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Deutsche Pfandbriefbank AG
Green Bond Second Opinion

27 April 2023

Executive Summary

Deutsche Pfandbriefbank AG ('pbb') is a German-headquartered bank specializing in commercial real estate. Around half of pbb's assets are in Germany, though it is also active in western and central Europe and the USA, and it is one of the largest issuers in the 'Pfandbriefe' market, with an outstanding volume of approximately EUR 25 billion.

Under its framework, pbb will finance or refinance loans in respect of the construction of buildings (built in 2021 or later), the acquisition and ownership of existing buildings (built prior to 2021), and refurbishment investments. The largest share of proceeds is expected to be allocated to existing buildings, while office buildings are expected to be the most commonly financed building type. Though the framework contains no geographical limits, pbb currently only finances projects in western and central Europe and expects the majority of projects to be in Germany. This is an update of pbb's framework dated March 2020. The main changes are to the eligibility criteria, including the introduction of separate criteria for buildings built before and from 2021, criteria reflecting the EU Taxonomy's substantial contribution to climate change mitigation criteria, and criteria for financing refurbishments.

SHADES OF GREEN

°CICERO Light Green

GOVERNANCE ASSESSMENT

GREEN BOND PRINCIPLES

Based on this review, the framework is found to be aligned with the principles.

We rate the framework **CICERO Light Green** and give it a governance score of **Excellent.** The Light Green shading primarily reflects the moderate ambition of the criteria for new buildings and that, for existing buildings, the same energy consumption thresholds apply across jurisdictions and will therefore be of varying ambition. In terms of governance, pbb has positively developed many elements of its climate and environmental approaches since its previous framework, has a track record of transparent green bond reporting, and retains a solid selection process.

Strengths

pbb has developed a sustainability scoring model, which will lead to additional climate and environmental factors being considered in the selection of eligible loans under the framework. As part of its green loan product, pbb has developed a sustainability scoring model, which it also applies to all lending to evaluate a building's sustainability. The model includes consideration of energy use, environmental certifications, and additional factors including availability of/distance to public transport, use of recycled materials in construction, heating type, and use of green electricity. pbb has confirmed that investments under the framework will be scored according to the model and the factors considered holistically, thereby bringing them into the selection process.

Among others, the framework excludes buildings with substantial negative impact on the environment or a concentration of tenants with an unacceptable environmental impact. Examples of the former include new construction in protected areas or buildings endangering biodiversity. Even though these exclusions are slightly vague, their inclusion represents a strength given it will require express consideration by the green bond committee of these important issues.

pbb screens each property in its portfolio for physical climate risks. We understand that the data it uses for such screening incorporates climate scenarios and, in the case of material risks, where increased insurance cannot be procured, adaptation measures are introduced.

Weaknesses

Proceeds can be allocated to buildings with natural gas heating. For new buildings, pbb considers the use of such heating unlikely and new buildings with such heating would only be financed if the heating was considered of high standard and necessary.

Pitfalls

The same energy consumption thresholds for existing buildings apply across all jurisdictions and will therefore be of varying ambition. pbb is aware of this risk, and notes that, notwithstanding that a building satisfies the energy consumptions thresholds, the green bond committee will also consider country specific benchmarks to ensure the building's performance is suitably ambitious in that jurisdiction.

New buildings can be financed based on environmental certifications. Such certifications cover a broad set of issues important for more sustainable real estate development, and it is positive that pbb has selected the highest levels of environmental certifications. Nonetheless, as points-based mechanisms covering a range of issues, they do not guarantee a low climate impact or energy performance better than regulation.

pbb does not consider embodied emissions from building materials. Embodied emissions from building materials are significant, particularly as the energy performance of buildings improve and electricity sources decarbonize. While pbb does not currently consider such emissions, we welcome that it intends to include these in future iterations of its sustainability scoring model. Such emissions should also be considered in refurbishments.

Uncertainty can arise in jurisdictions where NZEB and/or the top 15% of building stock have not been officially determined. In such cases, the framework states these may be defined together with external consultants or based on external studies. While such an approach is not uncommon, there is no common methodology for the determination of these thresholds, and discrepancies may arise between those relied on by pbb and official determinations made in the future.

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1 pbb's environmental management and green bond framework

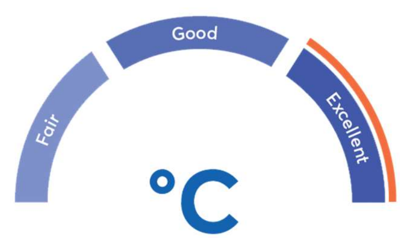
Company description

Deutsche Pfandbriefbank AG ('pbb') is a German-headquartered bank specializing in commercial real estate. Around half of pbb's assets are in Germany, though it is also active in western and central Europe and the USA, and it is one of the largest issuers in the 'Pfandbriefe' market, with an outstanding volume of approximately EUR 25 billion.

This is an update of pbb's framework dated March 2020. Per its latest allocation and impact report, as at March 2023, pbb had EUR 2.95 billion and GBP 500 million in outstanding green bonds under its previous framework and a green asset pool of approximately EUR 3.95 billion. Around 80% of the green bond asset pool consists of office properties and 66% is in Germany.

Governance assessment

pbb has developed certain elements of its climate and environmental approaches since its previous framework. Of note is its sustainability scoring model, which it utilizes in its lending process, as part of its green loan process, and on existing loans to understand the decarbonization pathway of its portfolio. The sustainability scoring model includes consideration of energy use, environmental certifications, and additional factors including availability of/distance to public transport, use of recycled materials in construction, heating type, and use of green electricity. Since its previous framework, pbb has introduced its green loans, which account for 11% of its portfolio as at 31 December 2022, with a target of 30% by 2024/25, as well as 'Green Capex' loans for renovations and refurbishments to make buildings more sustainable. pbb has few quantitative climate or environmental KPIs and targets in place - an area for improvement - though it informs us that some targets have been approved and are currently in the steering process (e.g. in respect of green loans as a percentage of new lending). Quantitative targets for portfolio decarbonization would strengthen pbb's climate and environmental approaches.



pbb's selection process remains solid and it emphasizes the holistic approach of its green bond committee. It also has a track record of green bond reporting and retains the same commitments in the updated framework. This includes reporting a list of financed assets, transparency on impact metric calculations, and external review.

The overall assessment of pbb's governance structure and processes gives it a rating of **Excellent.**

Sector risk exposure

Physical climate risks. Through lending portfolios, banks are indirectly exposed to the physical climate risks of their underlying assets. In Europe, more intense, extreme, and variable weather is expected, for example increased extreme precipitation, and associated flooding, and increased heat. This is likely to lead to increased losses from property damage.

Transition risks. Banks are exposed to transition risks from given their exposure to various sectors and their borrowers' exposure to changing regulations, technologies, and market conditions. Growing supervisory expectations for greater disclosure and oversight of climate financial risks and civil society focus on the finance sector's contribution to climate change create regulatory, liability, and reputational risks. Banks may also be exposed to systemic risks from mispricing of climate-exposed assets.

Environmental risks. Risks arise from the financing of activities with potential environmental risks and impacts. Pollution risks can arise in the real estate sector, for example, from poor waste handling, while real estate activities can also have biodiversity and other pollution impacts.

Environmental strategies and policies

pbb publishes a non-financial report in accordance with the German standard for sustainability reporting,[1] which includes information on its sustainability strategy, including its approach to environmental and climate issues. In 2022, Scope 1 emissions totaled 374 t CO_2e, exclusively from company cars. While pbb's company car policy includes emissions standards for vehicles, we understand that the fleet consists entirely of internal combustion engine vehicles. In 2022, Scope 2 emissions totaled 6 t CO_2e from purchased electricity, with pbb's German offices powered by renewable sources, and its overseas offices, except for Madrid and Stockholm, obtaining 'most' of their electricity from renewable sources. In 2022, Scope 3 emissions from office consumer goods, business travel, and events totaled 325 t CO_2e. We understand all Scope 1, 2, and 3 emissions were offset.

pbb does not measure or report its portfolio's emissions or climactic and environmental performance, though the framework states that pbb made a concerted effort to collect such data in 2022. More specifically, alongside the sustainability data it gathers for new deals, it has surveyed existing clients on the sustainability criteria included in its sustainability scoring model (see below), allowing pbb to examine and, in the future, report on the decarbonization pathway of its portfolio. As at 31 December 2022, around half of pbb's portfolio has been rated according to the criteria.

A key element of pbb's sustainability strategy is its green loans, with pbb aiming for 30% of its commercial real estate finance portfolio to consist of green loan eligible assets by 2024/2025 - as at 31 December 2022, the figure stood at 11%. pbb has offered its green loans since the end of 2021. There are two ways a property can qualify for a green loan. Firstly, a property can achieve enough points on pbb's sustainability scoring model. This considers three dimensions: i) energy efficiency, ii) building certifications, iii) other sustainability factors (such as surface sealing, availability of / distance to public transport, use of recycled materials in construction, heating type, and

[1] Deutscher Nachhaltigskeitkodex / DNK

use of green electricity).[2] Secondly, a building can align with the EU Taxonomy criteria (both the substantial contribution to climate change mitigation criteria and the Do No Significant Harm criteria). pbb furthermore offers ‘Green Capex’ - financing the renovation or refurbishment of buildings so that, on completion, they satisfy pbb’s sustainability criteria.

pbb has developed ‘ESG analysis tools’ which it applies in its lending process. This includes the use of pbb’s sustainability scoring model, EU Taxonomy assessments, and the application of a decarbonization tool measuring performance against CRREM benchmarks.[3] To comply with the reporting requirements on EU Taxonomy alignment, pbb is furthermore starting to collect data on alignment with relevant Do No Significant Harm criteria.

According to the German Pfandbriefgesetz, real estate is to be regularly screened for physical risks, such as flooding. pbb screens each property for physical risks and we understand that the data it uses incorporates climate scenarios. In the case of material risks, where increased insurance cannot be procured, adaptation measures are introduced. In complex cases, external insurance experts are included in the process. A yearly property monitoring is required during the term of the loan for each individual property in order to reflect new developments (e.g. climate change) or individual events (e.g. floods) in value and eligibility for loans.

Green bond framework

Based on this review, this framework is found to be aligned with the ICMA Green Bond Principles. For details on the issuer’s framework, please refer to the green bond framework dated May 2023.

Use of proceeds

For a description of the framework’s use of proceeds criteria, and an assessment of the categories’ environmental impacts and risks, please refer to section 2.

Selection

pbb has established a green bond committee, consisting of representatives from the business areas communications, property analysis and valuation, portfolio analysis, and treasury. According to pbb, the representative of the property analysis and valuation team has necessary environmental competence. Meetings are held quarterly and decisions made by consensus. The green bond committee is responsible for ensuring that properties financed under the framework comply with framework’s eligibility criteria and pbb’s standard credit process, fostering compliance with pbb’s corporate social responsibility and any regulatory or environmental and social requirements. Additionally, the green bond committee i) monitors the portfolio of properties financed under the framework, including ensuring, alongside the treasury, that the portfolio exceeds or will in the near future exceed the amount of proceeds raised under the framework, ii) monitors market developments, especially relating to the EU Taxonomy, and iii) coordinates reporting under the framework.

Management of proceeds

pbb’s treasury will manage proceeds under the framework on a portfolio basis, with the relevant loan amount allocated in its systems to the properties financed under the framework. The treasury, alongside the green bond committee, will monitor that an amount equivalent to the proceeds is used to finance or refinance the portfolio of eligible properties under the framework and that the amount of such properties generally exceeds the amount of outstanding green bonds.

[2] The scoring model awards a maximum of 100 points. Up to 50 points are awarded for energy efficiency, up to 20 points are awarded for certification, and up to 30 points are awarded for the other sustainability factors. A property must score at least 60 points to be eligible for a green loan. For more detailed information on pbb’s green loans, see its green loan framework: pbb - green loan framework.

[3] Carbon Risk Real Estate Monitor: https://www.crrem.org/

In the case of surplus financing under the framework, pbb will either invest in green bonds satisfying the ICMA Green Bond Principles or hold such proceeds as cash. According to the framework, any surplus will be reversed with two green bond committee cycles (around six months).

Reporting

pbb will publish a quarterly allocation report and an annual impact report. The allocation report will include:

- total amount of outstanding green bonds
- total amount of loans financing properties under the framework
- examples of eligible properties
- total amount of unallocated proceeds
- geographical distribution of properties financed under the framework

The framework includes example output and impact indicators:

<u>Output</u>

- Portfolio breakdown by year of construction / refurbishment (in %)
- Portfolio breakdown by EPC class or energy consumption in kWh/m^2
- Portfolio breakdown by property type and regions

<u>Impacts</u>

- Estimated annual reduced / avoided greenhouse gas (t CO_2e) in comparison to a benchmark[4]
- Estimated annual reduced / avoided greenhouse gas per EUR 1 million of green bonds (t CO_2e / EUR 1 million)
- Estimated annual reduced / avoided greenhouse gas per EUR 1 million financed (t CO_2e / EUR 1 million)

The impact report will also include a full list of properties in the portfolio financed under the framework, including information such as energy consumption. An independent third party will review the impact reporting and the allocation reporting prepared at the same time.

pbb has published two allocation and impact reports, relating to issuances under its previous framework. These reports include information on an asset basis, for example final energy consumption and heating system of each building in the green asset pool,[5] and a portfolio level avoided emissions calculation using buildings' energy performance compared to benchmark. Both these reports have been externally reviewed by CICERO Shades of Green.

[4] See pbb's previous impact reports for examples of benchmarks and their calculation: pbb - impact report 2022
[5] pbb lists a portfolio consisting of around 80 residential properties as one property, for reporting purposes.

2 Assessment of pbb's green bond framework

The eligible projects under pbb's green bond framework are shaded based on their environmental impacts and risks, based on the "Shades of Green" methodology.

Shading of eligible projects under pbb' green bond framework

- According to pbb, shares of financing vs refinancing are not predictable, though refinancing will likely be very high.
- pbb expects to allocate the largest share of proceeds to investments in the acquisition and ownership of buildings built before 2021. Moreover, pbb expects the largest share of proceeds to be allocated to office buildings (which constitute around 80% of the existing green bond portfolio and 45% of pbb's entire portfolio).
- There are no geographic limitations under the framework, though pbb currently invests only in western and central Europe and the USA. pbb expects the majority of proceeds to be allocated in Germany.
- According to pbb's latest allocation report dated March 2023, under its previous green bond framework, around 80% of the green bond asset pool consists of office properties and 66% is located in Germany. Properties in the United Kingdom, Finland, France, Hungary, Czech Republic, and Poland were also financed.
- The framework excludes: buildings i) used for the production of controversial weapons, chemicals, nuclear energy, fossil fuels, ii) with a concentration of tenants with an unacceptable environmental impact or pornography / sex work, and iii) with substantial other negative impact on the environment (e.g. polluted areas, green field construction in protected areas, endangering biodiversity, hazardous waste).

Category	Eligible project types	Green Shading and considerations
Green Buildings	Construction of new buildings Renovation of existing buildings Acquisition and ownership of buildings Eligible Properties built in 2021 or later have to meet at least one of the following criteria: 1) At least 10% lower than the requirements for the primary energy demand of the 'Nearly Zero-Energy Building' Standard (NZEB) OR	**Light Green** ✓ The Light Green shading primarily reflects the moderate ambition of the criteria for new buildings and that, for existing buildings, the energy consumption thresholds apply across jurisdictions and will therefore be of varying ambition. At the same time, the criteria must be viewed in light of pbb's sustainability scoring model - against which its investments are rated - which leads to consideration of additional climate and environmental factors in the selection of eligible loans. Buildings built in 2021 or later

2) The property's most recent Green Building Certificate has to be the best rating of one of the following Green Building Certificates: BREEAM (best rating: Outstanding); LEED (best rating: Platinum); DGNB (best rating: Platinum); HQE (best rating: Excellent)

Eligible Properties built before 2021 have to meet at least one of the following criteria:

1) Final Energy Consumption lower than:

- Office < 140 kWh/m^2 p.a.
- Retail < 140 kWh/m^2 p.a.
- Hotel < 155 kWh/m^2 p.a.
- Residential < 100 kWh/m^2 p.a.
- Logistics < 65 kWh/m^2 p.a.

OR

2) EPC level of at least 'A'

OR

3) Belong to the top 15% of the national building stock

OR

4) Buildings may also be included if refurbishments result in a relative improvement in primary energy demand of at least 30% in comparison

- ✓ The criterion that primary energy demand is at least 10% lower than NZEB mirrors the EU Taxonomy's substantial contribution to climate change mitigation criteria and is moderately ambitious. NZEB has not yet been officially determined in each EU Member State, including Germany. In such cases, the framework states this may be defined together with external consultants or based on external studies. Nor could this criterion be used outside of EU Member States (e.g. the USA) - for new buildings in such jurisdictions, the framework therefore contains no workable energy performance criterion.
- ✓ It is positive that pbb has selected the highest levels of environmental certifications. Nonetheless, as points-based systems that cover many environmental factors, these do not guarantee a low climate impact or energy performance better than regulation.
- ✓ In a 2050 perspective, for new constructions it is crucial to consider embodied emissions from building materials. According to pbb, such emissions are not currently considered, though it intends include these in future iterations of its sustainability scoring model.
- ✓ According to pbb, though oil and coal heating are excluded, new constructions could have natural gas heating, if such heating is of high standard and necessary. This would be considered by the green bond committee and pbb considers the financing of new buildings with natural gas heating to be unlikely.

Buildings built before 2021

- ✓ The energy consumption thresholds for office, retail and hotel buildings have been tightened since the previous framework.
- ✓ According to pbb, in setting the energy consumption thresholds it considered country-specific benchmarks from the Partnership for

to the performance before the renovation. Any reductions caused by renewable energy sources must not be taken into account.

Carbon Accounting Financials (PCAF) which reflect average energy consumption for specific building types in a jurisdiction. According to pbb, the energy consumption thresholds are significantly below these benchmarks in each country it is active. Moreover, according to pbb, notwithstanding that a building satisfies the energy consumptions thresholds, the green bond committee will also consider country specific benchmarks to ensure the building's performance is suitably ambitious in that jurisdiction.

- ✓ The criterion for a building to belong to the top 15% of national building stock mirrors the EU Taxonomy's substantial contribution to climate change mitigation criteria and is moderately ambitious. In many jurisdictions there is uncertainty around what constitutes the top 15% of building stock. The framework states this may be defined together with external consultants or based on external studies. For Germany, for example, pbb would rely on an external report prepared for the Association of Pfandbriefbanks.
- ✓ Though oil and coal heating systems are excluded, buildings may have natural gas heating.

<u>Refurbishments</u>

- ✓ Most of the real estate that will exist in 2050 is already built. Improvements in the energy performance of existing building stock is therefore crucial in the transition. pbb's inclusion of this criterion is therefore welcome, though the IPCC recommends 50% energy efficiency improvements from major renovations and pbb has confirmed that refurbishments could include natural gas heating.

- ✓ Proceeds will be allocated to refurbishment costs only (not the value of the entire building). The criterion does not require that the building

	has a certain primary energy demand after refurbishment, only that the primary energy demand has improved by 30%. Nonetheless, according to pbb, the green bond committee would in the selection process consider whether the building's primary energy demand after refurbishment satisfies the energy consumption benchmarks elsewhere in the framework.

Table 1. Eligible project categories

3 Terms and methodology

This note provides CICERO Shades of Green's second opinion of the client's framework dated May 2023. This second opinion remains relevant to all green bonds and/or loans issued under this framework for the duration of three years from publication of this second opinion, as long as the framework remains unchanged. Any amendments or updates to the framework require a revised second opinion. CICERO Shades of Green encourages the client to make this second opinion publicly available. If any part of the second opinion is quoted, the full report must be made available.

The second opinion is based on a review of the framework and documentation of the client's policies and processes, as well as information gathered during meetings, teleconferences and email correspondence.

'Shades of Green' methodology

CICERO Shades of Green second opinions are graded dark green, medium green or light green, reflecting a broad, qualitative review of the climate and environmental risks and ambitions. The shading methodology aims to provide transparency to investors that seek to understand and act upon potential exposure to climate risks and impacts. Investments in all shades of green projects are necessary in order to successfully implement the ambition of the Paris agreement. The shades are intended to communicate the following:

	Shading	Examples
°C	**Dark Green** is allocated to projects and solutions that correspond to the long-term vision of a low-carbon and climate resilient future.	Solar power plants
°C	**Medium Green** is allocated to projects and solutions that represent significant steps towards the long-term vision but are not quite there yet.	Energy efficient buildings
°C	**Light Green** is allocated to transition activities that do not lock in emissions. These projects reduce emissions or have other environmental benefits in the near term rather than representing low carbon and climate resilient long-term solutions.	Hybrid road vehicles

The "Shades of Green" methodology considers the strengths, weaknesses and pitfalls of the project categories and their criteria. The strengths of an investment framework with respect to environmental impact are areas where it clearly supports low-carbon projects; weaknesses are typically areas that are unclear or too general. Pitfalls are also raised, including potential macro-level impacts of investment projects.

Sound governance and transparency processes facilitate delivery of the client's climate and environmental ambitions laid out in the framework. Hence, key governance aspects that can influence the implementation of the green bond are carefully considered and reflected in the overall shading. CICERO Shades of Green considers four factors in its review of the client's governance processes: 1) the policies and goals of relevance to the green bond framework; 2) the selection process used to identify and approve eligible projects under the framework, 3) the management of proceeds and 4) the reporting on the projects to investors. Based on these factors, we assign an overall governance grade: Fair, Good or Excellent. Please note this is not a substitute for a full evaluation of the governance of the issuing institution, and does not cover, e.g., corruption.

Assessment of alignment with Green Bond Principles

CICERO Shades of Green assesses alignment with the International Capital Markets' Association's (ICMA) Green Bond Principles. We review whether the framework is in line with the four core components of the GBP (use of proceeds, selection, management of proceeds and reporting). We assess whether project categories have clear environmental benefits with defined eligibility criteria. The Green Bonds Principles (GBP) state that the "overall environmental profile" of a project should be assessed. The selection process is a key governance factor to consider in CICERO Shads of Green's assessment. CICERO Shades of Green typically looks at how climate and environmental considerations are considered when evaluating whether projects can qualify for green finance funding. The broader the project categories, the more importance CICERO Shades of Green places on the selection process. CICERO Shades of Green assesses whether net proceeds or an equivalent amount are tracked by the issuer in an appropriate manner and provides transparency on the intended types of temporary placement for unallocated proceeds. Transparency, reporting, and verification of impacts are key to enable investors to follow the implementation of green finance programs.

Appendix 1:
Referenced Documents List

Document Number	Document Name	Description
1	Green Bond Framework (May 2023)	
2	Non-Financial Report (2022)	
3	Green Bond Impact Report (2022)	
4	Green Bond Allocation Report (March 2023)	

Appendix 2:
About CICERO Shades of Green

CICERO Shades of Green, now a part of S&P Global, provides independent, research-based second party opinions (SPOs) of green financing frameworks as well as climate risk and impact reporting reviews of companies. At the heart of all our SPOs is the multi-award-winning Shades of Green methodology, which assigns shadings to investments and activities to reflect the extent to which they contribute to the transition to a low carbon and climate resilient future.

CICERO Shades of Green is internationally recognized as a leading provider of independent reviews of green bonds, since the market's inception in 2008. CICERO Shades of Green is independent of the entity issuing the bond, its directors, senior management and advisers, and is remunerated in a way that prevents any conflicts of interests arising as a result of the fee structure. CICERO Shades of Green operates independently from the financial sector and other stakeholders to preserve the unbiased nature and high quality of second opinions

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- **2020 External Assessment Provider Of The Year,** Environmental Finance Green Bond Awards
- **2020 Largest External Review Provider In Number Of Deals,** Climate Bonds Initiative Awards
- **2019 External Assessment Provider Of The Year,** Environmental Finance Green Bond Awards
- **2019 Largest Green Bond SPO Provider,** Climate Bonds Initiative Awards
- **2018 External Assessment Provider Of The Year,** Environmental Finance Green Bond Awards
- **2018 Largest External Reviewer,** Climate Bonds Initiative Awards
- **2017 Best External Assessment Provider,** Environmental Finance Green Bond Awards
- **2016 Most Second Opinions,** Climate Bonds Initiative Awards