3. Thereby "0" represents the relevant person having no formal training or experience; "1" stating the relevant having formal training or some experience; "2" stating the relevant person having formal training and some experience and "3" stating the relevant

3. Independent verification of eligibility by a third party:
The third evaluation is used to determine the level of independence of the person assessing the project's Taxonomy eligibility. The level of independence is also evaluated on an integer scale from 0 to 3. Thereby "0" represents the self-

input of evaluation, while an assessment of "1" states that the eligibility was internally inspected and "2" that the results were tested and verified by a third party. "3" states that the approach and results were tested and verified by a third party. The determination of the data quality indicator that combines

RESULT DATA QUALITY INDICATOR	CLASSIFICATION
N/A	Reliability not assessable
0	No reliability
> 0 - 1	Low reliability
> 1 - 2	Medium reliability
> 2	High reliability

Table 1: Classification of data quality indicator results

all evaluation aspects is an equally weighted, arithmetic average of the classification of the three evaluation aspects. The data quality indicator is accordingly a number between 0 and 3, which is to be classified as follows:

To assess the data quality of the projects participating in the study, participants were asked to answer additional questions:

- Which data source was used and how would you rate its reliability?

- Who has provided the information and where is it stored?

- What is the effort (hrs/EUR) in obtaining the information (estimate)?

- If the question was not answered, what was the reason?

Based on the information provided per project, the project team was able to calculate the data quality index for a few selected buildings.

$$DQI_{calculation\ result} = \frac{DQI_{basis} + DQI_{competencies} + DQI_{check}}{3}$$

$DQI_{calculation\ result}$ = data quality indicator for the calculation result (round up to the decimal point)

DQI_{basis} = data quality index of the basis for the performance evaluation

$DQI_{competencies}$ = data quality index (classification) of technical competencies

DQI_{check} = data quality index (classification) of the independent check

Equation 1: Data quality indicator

2. Market

2.1. Market participant perspective

Participating Companies

- 4 % Sustainable architecture and construction management company
- 4 % Housing company
- 8 % Operator
- 4 % Real Estate and Mortgage Bank
- 29 % Project Developer
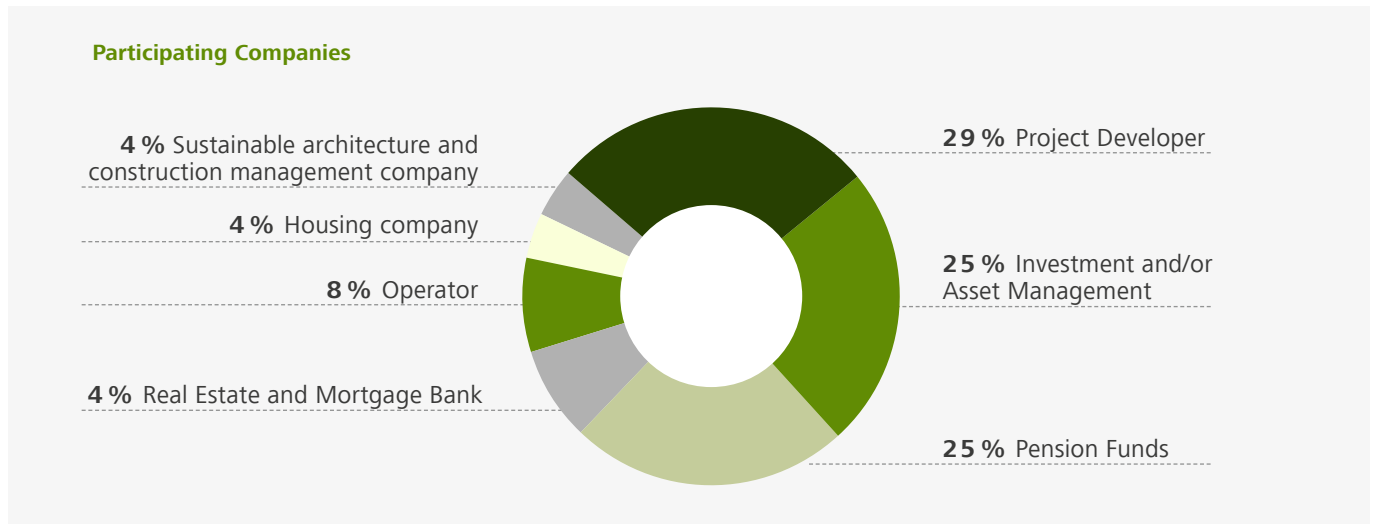- 25 % Investment and/or Asset Management
- 25 % Pension Funds

Figure 1: Main field of activities of participating organisations

For a successful practical market roll-out of the Taxonomy criteria to real buildings or projects, the expertise of sustainable building practitioners and respective organisations provides a valuable knowledge and skills source.

In total, 23 organisations contributed to this study by assessing their assets and projects. These organisations represent different stakeholder groups that are directly impacted by the EU Taxonomy regulation.

They include

credit institutions, financial service institutions, real estate developers, insurance companies, investment funds, pension funds, institutional investors valuation companies, as seen in Figure 1.

Among the 23 organisations are:

- ACCIONA INMOBILIARIA S.L.U
- Allianz Real Estate GmbH
- AP Pension
- ATP Ejendomme A/S,
- Berlin Hyp AG,
- CORESTATE CAPITAL ADVISORS GMBH SUCURSAL EN ESPAÑA
- Danica Pension
- DEAS A/S
- Deka Immobilien Investment GmbH
- Dreyer Logar & Partner

- ECE Projektmanagement GmbH & Co. KG
- H.A.U.S. Healthy Buildings S.L.
- LaSalle Investment Management Kapitalverwaltungsgesellschaft mbH
- Naussauische Heimstätte
- NEINOR HOMES S.A.
- NREP
- PensionDanmark A/S
- PKA A/S
- STRABAG Real Estate GmbH
- Teichmann & Compagnons Property Networks GmbH
- UBM Development GmbH
- value one development GmbH

> **》 Participating in the study was important for us to be able to assess the information base on our real estate assets against the Taxonomy. The study highlighted the possible blind spots and where we can better prepare for the future. 《**

Konrad Hedemann,
ESG Associate at Allianz Real Estate GmbH

Drivers for participation

Participants' level of knowledge about the Taxonomy Regulation prior to the study differed a lot. Some participants had rather limited knowledge, especially concerning the Taxonomy's impact on their company, while other companies' sustainability and ESG departments are already engaged in assessing the requirements for the EU Taxonomy or participate inworking groups.

By joining the study group participants hoped to gain insights around optimising their own processes or potentially the need to establish new ones and to identify existing blind spots or data gaps during implementation.

All study participants appreciated the opportunity to provide market feedback to the European Commission in order to influence future development of the Taxonomy.

Expectations according to participant profile

While most of the participants are continuously observing developments in relation to the topic of sustainable finance, they do so with varying objectives.

Project developers with experience in applying for green financing in the past aimed to gain a better understanding, whether green financing would still be a viable option in future. Others considered their participation an opportunity to gain knowledge on market trends and anticipate future requirements.

Facility and property managers providing services to investment and asset managers aim to expand their range of services by providing their clients with information required for a Taxonomy assessment in the future. Therefore, participation in the study paved the way to gaining a head start in understanding and implementing the Taxonomy criteria.

Stakeholders from asset management and investment management companies and pension funds mainly participated with the objective of analysing their buildings according to the Acquisition and Ownership criteria. Many companies have already defined their company strategy to align their respective portfolios to the EU Green Deal, or rather the Paris Climate Agreement, some focusing on core assets, others aiming for a portfolio-wide rollout with a more holistic approach

Key take-aways for study participants

First and foremost, the study enabled participants to gain a deeper understanding of the Taxonomy criteria. They felt that the Taxonomy will significantly influence business strategies and therefore viewed prior knowledge and insights on methodologies of implementation as essential.

However, it also enabled a cross-sectoral dialogue around core issues such as methodologies, common definitions and data availability and how these were being managed by other companies.

More specifically, participants stated that:

- Lessons learnt from the pilot application are going to be instrumental in assessing the eligibility of their projects once reporting against the Taxonomy will have become mandatory.

- Participation in the study had helped to establish their assets' sustainability credentials (which are currently often still seen as carrying a non-financial value) and derive additional key performance indicators for their existing sustainability reporting.

- The study had shown that for future large-scale Taxonomy implementation a standardised approach within the sector is essential.

> **》 Being commercial real estate developers and co-founders of the Austrian Sustainable Building Council we always try very hard to "walk the talk". Proving sustainability concepts and new technologies, we were happy to receive green building certificates and to win various awards. Simultaneously, we feel it is a pity that the finance industry had not taken much initiative so far. The EU taxonomy could be a game changer for the market – to gain insights in application we took part in this study! 《**

Dr. Richard Teichmann, CEO at Teichmann & Compagnons
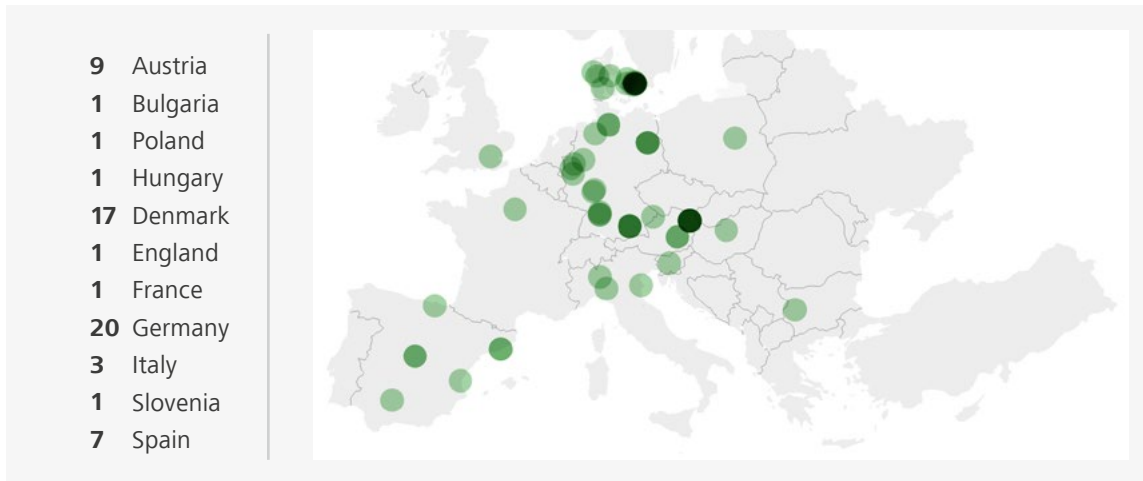Property Networks GmbH

9	Austria
1	Bulgaria
1	Poland
1	Hungary
17	Denmark
1	England
1	France
20	Germany
3	Italy
1	Slovenia
7	Spain

Figure 2: Case studies and their locations

2.2. The case studies

Collectively, market participants submitted 62 different buildings as case studies. The buildings were located in Austria, Bulgaria, Denmark, England, France, Germany, Hungary, Italy, Poland, Slovenia and Spain, as seen in the Figure 2.

Table 2 shows, how many case studies were analysed per business activity and Figure 3 depicts the building typologies

Business Activity	Construction of New Buildings	Building Renovation	Acquisition and Ownership
Number of buildings	22	4	36

Table 2: Number of case studies per Taxonomy activity

per use. Overall, around 41% of the case studies were certified assets or in the process of obtaining a sustainability certification, as shown in Figure 4.
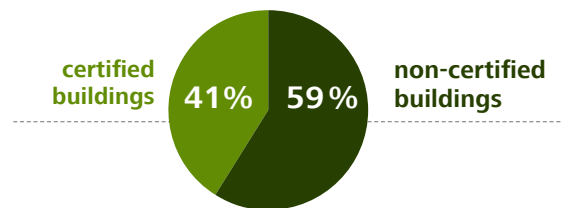

certified buildings **41%** **59%** non-certified buildings

Figure 4: Share of sustainability certified case studies across all Taxonomy activities

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New Construction

41% residential
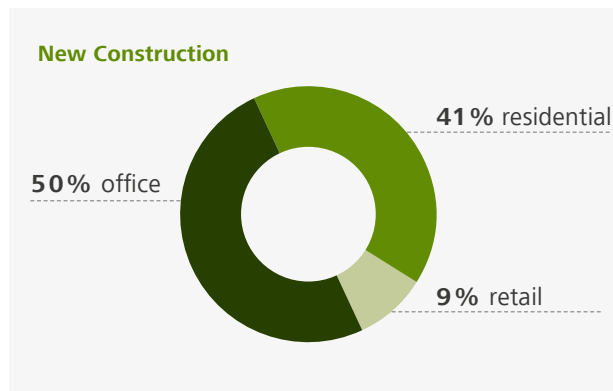**50% office**
9% retail

Figure 3a: Building type of New Construction case studies

NEW CONSTRUCTION PROJECTS

For the analysis of the Taxonomy screening criteria for the Construction of New Buildings, overall 22 buildings were submitted. These projects were located in Austria, Bulgaria, Denmark, Germany, Poland, Slovenia and Spain. The location varied from metropolitan areas, outskirts of cities, areas currently being developed or areas currently in the process of regeneration. The assets differed in size and were at different stages of the construction process during the time of the study, mostly being under construction, in the tendering or design phase or already realised.

Out of the 22 buildings, nine buildings were residential projects and 13 non-residential projects, among them buildings, which will be used for commercial or logistics purposes. Around 59% of the new buildings are being certified or have already completed the certification process.
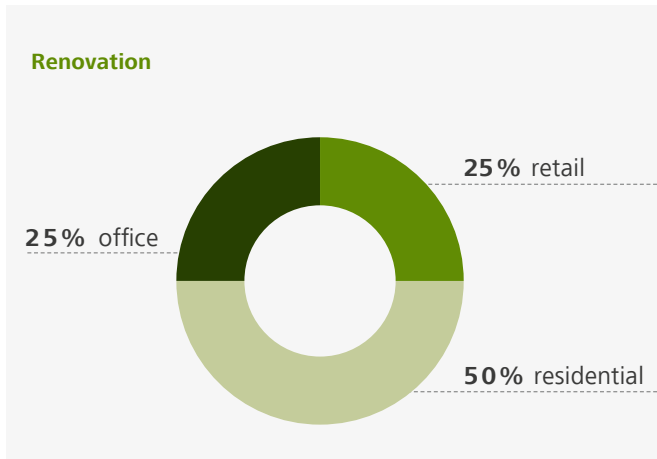
Renovation

25% retail

25% office

50% residential

Figure 3b: Building type of Renovation case studies

RENOVATION PROJECTS

For analysing the Taxonomy criteria for Building Renovation, in total four projects were analysed, located in Germany and Spain. Two residential buildings were built in the 1960ies, one non-residential building was built in the 1970ies and one in the late 1990ies. These projects, too, varied in location with the retail building located in one of Germany's metropolitan cities, while the residential projects were located in a smaller city and a town and the office building located in one of Spain's metropolitan cities. Only one of the projects had undergone sustainability certification.
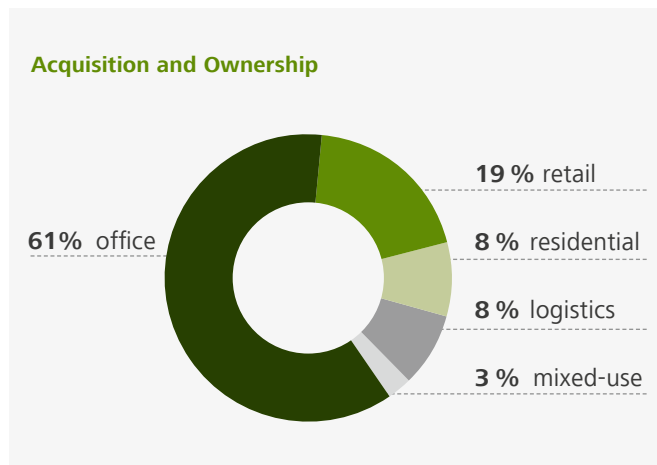
Acquisition and Ownership

19 % retail

8 % residential

8 % logistics

3 % mixed-use

61% office

Figure 3c: Building type of Acquisition and Ownership case studies

ACQUISITION AND OWNERSHIP PROJECTS

For assessing the Taxonomy criteria for the Taxonomy's Acquisition and Ownership criteria, 36 projects were evaluated in total.

20 projects were located in Germany, mainly in metropolitan regions, such as Munich, Hamburg, Düsseldorf, Cologne, Bremen. 14 projects were located across different cities in Denmark, while three logistics assets were located in the northern part of Italy and a project each in London and Paris.

Around 60 % of the assets analysed for eligibility against the Acquisition and Ownership criteria, were office buildings, while the remaining uses were retail, residential, mixed-use and logistics.

The majority of assets were built over the last 5 to 20 years, but there were also projects were between 40 and 100 years old. These older projects had mostly already undergone renovation, and had been upgraded to modern performance standards.

Around 33 % of the projects had undergone some kind of sustainability certification process, either being certified during their construction phase in line with the DGNB New Construction System, the DGNB Buildings in Use system or BREEAM-in-Use certifications, with varying certification award levels between Silver, Gold and Platinum.

3. Results

3.1. Analysing the market-readiness for the Taxonomy screening criteria

To evaluate the overall market readiness of the projects, all buildings and their eligibility were analysed according to their building type (residential and non-residential buildings), location, asset size, construction year or phase and their status of being green building certified. To enable an analysis according to asset size, the buildings were classed in four floor area classes according to Table 3.

AREA CLASS	ASSET SIZE IN M²
I	500 - 10,000
II	10,000 - 20,000
III	20,000 - 50,000
IV	> 50,000

Table 3: Floor Area classes and asset size

Overarching findings

When comparing the different economic activities related to buildings, new construction projects were most eligible in relation to the TEG criteria, as seen in the comparison in Figure 5. Moreover, new construction projects had least difficulty in proving their eligibility to the DNSH criteria.

Buildings evaluated with the Building Renovation criteria, did not have difficulties in proving their eligibility against the climate change mitigation criteria.

Buildings being scrutinised against the Acquisition and Ownership criteria were mostly non-eligible when considering both the climate change mitigation and the DNSH criteria.
From the 62 analysed projects, only one Danish project evaluated against the TEG Taxonomy criteria for Acquisition and Ownership, was rated as being fully Taxonomy eligible.
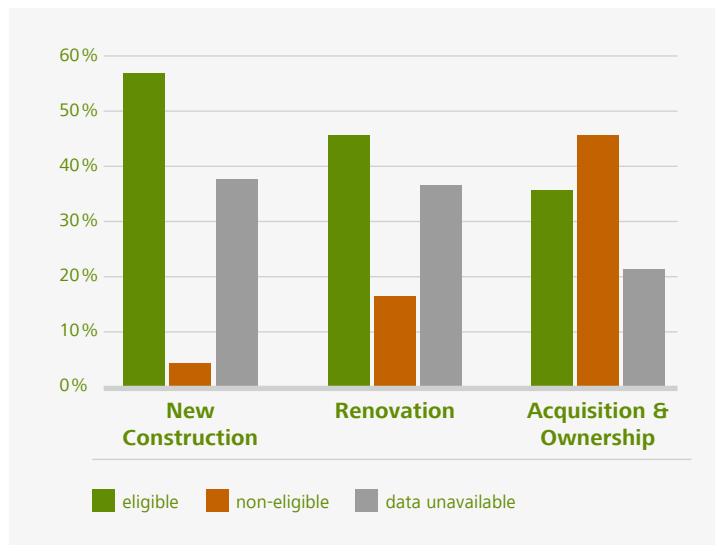

Figure 5: Share of eligible, non-eligible and non-assessable criteria across all Taxonomy activities

For all activities, certified projects could prove their eligibility more often, while non-certified projects were more likely to be rated as non-eligible against both the climate change mitigation criteria and the DNSH criteria, as seen in Figure 6.
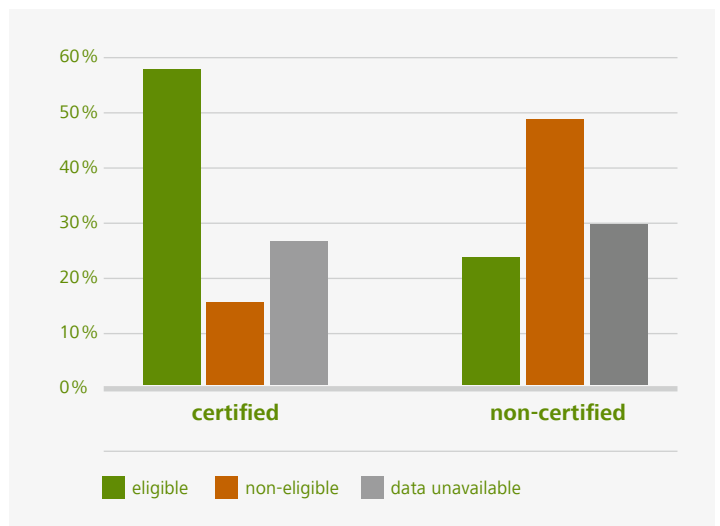

Figure 6: Share of eligible, non-eligible and non-assessable criteria in relation to sustainability certification status

In all activities, the eligibility was independent of building typology and building size. However, both residential buildings and buildings classed in floor area class III and IV (see Table 3) showed more data gaps in comparison to non-residential projects and smaller buildings.
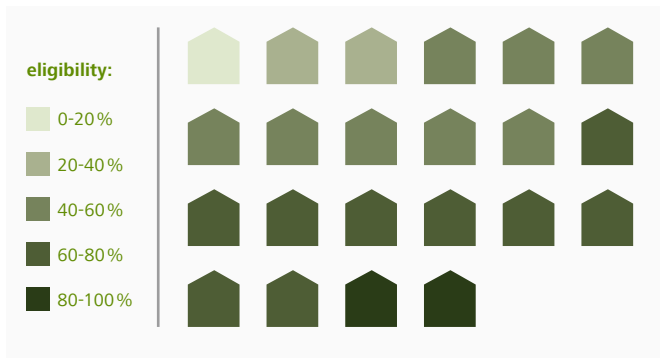
Figure 7: Case studies as rated in their eligibility to the Taxonomy new construction criteria

In the new construction business activity, 22 projects were analysed in total. These buildings were located in different European countries. Figure 7 shows the extent of how eligible each project was according to the new construction criteria, while Figure 8 shows an overview of how the projects were rated towards the climate change mitigation criteria and the DNSH criteria, rating the eligibility into three categories of: eligible, non-eligible and non-assessable due to lack of data.
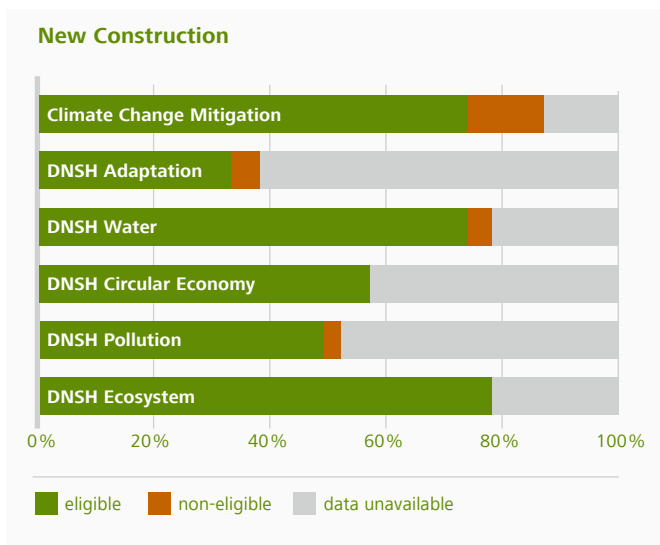

Figure 8: Share of eligible, non-eligible and non-assessable criteria in the new construction cases

Spanish and Austrian projects were mostly eligible against the climate change mitigation objective of the TEG Taxonomy criteria, while only two thirds of German projects were eligible. Two thirds of the Danish projects did not fulfil the requirements of the climate change mitigation criteria. In contrast, 70 % of the Danish projects could fulfil the DNSH requirements. Spanish and Austrian projects were unable to rate the building's eligibility against the DNSH criteria, with Austrian projects unable to rate their data in around 35 % of the cases.

Detailed findings

A. According to stage of project development:
■ Buildings that were already realised or still under construction had more information at hand to check for eligibility, in comparison to new construction projects that were still in the design phase.

■ All realised projects were eligible against the Taxonomy's climate change mitigation requirements, while 50 % of the buildings still in the design phase did not have sufficient information to make an assessment.

■ Buildings that were still under construction could make an assessment regarding DNSH eligibility in 60 % of cases, while in more than half of the instances buildings in the design phase or already realised, had insufficient data for an assessment.

B. According to building typology:
■ Residential new construction buildings could prove their eligibility against the criteria more often than non-residential buildings.

■ For around 45 % of the criteria, non-residential buildings had insufficient data to make an assessment, while residential projects had slightly more information available.

■ Residential projects had enough to rate a project's climate change mitigation eligibility, but lacked documentation for proving the eligibility against the DNSH criteria.

C. According to building size:

■ Overall eligibility did not vary significantly between different building sizes, however smaller buildings had more information available, while buildings categorised in floor area class III and IV tended to show more insufficient data for the DNSH criteria.

D. According to certification status:

■ Certified projects were able to prove their eligibility against both the climate change mitigation criteria and the DNSH criteria more often than non-certified projects. Moreover, certified projects had more information on their projects to make a decision on eligibility.

■ Non-certified projects were more likely to be rated as non-eligible against the climate change mitigation requirements and twice more likely to have insufficient data, especially with regard to the DNSH criteria.

■ The project team also evaluated the availability of life cycle assessment based on whole life carbon intensity figures for new buildings, as proposed in the Commission's Delegated Act. With life cycle assessment being a requirement in sustainability certifications, projects which were in process of being certified were able to report the figures, while non-certified projects did not have this information. Participants mentioned that in many European countries neither data nor tools for such calculations are available.

BUILDING RENOVATION

Detailed findings

A. According to criteria category:

■ Out of the four projects submitted for the economic activity renovation, no project was rated Taxonomy eligible. Figure 9 shows the share of projects rated as eligible, non-eligible or non-assessable due to insufficient data for renovation projects.

■ All projects were able to prove their eligibility against the climate change mitigation criteria, considering that projects require a new Energy Performance Certificate (EPC) after renovation.

■ The non-residential assets had more data available and were more eligible against the DNSH criteria, whereas the residential projects had larger data gaps and therefore had difficulty in rating the projects' eligibility in relation to the DNSH criteria.

B. According to certification status:

■ The certified project was twice as likely to be Taxonomy eligible, while for the non-certified projects around 40 % of the data was unavailable.
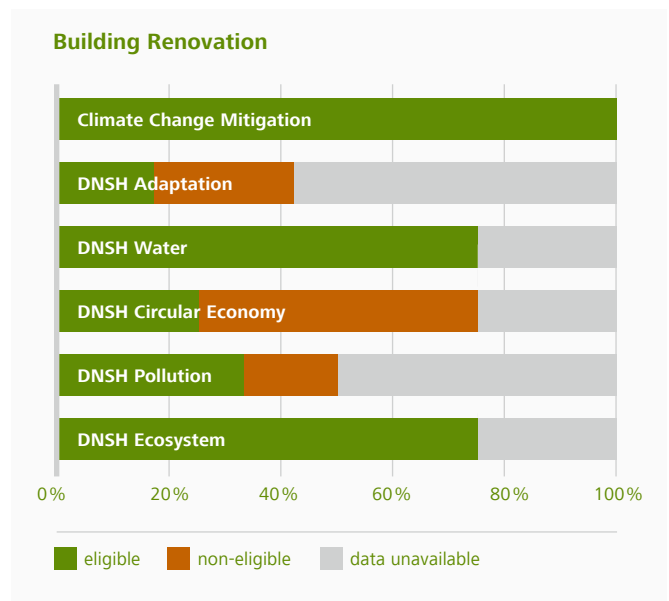

Building Renovation

eligible   non-eligible   data unavailable

Figure 9: Share of eligible, non-eligible and non-assessable criteria in the renovation cases

eligibility:
- 0-20 %
- 20-40 %
- 40-60 %
- 60-80 %
- 80-100 %

Figure 10: Case studies as rated in their eligibility to the Taxonomy Acquisition & Ownership criteria

To assess the Acquisition and Ownership criteria of the Taxonomy, 36 projects were analysed. Figure 10 shows the extent of eligibility for the different projects. It must be noted that only 5 projects rated within the category of 0-40 % eligibility were certified, while 11 of the projects rated with an eligibility of >40 % were certified.

Figure 11 shows an overview of how the projects fared per criteria category. These projects were mainly non-residential assets, with only two residential assets. Of the 36 projects, only 1 project, located in Denmark, was assessed as being eligible according to the all of the TEG proposed Taxonomy criteria.
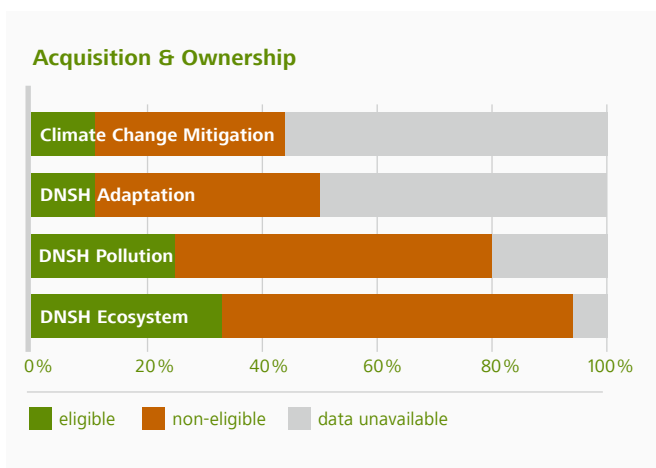
Detailed findings

A. According to criteria category:
- Looking at the overall eligibility to the environmental objective of climate change mitigation, 60 % of the assets were non-eligible and 33 % of the assets did not have sufficient information on their assets to assess the projects eligibility, primarily due to missing primary energy demand. Only two projects were classed as taxonomy eligible.

- A further difficulty for the assets were the assessing their eligibility to the DNSH criteria. 66 % of the projects were assessed as being non-eligible or not being able to evaluate their eligibility due to missing data.

B. According to building age:
Taking into consideration the different building ages, the project group was able to determine the Taxonomy eligibility, non-eligibility in relation to the construction year. Buildings built after 2005 were more likely to be eligible to the climate change mitigation criteria, compared to buildings built before 2005.

C. According to building size:
The overall eligibility and more specified the eligibility against the climate change mitigation criteria appears to be independent of project size, however, data is more likely to be missing in larger assets, while smaller assets belonging to floor area class I and III (see Table 2 for information on the area classes) were more likely to be rated as non-eligible.

Acquisition & Ownership

| | eligible | non-eligible | data unavailable |

Climate Change Mitigation
DNSH Adaptation
DNSH Pollution
DNSH Ecosystem

0 % 20 % 40 % 60 % 80 % 100 %

Figure 11: Share of eligible, non-eligible and non-assessable criteria in the Acquisition & Ownership cases

- The country comparison showed that Austrian and Danish projects had enough data available to assess a project's eligibility and ineligibility. For both countries more projects were evaluated as non-eligible, while German projects were able to document around half the criteria as eligible and for the other half of the criteria not enough information was available to make an assessment.

- Projects in all countries were more likely to rate a project as 'non-eligible' or 'data unavailable' for the DNSH criteria.

- Around 33 % of the projects being evaluated were green building certified. While certification did not help in eligibility against the climate change mitigation criteria, certified projects were six times more likely to be eligible against the DNSH criteria.

- Certified projects had less data gaps than non-certified projects.

Key Findings of the Analysis

OVERALL SUMMARY

- New Construction & Renovation projects had least difficulty in proving criteria eligibility

- New Construction and Renovation projects' non-eligibility was mainly due to unavailable data for the DNSH criteria

- Acquisition & Ownership projects could prove eligibility for only one third of the criteria

- Acquisition & Ownership projects are mostly non-eligible in the Climate Change Mitigation criteria due to low performance and missing benchmarks and have data gaps in DNSH criteria

- Certified projects could prove their eligibility more often

- Buildings with higher eligibility had higher quality data and data that was better accessible, hence required less time and effort

CONSTRUCTION OF NEW BUILDINGS

- Residential buildings could prove their eligibility more often

- Smaller buildings could prove overall eligibility, while bigger buildings more often had insufficient data

- Non-certified buildings were more likely to have insufficient data, especially for documenting the DNSH criteria

- Climate Change Adaptation followed by Pollution prevention and Circular Economy are the most difficult DNSH criteria

RENOVATION

- Projects had no difficulty in proving their eligibility to the Climate Change Mitigation criteria

- Climate Change Adaptation, Circular Economy and Pollution Prevention were the most difficult DNSH criteria

ACQUISITION & OWNERSHIP

- Only one building was rated fully eligible and only 15 % of the buildings could fulfil more than 2/3 of criteria

- 60 % of the projects were non-eligible to the Climate Change Mitigation criteria, due to missing primary energy data

- Buildings built after 2005 were more likely to be eligible

- Around 66 % of the projects were rated as non-eligible or were not assessable due to missing data for the DNSH criteria

- Larger assets had more data blind spots than smaller assets

- Certified projects were more likely to prove eligibility

3.2. Reliability and accessibility of data and proposed proofs for eligibility

» **The study once again underlines - with real case projects - something that we have expected for a long time: the building and construction industry has a problem and the need to improve data collection and to ensure a higher data reliability!** «

Carl Backstrand, ACE

Besides checking the case studies' Taxonomy eligibility, the questionnaire also included questions on data reliability and accessibility, as mentioned in section 1.3.3.

The described method for obtaining the data quality index was tested on 11 of the 62 projects, as they had enough data available for an assessment. Of these 11 projects, nine projects were certified and were assessed to have a high or medium data quality index, while the two non-certified projects were assessed as having a low data quality index, as seen in Figure 12.
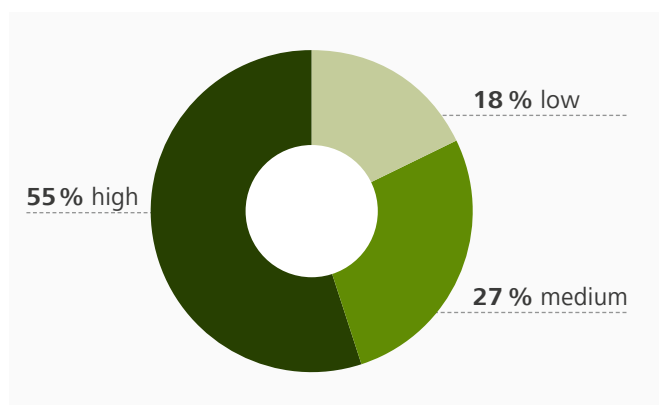

18 % low

55 % high

27 % medium

Figure 12: Rating of data quality index of eleven projects

Data source and supporting evidence

Most of the projects submitted for a Taxonomy eligibility check did not include documentation and evidence on the screening criteria. Assets certified with DGNB or similar green building certifications were able to provide supporting proof documentation nearly twice as often as non-certified buildings, as proof documentation was often gathered from documents required for the certification process. This is especially true for projects evaluated against the Construction of New Buildings screening criteria.

Around 35 % of all submitted projects pursued DGNB certifications, so that the evaluation for these projects were mostly submitted by the respective DGNB consultants and auditors. The availability of evidence for non-certified projects largely seemed to depend on the asset owner's internal organisation processes.

Independent from certification status however, the most predominant data source were Energy Performance Certificates (EPCs). While for the economic activities Construction of New Buildings and Building Renovation demand-based EPCs were mostly easily accessible, assets, especially those located in Germany, evaluated against the screening criteria for Acquisition and Ownership often did not have access to demand-based energy performance certificates, only to consumption-based ones.

Data sources according to Taxonomy criteria category

Data sources varied greatly according to the criteria. For climate change mitigation across all three activities, typically the EPC was the source of internally available data.

Evidence for the DNSH criteria was mostly sourced through reports or tools or online research. For certified projects this originated from documentation required for the green building certification, while non-certified projects had documentation available mostly through external consultants or through diverse data sources.

Data reliability assessment

Across all three activities, participants rated data reliability for the majority of data as high.
Two notable exceptions were the DNSH criteria climate change adaptation and pollution. With regard to the former, reliability was classified as medium and for the latter, depending on certification status, the data reliability was regarded as high or no judgement could be made for pollution data reliability as that type of data was not available.

In the Acquisition and Ownership category, data reliability regarding the 15 % threshold for climate change mitigation was seen as very low as participants felt that there were no adequate data sets available.

Overall, an analysis of the feedback received from market participants shows that there are specific data gaps in relation to:

a) Type of Taxonomy criteria: considering all building-related Taxonomy activities data gaps regarding the DNSH criteria were significantly higher than for the climate change mitigation criteria category. This was particularly the case for Construction of New Buildings and Building Renovation projects and to a much lesser extent for Acquisition and Ownership.

b) Building typology: bearing in mind that only a limited number of residential buildings formed part of the analysis,

unsurprisingly, data gaps were much more pronounced in residential than in non-residential buildings.

c) Building size: across all three Taxonomy activities examined, larger and more complex buildings showed more data gaps than smaller buildings.

For all three examined activities, the project team evaluated the evidence provided by market participants and potential alternative types of proof for all technical criteria. Tables 4 and 5 below provide an insight into reliability and accessibility of possible evidences for Construction of New Buildings, Building Renovation and for Acquisition and Ownership.

CONSTRUCTION OF NEW BUILDINGS AND RENOVATION	CRITERIA	RELIABILITY OF POTENTIAL DOCUMENTATION	ACCESSIBILITY OF POTENTIAL DOCUMENTATION
Minimum Requirements	Building Use and Business and Human rights	Medium to High	Easy
Climate Change Mitigation	Primary Energy Demand and comparison to NZEB	High	Easy to Medium
Future Climate Change Mitigation	GHG intensity of energy use and Life cycle emissions	High	Easy to High
DNSH Climate Change Adaptation	Climate Risk Analysis and Climate adaptation measures	Medium to High	Medium to High
DNSH Water	Top 2 Classes Water appliances	Low or High	Easy to Medium
DNSH Circular Economy	Re-use/ Recycling of construction and demolition waste	Medium to High	Easy to High
DNSH Pollution	Asbestos-free, REACH conform, soil analysis and construction machines	Low to High	Easy to High
DNSH Ecosystems	Nature reserve/ arable/ green areas and sustainable timber	High & Low to High for timber	Easy to Medium

Table 4: Overview of reliability and accessibility of evidence for Construction of New Buildings and Renovation)

ACQUISITION & OWNERSHIP	CRITERIA	RELIABILITY OF POTENTIAL DOCUMENTATION	ACCESSIBILITY OF POTENTIAL DOCUMENTATION
Minimum Requirements	Building Use and Business and Human rights	Medium to High	Easy
Climate Change Mitigation	Primary Energy Demand and 15% threshold	Low	Difficult
	Primary Energy Demand and class threshold	High for EPC classes	Easy for classes
	Energy Management System	High	Easy
Future Climate Change Mitigation	GHG intensity of energy use	High	Easy
DNSH Climate Change Adaptation	Climate Risk Analysis and Climate adaptation measures	Medium to High	Easy to High
DNSH Pollution	Soil analysis	High	Medium
DNSH Ecosystems	Nature reserve/ arable/ green areas	High	Easy to Medium

Table 5: Overview of reliability and accessibility of evidence for Acquisition and Ownership

With regard to time effort, the information provided by participants varies widely. For some the total time effort to provide answers was less than 5 hours, for others it was as much as 25 hours, depending on accessibility of information. Figures 13 and 14 show the time effort in total hours as well as per criteria category. These figures were derived from participant questionnaires during the assessments (see questions posed in section 1.3.3). Project developers and building owners submitted little to no evidence for the answers provided in the questionnaires. Most commonly, Energy Performance Certificates (EPC) are available. However, upon detailed review, the project team concluded that some EPC's accuracy needs to be verified.

Two projects in Austria provided detailed best-practice climate risk analysis and optimisation reports in which several measures for climate change adaptation were communicated. Generally speaking, a clear quality difference between green building certified assets and non-certified assets emerged, suggesting that many aspects, despite being assessed differently at a technical level within the EU Taxonomy and certification systems, are already covered by the certification process. Thus, unsurprisingly, project developers or asset managers turned to their sustainability consultants or auditors/assessors to provide answers to the questions and submit evidence.

In summary, the study has shown that establishing Taxonomy eligibility very much depends on three core factors in terms of data accessibility:

- Knowledge on source of required data, i.e. what to ask for and whom to ask. Where required data was available in internal data bases, the least amount of time for the assessment was required, typically less than 30 minutes per question.

- Consultation with a third party (mostly certification consultants): In this case, mostly certification consultants were involved, and around thirty minutes to two hours were required per question.

- Combination of external consultants and internal research to analyse asset performance. In this case, more than two hours were required, or depending on the complexity of the asset, it could sum up to days.

> » I believe that if the administrations want to promote the incorporation of measures and solutions to ensure that the renovation of the housing stock and the construction of new buildings is done with sustainability criteria, sustainability that must be measurable, objectifiable and tangible, they must seek proposals whose access is not exclusive for small and medium operators, that the achievement of the proposed solutions is not accompanied by costs in simulations, studies, evaluations with costs that end up making such proposals inaccessible. For policies to have an impact, access to the criteria and solutions defined by what is known as "taxonomy" must be universalized. «

Ricard Santamaría, Manager at H.A.U.S. Healthy Buildings

Total Time Effort (in hours)

3,75 hours
Low effort and good access to data

23,5 hours
High effort and no/ limited access to data

Figure 13: Maximum and minimum time effort for Taxonomy assessments

Time Effort per Category (in hours)

Minimum Requirement

Climate Change Mitigation

DNSH Climate Change Adaptation

DNSH Water

DNSH Circular Economy

DNSH Pollution

DNSH Ecosystem

0h   1h   2h   3h   4h

■ Low effort and good access to data
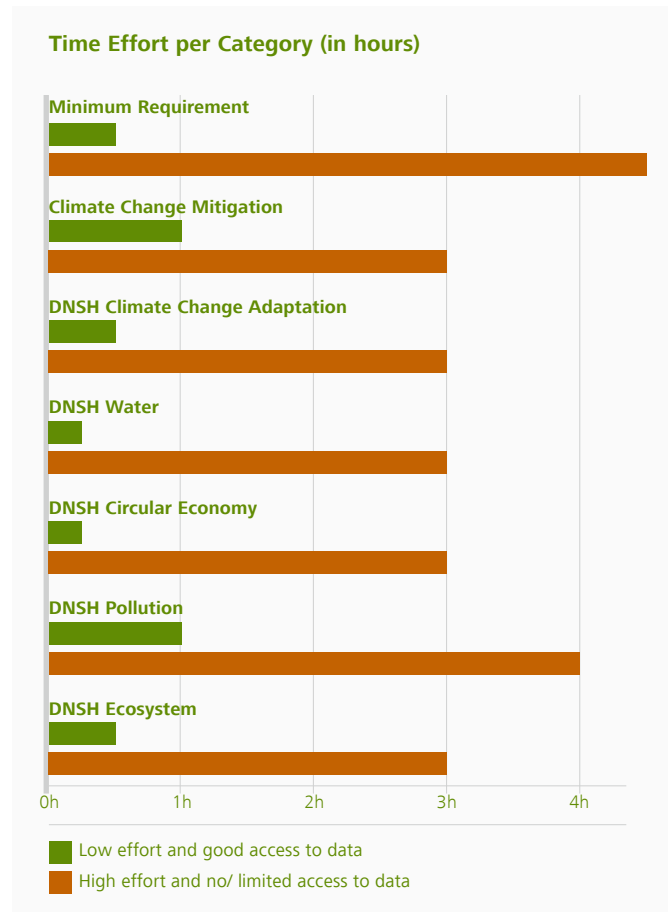■ High effort and no/ limited access to data

Figure 14: Time effort per Taxonomy criterion

4. Recommendations

4.1. Recommendations for application

» **The recommendations included in this report will be beneficial, not only for the European authorities, but also for many players across different industries relevant to the building value chain, such as business associations, real estate developers, constructors and manufacturing companies, training centres and technical faculties. All of them will play an important role in raising awareness of the importance of the EU Taxonomy criteriafor the building industry.** «

Carlos Valdés, Independent ESG Consultant

4.1.1 DEVELOPING DIGITAL BUILDING DATA

For years, the construction and real estate sector has been grappling with issues surrounding building data and information, hindering a whole life cycle approach to data capture and management.

However, as the analysis in chapter 3 shows, it is not as if there is no data. After all, data is generated at every stage of the life cycle for different purposes. The real issue is data accessibility. Often it is only possible to source data through third parties and/or through investing a considerable amount of time and effort.

Research published by the UNEP-led Global Alliance for Buildings and Construction (GlobalABC) confirmed that the most challenging aspect of adopting a more consistent approach to building data and information management is not a lack of data but rather the lack of a central data and information storage option, leading to data being scattered across organisational departments, or being misled and lost and certainly not shared.

Therefore, current efforts by various stakeholders across Europe and beyond to develop and roll out whole life cycle building data and information repositories should be stepped up and supported by governments and the industry.

Notable initiatives are the GlobalABC Building Passport, the European Commission's Digital Building Logbook and at local level the so-called Woningpas in the Flemish region of Belgium. Having a central data repository where all relevant life cycle building information could be stored or tagged in a standardised way, would increase market participants' in-house capacity for capturing and subsequently managing data needed for reporting against the EU Taxonomy and increase market buy-in, both at single asset as well as at portfolio level.

4.1.2 IMPROVING THE QUALITY OF ENERGY PERFORMANCE CERTIFICATES

The Energy Performance Certificate (EPC) is a well-established policy instrument that is used across all EU Member States. As such and given its market penetration it has to be regarded as a core element within the EU's strategy to improve the energy efficiency performance of the European building stock.

However, EPCs vary greatly across countries, making comparisons impossible.
Regarding reputation and reliability, the study acknowledges the low reliability of EPCs as a common theme, with insufficient levels of quality assurance requirements and quality control, and a qualification for experts which varies across different countries. Regarding public acceptance, a relatively high percentage show interest, but in fact it seems that the general public does not understand or does not trust the information. Furthermore, EPCs can vary in their type, being either consumption-based or demand-based EPCs. Even though consumption-based EPCs might be available more frequently, due to their convenience in preparation, asset owners must realize that demand-based EPCs depict the energetic potential of buildings and must be made available to banks.

» The Action Plan's Taxonomy provides guidance by its sector-specific carbon footprint thresholds on how to achieve the climate protection goals. In order to provide for a transformative impact, four aspects appear to necessary: A high level of ambition, a low level of bureaucracy, innovative financing instruments and a better coordination with EU-wide carbon pricing-schemes - e.g. carbon taxes. In addition so-called embodied emissions along the building lifecycle should be adequately taken into account. «

Prof. Dr. Tobias Popović at HFT Stuttgart

To fully realise their potential, EPCs should incorporate new indicators, such as, smart readiness, real energy consumption data, interaction with district energy systems. Once trust in the reliability of EPC data has thus been strengthened, it can then be used innovatively as a more dynamic tool for EPC databases, building passports or logbooks, tailored recommendations (building renovation passports or deep renovation roadmaps) and as a source of information for financing options and as a tool to support the long-term decarbonisation of the European building stock.

In terms of accessibility, even after two decades since the introduction of the EU Energy Performance of Buildings Directive (EPBD) that introduced the concept of EPCs in the EU was first published, most Member States still lack central, easily accessible EPC registers. This should be addressed as a matter of urgency.

The Taxonomy and its reliance on access to and robustness of energy performance data could be a real driver for improving the accessibility, reliability, consistency and comparability of EPCs across the EU. These are aspects that need to be stressed in the context of the upcoming 2021 revisions of the EED (Energy Efficiency Directive) and the EPBD.

4.1.3. SCALING-UP FOR PORTFOLIOS

The introduction of the Taxonomy criteria enables the definition of a common language for portfolio owners and the development of a corresponding performance-oriented context for green investments.
This provides banks and financial institutions with a standardised framework for defining and specifying financing eligibility and the entry points for so-called 'green loans'.
Many building portfolio owners have properties in several countries. The cross-border nature of the EU Taxonomy screening criteria facilitates the definition of green investments across national borders, and also, therefore, the opportunity to apply for green loans for cross-border building portfolio developments.

To align with the EU Green Deal and the Paris Agreement and to be eligible with the Taxonomy, owners of large buildings stocks have to develop strong strategic plans for improving the sustainability-related performance and associated management of their building portfolios.

As this study has shown, sustainability evaluation and management tools such as the DGNB System can play a significant role in applying the EU Taxonomy criteria to individual assets but also to portfolios. By systematically considering the respective evaluation criteria and thresholds, these frameworks help to identify necessary optimisations and enable building portfolio owners to streamline sustainable development strategies across the entire portfolio. The possibility of obtaining a green loan for not only a single building, but an entire portfolio, appears particularly beneficial for building portfolio owners, as this scale-up and portfolio-wide rollout will result in greater financial gain.

» It would be very beneficial for assets with Paris-aligned climate action roadmaps in place to be eligible, given that so much decarbonisation of the building stock is going to come from upgrading existing assets. These roadmaps would need to reflect EU-set benchmarks for 2030, 2040 and 2050, so that we know exactly where each asset needs to be at over the next three decades. These benchmarks must also measure CO_2 emissions as well as energy demand. «

Sophie Carruth, Head of Sustainability at Lasalle Investment Management

4.2. Recommendations for the Taxonomy: Transformational Approach

While current ambition levels for the Construction of New Buildings and Building Renovation criteria appear reasonable when looking at the current market share of buildings actually meeting the respective criteria, they are too low to successfully address the pressing challenges of a changing climate.

The indicator 'primary energy demand' is not an adequate metric to reduce greenhouse gas emissions and the current ambition levels for all three examined activities are not at all in line with a Paris-aligned path for the entire sector.

The so-called 'best in class' approach reflects current market practice by some stakeholders, but successful application depends on availability of reliable data and needs to be carefully monitored. Apart from this, a trend can be seen that banks start setting up financial products aimed at transforming promising assets into Paris-aligned assets. Their efforts and the related financial flows are not reflected in the current criteria.

> **» Climate protection is the topic of the hour. With the Taxonomy a way is opened for the transition of the economy and the financial sector. But then it is precisely this transition that must be considered and stimulated. Financing energy-efficient green buildings is important, but buildings that have the potential to become green need recognition. «**

Leoni Gros, Corporate Strategy at Berlin Hyp AG

The TEG report included a potential outlook on the development of the climate change mitigation criteria, instrumental in preparing market participants. This outlook foresaw a change of metric from primary energy to GHG intensity.

This could easily be implemented today as an alternative 'GHG eligibility path', potentially also supported by additional energy benchmarks, e.g. on final energy or useful energy.

To improve existing and to ensure good performance of newer or renovated assets, energy monitoring and management systems are very valuable instruments and should always be accompanied by monitoring the greenhouse gas emissions and by setting target values.

Ideally, the achievement of intermediate target values would be set and monitored in line with a Paris-Agreement-compatible or aligned path. In order to prevent greenwashing, minimum energy and carbon reduction values per annum could be defined to specify that a building is efficiently operated.

For the Acquisition and Ownership criteria, both the construction and real estate and financial market could easily embrace the introduction of an additional Taxonomy class a strengthening of financial flows into transitional financial products.

Eligible buildings within this class would have to provide evidence for a 'weaker-than-Class A' requirement for the current carbon (or energy) performance (e.g. 'GHG intensity better than average'), but would provide a solid investment plan for a step-by-step improvement, which would be actively managed and monitored by the owner and the bank and would be in line with 1.5°C or 2°C limit carbon budget mechanisms.

Such a roadmap ('building specific climate action roadmap') is building on the so-called 'renovation passport' concept, but is actually going transcending this by going towards a net-zero-GHG target within a specified limit.

With the current trend of rising carbon prices in Europe and the forecast of further dramatic increases in future, the long-term planning of renovation measures and necessary steps to reach carbon net zero is essential.

- Elements for the climate change mitigation criteria of a 'transitional approach': GHG emissions intensity average or above average plus Paris-aligned specific 'climate action roadmap' in operation

- Eligibility condition 1: GHG emission intensity of existing building based on final energy demand below carbon benchmark that represents at least average GHG emission intensity (for non-residential buildings e.g. use of the so-called Carbon Risk Real Estate Monitor (CRREM) benchmarks as starting point or Climate Bond Initiative benchmark - see www.crrem.eu and https://www.climate-bonds.net/

- Eligibility condition 2: Paris-aligned building specific climate action roadmap is specified and in operation. A 'climate action roadmap' is similar to a renovation passport, listing all necessary improvement measures and their realisation dates, but based on carbon metrics, limiting carbon emissions over time by applying an emission trajectory/path, that shall not be exceeded (according to a carbon budget approach) and resulting in net zero carbon emissions by, at the very latest, 2050 or in line with a recognised science-based targets approach.
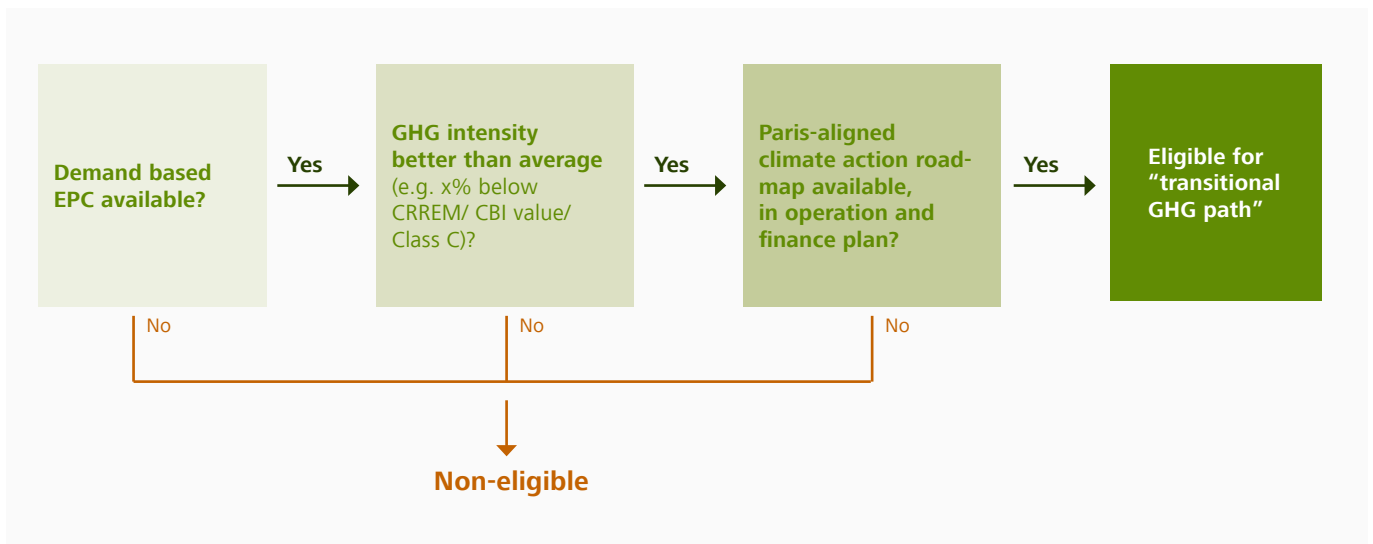
Figure 15: Proposed additional 'Transitional GHG path' – Building operated and improved according to Paris-aligned Climate Action Roadmap

5. Role of Green Building Councils and sustainability certification

5.1. Quality assurance processes

As discussed in chapter 3.2, the quality of information is varying a lot across the tested projects.

The main reasons are:
1. Different methods and instruments in application
2. Different technical backgrounds and qualifications of parties performing the assessment
3. Different approaches of validation have taken place (e.g. internal quality checks by independent experts or by third parties like certification bodies)

To obtain reliable information, all of the three aspects above should be covered in quality assurance processes. To structure the quality assurance process, the methodology for assessing the reliability of all information outlined in chapter 1.3.3 provides a methodology that accommodates all of the three quality assurance aspects mentioned above.

Quality assurance can be an internal process or outsourced. In both cases, used methods and instruments should be according to clearly specified rules and of course in line with the Taxonomy criteria.

Whoever is performing the assessments should be trained and professionally qualified to apply the methods and instruments, and, last but not least, an independent internal or external quality validation should take place. The last point can be either done internally within the financial institution, resulting usually in lower external acknowledgement of the statements, or by independent external verification bodies.

5.2. Integrating the Taxonomy criteria into the DGNB system

The DGNB German Sustainable Building Council has been using its certification system to assess sustainable buildings, urban districts and building interiors since 2009. As of the end of June 2020, the DGNB certification process was successfully applied to more than 6800 projects in approximately 30 countries.

With respect to buildings, this does not only apply to new developments and renovation measures, but also to how buildings are operated. In terms of sustainability aspects addressed, the DGNB System is considered the most ambitious and advanced system of its kind.

DGNB certification is particularly popular in Europe, where it is also offered through partner organisations in Austria, Switzerland, Denmark and Spain. Because DGNB assessment adopts a holistic approach and is based on the life cycle of buildings and building performance, it provides a basis for a common understanding within Europe when it comes to the requirements of sustainable building. A direct comparison of the areas covered by the DGNB certification system and the EU Taxonomy shows that using the DGNB System will leave investors and financial institutions well equipped for documenting the criteria and requirements of the EU Taxonomy. This illustrates how well the two approaches work together.

With new buildings, a large share of the technical assessment criteria can be validated by using the requirements laid down by the DGNB System for New Construction. Some of the remaining criteria outlined by the TEG are already addressed in some countries by meeting minimum legal requirements. Looking at this from the certification angle, meeting the Taxonomy criteria has a positive influence on certification outcomes under the DGNB System. With new buildings, this affects a large share of evaluation criteria for so-called environmental quality.

The existing stock is key when it comes to addressing climate change. This is not only because of the significant number of existing buildings that need renovating, but also because of the importance of quality standards used for renovations. Investors have considerable influence when it comes to calling for adherence to the Taxonomy criteria. A comparison with the criteria used by the EU Taxonomy shows that they are covered to a large extend by the DGNB System for Renovations. As a result, these criteria can be reliably validated and verified through DGNB certification.

Improving climate protection in the industry does not just depend on how buildings are constructed or renovated. Another crucial point of leverage is how they are acquired and owned and, with this, optimised in terms of building operation. It is therefore appropriate and important that aspects relating to how buildings are used are also captured as a 'living' standard of the Taxonomy and requirements in this area will become even tighter over time. Forthcoming legislation, such as Disclosure and Taxonomy regulations, will demand that operators and owners of buildings actually prove that existing or shortly-to-be-acquired buildings are Taxonomy-aligned. Only then will banks and other parties providing funding be able to assess how sustainable their financing activities are.

Published in 2020, the latest version of the DGNB System for Buildings in Use also provides a solid basis for this reporting obligation, offering suitable methods and reliable information. The criteria catalogue will be updated as soon as the Taxonomy criteria are finally defined to allow users to understand exactly which elements they need to comply with, not just to gain DGNB certification, but also to receive confirmation that a building is compatible with Taxonomy requirements.

If an existing building adheres to the Taxonomy criteria, applying the methods of energy management would allow a building to gain a notable assessment result in a DGNB assessment for buildings in use.

The DGNB System for Buildings in Use lays particular emphasis on strategic climate action, corresponding risk assessment and Taxonomy requirements. The DGNB is thus providing all owners of existing buildings with an evaluation and management instrument for systematically assessing not just individual buildings but also entire portfolios based on the appropriate and relevant information. This gives them a comprehensive decision-making template, making it possible to minimise risk and achieve climate protection goals as economically and appropriately as possible. The resulting climate action roadmap also highlights required measures, including sensible timings.

6. Assessment of the Draft Delegated Act proposal and next steps

Feedback on the draft Delegated Act

While the project team was finalising the feedback on the application of the TEG Taxonomy criteria (see Annex 3), at the end of November 2020, the EU Commission published the first draft of the Taxonomy Delegated Act, causing a great deal of uncertainty amongst market participants.

Considering that new processes will need to be rolled out within the companies to accommodate the requirements for the application of Taxonomy criteria, market participants are reluctant to implement these, if they feel that they may be outdated soon. Participants therefore stressed the need for a reliable roadmap regarding ambition and changing metrics within the screening criteria, to enable them to start preparing for future requirements.

The draft Delegated Act showed a substantial diversion from the March 2020 TEG screening criteria.

A major change concerned the Acquisition and Ownership criteria with the eligibility 'top 15% - best-in-class' requirement having been changed to requiring an EPC Class A rating. While the study participants considered the TEG's climate change mitigation criteria for Acquisition and Ownership criteria as difficult due to the lack specifically defined thresholds, they deemed them acceptable from an ambition level point of view. The proposed draft Delegated Act criteria however, were described as too ambitious, jeopardising large-scale market uptake.

The project team sees a real risk in limiting the transformational potential of the Taxonomy, if the effect of renovating or constructing assets classed as EPC Class A is not happening fast enough. This could be considered a threat to the desired green transition - both in terms of incentivising investments in existing energy efficient buildings and in renovation. The incentive to renovate buildings, which is crucial for mitigating climate change, is likely to be suppressed, as in most cases renovating older properties would still likely not achieve EPC Class A.

In light of this, the project team advocates adopting a transformational approach as set out in section "4.2. Recommendations for the Taxonomy: Transformational Approach" as part of the Taxonomy.

Next steps

Once the final Taxonomy criteria are published, all four participating Green Building Councils will integrate the requirements into their processes and product offerings. Through their common DGNB certification schemes, they will issue guidance on the methodologies and instruments to be used. They will also provide specific training for DGNB Auditors and DGNB Consultants as well as stand-alone Taxonomy trainings. The GBCs will also provide verification of the Taxonomy criteria within DGNB certifications.

ANNEX 1: Questionnaires on EU Taxonomy Criteria: Climate Change Mitigation

Construction of New Buildings

NR.	QUESTION	ANSWER OPTIONS		POSSIBLE PROOF
1. Basics				
1.1	Is it a residential building or non- residential building?	☐ Residential building	☐ Non-residential building	n.a.
1.2	In what year was the building built?	Construction year: _____		
1.3	What is the gross floor area (GFA) of the building under consideration?	GFA: _____		
1.4	General information about the building	Address / Additional information: _____		
1.5	In what stage is the project and the provided data?	Project stage: _____ _____ (e.g. design, realised)		
2. Minimum requirements				
2.1	Does the construction of the new building serve the extraction, storage, production or transport of fossil fuels?	☐ Yes	☐ No Reasoning / plausibility: _____	Extract of company policies, company statement, sustainability report or comparable
2.2	Are the OECD Guidelines for Multinational Enterprises and the UN Guiding Principles on Business and Human Rights being adhered to in the context of the construction of the new building?	☐ Yes	☐ No Reasoning / plausibility: _____	
3. Climate change mitigation				
3.1	Is the annual primary energy demand [kWh / (m²*a)] related to regulated energy consumption during the operating phase (B6 according to EN 15978) available and is it calculated ex-ante according to the national methodologies for asset design assessment, or as defined in the set of standards ISO 52000?	☐ Yes Value: _____ in [kWh / (m²*a)]	☐ No	Energy Performance Certificate
?	Is the primary energy demand at least 20% below nearly-zero energy building (NZEB) standard, which are defined in national regulation?	☐ Yes Reasoning / plausibility: _____	☐ No	Energy Performance Certificate plus percentage figure for NZEB improvement (see DGNB New Construction, ENV1.1)
3.2	Is the annual greenhouse gas emission intensity [kg CO_2e / (m²*a)] related to regulated energy consumption during the operating phase (B6 according to EN 15978) available?	☐ Yes Value: _____ in [kg CO_2e / (m²*a)]	☐ No	Energy Performance Certificate or comparable
3.3	Are the "embodied life-cycle carbon emissions" [kg CO_2e / (m²*a)] related to the new construction available? (calculated for all relevant modules according to EN 15978)	☐ Yes Value: _____ in [kg CO_2e / (m²*a)]	☐ No	Life cycle assessment results (see DGNB New Construction, ENV1.1)

Future requirements

NR.	QUESTION	ANSWER OPTIONS		POSSIBLE PROOF
4. Do no significant harm climate change adaptation				
4.1	Has a climate risk analysis been carried out, that is based on robust data that respects the current weather and future climate within the expected lifetime?	☐ Yes Reasoning / plausibility: _____	☐ No	Classification of the probability of occurrence at the site of heavy rain, hail, climate extremes, flooding, storm, storm surge, landslides and forest fires (see also DGNB New Construction, SITE1.1)
4.2	Does the building and its (planned) climate adaptation measures not have a negative impact on other people's climate adaptation efforts, nature and other assets?	☐ Yes Reasoning / plausibility: _____	☐ No	Option 1: Proof by expert opinion or confirmation by professionally suitable person (see DGNB New Construction SITE1.1) Option 2: Proof of greening of facade, roof and exterior surfaces (reason: increased resistance) (see DGNB New Construction, ENV2.4)
4.3	Based on the identified climate risks, are measures taken (or are planned for the next 5 years) in line with regional or national climate adaptation efforts or climate adaptation strategy?	☐ Yes Reasoning / plausibility: _____	☐ No	Option 1: Proof by expert opinion or confirmation by professionally suitable person (see DGNB New Construction, SITE1.1) Option 2: Proof of greening of facade, roof and exterior surfaces (reason: increased resistance) (see DGNB New Construction, ENV2.4)
5. Do no significant harm water				
5.1	Are all relevant water appliances (shower solutions, mixer showers, shower outlets, taps, WC suites, WC bowls and flushing cisterns, urinal bowls and flushing cisterns, bathtubs) in the top 2 classes for water consumption of the EU Water Label (values for flow rates and capacities see table below)?	☐ Yes Reasoning / plausibility: _____	☐ No	- Option 1: Specification of flow rates according to EU Water Label or required classes in the tender - Option 2: Declaration of building owner, builder or technical planner that appliances are conform with specified flow rates or classes of the EU Water Label - Option 3: Assessment of the water indicator according to DGNB with specific proof of not accessing limit values (see DGNB New Construction, ENV2.2)
6. Do no significant harm circular economy				
6.1	Are at least 80 % (by weight) of the non-hazardous construction and demolition waste (excluding naturally occurring material) generated on the construction site prepared for re-use or sent for recycling or other material recovery, including backfilling operations that use waste to substitute other materials?	☐ Yes Reasoning / plausibility: _____	☐ No	- Option 1: Declaration of constructor on achievement of the 80 %-rate, based on full list of C&D waste / waste balance - Option 2: Performed control of waste balance and own calculation of rate / verified (see DGNB New Construction, PRO2.1 - Target value definition in 4.1 Waste prevention)
7. Do no significant harm pollution				
7.1	Is it ensured that building components and materials do not contain asbestos nor substances of very high concern as identified on the basis of the "Authorisation List" of the REACH Regulation?	☐ Yes Reasoning / plausibility: _____	☐ No	Comment: The second part of the question is nearly impossible to be answered. If question is answered: - Option 1: Clear specification in the tender - Option 2: Declaration of construction
7.2	Was an examination of soil pollution (especially in industrial wastelands) carried out before the building was built or can contamination be ruled out for other reasons?	☐ Yes Reasoning / plausibility: _____	☐ No	- Option 1: Proof from building documents (e.g. building file of the competent building authority and contaminated site register of the competent state office for the environment) - Option 2: Proof of land survey of the property (DGNB Buildings In Use: ECO2-B: Indicator 2.1 - Advanced Object Documentation)

NR.	QUESTION	ANSWER OPTIONS		POSSIBLE PROOF
7.3	Did non-road mobile machinery used on the construction site comply with the requirements of the NRMM Directive?	☐ Yes Reasoning / plausibility: _____	☐ No	Important comment: This question is a "should" question. If it is answered with "no", it does not mean the building is not eligible. - Option 1: Specified in the tender - Option 2: Self declaration and the contract document - Option 3: Third party check on-site

8. Do no significant harm ecosystems

NR.	QUESTION	ANSWER OPTIONS		POSSIBLE PROOF
8.1	Was the building not built in a nature reserve or on arable or green areas with a recognised value for biological diversity?	☐ Yes Reasoning / plausibility: _____	☐ No	Possible proof that there is no violation of protected natural areas during the construction of the property: Proof is provided from the assessment of the property with regard to Natura 2000, UNESCO World Heritage Site, Key Biodiversity Area (KBA) or comparable (DGNB Buildings In Use: ECO2-B: Indicator 2.1 – Extended Object Documentation) Possible proof that there is no violation of natural areas of high biodiversity and endangered species during the construction of the property on agricultural land or on the green meadow: Evidence is provided from the assessment of the land with regard to high biodiversity and/ or habitat of endangered species, entered in the "European Red list, IUCN Red List). Information is provided by the responsible environmental, nature conservation and monument protection authorities. (DGNB Buildings In Use: ECO2-B: Indicator 2.1 - Advanced Object Documentation)
8.2	Does the building have at least 80 % of all timber products used in the new construction for structures, cladding and finishes been either recycled/reused or sourced from certified sustainably managed forests?	☐ Yes Reasoning / plausibility: _____	☐ No	- Option 1: Self declaration on achieved rate for timber products - Option 2: List of all timber products with sources information and certificates - Option 3: Third party verified (e.g. DGNB New Construction, ENV1.3 with indication of rate)

WATER APPLIANCE	CLASS 1: FLOW RATE OR CAPACITY	CLASS 2: FLOW RATE OR CAPACITY
Mixer Showers	≤6.0 l/min	≤8.0 l/min
Shower outlets	≤6.0 l/min	≤8.0 l/min
Taps	≤6.0 l/min	≤8.0 l/min
Water closets	≤3.5 l/min	≤4.5 l/min
Urinals	≤1.0 l/min	≤2.0 l/min
Bath tubs	≤ 155 l Actual capacity resp. ≤ 62 l effective capacity of 40 %	≤ 170 l Actual capacity resp. ≤ 68 l effective capacity of 40 %

Building Renovation

NR.	QUESTION	ANSWER OPTIONS		POSSIBLE PROOF
1. Basics				
1.1	Is it a residential building or non- residential building?	☐ Residential building	☐ Non-residential building	n.a.
1.2	In what year was the building built?	Construction year: _____		
1.3	What is the gross floor area (GFA) of the building under consideration?	GFA: _____		
1.4	General information about the building	Address / Additional information: _____		
1.5	In what stage is the project and the provided data?	Project stage: _____ (e.g. design, realised)		
2. Minimum requirements				
2.1	Does the renovation of the building serve the extraction, storage, production or transport of fossil fuels?	☐ Yes	☐ No Reasoning / plausibility: _____	Extract of company policies, company statement, sustainability report or comparable
2.2	Are the OECD Guidelines for Multinational Enterprises and the UN Guiding Principles on Business and Human Rights being adhered to in the context of the renovation of the building?	☐ Yes	☐ No Reasoning / plausibility: _____	

NR.	QUESTION	ANSWER OPTIONS		POSSIBLE PROOF
3. Climate change mitigation				
3.1	Is the annual primary energy demand [kWh / (m²*a)] related to regulated energy consumption during the operating phase (B6 according to EN 15978) available and is it calculated ex-ante according to the national methodologies for asset design assessment, or as defined in the set of standards ISO 52000?	☐ Yes Value: _____ in [kWh / (m²*a)]	☐ No	Energy Performance Certificate
3.2	Is one of the following the thresholds met:			
	a) Major renovation: The renovation is compliant with the requirements set in the applicable building regulations for 'major renovation' transposing the Energy Performance of Buildings Directive (EPBD)	☐ Yes Reasoning / plausibility: _____	☐ No	Energy performance certificate plus percentage figure for NZEB improvement including baseline calculation and validation by accredited energy auditor (see DGNB Renovation, ENV1.1)
	b) Relative improvement: The renovation achieves savings in net Primary Energy Demand of at least 30 % in comparison to the baseline performance of the building before the renovation. The baseline performance and predicted improvement shall be based on a specialised building survey and validated by an accredited energy auditor.			
3.3	Is the annual greenhouse gas emission intensity [kg CO_2e / (m²*a)] related to regulated energy consumption during the operating phase (B6 according to EN 15978) available?	☐ Yes Value: _____ in [kg CO_2e / (m²*a)]	☐ No	Energy Performance Certificate or comparable
3.4	Are the "embodied life-cycle carbon emissions" [kg CO_2e / (m²*a)] related to the renovation available? (calculated for all relevant modules according to EN 15978)	☐ Yes Value: _____ in [kg CO_2e / (m²*a)]	☐ No	Life cycle assessment results (see DGNB New Construction, ENV1.1)
4. Do no significant harm climate change adaptation				
4.1	Has a climate risk analysis been carried out that is based on robust data and takes into account the current weather and future climate within the expected building lifetime?	☐ Yes Reasoning / plausibility: _____	☐ No	Classification of the probability of occurrence at the site of heavy rain, hail, climate extremes, flooding, storm, storm surge, landslides and forest fires. For Germany, the CEDIM tool of the Karlsruhe Institute of Technology can be used for classification (see DGNB New Construction, SITE1.1)
4.2	Does the building and its (planned) climate adaptation measures not have a negative impact on other people's climate adaptation efforts, nature and other assets?	☐ Yes Reasoning / plausibility: _____	☐ No	- Option 1: Proof by expert opinion or confirmation by professionally suitable person (see DGNB New Construction, SITE 1.1) - Option 2: Proof of greening of facade, roof and exterior surfaces (reason: increased resistance). (see DGNB New Construction, ENV2.4)
4.3	Based on the identified climate risks, are measures taken (or are planned for the next 5 years) in line with regional or national climate adaptation efforts or climate adaptation strategy?	☐ Yes Reasoning / plausibility: _____	☐ No	- Option 1: Proof by expert opinion or confirmation by professionally suitable person (see DGNB New Construction, SITE 1.1) - Option 2: Proof of greening of facade, roof and exterior surfaces (reason: increased resistance). (see DGNB New Construction, ENV2.4)

Future requirements

NR.	QUESTION	ANSWER OPTIONS		POSSIBLE PROOF
5. Do no significant harm water				
5.1	Are all relevant new water appliances (shower solutions, mixer showers, shower outlets, taps, WC suites, WC bowls and flushing cisterns, urinal bowls and flushing cisterns, bathtubs) in the top 2 classes for water consumption of the EU Water Label (values for flow rates and capacities see Table above)?	☐ Yes Reasoning / plausibility: _____	☐ No	- Option 1: Specification of flow rates according to EU Water Label or required classes in the tender - Option 2: Declaration of building owner, builder or technical planner that appliances are conform with specified flow rates or classes of the EU Water Label - Option 3: Assessment of the water indicator according to DGNB with specific proof of not accessing limit values (See DGNB New Construction, ENV2.2)
6. Do no significant harm circular economy				
6.1	Are at least 80 % (by weight) of the non-hazardous construction and demolition waste (excluding naturally occurring material) generated on the construction site prepared for re-use or sent for recycling or other material recovery, including backfilling operations that use waste to substitute other materials?	☐ Yes Reasoning / plausibility: _____	☐ No	- Option 1: Declaration of constructor on achievement of the 80 %-rate, based on full list of C&D waste / waste balance - Option 2: Performed control of waste balance and own calculation of rate / verified (see DGNB New Construction, PRO2.1 - Target value definition in 4.1 Waste prevention)
7. Do no significant harm pollution				
7.1	Is it ensured that building components and materials do not contain asbestos nor substances of very high concern as identified on the basis of the "Authorisation List" of the REACH Regulation?	☐ Yes Reasoning / plausibility: _____	☐ No	Comment: The second part of this question is nearly impossible to be answered. If question is answered: - Option 1: Clear specification in the tender - Option 2: Declaration of constructor
7.2	Before starting the renovation work, has a building survey been carried out in accordance with national legislation by a competent specialist with training in asbestos surveying and in identification of other materials containing substances of concern?	☐ Yes Reasoning / plausibility: _____	☐ No	Survey report or expert opinion
7.3	Did non-road mobile machinery used on the construction site comply with the requirements of the NRMM Directive?	☐ Yes Reasoning / plausibility: _____	☐ No	Comment: This question is a "should" question. If it is answered with "no", it does not mean the building is not eligible. - Option 1: Specified in the tender - Option 2: Self declaration and the contract document - Option 3: Third party check on-site
8. Do no significant harm ecosystems				
8.1	Have at least 80% of all timber products used in the renovation for structures, cladding and finishes been either recycled/reused or sourced from certified sustainably managed forests?	☐ Yes Reasoning / plausibility: _____	☐ No	- Option 1: Self declaration on achieved rate for timber products - Option 2: List of all timber products with sources information and certificates - Option 3: Third party verified (e.g. DGNB New Construction, ENV1.3 with indication of rate)

Acquisition & Ownership

NR.	QUESTION	ANSWER OPTIONS		POSSIBLE PROOF
1. Basics				
1.1	Is it a residential building or non- residential building?	☐ Residential building	☐ non-residential building	n.a.
1.2	In what year was the building built?	Year built: _____		
1.3	What is the gross floor area (GFA) of the building under consideration?	GFA: _____		
1.4	General information about the building	Address / Additional information: _____		
2. Minimum requirements				
2.1	Does the acquisition or ownership of the building serve the extraction, storage, production or transport of fossil fuels?	☐ Yes	☐ No Reasoning/ plausibility: _____	Extract of company policies, company statement, sustainability report or comparable
2.2	Are the OECD Guidelines for Multinational Enterprises and the UN Guiding Principles on Business and Human Rights being adhered to in the context of the acquisition or ownership of the building?	☐ Yes	☐ No Reasoning/ plausibility: _____	
3. Climate change mitigation				
3.1	Depending on answer to 1.2			
built before 31.12. 2020	a) Is the annual primary energy related to regulated energy consumption during the operating phase (B6 according to EN 15978) demand available?	☐ Yes Value: _____ in kWh/ m² yr	☐ No	Energy Performance Certificate
	b) Is the primary energy demand in the top 15 % compared to local comparable buildings?	☐ Yes Reasoning/ plausibility: _____	☐ No	Energy Performance Certificate plus adequate classification (DGNB DGNB Buildings In Use: ENV1-B Climate Action and Energy, indicator 6.2)
built after 31.12. 2020	Is the annual primary energy demand [kWh/(m2*yr)] in connection with regulated energy consumption during the operating phase (B6 according to EN 15978) 20% below the requirements of the energy regulation?	☐ Yes Value: _____ in kWh/ m² yr and justification/ proof: _____	☐ No	Energy Performance Certificate
3.2	Is the annual greenhouse gas emission intensity [kg CO_2e/(m²*yr)] related to regulated energy consumption during the operating phase (B6 according to EN 15978) available?	☐ Yes Value: _____ in CO_2e/ m² yr	☐ No	EPC or comparable, additionally: Prepare to evaluate best 15 % threshold
3.3 (if 1.1 non-residential buildings and 1.3 GFA >1000 m²):	Is the building operated with an energy management (e.g. energy-saving contracting)?	☐ Yes Reasoning/ plausibility: _____	☐ No	ISO 50001 certification or plausible representation that an energy management is carried out for the building, which ensures that the building is operated efficiently and that energy savings and a reduction in greenhouse gas emissions are achieved each year. (see DGNB Buildings In Use: ENV1-B Climate Action and Energy , indicators 1.1, 2.1, 3.1, 3.2, 6.1)

Future requirements

NR.	QUESTION	ANSWER OPTIONS		POSSIBLE PROOF
4. Do no significant harm climate change adaptation				
4.1	Has a climate risk analysis been carried out that is based on robust data and takes into account the current weather and future climate within the expected building lifetime?	☐ Yes Reasoning/ plausibility: _____	☐ No	Classification of the probability of occurrence at the site of heavy rain, hail, climate extremes, flooding, storm, storm surge, landslides and forest fires (see DGNB Buildings In Use: ECO2-B Risk Management and Long-term Asset Value, indicator 4.1)
4.2	Does the building and its (planned) climate adaptation measures have no negative impact on other people's climate adaptation efforts, nature and other assets?	☐ Yes Reasoning/ plausibility: _____	☐ No	Possible proof that the building and its adaptation measures do not have a negative effect on adaptation measures of other people, nature and other assets: § Option 1: Proof by expert opinion or confirmation by professionally suitable person (see DGNB Buildings In Use: ECO2-B Risk Management and Long-term Asset Value, indicator 4.2) § Option 2: Proof by greening of facade, roof and exterior surfaces (reason: increased resistance). (see DGNB Buildings In Use: ECO2-B Risk Management and Long-term Asset Value, Innovation Room 4)
4.3	Based on the identified climate risks, are measures taken (or planned for the next 5 years) in line with regional or national climate adaptation efforts or climate adaptation strategies?	☐ Yes Reasoning/ plausibility: _____	☐ No	Possible proof that the measures are consistent with regional and/or national adaptation measures as well as the sectors: § n.a.
5. Do no significant harm pollution				
5.1	Was an examination of soil pollution (especially in industrial wastelands) carried out before the building was built or can contamination be ruled out for other reasons?	☐ Yes Reasoning/ plausibility: _____	☐ No	Possible proof that there is no suspected contamination: § Option 1: Proof from building documents (e.g. building file of the competent building authority and contaminated site register of the competent state office for the environment) § Option 2: Proof from land survey of the property (see DGNB Buildings In Use: ECO2-B Risk Management and Long-term Asset Value, indicator 2.1 – Advanced Object Documentation)
6. Do no significant harm ecosystems				
6.1	Was the building not built in a nature reserve or on arable or green areas with a recognised value for biological diversity?	☐ Yes Reasoning/ plausibility: _____	☐ No	Possible proof that there is no violation of protected natural areas during the construction of the property: § Proof is provided from the assessment of the property with regard to Natura 2000, UNESCO World Heritage Site, Key Biodiversity Area (KBA) or comparable (see DGNB Buildings In Use: ECO2-B Risk Management and Long-term Asset Value, indicator 2.1 – Extended Object Documentation) Possible proof that there is no violation of natural areas of high biodiversity and endangered species during the construction of the property on agricultural land or on the green meadow: § Proof is provided from the assessment of the land with regard to high biodiversity and/or habitat of endangered species, entered in the European Red list, IUCN Red List. Information is provided by the responsible environmental, nature conservation and monument protection authorities. (see DGNB Buildings In Use: ECO2-B Risk Management and Long-term Asset Value, indicator 2.1 – Advanced Object Documentation)

ANNEX 2: Exemplary Company Specific Report

EU TAXONOMY
Company-specific Taxonomy result: Your Company

1. Overview of company

Company name: Your Company
Company profile: Investment & Asset Management

Company's status quo and targets

Your Company is a RE investment and asset management company specialising in non-residential
projects. As investment company, Your Company is looking to acquire non-residential projects at
competitive prices while maintaining highest possible quality. As asset manager, Your Company
is aiming at providing carefree service to long term tenants.

Your Company was one of the earliest Investment and Asset Management companies to gear their
business model to include sustainability aspects, being aware of the benefits of green and/or sustainable
buildings. In acquisition, Your Company has developed their own set of sustainability criteria, according
to which acquisition is decided. Because not all relevant information is available at critical decision points,
Your Company is no stranger to the use of sustainability certification schemes as proxy.

Recently, Your Company has started rolling-out bi-annual assessment of operational performance
(for a number of pilot projects).

Motivation to participation in study

Your Company is aiming to broaden its customer base by providing Taxonomy-aligned investments to
interested parties. By participation in the study, Your Company is hoping to gain a thorough understan-
ding of the respective Taxonomy criteria. Moreover, Your Company is looking to benefit from first-mover
advantage regarding the training of its' experts in the practical application during the acquisition process
of new projects.

2. Overview of projects

Projectname: Project A

Type: Acquisition & Ownership

Certification: N/A

Taxonomy Eligibility: ●

TYPE: ACQUISITION & OWNERSHIP	PROJECT A		
	COMPLIANCE	ACCESSIBILITY OF DATA	DATA RELIABILITY
Minimum requirements			
Building use	🟢	Medium	Medium
Business and human rights	⚪	Medium	Low
Climate change mitigation			
Primary energy demand	🟠	Medium	Medium
Comparison to 15 % local comparable buildings	🟠	Medium	Medium
Energy management	🟠		Medium
"DNSH" Climate change adaptation			
Climate risk analysis	⚫	Low	Low
No impact of building and climate adaption measures	⚫	Medium	Low
Climate adaption measures	⚫	Low	Low
"DNSH" Pollution			
Soil pollution analysis	⚫	Low	High
"DNSH" Ecosystems			
Building not on nature reserve/ arable/ green areas	⚫	Medium	Low
DATA QUALITY INDEX [0-3]			1,7

🟢 Criteria fulfilled with hard evidence

⚪ Filling of criteria can be assumed

🟠 Criteria not fulfilled

⚫ Data unavailable

◢ Low

◢ Medium

◢ High

3. Results and recommendation

Descriptive summary of Taxonomy check

Despite strict internal checks in the assessment process, the projects submitted by Your Company only represent an average amount of data availability and quality. To provide data for the pollution criterion, Placeholder had to engage an external service provider.

Collection of data is currently decentralised and spread over several departments.

Some of the Taxonomy criteria currently cannot be proved with hard evidence, as the suggested screening criteria do not reflect national particularities, e.g. parts of the minimum requirement.

Results on data quality of Taxonomy checks

The project team recommended that in addition to checking the Taxonomy eligibility of projects, an evaluation of the data quality and reliability of the information submitted is necessary, considering that financial decision-making would be based on this information. For this, a data quality index was computed taking into account the basis for the eligibility evaluation, level of competence of the person making the evaluation and the independent verification of eligibility by a third party. This information is then provided expressed as a figure between 0 and 3. With the classification, Your Company's submission was rated a 1,7 representing a 'medium reliability'.

Recommendation for roll-out within organisation

To ease the assessment of Taxonomy conformity and to reduce costs and efforts, Your Company could roll out a centralised data collection and management system. In order to increase the reliability of the data provided, third party verification should be considered.

Where conformity with the Taxonomy can be assumed because of national particularities, the project group recommends Your Company to establish internal structures to provide evidence in a reliable and uniform matter.

A big weakness is the current lack of an energy management system across all assets. Your Company might want to increase their respective efforts with regard to this. Placeholder was open about the lack of demand-based EPCs for a number of their assets. The project group therefore strongly suggests to ensure availability of demand-based EPCs instead of consumption-based EPCs.

To truly embark on a path towards a Paris-proof future, Placeholder needs to increase their data base regarding climate risks. Climate adaptation measures can be planned and structured according to individual renovation plans, geared at zero carbon emissions by 2050 or sooner.

ANNEX 3: Recommendations to European Commission for adaptation / further development of the Taxonomy Screening Criteria for buildings

Published in December 2020

Executive Summary

In July 2020, a consortium of EU-based Green Building Councils (Green Building Council España (GBCe), the German Sustainable Building Council (DGNB), the Danish Green Building Council (DK-GBC), and the Austrian Green Building Council (ÖGNI)) initiated a study on the "Evaluation of the market-readiness of the proposed EU Taxonomy technical screening criteria for Buildings".

The consortium was joined by a group of 24 financial market participants from Spain, Germany, Austria and Denmark, representing different stakeholder groups directly impacted by the EU Taxonomy regulation: mortgage lenders, financial service institutions, real estate developers, insurance companies, investment funds, pension funds, institutional investors and valuation firms.

These are, among others: ACCIONA INMOBILIARIA S.L.U, Allianz Real Estate GmbH, AP Pension, ATP Ejendomme A/S, Berlin Hyp AG, CORESTATE CAPITAL ADVISORS GMBH SUCURSAL EN ESPAÑA, Danica Pension, DEAS A/S, Deka Immobilien Investment GmbH, Dreyer Logar & Partner, ECE Projektmanagement GmbH & Co. KG, H.A.U.S. Healthy Buildings S.L., ING N.V., LaSalle Investment Management Kapitalverwaltungsgesellschaft mbH, Naussauische Heimstätte, NEINOR HOMES S.A., NREP, PensionDanmark A/S, PKA A/S, Strabag Real Estate GmbH, Teichmann & Compagnons Property Networks GmbH, UBM Development GmbH, value Development GmbH.

The study tested 53 projects, covering the following three Taxonomy activities:

- New Construction (20 projects)

- Renovation (3)

- Acquisition and Ownership (30).

The study initiators and its participants welcome the initiative of the European Commission to create a common language for what constitutes a sustainable investment through a reliable framework of reference that makes their efforts comparable, plannable and scalable to minimise economic risks associated with the impending climate crisis.

While unwaveringly supportive of the Taxonomy principles, this diverse project group is concerned that the recently published technical screening criteria might not find the desired uptake by the market if released in their current form, thereby lessening the real-world impact of the Taxonomy regulation in Europe and beyond.

The need for ambition and changes to the scope and depth of the criteria are fully acknowledged, however, the draft Delegated Act document for consultation, released at the end of November created a situation of uncertainty among the market participants.

Therefore, any changes in ambition need to be proportional in relation to the overall objectives of the Taxonomy and need to be actively managed to ensure market buy-in.

Overarching recommendations:

- The development and communication of a clear and reliable transition roadmap regarding higher ambition or changing metrics of and within the screening criteria to enable the market to start preparing for future requirements.

- The establishment of of a clear and transparent procedure for setting benchmarks.

- The introduction of adequate impact assessments, e.g. active steering of Taxonomy development, extension and adjustment processes with real case studies accompanying considered changes upfront to prepare market participants.

- The immediate recognition of existing standards, certifications and labels: data collection, especially regarding technical specifics of the building, is regarded as a significant barrier for those market participants who have not yet introduced standard data capture and 6 management procedures. Standardised information or information based on recognised labels or certifications pose fewer difficulties for market participants.

- The timely development and roll-out of standardised building documentation tools and processes, e.g. through building passports/logbooks or Level(s) reporting.

Recommendations regarding New Construction and Renovation:

■ As an alternative to the primary energy demand requirement, also allow proof of climate protection criterion via GHG metrics.

■ Change metrics to GHG emissions as soon as possible (coupled, if necessary with energy indicators). Recommendations regarding Individual Measures:

■ Ensure that eligibility of individual measures depends on existence of renovation or climate roadmaps to avoid future lock-in effects.

Recommendations regarding Acquisition and Ownership:

■ As an alternative to the primary energy demand requirement, also allow proof of climate protection criterion via GHG metrics.

■ Change metrics to GHG emissions as soon as possible (coupled, if necessary with energy indicators).

■ Introduction of an additional "transition path" which defines medium-performing buildings for which an established Paris-compliant investment plan is available to increase Taxonomy impact beyond EPC class A rated buildings.

Recommendations regarding DNSH:

■ Facilitation of appropriate instruments and processes, allowing less rigid alternative evidence of achieving the defined targets, e.g. simplified evidence via tendering documents

■ Inclusion of a development path with statements on both extent / topics of the DNSH criteria and ambition to ensure that DNSH criteria do not undermine climate mitigation and adaptation effort.

■ Development of more concrete criteria for the climate adaptation objective.

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