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Sustainable Bank Bonds



# Sustainable Bonds Bothered by buildings?

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## Introduction

**The European Commission's technical screening criteria for green buildings may not be a major game changer for the issuance of green bonds, in our view, as long as issuers offer proper transparency regarding to what extent their green bonds are taxonomy aligned with EU regulation. That said, the technical screening criteria could become an increasingly important differentiating factor to the relative performance of green bonds.**

Sustainable markets were caught off guard by the EC's proposals for green buildings

In November last year, sustainable markets experienced some turmoil following the publication of the European Commission's draft delegated act establishing the **technical screening criteria** for climate change mitigation and climate change adaptation. Particularly the proposals **for green buildings** caused quite a stir, by requiring those built before end of 2020 to have energy performance certificates (EPC) at least in class A.

That many were caught off guard by these proposals can be explained by the shift that was made versus the technical screening criteria recommendations of the Technical Expert Group (TEG) in March last year. In line with market practice, the TEG proposed the use of a best in class approach, where green buildings should belong to the top 15% low-carbon buildings. While EPC labels could be used as evidence of meeting the top 15% requirement, the TEG was reluctant to include a minimum EPC reference level, recognising that more work needed to be done in order to define thresholds corresponding to the top 15% of the building stock.

Indeed, EPC labels do differ widely from country to country and often lack comparability. These differences in national EPC label methodologies may, for instance, result in buildings being labelled A in one country, while for a country with a similar type of building stock but stricter EPC criteria, a comparable building could be labelled B or C. Subjecting buildings built before 31 December 2020 to a class A energy performance certificate requirement would also leave various European countries with a negligible part of their building loans as eligible for green bond issuance. Besides, for banks it is complicated to obtain the required EPC label information for their mortgage lending books. This is why issuers often rely on year of construction information to identify the 15% most energy efficient buildings.

*“Pending the publication of the final technical screening criteria proposals we have a look at some of the concerns regarding the green building criteria”*

In this publication we have a closer look at some of the issues that may arise for the green bank bond market on the back of the technical screening criteria proposals for building, particularly in the event that the EPC label A proposals were to remain intact. The European Commission is

expected to publish the finalised draft delegated act in the near future, taking into consideration feedback received during the end of last year's consultation period. Even once adopted by the European Commission, the European Parliament and Council can still express objections to the delegated act, meaning nothing is set in stone yet.

Green buildings are for banks an important asset class for the issuance of green bonds

**Green buildings are for European banks an important asset class** for their green bond issuance. However, not all banks and markets rely on green building loans to a similar extent in their green asset portfolios. At the end of 2020, European banks had €54bn in EUR sustainable bonds outstanding in non-covered bond format and an additional €21bn in covered bonds. In non-covered bonds, 83% of the proceeds were allocated to green assets of which the majority to renewable energy loans (49%) and building loans (38%). In covered bonds, 75% of the proceeds were allocated to green assets of which

The most active senior markets primarily allocate proceeds to renewable energy loans

89% to energy efficient buildings. This shows that the technical screening criteria for green buildings are particularly relevant to the covered bond market.

In the non-covered bond segment, the largest green bond markets, ie, France and Spain, primarily allocate proceeds to renewable energy loans. German and Dutch banks are the third and fourth most active issuers of green unsecured bonds. These banks allocate almost 50% of their proceeds to green buildings and will therefore potentially be more impacted by the technical screening criteria than French and Spanish banks. However, Dutch green bank bonds make one of the isolated cases where an A EPC label criterion is already used for green portfolio selection purposes. As such, this market will be impacted less than others by the maintenance of the class A EPC requirement.

That said, the significant opposition with reference to the introduction of the A EPC label criterion for the acquisition and ownership of buildings, may still result in a more favourable technical screening criteria outcome, either by expanding the EPC label criterion to class B, or otherwise by aligning the criteria with the TEG's proposals and current market practice by maintaining a 15% best in class approach. Nonetheless, even if the criteria remain as penalizing as they are, we still expect issuers to print green bonds that are either non- or partially taxonomy aligned. After all, for investors it will probably be sufficient if issuers disclose to what extent their green bonds are taxonomy aligned. The only caveat is that these bonds can likely not be marketed as EU green bonds.

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*“The technical screening criteria may prove to be of more importance to performance than to supply”*

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While the shape and form of the technical screening criteria and taxonomy alignment of green asset portfolios would not necessarily have to be a significant obstacle to the future issuance of green bonds, we do believe they

will become an increasingly important factor to the performance of green bonds. After all, investors would still want to show the best taxonomy alignment for their investment portfolios, and consequently are likely to favour those bonds that mostly meet the taxonomy criteria. At this particular point in time we don't see this being reflected in pricing differences yet in the green bond market. Nonetheless, if the criteria for building loans remain as strict as they are, green bonds with proceed allocations towards renewable energy loans could stand to benefit versus bonds with a more buildings-focused allocation of proceeds.

Green bonds that are most taxonomy aligned are likely to perform the best

For green bank bonds with proceed allocations to buildings, those with a larger share of assets within the A EPC label class should have an advantage. This advantage would clearly diminish with the reintroduction of a 15% best in class approach, which in the end would still be the preferable outcome for the broader green bond market.

## The technical screening proposals

### The taxonomy backdrop

On 20 November 2020, the European Commission published the draft delegated act establishing the technical screening criteria for two of the six environmental objectives identified in the taxonomy regulation, ie, climate change mitigation and climate change adaptation<sup>1</sup>. The proposals built on the work of the European Commission's Technical Expert Group (TEG) in its updated technical report on **taxonomy** of March 2020<sup>2</sup>. The criteria should become applicable per 1 January 2022. The delegated acts for the other four objectives should be adopted by the end of 2021. These technical screening criteria would then have to be applied per 1 January 2023.

#### EU taxonomy

The EU taxonomy regulation came into force on 12 July 2020 and provides a unified classification system for sustainable activities<sup>3</sup>. It provides a framework for determining whether an economic activity qualifies as environmentally sustainable for the purpose of establishing the degree to which an investment is environmentally sustainable.

The taxonomy identifies the following **six sustainability objectives**:

- 1) Climate change mitigation;
- 2) Climate change adaptation;
- 3) Sustainable use and protection of water and marine resources;
- 4) Transition to a circular economy, waste prevention and recycling;
- 5) Pollution prevention and control;
- 6) Protection and restoration of biodiversity and ecosystems.

An **economic activity** is considered **environmentally sustainable** and thus taxonomy eligible if it meets the following **criteria**:

- a) The economic activity **contributes** substantially to one of the **environmental objectives** identified;
- b) The economic activity **does not significantly harm** (DNSH) any of these environmental objectives;
- c) The economic activity is carried out in compliance with the **minimum (social) safeguards**;
- d) The economic activity complies with the **technical screening criteria**.

Companies must include in their non-financial statement information about the extent their activities are environmentally sustainable.

### Technical screening criteria

The technical screening criteria should specify the performance criteria determining the conditions under which specific economic activities can be considered: (a) to make a substantial contribution to one of the taxonomy's six environmental objectives, while at the same time; (b) doing no significant harm to any of the other objectives.

In its draft delegated act, the European Commission identified **nine key sectors for climate change mitigation** and **thirteen sectors for climate change adaptation** (see Figure 1 and Appendix 1).

<sup>1</sup> [https://ec.europa.eu/info/law/sustainable-finance-taxonomy-regulation-eu-2020-852/amending-and-supplementary-acts/implementing-and-delegated-acts\\_en](https://ec.europa.eu/info/law/sustainable-finance-taxonomy-regulation-eu-2020-852/amending-and-supplementary-acts/implementing-and-delegated-acts_en)

<sup>2</sup> [https://ec.europa.eu/info/sites/info/files/business\\_economy\\_euro/banking\\_and\\_finance/documents/200309-sustainable-finance-teg-final-report-taxonomy-annexes\\_en.pdf](https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/200309-sustainable-finance-teg-final-report-taxonomy-annexes_en.pdf)

<sup>3</sup> The EU taxonomy regulation was published in the official journal of the European Union on 22 June 2020 (regulation 2020/852 on the establishment of a framework to facilitate sustainable investment).

**Fig 1 The identified sectors for climate change mitigation and adaptation**

Sectors	Climate change	
	Mitigation	Adaptation
1 Agriculture and forestry	✓	✓
2 Environmental protection and restoration activities	✓	✓
3 Manufacturing	✓	✓
4 Energy	✓	✓
5 Water supply, sewerage, waste and remediation	✓	✓
6 Transport	✓	✓
7 <b>Construction and real estate activities</b>	✓	✓
8 Information and communication	✓	✓
9 Professional, scientific and technical activities	✓	✓
10 Financial and insurance activities		✓
11 Education		✓
12 Human health and social work activities		✓
13 Arts, entertainment and recreation		✓

Source: EC, ING

The EC proposes that buildings built before 2021 should have an EPC label of A

However, finalising the technical screening criteria is proving to be a longer process for the European Commission than initially anticipated. The main reason is the flood of questions raised at the end of last year's consultation period related to the November draft delegated act proposals. In particular, the technical screening criteria suggestions for buildings received substantial pushback from sustainable market participants. The criteria stipulate, among other things, that buildings built before 31 December 2020 should have **energy performance certificates (EPC) at least in class A**.

### Understanding national EPC label differences is a hard nut to crack

That many were caught off guard by the European Commission's proposals for green buildings can be explained by the shift that was made versus the technical screening criteria recommendations of the Technical Expert Group (TEG) in March last year<sup>1</sup>. In line with market practice, the TEG proposed the use of a **best in class approach**, where green buildings should belong to the **top 15%** low-carbon buildings. Certification schemes such as EPCs could be used as evidence of meeting the top 15% requirement. However, the TEG explicitly refrained from mentioning a minimum EPC reference level, recognising that more work needed to be done in order to define the absolute thresholds corresponding to the top 15% of the building stock.

*“EPC labels do differ widely from country to country and lack comparability”*

Indeed, it is commonly known that EPC labels differ widely from country to country and often lack comparability. Some countries use primary energy demand as a reference, while others

refer to final energy use. Some jurisdictions have set their EPC label requirements on a country level, whereas elsewhere EPC definitions are set regionally and may vary from region to region. In some countries, the EPC criteria may differ per property type (for instance, houses versus apartments or residential versus commercial buildings).

While most label definitions are ultimately based on a measure of the energy used in kWh/m<sup>2</sup>/y, there are also countries that express their labels in terms of a building's energy performance in comparison to a reference building. For those that do, even the simple definition of a reference building is far from uniform. It can refer to a building built in a specific year, or a standard building that falls within a certain energy performance class. These are just a few examples illustrating why the energy performance of a building with an EPC label of A in country X could differ widely from a building with an EPC label of A in country Y. Figures 2 and 3 highlight some of these applicable differences. The result is that countries that have actually set the strictest A label definitions, may be harmed the most by technical screening criteria that use EPC labels as the main reference for green buildings.

Fig 2 EPC labels differ from country to country

	Germany	France	Norway*		Denmark		Finland*	Austria	Ireland	UK	Belgium***
Metric:	Final energy kWh/m <sup>2</sup> /y	Primary energy kWh/m <sup>2</sup> /y	Energy delivered kWh/m <sup>2</sup> /y	m <sup>2</sup> adj.**	Primary energy kWh/m <sup>2</sup> /y	m <sup>2</sup> adj.**	Primary energy kWh/m <sup>2</sup> /y	Primary energy kWh/m <sup>2</sup> /y	Primary energy kWh/m <sup>2</sup> /y	Final energy kWh/m <sup>2</sup> /y	Primary energy kWh/m <sup>2</sup> /y
A++					≤20	+1000/A		≤60	≤25		
A+	≤30				≤30	+1000/A		≤70	≤50		
A	≤50	≤50	≤85	+600/A	≤52.5	+1650/A	≤75	≤80	≤75	≤32	≤45
B	≤75	≤90	≤95	+1000/A	≤70	+2200/A	≤100	≤120	≤150	≤65	≤95
C	≤100	≤150	≤110	+1500/A	≤110	+3200/A	≤130	≤160	≤225	≤100	≤150
D	≤130	≤230	≤135	+2200/A	≤150	+4200/A	≤160	≤280	≤300	≤135	≤210
E	≤160	≤330	≤160	+3000/A	≤190	+5200/A	≤190	≤340	≤380	≤170	≤275
F	≤200	≤450	≤200	+4000/A	≤240	+6500/A	≤240	≤400	≤450	≤200	≤345
G	≤250	>450	≥200	+4000/A	≥240	+6500/A	>240	>400	>450	>200	>345

\*Apartment buildings; \*\*Addition in kWh/m<sup>2</sup>/y for m<sup>2</sup> adjustment (A); \*\*\*Brussels (the Walloon region and Flanders have different EPC labels). Source: Various national and EU sources, ING

Fig 3 EPC labels differ from country to country

	Netherlands*	Netherlands*	Italy**	Sweden***
Metric:	Primary fossil energy use kWh/m <sup>2</sup> (>2021)	(Primary) energy performance (EP) kWh/m <sup>2</sup> /y vs model residence (<2021)	(Primary) energy performance (EP) kWh/m <sup>2</sup> /y vs reference building (A1)	(Primary) energy performance (EP) kWh/m <sup>2</sup> /y vs building built today (C)
A++++	≤0	≤0.2		
A+++	≤50	≤0.4	≤0.4	
A++	≤75	≤0.6	≤0.6	
A+	≤105	≤0.8	≤0.8	
A	≤160	≤1.2	≤1.00	≤0.5
B	≤190	≤1.4	≤1.20	≤0.75
C	≤250	≤1.8	≤1.50	≤1.00
D	≤290	≤2.1	≤2.00	≤1.35
E	≤335	≤2.4	≤2.60	≤1.80
F	≤380	≤2.7	≤3.50	≤2.35
G	≥380	≥2.7	>3.50	>2.35

\* Energy index (EI) comparable to energy performance indicators applicable until the end of 2020. Per 2021 expressed as primary fossil energy use in kWh/m<sup>2</sup>; \*\* Italian A class EPC labels range from A1 to A4. In this table, A is comparable to A1 and A+++ to A4. Reference building is EPC class A1; \*\*\*Reference building is building built today corresponding to EPC class C. Source: Various national and EU sources, ING

### Only a small proportion of building stock has EPC label of A

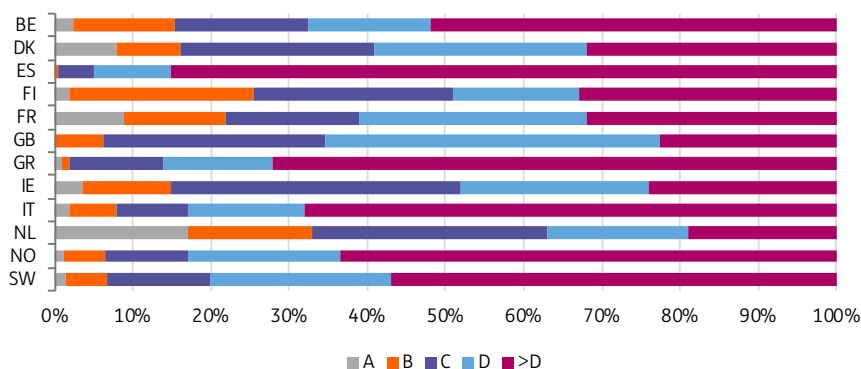
But that is not the major issue with proposals of a minimum energy label of A. For some countries, this would leave a negligible part of their building loans as eligible, as:

- Parts of the building stock would not have EPC labels to begin with, while
- Only a small proportion of the labelled buildings has an A class EPC certificate.

*“Few buildings have an EPC label of A”*

Figure 4 gives an indication of EPC label distributions per country. The chart solely represents the distribution for the building stock that has EPC labels. It shows that for many of the countries, not even 5% of their labelled buildings has an EPC label of A. As not all buildings in these countries have EPC labels, the actual share of the buildings with an A label in the total building stock is even lower.

Fig 4 The share of buildings within the EPC class A is generally very low



Based on average for countries with regional statistics or statistics by building type Source: X-TENDO (March 2020) and SBAB green bond impact report, ING

A loosening of the EPC label criterion to include an EPC label of B, in line with the TEG's first technical screening criteria recommendations, would already significantly expand the scope of eligible building loans. This would also align the EPC label reference for buildings with the European Commission's 'do no significant harm' to climate change mitigation proposals under the climate change adaptation objective.

*“An A or B label in one country could compare to an EPC C label in another”*

However, this would still not solve the fact that differences in national EPC label methodologies may result in buildings being labelled A or B in one country, while for a country with a similar

type of building stock but stricter EPC criteria, a comparable building could be labelled C. Another complicating factor is that, for banks issuing green bonds, it is often not as straightforward as it may seem to know, or otherwise obtain, the required EPC label information for their mortgage lending books. This is why issuers often rely on year of construction information to identify the 15% most energy efficient buildings.

### Nearly zero-energy buildings, but only when 20% more efficient

Also the proposed technical screening criteria for buildings built after 1 January 2021 come with challenges. To be taxonomy aligned these buildings have to be at least 20% more energy efficient than nearly zero-energy buildings (NZEB). Every building in the EU constructed per 1 January 2021 has to meet the nearly zero-energy building requirements as stipulated by the national building regulations implementing the energy performance of buildings directive (EPBD). **Nearly zero-energy buildings are buildings that have a very high energy performance**, where the nearly zero or very low amount of energy required should be covered to a very significant extent by renewable sources, including from sources produced on-site or nearby.

*“NZEB definitions may vary quite a bit from country to country”*

However, also here the national definitions of NZEBs can differ quite a bit from country to country. In the Netherlands for example, the energy efficiency of nearly zero-energy

buildings (BENG) is determined by means of three different requirements: (1) the maximum energy need in kWh/m<sup>2</sup>/y; (2) the maximum primary fossil energy use in kWh/m<sup>2</sup>/y; and (3) the minimum share of renewable energy in percentages. For a multi-family residential building the BENG restrictions are for example as follows:

- BENG 1) The maximum energy need in kWh/m<sup>2</sup>/y
  - 65 kWh/m<sup>2</sup>/y if  $A_{Is}/A_g < 1.83$ ,
  - 55 kWh/m<sup>2</sup>/y + 30x( $A_{Is}/A_g - 1.5$ ) if  $A_{Is}/A_g > 1.83$  and  $\leq 3$
  - 100 kWh/m<sup>2</sup>/y + 50x( $A_{Is}/A_g - 3$ ) if  $A_{Is}/A_g > 3$ ,
 where  $A_{Is}/A_g$  is a ratio of the surface of the building envelope versus the floor area.
- BENG 2) The maximum primary fossil energy use is set at 50 kWh/m<sup>2</sup>/y,
- BENG 3) The share of renewable energy has to be at least 40%.

This illustrates that in the case of the Netherlands, based on the BENG 2 criterion, a newly built nearly zero-energy building (ie, BENG) would be comparable to an EPC label of at least A+++ as of 1 January 2021 (Figure 3). Classifying the primary fossil energy use of a building as 20% lower than 50 kWh/m<sup>2</sup>/y may seem straightforward for the Netherlands (ie, 40 kWh/m<sup>2</sup>/y), but things would already become more complicated in countries where the NZEB primary energy demand definition is set at 0 kWh/m<sup>2</sup>/y.

Besides, it would be quite a challenge for banks to exactly know which properties securing their mortgage loans meet the NZEB-20% requirement. A simple year of construction approach cannot easily be applied. Banks may know for sure that buildings built as of 1 January 2021 do meet the NZEB requirements, but they may find it much harder to identify which part of these buildings would be NZEB-20%. Furthermore,



assuming that a bank would know the EPC label of the building involved, the example of the Netherlands (ie, where both NZEB and NZEB-20% buildings fall in the A+++ category) proves that it may still be difficult to identify the NZEB-20% buildings via EPC schemes.

### 15% best in class versus NZEB-20%

In its final report on the EU taxonomy of March 2020, the TEG recommended that buildings built before 2021 should be within the top 15% of the existing local building stock. The 15% best in class approach has the advantage of allowing issuers to rely on building code information for buildings built up until the end of 2020.

However, even if the 15% best in class approach were to be reintroduced by the European Commission as a selection criterion for existing buildings built before 2021, the NZEB-20% requirement would give rise to certain anomalies regarding green asset portfolios. After all, buildings built as of 2021 under the NZEB requirements would belong to the top 15% most efficient buildings. As this building stock increases over time it will narrow the share of buildings built before 31 December 2020 within the top 15% segment, unless building renovations were to ensure a sufficient improvement and alignment of the energy efficiency of older buildings with newer buildings. This would, by definition, narrow the green asset portfolio that can be selected based on year of construction.

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*“The top 15% built before 2021 will narrow as the NZEB building stock built as of 2021 grows”*

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More importantly, while being top 15% best in class, NZEB buildings built per 2021 will not necessarily be taxonomy aligned. They only are if their energy performance is 20% better than the national standard for nearly zero-

energy buildings. This may result in part of the energy efficient buildings (those built per 2021 but with more than 80% NZEB primary energy demand) not meeting the taxonomy criteria, while somewhat less energy efficient buildings (built before 2021 but still within the top 15%) still may.

This illustrates that for existing building loans, the current market practice of selecting loans based upon a top 15% best in class approach may even have advantages if it were also to be applicable to existing buildings built after 1 January 2021. After all, it would avoid the undesirable situation where part of the NZEB stock built since 2021 would not be taxonomy aligned, while certain less energy efficient buildings built before 2021 would be. Besides the criterion is a rolling target, meaning that once the building stock as a whole becomes more energy efficient, the same would apply to the top 15%.

We refer to Appendix 2 for a more detailed overview of the proposed technical screening criteria and the ‘do no significant harm’ standards for green buildings.

## Which technical screening criteria are most relevant?

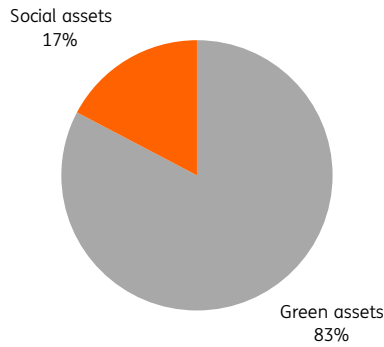
Having analysed the issues related to the European Commission’s technical screening criteria proposals for buildings, the question left to answer is to what extent this will impact the green bond market, and which markets in particular. In this section, we analyse the relevance of green buildings for non-covered bank bonds and for covered bonds by means of a use of proceeds analysis for all green bank bonds outstanding and issued by European banks.

### Non-covered bank bonds use of proceeds distribution

The proceeds of the EUR **sustainable senior and subordinated bank bonds** issued by banks located in the EEA, UK or Switzerland are predominantly allocated to green assets (Figures 5 and 6). Hence, the EU taxonomy and the related technical screening criteria do impact quite a substantial part of these sustainable loan portfolios (83%).

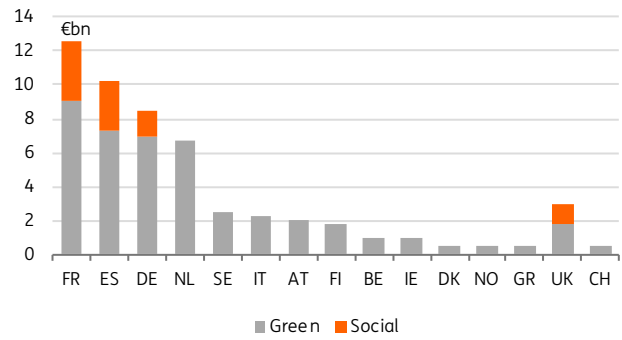
Green assets dominate social assets in green bank bonds

**Fig 5 Asset allocations by type (total non-covered €54bn)**



\*Non-covered EUR supply by EEA, UK and CH banks (size ≥€250m)  
Source: Issuer allocation reports, ING

**Fig 6 Asset allocations by country and type (total non-covered €54bn)**



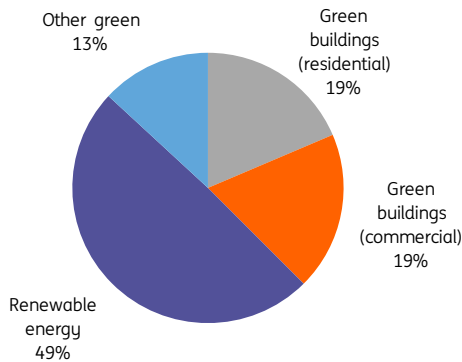
\*Non-covered EUR supply by EEA, UK and CH banks (size ≥€250m)  
Source: Issuer allocation reports, ING

*“Green bank bond proceeds are allocated for almost 50% to renewable energy loans, and for almost 40% to green building assets”*

Of these green assets, 49% are renewable energy loans and 38% green building assets (Figures 6 to 7). As such, while the technical screening criteria for climate change mitigation and adaptation do cover a broad

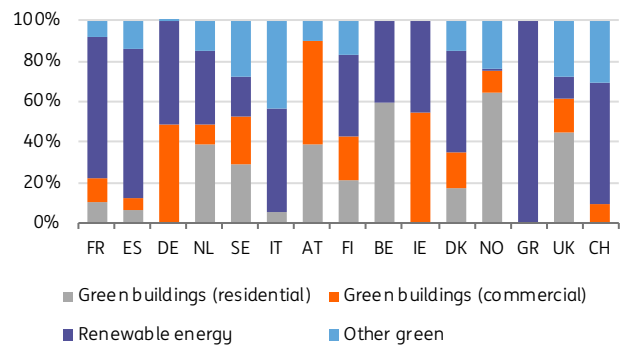
subset of sectors, the criteria on renewable energy and buildings are the most important for green bank bonds.

**Fig 7 Green asset allocations by type (total non-covered €44bn)**



\*Non-covered EUR supply by EEA, UK and CH banks (size ≥€250m)  
Source: Issuer allocation reports, ING

**Fig 8 Green asset allocations by country and type (total non-covered €44bn)**



\*Non-covered EUR supply by EEA, UK and CH banks (size ≥€250m)  
Source: Issuer allocation reports, ING

French and Spanish banks mostly allocate their proceeds to renewable energy loans

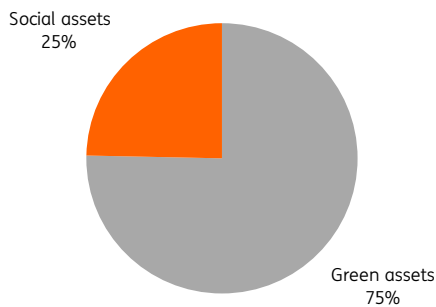
Meanwhile, Figure 8 illustrates that of the four countries that up until now have dominated the EUR green bond issuance (see Figure 6), French and Spanish banks primarily issued green bonds to refinance renewable energy loans. Instead, German and Dutch banks allocate a substantial part of their green bond proceeds to energy efficient building loans. The difference is that Dutch banks have a stronger focus on residential assets and already use an EPC label of A as selection criterion for green building loans.

75% of the sustainable covered bond proceeds are allocated to green assets

**Covered bonds use of proceeds distribution**

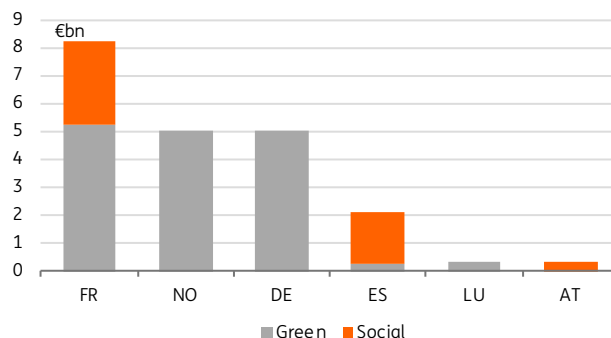
Also, sustainable covered bond issuers located in the EEA allocate a substantial part of their proceeds to green assets (see Figures 9 and 10). However, as covered bonds are in majority secured by residential and/or commercial mortgage loans, green buildings are relatively of more importance to the green covered bond market than they are to the non-covered green bank bond market.

**Fig 9 Asset allocations by type (total covered €21bn)**



\*Covered EUR supply by EEA banks (size ≥€250m)  
Source: Issuer allocation reports, ING

**Fig 10 Asset allocations by country and type (total covered €21bn)**



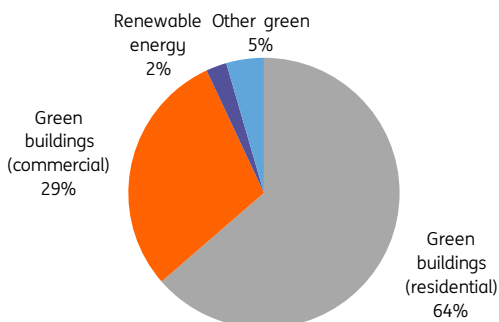
\*Covered EUR supply by EEA banks (size ≥€250m)  
Source: Issuer allocation reports, ING

*“Over 90% of the green covered bond proceeds are allocated to green buildings”*

Of the aggregate green use of covered bond proceeds, 93% represents energy efficient buildings (Figures 11 and 12). Renewable energy and other green assets have an almost

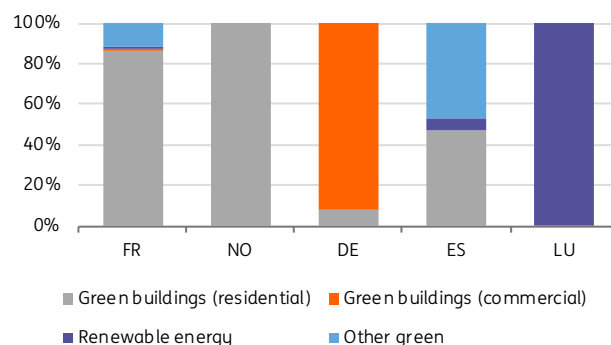
negligible share in the green covered bond market with 2% and 5%, respectively. This makes the technical screening criteria for buildings of even more relevance to the covered bond market than for green non-covered bank bond issuance.

**Fig 11 Green asset allocations by type (total covered €16bn)**



\*Covered EUR supply by EEA banks (size ≥€250m)  
Source: Issuer allocation reports, ING

**Fig 12 Green asset allocations by country and type (total covered €16bn)**



\*Covered EUR supply by EEA (size ≥€250m)  
Source: Issuer allocation reports, ING

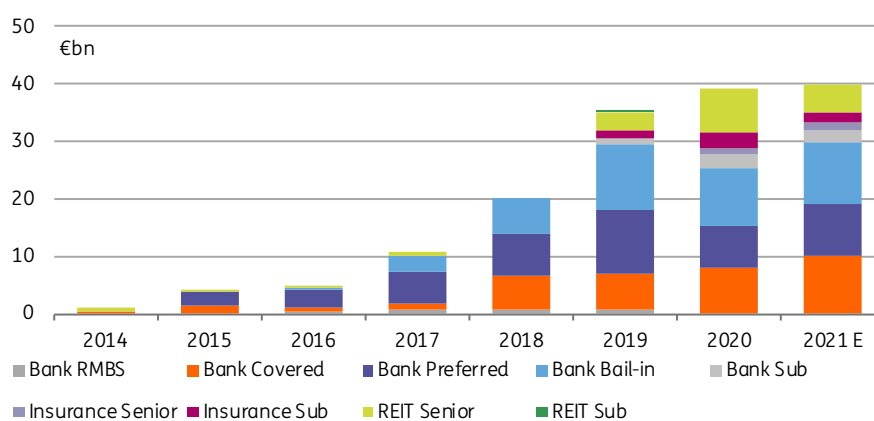
As a matter of fact, the almost €15bn in sustainable covered bond proceeds allocated to green buildings, is almost similar to the €16bn in sustainable non-covered bond proceeds allocated to green buildings, despite the fact that the European sustainable covered bond market was by the end of 2020 less than half the size (€21bn) of the European sustainable non-covered bank bond market (€54bn).

This illustrates that the technical screening criteria for buildings are relatively of far more importance to green covered bonds than to the issuance of other green bank bonds.

### The impact on green bank bond supply

We expect banks to issue €32bn in sustainable EUR bonds in 2021 of which €23bn in green

Knowing the importance of green building assets for the issuance of green bank bonds, the major question remains whether the market for green bank bonds can maintain its path of expansion if the European Commission stands firm on its proposal for buildings built before 31 December 2020 to have at least an EPC class A. We believe it can and therefore firmly stick to our estimate of €32bn in sustainable bank bond supply in 2021, up from €28bn in 2020. Of this amount, €23bn is expected to be issued in green bonds.

**Fig 13 €40bn in financials supply expected of which €32bn will be issued by banks**

\*Only includes sustainable bonds with a minimum size of  $\geq$ €250m

Source: ING

For now, the European Commission's draft delegated regulation establishing the technical screening criteria for the climate change mitigation and adaptation objectives are just proposals. The significant opposition with reference to the introduction of the A EPC label criterion for the acquisition and ownership of buildings, may still result in a more favourable technical screening criteria outcome, either by expanding the EPC label criterion to class B, or otherwise by indeed aligning the criteria with the TEG's proposals and current market practice by maintaining a 15% best in class approach.

*“Banks will likely continue to issue green bonds even if they are only partially taxonomy aligned”*

However, even if the criteria remain as penalizing, we still expect issuers to opt for the issuance of green bonds that are

either non-taxonomy aligned or only partially aligned. After all, for investors it will probably be sufficient if issuers disclose to what extent their green bonds are taxonomy aligned. The only caveat is that these bonds can likely not be marketed as EU green bonds as these bonds would have to contribute **substantially** to one or more of the taxonomy's objectives.

### How disclosures may come to the rescue

One of the key objectives of the EU taxonomy regulation is to address greenwashing concerns and help investors better compare environmentally sustainable investment opportunities. This should ultimately serve to enhance investor confidence and support the financing of sustainability projects. To support these objectives, the taxonomy regulation not only made sure that the criteria for environmentally sustainable activities should be used for labelling standards within the EU, it also introduced amendments to: (1) the sustainable finance disclosure regulation (SFDR); and (2) the non-financial reporting directive (NFRD), to ensure transparency and comparability of ESG disclosures.

### The use of taxonomy criteria in public measures, standards and labels

The EU taxonomy regulation requires that the criteria to determine whether an economic activity is environmentally sustainable, as stipulated in the taxonomy regulation, are also applied by EU member states and the EU for the purpose of drafting requirements for financial market participants or issuers in respect of financial products or corporate bonds that are marketed as environmentally sustainable.

Projects should contribute to the taxonomy objectives for EU green bond standard purposes

As such, meeting the EU taxonomy regulation also makes an important reference point for the establishment of the voluntary **EU green bond standard**. In its March 2020 report on the EU green bond standard, the Technical Expert Group (TEG) proposed that green projects should contribute **substantially** to one or more of the taxonomy's objectives, do no significant harm to any of the other objectives, comply with the minimum social

safeguards and comply with the technical screening criteria. Climate change mitigation activities, for instance, would substantially contribute directly if they are already low-carbon or if they contribute to a transition to low-carbon.

The TEG suggested flexibility to the taxonomy alignment, only if the technical screening criteria are not directly applicable as a result of the innovative nature, the complexity and/or the location, or due to other legitimate factors of the green bond project. Flexibility could also be applied for those cases where the technical screening criteria have not yet been developed. In these cases, a registered or supervised verifier would have to confirm, among other things, the substantial contribution of green projects to the taxonomy's environmental objectives.

The European Commission is committed to establishing an EU green bond standard as part of the European green deal. To this purpose the Commission conducted a separate targeted consultation running from June until October 2020. The consultation among other things requested feedback on the extent of agreement with the TEG's proposal of alignment of eligible green project with the EU taxonomy. The TEG essentially proposes 100% taxonomy alignment for EU green bond proceeds, with some flexibility as highlighted above. However, the consultation did ask for feedback as to whether the taxonomy alignment of the green bond proceeds should, for example, be applied with a bit more leeway, ie, a less than 100% alignment.

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*“The jury is still out to whether EU green bonds will require 100% taxonomy alignment”*

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This illustrates that the jury is still out on whether the use of the voluntary EU green bond standard would actually require 100% taxonomy alignment.

Besides, as the technical screening criteria evolve subject to periodical review, it also remains the question whether an EU green bond will maintain its status until maturity. Ultimately it could be decided that an EU green bond cannot be considered green anymore if it no longer meets the updated technical screening criteria.

In our view, an EU green bond standard qualification may therefore not be as important as, for example, the ESG disclosure considerations in the decision of investors to buy a sustainable bond or at what price.

#### **Disclosures under the sustainable finance disclosure regulation (SFDR)(2019/2088/EU)**

Under the sustainable finance disclosures regulation **financial market participants**, such as insurance companies, pension funds, investment firms or credit institutions providing portfolio management services (manufacturers of financial products), and **financial advisers**, such as insurance companies, credit institutions or investment firms providing investment or insurance advice, should provide transparency to end investors on:

- the integration of sustainability risks in investment decisions and financial advice;
- the consideration of adverse sustainability impacts at financial product level;
- sustainable investment objectives;
- the promotion of environmental or social characteristics.

## The taxonomy regulation introduced additional SFDR transparency requirements

### The extra transparency requirements under SFDR

The taxonomy regulation introduced additional transparency requirements under the disclosures regulation related to the pre-contractual disclosures and periodic reports for:

- **environmentally sustainable investments**, among other things, financial products that invest in an economic activity that contributes to an environmental objective;
- **financial products that promote environmental characteristics;**
- **other financial products** that: (a) do not promote environmental characteristics; and (b) do not invest in economic activities that contribute to an environmental objective.

Where a financial product **invests** in an economic activity that contributes to an environmental objective, or where a financial product **promotes** environmental characteristics the information to be disclosed should include:

- Information on the environmental objective(s) defined in the taxonomy regulation to which the investment contributes;
- A description of how and to what extent the investments are in economic activities that **qualify as environmentally sustainable**, or more specifically
  - a) contribute to one of the six taxonomy environmental objectives,
  - b) do not significantly harm any of the other environmental objective,
  - c) are carried out in compliance with the minimum social safeguards and comply with the technical screening criteria.

This description specifies **the proportion of investments in environmentally sustainable activities** selected for the financial products **as a percentage of all investments** selected for the financial product. It should also include details on the proportions of enabling and transitional activities.

Information to be disclosed on: (a) the integration of sustainability risks; and (b) the promotion of environmental and social characteristics and sustainable investments in periodic reports, has to be accompanied by a statement that *“the do no significant harm’ principle applies only to those investments underlying the financial product that take into account the EU criteria for environmentally sustainable economic activities. The investments underlying the remaining portion of this financial product do not take into account the EU criteria for environmentally sustainable economic activities.”*

For **other financial products** the information to be disclosed has to be accompanied by the statement that *“investments underlying the financial product do not take into account the EU criteria for environmentally sustainable activities.”*

*“Investors need to know to what extent a green bond is taxonomy aligned”*

As of 10 March 2021, investors would have to disclose to what extent their financial products or investments qualify as environmentally sustainable under the sustainable finance

disclosure regulation SFDR. Hence, knowing whether their products or investments meet the technical screening criteria will ultimately be key.

On 4 February 2021, the three European supervisory authorities (ESAs) published their final report and draft RTS on disclosures under the SFDR<sup>4</sup>. While the provisions on the SFDR’s sustainability-related disclosures apply from 10 March, the application of the RTS will be delayed until a later date, with the ESAs proposing 1 January 2022. The ESAs will

<sup>4</sup> <https://www.esma.europa.eu/press-news/esma-news/three-european-supervisory-authorities-publish-final-report-and-draft-rts>

publish a separate consultation on taxonomy-related product disclosures. We note that the taxonomy's disclosure criteria for climate change mitigation and climate change adaptation should be met per 1 January 2022, while as of 1 January 2023 the disclosure requirements should also apply for the other four environmental activities.

For the purpose of the SFDR disclosure requirements, full taxonomy alignment of a green bond is not a must. It is probably sufficient for investors to know to what extent the green bonds they invested in (ie, the use of proceeds) are indeed taxonomy aligned. This means that issuers do not necessarily have to lose out on investors if their green bonds fail to meet the technical screening criteria in full, as long as they do provide investors with the proper information to what degree their green bonds are taxonomy aligned.

#### Disclosures under the non-financial reporting directive (NFRD)(2013/34/EU).

The taxonomy regulation also introduced certain amendments to the non-financial reporting directive (NFRD). The NFRD requires large companies, including financial institutions, to disclose relevant and material environmental and social information in their annual reports.

Companies that have to publish non-financial information under the NFRD, must going forward also include in their non-financial statement information on how and to what extent their activities are economic activities that qualify as being environmentally sustainable under the taxonomy regulation. These disclosures include the following:

- the **proportion of the turnover** derived from products or services associated with economic activities that qualify as environmentally sustainable under the taxonomy regulation;
- the **proportion of their capital expenditure** and the **proportion of their operating expenditure** related to assets or processes associated with economic activities that qualify as environmentally sustainable under the taxonomy regulation.

The European Commission will adopt a separate delegated act by 1 June 2021 to specify the content and presentation of the information to be disclosed, including the methodology to be used. To this purpose, ESMA, EIOPA and EBA will first submit their advice to the Commission by 28 February 2021.

In a consultation on its draft advice to the European Commission regarding the taxonomy regulation's NFRD disclosure requirements of 5 November 2020, the ESMA included some recommendations for KPIs related to asset managers<sup>5</sup>. Even though very few asset managers would be directly in scope of the NFRD based upon the current reporting thresholds of listed companies with an average of 500 employees or more, the ESMA argues that the scope may be expanded in the context of the NFRD review.

The ESMA proposes that the KPI for asset managers should consist of a ratio of eligible investments that are taxonomy aligned. The numerator should consist of a value of green bonds complying with the EU green bond standard and a weighted average of the value of the investments in taxonomy aligned activities of investee companies as measured by turnover. Additional calculations based on CapEx and OpEx may also be provided. The denominator should include the value of the total eligible equity and fixed income investments in investee companies held by the asset manager's fund.

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*“The ESMA proposes that only 100% taxonomy aligned activities can directly count towards asset manager KPIs”*

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The ESMA proposes that in cases of specialised taxonomy funding tools, such as green bonds complying with the EU green bond standard, 100% taxonomy aligned activities can be financed directly and can therefore be counted

<sup>5</sup> [https://www.esma.europa.eu/sites/default/files/library/esma30-379-325\\_consultation\\_paper\\_-\\_draft\\_advice\\_to\\_ec\\_under\\_article\\_8\\_of\\_the\\_taxonomy\\_regulation.pdf](https://www.esma.europa.eu/sites/default/files/library/esma30-379-325_consultation_paper_-_draft_advice_to_ec_under_article_8_of_the_taxonomy_regulation.pdf)

fully in the numerator. Otherwise, a weighted average approach based upon the taxonomy alignment of the underlying investee companies' activities is applied.

This could be an example, where the 100% taxonomy alignment of a sustainable bond investment would be the preferred outcome, even though a partial alignment would still count towards the KPI via the weighted average approach. Hence it should not prohibit asset managers from investing in green bonds that are not fully taxonomy aligned.

**Fig 14 ESMA's example of asset manager KPIs under the NFRD**

**Asset managers fund:**

€100m of shares and corporated bonds and green bonds complying with the EU green bond standard, of which:

- €80m in shares and corporated bonds from companies reporting their taxonomy aligned economic activities under the NFRD, which have
  - on a weighted average basis, 10% turnover contributing to taxonomy aligned activities
  - on a weighted average basis, 15% CapEx contributing to taxonomy aligned activities
  - on a weighted average basis, 20% OpEx contributing to taxonomy aligned activities
- €2m in green bonds complying with the green bond standard (assumed by ESMA to be 100% taxonomy aligned)

**KPIs taxonomy alignment**



Source: ESMA, ING

The taxonomy regulation's NFRD reporting requirements will apply from 1 January 2022 onwards for the taxonomy regulation's first two environmental objectives and from 1 January 2023 onwards for the other four environmental objectives.

**Use of proceeds – do they impact valuation?**

The aforementioned discussions show that from a disclosures perspective there are not necessarily major obstacles for investors to invest in green bonds that are not fully taxonomy aligned. For that particular reason, we believe that even in the worst case scenario, where the A label reference is maintained for buildings, the technical screening criteria should not be a major hurdle for the green bond market to grow further.

*“Taxonomy alignment should become increasingly important to bond valuations”*

Having said that, while the technical screening criteria may not be a major obstacle to the further growth of the green bank bond market, it could become an

increasingly important differentiating factor to the performance of green bonds. After all, investors would still preferably search for those bonds that offer them the best taxonomy alignment. We will show in the next section that taxonomy related pricing differences do not appear to be visible yet, meaning that the finalisation of the technical screening criteria could prove to become a more noteworthy performance angle.



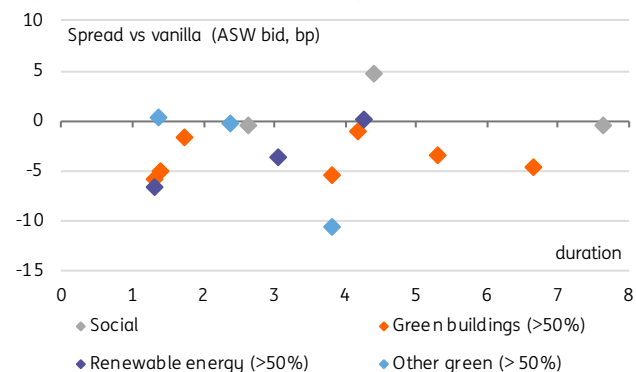
### Non-covered bank bonds

Figures 15 and 16 offer insight into the value of non-covered sustainable bank bonds versus vanilla alternatives on the same curve. The bonds plotted in these graphs only include sustainable senior bank bonds issued by European banks, that have two vanilla adjacents on the curve and are included in the Markit iBoxx EUR bank index.

In preferred senior the greenium is more notable for green bonds than for social bonds

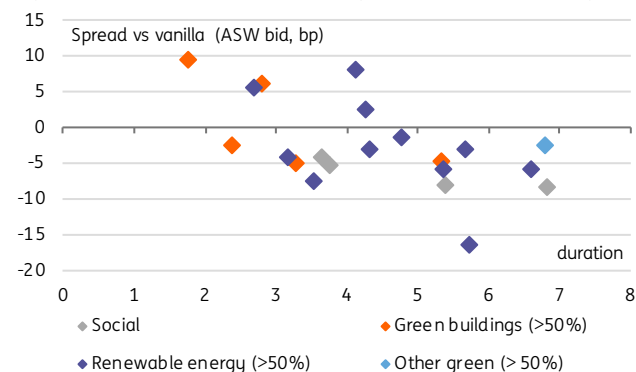
Within the **preferred senior unsecured** segment green bank bonds, on average, do trade tighter versus vanilla comparables than social bond alternatives (Figure 15). However, for the selection of green bonds it is difficult to draw any conclusions on the relative value of bonds that mostly allocate proceeds to green buildings, versus those that do so predominantly to renewable energy loans or other green assets.

Fig 15 Preferred senior: mostly quoted through vanilla\*



\*Only Markit iBoxx index constituents included with two vanilla adjacents  
Source: Markit iBoxx, ING

Fig 16 Bail-in senior: a wider “greenium” at the long end\*



\*Only Markit iBoxx index constituents included with two vanilla adjacents  
Source: Markit iBoxx, ING

*“Bonds that predominantly allocate proceeds to green buildings do not trade differently from other green bonds”*

Within the **bail-in senior unsecured** segment sustainable bonds with a somewhat longer duration tend to trade tighter versus vanilla alternatives than those with a shorter duration (Figure 16). An explanation might be that bail-

in senior unsecured curves are somewhat steeper than preferred senior unsecured curves, and for that reason offer more spread further out the curve and as such more scope for spread differences. Another reason could be that those bonds with a longer duration have been issued at a later date than those with a shorter duration. For that reason these bonds in particular may have reaped the benefits of the expansion of the sustainable investor base in the past years. More recent bonds may also have been issued under stricter portfolio selection criteria under updated green bond frameworks.

In bail-in senior a difference in greenium between green and social bonds is not visible

In contrast with the preferred senior unsecured space, there is no difference in the average spreads versus vanilla alternatives for social versus green bonds. Other than for duration reasons, it is again far from obvious that bonds that mostly allocate their proceeds to green buildings are quoted at less favourable levels versus vanilla alternatives than bonds that mostly finance renewable energy or other green assets.

### Covered bonds

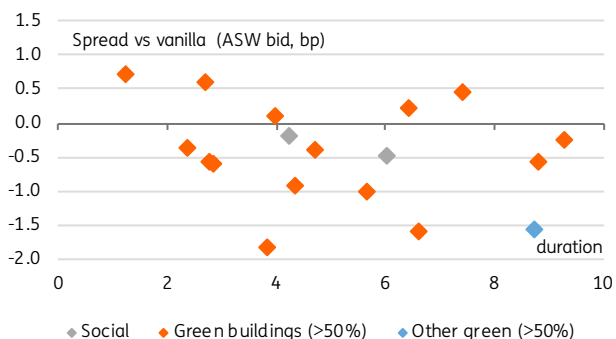
Figures 17 and 18 give an overview of the spread levels of sustainable covered bonds versus their vanilla adjacents. Also here, the bonds plotted in these graphs only include those sustainable covered bonds that have been issued by European banks, have two vanilla adjacents and are included in the Markit iBoxx EUR covered index.

Green and social covered bonds also trade at a similar greenium

As with bail-in senior bonds, sustainable covered bonds do tend to trade slightly tighter versus vanilla alternatives further out the curve than in the shorter duration buckets. The “greenium” for social and green covered bonds appears to be relatively similar.

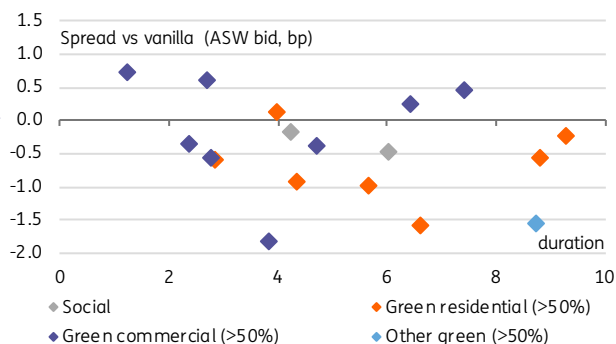
Figure 17 confirms that the large majority of green covered bonds outstanding allocate their proceeds to green buildings. This comes as no surprise considering the fact that covered bonds are mostly secured by mortgage loans. The selection of bonds plotted in the chart includes only one green covered bond that predominantly allocates its proceeds to other green assets. The only sub-benchmark size renewable energy covered bond currently outstanding is not plotted in this chart as it is not included in the iBoxx EUR covered index due to its sub-benchmark size.

**Fig 17 Covered bonds: most allocations are to buildings\***



\*Only Markit iBoxx index constituents included with two vanilla adjacents  
Source: Markit iBoxx, ING

**Fig 18 Covered bonds: a larger “greenium” for residential\***



\*Only Markit iBoxx index constituents included with two vanilla adjacents  
Source: Markit iBoxx, ING

Figure 18 makes a further distinction between a dominance in proceed allocations to green residential assets versus green commercial assets. Here we find that green covered bonds with proceed allocations to green residential building loans do tend to trade relatively tighter versus vanilla comparables than covered bonds with proceed allocations to energy efficient commercial building loans.

**In summary**

Whether technical screening criteria considerations already play a role in today’s sustainable bond trading levels remains difficult to say. Factors such as scarcity (ie, fewer green bonds outstanding), size, or alternatives outstanding in the green bond’s maturity bucket also play an important role when looking at the relative spreads of green versus vanilla bonds.

Besides, the technical screening criteria for climate change mitigation and climate change adaptation are not set in stone yet and will only apply as of 2022. Nonetheless, we do believe that once these criteria are finalised, investors may already start repositioning themselves by focusing on buying bonds that will allow them to tick the box “taxonomy aligned” to the largest possible extent.

*“An unfavourable outcome to the TSC for buildings, could favour bonds with proceed allocations to renewable energy loans”*

In that regard, green bonds with proceed allocations towards renewable energy loans could stand to benefit versus bonds with more buildings-focused proceed allocations. Within the segment of green bond with proceed

allocations to buildings, particularly those with a larger share of assets within the A EPC label class would have an advantage if the technical screening criteria for building assets were to stay as they are in the current Commission proposals. This advantage would clearly diminish with the reintroduction of a 15% best in class approach, which in the end would still be the preferable outcome for the broader green bond market.

## Appendix 1: Technical screening criteria – the sectors

Fig 19 Overview climate change mitigation sectors

Sector	
<b>1</b>	<b>Agriculture and Forestry</b>
1.1	Growing of non-perennial crops
1.2	Growing of perennial crops
1.3	Livestock production
1.4	Afforestation
1.5	Rehabilitation and restoration of forests
1.6	Reforestation
1.7	Improved forest management
1.8	Conservation forestry
<b>2</b>	<b>Environmental protection and restoration activities</b>
2.1	Restoration of wetlands
<b>3</b>	<b>Manufacturing</b>
3.1	Manufacture of renewable energy technologies
3.2	Manufacture of equipment for the production of hydrogen
3.3	Manufacture of low carbon technologies for transport
3.4	Manufacture of energy efficiency equipment for buildings
3.5	Manufacture of other low carbon technologies
3.6	Manufacture of cement
3.7	Manufacture of aluminium
3.8	Manufacture of iron and steel
3.9	Manufacture of hydrogen
3.10	Manufacture of carbon black
3.11	Manufacture of disodium carbonate
3.12	Manufacture of chlorine
3.13	Manufacture of organic basic chemicals
3.14	Manufacture of anhydrous ammonia
3.15	Manufacture of nitric acid
3.16	Manufacture of plastics in primary form
<b>4</b>	<b>Energy</b>
4.1	Electricity generation using solar photovoltaic technology
4.2	Electricity generation using concentrated solar power (CSP) technology
4.3	Electricity generation from wind power
4.4	Electricity generation from ocean energy technologies
4.5	Electricity generation from hydropower
4.6	Electricity generation from geothermal energy
4.7	Electricity generation from gaseous and liquid fuels
4.8	Electricity generation from bioenergy
4.9	Transmission and distribution of electricity
4.10	Storage of electricity
4.11	Storage of thermal energy
4.12	Storage of hydrogen
4.13	Manufacture of biogas and biofuels for use in transport
4.14	Transmission and distribution networks for renewable and low-carbon gases
4.15	District heating/cooling distribution
4.16	Installation of electric heat pumps
4.17	Cogeneration of heat/cool and power from solar energy
4.18	Cogeneration of heat/cool and power from geothermal energy
4.19	Cogeneration of heat/cool and power from gaseous and liquid fuels
4.20	Cogeneration of heat/cool and power from bioenergy
4.21	Production of heat/cool from solar thermal heating
4.22	Production of heat/cool from geothermal energy
4.23	Production of heat/cool from gaseous and liquid fuels
4.24	Production of heat/cool from bioenergy
4.25	Production of heat/cool using waste heat
<b>5</b>	<b>Water supply, sewerage, waste management and remediation</b>
5.1	Construction, extension and operation of water collection, treatment and supply systems
5.2	Renewal of water collection, treatment and supply systems
5.3	Construction, extension and operation of water collection and treatment
5.4	Renewal of waste water collection and treatment
5.5	Collection and transport of non-hazardous waste in source segregated fractions
5.6	Anaerobic digestion of sewage sludge
5.7	Anaerobic digestion of bio-waste
5.8	Composting of bio-waste

Source: European Commission, ING

**Overview climate change mitigation sectors (continued)**

Sector	
5.9	Material recovery from non-hazardous waste
5.10	Landfill gas capture and utilization
5.11	Transport of CO2
5.12	Underground permanent geological storage of CO2
<b>6</b>	<b>Transport</b>
6.1	Passenger interurban rail transport
6.2	Freight rail transport
6.3	Urban, suburban and road passenger transport
6.4	Operation of personal mobility devices
6.5	Transport by motorbikes, passenger cars and light commercial vehicles
6.6	Freight transport services by road
6.7	Inland passenger water transport
6.8	Inland freight water transport
6.9	Retrofitting of inland water passenger and freight transport
6.10	Sea and coastal freight water transport
6.11	Sea and coastal passenger water transport
6.12	Retrofitting of sea and coastal freight and passenger water transport
6.13	Infrastructure for personal mobility
6.14	Infrastructure for rail transport
6.15	Infrastructure enabling low carbon road transport
6.16	Infrastructure for water transport
6.17	Low carbon airport infrastructure
<b>7</b>	<b>Construction and real estate activities</b>
7.1	Construction of new buildings
7.2	Renovation of existing buildings
7.3	Installation, maintenance and repair of energy efficiency equipment
7.4	Installation, maintenance and repair of charging stations for electric vehicles in buildings (and parking spaces attached to buildings)
7.5	Installation, maintenance and repair of instruments and devices for measuring, regulation and controlling energy performance of buildings
7.6	Installation, maintenance and repair of renewable energy technologies
7.7	Acquisition and ownership of buildings
<b>8</b>	<b>Information and communications</b>
8.1	Data processing, hosting and related activities
8.2	Data-driven solutions for GHG emission reductions
<b>9</b>	<b>Professional, scientific and technical activities</b>
9.1	Research, development and innovation
9.2	Professional services related to energy performance of buildings

Source: European Commission, ING

**Fig 20 Overview climate change adaptation sectors**

Sector	
<b>1</b>	<b>Agriculture and Forestry</b>
1.1	Growing of non-perennial crops
1.2	Growing of perennial crops
1.3	Livestock production
1.4	Afforestation
1.5	Rehabilitation and restoration of forests
1.6	Reforestation
1.7	Improved forest management
1.8	Conservation forestry
<b>2</b>	<b>Environmental protection and restoration activities</b>
2.1	Restoration of wetlands
<b>3</b>	<b>Manufacturing</b>
3.1	Manufacture of renewable energy technologies
3.2	Manufacture of equipment for the production of hydrogen
3.3	Manufacture of low carbon technologies for transport
3.4	Manufacture of energy efficiency equipment for buildings
3.5	Manufacture of other low carbon technologies
3.6	Manufacture of cement
3.7	Manufacture of aluminium
3.8	Manufacture of iron and steel
3.9	Manufacture of hydrogen
3.10	Manufacture of carbon black
3.11	Manufacture of disodium carbonate
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3.13	Manufacture of organic basic chemicals
3.14	Manufacture of anhydrous ammonia
3.15	Manufacture of nitric acid
3.16	Manufacture of plastics in primary form
<b>4</b>	<b>Energy</b>
4.1	Electricity generation using solar photovoltaic technology
4.2	Electricity generation using concentrated solar power (CSP) technology
4.3	Electricity generation from wind power
4.4	Electricity generation from ocean energy technologies
4.5	Electricity generation from hydropower
4.6	Electricity generation from geothermal energy
4.7	Electricity generation from gaseous and liquid fuels
4.8	Electricity generation from bioenergy
4.9	Transmission and distribution of electricity
4.10	Storage of electricity
4.11	Storage of thermal energy
4.12	Storage of hydrogen
4.13	Manufacture of biogas and biofuels for use in transport
4.14	Transmission and distribution networks for renewable and low-carbon gases
4.15	District heating/cooling distribution
4.16	Installation of electric heat pumps
4.17	Cogeneration of heat/cool and power from solar energy
4.18	Cogeneration of heat/cool and power from geothermal energy
4.19	Cogeneration of heat/cool and power from gaseous and liquid fuels
4.20	Cogeneration of heat/cool and power from bioenergy
4.21	Production of heat/cool from solar thermal heating
4.22	Production of heat/cool from geothermal energy
4.23	Production of heat/cool from gaseous and liquid fuels
4.24	Production of heat/cool from bioenergy
4.25	Production of heat/cool using waste heat
<b>5</b>	<b>Water supply, sewerage, waste management and remediation</b>
5.1	Construction, extension and operation of water collection, treatment and supply systems
5.2	Renewal of water collection, treatment and supply systems
5.3	Construction, extension and operation of water collection and treatment
5.4	Renewal of waste water collection and treatment
5.5	Collection and transport of non-hazardous waste in source segregated fractions
5.6	Anaerobic digestion of sewage sludge
5.7	Anaerobic digestion of bio-waste
5.8	Composting of bio-waste
5.9	Material recovery from non-hazardous waste
5.10	Landfill gas capture and utilization
5.11	Transport of CO <sub>2</sub>
5.12	Underground permanent geological storage of CO <sub>2</sub>

Source: European Commission, ING

## Overview climate change adaptation sectors

Sector	
<b>6</b>	<b>Transport</b>
6.1	Passenger interurban rail transport
6.2	Freight rail transport
6.3	Urban, suburban and road passenger transport
6.4	Operation of personal mobility devices
6.5	Transport by motorbikes, passenger cars and light commercial vehicles
6.6	Freight transport services by road
6.7	Inland passenger water transport
6.8	Inland freight water transport
6.9	Retrofitting of inland water passenger and freight transport
6.10	Sea and coastal freight water transport
6.11	Sea and coastal passenger water transport
6.12	Retrofitting of sea and coastal freight and passenger water transport
6.13	Infrastructure for personal mobility
6.14	Infrastructure for rail transport
6.15	Infrastructure enabling low-carbon road transport
6.16	Infrastructure for water transport
6.17	Low carbon airport infrastructure
<b>7</b>	<b>Construction and real estate activities</b>
7.1	Construction of new buildings
7.2	Renovation of existing buildings
7.3	Installation, maintenance and repair of energy efficiency equipment
7.4	Installation, maintenance and repair of charging stations for electric vehicles in buildings (and parking spaces attached to buildings)
7.5	Installation, maintenance and repair of instruments and devices for measuring, regulation and controlling energy performance of buildings
7.6	Installation, maintenance and repair of renewable energy technologies
7.7	Acquisition and ownership of buildings
<b>8</b>	<b>Information and communications</b>
8.1	Data processing, hosting and related activities
8.2	Computer programming, consultancy and related activities
8.3	Programming and broadcasting activities
<b>9</b>	<b>Professional, scientific and technical activities</b>
9.1	Engineering activities and related technical consultancy dedicated to adaptation to climate change
9.2	Research, development and innovation related to nature-based solutions for adaptation
<b>10</b>	<b>Financial and insurance activities</b>
10.1	Non-life insurance: underwriting of climate-related perils
10.2	Reinsurance
<b>11</b>	<b>Education</b>
<b>12</b>	<b>Human health and social work activities</b>
12.1	Residential care activities
<b>13</b>	<b>Arts, entertainment and recreation</b>
13.1	Creative, arts and entertainment activities
13.2	Libraries, archives, museums and cultural activities
13.3	Motion picture, video and television programme production, sound recording and music publishing activities

Source: European Commission, ING

## Appendix 2: Screening the real estate sector

### Transitional versus enabling activities

The taxonomy regulation stipulates that the technical screening criteria should take into account the nature and scale of an economic activity and sector referred to, and whether the economic activity is: (a) a **transitional economic activity**, for climate change mitigation purposes; or (b) an **enabling activity**.

*“Transitional activities support the transition to a climate-neutral economy”*

More specifically, a **(transitional) economic activity** for which there is no technologically and economically feasible low-carbon alternative qualifies as contributing

substantially to climate change mitigation where it supports the transition to a climate-neutral economy consistent with a pathway to limit the temperature increase to 1.5°C above pre-industrial levels, including by phasing out greenhouse gas emissions, in particular emissions from solid fossil fuels, and where that activity:

- has greenhouse gas emission levels that correspond to the **best performance** in the sector or industry;
- does not hamper the development and deployment of low-carbon alternatives; and
- does not lead to a lock-in of carbon-intensive assets, considering the economic lifetime of those assets.

*“Enabling activities enable other activities to make a substantial contribution to the taxonomy’s environmental objectives”*

Economic activities also qualify as contributing to the taxonomy’s environmental objectives, if they directly **enable other activities** to make a substantial contribution to one or more of these objectives. This is subject to the condition

that the economic activity: (a) does not lead to a lock-in of assets that undermine long-term environmental goals, considering the lifetime of those assets; and (b) has a substantial positive environmental impact on the basis of the life-cycle considerations.

Transitional activities in construction and real estate

The construction and real estate sector comprises seven sub-sectors, of which three are **transitional** activities:

- the construction of **new buildings**;
- **building renovation**;
- the **acquisition and ownership** of buildings.

Enabling activities in construction and real estate

The remaining four activities are **enabling**:

- installation, maintenance and repair of **energy efficiency equipment**;
- installation, maintenance and repair of **charging stations for electric vehicles in buildings** (and sparking spaces attached to buildings);
- installation, maintenance and repair of **instruments and devices for measuring, regulation and controlling energy performance** of buildings;
- installation, maintenance and repair of **renewable energy technologies**.

### The transitional activities

#### New buildings

*“Newly constructed buildings have to perform 20% better than NZEBs”*

For newly constructed buildings, the primary energy demand (PED), defining the energy performance of the building, must be at least **20% lower than** the national threshold set for

**the nearly zero-energy building (NZEB) requirements** following the implementation of the energy performance of buildings directive (EPBD, Directive 2010/31/EU). The energy performance is certified by using as built energy performance certificates (EPC).

Constructed buildings larger than 5,000m<sup>2</sup> have to be tested upon completion for air-tightness and thermal integrity. Any deviation in the levels of performance set at the design stage or defects in the building envelope have to be disclosed to investors and clients. For buildings larger than 5,000m<sup>2</sup>, the life cycle global warming potential (GWP) of the constructed building also has been calculated for each stage in the life cycle. This information has to be disclosed to investors and clients upon demand.

### Renovation of existing buildings

The European Commission proposals regarding the renovation of existing buildings are broadly in line with the TEG's March 2020 report. The building renovation has to comply with the applicable requirements for major renovations as set in the national and regional building regulations for 'major renovation' implementing the energy performance of buildings directive 2010/31/EU (EPBD). The energy performance of the building or the renovated part upgraded has to meet the cost-optimal minimum energy performance requirements in accordance with the EPBD.

*“Renovations qualify if they would, among others, lead to a 30% reduction in primary energy demand”*

Alternatively, the renovation should lead to a **reduction of primary energy demand (PED) of at least 30%** (relative improvement). The initial PED and the estimated improvement is based on: (a) a detailed building survey; (b) an energy

audit conducted by an accredited independent expert; or (c) any other transparent and proportionate method, and validated through an energy performance certificate (EPC). The 30% improvement results from an actual reduction in PED and can be achieved through a succession of measures within a maximum of three years. Reductions in net primary energy demand through renewable energy sources are not taken into account.

### Acquisition and ownership of buildings

The most controversial part of the European Commission technical screening proposals for the construction and real estate activities is related to the acquisition and ownership of buildings. Namely, buildings built before 31 December 2020, need to have at least an **energy performance certificate (EPC) class A**.

**Fig 21 The technical screening criteria for construction and real estate activities (transitional activities)**

	Construction of new buildings	Building renovations	Acquisition and ownership
<b>Substantial contribution to climate mitigation</b>	<p>The primary energy demand (PED), defining the energy performance of the building resulting from the new construction must be <b>20% lower than</b> the threshold set for <b>the nearly zero-energy building (NZEB) requirements</b>.</p> <p>The energy performance is certified using an as built energy performance certificate (EPC). Buildings &gt; 5000 m<sup>2</sup>: undergo testing for air-tightness and thermal integrity. Performance deviations/building envelope defects are disclosed. Buildings &gt; 5000 m<sup>2</sup>: life cycle global warming potential (GWP) of the building has been calculated for each stage in the life cycle and is disclosed.</p>	<p>The building renovation complies with the applicable requirements for <b>major renovations</b> stipulated by the EPBD. EPBD's cost-optimal minimum energy requirements must be met.</p> <p>The renovation leads to a <b>reduction of PED of at least 30%</b>. The initial energy performance and improvement are based on a) a detailed building survey, b) an energy audit conducted by an accredited independent expert or c) any other transparent and proportionate method and validated through an energy performance certificate (EPC). The 30% improvement results from an actual reduction in PED and can be achieved through a succession of measures within maximum three years.</p>	<p><b>Buildings acquired ≤ 31 December 2020:</b> Building has at least Energy Performance Certificate (EPC class A) <b>Buildings acquired &gt; 31 December 2020:</b> Criteria for construction of new buildings</p> <p><b>Large non-residential buildings</b> should be efficiently operated through energy performance monitoring and assessment (Energy Performance Contract or building automation and control system)</p>

Source: EC, ING



*“The EPC label A proposals for buildings built before 31 December 2020 contrast with the TEG’s 15% best in class suggestion”*

This contrasts with the TEG’s March 2020 report. Namely, the TEG recommended that a building acquired before 31 December 2020 should be assessed upon a best-in-class approach, which

requires the performance of the building to be in the top 15% of the local existing stock in terms of operational primary energy demand. Certification schemes such as EPCs could be used as evidence of meeting the top 15% requirement. The TEG at that time refrained from making further reference to a specific minimum EPC of B, recognising that more work needed to be done in order to define absolute thresholds corresponding to the top 15% of the building stock.

For buildings built after 31 December 2020, the Commission proposals are similar to the TEG report. Namely, those buildings have to meet the criteria for the ‘construction of new buildings’ relevant at the time of the acquisition.

Also, additional criteria for large non-residential buildings remain in place under the Commission proposals, albeit a bit more detailed. Namely, where the building is a large non-residential building (with an effective rated output for heating systems, systems for combined space heating and ventilation, air-conditioning systems or systems for combined air-conditioning and ventilation of over 290kW) it has to be efficiently operated through energy performance monitoring and assessment.

## The enabling activities

### Installation, maintenance and repair of energy efficiency equipment

Individual renovation measures, such as the installation, maintenance or repair of equipment improving the energy efficiency of buildings should comply with the minimum national requirements for individual components and systems implementing the energy performance of buildings directive (EPBD, Directive 2010/31/EU). Where applicable, these enabling activities should achieve energy ratings of at least class A in accordance with the energy labelling regulation (ELR, Regulation (EU) 2017/1369). The following individual measures are identified in the technical screening criteria proposals.

- Addition of insulation to existing envelope components, such as external walls (including green walls), roofs (including green roofs), lofts, basements and ground floors (including measures to ensure air-tightness, measures to reduce the effects of thermal bridges and scaffolding) and products for the application of the insulation to the building envelope (including mechanical fixings and adhesive);
- Replacement of existing windows with new energy efficient windows;
- Replacement of existing external doors with new energy efficient;
- Installation and replacement of heating, ventilation and air-conditioning (HVAC) and water heating systems, including equipment related to district heating services, with highly efficient technologies;
- Installation of low water and energy using kitchen and sanitary water fittings which comply with the applicable technical specifications and, in case of shower solutions, mixer showers, shower outlets and taps, have a maximum water flow of 6 litres per minute or less confirmed by an existing label in the EU market.

### Installation, maintenance/repair of charging stations for electric vehicles in buildings

The installation, maintenance or repair of charging stations for electric vehicles is also identified as eligible enabling activity within the technical screening criteria for buildings.

### **Installation, maintenance and repair of instruments for measuring, regulation and controlling energy performance of buildings**

The installation, maintenance and repair of instruments and devices for measuring, regulation and controlling of the energy performance of buildings is identified as another enabling activity, consisting of one of the following individual measures:

- Installation of zoned thermostats, smart thermostat systems and sensing equipment, including motion and day light control;
- Installation of building automation and control systems, building energy management systems (BMS), lighting control systems and energy management systems (EMS);
- Installation of smart meters for gas, heat, cool and electricity;
- Installation of façade and roofing elements with a solar shading or solar control function, including those that support the growing of vegetation.

### **Installation, maintenance and repair of renewable energy technologies**

The installation, maintenance and repair of renewable energy technologies is an enabling activity if it consists of one of the following individual measures, installed on-site as technical building systems;

- Installation, maintenance and repair of solar photovoltaic systems and the ancillary technical equipment;
- Installation, maintenance and repair of solar hot water panels and the ancillary technical equipment;
- Installation, maintenance, repair and upgrade of heat pumps contributing to the targets for renewable energy in heat and cool in accordance with Directive (EU) 2018/2001 and the ancillary technical equipment;
- Installation, maintenance and repair of wind turbines and the ancillary technical equipment;
- Installation, maintenance and repair of solar transpired collectors and the ancillary technical equipment;
- Installation, maintenance and repair of thermal or electric energy storage units and the ancillary technical equipment;
- Installation, maintenance and repair of high efficiency micro CHP (combined heat and power) plant;
- Installation, maintenance and repair of heat exchanger/recovery systems.

Fig 22 Technical screening criteria for construction and real estate activities (enabling activities)

	Installation, maintenance and repair of energy efficiency equipment	Installation, maintenance and repair of charging stations for electric vehicles in buildings	Installation, maintenance and repair of instruments and devices for measuring, regulation and controlling energy performance	Installation, maintenance and repair of renewable energy technologies
<b>Substantial contribution to climate mitigation</b>	Individual renovation measures such as the installation, maintenance or repair of <b>equipment improving the energy efficiency</b> of buildings complying with the minimum EPBD requirements for individual components and systems, where applicable, achieving at least A energy ratings in line with the ELR. These include: (a) addition of insulation, (b) energy efficient windows and doors, (c) HVAC/ water heating system with highly efficient technologies, and (d) low water and energy using kitchen/sanitary water fittings	The installation, maintenance or repair of <b>charging stations for electric vehicles</b> .	The installation, maintenance and repair of instruments and <b>devices for measuring, regulation and controlling of the energy performance</b> of buildings, consisting of one of the following individual measures: installation of (a) zoned thermostats, smart thermostat systems and sensing equipment, (b) building energy management systems (BMS), lighting control systems and energy management systems (EMS), (c) smart meters; and (d) façade/roofing elements with a solar shading or solar control function.	The installation, maintenance and repair of <b>renewable energy technologies</b> consisting of the following individual measures, if installed on-site as technical building systems: (a) solar photovoltaic systems, (b) solar hot water panels, (c) heat pumps, (d) wind turbines, (e) solar transpired collectors, (f) thermal or electric energy storage units, (g) high efficiency micro CHP plant, and (h) heat exchanger/ recovery systems.

Source: EC, ING

### Climate change adaptation

For the climate change adaptation objective a similar set of economic activities are identified for buildings as for the climate mitigation objective with a similar description of these activities (see Figures 21 and 22). However, each single building activity identified is believed to only make a substantial contribution to the climate adaptation objective if it has implemented physical and non-physical solutions (adaptation solutions) that reduce the most important physical climate risks material to that activity.

The physical climate risks that are material to the activity are identified from those listed in Figure 23 by performing a robust climate risk and vulnerability assessment that is proportionate to the scale of the activity and its expected lifespan. More specifically:

- for investments into adaptation solutions activities with an expected lifespan <10yr, the assessment is performed at least by using a downscaling of climate projections;
- for all other activities, the assessment is performed by using high resolution, state-of-the-art climate projections across a range of future scenarios consistent with the expected lifetime of the activity. This includes at least 10-30yr climate projections scenarios for major investments.

These climate projections and impact assessments are based on best practice and available guidance and take into account the open source models (such as the EC's Copernicus services), the best available science for vulnerability and risk analysis and related methodologies in accordance with the most recent reports of the intergovernmental panel on climate change and scientific peer-reviewed publications.

**Fig 23 Classification of climate related risks**

	Temperature related	Wind related	Water related	Solid mass related
<b>Chronic</b>	Changing temperature (air, freshwater, marine water)	Changing wind patterns	Changing precipitation pattern	Coastal erosion
	Heat stress		Precipitation or hydrological variability	Soil degradation
	Temperature variability		Ocean acidification	Soil erosion
	Permafrost thawing		Saline intrusion	Solifluction
			Sea level rise	
		Water stress		
<b>Acute</b>	Heatwave	Cyclone, hurricane, typhoon	Drought	Avalanche
	Cold wave/frost	Storm (incl blizzards, dust and sandstorms)	Heavy precipitation (rain, hail, snow/ice)	Landslide
	Wildfire	Tornado	Flood (coastal, fluvial, pluvial, ground water)	Subsidence
			Glacial lake outburst	

Source: EC, ING

The adaptation solutions implemented:

- do not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, of nature, of assets and of other economic activities,
- favour nature-based solutions or rely on blue or green infrastructure if possible,
- are consistent with local, sectoral, regional or national adaptation efforts, and
- are monitored and measured against pre-defined indicators and remedial action is considered where those indicators are not met.

Where the solution implemented is physical and consists of an activity for which technical screening criteria have been specified, the solution complies with the DNSH criteria for that activity.

### The “do no significant harm” assessment

The taxonomy’s “do no significant harm” (DNSH) criteria specify the minimum requirements to be met to avoid significant harm to the remaining other environmental objectives relevant to each economic activity. This ensures that an economic activity that contributes positively to one sustainability objective, is not at the same time negatively impacting one of the other sustainability objectives.

More precisely, when an economic activity is contributing positively to the climate mitigation objective (sustainability objective 1), no significant harm should be done to the sustainability objectives 2 to 6. Alternatively, where an economic activity contributes positively to climate change adaptation (sustainability objective 2), it should do no significant harm to the sustainability objectives 1 and 3 to 6 of the taxonomy regulation.

Figures 24 and 25 give an overview of the DNSH criteria per (other) environmental objective for the different construction and real estate activities specified in the European Commission’s delegated regulation proposals. The DNSH criteria for the sustainability objectives 3 to 6 are similar for climate change mitigation and climate change adaptation for the transitional and enabling construction and real estate activities identified in the European Commission delegated act proposals.

**Fig 24 Do no significant harm assessment construction and real estate activities (transitional activities)**

	Construction of new buildings	Building renovations	Acquisition and ownership
<b>1. Mitigation</b>	<p>The building is not dedicated to extraction, storage, transport or manufacture of fossil fuels.</p> <p>The Primary Energy Demand (PED) setting out the energy performance of the building resulting from the construction does not exceed the threshold set for the nearly zero-energy building (NZEB) requirements in national regulation implementing the EPBD. The energy performance is certified using an as built Energy Performance Certificate (EPC).</p>	<p>The building is not dedicated to extraction, storage, transport or manufacture of fossil fuels.</p> <p>-</p>	<p>The building is not dedicated to extraction, storage, transport or manufacture of fossil fuels.</p> <p>For buildings built before 31 December 2020, the building has at least EPC B.</p> <p>For buildings built after 31 December 2020, the Primary Energy Demand (PED) defining the energy performance of the building does not exceed the threshold set for the nearly zero-energy building (NZEB) requirements in national regulation implementing Directive 2010/31/EU. The energy performance is certified using an as built EPC.</p>
<b>2. Adaptation</b>	<p>Material physical climate risks have to be identified by performing a robust climate risk and vulnerability assessment, proportionate to the scale of the activity and its expected lifespan.</p> <p>Adopt a plan for adaptation solutions to reduce material physical climate risks, which should not adversely affect the adaptation efforts of other people, nature, assets or activities, and are consistent with local, sectoral, regional or national adaptation efforts.</p>	<p>Material physical climate risks have to be identified by performing a robust climate risk and vulnerability assessment, proportionate to the scale of the activity and its expected lifespan.</p> <p>Adopt a plan for adaptation solutions to reduce material physical climate risks, which should not adversely affect the adaptation efforts of other people, nature, assets or activities, and are consistent with local, sectoral, regional or national adaptation efforts.</p>	<p>Material physical climate risks have to be identified by performing a robust climate risk and vulnerability assessment, proportionate to the scale of the activity and its expected lifespan.</p> <p>Adopt a plan for adaptation solutions to reduce material physical climate risks, which should not adversely affect the adaptation efforts of other people, nature, assets or activities, and are consistent with local, sectoral, regional or national adaptation efforts.</p>
<b>3. Water</b>	<p>Where installed, the specified water use for the following water appliances are attest by product datasheets, a building certification or an existing product label:</p> <p>a) Wash hand basin taps, kitchen taps and showers: max water flow 6 l/m</p> <p>b) WCs: full flush volume of max 6 litre and max avg flush volume of 3.5 litre</p> <p>c) Urinals: max 2 l/b/h. Flushing urinals: a max 1 litre full flush volume</p> <p>To avoid impact from the construction site, environmental degradation risks related to preserving water quality and avoiding water stress are identified and addressed, in accordance with a water use and protection management plan.</p>	<p>Where installed, the specified water use for the following water appliances are attest by product datasheets, a building certification or an existing product label:</p> <p>a) Wash hand basin taps, kitchen taps and showers: max water flow 6 l/m</p> <p>b) WCs: full flush volume of max 6 litre and max avg flush volume of 3.5 litre</p> <p>c) Urinals: max 2 l/b/h. Flushing urinals: a max 1 litre full flush volume</p> <p>-</p>	<p>-</p> <p>-</p>
<b>4. Circular economy</b>	<p>≥ 70% of the non-hazardous construction and demolition waste must be prepared for re-use, recycling, and other material recovery.</p> <p>Operators limit waste generation, taking into account the best available techniques and using selective demolition for the removal of hazardous substances and to facilitate re-use.</p> <p>Building designs and construction techniques support circularity and demonstrate how they are designed to more resource efficient and enable reuse.</p>	<p>≥ 70% of the non-hazardous construction and demolition waste must be prepared for re-use, recycling, and other material recovery.</p> <p>Operators limit waste generation, taking into account the best available techniques and using selective demolition for the removal of hazardous substances and to facilitate re-use.</p> <p>Building designs and construction techniques support circularity and demonstrate how they are designed to more resource efficient and enable reuse.</p>	<p>-</p> <p>-</p> <p>-</p>

**Fig 24 Do no significant harm assessment construction and real estate activities (transitional activities)**

	Construction of new buildings	Building renovations	Acquisition and ownership
<b>5. Pollution</b>	Building materials do not contain asbestos nor substances of very high concern (based on the REACH regulation Authorisation List).	Building materials do not contain asbestos nor substances of very high concern (based on the REACH regulation Authorisation List).	-
	Building materials that may come into contact with occupiers emit less than 0.06mg formaldehyde per m <sup>3</sup> and less than 0.001mg of 1A and 1B carcinogenic volatile organic compounds per m <sup>3</sup> .	Building materials that may come into contact with occupiers emit less than 0.06mg formaldehyde per m <sup>3</sup> and less than 0.001mg of 1A and 1B carcinogenic volatile organic compounds per m <sup>3</sup> .	-
	Where the new construction is located on a potentially contaminated site (brownfield site), the site has been investigated for contaminants. Measures are taken to reduce noise, dust and pollutant emissions during construction.	Measures are taken to reduce noise, dust and pollutant emissions during construction.	-
<b>6. Ecosystems</b>	An Environmental Impact Assessment (EIA) or Screening (or a third country equivalent) has been completed, and where the EIA was carried out, the required migration and compensation measures for protecting environment are implemented.	-	An Environmental Impact Assessment (EIA) or Screening (or a third country equivalent) has been completed.
	For sites/operations located in or near biodiversity-sensitive areas, an appropriate assessment has been conducted and based on its conclusions the necessary mitigation measures are implemented.	-	-
	New constructions must not be built on: <ul style="list-style-type: none"> <li>a) arable and crop land with a moderate to high level of soil fertility and below ground biodiversity;</li> <li>b) greenfield land of recognised high biodiversity value and land that serves as habitat for endangered species;</li> <li>c) forest land, other wooded land or land that is (partially) covered or intended to be covered by trees.</li> </ul>	-	-

Source: EC, ING

Fig 25 Do no significant harm assessment construction and real estate activities (enabling activities)

	Installation, maintenance and repair of energy efficiency equipment	Installation, maintenance and repair of charging stations for electric vehicles in buildings	Installation, maintenance and repair of instruments and devices for measuring, regulation and controlling energy performance	Installation, maintenance and repair of renewable energy technologies
<b>1. Mitigation</b>	The building is not dedicated to extraction, storage, transport or manufacture of fossil fuels.	The building is not dedicated to extraction, storage, transport or manufacture of fossil fuels.	The building is not dedicated to extraction, storage, transport or manufacture of fossil fuels.	The building is not dedicated to extraction, storage, transport or manufacture of fossil fuels.
<b>2. Adaptation</b>	<p>Material physical climate risks have to be identified by performing a robust climate risk and vulnerability assessment, proportionate to the scale of the activity and its expected lifespan.</p> <p>Adopt a plan for adaptation solutions to reduce material physical climate risks, which should not adversely affect the adaptation efforts of other people, nature, assets or activities, and are consistent with local, sectoral, regional or national adaptation efforts.</p>	<p>Material physical climate risks have to be identified by performing a robust climate risk and vulnerability assessment, proportionate to the scale of the activity and its expected lifespan.</p> <p>Adopt a plan for adaptation solutions to reduce material physical climate risks, which should not adversely affect the adaptation efforts of other people, nature, assets or activities, and are consistent with local, sectoral, regional or national adaptation efforts.</p>	<p>Material physical climate risks have to be identified by performing a robust climate risk and vulnerability assessment, proportionate to the scale of the activity and its expected lifespan.</p> <p>Adopt a plan for adaptation solutions to reduce material physical climate risks, which should not adversely affect the adaptation efforts of other people, nature, assets or activities, and are consistent with local, sectoral, regional or national adaptation efforts.</p>	<p>Material physical climate risks have to be identified by performing a robust climate risk and vulnerability assessment, proportionate to the scale of the activity and its expected lifespan.</p> <p>Adopt a plan for adaptation solutions to reduce material physical climate risks, which should not adversely affect the adaptation efforts of other people, nature, assets or activities, and are consistent with local, sectoral, regional or national adaptation efforts.</p>
<b>3. Water</b>	-	-	-	-
<b>4. Circular economy</b>	-	-	-	-
<b>5. Pollution</b>	<p>Building materials do not contain asbestos nor substances of very high concern.</p> <p>If thermal insulation is added to an existing building envelope, a building survey is carried out by a competent specialist trained in asbestos surveying. The removal of asbestos containing materials is done by trained personnel</p>	-	<p>Building materials do not contain asbestos nor substances of very high concern.</p>	-
<b>6. Ecosystems</b>	-	-	-	-

Source: EC, ING

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