°CICERO Shades of Green

Wästbygg Gruppen AB
Shades of Green assessment

Sector: Real Estate

Region: Sweden

May 5, 2021

Wästbygg Gruppen AB (Wästbygg) is a Swedish construction and development company founded in 1981 focusing on development of residential, commercial and logistical/industrial properties in the Swedish market. Through the group company Logistic Contractor AB, Wästbygg is also represented in Norway, Denmark and Finland.

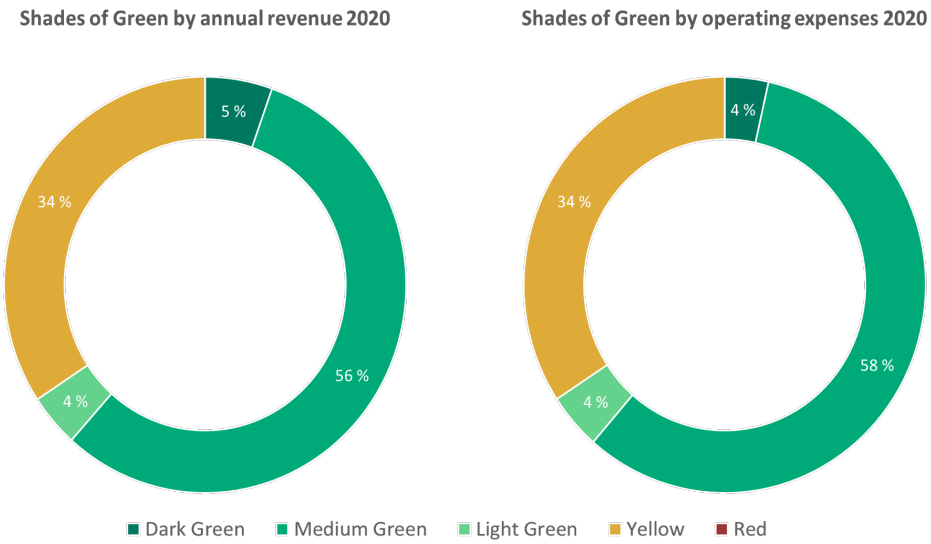

Figure 1: Wästbygg 2020 revenue and operating expenses by Shade of Green. Revenue includes development gains.

In 2020, 65% of Wästbygg's revenues and 66% of operating expenses came from assets with some Shade of Green. Both revenues and operating expenses include all Shades of Green, as well as a 34% share of Yellow, the shade allocated to properties not fulfilling the green criteria or where data is lacking because the project is in the early stages of development. Wästbygg, as a construction and project development company, has very small investments related to only one property. For this reason, we have chosen to highlight operational expenses. The sum of Cap-ex and Op-ex allocated a Shade of Green is 66 %.

The Shade of Green assigned to a property reflects its overall climate risk and environmental impact, taking into account that Wästbygg's main levers of influence are in the design of the buildings, selection of material and management of the construction process. Dark Green is allocated to projects and solutions that correspond to the long-term vision of a low carbon and climate resilient future and has been assigned to exceptionally energy efficient properties. Medium Green is allocated to projects and solutions that represent steps towards the long-term vision but are not quite there yet and is assigned to highly energy efficient properties. Miljöbyggnad Silver and Nordic Swan Ecolabel are considered sufficiently stringent to qualify for Medium Green. Light Green is assigned to energy efficient properties, with projected energy use of at least 10 % below national regulation.

The analysis of properties is based on our assessment of Wästbygg's governance and management of these key environmental concerns: Construction emissions, Energy Management, Building certifications, Materials and waste, Climate Resilience & Transportation solutions. The main share of Wästbygg's emissions (74.7%) are Scope 3 emissions, coming from heavy transport, goods and services in the supply chain and business trips. It is a strength that Wästbygg has established targets to reduce the Scope 3 emissions, among others related to emissions from business trips, waste and emissions from transport of material. The average energy use for all projects is 27% below national requirements. Furthermore, Wästbygg has decided that all self-developed residential and commercial properties shall be certified according to Nordic Swan Ecolabel, Miljöbyggnad Silver

or equivalent, which include energy thresholds. This is positive and will contribute to a continued focus on energy efficiency. However, the current energy intensity level is at least partly due to requests from the current client base. To ensure continued high energy performance, CICERO Green encourages Wästbygg to establish its own energy intensity targets. It is a pitfall that Wästbygg could not provide relevant data on energy use per property in 2019, hindering an evaluation on the development on average energy use.

Wästbygg's projects are exposed to physical climate risk. According to Wästbygg, they have not yet carried out a systematic climate risk assessment, nor reporting in line with the TCFD-recommendations. To be fully aligned with the Do No Significant Harm (DNSH) criteria on Climate change adaptation Wästbygg needs to identify physical climate risks and adaptation solutions for their activities. The company informs that they will develop an approach to climate risk assessments in 2021.

The relevant EU Taxonomy criteria is Construction of new buildings. The energy efficiency threshold for Light Green (10 % below BBR) could likely be viewed as a proxy for the technical mitigation threshold, though the use of BBR as a proxy for nearly zero-energy building (NZEB) in Sweden should be clarified by Swedish authorities. The taxonomy has further requirements for buildings larger than 5000m^2. Wästbygg is likely aligned with the part of the criteria related to airtightness and thermal integrity, but is not currently calculating the Global Warming potential, GWP for buildings. Wästbygg appears likely to meet many DNSH-criteria, however not the Sustainable use and protection of water and marine resources criteria. Furthermore, alignment to the Pollution prevention and control criteria cannot be confirmed for contracted developments, nor can full alignment with the criteria under Protection and restoration of biodiversity and ecosystems.

Wästbygg's has a comprehensive sustainability strategy including social, financial and environmental sustainability. **The company has signed the Roadmap for Fossil-Free Competitiveness for the construction sector to be fossil free within 2045**. The investor should be aware that up to 15% of the emissions reduction can come from climate compensation. Wästbygg has a Code of Conduct including suppliers and sub-contractors. The establishment of an ethical council and a whistle blower function will help the company in identifying potential and actual social risks. CICERO Green considers that Wästbygg mainly fulfil the minimum social safeguards of the EU Taxonomy, but the company could implement a screening of suppliers that identify if products and sourcing countries require extra caution and follow-up.

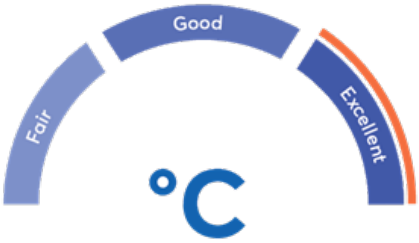

Figure 2: Wästbygg's governance score as assessed by CICERO Green (include excellent).

Table 1: Sector spesific metrics for Wästbygg

	Direct emissions (Scope 1 & 2)	Construction waste sorted (% of total)	Average better than BBR (%)	Environmentally certified (% of properties)
2020	385	87	27	49
2019	907	83	-[1]	-[2]

[1] Data could not be provided.

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1 Wästbygg's sustainability management

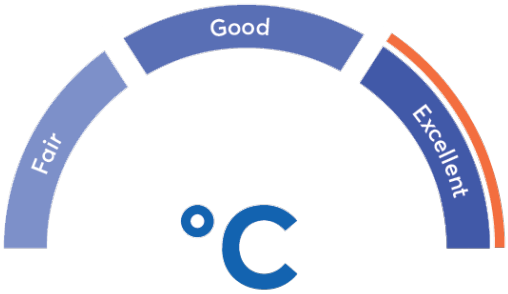
Company description

Wästbygg Gruppen AB (Wästbygg) is a construction and project development company founded in 1981 with offices in Gothenburg, Stockholm, Malmö, Borås, Jönköping, Helsingborg and Varberg. Through the group company Logistic Contractor Wästbygg is also represented in Norway, Denmark and Finland. Wästbygg has been listed on the Nasdaq Stockholm exchange since October 2020. Total revenues in 2020 amounted to 3 801 billion SEK, where 48% came from logistics and industry, 30% from residential and 22% from the commercial segment.

Wästbygg focuses on three segments: residential, commercial and logistics and industry. Within each segment, Wästbygg works with both construction (contract assignment) and project development (self-development and management of properties). At the end of 2020, 28% of the properties were developed by Wästbygg, and the company has an ambition to have a 50/50 distribution between contract assignment and own project development. Inwita Fastigheter AB (Inwita) is a newly established company in the Wästbygg Group, which will provide ownership and management of self-developed properties with a primary focus on community service properties.

Governance Assessment

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



Wästbygg's has a comprehensive sustainability strategy including social, financial and environmental sustainability which is well anchored within the management. The company has signed the Roadmap for Fossil-Free Competitiveness for the construction sector to be fossil free within 2045 and has KPIs targeting the main emissions sources.

CICERO Green is encouraged by Wästbygg's systematic approach to reduce emissions from the construction sites e.g. through the use of the Climate-Smart Construction Sites tool. Wästbygg is reporting Scope 1, 2 and 3 emissions (except materials), and is including relevant KPIs in their sustainability report. The company is aware of the physical risks affecting their operations and will start systematic climate risk assessments in 2021.

It is positive that Wästbygg has decided that all self-developed residential and commercial properties shall be certified according to Nordic Swan Ecolabel or Miljöbyggnad Silver, which include energy thresholds. The average energy use for all projects is 27% below national requirements. This is considered ambitious, but is partly due to the current client base, as Wästbygg generally is less involved in determining the energy efficiency or use of certification in contract assignments. The building certification schemes chosen by Wästbygg have energy efficiency thresholds. However, CICERO Green encourages Wästbygg to also establish energy intensity targets for all projects, including for contracted developments.

The company has established a Code of Conduct (CoC) covering both employees, sub-contractors and suppliers. The CoC operationalises the company's guidelines and policies related to ethical business conduct, human rights and environmental sustainability. According to the CoC, sub-contractors must commit to certain working conditions for their employees and submit risk analysis related to the work environment. The CoC is referring to

the use of good accounting practices. According to the company, relevant environmental and social aspects of the Code of Conduct are included in contracts with suppliers and subcontractors, CICERO Green views this positively. Wästbygg has established an ethical council that will help the company to identify potential social risks and a whistle blower function to inform about actual incidents. In addition to contractors, Wästbygg's supply chain consists of sourcing materials. The use of Byggvarubedömmningen, Basta and Sunda Hus will monitor the chemical composition of the construction materials used, but will not discover issues related to e.g. workers' rights. CICERO Green considers that Wästbygg mainly fulfil the minimum social safeguards of the EU Taxonomy, but the company could implement a screening of suppliers that will identify if products and sourcing countries require extra caution and follow-up.

Sector risk exposure

The below text box highlights some key risks for the real-estate sector. See Appendix 3 for additional background on the real estate sector more generally.

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Physical climate risks. For the Nordic building sector, the most severe physical impacts will likely be increased flooding, snow loads and urban overflow, as well as increased storms and extreme weather. Developing projects with climate resilience in mind is critical for this sector. The real estate sector is also exposed to climate risks through links to the construction industry and the utilities sector.

Transition risks. Wästbygg is exposed to transition risks from stricter climate policies e.g., mandatory efficiency upgrades. The company is also exposed to liability risks due to e.g., legal challenges if preventable damages from climate change increases. In addition, the real estate sector is exposed to changing consumer preference for more climate smart and energy efficient buildings.

Environmental risks. The construction sector is at risk of polluting the local environment during the erection of the properties, e.g. from poor waste handling. There are also risks related to impacts on local biodiversity/habitats as well as the use of un-sustainably sourced material like tropical wood.

Social risks. The social risks related to the real estate and construction sector include risk to the health and safety of the employees and sub-contractors, risks related to corruption, human rights violations in their supply chains, including risks for violations of workers' rights.

Sustainability Management

Wästbygg's business concept is to develop and build sustainable properties and logistics and industrial facilities in cooperation with clients, and the company has a comprehensive sustainability strategy including both social, financial and environmental sustainability. The company's business policy outlines the guidelines for Wästbygg's work, including the principle of continuous improvement in the areas of environmental and social issues. The company has established a Code of Conduct covering both employees, sub-contractors, and suppliers.

Governance structure

The company's group management is responsible for the sustainability work and achievement of sustainability targets. The work is coordinated by the sustainability staff function, as well as QEW (quality, environment, and work environment), HR and the finance department. Head of Sustainability and the sustainability deputy are both part of the group's management team. The sustainability work is based on Swedish regulation, and the company's policies and guidelines. Wästbygg Entreprenad AB is certified according to ISO 9001, ISO 14001 and ISO 45001,

while Logistic Contractor AB is working in line with ISO 9001 without being certified. The company is committed to the principles of UN Global Compact, ILO's core conventions and the OECD guidelines for multinational enterprises.

Risk assessment

Wästbygg started to conduct materiality assessments in 2017[2]. Health and working environment, ethics, anti-corruption and the use of material and energy have been identified as topics material to the company. The company's risk policy and risk assessments include sustainability risks related to whether energy use and material are included in the early stages of the developments. Additionally, risks related to suppliers and sub-contractors are identified to include lack of compliance with the company's Code of Conduct (CoC) and can result in e.g. materials not fulfilling the requirements given, which again can result in the construction not achieving the targeted certification.

Climate has been identified as a material issue for Wästbygg. The company is aware of the physical climate risks their portfolio is exposed to, however, the company has not yet carried out a systematic climate risk assessment.

Reporting

Wästbygg issues an annual sustainability report with key metrics including figures linked to the environment, social factors and governance. The sustainability report includes information on the company's materiality and risk assessments. The reporting will be published on the company's website and will include the below metrics for the total property portfolio:

- Type of certification and level of certification
- Average energy use per m^2 for own properties
- Estimated annual CO_2 emissions for the total project portfolio in the construction phase (tCO_2e)

The company will also report the percentage of revenue, operating costs and investments related to green buildings as defined by Wästbygg[3]. According to the company they will strive to report consistently with the definitions of sustainable activities available in the EU Taxonomy. The company has not started reporting according to the TCFD-guidelines but is planning to start identifying financial climate risks in 2021. Key sustainability metrics are not included in the company's financial reporting.

Key issues

GHG Emissions

Wästbygg has signed the Roadmap for Fossil-Free Competitiveness[4] for the construction sector to be fossil free within 2045 and a local action plan for a climate neutral construction sector in Malmø (the LFM30[5]) by 2030. Furthermore, the company has a target to become fossil free within 2030 for the areas constituting the highest

[2] Materiality assessments are a process to identify the environmental, social and governance issues that are the most important (material) for internal and external stakeholders.
3 Green buildings are defined as buildings which are planned to at least reach the environmental standard of either Miljöbyggnad Silver (or higher) or Nordic Swan Ecolabel or an equivalent level from another well recognised certification scheme, buildings which are planned to receive an energy performance at least 10% below Boverket's Building Regulations ("BBR") and buildings which are planned to receive an EPC of class A or B.
[4] Roadmaps - Fossilfritt Sverige
[5] LFM30 – Netto noll CO2-utsläpp till 2030

emissions (electricity, heat, transport and waste). Wästbygg informs that up to 15% of the emissions reduction can come from climate compensation, relevant for among others heavy transport, use of machinery and business trips.

To reduce the company's carbon footprint from the construction sites, the company has established the tool Climate-Smart Construction Site (Klimatsmart Byggarbetsplats). The tool is covering the areas representing the largest climate emissions in the construction phase and has three levels; bronze (the minimum level that shall be reached for all construction projects), silver and gold. Five constructions had the ambition to reach gold level in 2020, which only two projects achieved this within the year. Wästbygg has a target to increase the share of gold projects by 10% each year with 2020 as the base year, reaching 50% within 2025.

Wästbygg calculates emissions according to the Greenhouse Gas protocol and reports both direct and indirect emissions (Scope 1, 2 and partial 3)[6]. Fossil fuel was used in district heating, in temporary construction heating and in transportation. Emissions and reduction targets are summarised in the table below. Emissions from transport of construction material went up from 2019 to 2020, but for other targets the company is on track. The base year for reductions of CO_2-emissions is 2018.

Table 2: The table summarises Wästbygg's CO_2-emissions and main CO_2-emission reduction targets.

Emissions	Total (tons CO_2eq[7])	Scope 1	Scope 2	Scope 3
Main targets	Net zero emissions by 2030.	100% renewable fuel in temporary construction heat by 2030. 98% reduction in emissions. Reduction in energy use. 98% reduction in emissions.	100% use of renewable energy by 2030. 95% reduction of emissions from electricity. Increase the amount of fossil free district heating to 100% by 2030. 95% reduction in emissions.	Increase the share of business travels with lower CO_2-footprint. 30 % reduction in emissions by 2022. 100% renewable fuel in heavy transport by 2030. 95% reduction in emissions. 100% waste sorted by 2028. 98% reduction in emissions.
2020	1,523	261	124	1,138
2019	2,253	589	318	1,345
Change 2019-2020	-32%	-56%	-61%	-15.3%
Main sources	District heating represented 42.7% of the emissions, temporary construction heating 38.7% and electricity 18.6%.	Scope 1 emissions result from combustion of fossil fuels mainly at the construction site and represented 17.1% of total registered emissions.	Use of electricity, district heating and cooling and represented 8.2% of the emissions.	Scope 3 represent 74.7%, coming from e.g. heavy transport, and goods and services in the supply chain and business trips. Emissions from use of materials are not covered.

Energy

In 2020, energy use from own offices and construction sites was 6,588 MWh, and energy generated from Wästbygg's wind farm was 1,279 MWh. In 2020 90% of the energy was produced from renewable energy, achieved by using energy produced by a company owned wind power park (17%), and from purchasing eco-

[6] Wästbygg changed the methodology for calculation of GHG that led to some reductions of emissions.
[7] CO_2e, carbon dioxide equivalent is a measurement term for greenhouse gas accounting.

labelled electricity. Total energy use decreased by 7% from 2019 to 2020. Average energy intensity in 2020 was 65.7 kWh/m2 Atemp, 27% better than current regulation (BBR). The building certification schemes chosen by Wästbygg have energy efficiency thresholds, but the company has not established energy intensity targets. The table below summarises the average energy intensity for Wästbygg's three segments. Wästbygg could not provide information on the energy use per property for 2019.

Table 3: The table summarises average energy intensity for Wästbygg's three segments for 2020.

Segment	Average energy intensity 2020 (kWh/m^2 Atemp)	Average % better than BBR
Logistic and Industry	47.8	36.9
Residential	64.6	22.7
Commercial	69.7	28.3

Building Certifications

The company is working with several certification schemes, summarised in figure 2. Wästbygg has decided that all their self-developed residential and commercial properties shall be certified according to Nordic Swan Ecolabel, Miljöbyggnad Silver or equivalent. Within the logistics segment, the properties will be constructed according to Miljöbyggnad Silver. From January 2022, the global warming potential needs to be calculated for all new constructions which includes registering the materials used and how they were transported and installed. The majority of the Miljöbyggnad certification levels where silver (11), in addition to 4 gold and 1 bronze.

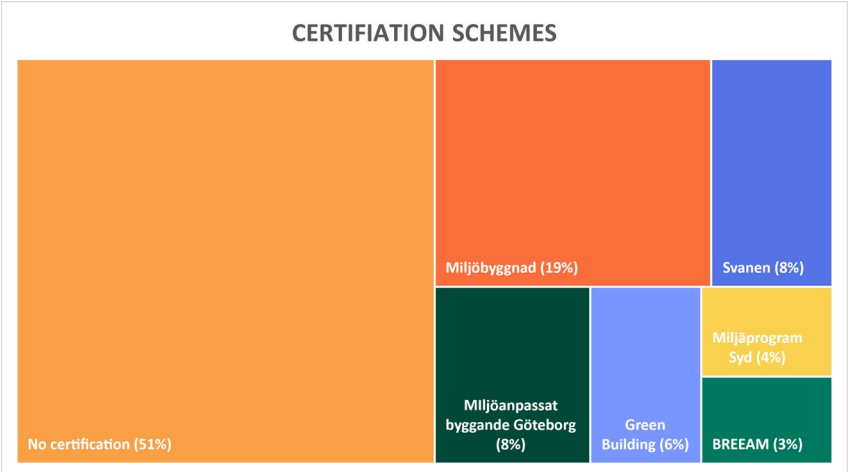

Figure 3: The figure summarises the different certification schemes used by Wästbygg and level of certification in 2020.

Material use and waste

Wästbygg has a target to achieve 100% waste sorted by 2028, and in 2020 87% of the waste was sorted. In the tool Climate-Smart Construction Sites, there is a requirement that 90% of the waste shall be sorted, encouraging waste sorting on the construction sites. The company also has a long-term target to minimise the amount of waste and to create a circular process where more recycled materials are used.

Through the tool Climate-Smart Construction Sites, Wästbygg is working to reduce material waste, and to find energy efficient solutions and environmentally friendly materials in the design stage. The company is using the systems Byggvarubedömmningen, Basta and Sunda Hus to monitor the chemical composition of the construction materials used for own property developments. According to the company, this ensures that they only use material approved by national regulation.

Wästbygg aims to start using life cycle assessments to determine the climate footprint of materials looking at the environmental impact from raw material extraction to manufacturing, transportation, use, life, and recyclability. The company is constructing their first property with a cross laminated timber frame with an expected finalisation spring 2022. Lagerkransen Brunnshög is an apartment building with 82 apartments and aims at a Miljöbyggnad Gold certification.

Climate Resilience

The company is aware of the physical climate risks their portfolio is exposed to and use municipal plans/maps to get information on e.g. flood risks. However, the company has not yet carried out a systematic climate risk assessment, nor reported in line with the TCFD-recommendations. The company informs that they are working on a more comprehensive approach to climate risk assessments, and that this is one of the company's sustainability targets for 2021.

Transportation solutions

The company does not have a policy that properties should have EV charging or be built in close proximity to public transportation but informs us that they are working towards establishing charging stations for electrical vehicles connected to all properties (residential, commercial and logistics) Wästbygg are developing. Furthermore, the company has developed an app, Boaktiva, that encourages car-sharing and other environmental behaviours.

Key social issues

The materiality assessment also identified risks related to violations of social issues, like violations of the company's internal guidelines related to workers' rights. To reduce risks of violating workers' rights at the construction sites, Wästbygg uses ISO-certified management systems including checklists. When using subcontractors, the company checks whether the contractor has collective agreements and is approved by the trade association. All subcontractors must confirm that they are fulfilling their commitments towards the employees and that only contracted companies have access to the workplaces. Audits to check compliance are carried out on a regular basis. Risks are furthermore reduced through requirements and specifications as well as evaluations of the suppliers and sub-contractors and training of staff working with the suppliers. Evaluations of suppliers do not seem to include an assessment to identify products and sourcing countries that require extra caution and follow-up. Employees and sub-contractors are expected to follow the ethical guidelines set out in Wästbygg's CoC. Wästbygg has established an ethics council with the overall task of working to ensure that Wästbygg's operations are conducted in a sound ethical manner. If an employee or a sub-contractor experience corruption, bribery or the like the company has a whistleblower function managed by the ethics council. The council can also be used for major safety deficiencies in the workplace, serious environmental crimes as well as serious forms of discrimination and harassment. The company informs that in 2020, seven notifications were received via the whistleblower function.

Table 4 CICERO Green assessment of Wästbygg's management of key environmental issues

Key issue		CICERO Green comments
GHG emissions	✓	CICERO Green is encouraged by Wästbygg's systematic approach to reduce emissions from the construction sites e.g. through the use of the Climate-Smart Construction Sites tool. Targets are established for reduction of emissions from e.g. waste, business travels, transport of construction material, rented machinery and from temporary construction heating.
Energy	✓	The average energy use for all projects is 27% below national requirements, which is considered ambitious. However, this is partly due to the current client base, as Wästbygg has less possibilities to determine the energy efficiency in contract assignments.

	✓ Wästbygg could not provide data on energy use in 2019, and CICERO Green could not compare the historical development in energy use per property. ✓ CICERO Green encourages the company to develop energy intensity targets.
Building certifications	✓ It is a strength that Wästbygg has decided that all their self-developed residential and commercial properties shall be certified according to Nordic Swan Ecolabel or Miljöbyggnad Silver. Environmental certification schemes include many important environmental aspects. However, these certifications alone do not necessarily ensure that energy and resilience aspects are taken into considerations to a sufficiently high degree. However, this pitfall is partially mitigated as the specific certification schemes chosen have energy efficiency thresholds.
Materials and waste	✓ For self-developed projects, Wästbygg uses third-party databases to ensure that hazardous materials are not used. CICERO Green encourages Wästbygg to extend this to the contracted developments.
Climate Resilience	✓ The company is aware of climate risks but is currently not conducting systematic climate risk assessments. CICERO Green acknowledges that Wästbygg appears to be committed to further developing their approach to climate resilience and encourages the company to consider incorporating the criteria for physical climate risk assessments in the EU taxonomy.
Transportation solutions	✓ CICERO Green view positively that some of the buildings in the portfolio have EV charging and that the company has developed an app that enables car-sharing, however, we encourage a more systematic approach to low carbon transportation solutions, also targeting the properties Wästbygg is building under contract.

2 Assessment of Wästbygg's revenues and investments

Shading of Wästbygg's revenue, operating expenses and investments

Wästbygg, as a construction and project development company, has small investments related to only a few properties. For this reason, we have chosen to highlight operational expenses in the graph below. The figures are aligned with Wästbygg's financial reporting; however, some small discrepancies may occur as our analysis requires allocating revenue, operating expenses, and investments to specific projects.

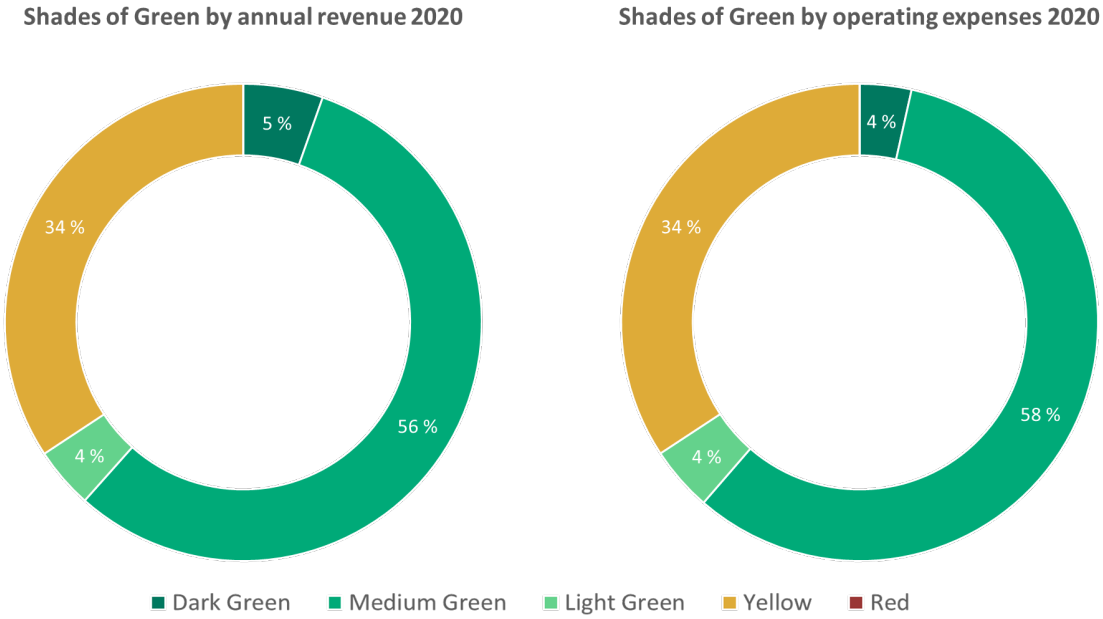

Figure 4: Wästbygg 2020 revenue and operating expenses by Shade of Green. Revenue includes development gains.

The Shade of Green assigned to a property reflects its overall climate risk and environmental impact. We have assessed and allocated a shade of green to each property in the portfolio. Wästbygg's main levers of influence are in the design of the buildings, selection of material and the management of the construction process. However, these factors are highly influenced by client specifications for contract work. Wästbygg currently sell the properties when the construction process is finalised and therefore does not have direct control over the use and demolition phases. Through the establishment of Inwita, Wästbygg aims to manage properties and will in the future also be responsible for the use-phase of these buildings.

In assigning a shade of green to Wästbygg's revenue streams and costs, we have used the design specifications of building projects e.g. planned environmental certification schemes and energy levels. Our analysis of the properties is positively influenced by our assessment of Wästbygg's Governance Score of Excellent and the company's management of some key environmental concerns, specifically Wästbygg's work to reduce the environmental impact of construction sites. Given Wästbygg's governance and management of key concerns, we have assigned a shade to each property based on the following:

Dark Green is allocated to projects and solutions that correspond to the long-term vision of a low carbon and climate resilient future. These projects should be Paris aligned or have zero emissions around mid-century. This

shade has been assigned to exceptionally energy efficient properties, Swedish EPC label A or a projected energy use of at least 50 % below national regulations (in Sweden BBR), and either a high level of certification or additional low carbon technologies including e.g. heat pumps. For example, one Dark Green property is certified with Miljöbyggnad Gold, an energy use 51 % better then BBR, in addition to installed solar panels and EV charging.

Medium Green is allocated to projects and solutions that represent steps towards the long-term vision but are not quite there yet. This shade is assigned to highly energy efficient properties, Swedish EPC label B or a projected energy use of at least 20 % below national regulation. Most Medium Green buildings also have green building certifications or additional low carbon technologies including EV charging stations, rooftop solar and green roofs. Miljöbyggnad Silver and Nordic Swan Ecolabel are considered sufficiently stringent to qualify for Medium Green, also with an energy use slightly more than 20 % under national regulation.

Light Green is allocated to transition activities. These projects and solutions could have lower emissions, but do not by themselves represent or contribute to the long-term vision. Energy efficient properties with projected energy use of at least 10 % below national regulation qualify as light green. Some Light Green properties have additional low carbon technologies like rooftop solar.

For properties not fulfilling any of the above criteria, a shade of yellow is allocated. The yellow category is also used for assets where data is lacking because the project is in the early stages of development. These building may qualify for a shade of green when they are at a more advanced stage. No buildings were given the red shading. Wästbygg has a small share of income, expenses and investments that could not be allocated to specific projects, these were allocated the Medium Green shading, based on our assessment of the project portfolio, governance and management of key issues.

The use of the property is also relevant for our assessment, properties linked to fossil fuel or high emitting sectors pose a higher climate risk. Wästbygg has no projects where the client is directly related to the fossil fuel sector, however, the logistics segment includes properties for high emitting sectors including transportation.

Investors should note that our shading is based on projected data, there is always a risk that the actual certification level or energy use of the project is not met. It is also common for actual energy use to deviate somewhat from design values given the varying energy management of end users of buildings.

With these provisions, we find that 5% of the revenue came from assets considered Dark Green, 56% from assets shaded Medium Green, 4% from assets shaded Light Green, and the remaining 34% from assetss shaded Yellow Green. Thus, 65% of the revenue came from assets with some Shade of Green. Operating expenses are distributed similarly, 4 % are shaded Dark Green, 58% Medium Green and 4 % Light Green. In total, 66 % of operating expenses are from assets with some Shade of Green. Wästbygg's investments are related to only one property, KV Häggen Halmstad, which is shaded Medium Green, along with other investments. Thus, 100 % of investments are shaded Medium Green. The sum of investments and operating expenses allocated a Shade of Green is 66 %.

Wästbygg has a current order stock of 3 136 M SEK. Given the currently available data, it is likely that as much as 70 % of the value of the order stock could be assigned a Shade of Green when reviewing project specific data. This is in line with the current portfolio of projects. The share of value associated with potentially Dark Green projects is, however, over 20 %, a substantial increase from current revenue and operating costs.

EU Taxonomy

The mitigation criteria in the EU taxonomy includes specific thresholds and do no significant harm (DNSH) criteria for real estate sector activities relevant for the company[8]. The relevant activity for this Company Assessment is Construction of new buildings. Comments on alignment are given below, and detailed thresholds, NACE-codes and likely alignment with DNSH criteria are given in Appendix 2. Input on our methodology is given in part 3.

For construction of new buildings, the taxonomy requires that Primary Energy Demand is at least 10 % lower than the threshold set for the nearly zero-energy building (NZEB) requirements in national regulation[9]. The energy efficiency threshold for Light Green (10 % below BBR) could likely be viewed as a proxy for the above technical threshold, though the use of BBR as a proxy for NZEB in Sweden should be clarified by Swedish authorities.

The taxonomy further requires that buildings larger than 5000 m^2 must undergo testing for airtightness and thermal integrity, and that the life cycle Global Warming Potential (GWP) must be calculated. Wästbygg has informed us that they test buildings over 5000m^2 for airtightness, meeting the first criteria for this share of the portfolio. Wästbygg is not currently calculating GWP for buildings over 5000m^2. In Sweden, climate calculations establishing the GWP for the construction phase are a regulatory requirement from January 1, 2022. Wästbygg confirms that they will follow these requirements also for also for buildings in Denmark, Norway and Finland.

Key DNSH gaps:

- To be fully aligned with the DNSH-criteria Climate change adaptation Wästbygg needs to identify physical climate risks and adaptation solutions for their activities by performing a climate risk and vulnerability assessment, and by using climate scenarios. The company informs that they will start climate risk assessments in 2021, and that this is one of the company's sustainability targets.
- Wästbygg does not currently have any policies specifying water usage in non-residential units and does not seem to meet the DNSH-requirement on Sustainable use and protection of water and marine resources.
- For the DNSH-criteria related to pollution prevention and control, the company is likely aligned for self-developed properties, but alignment cannot be confirmed for contracted developments.
- For the DNSH-criteria Protection and restoration of biodiversity and ecosystems Wästbygg cannot confirm that none of their properties are constructed on arable land or land matching the national definition of forest. However, the company informs that this will be considered for future developments.

CICERO Green considers that Wästbygg mainly fulfils the minimum social safeguards of the EU Taxonomy, but the company could implement a screening of suppliers that identify if products and sourcing countries require extra caution and follow-up. The company has established a strong Code of Conduct covering both employees, sub-contractors and suppliers. The CoC is laying down the company's guidelines and policies related to ethical business conduct, human rights and environmental sustainability. According to the CoC, sub-contractors must commit to orderly working conditions for their employees and submit risk analysis related to the work environment. The CoC refers to the use of good accounting practices. Wästbygg has established an ethical council and a whistle blower function that will help the company in discovering potential social risks.

[8] taxonomy-regulation-delegated-act-2021-2800-annex-1_en.pdf (europa.eu)
[9] The Nordic countries has not yet established the NZEB, and the existing national building codes are being used.

3 Terms and methodology

The aim of this analysis is to be a practical tool for investors, lenders and public authorities for understanding climate risk. CICERO Green encourages the client to make this assessment publicly available. If any part of the assessment is quoted, the full report must be made available. Our assessment, including on governance, is relevant for the reporting year covered by the analysis. This assessment is based on a review of documentation of the client's policies and processes, as well as information provided to us by the client during meetings, teleconferences and email correspondence. In our review we have relied on the correctness and completeness of the information made available to us by the company.

Shading corporate revenue and investments

Our view is that the green transformation must be financially sustainable to be lasting at the corporate level. We have therefore shaded the company's current revenue generating activities, as well as investments and operating expenses.

The approach is an adaptation of the CICERO Shades of Green methodology for the green bond market. The Shade of Green allocated to a green bond framework reflects how aligned the likely implementation of the framework is to a low carbon and climate resilient future, and we have rated investments and revenue streams in this assessment similarly. We allocate a shade of green to the revenue stream and investments according to how these streams reflect alignment of the underlying activities to a low carbon and climate resilient future and taking into account governance issues.

SHADES OF GREEN	EXAMPLES
Dark green is allocated to projects and solutions that correspond to the long-term vision of a low carbon and climate resilient future.	Solar energy projects
Medium green is allocated to projects and solutions that represent steps towards the long-term vision but are not quite there yet.	Green buildings with a high level of certification and energy efficiency
Light green is allocated to transition activities. These projects and solutions could have lower emissions, but do not by themselves represent or contribute to the long-term vision.	Substantially more efficient manufacturing of fossil fuel intensive materials
Yellow is allocated to projects and activities that do not contribute to transition. These activities could have some emissions and be exposed to climate risks. This category also includes activities with too little information to assess.	Efficiency in fossil fuel infrastructure
Red is allocated to projects and activities that have no role to play in a low-carbon and climate resilient future. These are heaviest emitting assets, with the most potential for lock-in of investments and risk of stranded assets.	New infrastructure for coal

In addition to shading from dark green to red, CICERO Shades of Green also includes a governance score to show the robustness of the environmental governance structure. When assessing the governance of Wästbygg, CICERO Green looks at five elements: 1) strategy, policies and governance structure; 2) lifecycle considerations including supply chain policies and environmental considerations towards customers; 3) the integration of climate considerations into their business and the handling of resilience issues; 4) the awareness of social risks and the management of these; and 5) reporting. Based on these aspects, an overall grading is given on governance strength

falling into one of three classes: 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.

In March 2020, a technical expert group (TEG) proposed an EU taxonomy for sustainable finance that included a number of principles including "do-no-significant-harm (DNSH)-criteria" and safety thresholds for various types of activities[10]. In April 2021, EU published its delegated act to outline proposed criteria for climate mitigation and adaptation, which it was tasked to develop after the EU Taxonomy Regulation entered into law in July 2020. The mitigation criteria in the EU taxonomy includes specific thresholds for real estate sector activities relevant for the company[11].

Do-No-Significant-Harm criteria include measures such as ensuring resistance and resilience to extreme weather events, preventing excessive water consumption from inefficient water appliances, ensuring recycling and reuse of construction and demolition waste and limiting pollution and chemical contamination of the local environment, as well as restriction on the type of land used for construction (no arable or forested land).

CICERO Green has assessed potential alignment against the mitigation thresholds and the DNSH criteria in the delegated acts published in April 2021.

In order to qualify as a sustainable activity under the EU regulation 2020/852 certain minimum safeguards must be complied with. The safeguards entail alignment with the OECD Guidelines for Multinational Enterprises and UN Guiding Principles on Business and Human Rights, including the International Labour Organisation's ('ILO') declaration on Fundamental Rights and Principles at Work, the eight ILO core conventions and the International Bill of Human Rights. CICERO Green has completed a light touch assessment of the above social safeguards with a focus on human rights and labor rights risks[12]. We take the sectoral, regional and judicial context into account and focus on the risks likely to be the most material social risk.

Our assessment of alignment against the EU Taxonomy is based on a desk review of the listed source documents against the Taxonomy Delegate Act and following our own shading methodology.

[10] Taxonomy: Final report of the Technical Expert Group on Sustainable Finance, March 2020. TEG final report on the EU taxonomy (europa.eu)
[11] taxonomy-regulation-delegated-act-2021-2800-annex-1_en.pdf (europa.eu)
[12] CICERO Green is in the process of further developing its assessment method to ensure that it encompasses the object and purpose of the minimum safeguards.

Appendix 1: Referenced documents list

Document Number	Document Name	Description
1	Wästbygg's Green Finance Framework, dated May 2021.	Green Finance Framework.
2	Wästbygg's Års og hallbarhetsredovisning	2020 Sustainability report
3	Wästbygg Uppförandekod	Code of conduct for employees, suppliers and sub-contractors.
4	Wästbygg Hållbarhetsmål 2020-2030 on the issuer's webpage.	Sustainability targets 2020 – 2030
5	Wästbygg year-end report 2020	Financial statements for 2020.
6	Wästbygg Verksamhetspolicy, October 2020	A policy note outlining the normative basis for Wästbygg's activities.
7	Wästbygg Excel sheet with information on revenues and costs for 2020.	Giving information on revenues and costs for 2020.
8	Information on "Klimatsmart Byggarbetsplass".	Climate-Smart Construction Sites.
9	Summary of plans to be fossil free by 2030.	Summarise targets on how to be fossil free by 2030.
10	Likabehandlingsplan, dated 01-10-2021.	Plan for equal treatment of personnel in Wästbygg.

Appendix 2: EU Taxonomy criteria and alignment, Wästbygg

Complete details of the EU taxonomy criteria are given in taxonomy-regulation-delegated-act-2021-2800-annex-1_en.pdf (europa.eu)

Construction of new buildings

Framework activity	**Green buildings**		
Taxonomy activity	**Construction of new buildings (NACE Code F41.1, F41.2)**		
	EU Technical mitigation criteria	**Comments on alignment**	**Alignment**
Mitigation criteria	• Substantial contribution to climate change mitigation **Constructions of new building, eligible if:** • The Primary Energy Demand is at least 10 % lower than the threshold set for the nearly zero-energy building (NZEB) requirements in national regulation. The energy performance is certified using an Energy Performance Certificate (EPC). • For buildings larger than 5000 m^2, upon completion, the building resulting from the construction undergoes testing for air-tightness and thermal integrity, and any deviation in the levels of performance set at the design stage or defects in the building envelope are disclosed to investors and clients. s an alternative; where robust and traceable quality control processes are in place during the construction process this is acceptable as an alternative to thermal integrity testing. • For buildings larger than 5000 m^2, the life cycle Global Warming Potential (GWP) of the building resulting from the construction has been calculated for each stage in the life cycle and is disclosed to investors and clients on demand.	The use of BBR as a proxy for NZEB for the Swedish market should be clarified by the Swedish authorities. To support Wästbygg's equity framework, CICERO Green has assessed alignment of revenue, operating costs and investments. For this analysis the Primary Energy Demand criteria is evaluated on a property by property basis. • According to the company, all buildings within the logistics and industry segment and an estimated 30-50% of the properties in the residential and commercial segments are larger than 5000m^2. • Testing of airtightness is a requirement for BREEAM, Nordic Swan Ecolabel and Miljöbyggnad certifications. • Wästbygg confirms that they are conducting theoretical calculations on airtightness, which are controlled after completion. Testing of thermal integrity is conducted for problem solving if the airtightness does not confirm the calculations. The company informs that the thermal integrity test needs a temperature lower than 10ºC and is therefore not a reliable method all year around. • In Sweden, climate calculations establishing the GWP for the construction phase are a regulatory	Likely aligned to criteria related to airtightness and thermal integrity.

		requirement from 1. January 2022[13]. The requirement is only valid for properties seeking a construction permit after January 1, 2022. According to Wästbygg this means that only a few of their initiated projects, but all new projects, will be covered by the law. • According to Wästbygg, building components that are to be climate-calculated include 80-90% of a buildings' climate impact (climate screen, load-bearing structural parts and non-load-bearing interior walls). • Wästbygg confirms that they will conduct calculations of GWP resulting from the construction for buildings larger than 5000m^2 in line with Swedish regulations from 2022. The company will also conduct this analysis for buildings in Denmark, Norway and Finland.	Not aligned to GWP-requirement for current projects.
	EU Taxonomy DNSH-criteria	**Comments on alignment**	**Alignment**
Climate change adaptation	The physical climate risks that are material to the activity have been identified (chronic and acute, related to temperature, wind, water, and soil) by performing a robust climate risk and vulnerability assessment with the following steps[14]: **(a)** screening of the activity to identify which physical climate risks from the list in Section II of this Appendix may affect the performance of the economic activity during its expected lifetime; **(b)** where the activity is assessed to be exposed to physical climate risks, a climate risk and vulnerability assessment to assess the materiality of the physical climate risks on the economic activity; **(c)** an assessment of adaptation solutions that can reduce the identified physical climate risk. The climate projections and assessment of impacts are based on best practice and available guidance and take into account the state-of-the-art science for vulnerability and risk analysis and related methodologies in line with the most recent	• Wästbygg is aware of the physical climate risks their portfolio is exposed to and use municipal plans/maps to get information on e.g. flood risks. • According to Wästbygg, projects within the logistics/industrial segment analysis are conducted to address storm water by simulating two- and five years rainfalls if the municipality does not have other requirements. • According to Wästbygg, they have not yet carried out a systematic climate risk assessment, nor are reporting in line with the TCFD-recommendations. However, the company informs that they will start climate risk assessments in 2021, and that this is one of the company's sustainability targets.	Likely partially aligned.

[13] https://www.boverket.se/en/start/building-in-sweden/contractor/tendering-process/climate-declaration/

[14] The Taxonomy is referring to Appendix A in the Taxonomy Annex 1.

	Intergovernmental Panel on Climate Change reports, scientific peer-reviewed publications, and open source or paying models. For existing activities and new activities using existing physical assets, the economic operator implements physical and non-physical solutions ('adaptation solutions'), over a period of time of up to five years, that reduce the most important identified physical climate risks that are material to that activity. An adaptation plan for the implementation of those solutions is drawn up accordingly. For new activities and existing activities using newly-built physical assets, the economic operator integrates the adaptation solutions that reduce the most important identified physical climate risks that are material to that activity at the time of design and construction and has implemented them before the start of operations. 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 cultural heritage, of assets and of other economic activities; are consistent with local, sectoral, regional or national adaptation strategies and plans; and consider the use of nature-based solutions or rely on blue or green infrastructure to the extent possible.		
Sustainable use and protection of water and marine resources	• Where installed, except for installations in residential building units, the specified water use for the following water appliances are attested by product datasheets, a building certification or an existing product label[15] in the Union, in accordance with the technical specifications: (a) wash hand basin taps and kitchen taps have a maximum water flow of 6 litres/min; (b) showers have a maximum water flow of 8 litres/min; (c) WCs, including suites, bowls and flushing cisterns, have a full flush volume of a maximum of 6 litres and a maximum average flush volume of 3,5 litres; (d) urinals use a maximum of 2 litres/bowl/hour. Flushing urinals have a maximum full flush volume of 1 litre.	• Wästbygg's self-developed properties are certified according to Nordic Swan Ecolabel or Miljöbyggnad Silver, where there are requirements related to monitoring of hot water consumption and low water use taps and toilets, but not related to maximum liters of water use in the appliances. • It is currently unclear to what extent the criteria in green building standards overlap with the taxonomy requirements. Most green building standards are made up of a mix of mandatory and voluntary criteria (points), and a specific certification level does	Likely not aligned.

[15] The Taxonomy is referring to Appendix E in the Taxonomy Annex 1.

	To avoid impact from the construction site, the activity complies with the criteria in the EU Water Framework Directive[16]. Where an Environmental Impact Assessment is carried out in accordance with Directive 2011/92/EU[17] and includes an assessment of the impact on water in accordance with the Water Framework Directive, no additional assessment of impact on water is required, provided the risks identified have been addressed.	therefore not guarantee a level of water efficiency performance across all certified buildings. • According to the issuer, some clients have requirements related to water use. However, for buildings not constructed by Wästbygg and where clients do not have requirements related to water use and monitoring, the company confirms that no requirements other than Swedish law will be effectuated. • According to Wästbygg, general planning is the responsibility of the municipality and EIAs will be carried out on municipality level where required by national law. This includes a plan for impacts on water sources.	
Transition to a circular economy (circular economy)	• At least 70 % (by weight) of the non-hazardous construction and demolition waste (excluding naturally occurring material[18]) generated on the construction site is prepared for re-use, recycling and other material recovery, including backfilling operations using waste to substitute other materials. • Operators limit waste generation in processes related to construction and demolition. • Building designs and construction techniques support circularity and in particular demonstrate how they are designed to be more resource efficient, adaptable, flexible and dismantlable to enable reuse and recycling.	• In the tool Climate-Smart Construction Sites, there is a requirement that 90% of the waste shall be sorted and reported, and in 2020 87% of the waste was sorted. • According to Wästbygg they are focusing on reducing material waste, energy-efficient solutions, environmentally friendly materials, and on creating a healthy indoor environment in the design-stage of the development. • The company also has a long-term target to minimise the amount of waste and to create a circular process where more recycled materials are used.	Likely aligned.
Pollution prevention and control	• Building components and materials used in the construction comply with the criteria set out in Appendix C to the Taxonomy Annex 1.	• According to Wästbygg they use Byggvaru-bedömmningen, Basta and Sunda Hus to monitor the chemical composition of the construction material used. According to the company, this ensures that they only use material approved by national regulation, as well as material with low climate	Likely aligned for self-developed properties.

[16] Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy

[17] DIRECTIVE 2011/92/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the assessment of the effects of certain public and private projects on the environment.

[18] Refer to the European List of Waste established by Commission Decision 2000/532/EC

	• For building components and materials used in the construction that may come into contact with occupiers formaldehyde emissions are within relevant limits[19]. • Where the new construction is located on a potentially contaminated site (brownfield site), the site has been subject to an investigation for potential contaminants[20]. • Measures are taken to reduce noise, dust and pollutant emissions during construction or maintenance works.	footprint for own property developments. However, this cannot be ensured for contracted developments. • According to the company, self-developed constructions are certified according to the Nordic Swan Ecolabel or Miljöbyggnad Silver, where there are requirements to phase out hazardous components and endocrine disruptors in line with Swedish regulation, as well as maximum limits for formaldehyde in line with the EU-taxonomy requirement. • For constructions developed for external customers where no additional requirements are made related to hazardous substances, Swedish law is adhered to. The company cannot confirm that this is sufficient to be aligned with the requirements in the EU-taxonomy. • The company informs that the soil is always examined for polluting substances in all new production, and if the soil is contaminated, it is the client's responsibility to decontaminate the soil. • According to the issuer, as a measure to reduce the climate and environmental impacts at the construction sites, they have developed the tool Climate-Smart Construction Sites. Through the tool the issuer has established a minimum level for all construction projects with targets related to the areas with the highest emissions, like the use of electricity, temporary construction heat, fuels used in heavy machinery, material transport and waste. Measures are taken in all projects to minimise noise, dust and pollution.	Alignment for contracted developments cannot be confirmed.
Protection and restoration of biodiversity and ecosystems	• An Environmental Impact Assessment (EIA) or screening should be completed in accordance with national provisions[21]. • Where an EIA has been carried out, the required mitigation and compensation measures for protecting the environment are implemented.	• According to Wästbygg, general planning is the responsibility of the municipality and EIAs will be carried out on municipality level. Land that is covered by area protection according to the Planning and Building Act is Natura 2000, nature reserves and animal and plant protection areas, and construction is	Likely aligned with EIA-requirement.

[19] Emit less than 0,06 mg of formaldehyde per m³ of material or component and less than 0,001 mg of categories 1A and 1B carcinogenic volatile organic compounds per m³ of material or component, upon testing in accordance with CEN/TS 16516522 and ISO 16000-3 523 or other comparable standardised test conditions and determination method.

[20] Standard ISO 18400 can be used.

[21] The Taxonomy is referring to Appendix D in the Taxonomy Annex 1.

	• For sites/operations located in or near biodiversity-sensitive areas (including the Natura 2000 network of protected areas, UNESCO World Heritage sites and Key Biodiversity Areas, as well as other protected areas), an appropriate assessment where applicable, has been conducted and based on its conclusions the necessary mitigation measures are implemented. • The new construction should not be built on one of the following: a) arable land and crop land; b) greenfield land of recognised high biodiversity value and land that serves as habitat of endangered species (flora and fauna) listed on the European Red List or the IUCN Red List. c) land matching the definition of forest as set out in national law used in the national greenhouse gas inventory, or where not available, is in accordance with the FAO definition of forest[22].	not permitted. This is stated in the general and detailed plan for each municipality. • Before construction on new land is permitted, Wästbygg needs to prepare a detailed plan and receive a building permit. Wästbygg builds according to regulations in the detailed plan in all projects. • Wästbygg cannot confirm that none of their properties are constructed on arable land or land matching the national definition of forest. However, the company informs that this will be considered for future developments.	Alignment towards construction on arable or forested land for existing properties cannot be confirmed.

[22] Land spanning more than 0,5 hectares with trees higher than five meters and a canopy cover of more than 10 %, or trees able to reach those thresholds in situ. It does not include land that is predominantly under agricultural or urban land use, FAO Global Resources Assessment 2020. Terms and definitions: http://www.fao.org/3/I8661EN/i8661en.pdf).

°CICERO Shades of Green

Appendix 3: Background

According to the International Energy Agency (IEA), the buildings and buildings construction sectors combined are responsible for 36% of global final energy consumption in 2018 and nearly 40% of total direct and indirect CO_2 emissions. Appliances (excluding heating, cooking and cooling appliances) are responsible for around 17% of final electricity use by buildings.

Emissions from heating of buildings in Sweden have decreased from 9.3 million tonnes CO_2e to 0.8 million tonnes over the period from 1990 to 2019. In 2019, the sector accounted for less than 2% of Sweden's total emissions[23]. Emissions from production of materials, construction and demolition of the buildings constitute additional emission[24]. These (scope 3) emissions become increasingly important as buildings are built more energy efficient and the electricity and heat supply is converted to 'greener' sources, reducing scope 1 and 2 emissions. Around half of all life cycle greenhouse gas emissions in new buildings comes from heat and energy use[25], while approximately 40% comes from use of materials. Emissions associated with construction and demolition accounts for 2-5%.

The construction and real estate sector have a major impact on our common environment. According to the National Board of Housing, Building and Planning's environmental indicators, it accounts for 32% of Sweden's energy use, 31% of waste and 19% of domestic greenhouse gas emissions. Calculations from Sveriges Byggindustrier indicate that the climate impact of new production of a house is as great as the operation of the house for 50 years.

As members of the EU, Sweden, Denmark and Finland are subject to the EU's climate targets of reducing collective EU greenhouse gas emissions 40% by 2030 compared to 1990 levels, increasing the share of renewable energy to 32% and improving energy efficiency by at least 32.5%.[26] The European Green Deal aims for carbon neutrality in 2050.[27] Sweden has developed a National Energy and Climate Plan (NECP) in which it outlines the targets and strategies in all sectors.[28] These strategies include measures such as increasing renewable energy capacity, improving energy efficiency, facilitating the large scale implementation of clean transportation alternatives, and implementing carbon sinks through reforestation and the LULUCF sector. Non-ETS emissions, of which public buildings and households are a part, must decrease by 63% by 2030. In February 2020, Norway released updated targets for 2030 to cut GHG emissions by 50-55% from 1990 levels[29].

The building sector accounts for a large share of primary energy consumption in most countries, and the IEA reports that the efficiency of building envelopes needs to improve by 30% by 2025 to keep pace with increased building size and energy demand – in addition to improvements in lighting and appliances and increased renewable

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[23] Naturvårdsverket: https://www.naturvardsverket.se/Sa-mar-miljon/Statistik-A-O/Vaxthusgaser-utslapp-fran-uppvarmning-av-bostader-och-lokaler/

[24] https://www.miljostatus.no/tema/klima/norske-klimagassutslipp/klimagassutslipp-bygg/

[25] Asplan Viak AS (2018): Utredning av livsløpsbaserte miljøkrav i TEK, https://dibk.no/globalassets/02.-om-oss/rapporter-og-publikasjoner/utredning_av_livslopsbaserte_miljokrav_i_tek_asplan_viak_2018.pdf

[26] https://ec.europa.eu/clima/policies/strategies/2030_en

[27] https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

[28] https://ec.europa.eu/energy/topics/energy-strategy/national-energy-climate-plans_en

[29] https://www.regjeringen.no/no/aktuelt/norge-forsterker-klimamalet-for-2030-til-minst-50-prosent-og-opp-mot-55-prosent/id2689679/

heat sources.[30] The energy efficiency of buildings is dependent on multiple factors including increasing affluence and expectations of larger living areas, growth in population and unpredictability of weather, and greater appliance ownership and use. Additionally, approximately half of life-cycle emissions from buildings stem from materials/construction. The other half stems from energy use, which becomes less important over time with the increasing adoption of off-grid solutions such as geothermal and solar. All of these factors should therefore be considered in the project selection process. In addition, voluntary environmental certifications such as LEED and BREEAM or equivalents measure or estimate the environmental footprint of buildings and raise awareness of environmental issues. These points-based certifications, however, fall short of guaranteeing a low-climate impact building, as they may not ensure compliance with all relevant factors e.g., energy efficiency, access to public transport, climate resilience, sustainable building materials. Many of these factors are covered under the World Green Building Council's recommendations for best practices for developing green buildings.[31] CICERO Shades of Green assesses all of these factors when evaluating the climate impact of buildings.

The Exponential Roadmap[32] lays out a trajectory for reducing emissions by 50% by 2030 and requires that emissions reduction strategies within the buildings sector be rapidly scaled up. The roadmap advocates for standardised strategies that are globally scalable within areas such as new procurement practices for construction and renovation that require dramatically improved energy and carbon emission standards, developing new low-carbon business models for sharing space and smart buildings to achieve economies of scale, and allocating green bond funding for sustainable retrofitting and construction.

A large number of LCA studies show that wood-frame building results in lower primary energy and GHG emission compared to non-wood alternatives including concrete and steel. Less energy, in particular fossil fuels, is needed to manufacture wood-based building materials compared with alternative non-wood materials. Wood-based materials use primarily biomass residues for processing energy. Wooden materials also store carbon during their lifetime, temporarily sequestering carbon from the atmosphere. Large amounts of biomass residues are produced during the manufacture and end-of-life of wood products, and these can be used to replace fossil fuels. Hence, wood-based buildings are appropriate for long-term strategies for reducing fossil fuel use and GHG emissions when combined with sustainable forestry[33]. Quantitative estimates are imprecise, but some studies indicate energy savings in the order of one third in the construction phase of wood buildings compared to buildings using mainly other materials.

[30] https://www.iea.org/reports/building-envelopes
[31] https://www.worldgbc.org/how-can-we-make-our-buildings-green
[32] https://exponentialroadmap.org/wp-content/uploads/2020/03/ExponentialRoadmap_1.5.1_216x279_08_AW_Download_Singles_Small.pdf
[33] R&D Fund for public real estate, The Swedish Association of Local Authorities and Regions (2016): Climate impacts of wood vs. non-wood buildings. https://webbutik.skl.se/bilder/artiklar/epub/7585-377-2.epub

Appendix 4: About CICERO Shades of Green

CICERO Green is a subsidiary of the climate research institute CICERO. CICERO is Norway's foremost institute for interdisciplinary climate research. We deliver new insight that helps solve the climate challenge and strengthen international cooperation. CICERO has garnered attention for its work on the effects of manmade emissions on the climate and has played an active role in the UN's IPCC since 1995. CICERO staff provide quality control and methodological development for CICERO Green.

CICERO Green provides second opinions on institutions' frameworks and guidance for assessing and selecting eligible projects for green, sustainability and sustainability-linked bond investments. CICERO Green also provides Company Assessments, providing an assessment and shading of a company's revenues and investments as well as assessing the governance structure to indicate the greenness of a company. CICERO Green is internationally recognized as a leading provider of independent reviews of green bonds, since the market's inception in 2008. CICERO 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 Green operates independently from the financial sector and other stakeholders to preserve the unbiased nature and high quality of second opinions.

We work with both international and domestic issuers, drawing on the global expertise of the Expert Network on Second Opinions (ENSO). Led by CICERO Green, ENSO contributes expertise to the second opinions, and is comprised of a network of trusted, independent research institutions and reputable experts on climate change and other environmental issues, including the Basque Center for Climate Change (BC3), the Stockholm Environment Institute, the Institute of Energy, Environment and Economy at Tsinghua University and the International Institute for Sustainable Development (IISD).