



Cadeler Company assessment

 Sector: Shipping & Offshore wind
 Region: Northern Europe

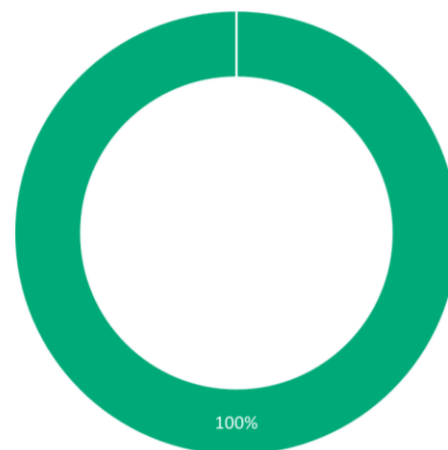
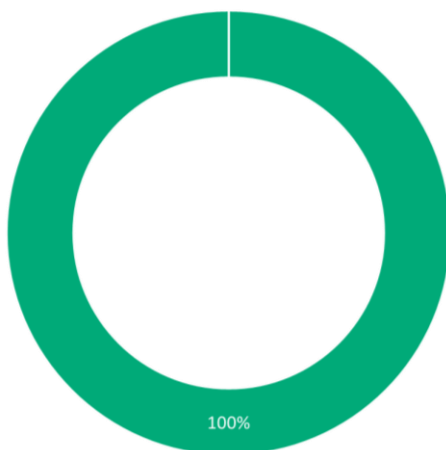
October 28, 2020

Executive summary

Cadeler A/S is headquartered in Copenhagen, Denmark and is an offshore wind turbine transportation and installation contractor. Cadeler operates two of the world's largest windfarm installation vessels, Pacific Orca and Pacific Osprey. To date, Cadeler's vessels have worked on more than thirty offshore wind projects, installing almost three hundred turbines and more than four hundred turbine foundations. Having installed more than 3GW of wind capacity, Cadeler is targeting to install no less than additional 3.5GW of offshore wind capacity by 2025. A total of 6.5GW is more than, e.g., the total current wind power capacity in Denmark.

Shades of Green by annual revenue 2019

Shades of Green by investments in 2019



■ Dark Green ■ Medium Green ■ Light Green ■ Light Brown ■ Medium Brown ■ Dark Brown

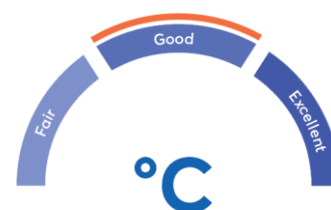
100% of Cadeler's revenue and investments in 2019 were shaded Medium Green. While the offshore wind farms itself can be Dark Green, Cadeler's revenue results from operating two conventional wind turbine installation vessels that provide capacity to handle the next generation of wind turbines are considered Medium Green due to the vessels use of fossil fuel in its operations. Similarly, in 2019, all of Cadeler's investments were in upgrades, overhauls and improvements of wind turbine installation vessels. These investments are rated Medium Green, similarly due to the risk of lock-in of emissions in vessels that will burn fossil fuels for more than two decades. Investments in "future-proofed" battery hybrid wind turbine installation vessels could be Medium or even Dark Green depending on how they contribute to technology development in order to deliver significant emission reductions.



As a shipping company servicing the offshore wind industry, Cadeler is exposed to several climate risks. The shipping sector represents 2.2% of global emissions and while vessel efficiency has improved since the financial crisis, mainly through slow steaming, total emissions have been increasing and, according to IMO, emissions could grow between 50 and 250% by 2050. International shipping is not covered by the Paris Agreement, but regulated through the International Maritime Organization (IMO). There are currently no available solutions to power Cadeler’s type of vessels with alternative fuels. Cadeler is in particular exposed to substantial transition risks from stricter climate policies associated with, e.g., emerging carbon pricing, tighter emission regulation, increased environmental performance expectations and lock-in to fuels that become uncompetitive during ship’s lifetime. Therefore, the company is actively monitoring market developments, investing in R&D on alternate fuels as well as developing “future proofed” battery hybrid wind installation vessel. In addition, the company is currently assessing up to 27 different Energy Efficiency and Carbon Reduction measures

Swire Pacific Offshore is a wholly owned subsidiary of Swire Pacific Limited, a listed company in Hong Kong However, at the time of writing, Cadeler is in the process of being spun-off and listed on the Oslo Stock Exchange. In future it will be an independent company, focusing exclusively on offshore renewables. The company is investing in crane systems that are ready to handle the next generation of 10, 11, and 12MW turbines and has existing contract pipeline in the offshore wind installation business until 2025. This company assessment is therefore not an assessment of the former parent company that is active in the oil and gas service industry.

Cadeler has in place a Sustainable Development Policy and reports in accordance with the GRI and will publish an externally reviewed Sustainable Development report in FY 2021. However, emission reduction from renewable energy production from the offshore wind farms, are not part of the GRI reporting. While the company aims to align with the IMO Initial Strategy and the Danish NDCs and has a 3% annual emission intensity improvement target, Cadeler itself has no absolute targets, but is committed to pursue the long-term goal of radical decarbonization according to the company . The company is aware of climate risks and has climate risk mitigation measures in place but has not yet formally adapted TCFD recommendations and is not using climate scenarios. Cadeler receives a Governance Score of **Good**



CICERO Green is of the opinion that while the construction and operation of the wind installations itself would likely qualify under the EU taxonomy, it is currently unclear how the proposed EU taxonomy will apply to Cadeler’s shipping activities. Currently, wind power itself is derogated from performing a product carbon footprint or lifecycle assessment and deemed to be taxonomy eligible. Cadeler sees the developer of the wind farm as responsible for ensuring environmental integrity. However, Cadeler ensures that the clients have secured environmental permits and indirectly contributes to following DNSH criteria and social guidelines.

Table 1 summarizes key sector metrics for Cadeler incl. utilization rate of ships, emissions from fuel usage and installed wind capacity. The installed wind capacity shown in Table 1 divides wind project capacity for projects that run over two years in both years equally.

Table 1 Measured specific sector metrics for Cadeler.

Specific sector metrics	Utilization rate of ships (%)	Emissions from shipping fuel burned (ktCO ₂ e)	Installed wind capacity (MW)
2019	52	7.9	294
2018	60	8.0	828.2
2017	55	7.8	252



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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 activities. 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.	 Substantially more efficient manufacturing of fossil fuel intensive materials
 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.	 Efficiency in fossil fuel infrastructure
 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

While the green shading in our company assessment indicates the over-arching direction of a company's investments in a green finance perspective, more in-depth scrutiny of the investments is required in order to qualify for use of proceeds green financing.



In addition to shading from dark green via light green to dark brown, CICERO Shades of Green also includes a governance score to show the robustness of the governance structure. The company assessment also provides investors and lenders with information on possible alignment to the EU taxonomy as well as companies' environmental governance structure, including an assessment of how companies respond to the TCFD recommendations on climate-related risk disclosure.

We have only shaded revenue or investments to the extent we were able to find sufficient information. Our data sources are company reports, as well as CDP responses supplemented by company responses. We aim to develop a methodology based on publicly available sources.



2 Brief description of Cadeler’s activities, strategies and related policies

Company description

Cadeler A/S (“Cadeler”), is headquartered in Copenhagen, Denmark and is an offshore wind turbine transportation and installation contractor. Cadeler operates two of the world’s largest windfarm installation vessels, Pacific Orca and Pacific Osprey. In 2010, Cadeler was acquired by Swire Pacific Offshore Operations (Pte) Ltd (“SPO”), a marine services conglomerate and leading service provider to the offshore oil & gas and renewables industries. Approximately 70-80 percent of SPO’s revenue currently comes from fossil fuel-related business. Swire Pacific Offshore has offices in more than 20 countries worldwide and over 2,000 employees. Swire Pacific Offshore is a wholly owned subsidiary of Swire Pacific Limited, a listed company in Hong Kong. However, at the time of writing, Cadeler is in the process of being spun-off and listed on the Oslo Stock Exchange. In future it will be an independent company, focusing exclusively on offshore renewables.

In addition to offshore wind farm installation, Pacific Orca and Pacific Osprey offer a range of maintenance, construction and decommissioning services. These vessels are designed to meet both the current and future needs of the offshore wind industry. Despite being of special design as offshore windfarm installation vessels, the vessels could potentially be deployed to support other offshore gas operations the vessels have only been commissioned by offshore wind projects so far. To date, Cadeler’s vessels have worked on more than thirty offshore wind projects, installing almost three hundred turbines and more than four hundred turbine foundations. At the time of their construction, Pacific Orca and Pacific Osprey were the largest and most capable wind turbine installation vessels in the market. They were designed to enable upgrades, which have allowed them to keep pace with the rapid increase in the size of offshore wind turbines and the trend towards installing them in both deeper water and more challenging locations. Cadeler is not responsible for logistics of wind turbine components from the manufacturer facility to the port of loading. In 2020 an extension to Pacific Osprey’s crane was completed. By investing in a 30m extension to the boom, the vessel is ready to handle the next generation of 10, 11, and 12MW turbines from MHI Vestas, Siemens Gamesa and General Electric. To date, more than 3GW of wind capacity has been installed. Based on the existing contract pipeline, Cadeler is targeting to install no less than 3.5GW of offshore wind capacity by 2025.

Climate risk exposure

Shipping causes more than 2% of global greenhouse gas (GHG) emissions and, according to IMO, emissions could grow between 50 and 250% by 2050¹. The shipping itself, but also carbon intensive goods as well as fossil fuels shipped directly and indirectly contribute to GHG emissions directly (Scope 1, 2 and 3). However, shipping also contributes to the instalment and transport of green infrastructure elements, such as renewable energy, electric transport solutions and low-carbon products.

Both the shipping sector and wind farms are exposed to physical and transition climate risks. The International Maritime Organization (IMO) set a target to reduce emissions from shipping by at least 50% from the level of

¹ <http://www.imo.org/en/OurWork/Environment/PollutionPrevention/AirPollution/Pages/GHG-Emissions.aspx>



2008 by 2050 and limiting the sulfur content to no more than 0.5% by 2020². In addition, according to the IEA, the share of renewables in global electricity generation must reach 47% by 2030, up from 25% in 2017.³

As a company operating in the shipping industry, Cadeler is exposed to substantial transition risks from stricter climate policies associated with, e.g., emerging carbon pricing, tighter emission regulation, increased environmental performance expectations and lock-in to fuels that become uncompetitive during ship's lifetime. As a result, the company has identified transition risks as

- **Supply-side risk because of policies that are meant to decarbonize shipping:** Market-based GHG mitigation policies will advantage vessels that are more carbon efficient. In practice, this will benefit vessels which can be retrofitted with the newest energy efficiency technologies and eventually switch to the use of low-carbon fuels. GHG mitigation policies will initially accelerate the differentiation between efficient and inefficient vessels. With implementation of carbon pricing, the resulting increase in fuel and carbon cost will force the market to determine the optimal specification for chartering. Vessels deemed suboptimal will see their day rates, asset value and liquidity fall.
- **Obsolescence of the wind turbine installation vessels due to advancement in offshore wind turbine technology faster than expected:** Upscaling wind turbine generators to increase energy capture is one measure to reduce costs of offshore wind electricity. As a result, an arms race among the turbine manufacturers to introduce larger and more efficient turbine platforms has rendered many wind turbine installation vessels built in the late 2000s/early 2010s obsolete. To every shipowner, vessel obsolescence due to advancing market technology this is an inherent risk.

Due to historical emissions, we are de facto already locked in for approximately 1.5°C global warming.⁴ 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.⁵ 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 offshore wind turbine transportation and installation companies such as Cadeler the most severe physical impacts will likely be increased storms and extreme weather. Severe impacts on operation capacity, vessel safety as well as on the wind farms itself are expected. Developing projects with climate resilience in mind is critical for this sector. Cadeler also finds it likely that climate change represents upside risks, such as increased numbers of wind farm installations, demand for future proofed vessels and higher demand for other wind farm related services.

As an offshore wind turbine transportation and installation company, Cadeler is naturally exposed to physical risks associated with climate change and has already observed some impacts. Cadeler already noted impacts in ports and shipping channels due to rising sea levels and changed erosion and sedimentation patterns. Extreme weather events have the potential to affect Cadeler's operations both offshore and in ports and operations of their clients especially their offshore infrastructure. such as more extreme weather events and storms, stronger winds, and also sea level rise for vessel operations in ports, open water and at installation of wind farms.

Cadeler is exposed to indirect physical climate risks through their offshore wind customers. Transition risks arise should the demand for offshore wind installations decrease due to a global lack of transition ambition. In addition,

²<http://www.imo.org/en/MediaCentre/HotTopics/GHG/Pages/default.aspx>

³ <https://www.iea.org/topics/tracking-clean-energy-progress>

⁴ <https://www.cicero.oslo.no/en/posts/news/scientists-demystify-climate-scenarios-for-investors>

⁵ https://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full_wcover.pdf



a lack of ambitious policies at a global level to rapidly reduce greenhouse gas emissions, will increase the frequency of extreme events and increase the probability of physical damage to offshore wind installations.

Key statistics & background figures

Installation of offshore wind farms require deep sea vessels that run on emission intensive fossil fuels. Almost all of Cadeler's energy consumption and GHG emissions are related to operation of vessels which is currently reported as Scope 3.

Emissions

The historic emissions of the whole group's direct emissions have decreased over the years (scope 1 emissions down by 14.8% in 2019 and its scope 2 by 21%). Scope 3 emissions are in order of magnitude higher than Scope 1 and 2 emissions combined (represent more than 80 percent of emissions). The group is reporting emissions from the vessels when they are operating for a customer as scope 3 emissions. Emissions from the production of the oil and gas, as well as emission reduction from renewable energy production from the offshore wind farms, are not part of the GRI reporting. Fuel combustion in internal combustion engines is the biggest contributor to the group's carbon footprint (90.2%). These emissions increased by 5.7% in 2019 compared to the 2018 figure.

The two vessels the company is currently operating emitted approximately 7.9 ktCO₂ in 2019 with a utilization rate of 52%. Both ships were solely active on wind farm installations. According to the reporting Scope 3 fuel consumption emissions per 'utilized available boat day' decreased by 2.7% since 2018. This is explained by better environmental performance of the new fuel-efficient fleet: the design of every new class of their vessels involves the use of the latest technology and emission control equipment.

Environmental Strategies and Policies

The group is committed to reduce its normalized scope 1 and 2 GHG emissions by 3% y-o-y. Normalization takes into account the time the vessels are on hire or off hire, respectively.

Having adopted its environmental strategies and policies from its former parent, the Swire Pacific Offshore group of companies, Cadeler is committed to delivering leadership in environmental, health and safety, employment, business partnerships and community matters across the value chain. The company is undergoing corporate restructuring at the moment. Cadeler observes all Swire Pacific Offshore and Swire Pacific's sustainability policies and procedures and will continue to do so after the spin-off. However, the existing SPO Environmental Management Manual, and the ISO 9001 Quality Management Manual will be adjusted sector specifically.

The group (SPO) has a Sustainable Development Policy in place where several of UN's Sustainability Development goals (SDG's) have been identified as relevant. As stated in the group's sustainability Policy and Environmental Policy, Cadeler is committed to pursuing the long-term goals of radical decarbonization and optimizing energy efficiency. The group has provided Global Reporting Initiative (GRI) compliant Sustainable Performance reports since 2008.

The group has in place several environmental targets. The group aims at zero release of oil and other hydrocarbons to the marine environment. The company Investment in the REDD+ (Reduced Emissions from avoided Deforestation and Forest Degradation) forest conservation scheme in Paraguay, which aims to preserve primary forests and biodiversity of the endemic species of flora and fauna meeting both the 'Gold Level' of the Climate, Community and Biodiversity Alliance (CCBA) Standard and the Verified Carbon Standard (VCS).



SPO recycles all their ships at the end of their economic lives in a Sustainable and Environmentally Responsible way in accordance with the HK Convention. Vessels are sustainably and responsibly recycled at the end of their lives only at Ship Recycling Facilities in Alang, India that have been issued with a Statement of Compliance with the Hong Kong Convention for the Safe and Environmentally Sound Recycling of Ships by ClassNK.

The company does invest in R&D on alternate fuels (e.g. Project Hafnium). Project Hafnium was set up to explore the viability of hydrogen (H₂) production, storage, and power for Offshore Supply Vessels, with the goal of radical decarbonization through the use of H₂-based fuel. A feasibility study was conducted in 2019 with the initial focus to investigate the possibility to produce hydrogen on board and use it as fuel in the existing diesel engines.

However, this was not a technically feasible option as the hydrogen engine technology has several unresolved issues. The research was extended to alternative ways to store hydrogen and extract useful energy from it, including chemical hydrogen carrier molecules such as methanol and ammonia that can be used both as fuels in internal combustion engines or as hydrogen sources. The analysis revealed that although there is potential for methanol and ammonia as hydrogen carriers for marine fuel cells, the technology is still not mature at present day to commit to for new ships. According to Cadeler, the company is actively considering alternate fuels (that will supply 64% reduction in GHG emissions to meet the IMO Initial Strategy) as well as technical and operational measures that will provide the remaining 36%. At the moment the company is assessing up to 27 different Energy Efficiency and Carbon Reduction measures.

Governance

When assessing the governance of Cadeler, CICERO Green looks at the overarching structures and procedures for decision making connected to climate risk analysis in Cadeler, climate-related strategy and policy formulation and implementation of these, including policies towards sub-contractors and use of LCA, handling of resilience issues and quality of reporting. Please note this is not a substitute for a full evaluation of the governance of Cadeler, and does not cover, e.g., corruption.

Currently, the Swire Pacific Limited has a Sustainable Development Team which has the Public Swire group's oversight of climate resilience and performance (amongst the other sustainability areas). Swire Pacific Offshore (as the current parent of Cadeler) has a Sustainable Development Team of three to implement both parent and SPO internal sustainable development and climate risk strategy issues in all SPO group operating companies, including Cadeler. The Sustainable Development team reports directly to the Managing Director of SPO (and indirectly to the Global Head of Sustainability in the SD Office at Swire Pacific Limited in Hong Kong SAR) enabling the provision of sustainability input in the early stages of relevant strategic decisions. Decisions made by the executive are then cascaded down through the organisation. Other than the Sustainable Development team, the company also work closely with the Group Risk Management Committee and various thematic Working Groups (under SwireTHRIVE strategy) to ensure a coherent approach to managing Sustainable Development related risks and opportunities.

To counter climate risks, Cadeler has put in place a variety of measures

- **General risk management:** there is a mechanism for early identification and addressing increased climate related risks within the overall company group risk management process.
- **Operating Efficiency:** Integrating sustainability/energy efficiency specifications into vessel design and operations and addressing ways to reduce carbon footprint of SPO's offices.
- **Carbon Offsetting:** Offsetting current GHG emissions through dual accredited carbon offset REDD+ project and supplementing the downfall in credits by purchasing additional credits from credible projects delivering additional social value-



- **Alternative Fuels:** investigating opportunities to decarbonize operations through the determination and proof of the feasibility of a low / zero carbon alternative to fossil fuel.
- **Future Regulations:** Monitoring future market traits and regulatory conditions and “future-proofing” the business
- **Client Energy Management:** Working with clients to reduce their fuel use (and costs).

With regards to physical risk, the company informed us that whilst weather patterns remain unpredictable, Cadeler has high-quality vessels and well-trained employees to support the industry during climate and weather changing conditions. The company informed us that it is addressing safety measures pertinent to physical climate risks it observes.

The group communicates its approach to climate change mitigation, adaptation and resilience in accordance with its Climate Resilience Standard Operating Procedure. In their latest report they signal that they will address TCFD reporting more detail in 2020 as the group comes to a consensus on the most applicable Representative Concentration Pathway (RCP) to use for their scenario planning. Scenario analysis is used to analyze how different future states can impact a business. In the context of climate risk, scenario stress testing is useful for analyzing some risks and timeframes. To prepare for transition risk and long term physical impacts, a range of scenarios from 2°C to 4°C should be considered. It is not necessary to conduct elaborate scenario testing to prepare for physical climate change over the next 10 years.

Reporting

On a group level the company reports according to GRI and will provide additional Sustainable Development Reports. Currently, Cadeler does not yet report transparently on its investment and revenue streams in order to allow for assessment of their climate impact.

A newly hired local Sustainability Manager in Denmark will be responsible for the company’s reporting. Cadeler will provide information annually on Cadeler’s website and in Cadeler’s Sustainable Development Reports. According to the issuer, Scope 1, 2 and 3 emissions as well as performance metrics of the vessels will be reported and will receive an external review. The company will report revenue and investments in the SD report. The first Sustainable Development Report is expected for FY 2021.

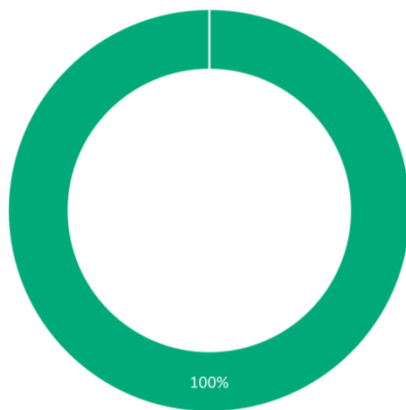
According to the company, Cadeler has the ambition of reporting according to TCFD guidelines as of end of FY 2021.



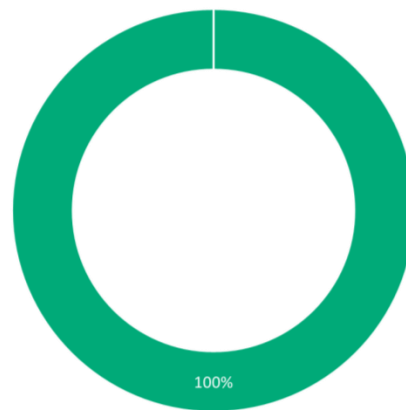
3 Assessment of Cadeler’s green activities and policies

According to CICERO Green’s methodology Shades of Green or Brown should be allocated 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. (See notes and methodology page for further details on shading).

Shades of Green by annual revenue 2019



Shades of Green by investments in 2019



■ Dark Green ■ Medium Green ■ Light Green ■ Light Brown ■ Medium Brown ■ Dark Brown

With these provisions, we find that in 2019, all of Cadeler’s revenue resulted from servicing wind farms by operating wind turbine installation vessels which is considered Medium Green. While the offshore wind farms itself can be Dark Green, Cadeler’s revenue results from operating two conventional wind turbine installation vessels that provide capacity to handle the next generation of wind turbines are considered Medium Green due to their emissions. Similarly, in 2019, all of Cadeler’s investments were in upgrades, overhauls and improvements of wind turbine installation vessels. These investments are rated Medium Green, similarly due to the risk of lock-in of emissions in vessels that will burn fossil fuels for more than two decades. Investments in “future-proofed” battery hybrid wind turbine installation vessels could be Medium or even Dark Green depending on how the vessels incorporate, e.g., an option to run partly on battery power, are ready to and wholly or partly already do use low-carbon fuels and deliver significant emission reductions through efficiency improvements.

Governance Assessment

When assessing the governance of Cadeler, CICERO Green looks at three elements: 1) Strategy, goals, policies including policies towards sub-contractors and use of LCA; 2) handling of resilience issues; and 3) 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 Cadeler, and does not cover, e.g., corruption.

Cadeler has in place a Sustainable Development Policy and reports in accordance with the GRI and has Scope 1 and 2 emissions reduction targets of 3% per year normalized by utilization. However, emissions from the production of the oil and gas upstream, as well as emission reduction from renewable energy production from the

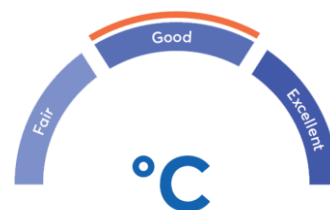


offshore wind farms, are not part of the GRI reporting. While the company aims to align with the IMO Initial Strategy and the Danish NDCs and has a 3% annual emission intensity improvement target, Cadeler itself has no absolute targets, but is committed to pursue the long-term goal of radical decarbonization according to the company.

The company is aware of climate risks, but has not yet formally adapted TCFD recommendations and is not using climate scenarios. Currently climate risk as well as sustainability strategy lies with the company's parent company, but all strategies and procedures will be adopted by the company itself post IPO. Cadeler has several measures in place to mitigate the climate risks the company is associated with, e.g., emerging carbon pricing, tighter emission regulation, increased environmental performance expectations. The company is currently assessing up to 27 different Energy Efficiency and Carbon Reduction measures

On a group level a Sustainable Development Report is expected to be published for FY 2021. This report will be externally reviewed and will include the wind turbine installation vessels' performance metrics as well as Scope 1, 2 and 3 emissions as well as revenue and investment data according to the company.

Assessing these elements, CICERO Green concludes that Cadeler is given an overall governance score of **Good**. Please note that the governance score is allocated to Cadeler and its dedication to offshore wind projects and is not an assessment of the parent company that is active in the oil and gas service industry with 70-80 percent of revenue currently coming from fossil fuel-related business activities.



Strengths

It is a strength that Cadeler's business model is entirely focused on supporting offshore wind installations. According to the company, the two vessels the company is currently operating are expected to qualify under the Marine Renewable Energy Sector CBI taxonomy.⁶ Investments in upgrades with, e.g., cranes to be able to handle the next generation of larger offshore wind plants are commendable efforts to deploy large capacities of renewable energy. With a total wind power of 6.5GW in 2025, Cadeler aims to have installed more capacity than, e.g., the total current wind power capacity in Denmark (6.2GW in 2019⁷).

It is a strength that Cadeler is actively exploring efficiency improvements and low-carbon solutions. According to Cadeler, due to its current two vessels' size, the vessels are more efficient in terms of fuel burned compared to other market participants. In addition, according to the company, a new vessel that is currently being planned will be a battery hybrid technology vessel with a range of efficiency improvement. Cadeler aims at preparing the newbuild for fuel cell technology. Batteries are expected to be used as a carbon-free energy source in coastal, short-distance applications (offshore wind farms) and as energy buffers for on-board electricity needs to reduce dependency on auxiliary engines. Additionally, the company is exploring the possibility of shore and offshore charging. In addition, the company is in close dialogue with the clients on future turbine technologies, which will ensure that any newbuilds will be built to a longer life span. In the medium term, the company informed us that it will continue to explore the use of alternative fuels, e.g., biofuels or synthetic fuels generated from renewable energy such as hydrogen produced by electrolysis using wind or photovoltaic energy. However, firm commitments

⁶ <https://www.climatebonds.net/standard/marine>

⁷ <https://www.statista.com/statistics/990723/number-of-active-wind-power-turbines-in-denmark/>



to which type of technology will be deployed have not been made. CICERO Green views this effort of accelerating lower emission shipping technology as vital to reach the 2° target. The company notified us that, e.g., biofuel blends are already partly used but sustainability of biofuels are not always deemed to be sustainable and the engines are not cleared for use of higher levels of biofuel contents. Closer partnerships with clients on reducing carbon footprint

Cadeler informed us that all its vessels trade under Danish or Cyprian flag. This is a strength as ship recycling requirements will be handled by an approved recycling facility according to the EU Ship Recycling Standard. In addition, the company included “green recycling” of the ships as an eligible project category. However, recycling ships can have substantial environmental impacts and we encourage to apply the highest available standards.

Weaknesses

Cadeler is operating and investing in vessels that are powered wholly or in part by fossil fuels with significant emissions associated with its operation, but that are solely dedicated to the installation of offshore wind infrastructure. While there are currently no economically viable alternatives, Cadeler is aware of this weakness and is actively taking measures improve efficiency of its vessels and to explore low carbon shipping solutions. As a shipping company, Cadeler has a responsibility to reduce its impact on the environment through innovative solutions for its shipping.

Pitfalls

It constitutes a pitfall that Cadeler invests in improvements of its fossil fuel powered vessels. This bears a risk of lock-in of emissions, especially if improvements are not substantial. This risk is partly mitigated by Cadeler’s current plans to develop a “future proofed” wind turbine installation vessel by 2023-2025.

Currently, Swire Pacific Limited has a Sustainable Development Team which has the Public Swire group’s oversight of the climate resilience and performance (amongst the other sustainability areas). According to the company, Swire Pacific Offshore (as the current parent of Cadeler) has a Sustainable Development Team of three to implement both parent and SPO internal sustainable development and climate risk strategy issues in all SPO group operating companies, including Cadeler. All the existing relevant sustainability, climate and other SPO policies and procedures will be adopted by Cadeler at its listing. Cadeler is currently in the process of hiring an internal Sustainability Manager.

The company commits to Scope 1 and 2 emissions reduction targets of 3% per year normalized by utilization. However, Cadeler has no absolute emission targets and expects to increase emissions by adding a new vessel to the fleet.

Cadeler does not screen for the environmental impact of the wind farm projects, but the company informed us that all of its projects are within the EU and subject to environmental impact assessments. The overall responsibility for the environmental impact of the installation project lies with the developer and not with the wind farm installation contractor. While Cadeler requires developers to have a relevant permit, the impact of the project could also have additional negative local environmental impacts.

According to the company, Cadeler is considering the life cycle impact of the overall vessels. The company does not generally require specific climate or environmental standards regarding the selection of suppliers and technology deployed. CICERO Green encourages Cadeler to establish dedicated policies towards the suppliers as well as generally to subcontractors, offshore wind developers and for other supply chain aspects.



Despite the vessels' estimated lifetime of 20 to 25 years, the company's business bears significant risks of stranded assets and would therefore benefit from TCFD reporting. In addition, the company informed us that impacts from climate change are already noted in ports and shipping channels due to rising sea levels and changed erosion and sedimentation patterns. In addition, extreme weather events have the potential to affect operations both offshore and in ports and operations of clients especially at their offshore infrastructure. While Cadeler is aware of these climate risks, the company does not yet align with TCFD recommendations.

EU Taxonomy

In 2020, the EU Taxonomy was released in a multi-lateral effort to standardise thresholds and metrics to aid the green transition. The Taxonomy provides signposting for investors and bond issuers to aid in their decision-making and project selection processes.

The proposed EU taxonomy for sustainable finance⁸ currently does not suggest thresholds or criteria for deep water shipping. However, the taxonomy suggests a threshold for facilities operating wind power at life cycle emissions lower than 100gCO₂e/kWh, declining to 0gCO₂e/kWh by 2050. Currently, wind power is derogated from performing a product carbon footprint or lifecycle assessment and deemed to be taxonomy eligible.

However, the EU Taxonomy also considers Do No Significant Harm (DNSH) and social guidelines. According to the company, Cadeler sees the developer of the wind farm as responsible for ensuring environmental integrity. However, Cadeler ensures that the clients have secured environmental permits and, e.g., arranged dual big bubble curtains before commencing installation of bottom fixed foundations and, therefore, indirectly contributing to following DNSH criteria and social guidelines.

CICERO Green is of the opinion that while the construction and operation of the wind installations itself would likely qualify under the proposed EU taxonomy, it is currently unclear how the EU taxonomy will apply to Cadeler's shipping activities.

⁸ 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	Green Finance Framework 07282020	
2	Environmental Policy 06032020	
3	Human Rights Policy 07142020	
4	Sustainable development policy 06032020	
5	Biodiversity Policy 09042018	
6	Supply Chain Policy	
7	Sustainable Ship Recycling 07062020	
8	Climate Resilience Policy 07062018	



Appendix 2: Background

The International Maritime Organization (IMO) set a target to reduce emissions from shipping by at least 50% from the level of 2008 by 2050 and limiting the sulfur content to no more than 0.5% by 2020⁹. The IEA's 2018 World Energy Outlook, however, foresees that, e.g., switching to LNG would not be sufficient on its own to achieve the IMO's long-term target¹⁰ – this could enable advanced battery technology as a complementary solution. The only zero-carbon technology currently suitable for deep-sea shipping is sustainable biofuel. This is a “drop-in” fuel, requiring no technological innovation into ships. Innovation into alternative zero-carbon fuels is the most important long-term policy for the deep-sea shipping. Energy efficiency improvements are also needed to cater for these fuels, as they have lower energy density.

No current deep-sea shipping activity would qualify as CICERO Dark Green. However, CICERO Green's Light Green shading is allocated to vital efficiency improvements in fossil fuel related infrastructure particularly in sectors that are difficult to decarbonize and the fossil fuel production industry. Despite the fact that projects might be exposed to the risk of lock-in of emissions, CICERO Green views efficiency improvements as necessary to reach the well below 2°C target. The heavy-duty shipping is an example where no viable alternatives yet exist. Therefore, substantially reducing CO₂, NO_x and SO_x emissions in shipping is vital but does not constitute a long-term green solution. Emissions from transportation should be zero in the long-term and transporting fossil fuels such as coal and petroleum products should become obsolete.

CICERO Green acknowledges the substantial need for more renewable energy production incl. offshore wind installations. In 2019, global renewable electricity generation grew 7% and reached a quarter of global power output, due to the continued growth of solar PV and wind technologies accounting for 65% of this increase. Despite these positive trends (especially with PV), additional efforts are needed in renewable power generation to meet the targets set out in the IEA's SDS. According to the IEA, the share of renewables in global electricity generation must reach 47% by 2030, up from 25% in 2017.¹¹

⁹ <http://www.imo.org/en/MediaCentre/HotTopics/GHG/Pages/default.aspx>

¹⁰ <https://www.iea.org/weo>

¹¹ <https://www.iea.org/topics/tracking-clean-energy-progress>



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).

