

Methodology And Assumptions: Sustainable Transparency Template

Jyske Realkredit

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1 Sustainable Transparency Template

This document describes the methodologies applied to produce the Sustainable Transparency Template (STT) for Jyske Realkredit.

The STT is produced to provide investors investing in Jyske Realkredit's covered bonds transparency about how the assets in the cover pool affects the climate. The STT contain information about CO₂-emission and Energy Performance Certificates (EPCs) for properties financed through Jyske Realkredit, as well as information on lending supporting UN Sustainable Development Goals (SDG) and lending compliant with the technical screening criteria for objective for climate change objective defined in EU Taxonomy Climate Delegated Act published in April 2021.

As Denmark has a well-developed system for producing EPCs for building that reflect the expected energy consumption of individual property, it is possible to produce the STT for Jyske Realkredit. Moreover, Denmark has detailed information about the energy consumption of the various sectors in Denmark, as well as the types of raw materials used for energy generation and their respective CO₂-

emissions. The template is produced, as far as possible, by using data for the individual properties financed through Jyske Realkredit. Where no data is available for individual buildings, statistical calculations are used to estimate its energy performance or the fuel type in energy generation.

2 Energy Performance Certificate

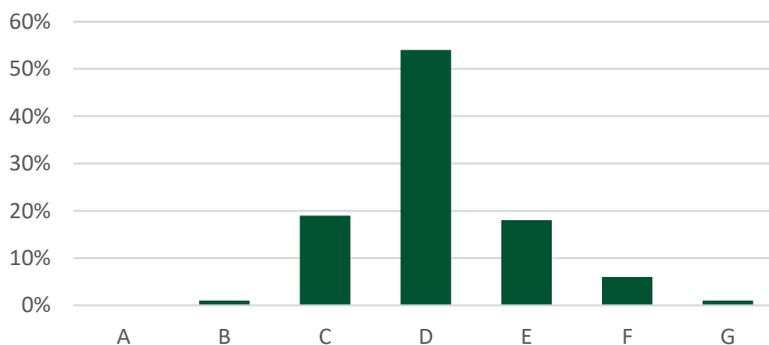
The EPC score for buildings in Denmark is retrieved from the Danish Energy Agency. Data is retrieved for all properties in Denmark with a valid EPC.

For properties for which Jyske Realkredit has granted loans and which have a valid EPC, this EPC is attached directly to the building.

For properties with no valid EPC, the distribution of EPCs for the total population is used to estimate energy performance. To this end, distributions have been made for all properties with a valid EPC in Denmark, based on property type, area (Copenhagen and environs, Aarhus and environs, Large provincial towns and Small provincial towns), year of construction and type of heating used to heat the property (gas, oil, district heating etc.).

As an example, the figure below shows the distribution of valid EPCs for apartment buildings in Copenhagen built in the 1891-1930 period and heated by district heating. A total of 5,034 valid EPCs match this category. Thus, a property in Jyske Realkredit's portfolio that matches this category and does not have a valid EPC will be distributed as having 0% EPC grade A, 1% EPC grade B, 19% EPC grade C, 54% EPC grade D etc.

Figure 1 Distribution of EPCs for blocks of flats in Copenhagen built between 1891 and 1930 and heated by district heating



Source: Danish Energy Agency and own calculations

For the distributions, only combinations of categories (Property type, area, year of construction of the property and source of heating) with more than 20 observations are used. For properties in Jyske Realkredit's portfolio with no valid EPC or with a combination of categories for which a distribution cannot be made, a less granular distribution is made of all properties with a valid EPC, based on property type, area and year of construction.

Approximately 61% of the properties (in terms of outstanding debt) of Jyske Realkredit's Capital Centre E have a valid EPC. About 33% are assigned an EPC value based on the distribution using property type, geographical area, year of construction and source of heating. About 2% are assigned an EPC value based on the less granular distribution, and for about 0.5%, it has not been possible to

assign an EPC value. For about 4.5%, it is not relevant to assign an EPC value (manufacturing industry, warehouses, holiday homes, undeveloped plots etc.).

The Appendix provides a breakdown of the categories.

3 Calculated CO₂e-emission

Emissions of greenhouse gasses from production of electricity and heat is almost entirely CO₂. In the STT we therefor only calculate CO₂e-emissions and not emissions from other greenhouse gasses.

In order to calculate the CO₂e-emissions for properties the model use the following five variables: EPC-score, Property type, Heating source, Heated m² and CO₂e-emission factors. The EPC-scores and CO₂e-emission factors are published by the Danish Energy Agency, while property type, heating source and heated m² are based on data from the IT and Development Agency of the Danish Ministry of Taxation. For properties without a valid EPC the model uses the estimated EPC-score explained in section 2.

The energy consumption for heating depends on the energy consumption of the property (measured by EPC) and heated floor area (m²). The model calculates the property's energy consumption as an average of the minimum and maximum consumption for a given EPC-score¹. For buildings with an EPC valid from before 30-06-2018 the energy consumption will be corrected with old energy factors (appendix 2A).

The Danish Energy Agency publish CO₂e-emissions factors for each heating source² and by combing these factors with the calculated energy consumption, the model estimates a property's yearly CO₂e-emission. For Electricity and District heating the emission factor depends on the mix of sources of which the energy is produced. The Danish Energy Agency publish a yearly report³ on which the emission factors for district heating, electricity and natural gas are based on. See appendix 2B.

Example: CO₂e-emission for a single-family house, 150 m², EPC-score C and district heating:

EPC valid after 30-06-2018

*Calculated energy consumption: $((90 + 2700/150)/0,85) * 150 = 19.059 \text{ kWh/year}$*

*CO₂e-emission: $19.059 \text{ kWh/year} * 0,049 \text{ kg CO}_2/\text{kWh} = 934 \text{ kg CO}_2/\text{year}$*

EPC valid before 30-06-2018

*Calculated energy consumption: $((90 + 2700/150)/0,85) * (0,80/0,85) * 150 = 17.938 \text{ kWh/year}$*

*CO₂e-emission: $17.938 \text{ kWh/year} * 0,049 \text{ kg CO}_2/\text{kWh} = 879 \text{ kg CO}_2/\text{year}$*

¹ <https://sparenergi.dk/forbruger/boligen/energimaerkning-boliger/huse>

² <https://hbemo.dk/haandbog-for-energikonsulenter-hb2021-gaeldende/bilag-4-energimaerkning-af-eksisterende-bygninger/vejledende-tekniske-bilag-og-tabeller/braendsel/braendvaerdier-og-co2-emissionsfaktorer>

³ <https://ens.dk/service/statistik-data-noegletal-og-kort/maanedlig-og-aarlig-energistatistik>

Gas delivered to Danish buildings is a combination of natural gas and bio natural gas. The emission factor for delivered gas is based on the emission factor for natural gas corrected with proportion of bio natural gas delivered. The proportion of bio natural gas is based on The Danish Energy Agency's yearly report of energy in Denmark.

The calculations are based on a property's net energy consumption. The model only includes the part of a property's energy consumptions, which ensures a standard temperature inside the property. The Danish Energy Agency decides the standard temperatures⁴. The model does not take into account what temperature individual households sets, as well as it does not include energy consumption used for appliances.

CO₂e-emissions are calculated for all properties financed in Jyske Realkredit. For approximately 95 pct. of the lending book the method above is used. The last 5 pct. are loans to building types where the number of EPCs are limited, because of no requirements of a valid EPC at the selling point. No valid EPCs are required for buildings that do not have heating.

Holiday houses

When calculating the CO₂e-emission for holiday houses the model uses average numbers produced by the Danish Energy Agency and Statens Byggeforskningsinstitut⁵. In order to estimate CO₂e-emission the model use average numbers for energy consumption used to heating and size. The majority of holiday houses have electricity as heating source.

Agriculture and Manufacturing

CO₂e-emission for property type *Agriculture, Manufacturing and Manuel industries* depends on the industry specific CO₂e/kr-factor. This factor is based on sector averages and is calculated in accordance with the method suggested by Finance Denmark in their Framework for Financed Emissions Accounting⁶. For these sectors other greenhouse gasses than CO₂ are included in the calculations.

3.1 Loan-to-value adjusted CO₂e-emission

In order to calculate the part of the assets CO₂e-emission, which Jyske Realkredit finance, we adjust the buildings full emission with the borrower's loan-to-value (LTV). This number only includes the share of the asset's total CO₂e-emission, which correspond to borrower's outstanding debt to Jyske Realkredit relative to the asset valuation.

For buildings categorized as subsidised housing the LTV is one. Most of these buildings have funding in multiple mortgage institution and have LTV's above one because of renovations, expansion etc. This complicates finding the share of the asset Jyske Realkredit finance.

⁴ <http://www.hbemo.dk/haandbogen>

⁵ <https://sparenergi.dk/forbruger/boligen/sommerhus/skal-du-koebe-sommerhus>

⁶ <https://finansdanmark.dk/media/47145/finance-denmark-co2-model.pdf>

4 UN Sustainable Development Goals

Table 4 shows Jyske Realkredit's amount of loans supporting UN's Sustainable Development Goals (SDG). Jyske Realkredit contribute to a more sustainable society by financing Energy Efficient Buildings, Renewable Energy and Social Housing. Mapping loans to environmental and social objectives is verified by Sustainalytics in our Green Finance Framework⁷.

5 EU taxonomy regulation: TSC for objective for climate change mitigation

Table 5 shows Jyske Realkredit's lending to activities aligned with the Technical Screening Criteria (TSC) for objective for climate change mitigation. This table includes Jyske Realkredits loans to wind and solar, buildings constructed after 2020 with a Primary Energy Demand (PED) below 10% of the national NZEB definition, and buildings constructed before 2021 within the top 15% most energy efficient buildings. For large non-residential buildings, only buildings constructed after 2017 will be aligned.

You will find more information on activities alignment with taxonomy in appendix 1 in Jyske Bank Green Finance Framework⁸.

6 Sustainability data on ISIN-level

The sheet "Sustainability - ISIN" contains on ISIN-level information on Ton CO_{2e} per million invested, share of assets aligned with the green definitions in Jyske Bank Green Finance Framework and the share of Social housing.

For the part of the ISINs, where the loans financed by the bonds are not one-to-one match funded, an average method approach based on the assets behind these types of loans is used. The sustainability numbers for ISIN's funding these loans will be calculated as a weighted average between the loans with and without direct match funding.

For ISINs with a volume circulating below DKKm 100 or below 50 debtors, the reporting is based on average numbers for these types of ISIN's within the same Capital Centre.

"Green" includes lending for renewable energy and green buildings.

A loan can only appears in either "Green buildings" or in "Social housing". If a building fulfils both criteria's it will appears under "Green Buildings".

The share of "Social housing" is based on a Capital Centre averages.

⁷ <https://www.jyskebank.dk/wps/wcm/connect/jfo/f5080b57-8cb8-4cf9-807c-1ebc452ec689/Jyske+Bank+Group+Green+Finance+Framework+2022+November.pdf?MOD=AJPERES&CVID=ogO7y2w>

⁸ <https://www.jyskebank.dk/wps/wcm/connect/jfo/f5080b57-8cb8-4cf9-807c-1ebc452ec689/Jyske+Bank+Group+Green+Finance+Framework+2022+November.pdf?MOD=AJPERES&CVID=ogO7y2w>

CO₂e/DKKm is calculated as the financed share of the total emission related to the buildings being financed by the bond. When calculating financed emissions, the total emissions from the building are weighted with current loan-to-value (LTV) based on market price the loan. Since the reported CO₂e/DKKm is based on the market price of the loan, investors holding a covered bond should calculate the CO₂e from investing in a bond using a price of 100 for the bond.

7 Appendix

Appendix 1

Information about energy consumption is available at the Danish Energy Agency's website – ens.dk.

In the distribution of EPCs for properties in Jyske Realkredit's portfolio without a valid EPC, the following categories are used:

Property type	Area	Construction year	Heat source
Single-family homes	København/Frederiksberg	-1890	District heating
Townhouse	Aarhus	1891-1930	Electric heating
Appartments	Large cities	1931-1950	Natural gas
Production	Smal cities/towns	1951-1960	Oil
Office		1961-1972	Biofuel
Properties for social purposes		1973-1978	
Holiday houses		1979-1998	
		1999-2006	
		2007-2010	
		2011-2014	
		2015-	

Appendix 2A – Energy factor

EPC date	District heating	Electric heating	Other Heat sources
Before 30-06-2018	0.8	2.5	1
After 30-06-2018	0.85	1.9	1

Source: https://ens.dk/sites/ens.dk/files/Energimaerke/faktaark_om_energifaktorer.pdf

Appendix 2B – Emission factor

Heat source	kgCO ₂ /kWh	Source
District heating	0.049	ENS + HBEMO
Electric heating	0.132	ENS + HBEMO
Supplied Gas	0.171886	ENS + HBEMO
Oil	0.281	HBEMO
Biofuel	0.0	HBEMO

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