



Nexam Chemical

Shades of Green assessment

 Sector: Chemicals

 Region: Global

February 21, 2022

Nexam Chemical (Nexam) is a Swedish company that develops chemicals and solutions enhancing the properties and performance of plastics and polymers. The chemical sector is a large consumer of oil and gas and associated with high CO₂-emissions.

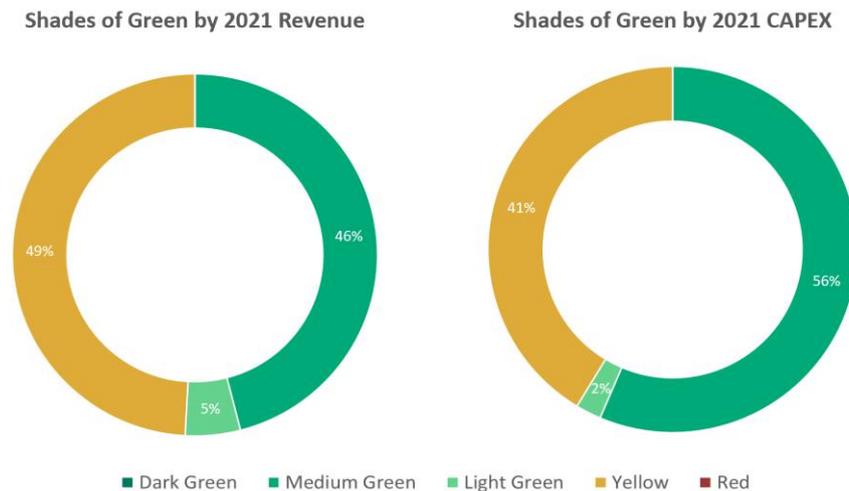


Figure 1: Nexam's 2021 revenue and capital expenditures by Shades of Green.²

In 2021, 51% of Nexam's revenue and OPEX, and 59% of CAPEX, is assessed as Green by CICERO Shades of Green, while the rest is assessed as Yellow. 51% of the sum of CAPEX and OPEX is allocated a shade of green.

CICERO Green considers that several of the chemicals manufactured by Nexam have significant environmental benefits. However, the raw materials originate from fossil fuels and currently only 1% of the raw material is recycled or bio-based. In addition, the plastics and polymers the chemicals are added to cannot be recycled indefinitely and their landfilling or incineration contributes to emissions.

Medium Green is allocated to Nexam's chemicals that contribute towards a low carbon and circular economy by enhancing windmill production, enabling increased recycling and improving the lifespan of water pipes. Nexam performance chemicals that enable the production of PET-foam to be used in windmill blades make the blades easier to recycle and increase energy efficiency by reducing the weight of the blades. These chemicals enable environmental improvements in renewable energy, a vital sector for the low carbon transition. Nexam PET-resins that enable a larger proportion of plastics to be recycled contribute to a vital aspect of the circular economy and reduced emissions incineration of plastics. Nexam polyolefins that increase the lifespan of water pipes contribute to an important aspect of climate resilience, as the threats to water security increases due to climate change. These applications of Nexam chemicals could be

Nasdaq Green Designation

CICERO Green assesses that, Nexam meets the requirements for Nasdaq Green Equity Designation set out in the Nasdaq Green Equity Principles¹.



¹ CICERO Shades of Green is an approved reviewer to assess alignment with the Nasdaq Green Equity Principles, [Nasdaq.com/Solutions/Nasdaq-Nordic-Green-Designations](https://www.nasdaq.com/Solutions/Nasdaq-Nordic-Green-Designations)

² For the purpose of this assessment, revenue and turnover are used interchangeably, as are operating costs and OPEX, investments and CAPEX.



considered Dark Green, however, considering the emissions in the upstream value chain and the embedded emissions released at end of life, these products have been shaded Medium Green.

A Light Green shade has been allocated to heat resistant monomers that enable the use of a plastic composite light-weight material in the aviation sector. The aviation sector is emissions intensive and deep emissions reductions are needed to align with a low carbon future. The plastic composites replace heavier metals resulting in the materials being 50% lighter, and lead to an increased fuel efficiency. Lighter materials also will be needed for biofuels and other low carbon fuels, reducing the lock in risk.

The Yellow shade has been allocated to the remainder of Nexams products. Among these are Nexam’s UV stabilisers that increase the durability of outdoor plastics films and molds. Extending the lifetime of products is positive from a climate perspective, however, the Yellow shading reflects that the products Nexam’s chemicals are added to do not contribute to the transition and that there are emissions associated with the activities. In addition, it is uncertain that extending the lifetime of these plastics will reduce new plastic production. Furthermore, the UV stabilisers do not contribute to increased recyclability. The Yellow shade has also been allocated to chemicals added to products that do not actively contribute to the transition, like PET-foam used in buildings. Nexam serves the aviation sector and is considering a cooperation with the maritime industry but has confirmed that they do not have other heavy emitting customers associated with high climate and/or lock-in risks.

Nexam operating expenses are general in nature and support the production of chemicals and solutions. These have been allocated the same split in shading as revenues (51% Green and 49 % Yellow). Nexam has investments research and development, and general investments that support operations. Research and development investments have been shaded according to product type following the above approach. CAPEX not used for development work has been allocated the same split in shading as revenues.

CICERO Green has assessed that the activities currently defined by the EU Taxonomy is not directly applicable to Nexam’s activities. The current delegated act to the EU Taxonomy regulation on climate mitigation (Annex 1) identifies the category *3.14 Manufacture of organic basic chemicals*. According to Nexam, their products are more complex in terms of structure and reactivity than those covered by the EU-Taxonomy. Assessment of alignment towards the CO₂-intensity thresholds in the current delegated act is therefore not directly applicable and a taxonomy assessment has not been carried out.

Investors should note that CICERO Green has relied on the company’s documentation and not conducted their own research on Nexam’s products. Furthermore, our assessment is based on data reported or estimated by the company and has not always been verified by a third party.

Nexam has established a sustainability policy and taken some key steps to managing environmental risks. The company has a target for their scope 1 and 2 emissions to be carbon neutral by 2025 and is on track to meet the target. However, the target does not include scope 3 emissions, representing the company’s largest emissions. The company seems to have a good understanding of environmental and social risks in own operations. Nexam could however improve the systematic evaluation of risks in its upstream and downstream supply chain. Nexam has, however, established a strong suppliers Code of Conduct. The company intends to strengthen its work related to sustainability. CICERO Green therefore expects Nexam’s governance of environmental and social issues to improve over the coming years.



Figure 2: CICERO Green assesses Nexam’s governance structure and practice to be Good.

Table 1: Sector specific metrics

	Energy use (kWh/kg)	Emissions tons CO ₂ eq (Scope 1 & 2)	Waste (kg waste/kg product)	Water use liters/kg product	Renewable energy use (%)
Targets (2022)	0.60	65 (30)*	0.08	0.70	85
2021	0.63	90 (39)*	0.09	0.73	80
2020	0.66	154 (89)*	0.12	1.87	57
2019	0.57	159 (89)*	0.08	1.41	59

* Main figure is absolute tonnes CO₂e emitted, figure in bracket is the relative figure of ‘kg CO₂e / tonne of product’



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1 Nexam's sustainability management

Company description

Nexam Chemical (Nexam) is a Swedish company that develops solutions enhancing the properties and performance of plastics and polymers. The company has been listed on Nasdaq Stockholm First North Premier since 2013 and had revenues of around 220 million SEK in 2021.

Nexam develops solutions, that depending on the product, aim to contribute to increased temperature resistance and strength, increased durability, increased recycling rates, or improved production processes.³ Nexam manufactures its products by among others using heat activated chemistry⁴ and reactive extrusion⁵. The company's main raw materials are purchased from big chemical companies based in Europa, the USA and Asia (China and Japan). In 2020 Nexam made an agreement with the chemical company DIAB (located in Sweden) that supplies PET-foam, used in turbine blades for renewable wind energy. Manufacturing is carried out in Sweden, Scotland, Poland and Hungary, and the company has distributors and agents in Asia and Europe, including in Eastern Europe. Nexam also has some contract manufacturing in Germany.

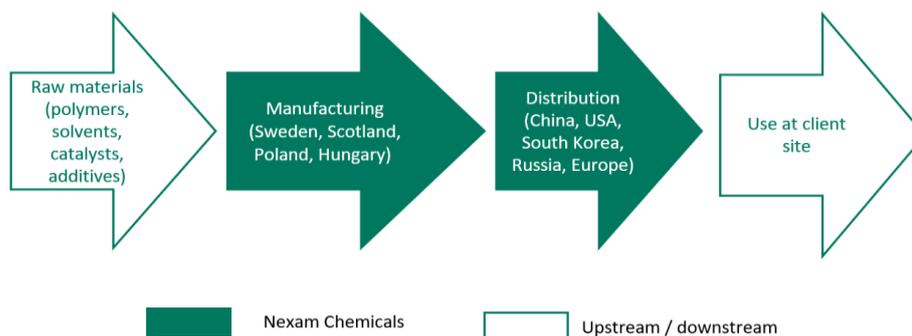


Figure 3: The figure shows Nexam's value chain.

Nexam's customers span chemical and material companies, aerospace, electronics, industry and plastic recycling companies. The products are also used in renewable energy like solar modules and wind turbines. Nexam informs us that they do not have any customers directly associated with fossil fuels.

³ Among Nexam's main products are additives to:

- ✓ Polyesters (PET): Improve the PET-properties and increase recycling possibilities and enable the production of PET-foam that makes the material lighter. PET is among others used in plastic bottles, and wind turbines.
- ✓ Polyolefins (PE/PP): Upgrade and modify the properties in polyolefins. The material is used in among other pipes within water, agriculture and industry. Recycled polyolefins are used in plastic bottles.
- ✓ Additives improving the heat resistance in high-functionality plastics used in e.g. engines, and increase the stability and strength in functionality chemicals used within the packaging industry.

⁴ Changing the product by using heat to speed up the motion of molecules.

⁵ Combining chemical processes and extrusion (melting, blending, structuring, devolatilization and shaping) into a single process carried out onto an extruder.



Governance Assessment

Sustainability is at the core of Nexam's activities. Nexam has established a sustainability policy approved by the board and a target to be carbon neutral by 2025 for their scope 1 and 2 emissions. The company is on track to achieve the target. The target does not include scope 3 emissions, representing the company's largest emissions. Nexam also has KPIs related to several key issues, like energy efficiency and waste.

Nexam conducts regular risk assessments, and has conducted preliminary climate risk assessments related to its operational sites. Nexam has not assessed climate risks in its supply chain. The company does not yet report according to the TCFD-recommendations.

Nexam has established a strong suppliers Code of Conduct (CoC) addressing both environmental and social issues, and the CoC is referenced in the contracts. The company seems to have a good understanding of its own environmental and social risks, and all employees receive sustainability training. The company could however improve the systematic evaluation of risks in its upstream and downstream supply chain, including when selecting new suppliers and customers.

Nexam issues a joint financial and sustainability report with information on e.g., scope 1 emissions and plans to reduce those. The company has calculated scope 2 and 3 emissions for 2021 but has not yet included these in sustainability reporting.

Nexam has been allocated a **Good** governance rating. The company intends to strengthen its work related to sustainability, among others by more systematic risk assessments of its supply chain. They furthermore intend to establish concrete targets related to scope 3 emissions. CICERO Green therefore expects Nexam's governance of environmental and social issues to improve the coming years.

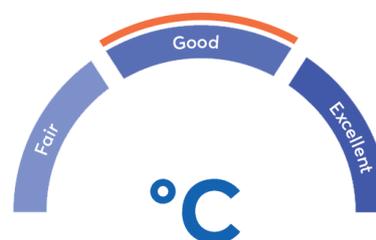


Figure 4: CICERO Green assesses Nexam's governance structure and practice to be Good.

Sector risk exposure

The below text box highlights some key risks for the chemical sector. See Appendix 2 for additional background on the chemical sector more generally.



Physical climate risks. Extreme events and flooding are already affecting all sectors and regions. Due to historical emissions, we are de facto already locked in for approximately 1.5°C global warming.⁶ Given today's policy ambitions, the world is most likely heading toward 2-3°C warming in 2100 which implies accelerated physical climate impacts, including more extreme storms, accelerated sea level rise, droughts and flooding.⁷ 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 European chemical manufacturing 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 company should consider the physical climate risks affecting both manufacturing facilities and the supply chain.

⁶ <https://www.cicero.oslo.no/en/posts/news/scientists-demystify-climate-scenarios-for-investors>

⁷ https://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full_wcover.pdf



Transition risks. Some of Nexam solutions will likely be in increased demand as there will be an increased need for products improving plastic recycling and that i.a. makes products lighter and more durable. However, increased carbon prices may influence profitability considering that parts of the raw material are fossil fuel based.

Environmental risks. The manufacturing industry is at risk of polluting the local environment during production of raw material, manufacturing, and disposal of the products. Pollution can also come from poor waste handling in the value chain, depending on the hazardousness and handling of the waste.

Social risks. The social risks related to Nexam seem to be related to human rights and workers' rights in Nexam's own operations and in its supply chain.

Sustainability Management

Nexam has established a sustainability policy approved by the board and focuses its sustainability work on the UN Sustainable Development Goals affordable and clean energy (SDG 7), decent work and economic growth (SDG 8), industry, innovation, and infrastructure (SDG 9) and responsible consumption and production (SDG 12).

The company has not yet carried out a materiality assessment, but this is scheduled for 2022. According to the company, the assessment will cover ESG-topics, including social issues, and aims to contribute to improved reporting.

Nexam has a strong focus on R&D and is cooperating with both universities and research institutes. In 2020 the company was a part of a research consortium that focused on how to increase material recycling of plastics, particularly contaminated plastics that are not currently recycled. Nexam is also cooperating with commercial partners on increasing the material recycling of black plastics. Black plastic is currently difficult to recycle as the waste systems are unable to detect and sort out black plastics, and the project focuses on replacing the currently used color carbon black with an option readable by the waste sorting system. According to Nexam the plastic retains its positive properties, while it can be recycled.

Nexam has established a Corporate Social Responsibility policy and a supplier Code of Conduct, further discussed under Social issues below.

Governance structure

According to the sustainability policy, Nexam Chemical Group management is committed to sustainable development and the CEO has the overarching responsibility for the implementation of the policy. The HSEQ-manager has specific responsibilities for the environmental policies in their country organisation, related to the ISO-certifications.

Nexam's production site in Scotland is accredited according to ISO 9001 for quality, ISO 14001 for environment and ISO 45001 for health and safety. Other production sites have ISO certifications on parts of their operations. The company is complying with REACH, EU's legal regime on chemicals.

Risk assessment

There are likely environmental and social risks related to the manufacturing process and the supply chain. Nexam has informed us that they in 2022 will conduct a more systematic risk assessment to be able to identify the most salient risks linked to their operations and supply chain, also in the social field. The company has training programs for employees to reduce the occupational safety and health risks.



Reporting

Nexam issues annual financial reports, including information on the status of the company's work with sustainability. The report summarises scope 1 emissions, and other relevant environmental issues like the generation of renewable energy, energy- and water efficiency. Nexam intends to report according to requirements in the EU Taxonomy when the relevant standards and guidance are published, as well as include information on scope 2 and 3 emissions.

Key issues

GHG Emissions

Nexam has established a target to be carbon neutral by 2025 for scope 1 and 2 emissions, among others by finding green solutions for diesel steam generators (scheduled for 2023/24) and to generate renewable electricity at the production sites (solar PV will be installed in Poland in 2022). Emissions not possible to eliminate will be reduced using offsets, however, the company does not expect a need to utilise offsets. The company had targets for 2021 for scope 1 emissions, water- and energy efficiency and renewable energy that were all achieved. Nexam has calculated scope 3 emissions for 2021 to be far bigger than scope 1 and 2 emissions. Initial scope 3 calculations are based on a spend-based approach. The results of the calculations will be used to work with suppliers and reduce scope 3 emissions.

93% of Nexam's production volume is transported by road, 6.8 % is transported by sea and 0.2 % is transported by air.

Emissions and targets are summarised in table 2 below.

Emissions	Total (tons CO ₂ eq ⁸)	Scope 1	Scope 2	Scope 3
Main targets (2022)	Carbon neutral under Scope 1 & 2 by 2025	30	35	TBD
2021	-	34	56	3,384
2020	-	42	112	Not calculated.
Change 2020-2021	-	-19%	-50%	N/A
Main sources	-	Steam generation using diesel boiler unit in Scotland	Grid electricity supply in Poland	TBD

Table 2: The table summarizes Nexam's GHG-emissions and main emission reduction targets.

⁸ CO₂e, carbon dioxide equivalent is a measurement term for greenhouse gas accounting.



Energy

Energy is used upstream for raw material production, manufacturing of the products and for transportation to customers.

Nexam had an energy efficiency of 0.63 kWh / kg of product in 2021, and the target for 2022 is 0.60 kWh/kg product. The electricity generation differs between the different locations. In the Swedish site, electricity is generated using solar PV, and the remaining need is covered using electricity from renewable sources with guarantees of origin, or from communal heating from renewable sources for the manufacturing buildings. The latter is also the situation in the Hungarian and the Scottish sites. For the site in Poland, the use of solar PVs that will cover the average demand will be installed in 2022, but until installations are finalised the company relies on a fossil intensive Polish grid. In the Scottish site the company also uses natural gas for water heating and diesel for a steam generated boiler. According to Nexam the company is working to find other solutions for the water heating and the boiler in the site in Scotland.

Energy type	Amount	Percent	Comments
Electricity	1,260,646 kWh	87 %	8.4% from non-renewable
Gas Oil (Diesel)	114,449 kWh	8 %	10,654 l
Natural Gas	21,724 kWh	1.5 %	3,060 l
Others	50,827 kWh	3.5 %	Including communal heating from renewable sources (Sweden).

Table 3: The table give information on the energy use for Nexam.

According to Nexam, some of the products manufactured by the company will give reduced energy use for its customers. One example is Nexam's products used to manufacture light-weight resins, that are more energy efficient than heavier, less efficient traditional metal components.

Materials

The raw materials used in the manufacturing processes originate from fossil fuels. These are organic monomers/polymers and solvents. The company informs that 99% of the polymers originates from virgin fossil fuels. The remaining 1% is a mix of recycled materials and bio-polymers. Nexam informs that the company has initiated development projects to increase the share of recycled polymers, even if specific targets have not yet been established.

Nexam informs us that some of their products, like the additives produced for polyesters (PET) aim at increasing the recycling possibilities and enable the production of PET-foam that makes the material lighter. PET is among others used in plastic bottles, and wind turbines.

Waste

Waste will mainly originate from the manufacturing processes and the company reported 0.09 kg waste/kg product in 2021, with a target to reduce it to 0.08 kg in 2022. To reduce the waste in the production processes the company is among others including production efficiency in the ESG-training.

Nexam informs that more than 85% of its waste is recycled and that less than 5% of its waste gets deposited to land-fills. Hazardous waste that cannot be recycled is according to the company treated prior to safe disposal to an approved receiver.



Climate Resilience

As the climate is changing, we are expecting increased frequency and severity of extreme weather, like storms, heavy rain and flooding. Nexam has conducted preliminary climate risk assessments related to its internal operations, but has not yet carried out a systematic assessment of physical climate risks and the consequences this might have on the company's supply chain and operations. The company has not started reporting in line with the TCFD-guidelines.

Key social issues

Nexam's suppliers Code of Conduct (CoC) specifies the company's requirements towards the suppliers regarding human rights, health and safety, environment and business ethics:

- ✓ Human rights: Zero tolerance for forced labour and child labour. Suppliers shall respect freedom of association.
- ✓ Health and safety: Suppliers shall ensure safe working conditions for their employees
- ✓ Environment: Suppliers shall comply with relevant permits and operations shall minimise and monitor pollution, water use, energy use and waste generation.
- ✓ Business ethics: Corruption and fraud will not be tolerated. All minerals shall be sourced responsibly, and due diligence must be carried out where production might lead to human rights abuses.

To ensure implementation of the CoC, it is referenced in the standard terms and conditions and in contracts. Nexam has met all suppliers, and the topics in the CoC is discussed during customer visits, audits and on-boarding of new suppliers. They furthermore expect that suppliers will self-audit against these principles but retains the right to audit any of their suppliers if needed. Nexam also expects that its suppliers will cascade similar expectations to their own supply chains.

New suppliers are identified by supply chain using contacts and desktop searches. These are audited before any partnership is initiated. This is initially a self-audit process, followed by an in-depth site visit. Health and Safety is an integral part of this process.

Nexam states in its Corporate Social Policy that they support the UN Declaration of human rights, that child labour is not accepted, that all employees shall be paid at least minimum wage and that all employees may raise matters of concern without fear of retribution. Nexam's work is also inspired by the Responsible Business Alliance's (RBA) Code of Conduct.⁹ The company conducts regular internal and external audits. Most audits are mandatory in relation with the ISO accreditations. Additionally, Environment, Health and Safety (EHS) inspections are carried out across the different sites as a proactive measure to improve worker Health, Safety and Well-being and environmental performance. All accidents/incidents are investigated when they occur, and appropriate additional safety measures will be put in place.

The CoC is not yet available on the company's website.

Workplace safety. Nexam aims to follow the RBA's CoC also related to health and safety. This includes i.a. to identify and mitigate occupational safety hazards and implement emergency response plans and training. Nexam has a zero-accident vision as a part of its work environment policy. In 2020 the company reported two accidents with a total of three days lost working time. In 2021 the company made it easier for employees to report incidents.

⁹ [RBACodeofConduct6.0_English.pdf \(responsiblebusiness.org\)](#)



Main environmental risks are according to the company related to the use of organic chemicals in the manufacturing process in Scotland. Nexam informs that they conduct risk assessments before each process, and no incidents were reported in 2021.

Table 4 CICERO Green assessment of Nexam’s management of key environmental and social issues.

Key issue	CICERO Green comments
GHG emissions	<ul style="list-style-type: none"> ✓ It is positive that Nexam has established a target to be carbon neutral for scope 1 and 2 emissions by 2025 and is making good progress towards the target. However, considering that Nexam’s scope 3 emissions are far larger than its scope 1 and 2 emissions, CICERO Green encourages Nexam to also establish targets to reduce its scope 3 emissions. ✓ Nexam’s products are associated with emissions in the upstream value chain, as well as embedded emissions that most likely will be released at end of life if the products end up being incinerated. An increase in the use of recycled/bio-based raw materials will reduce the emissions in a life cycle perspective.
Energy	<ul style="list-style-type: none"> ✓ It is a strength that Nexam has established energy efficiency targets, and that they have concrete plans to phase out the use of fossil fuels in its operative sites and the use of electricity from the Polish electricity grid. ✓ Several of Nexam’s products contribute to reduced energy use for its customers.
Materials	<ul style="list-style-type: none"> ✓ Nexam’s raw materials originate from fossil fuels. Even if the company has initiated projects to increase the share of recycled polymers and bio-polymers, the company has not established concrete targets and the volume is low. CICERO Green encourages Nexam to engage with its relevant suppliers to reduce the content of virgin fossil material in the raw materials. ✓ It is a strength that some of Nexam’s products enable upgrading and increased recycling of used plastics.
Waste	<ul style="list-style-type: none"> ✓ It is positive that Nexam has established targets to reduce the waste generated, and that less than 5% of the waste generated is deposited.
Climate Resilience	<ul style="list-style-type: none"> ✓ It is positive that Nexam has conducted preliminary assessments of physical climate risks, starting with its operational sites. ✓ It is a pitfall that the likelihood and impacts of supply chain disruptions from physical climate risks have not been considered. We encourage Nexam to establish action plans based on the identified risks in its operative sites, to include the supply chain in the assessments and to start reporting according to the TCFD-recommendations. Nexam informs that this is planned for 2023.
Social issues	<ul style="list-style-type: none"> ✓ Nexam has a solid Code of Conduct that is referenced in the standard terms and conditions in contracts. We encourage Nexam to make the CoC publicly available on its web-site. ✓ Nexam seems to have a good understanding of its own environmental and social risks, but can improve the systematic evaluation of risks in its upstream and downstream supply chain, including when selecting new suppliers or customers.



2 Assessment of Nexam’s revenues and investments

Shading of Nexam’s revenue, operating expenses and investments

According to CICERO Green’s methodology a Shade of Green should be allocated to the revenue stream, operating costs or investment according to how these reflect alignment of the underlying activities to a low carbon and climate resilient future. In allocating a shade we have considered the products Nexam’s chemicals and solutions are added to and their contribution to that future, as well as Nexam’s ties with a fossil-based value chain. Governance is also included in the considerations (see methodology page for further details on shading).

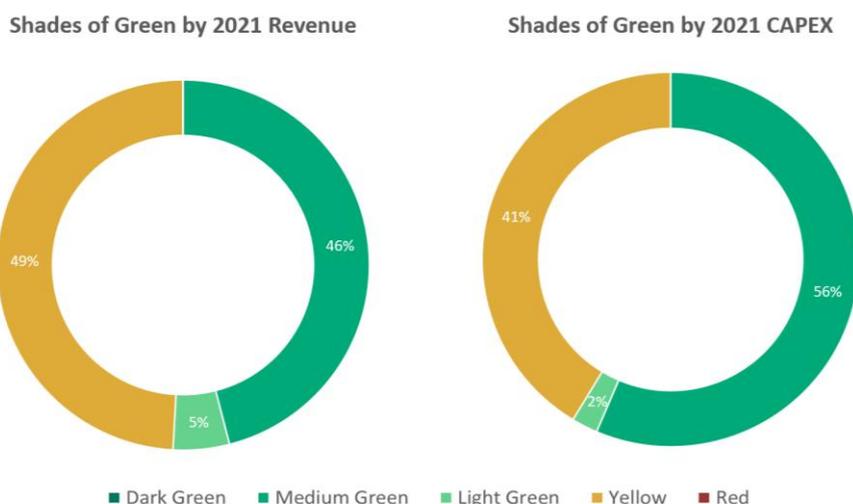


Figure 5: Nexam 2021 revenue and investments by Shade of Green. The figures are aligned with Nexam’s financial reporting.

We find that in 2021, 51% of Nexam’s revenue, 59% of CAPEX, and 51% of OPEX are assessed as green, while 49% of the revenue, 41% of CAPEX and 49% of OPEX are assessed as yellow. 51% of the sum of CAPEX and OPEX are assessed as green, while 49% are assessed as Yellow.

Nexam manufactures a wide range of chemicals, some with significant environmental benefits. For example, some of Nexam’s chemicals enable increased recyclability of plastics. This is positive from a climate perspective and contributes positively to the circular economy. However, there are also emissions and potentially negative environmental impacts associated with the manufacturing of the chemicals. The raw materials originate from fossil fuels, and emissions intensity will depend on how the raw materials are extracted and transported. The company has initiated work to increase the use of recycled and bio-based material, but currently 99% is fossil based. When considering the end of life for the products Nexam’s chemicals are added to, they will most likely be incinerated, further contributing to emissions of GHG. Nexam has a target to be climate neutral based on scope 1 and 2 emissions by 2025, and the company is on track to meet the target. However, the target does not include scope 3 emissions, constituting Nexam’s highest share of emissions. Taking these considerations into account, we have assigned a shade to the revenue streams based on the following:



Medium Green is allocated to activities that represent steps towards the long-term vision but are not quite there yet. Nexam's chemicals that contribute towards necessary activities for the low carbon and circular economy, but have emissions in the value chain are allocated the Medium Green shade. These are:

- ✓ Performance chemicals (e.g., NEXAMITE M852000) that enable the production of PET-foam used in the core of the blades of wind turbines. Using PET-foam instead of the more widely used PVC-foams or balsa wood makes it easier to recycle the wind turbine blades instead of scrapping them, and PET-foam is also lighter than the other materials used, increasing the energy efficiency. Note that the other applications of the PET-foam e.g. within buildings and vehicles have been allocated a Yellow shade.
- ✓ PET-resins (NEXAMITE M020601) that enable a larger proportion of plastics to be recycled. Examples are the recycling of PET-plastic bottles. The product enables upcycling without the use of Solid-State polymerization (SSP), which gives significant energy savings as the SSP stage involves several hours of processing at high temperatures.
- ✓ Polyolefins that increase the lifespan of water pipes. Water pipes are important for climate adaptation and resilience as the threats to water security and the need for treatment of i.a. surface water increases due to climate change.

Some of the applications for Nexam's chemicals are Dark green, as the chemicals that contribute to increased recyclability of windmill-blades. However, considering the emissions in the upstream value chain and the embedded emissions released at end of life these products have been allocated a Medium Green shade.

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. The following product has been allocated a Light Green shade:

- ✓ Heat resistant monomers (Neximid 100A) that enable the use of a plastic composite light-weight material in the aviation sector (e.g., jet engines, jet-exhaust details etc with operating temps >300 °C). These products are used to replace heavier metals resulting in the materials being 50% lighter. This leads to a reduction in energy demand and as such an increased fuel efficiency. Increasing fuel efficiency is positive from a climate perspective and this is reflected in the green shading.

The aviation sector will be present in a low-carbon and climate resilient future, but the sector is emissions intensive, and deep emissions reductions are needed. According to the IEA, fuel efficiency must increase by more than 2% annually in the Net Zero Emissions scenario¹⁰, and Nexam's chemicals contributes to this. The use of lighter materials will also be needed when the fossil fuels used are being replaced with biofuels or other low carbon fuels, considering that low-carbon fuels tend to be less energy efficient. As such, the need for Nexam's chemicals will still exist going forward and the lock in risk is small.

The **Yellow shade** has been allocated to Nexam's other products. Among these are Nexam's UV stabilisers that increase the durability of outdoor plastics films and molds. Extending the lifetime of products is positive from a climate perspective, however, the yellow shading reflects that the products Nexam's chemicals are added to do not contribute to the transition and that there are emissions associated with the activities. In addition, it is uncertain that extending the lifetime of these plastics will reduce new plastic production. Furthermore, the UV stabilisers do not contribute to increased recyclability. The Yellow shade has also been allocated to chemicals added to products

¹⁰ Aviation – Analysis - IEA



not driving the transition, like PET-foam used in buildings. Nexam has confirmed that they do not have heavy emitting customers associated with high climate and/or lock-in risks.

Nexam operating expenses are general in nature and support the production of chemicals and solutions. These have been allocated the same split in shading as revenues (51% Green and 49% Yellow). Nexam has investments research and development, and general investments that support operations. Research and development investments have been shaded according to product type following the above approach. CAPEX not used for development work has been allocated the same split in shading as revenues.

Investors should note that our assessment is based on data reported or estimated by the company and has not always been verified by a third party. We analyse revenue, operating costs and investments, however there is typically not an explicit link between sustainability and financial data¹¹. Our shading often requires allocating line items in financial statements to projects or products, for this we have relied on Nexam's split of revenues per product. In addition, there are numerous ways to estimate, measure, verify and report e.g. data on emissions, which may make direct comparisons between companies or regulatory criteria difficult and somewhat uncertain.

Nasdaq Green Designation

CICERO Green confirms that Nexam meets the requirements for Nasdaq Green Equity Designation set out in the Nasdaq Green Equity Principles. In 2021, 51% of Nexam's turnover came from assets with some Shade of Green, exceeding the 50% threshold for green activities for company turnover. The sum of OPEX and CAPEX allocated a Shade of Green is also 51%, meeting the 50 % threshold for investments, defined as the sum of CAPEX and OPEX. In 2021, Nexam had no turnover assessed shaded Red, meeting the threshold of less than 5% of the company's turnover being derived from fossil fuel activities.

In addition, this report provides transparency on alignment of the company's activities with the EU Taxonomy and transparency on the company's environmental targets and KPIs is provided.

EU Taxonomy

The EU Taxonomy has established six environmental objectives and issued in April 2021 delegated acts to the EU Taxonomy regulation to outline proposed criteria for the two first objectives Climate change mitigation (Annex 1 to the EU Taxonomy Regulation) and Climate Change adaptation (Annex 2)¹². The Annex 1 identifies the category *3.14 Manufacture of organic basic chemicals*. Nexam's product range is however more complex in terms of structure and reactivity than those covered by the EU-Taxonomy. Assessment of alignment towards the CO₂-intensity thresholds in the current delegated act of the EU Taxonomy is therefore not directly applicable and a taxonomy assessment has not been carried out in this Company Assessment.

¹¹ Most accounting systems do typically not provide a break-down of revenue and investments by environmental impact, and the analysis may therefore include imprecisions and may not be directly comparable with figures in the annual reporting

¹² [taxonomy-regulation-delegated-act-2021-2800-annex-1_en.pdf \(europa.eu\)](https://eur-lex.europa.eu/eli/reg/2021/2800/annex-1_en.pdf)



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 the company, 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.

The EU Taxonomy, first introduced in 2020, seeks to set out common classification systems to determine the environmental sustainability of activities. The EU-taxonomy regulation¹³ defines six environmental objectives. To be considered environmentally sustainable, an activity must substantially contribute to one or more of the six objectives, not significantly harm any of the other six objectives (Do-No-Significant-Harm - DNSH), and comply with the technical screening criteria (TSC). In June 2021, EU published its delegated acts outlining the TSC for climate adaptation and mitigation objectives, respectively, which it was tasked to develop after the Taxonomy Regulation entered into law in July 2020¹⁴.

In order to qualify as a sustainable activity under the EU regulation 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. 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.

¹³ EU-Taxonomy regulation (2020/852), <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32020R0852&from=EN>

¹⁴ [taxonomy-regulation-delegated-act-2021-2800-annex-1_en.pdf](#) (europa.eu)



Appendix 1: Referenced documents list

Document Number	Document Name	Description
1	Sustainability policy, dated November 2020.	Nexam Chemical's principles of sustainable operation.
2	Årsredovisning 2020, dated April 2021.	Annual report 2020
3	Supplier Code of Conduct, dated July 2021.	Specifies the company's expectations towards the suppliers.
4	Corporate Social Responsibility statement, dated November 2020.	Outlines the expectations and rights for the employees.
5	Presentation, Sustainability at Nexam Chemicals, dated November 2020.	Provide input on the sustainability work in Nexam Chemicals.
6	Nexam Climate risk assessment, dated January 2022.	Summarises physical climate risk for Nexam's operative sites.
7	Financial information on revenues, CAPEX and OPEX.	



Appendix 2: Background

According to the IEA, the chemical sector is the largest industrial consumer of both oil and gas. The sector is the largest industrial energy consumer, but it is the third largest industry subsector in terms of direct CO₂ emissions – behind iron and steel and cement. This is largely because around half of the sector’s energy input is consumed as feedstock, the emissions of which are released downstream in other sectors. Direct CO₂ emissions from primary chemical production were 920 Mt CO₂ in 2020, a 2.3% decrease from the previous year, resulting from production declines due to the Covid-19 crisis. In IEA’s Net Zero Emissions by 2050 Scenario, emissions from primary chemical production peak in the next few years and then decline to about 10% below the 2020 level by 2030, despite strong growth in demand. To get on track, government and industry efforts need to address CO₂ emissions from chemical production, as well as from the use and disposal of chemical products.¹⁵

It is estimated that plastic production and incineration of plastic waste is responsible for around 400 million tons of CO₂ every year. Increasing the recycling rates can therefore curb CO₂ emissions. Annual energy savings that could be achieved from recycling all global plastic waste is estimated to around 3,5 billion barrels of oil per year. Currently about 5 out of 30 million tons of plastic waste generated in Europe were recycled and only 6% of new plastic materials are currently derived from recycled plastic.¹⁶ The main reason for this is that only a small share of the plastic collected can be reprocessed due to mixing and contamination, with additive contents that make recycling technically and economically difficult¹⁷. Demand for recycled plastic today accounts for around 6 % of plastic demand in Europe. There is, however, a discussion in the EU to introduce requirements for minimum content of recycled plastic in some products.¹⁸

According to the EIA, achieving net-zero emission targets depends on strong and targeted R&D and innovation efforts in critical technologies. In the Sustainable Development Scenario, almost 35% of the cumulative CO₂ emissions reductions by 2070 compared with the Stated Policies Scenario come from technologies that are currently at the prototype or demonstration phase which will not become available at scale without further R&D. About 40% of the cumulative emissions reductions rely on technologies that have not yet been commercially deployed in mass-market applications.¹⁹

¹⁵ [Chemicals - Fuels & Technologies - IEA](#)

¹⁶ https://eur-lex.europa.eu/resource.html?uri=cellar:2df5d1d2-fac7-11e7-b8f5-01aa75ed71a1.0001.02/DOC_1&format=PDF

¹⁷ The circular economy: A powerful force for climate mitigation, Material economics (2018)

¹⁸ https://ec.europa.eu/commission/presscorner/detail/pl/IP_18_6728

¹⁹ [Clean energy innovation – Energy Technology Perspectives 2020 – Analysis - IEA](#)



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, 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).

