°CICERO Shades of Green

Entra ASA
Shades of Green Assessment

Sector: Real Estate

Region: Norway

May 14, 2020

Executive summary

Entra ASA is a large listed Norwegian real estate company, headquartered in Oslo. Entra is focusing on high quality, flexible office buildings with central locations close to public transportation hubs. Thus, Entra's strategic areas of concentration are Oslo and the surrounding districts, Bergen, Stavanger and Trondheim.

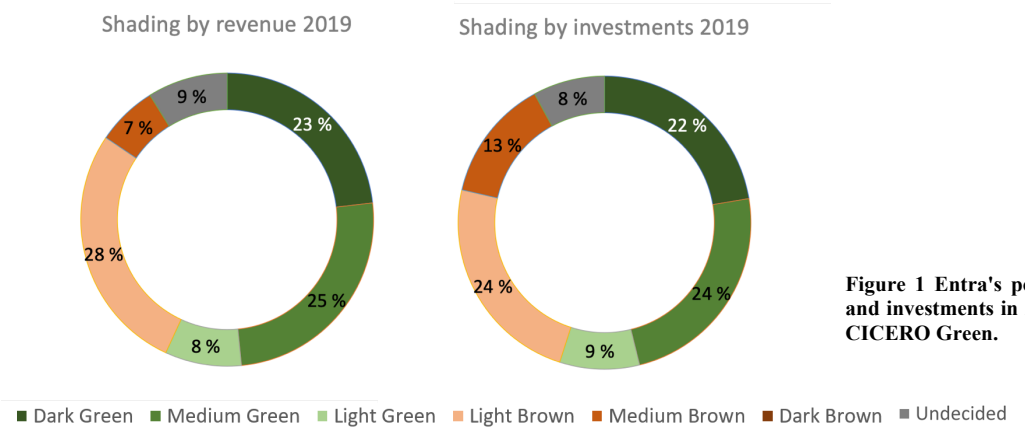

Figure 1 Entra's portfolio by revenue and investments in 2019 as assessed by CICERO Green.

More than half of the revenue from rents of the current portfolio is considered to come from properties with a green shading. Going forward the majority of the investments in new or redeveloped buildings are targeted to be some shade of green (Figure 1). All planned new buildings are dark green. However, Entra also plans unspecified investments in existing buildings. Thus, these investments are shaded according to the overall shading of the buildings in question. These are the brown and grey shares of the investment shadings. If these unspecified investments were part of the rehabilitation of older building to higher environmental standards, it would represent a sound contribution to a green transformation of the real estate sector.

The shading of revenues and investments is based on a broad overall assessment. As a guiding principle we have assigned dark green to power houses and buildings categorized as BREEAM Outstanding and buildings with energy label A, medium green to those labelled BREEAM Excellent or with energy label B or C constructed before 2009, light green to those with a BREEAM Very good classification, light brown to buildings with energy label D, and medium brown to those below this level.

As a real estate company, Entra is naturally exposed to transitional risks and physical risks associated with climate change and more frequent extreme weather. 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. Heating buildings accounts for 2.1% of total Norwegian on-land emissions if all electricity use is counted as emission free. The materials, construction and demolition phase of buildings' lifecycle constitutes additional emissions[1]. These emissions become increasingly important as buildings becomes more energy efficient and the electricity and heat supply becomes 'greener'.

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

According to Asplan Viak[2], a little over half of all life-cycle greenhouse gas emissions in a TEK17 building comes from heat and energy use, while approximately 40% comes from use of materials. Emissions from construction and demolition account for 2-5%. For the Norwegian building sector, the most severe physical impacts will likely be increased flooding and urban overflow, as well as increased storms and extreme weather. Developing projects with climate resilience in mind is critical for this sector.

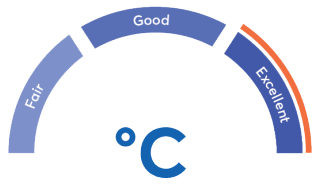

Figure 2 Entra's governance score as assessed by CICERO Green

Entra has high transparency on environmental governance structures and good reporting procedures and standards. To provide insight for stakeholders, Entra report according to the Global Real Estate Sustainability Benchmark (GRESB). Entra achieved Green Star status on the reports for the years 2017 and 2018, and received a total score of 84 (against a global average of 72) for the 2018 numbers, reported in 2019. Entra's annual report is comprehensive and reviewed by an external auditor. It includes for instance the largest tenants by rental value (containing some fossil fuel related companies and institutions), and location, cost, area, certification level and occupancy ratio of ongoing projects. However, Entra does not use an internal carbon price in their planning, neither do they fully implement the TCFD recommendations when it comes to the use of scenarios and stress testing of their portfolio. Nevertheless, CICERO Green assess Entra's governance structure and practice to be **Excellent,** cf. Figure 2.

Entra is well aware of the physical risks to their portfolio. It is more uncertain whether risks to their supply chain are included in planning projects. The location of Entra's properties is not seen as particularly exposed to flooding. Entra is by its proactive approach well situated to meet coming transition risks. Regulatory changes resulting from climate related risks are highly relevant and are monitored closely by Entra.

Entra has ambitious strategies and policies when it comes to its climate impact. The longer-term aim for Entra is to be climate neutral. Until then, Entra will climate compensate for the CO_2 emissions by buying guarantees of origin for all electricity used in the buildings. For Entra's total portfolio the target is to achieve energy consumption below 135 kWh/m^2 in 2020 (the result was 136 kWh/m^2 in 2019). The sector average was 179 kWh/m^2 in 2017 according to Enova (Entra 2019, Annual Report). The annual energy efficiency improvement was 5% for Entra over the period 2011-2019. The industry average was 3% over the period 2011-2017 (last available data 2017)[3]. For new and totally renovated buildings, Entra targets an energy consumption of less than 40 kWh/m^2. Entra wants to reduce CO_2 emissions (scope 1 and 2) by 70% from 2015 to 2030. Among the measures to achieve this target is the increased use of self-generated renewable electricity. Regarding certifications, Entra's target is to achieve a rating of BREEAM-NOR Excellent or better for all new, and BREEAM-NOR Very Good or better for redevelopment projects. Around 40% of Entra's investments for 2019 are in properties with shades of brown (Figure 1). This is a pitfall when it comes to a green transformation, unless substantial parts of these investments are to raise the environmental quality of the buildings in question.

Specific sector metrics	Specific energy use[4] (kWh/m^2)	Green Certification (per cent area of portfolio)[5]	Emission intensity[6] (kg CO_2e/m^2)	Per cent area heated directly by fossil fuels
2019	136	42	4.5	~0%
2018	145	27	5.7	~0%
2017	179	24	5.9	~0%

[2] 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
[3] Entra Annual Report 2019, p. 43, "Energy consumption in the portfolio 2011-2019". Underlying data provided by Entra.
[4] Per heated used area and temperature corrected.
[5] BREEAM NOR and BREEAM In use Very Good and better.
[6] Scope 1 and 2 only. Grid factor is based on Nordic electricity mix.

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Contents

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1 Terms and methodology

The aim of this analysis is to be a practical tool for investors, lenders and public authorities for understanding climate risk. This first iteration provides several key elements of this analysis but should be viewed as a starting point for discussion and further development, rather than a conclusive analysis.

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 activates. Shaded investments add a forward-looking element and provide insight into future revenue streams and corporate strategy in relation to the green transformation.

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, we have rated investments and revenue streams similarly. To encompass the full scale of potential projects, we have added three "brown" categories. While some projects with fossil fuel elements might be accepted, we are careful to avoid projects that increase the capacity or longevity of fossil fuel infrastructure.

SHADES OF GREEN AND BROWN	EXAMPLES
Dark green is allocated to projects and solutions that correspond to the long-term vision of a low carbon and climate resilient future.	Wind energy projects with a governance structure that integrates environmental concerns.
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 projects and solutions that are environmentally friendly but do not by themselves represent or contribute to the long-term vision.	Hybrid personal vehicles
Light brown for efficiency improvements in projects that are associated with fossil fuel use but do not necessarily promote locking-in of emissions. Changes in the way assets are used may position them in the light green category.	Efficient fossil fuel cargo vessels
Medium brown projects can be lower emissions, but still represent risk of locking-in fossil fuel infrastructure and are exposed to risk of stranded assets.	New infrastructure for natural gas
Dark brown for the heaviest emitting projects, with the most potential for lock-in of emissions and risk of stranded assets.	New infrastructure for coal

We have only shaded revenue or investments to the extent we were able to find sufficient information. The amount of "unshaded" revenue and investments is noted in the scorecard. Our data sources are annual and sustainability reports, as well as CDP responses. We aim to develop a methodology based on publicly available sources, but the companies used as "test cases" will be given the opportunity to comment on the results.

2 Brief description of Entra's activities, strategies and related policies

Company description

Entra ASA is a large, listed Norwegian real estate company, headquartered in Oslo. Entra ASA is a large, listed Norwegian real estate company, headquartered in Oslo. The property portfolio can be split into categories as follows (share by value in parenthesis): Property management (92 %), project development (7%) and land bank (1 %). Entra is focusing on high quality, flexible office buildings with central locations close to public transportation hubs. Thus, based on market value, Entra's main strategic areas of concentration are Oslo and the surrounding districts (74%), Bergen (10 %), Stavanger (5 %) and Trondheim (11 %). As of Q4 2019, Entra owned and managed approximately 1.3 million m^2 in 89 buildings with a market value of 49 billion NOK. The public sector represented approximately 60% of the customer portfolio. Among both the public and private sector tenants, some are related to fossil fuel activities (i.e. public petroleum related bureaucracy and gasoline station management).

Climate risk exposure

According to the International Energy Agency (IEA), the buildings and buildings construction sectors combined are responsible for 36% of global final energy consumption (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. Heating buildings accounts for 2.1% of Norwegian on-land emissions, the materials, construction and demolition phase of the building lifecycle constitute additional emissions[7]. These (scope 3) emissions become increasingly important as buildings becomes more energy efficient and the electricity and heat supply becomes 'greener', reducing scope 1 and 2 emissions. According to a report from Asplan Viak[8], a little over half of all life cycle greenhouse gas emissions in a TEK17 building comes from heat and energy use, while approximately 40% comes from use of materials. Emissions associated with construction and demolition account for 2-5%.

Figure 3 Life cycle and sources of emissions

The building sector has developed a roadmap for sustainable growth towards 2050, which includes several recommendations for the sector. Some of the key recommendations include certifying the organization, removing all fossil fuel heating, requesting fossil free construction sites and

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

[8] 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

commissioning an energy budget for the estimated actual and energy consumption[9].

Physical climate change such as extreme events and flooding are affecting all sectors and regions already. Due to historical emissions, we are de facto already locked in for approximately 1.5°C global warming.[10] Given today's policy ambition, the world is most likely heading toward 3°C warming in 2100 which implies accelerated physical climate impacts, including more extreme storms, accelerated sea level rise, droughts and flooding.[11] For near-term physical risk, investors and companies must consider the probabilities of physical events and resiliency measures to plan for and protect against the worst impacts. For the Norwegian building sector, the most severe physical impacts will likely be increased flooding and urban overflow, as well as increased storms and extreme weather. Developing projects with climate resilience in mind is critical for this sector.

As a real estate company, Entra is naturally exposed to physical risks associated with climate change, such as more extreme precipitation events and associated flooding, mudslide and avalanche risks, stronger winds, heat stress and also sea level rise for properties close to the ocean. A lack of ambitious policies at a global level to rapidly reduce greenhouse gas emissions will increase the frequency of such events and increase the probability of physical damage to buildings and associated infrastructure. The real estate sector is also exposed to climate risks through links to the construction industry and the utilities.

In addition to the physical risks, Entra is also exposed to transition risks from stricter climate policies, associated with e.g.: 1) Policy risks when heating systems based on fossil fuel are banned or strong mandatory efficiency upgrades are introduced. 2) Liability risks due to e.g. stricter standards in the future for building owners or legal challenges if preventable damages from climate change increase. 3) Technology risks in combination with changing consumer preferences, preferring climate smart buildings, requiring building companies to invest in upgrades.

Key statistics & background figures

Energy use

Landlord and tenant-obtained absolute energy use[12] was 134 GWh in 2019, down from 138 GWh in 2018. Two third of this was in the form of electricity and one third from district heating and cooling. Use of fossil fuel was neglectable (6 MWh in 2019).

Specific energy use for heat and electricity in Entra's property portfolio was 136 kWh/m^2 in 2019, down from 145 kWh/m^2 in 2018 and 179 kWh/m^2 in 2017. The average specific energy use for the real estate industry in Norway was about 185 kWh/m^2 in 2017[13].

Emissions

CO_2 emissions (Scope 1+2) were 4.5 kt in 2019 (with a grid factor equal to Nordic energy mix as reported by IEA), down by 17% since 2018. Scope 2 emissions from electricity use and district heating/cooling in 2019 are estimated to represent approximately 4.4 ktCO_2. Greenhouse gas emission intensity from energy use in buildings fell to 4.5 kg CO_2e/m^2 in 2019, a reduction of 20% compared with 2018, mainly because of reduced energy use

[9] https://byggalliansen.no/wp-content/uploads/2019/02/roadmap2050.pdf
[10] https://www.cicero.oslo.no/en/posts/news/scientists-demystify-climate-scenarios-for-investors
[11] https://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full_wcover.pdf
[12] All numbers from Entra's EPRA reporting, published in the 2018 and 2019 annual reports.
[13] Based on data from Enova as published in Entra's 2019 Annual report. Note that these number are different from EPRA reporting as they are temperature corrected.

and changes in the grid factor. Scope 3 emissions (from air travel, car use in Norway, waste and water), amounted to 0.9ktCO_2 in 2019, slightly down from 2018. As is the case for almost all companies, Entra does not regularly measure or estimate emissions associated with material use in construction or refurbishment. However, this is done is so called Futurebuilt projects (www.futurebuilt.no) of which there are four so far in the Entra portfolio.,

Certificates

Entra is using the BREEAM NOR and BREEAM In use systems for certification of new and existing buildings. The table below shows the distribution of properties on the different classes as percentage of total portfolio area as of end 2019.

Table 1 Classification of properties in the current (2019) portfolio according to share of total portfolio area.

	BREEAM NOR	BREEAM IN USE
OUTSTANDING	4%	6%
EXCELLENT	5%	16%
VERY GOOD	19%	3%

Environmental Strategies and Policies

Entra's sustainability work is based on the ten UN Global Compact principles. Entra has also signed up to "The roadmap towards 2050 for the property sector" compiled by the Green Building Council and Norsk Eiendom. The roadmap's vision is to contribute to a climate neutral Norway in 2050. Entra also has as aims to retain its GRESB "Green Star", EPRA Sustainability Gold and CICERO Dark Green shading in the future.

Entra's environment strategy includes strategies and targets for 1) own organisation 2) the property portfolio and property management 3) the development projects and 4) counterparties, hereunder suppliers and customers. The strategy has the following overall objectives:

- The longer-term aim for Entra is to be climate neutral
- Entra shall be an environmental leader within property management
- Entra's projects shall be characterised by high quality, flexibility and a low environmental burden
- Entra shall influence and set requirements for its counterparties

In order to compensate for its own emissions and make Entra's business close to climate neutral, Entra buys guarantees of origin ("green power") corresponding to the electricity consumption of the buildings where Entra is responsible for providing electricity. Entra will also gradually produce more renewable energy through new development and refurbishment projects.

More concretely, Entra aims to:

1. For Entra's total portfolio the energy efficiency target is to achieve energy consumption below 135 kWh/m^2 in 2020 (the result was 136 kWh/m^2 in 2019). For new and totally renovated buildings, Entra target an energy consumption of less than 40 kWh/m^2.
2. Entra's target is to achieve a rating of BREEAM-NOR Excellent or better for all new, and BREEAM-NOR Very Good or better for redevelopment projects.

3. Entra's emissions of greenhouse gases can be reduced by 70% from 2015 level by 2030, mainly by reduced emissions from electricity. The estimates assume that Entra continues to reduce annual energy consumption in its buildings by 2% a year.

Governance

Here is described briefly the overarching structures and procedures for decision making connected to climate risk analysis, strategy and policy formulation and implementation. This reflects some of the key elements of the TCFD recommendations.

The Board of Directors reviews and sets out the sustainability focus areas and overall risk analysis at least on an annual basis, and various sustainability topics are on the Board agenda regularly, e.g., revision of the environmental strategy, corporate governance, ethical guidelines, and risk analysis. The individual business units present business reviews to the Board of Directors at least on an annual basis. These reviews also include sustainability targets and KPIs. Targets are then aggregated into company KPIs and followed up on a regular basis.

The CFO of Entra is responsible for handling climate risk. Entra has set up a Sustainability Committee that has a separate responsibility to evaluate, follow-up and implement new initiatives. This Committee reports to corporate management on a regular basis.

The CEO is responsible for following up the implementation of the sustainability strategy in Entra. Implementation and evaluation of risks and opportunities is mostly handled by the individual business units and is reported to the CEO/CFO through quarterly business reviews and in corporate management meetings.

Entra considers different scenarios for future development of the climate and climate related regulations and societal trends. These are not the kind of established climate or energy system scenarios which are used in academia and the IPCC. Entra's scenarios consist of a set of self-defined risk factors with varying probability in the different scenarios. Based on this mapping, Entra has assessed what the financial consequences would be for the company under the different scenarios. Entra has further contemplated what sort of actions the company could take and whether the company's strategy would have to be adjusted under the different scenarios. According to Entra, the internal scenarios are based on a general assumption that global warming will increase. This scenario thinking and risk mapping is presented to the company leadership and has supported the decision to map and assess the resiliency against more extreme weather of all roofs and facades in the portfolio. Entra's use of scenarios does not follow the TCFD recommendations in detail and complexity. However, Entra's scenario analysis does follow the underlying logic of the TCFD recommendations on strategy of exploring the bounds of risk, assessing financial consequences and feeding this information into strategy formulation.

Reporting

Entra has started a process to adapt the company's reporting in accordance with the TCFD recommendations. Entra's annual report is comprehensive and reviewed by an external auditor. It includes for instance the largest tenants by rental value (containing some fossil fuel related companies and institutions), and location, cost, area, certification level and occupancy ratio of ongoing projects. Entra's annual sustainability report (included in the annual report) is also very comprehensive and contains among other things EPRA[14] Sustainability Performance Measures. This reporting, which is at a total portfolio level and not for single properties, covers energy use, greenhouse gas emissions (scope 1, 2 and 3), water use, waste and certification levels, in addition to some social

[14] EPRA: European Public Real Estate Association, https://www.epra.com/

and governance issues. Entra provides impact reporting in connection with its green bonds on an annual basis. Entra is also reporting to GRESB. In 2018 Entra, reporting on 2017 numbers, achieved the CDP score of B and GRESB Green Star status with a total score of 81 (peer average 73). In 2019, Entra scored 84 for reporting on 2018 numbers (against a global average of 72). The GRESB Real Estate Assessment includes an assessment of management, performance indicators, such as energy consumption, GHG emissions and water consumption. In addition, the entity's efforts to address ESG issues during the design, construction, and renovation of buildings is also assessed.

3 Assessment of Entra's green activities and policies

The total portfolio of Entra consisted of 89 properties with 1.3 million m^2 and a market value of some 49 billion NOK in 2019. Our shading of this portfolio by revenue is shown in the upper half of figure 4. As a guiding principle we have assigned dark green to rents from power houses and buildings categorized as BREEAM Outstanding and buildings with energy label A, medium green to rent from those labelled BREEAM Excellent or with energy label B or C constructed before 2009, light green to rent from those with a BREEAM Very good classification, light brown to rent from buildings with energy label D, and medium brown to those below this level[15]. More than half of the rent from properties are assessed as some shade of green, while 23% are considered to be dark green. 28% and 7% are classified as light and medium brown, respectively, mainly due to low energy efficiency, while 9% of the area was impossible to assess due to lack of data.

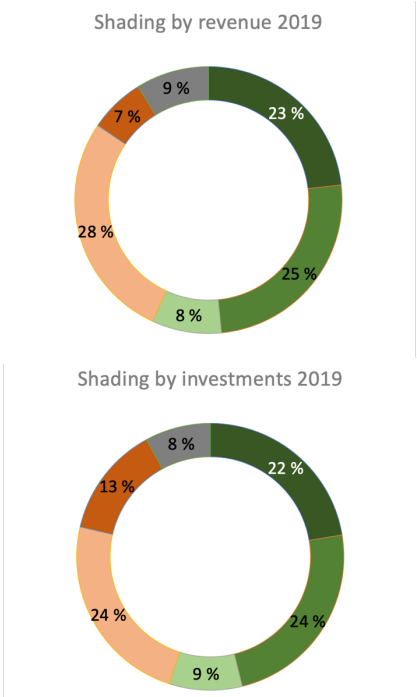

Figure 4 Rental revenue from Entra's portfolio in 2019 as assessed per building by CICERO Green (upper) and Entra's investments as assessed per building by CICERO Green (lower).

Turning to investments, their shades of green (and brown) are assigned on the basis of the environmental quality of the buildings to be invested in and are shown in the lower half of figure 4. We note that the distribution among the different shades follows the shading by revenue quite closely. Again, more than half is assigned a shade of green, with 22% of the investments shaded as dark green. One should note that even if almost 40% of investments are in brown buildings, it may be the case that (part of) the investments are in 'green projects' such as LED lighting, better isolation, better windows, etc. However, without further information we have chosen to assign the investments on the basis of the current status of the buildings themselves. As noted previously, all new constructions are planned as dark green buildings.

For Entra's total portfolio the target is to achieve energy consumption below 135 kWh/m^2 in 2020 (the result was 136 kWh/m^2 in 2019). The sector average was 185 kWh/m^2 in 2017 (latest available data) according to Enova's 2019 Annual report.

Based on the above, we see a quite green portfolio existing already today, and no apparent signs of this portfolio becoming less green. Given Entra's strong environmental goals and governance structure, we would expect a further greening of the property portfolio going forward.

[15] Note that a BREEAM certification level can get a darker shading than indicated here if additional energy requirements are fulfilled.

Governance Assessment

When assessing the governance of Entra, CICERO Green looks at the overarching structures and procedures for decision making connected to climate risk analysis in Entra, strategy and policy formulation and implementation including policies towards sub-contractors and use of LCA, handling of resilience issues and quality of reporting.

Entra has a strong and systematic focus on climate and other environmental risks as sustainability is fundamental to Entra's strategy and has been so for more than a decade. The Board of Directors reviews and sets out the ESG focus areas and overall risk analysis at least on an annual basis, and various ESG topics are on the Board agenda regularly, e.g., revision of the environment strategy, corporate governance and ethical guidelines. In 2019 there has been particular focus on evaluating and increasing the disclosure of climate related risks and opportunities. The individual business units present business reviews to the Board of Directors at least on an annual basis. These reviews also include ESG targets and KPIs. Targets are then aggregated into company KPIs and are followed up on a regular basis.

An important part of Entra's environment strategy is to work actively to influence and set requirements for its suppliers and customers. Specifically, this means that Entra prefers partners that also have a clear environmental profile and will put the environment on the agenda in meetings with their counterparties. Entra sets environmental requirements on its suppliers and partners through conditions on purchasing and social responsibility, sets requirements for fossil-free construction sites and imposes a total prohibition on the use of materials hazardous to health and the environment. In order to enter into an agreement with Entra, all suppliers must accept and follow Entra's "Socially Responsible Purchasing guidelines for suppliers". Entra has started to implement some elements of TCFD reporting but has not yet fully implemented the recommendations.

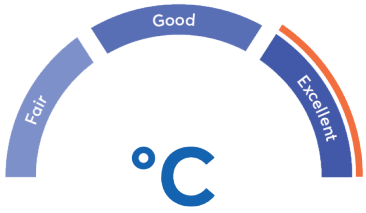

Figure 5 Entra's governance score as assessed by CICERO Green

In conclusion, when assessing the governance of Entra, CICERO Green finds that Entra systematically is close to the highest score on all elements and is therefore given an overall governance score of **Excellent.**

Strengths

Through its strategic framework and other policies, Entra is committed to contribute to a green transition towards a low carbon society in the longer run. Entra has clear and ambitious targets when it comes to reducing energy consumption and CO_2 emissions. Entra has a goal to reduce its current CO_2 footprint by at least 70 per cent from 2015 to 2030. This will be achieved through, among other things, replacing energy bought with green energy self-produced, phasing out environmentally harmful cooling media, reducing the quantity of waste, and focusing on green transport. Historically, the annual energy efficiency improvement was 5% for Entra over the period 2011-2019 compared to the industry average of 3% over the period 2011-2017.

Entra has the further target to achieve a rating of BREEAM-NOR Excellent or better for all new projects and BREEAM-NOR Very Good or better for redevelopment projects. This requires, among other things, analysis of life-cycle costs, low energy consumption and good internal climate and innovative measures. Upon completion of buildings currently under construction and ongoing certification processes, Entra will have 19 buildings with BREEAM-NOR built/redeveloped and 16 buildings BREEAM In-Use certified.

The longer-term aim for Entra is to be climate neutral. In order to compensate for its own emissions, Entra buys guarantees of origin ("green power") corresponding to the electricity consumption of the buildings where Entra is responsible for providing electricity.

Entra has further proved to be an environmental leader in the building sector in Norway and has been responsible for some dark green and very innovative building projects. Based on existing technology, expertise and experience, Entra contributes to reducing energy consumption through measures in existing buildings, through refurbishment and new buildings. Entra complies with national and international environmental requirements and takes active responsibility for reducing negative environmental impacts beyond such requirements. Entra also takes responsibility outside its own value chain by contributing to the sector and to the customers' development.

Entra has an active approach to assessing, monitoring, and following up on climate related risk, and climate risk is, together with other risks, a topic at the Board of Directors meetings at least two times per year. The location of Entra's properties is not seen as particularly exposed to flooding and is generally built to a high standard able to withstand extreme weather. Damage to property from e.g. heavy rain is an integral part of risk management on individual asset level. In 2019 the conclusion was (from the annual report): "While the gross risk related to climate has increased, Entra has invested significantly in process improvements and technologies to reduce this risk." This assessment of the climate risks is an integral part of a more general risk assessment. Hence, there is a close connection between climate risk measurements and company decision processes and risk management.

Entra's scenario analysis is under development but seems to be broadly in line with the TCFD recommendations on strategy in its underlying structure, if not in its detailed execution. Different future outcomes and their consequences for the company are considered. It is a strength that Entra feeds this risk mapping back into its operations. One example for this is the mapping of roofs and facades and their resilience to more extreme weather.

Entra is by its proactive approach also well situated to meet transition risks. Regulatory changes imposed resulting from climate related risks are highly relevant and are monitored closely by Entra.

Weaknesses

No significant weaknesses are perceived. However, we note that Entra has no internal carbon pricing.

Pitfalls

Entra has clear environmental and sustainability ambitions for their portfolio and has formulated plans and policies to realize their ambitions, including through minimum requirements for BREEAM certification of new buildings and major rehabilitation as well as BREEAM In-Use certification of existing portfolio. Green building certifications include many important environmental aspects. However, these certifications alone do not necessarily ensure improved energy performance or that resilience aspects are taken into considerations. We note that BREEAM-NOR Very Good for redevelopment projects is not fully aligned with a 2-degree target. According to Entra, re-development projects generally attain higher BREEAM In-Use certifications, which would contribute to further align projects with respective targets. In a low carbon 2050 perspective the energy performance of buildings is expected to be improved, with passive and plus house technologies becoming mainstream and the energy performance of existing buildings greatly improved through refurbishments. Entra is not quite there yet but is taking valuable steps towards this long-term vision.

It is unclear whether the climate risk confronting sub-contractors and utilities are explicitly taken into account during project planning. It is also unclear to us whether Entra optimises (from a climate perspective) the choice between new construction versus refurbishments. Rehabilitation of older buildings can represent an important and sound contribution to a green transformation of the real estate sector. Such investments could for instance be for higher energy efficiency (better isolation, LED lighting, etc).

Around 40% of Entra's investments are in properties with shades of brown. Without more detailed knowledge about what these investments entail, we have shaded the investments brown as well. This represents a potential pitfall when it comes to a green transformation, unless substantial parts of these investments are to raise the environmental quality significantly of the buildings in question. A raise in environmental quality will eventually show up in the shading of Entra's revenues.

Finally, we note that 100 percent of purchased renewable energy could be achieved without any direct investments in renewable energy. There is thus no guarantee that purchases of renewable energy certificates result in more investments in renewable energy.

EU Taxonomy

The proposed EU taxonomy for sustainable finance[16] includes thresholds for the real estate sector, briefly summarized as follows:

1. Ownership or acquisition of building built before 2021: Energy performance in the top 15% of similar stock.
2. Newbuild from 2021: Should have an energy use compatible with Near-Zero-Energy-Building (NZEB) less 20%.
3. Renovations should deliver 30% energy savings.
4. Large non-residential buildings should have dedicated energy management system.

It is currently unclear how this will apply to Norway, but it is reasonable to expect that buildings with energy use 20 percent below regulation would be aligned with the taxonomy. The taxonomy also highlights the importance of lifecycle emissions including a focus on building material such as wood.

[16] Taxonomy: Final report of the Technical Expert Group on Sustainable Finance, March 2020. https://ec.europa.eu/knowledge4policy/publication/sustainable-finance-teg-final-report-eu-taxonomy_en

Appendix 1: Source List

Document Number	Document Name	Description
1	entra-annual-report-2019-final	Annual report 2019
2	Web site: https://entra.no	
3	Entra - Green Bonds Framework - Update April 2018 v5	Entra's green bond framework from 2018
4	Second Opinion Entra 22May2018	CICERO second opinion on Entra's green bond framework
5	CDP 2018 reporting from Entra	
6	Climate risk	A preliminary report on climate risk developed by Entra
7	Klimarisiko 121019	A power point presentation on climate risk and opportunities from November 2019
8	Samfunnsansvarlige innkjøp	Socially Responsible Purchasing guidelines for suppliers, see https://entra.no/storage/uploads/article-documents/8_samfunnsansvarlige-innkjop.pdf
9	Entra portfolio 13_12_19	An excel sheet with key characteristics of Entra's portfolio

Appendix 2: Background

In a low carbon 2050 perspective, the energy performance of buildings is expected to be improved, with passive house technology becoming mainstream and the energy performance of existing buildings greatly improved through refurbishments. According to the IEA[17], the buildings and buildings construction sectors combined are responsible for 36% of global final energy consumption and nearly 40% of total direct and indirect CO_2 emissions. 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 heat sources.[18] Energy efficiency improvements in buildings are thus important building blocks towards reaching the 2°C goal. Also, local transport solutions and easy access to renewable energy are important elements. Emissions from buildings are approximately half coming from materials/construction and half from energy use. Over time the energy use becomes less important (with off grid solution such as geothermal and solar increasing).

According to IPCC, more emphasis on refurbishment instead of new constructions combined with more stringent standards for older buildings and their retrofit is important.

Choice of building materials is becoming more important for climate footprint than heating/cooling and power. Further electrification of the vehicle fleet will reduce Scope 3 emissions.

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, temporary 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[19]. Quantitative estimates are imprecise, but some studies indicate energy savings of the order of one third in the construction phase of wood buildings compared to buildings using mainly other materials.

- ✓ Although voluntary environmental certifications such as LEED and BREEAM or equivalents can measure or estimate the environmental footprint of buildings and raise awareness of environmental issues, they fall short of guaranteeing an environmentally friendly building. They do not guarantee a reduction in GHG emissions nor necessarily include considerations of resiliency.
- ✓ In addition to certifications we consider
  a) Energy efficiency targets that exceed regulations.
  b) Low carbon transportation solutions.
  c) Construction phase concerns.
  d) Resiliency. Flooding risk, in combination with extreme weather and sea level rise, has been observed in almost all regions in the world.[20] Flood risk for properties, is of particular concerns in

[17] https://www.iea.org/topics/energyefficiency/buildings/
[18] http://www.iea.org/tcep
[19] R&D Fund for public real estate, The Swedish Association of Local Authorities and Regions (2016): Climate impacts of wood vs. non-wood buildings.
[20] https://www.cicero.oslo.no/no/publications/internal/2871

vulnerable geographic regions, i.e. Europe, coastal regions of North America, and Central and South America.

Finally, the building sector traditionally has incentive problems due to the different interests of constructors, owners and tenants of buildings:

- Constructors do not necessarily focus on long-term efficiency, but more on short term cost of construction.
- Owners do not necessarily upgrade the building as the running costs are carried by the tenants.
- Tenants often have less flexibility to upgrade efficiency as this requires investments from owners.

Appendix 3: 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 bond investments. 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).