DZ HYP AG
GREEN BOND CONSULTING

Portfolio Assessment & Impact Reporting

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INTRODUCTION

DZ HYP AG assigned Drees & Sommer with the sustainable finance consulting to fulfill the client’s intent of performing a low carbon building portfolio assessment and environmental impact reporting for its green bond program.

PORTFOLIO ASSESSMENT

Verifying the client’s set of eligibility criteria and delivered portfolio asset information forms the foundation of the portfolio assessment. The aim of the portfolio assessment is to enable an identification of “green” assets which comply with the set of established green bond eligibility criteria.

Assets cover the low carbon buildings classes residential, and non-residential (office, retail, logistics, hotel) in Germany and do have either an energy performance certificate (consumption or demand-based), a building energy code of EnEV2016/GEG 2020, or a green building certification.

For each asset, key information such as the certified building energy performance, the energy carriers for heating (e.g. district heating, gas, oil, heat pump) and electricity were applied to reference building area-specific final and or primary energy use.

REFERENCE BENCHMARKS (ENERGY & CO2)

The environmental impact covers the operational energy and carbon emissions savings of green eligible assets within the portfolio against a national building usage specific reference asset (notional building). All sources and applied values consist of public-accessible and building-usage representative data from official German national institutions.

To establish reference benchmarks for energy and CO2, the existing building stock is matched with the corresponding building energy legislative codes and requirements to identify period of years of construction with typical reference building energy performances.

Identifying the distribution of energy carriers for heating and electricity enables the determination of building-stock weighted national reference primary energy conversion factors and operational carbon emissions equivalents for each assessed residential and non-residential asset class.

Based on the typical reference building energy performance, the converted reference benchmarks with primary energy and carbon emissions are established to state an average typical building performance in Germany representing the national existing building stock information.

ENVIRONMENTAL IMPACT

The difference in environmental (energy & CO2) performance between the green asset of the client’s portfolio and the national reference benchmark represents the energy savings and the carbon emissions savings, highlighting the environmental impact of the portfolio impact reporting.

For assets without a data-available actual CO2-performance, the final energy savings are being transformed into carbon emissions savings based on the building-stock weighted national reference carbon emissions equivalents.

This following documentation summarizes the key results of the portfolio assessment, the impact reporting and the national reference benchmarks as of February 2022.
MILESTONES & PROCESS
Workstream – Focus Portfolio Assessment & Impact Reporting

- DZ HYP (Client) has a set of eligibility criteria in place.
- Portfolio Assessment and Impact Reporting are based on the provided eligibility criteria.
- Assets cover the low carbon buildings classes residential, and non-residential (office, retail, logistics, hotel).
- Assets do have an energy performance certificate (consumption or demand-based) or a green building certification and are located in Germany.
Maximum final site energy per m²/year:

<table>
<thead>
<tr>
<th></th>
<th>Heating</th>
<th>Electricity</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>65</td>
<td></td>
<td>65</td>
</tr>
<tr>
<td>Office</td>
<td>90</td>
<td>70</td>
<td>160</td>
</tr>
<tr>
<td>Retail</td>
<td>60</td>
<td>75</td>
<td>135</td>
</tr>
<tr>
<td>Hotels</td>
<td>95</td>
<td>60</td>
<td>155</td>
</tr>
<tr>
<td>Logistics buildings (storage)</td>
<td>30</td>
<td>35</td>
<td>65</td>
</tr>
<tr>
<td>Light industrial (production)</td>
<td>105</td>
<td>65</td>
<td>170</td>
</tr>
</tbody>
</table>

Certificates:
- DGNB: Gold and Platinum
- LEED: Gold and Platinum
- BREEAM: Very Good or better

Energy efficiency standard:
- EnEV 2016/GEG
Drees & Sommer benchmarks for assets located in Germany. Status: January 2022. Operational carbon emissions cover scope 1 and scope 2 emissions, according to national scope.

### National reference benchmarks for impact

<table>
<thead>
<tr>
<th>National reference building stock</th>
<th>Unit</th>
<th>Office</th>
<th>Logistic</th>
<th>Retail</th>
<th>Hotel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building stock weighted</td>
<td>kWh/m²a</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>reference benchmark:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>consumption</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Final energy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO2-</td>
<td>kgCO2/m²a</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emissions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National energy carrier</td>
<td>gCO2/kWh</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>distribution-weighted:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO2-equivalent intensity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Residential: reference benchmarks Energy & CO2

<table>
<thead>
<tr>
<th>Year of construction</th>
<th>SFH kWh/m²a</th>
<th>estimated EPC*</th>
<th>MFH kWh/m²a</th>
<th>estimated EPC*</th>
</tr>
</thead>
<tbody>
<tr>
<td>...-1919</td>
<td>263 H</td>
<td>206 G</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1919-1948</td>
<td>260 H</td>
<td>196 F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1949-1978</td>
<td>250 H</td>
<td>181 F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1979-1990</td>
<td>190 F</td>
<td>147 E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1991-2000</td>
<td>131 E</td>
<td>115 D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2001-2010</td>
<td>94 C</td>
<td>85 C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010-...</td>
<td>36 A</td>
<td>47 A</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Estimation based on BMWI 2020 LTRS

### Residential - Year of construction – reference benchmarks

### Residential - EPC rating

Energy performance certificate with energy efficiency classes based on calculated final energy demand for residential buildings in Germany, according to EnEV 2014 / GEG 2020:

- A+   - A   - B   - C   - D   - E   - F   - G

- 0   - 25  - 50  - 75  - 100 - 125 - 150 - 175

Drees & Sommer benchmarks for assets located in Germany. Status: January 2022. Operational carbon emissions cover scope 1 and scope 2 emissions, according to national scope.
PORTFOLIO ASSESSMENT & IMPACT REPORTING

Process – Benchmarking & References

Building portfolio of the client

- **Energy Consumption Certificate**
  - Heating
  - Electricity

- **Energy Demand Certificate**
  - Heating
  - Electricity

No energy data

Supplement Drees & Sommer Benchmarks

Basis for comparison to determine the impact
(Energie & CO₂-determination)

- National reference value
- Reference value BBSR 2015
- Requirement characteristic value + conversion

National reference value
SUSTAINABLE FINANCE
Reference Benchmarks – Energy & Greenhouse Gases (CO2)

Top 15%-Benchmark
- Final energy in kWh/m²a (or equivalent rating)
- CO₂-emissions in kgCO₂/m²a

National Benchmark – Average building stock
- Final energy in kWh/m²a (or equivalent rating)
- CO₂-emissions in kgCO₂/m²a

Detailed benchmarks per building age class/energy standard
- Final energy in kWh/m²a (or equivalent rating)
- CO₂-emissions in kgCO₂/m²a
# SUSTAINABLE FINANCE

## Summary - Impact

<table>
<thead>
<tr>
<th>Low Carbon Buildings</th>
<th>Year of Issuance</th>
<th>Type</th>
<th>Signed Amount[^a]</th>
<th>Share of Total Portfolio Financing[^b]</th>
<th>Eligibility for green bonds[^c]</th>
<th>Annual final energy savings[^d]</th>
<th>Annual CO2 emissions avoidance[^e]</th>
</tr>
</thead>
<tbody>
<tr>
<td>DZ HYP AG</td>
<td>2022</td>
<td>Low Carbon Building</td>
<td>2,001,056,306 EUR</td>
<td>100.0 [%]</td>
<td>100 [%]</td>
<td>251,029 [MWh/year]</td>
<td>75,986 [tCO2/year]</td>
</tr>
<tr>
<td>Office</td>
<td></td>
<td></td>
<td>919,873,858 EUR</td>
<td>46.0 [+]</td>
<td>100 [%]</td>
<td>49,482 [MWh/year]</td>
<td>15,259 [tCO2/year]</td>
</tr>
<tr>
<td>Residential</td>
<td></td>
<td></td>
<td>517,212,436 EUR</td>
<td>25.8 [+]</td>
<td>100 [%]</td>
<td>67,365 [MWh/year]</td>
<td>15,834 [tCO2/year]</td>
</tr>
<tr>
<td>Trading</td>
<td>2022</td>
<td>Low Carbon Building</td>
<td>298,763,887 EUR</td>
<td>14.9 [+]</td>
<td>100 [%]</td>
<td>80,740 [MWh/year]</td>
<td>27,748 [tCO2/year]</td>
</tr>
<tr>
<td>Logistics / Warehouse</td>
<td></td>
<td></td>
<td>105,973,714 EUR</td>
<td>5.3 [+]</td>
<td>100 [%]</td>
<td>43,753 [MWh/year]</td>
<td>12,849 [tCO2/year]</td>
</tr>
<tr>
<td>Hotel</td>
<td></td>
<td></td>
<td>159,232,410 EUR</td>
<td>8.0 [+]</td>
<td>100 [%]</td>
<td>9,688 [MWh/year]</td>
<td>4,296 [tCO2/year]</td>
</tr>
</tbody>
</table>

[^a]: Legally committed signed amount by the issuer for the portfolio or portfolio components eligible for green bond financing.

[^b]: Portion of the total portfolio cost that is financed by the issuer.

[^c]: Portion of the total portfolio cost that is eligible for Green Bond.

[^d]: Final energy savings calculated using the difference between the top 15% and the national building stock benchmarks.

[^e]: Greenhouse gas emissions avoidance determined by multiplying the final energy savings with the carbon emissions intensity.
GREEN BOND
Impact Reporting 2022

Green Bond Portfolio:
- Buildings: 235
- Exposure: ≈2 bn EUR
- Energy savings: 251,029 MWh/year
- Carbon emissions savings: 75,986 tCO₂/year

Final Energy Savings
- Büro: 49,482 MWh/year
- Wohnen: 67,365 MWh/year
- Handel: 80,740 MWh/year
- Logistik Lager: 43,753 MWh/year
- Hotel: 9,688 MWh/year

Carbon Emissions Savings
- Büro: 15,259 tCO₂/year
- Wohnen: 15,834 tCO₂/year
- Handel: 27,748 tCO₂/year
- Logistik Lager: 12,849 tCO₂/year
- Hotel: 4,296 tCO₂/year