

C0. Introduction

C0.1

(C0.1) Give a general description and introduction to your organization.

LANXESS is a leading specialty chemicals company with sales of EUR 6.8 billion in 2019. The company currently has about 14,300 employees in 33 countries. The core business of LANXESS is the development, manufacturing and marketing of chemical intermediates, additives, specialty chemicals and plastics. LANXESS is listed in the leading sustainability indices Dow Jones Sustainability Index (DJSI World and Europe) and FTSE4Good.

LANXESS is listed in the leading sustainability indices Dow Jones Sustainability Index (DJSI World and Europe), FTSE4Good, CDP Climate "A" listed and signatory to the UN Global Compact *** "Good for business, good for society." Under this guiding principle LANXESS aims at combining safety, environmental protection, social responsibility, and commercial efficiency in its business operations. As a specialty chemicals enterprise operating worldwide, we believe that developing efficient technologies that protect the environment is a well-founded strategy for securing the long-term growth of our company. Every business decision at LANXESS takes into account the company's responsibility for society, environment, climate, and business results. Therefore, sustainability is an important criterion in all our strategic considerations and decisions. Regardless of where we do business, we are a leading provider of quality solutions. This means that we not only supply our clients with high-quality products, but also actively enable their own innovation and sustainable processes along their value chain. *** LANXESS is serious about climate protection - both in terms of its own carbon footprint and with regard to the benefits to society. "Climate Action and Energy Efficiency" is one of our seven material sustainability topics (Annual Report 2019, p. 14) and as such incorporated into all strategy processes and integral part of LANXESS Corporate Strategy, the group wide risk management system and the agenda of all relevant operational committees. The foundation of LANXESS' climate strategy is still the objective to reduce our own impact and manage emissions from our processes, sourced energy and raw materials, to make LANXESS more resilient in the long-term perspective. To this end, LANXESS has declared to become climate neutral by 2040. This firm ambition is reflected in our concrete successive climate goals and the goal to further increase energy efficiency: • 65% reduction of CO₂e emissions by 2025 (base year: 2004) • 75% reduction of CO₂e emissions by 2030 (base year: 2004) • •

Increase in energy efficiency of 40% to < 1.24 (MWh/t) by 2025 (base year: 2015) *** In addition, beyond our own production processes we are using our knowledge and experience to develop products and technologies which enable emissions savings. As an example, thanks to the high-performance engineering plastic Durethan®, the automotive industry is increasingly producing car body parts that can withstand the highest stresses and are up to 40 percent lighter than conventional parts, saving fuel and emissions. Reporting of environmental goals and data is available in the LANXESS Annual Report 2019, Corporate Responsibility section (pp 16-18), <https://lanxess.com/corporate/investor-relations/publications/annual-reports/>

LANXESS has decided to have the environmental management of all its worldwide activities certified to ISO 14001 and to introduce an ISO 50001 energy management system. *** For general information, please see at www.lanxess.com - About LANXESS (e.g. Company News, Innovation, Management/Organization), - Products & Solutions (e.g. Business Units, eBusiness incl. Terms & Conditions), - Media (e.g. Press Releases, Publications), - Investor Relations (e.g. Corporate Governance, Investor News, Publications, Shares), - Corporate Responsibility (e.g. CR News, strategy, material topics and targets, SDGs, Certificates & Commitment) *** All data above as per May 31st. 2020. *** Forward-Looking Statements: The answers to the questions of the CDP contain forward-looking statements based on current assumptions and forecasts made by LANXESS AG management. Various known and unknown risks, uncertainties and other factors could lead to material differences between the actual future results, financial situation, development or performance of the company and the estimates given here. Company assumes no liability whatsoever to update these forward-looking statements or to conform them to future events or developments.

In 2019 the board decided to divest the business unit "Leather chemicals", therefore they were reported under discontinued operations in the financial reporting and are not more part of the reported LANXESS revenue or EBITDA. We have adjusted the environmental data and targets accordingly. This results in a small difference between the figures in this chapter and the publicly available information.

C0.2

(C0.2) State the start and end date of the year for which you are reporting data.

	Start date	End date	Indicate if you are providing emissions data for past reporting years	Select the number of past reporting years you will be providing emissions data for
Reporting year	January 1 2019	December 31 2019	No	<Not Applicable>

C0.3

(C0.3) Select the countries/areas for which you will be supplying data.

- Argentina
- Australia
- Belgium
- Brazil
- Canada
- China
- France
- Germany
- India
- Italy
- Japan
- Mexico
- Republic of Korea
- Russian Federation
- Singapore
- Taiwan, Greater China
- United Kingdom of Great Britain and Northern Ireland
- United States of America

C0.4

(C0.4) Select the currency used for all financial information disclosed throughout your response.

- EUR

C0.5

(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should align with your chosen approach for consolidating your GHG inventory.

- Financial control

C-CH0.7

(C-CH0.7) Which part of the chemicals value chain does your organization operate in?

Row 1

Bulk organic chemicals

- Polymers
- Adipic acid

Bulk inorganic chemicals

- Fertilizers

Other chemicals

- Specialty chemicals
- Specialty organic chemicals

C1. Governance

C1.1

(C1.1) Is there board-level oversight of climate-related issues within your organization?

- Yes

C1.1a

(C1.1a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for climate-related issues.

Position of individual(s)	Please explain
Chief Executive Officer (CEO)	As climate change is a multidimensional issue, the highest level of direct responsibility lies within the Board of Management headed by the CEO of LANXESS. Strategic risks and/ or chances arising from climate change are analysed and monitored as part of the annual 'Strategic Portfolio Review' by the Board and presented to the Supervisory Board. Outcomes are considered in the corporate business strategy of LANXESS. In 2019 the Board decided new more ambitious CO2 reductions targets for LANXESS (25% scope 1 and 2 reduction until 2025, 50% reduction until 2030 and climate neutral until 2040 against base year 2018).
Chief Operating Officer (COO)	The highest level of direct responsibility for directives, strategies and programs with regard to energies and emissions as well as for defining HSEQ targets and monitoring their attainment is assigned to LANXESS Chief Operating Officer, who is also part of the Board of Management. HSEQ standing for Health, Safety, Environmental protection (climate protection included) and Quality. The COO directs LANXESS's HSEQ Committee, comprising the company's senior executives including the heads of the Business Units and Group Functions. It has responsibility for initiating and monitoring the global implementation of HSEQ directives, strategies and programs. The COO sets up energy and emission reduction targets and strategies and supervises the Business Units in the implementation process and identifies the relevant reduction projects. Investment projects are then confirmed together with the CFO. After the decision in 2019 for LANXESS to become climate neutral until 2040, the COO initiated the Climate Coordination Committee, to manage and to harmonize the different work streams regarding CO2-topics.
Chief Financial Officer (CFO)	The Chief Financial Officer, who is a board member, is responsible to review the Corporate Risks and the corporate finance structure. This includes the heading of the Corporate Risk Committee (CRC). The Corporate Risk Committee takes over the main oversight function. It is responsible for the structure and implementation of the Group-wide Risk Management process. CRC is made up of senior executives, analyses, validates and monitors the Group's risk profile as well as the key opportunities, risks and measures, including climate related risks and opportunities. After the decision in 2019 for LANXESS to become climate neutral until 2040, the CFO committed to invest up to 100m€ in for climate related projects until 2025.

C1.1b

(C1.1b) Provide further details on the board's oversight of climate-related issues.

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Scope of board-level oversight	Please explain
Scheduled – all meetings	Reviewing and guiding risk management policies Monitoring and overseeing progress against goals and targets for addressing climate-related issues	<Not Applicable>	Corporate Risk Committee - The Corporate Risk Committee as the main oversight function for risks and opportunities analyses and validates the key opportunities and risks and their development from a group perspective as well as the management measures. It is headed by the Chief Financial Officer. If necessary, additional analyses or measures are commissioned. This includes all topics resulting from Climate Change. Every year all strategic topics and measures were discussed by the board in a three-day workshop. One topic is always CO2 including actual progress against the new targets.
Scheduled – some meetings	Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding annual budgets Reviewing and guiding business plans Setting performance objectives Monitoring implementation and performance of objectives Overseeing major capital expenditures, acquisitions and divestitures Monitoring and overseeing progress against goals and targets for addressing climate-related issues	<Not Applicable>	Board of Management - As climate change is a multidimensional issue, the highest level of direct responsibility lies within the Board of Management headed by the CEO of LANXESS. Strategic risks and/ or chances arising from climate change are analysed and monitored as part of the annual 'Strategic Portfolio Review' by the Board and presented to the Supervisory Board. Outcomes are considered in the corporate business strategy of LANXESS. In 2019 the Board decided new more ambitious CO2 reductions targets for LANXESS (25% scope 1 and 2 reduction until 2025, 50% reduction until 2030 and climate neutral until 2040 against base year 2018).
Scheduled – all meetings	Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Setting performance objectives Monitoring implementation and performance of objectives Monitoring and overseeing progress against goals and targets for addressing climate-related issues	<Not Applicable>	LANXESS's HSEQ Committee is headed by the COO. HSEQ standing for Health, Safety, Environmental protection (climate protection included) and Quality. It comprises the company's senior executives including the heads of the Business Units and Group Functions. The HSEQ Committee has responsibility for initiating and monitoring the global implementation of HSEQ directives, strategies and programs, as well as for defining HSEQ targets and monitoring their attainment. This included energy and climate related targets and decisions.

C1.2

(C1.2) Provide the highest management-level position(s) or committee(s) with responsibility for climate-related issues.

Name of the position(s) and/or committee(s)	Reporting line	Responsibility	Coverage of responsibility	Frequency of reporting to the board on climate-related issues
Chief Operating Officer (COO)	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	More frequently than quarterly
Safety, Health, Environment and Quality committee	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	More frequently than quarterly
Other committee, please specify (Corporate Climate Committee)	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	Quarterly
Chief Financial Officer (CFO)	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	More frequently than quarterly

C1.2a**(C1.2a) Describe where in the organizational structure this/these position(s) and/or committees lie, what their associated responsibilities are, and how climate-related issues are monitored (do not include the names of individuals).**

Chief Operating Officer (COO):

The COO is member of the Board of Management. The COO has the highest level of direct responsibility for LANXESS' operations. The COO also has the highest level of direct responsibility for directives, strategies and programs with regard to energies and emissions as well as for defining HSEQ targets and monitoring their attainment is assigned to LANXESS Chief Operating Officer. As climate has become one of the most important corporate-wide issues, responsibility for it has been assigned directly to the COO, who heads the Climate Coordination Committee. The COO not only chairs the HSEQ committee and the Climate Coordination Committee but the overall process for eco efficiency incl. energy efficiency and emission reductions. It is the everyday business of the COO to take care of energy efficiency and emission reductions especially in the case of investment decisions. In this respect the COO brings climate related topics to the attention of the Board of Management on a regular basis. The COO monitors the implementation of the energy and emission reduction strategies and the target achievements via the LANXESS HSE performance data. Results are analysed by the Energy Manager and Corporate Strategy department. The COO then brings the results to the attention of the HSEQ – Committee. New measures are deducted according to the result.

LANXESS's HSEQ Committee is comprised of the company's senior executives (including the heads of the Business Units and Group Functions) under the direction of the Chief Operating Officer. HSEQ standing for Health, Safety, Environmental protection (climate protection included) and Quality. The Committee is coordinated by the Head of the Group Function " Production Technology Safety and Environment", has responsibility for initiating and monitoring the global implementation of HSEQ directives, strategies and programs, as well as for defining HSEQ targets and monitoring their attainment. The Head of the Group Function " Production Technology Safety and Environment" serves as the global representative of the Board of Management in terms of HSEQ management for LANXESS and its affiliates. The Head of the Group Function " Production Technology Safety and Environment" directly reports to the COO.

LANXESS's Climate Coordination Committee (3C) collects, develops and monitors in separate workstream all CO2 reduction options. The COO is chair of this Committee. The 3C manages beside workstreams for energy procurement (buying green energy), Innovation (process development to reduce CO2) , BUs (projects regarding CO2 reduction on plant level) and Finance (including of CO2 KPIs into capex process) also the big corporate climate projects, where more than one BU is direct affected. All significant climate related projects issues have to be approved by 3C and progress of projects also have to be reported on regular basis.

Chief Financial Officer (CFO)

The Chief Financial Officer chairs the Corporate Risk Committee and supervises all LANXESS investment decisions in the Investment Committee. As climate has become one of the most important corporate-wide issues, the CFO assesses and manages climate-related risks and opportunities on a regular basis and therefore more frequently than quarterly. The CFO monitors the target attainment for energy and emission reductions via the HSE performance data that are provided to him by the COO and proceeds with the approval of investment decisions accordingly.

C1.3**(C1.3) Do you provide incentives for the management of climate-related issues, including the attainment of targets?**

	Provide incentives for the management of climate-related issues	Comment
Row 1	Yes	

C1.3a

(C1.3a) Provide further details on the incentives provided for the management of climate-related issues (do not include the names of individuals).

Entitled to incentive	Type of incentive	Activity incentivized	Comment
Board/Executive board	Monetary reward	Emissions reduction target	For the CEO/Executive Board the annual performance bonus as well as the long-term performance bonus is linked to the achievement of the climate/sustainability targets including GHG emission reduction and reduction of energy consumption. All board members are included in this bonus system. Climate targets 2015 - 2025: 1. Reduction of specific Scope1 CO2e emissions by 25% for the LANXESS Group by the end of 2025 (base date: December 31, 2015), 2. Reduction of specific Scope 2 CO2e emissions by 25% for the LANXESS Group by the end of 2025 (base date: December 31, 2015), 3. Reduction of specific energy consumption by 25% for the LANXESS Group by the end of 2025 (base date: December 31, 2015), 4. Reduction of emissions of volatile organic compounds (NMVOC) by 25% for the LANXESS Group by the end of 2025 (base date: December 31, 2015). Besides that, LANXESS published further CO2e-Emission reduction goals in 2019.
Corporate executive team	Monetary reward	Energy reduction target	Since the beginning of 2016 the sustainability targets 2015-2025 (see above Board/Executive Board) have been included into the bonus matrix of the senior and upper management: Senior Management: 20% of annual performance bonus and 20% of long-term performance bonus (global coverage 100%). Upper Management: 12% of annual performance bonus (global coverage 100%).
All employees	Monetary reward	Energy reduction project	For all other employee groups the incentive system is designed to reward outstanding individual performance including engagement for the climate targets via the individual performance portion of the annual incentive schema. Additionally there is a mechanism to evaluate the overall sustainability performance for an individual, a group, a site, a country and/or LANXESS at all and to reduce the annual performance payment in case of unsatisfying performance. Additionally to the LANXESS incentive scheme LANXESS incentivizes employees to generate ideas on how to improve the environmental footprint of LANXESS. These ideas are collected and evaluated through LANXESS' 'Idea Management System'. Employees are encouraged to submit ideas on how to improve production processes and save costs. In 2015, LANXESS further optimized the process and structure of the 'Idea Management System'. A new agreement with the works council, which became effective on Sep. 1, 2015, includes a special incentive for ideas on new ways to reduce emissions throughout production processes. In 2019 employees submitted a total of 1,538 ideas, yielding total savings of 422 k€. A total of 272k€ million was paid out to employees.

C2. Risks and opportunities

C2.1

(C2.1) Does your organization have a process for identifying, assessing, and responding to climate-related risks and opportunities?

Yes

C2.1a

(C2.1a) How does your organization define short-, medium- and long-term time horizons?

	From (years)	To (years)	Comment
Short-term	0	1	Formally included in corporate risk and opportunities management .
Medium-term	1	10	Formally included in corporate risk and opportunities management .
Long-term	10	30	Formally included in corporate risk and opportunities management .

C2.1b

(C2.1b) How does your organization define substantive financial or strategic impact on your business?

Substantive financial or strategic impacts are defined for several dimensions.

Each opportunity and risk is measured in three dimensions, thereof one quantitative and two qualitative dimensions:

- a) Financial Impact (quantitative)
- b) Impact on LANXESS' reputation (qualitative)
- c) Impact on society and environment (qualitative)

a) Financial Impact

Regarding Financial Impact, all opportunities and risks have a substantive financial or strategic impact, if they met one of the following criteria:

- i) Opportunities and risks with more than €1 million EBITDA-impact after countermeasures
- ii) Risks which have an expected EBITDA impact, that was reduced by more than €10 million through the implementation of countermeasures
- iii) New opportunities or risks with an impact of more than €5 million after measures must be reported ad-hoc

Opportunities and risks having an impact on several BUs are aggregated for an evaluation of the impact on corporate level (e.g. low Rhine water).

These thresholds guarantee that the information is comprehensive and not just limited to material risks or risks that could jeopardize the future of the company as a going concern.

b+c) Impact on LANXESS' reputation and on society and environment

If an opportunity or a risk is evaluated with highest ranking in category b) or c) it will be also marked as risk with substantive impact.

C2.2

(C2.2) Describe your process(es) for identifying, assessing and responding to climate-related risks and opportunities.

Value chain stage(s) covered

Direct operations
Upstream
Downstream

Risk management process

Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment

More than once a year

Time horizon(s) covered

Short-term
Medium-term
Long-term

Description of process

The opportunity and risk management process is based on the COSO II standard and consists among others of the following process steps. (1) Opportunity and Risk Identification: Objective of the RM process is the early detection and creation of transparency of material opportunities and risks, that could lead to a deviation from our targets and to implement measures to mitigate these risks and to exploit the opportunities, respectively. a) Process responsibility: The BU and GF Heads and Country Representatives are ultimately responsible for the opportunity/risk management in their unit. They each appoint a Risk Champion, who organizes the bottom-up assessment of opportunities and risks in the respective unit and ensure that all relevant opportunities and risks are identified and submitted in the RM software. Each opportunity and risk needs to be assigned to a Risk Owner who is responsible to quantify and steer the risk. Climate-related risks and opportunities are usually managed by the local, regional and corporate units. Relevant climate related Corporate Risk Owners are: Environmental and technology, procurement/logistics, political relations, corporate strategy, innovation management. b) Process: A risk catalogue is defined in order to systematize the collection of opportunities and risks and to ensure that all material risks and opportunities are taken into account. It contains climate-related categories: e.g. "natural disaster, climate & weather", "environmental policy", "raw material, energy and water price", "transport & logistics" and "environmental & societal concern". All users may report opportunities and risks in all risk categories. However, for clear responsibilities and to avoid duplications, for each risk category it is determined which organizational units are primarily responsible for identifying and assessing relevant risks. Risks can either be identified and assessed directly by the Risk Owner or alternatively by a Non-Risk Owner: Wherever a GF (Group Function) fulfils a service function for a BU (e.g. Global Procurement), the GF must report matters which may result in deviations from the forecasted EBITDA. In this case, the GF assumes a Risk Identifier role. The GF needs to enter the risk in the RM software, assign it to the concerned BU as Risk Owner to assess the potential financial impact. The country organizations always have a Risk Identifier Role and assign all identified risks to the relevant Risk Owners for assessment and steering. E.g. risks regarding the availability of raw materials, energies and water for individual sites are identified by Global Procurement, risks of (acquired) assets with (new) environmental topics are primarily identified by GF PTSE, new directives and laws on energy, water, environmental, climate and chemicals policy are identified by GF COM and the country organisations. The potential financial impact of these risks before and after risk steering measures is then assessed by the concerned BU as Risk Owner. (2) Assessment process: Short-, medium- and long-term opportunities and risks are assessed twice a year in the context of the forecasting and the budget/planning process. Opportunities and risks are potential deviations from set targets and are assessed in regard to their impact on the EBITDA or net income Depending on the risk type, different calculation methods are applied. In addition, there are specialized committees on company level to oversee risks during the assessment process, e.g. HSEQ committee for environmental, energy and climate protection standards. In addition to the financial dimension, risk owners also assess the potential reputational impact on the Group for each risk and the potential impact on society and environment. These assessments are qualitative and classify the impact into four different categories in terms of damage on image/ stakeholder confidence/ expected media coverage (reputational risk dimension) and the in terms of geographical spread and the possibility of remediation the damage, respectively (societal risk dimension). The Risk Owners submit the information in the RM software, the Risk Champions review and discuss the findings with their heads of department and approve the risks and opportunities in the Risk software. All opportunities and risks are then analysed and prioritized by GF Controlling. GF Controlling compiles the top risks and opportunities (in terms of the expected financial impact as well as impact on LANXESS' reputation and Impact on society & environment) together with the measures. Case study for Transitional risks and/or opportunities Situation: LANXESS supplies products to numerous customers almost worldwide. The number of customers considering sustainability-related information in their supply relationships (e.g. sustainability criteria in supplier performance reviews, sustainability characteristics of purchased products) is constantly increasing. Task: The risk that these sustainability-sensitive customer will reduce their share of wallet of LANXESS products, if LANXESS doesn't constantly improve all significant sustainability KPIs at least as fast as LANXESS competitors. Action: The risk has to be quantified. Therefore companies with requests for the CDP Supply Chain were used as a proxy. Risk was derived by sales reduction of ~10% of these customer. A three dimensional portfolio assessment had to be implemented to evaluate all LANXESS products regarding significant sustainability KPIs to find products with high improvement potential. Result: LANXESS has a clear view of the Risk. This risk was qualified as substantive. LANXESS three dimensional portfolio assessment helps to limit this risk. Case study for Physical risks and/or opportunities Situation: Longer periods of drought can mean that rivers carry less water. For LANXESS, this is particularly crucial for the Rhine, as the Lower Rhine sites are the largest location for LANXESS, and shipping is essential for the supply of raw materials as well as the transport of products. Task: In order to assess the risk and define countermeasures, a precise extent of the risk at business unit level is necessary. Action: The risk champions of all business units were asked to assess the risk and define countermeasures. First of all, the storage capacities and storage ranges were considered. Next, alternative supply routes such as road or rail were identified and evaluated. Prices, including premium due to scarce availability, were used for this analysis. Result: LANXESS has a consolidated view of the risk, including possible countermeasures. This risk was qualified as substantive.

C2.2a

(C2.2a) Which risk types are considered in your organization's climate-related risk assessments?

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	//Relevance and inclusion of risk type: Since 2015 LANXESS carries out a global but country specific assessment twice per year asking for current changes in regulations as well as upcoming or anticipated regulations. Included are direct and indirect site-, operations-, supply chain-, product and business-impacts related to the regulatory environment. Such impacts include financial, organizational and strategic implications as well as proposed measures. //Example: The anticipated increased or newly introduced pricing of GHG emissions in various countries LANXESS operates in are part of LANXESS' risk identification, evaluation and management process: Revision of the European Emission Trading System (ETS): After Divestment of ARLANXEO 13 LANXESS operations are still under the rule of the EU-ETS. The system will be revised periodically. There is a risk that during the next revisions the allocation rules for free industrial certificates may change and the allocation will fall below the level of the average of reduction scenarios that are currently discussed. The impact on the operational costs due to the changes in the ETS rules is calculated by the following methodology: (1)Scope 1 related effect: the allocation of certificates according to the current ETS rules is compared to the potential new allocation rules. In various scenarios the deltas in the amounts of allowances are multiplied with a bandwidth of potential future carbon prices (between 20 and 50 €/t CO2). (2)Scope 2 related effect: the current level of power price compensation is compared to a situation with no compensation. The resulting difference is multiplied by the volume of power affected, finally the scope 1 and 2 related effects are added.
Emerging regulation	Relevant, always included	//Relevance and inclusion of risk type: LANXESS carries out a country specific assessment per year, asking for current and upcoming regulations. Even anticipated developments are requested to be reported to corporate level from country level. Included are direct and indirect site-, operations-, supply chain-, product- and business-impacts related to the regulatory environment. Such impacts include financial, organizational and strategic implications including the recommended measures. //Example: The inconsistent implementation of CO2 pricing schemes worldwide is part of LANXESS' risk identification, evaluation and management process. Based on the climate protection agreement COP 21 regulations on CO2 pricing systems are expected to emerge in a large number of countries and regions. This may include new or tightened emission trading systems or carbon taxes or fees, respectively. A non-coordinated implementation of regional or national CO2 price systems in the area of the LANXESS sites with no adequate systems in the countries of LANXESS' competitors may affect the competitive position of LANXESS significantly by adding operational costs to solely the LANXESS sites. Currently a high risk is seen in the planned German national CO2 pricing system for the non-ETS-sectors parallel to the EU ETS and no adequate implementation of carbon-leakage measures to ensure competitiveness with countries like USA or China. //Inclusion in assessment process: Our public policy experts thoroughly monitor the global regulatory regimes and identify and assess the potential upcoming regulation. Our corporate strategy department incorporate it in the strategic tools of the LANXESS group. The business units incorporate the approaches in their business strategies.
Technology	Relevant, sometimes included	//Relevance and inclusion of risk type: Worldwide, low carbon regimes/economies are in the design phase, especially in Europe and China. LANXESS pursues its low carbon strategy to transition towards such low carbon economies. Outcome for the chemical industry will be the set-up of large scale, low carbon energy supply and storage as well as innovative technologies for energy efficient chemical production processes including those processes causing process emissions. Drivers are carbon trading and pricing regimes as well as a genuine interest of the chemical industry to be part of the solution for a future low carbon world. Chemical companies including LANXESS will have to thoroughly consider the best business and investment strategy, in order to invest the right technology in the right region according to the local regulatory environment with respect to carbon emissions and approaches to low carbon energy supply. It is a prerequisite in order to not be outperformed by other chemical players that invest in more cost efficient installations especially with less carbon emission reduction. //Example: Lanxess produces partly commoditized products, that can be produced with different processes, leading to different carbon footprints, like adipic acid. If we do not steadily improve our own processes, demand for our products will decrease especially in regions with higher CO2 awareness, if competitors sell same product with lower carbon footprint. The risk is to loose up to 10% of revenue and margin, so it can be seen as substantial. //Inclusion in assessment process: The above mentioned assessment includes technical measures that are anticipated and measured against best available technology by country. Our manufacturing excellence team works as in house consultants and analyses site by site technological improvement potentials. Round about 50% of identified improvement potentials are energy-related. Our corporate strategy department identify the best investment strategy.
Legal	Relevant, sometimes included	//Relevance and inclusion of risk type: LANXESS carries out a country specific assessment twice per year, asking for potential legal risks. Such legal risks are requested to be reported to corporate from country level. Included are climate change related legal risks. //Example: LANXESS installations are subject of the relevant emission trading schemes in Europe. There would be legal consequences if LANXESS was not in line with the requirements. Especially, this imposes the risk of payment of fines. We calculate the potential risk by multiplying our emissions in the EU ETS with a potential payment of fines e.g. 100€/t CO2 in Europe. Please note that this risk is very unlikely.
Market	Relevant, sometimes included	//Relevance and inclusion of risk type: As for climate change and the upcoming decarbonization, products of LANXESS will be needed to construct a low carbon society. The chemical industry is at the beginning of long value chains and provides the molecules for downstream markets. Therefore regulations and trends in these markets need to be thoroughly monitored. Especially the implementation of the European "Green Deal" that follows a low carbon ambition among other goals will change markets e.g. with respect to recycling. The chemical industry will provide the molecules required for closed chemical and technical loops in order to build carbon efficient economies. Chemical companies that do not manage to transform their portfolio will lose the related market share, e.g. in plastics or additives. LANXESS continuously identifies, assesses, evaluates and manages upcoming sustainability and low-carbon trends in its downstream markets. //Example: LANXESS needs to steer its product portfolio towards low carbon products and needs to identify the products that are recyclable and steer additives towards integration in recycling processes. Some of LANXESS High Performance Materials can already be produced with recycled raw materials and some customers are asking especially for these products. If LANXESS doesn't follow this trend and change the processes towards recycled raw materials a significant part of revenue and margin of these products is at risk. Because LANXESS High Performance Materials are the main part of LANXESS Materials segment, this risk is substantial. //Inclusion in assessment process: The Business Units and country organizations continuously screen market development. Our strategy and policy department screens regulatory developments and the innovation department drives innovation strategies towards circular economy solutions.
Reputation	Relevant, always included	//Rationale: Our risk management includes an identification of reputational risks for every risk that has been identified. It is applied qualitatively by classifying the reputational impact into four different categories (in terms of change in stakeholder confidence and expected media coverage). //Example: New and especially young potential employees focus on the corporate responsibility / sustainability of an employer. If we fail to demonstrate that LANXESS is following a credible climate strategy and substantially reduces emissions as part of it, we will experience difficulties to recruit (young) employees. //Inclusion in assessment process: This risk is assessed qualitatively by our employer branding department. The department is in constant exchange with potential employees via recruiting events, media and stakeholder analyses and hiring processes.
Acute physical	Relevant, always included	//Relevance and inclusion of risk type: All relevant corporate functions are connected to the Incident Reporting System of LANXESS and thus are alerted as soon as the entry of a unit is becoming effective. Such Level 1 incidents are always triggering emergency plans and communication measures, coordinated by the appointed emergency response officer. In some cases a corporate crisis team is taking over, consisting of members of all relevant corporate functions. //Example: One of our Indian sites is located in an area that has been and will be subject to monsoon flooding as well as droughts and therefore can be subject to extreme weather events. Mitigation measures are in place in terms of technical installations that ensure that the site is not affected in its operations. Emergency plans are in place and revised annually. // Assessment : LANXESS' finance team and the HSEQ team assess the remaining risks in terms of potential capital damage, revenue losses by business interruptions etc. in order to ensure sufficient coverage of insurances.
Chronic physical	Relevant, sometimes included	//Relevance and inclusion of risk type: Changing climate patterns in longer-term shifts is one of the basic characteristics of climate change. LANXESS as a globally operating chemical company is and will be subject of these patterns like all economies and societies. Those climate patterns include extreme weather events. They can lead to supply chain disruptions, e.g. through droughts and flooding and possible disruptions of waterways. Disruptions of waterways can influence our supply chain stability if alternative transports methods are not thoroughly planned. //Example: Changing climate patterns in Europe are expected to lead to more extreme weather events e.g. flooding of rivers or droughts during longer time periods than before. The LANXESS production sites in Leverkusen, Dormagen and Uerdingen are situated next to the river Rhine. Meteorological studies estimate that changing climate patterns can lead to longer lasting low water levels on the river Rhine that can require alternative distribution ways for our high volume products as well as for LANXESS' raw materials. The risk is, that if shipping has to shut down due to low water level, alternatives will be short and expensive very quickly, because LANXESS competitors would facing the same problem. Worst case would be a shutdown of production. //Inclusion in assessment process: Our strategy department as well as our production and technology department closely monitor official documents and accepted risk filters, e.g. the WWF water risk filter to identify and assess the relevance and the potential impact of changing climate patterns to our company e.g. the sites situated next to the river Rhine. The impact is identified and assessed on a mixed quantitative and qualitative basis. Outcomes of the identification and assessment process are included in our business strategy planning, our site and asset management strategies as well as supply chain management. Our supply chain management closely monitors upcoming weather situations and assesses whether they might lead to supply chain disruptions, e.g. through droughts of rivers. As a consequence they thoroughly adapt supply chain structures e.g. by switching to intermodal transport systems.

C2.3

(C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.3a

(C2.3a) Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Risk 1

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Emerging regulation	Carbon pricing mechanisms
---------------------	---------------------------

Primary potential financial impact

Increased direct costs

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

Based on the climate protection agreement COP 21, regulations on CO2 pricing systems are expected to emerge in a number of countries and regions, especially Europe. This may include new or tightened emission trading schemes, carbon taxes or carbon fees, respectively. Some member states of the EU consider a carbon tax except for those plants that are already regulated by the European Emission Trading Scheme. Currently the highest risk is seen in an EU-wide implementation of a CO2 tax parallel to the EU ETS and no adequate implementation of such taxes in countries like USA or China. This is especially harming if the EU or Germany will refrain from carbon leakage rules (carbon border taxing is a target of the new EU Commission, however it is still a concept). LANXESS has a major footprint in Europe, with about 50% of Net Sales, 66% of employees and 71% of Capex, but only 13 of the plants and sites are subject to European emissions trading, covering only ~25% of LANXESS' Scope 1 emissions. Due to accelerating pressure coming along with the Green Deal pushing the European countries towards emissions reduction, there is especially for Lanxess with its heavy footprint in the EU an increasing risk of loosing competitiveness by un-coordinated CO2 regulations against players in less regulated regions. One aspect of this risk is that operational costs could negatively affect the financial results of LANXESS. If competitors of LANXESS produce the same products as LANXESS in countries with no adequate CO2 tax price systems, there is a risk that LANXESS will not be able to pass over these additional costs to customers. As a consequence, our EBITDA would decrease accordingly and revenue would be reduced.

Time horizon

Medium-term

Likelihood

About as likely as not

Magnitude of impact

Medium-high

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

21500000

Potential financial impact figure – maximum (currency)

43000000

Explanation of financial impact figure

The method to estimate the financial impact of regional/national carbon price systems is based on the scope 1 emissions of LANXESS within the EU but outside the EU-ETS, i.e. 430 kt CO2e (Total Scope 1 emissions in Europe [950kt] minus CO2e reduction due to actual nitrous oxide reduction in Antwerp [150kt] minus verified EU ETS emissions [370kt]) in the EU multiplied by the level of a regional or national CO2 tax price, which we assume to be significantly higher than the price in the EU-ETS, i.e. to be 50 - 100 €/t in 2030 within standard predictions. This leads to potential additional costs of some 21.5 – 43m€ p.a.

Cost of response to risk

20000000

Description of response and explanation of cost calculation

LANXESS mitigates the risk with a two-step approach: 1) LANXESS is pursuing its ambitious emission reduction pathway with two general concepts: a) improving energy efficiency and b) major reduction projects based on technology development. 2) LANXESS' political relations assesses drafts for CO2 pricing schemes in the countries. LANXESS provides input to transition pathways. This will enable the regulator to set up smart CO2 regimes. Example: 1) Situation: To continue manufacturing products at the Leverkusen Verbund site that are both cost competitive and have a low CO2 footprint, production must be continuously optimized. 2) Task: The energy consumption of NHF (Nitriding Hydrogenation Fractionation) plant, which is an essential component of the Verbund site, should be further optimised. 3) Action: In the NHF plant there are strippers in which unwanted substances, the vapours, are extracted. LANXESS started a project, so that the energy of the vapours can now be used to reduce the energy of the low-boiling column and thus optimise the overall energy consumption. 4) Result: About 5,000 MWh can be saved by this project per year. About 500 k€ investment was needed for the project. Cost of Calculation: In the context of the LANXESS Climate Neutral 2040 strategy, Lanxess will invest 100 m€ in climate protection projects by 2025. This results in a total of up to €20,000,000 per year for climate protection projects. These projects include both the energy efficiency projects mentioned under 1a) and those under 1b) technology development, which will result in new plants or plant modifications. In addition to this risk, also other risks are also minimized with this investment. It is therefore not possible to precisely allocate the sum to the individual risks. The political relations mentioned under 2) are rather insignificant in terms of costs compared to the 20,000,000 both in terms of absolute amount and fluctuation in the individual years and can therefore be neglected.

Comment

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Technology	Transitioning to lower emissions technology
------------	---

Primary potential financial impact

Increased capital expenditures

Climate risk type mapped to traditional financial services industry risk classification
<Not Applicable>

Company-specific description

Worldwide, low carbon regimes/economies are in the design phase, especially in Europe and China. LANXESS pursues its low carbon strategy to transition towards such low carbon economies. Target for the chemical industry will be a set-up of, among others, innovative technologies for energy/resource efficient chemical production processes including those processes causing process emissions. Drivers are carbon trading and pricing regimes as well as a genuine interest of the chemical industry to be part of the solution for a future low carbon world. Chemical companies including LANXESS will have to thoroughly consider the best innovation strategy in order to invest expenditures for research and development into the right technology. It is of vital interest to invest in the most efficient low carbon technologies in order to not be outperformed by competitors using better processes and to not lose pace. This is relevant because the necessary technologies to transform the chemical industry into a low carbon industry are not readily available. Therefore low carbon solutions require a high amount of R&D invest. Some technological challenges are of general nature and very similar among the different players in the chemical industry. Due to its size compared to the large corporations on the one hand and its differentiated product and process portfolio on the other, it does not make sense for LANXESS to manage the necessary process and technology developments alone. Therefore, for those challenges, it is of advantage to collaborate in consortia to get expertise you can't buy, to be faster in process and technology development and to dilute costs. There is a risk that we will not partner up with the right innovation partners and therefore having the major new technologies later as our competitors. As a consequence the higher cost would harm the profitability and competitiveness of LANXESS. Example: Zero carbon energy supply of Verbund sites will require several innovative approaches that are currently developed by the chemical industry, e.g. electrified thermal air cleaning. Innovative solutions will be addressed in collaborations with other chemical players in order to be fast enough for a sufficient and timely low carbon transition and to adapt the relevant global chemical value chains.

Time horizon
Medium-term

Likelihood
About as likely as not

Magnitude of impact
Medium

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
13000000

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
Maximum amount at risk is 13m€/a. The impact is derived from expert interviews and is estimated to be 11% of our total annual R&D expenditures of 114m€. This includes additional staff (~3m€), external collaboration (~5m€) and third party research services (~5m€). The sum of this three points ends up in the amounts that would have to be reinvested into additional R&D investments in order to be on track.

Cost of response to risk
600000

Description of response and explanation of cost calculation
LANXESS pursues innovation and collaboration approaches: a) Innovation Technology scouting, strict stage gate processes and technology benchmarking: The comparison of process alternatives ensures the selection of the best, cost efficient and low carbon production processes. b) Collaboration steering : Relevant collaboration forums and initiatives ensure that collaboration with other chemical players take places. Case Study: Situation: In order to find the right partners, the first essential step is to have a group-wide overview of the existing technologies as well as the necessary steps to improve the technologies in order to sensibly search for the options that promise the greatest benefit. Task: A community had to be built up to share actual status of LANXESS processes and to bundle and assess process-innovation-requirements. Action: The Innovation Community set up by GF DEV has set itself the task of identifying innovations within the community and for the benefit of the company and providing expert support for implementation. Generally, one representative from each business unit as well as selected experts from the Group Functions Production, Technology, Safety and Environment (PTSE), Legal and Compliance (LEX) and dLX meet for this purpose. The Innovation Community meets three times a year to discuss amongst others relevant climate related topics and opportunities. Result: A series of low carbon emitting technologies (e.g. two major cooperation programs regarding recycling technologies for plastics with additives) were discussed and evaluated. Cost of Management: Costs include compensation of the relevant innovation experts of our innovation and technology departments (cost of ~€150,000 each p.a.) times the amount of time required. It was taken into account that employees from Group function Corporate Development participate to a greater extent of their working time. in the innovation community than the numerous employees of the business units and other Group functions.

Comment

Identifier
Risk 3

Where in the value chain does the risk driver occur?
Direct operations

Risk type & Primary climate-related risk driver

Current regulation	Carbon pricing mechanisms
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Primary potential financial impact
Increased direct costs

Climate risk type mapped to traditional financial services industry risk classification
<Not Applicable>

Company-specific description
In Germany the installation of an increasing amount of renewable energy capacities is promoted by the government. Regulations on promoting renewable energies include financing rules for all electricity consumers in Germany. In these financing rules, especially EEG (Erneuerbare-Energien-Gesetz), exemptions for energy intensive

industries that face international competition are included. This means that the expansion of renewable energies is financed by a premium on the electricity price, from which energy-intensive companies can be exempted. LANXESS, with its major production sites and plants with high energy demand in Germany, is subject of these exemption rules at several German production sites. A number of these rules have been adapted in the past in order to limit the applicability of these exemptions, reduce the level of protection and in some cases companies even have been withdrawn from the exemptions. Due to ongoing political discussions about the necessity of the exemptions, LANXESS considers the current rules as politically instable. An exclusion of LANXESS from the exemption rules would increase the operational costs by adding significant costs for its energy supply.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium-high

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

10000000

Potential financial impact figure – maximum (currency)

40000000

Explanation of financial impact figure

Assumption for the maximum impact would be, that the EEG exemption for energy intensive companies will be completely cancelled. It was calculated by multiplying the actual EEG charge of 6,756ct/kWh for 2020 with the amount of electricity used in Germany that is EEG exempted (~600GWh in 2019). Assumption for the minimum impact is, that energy intensive companies will only get an EEG exemption of 75%. So the minimum financial impact is 25% of the maximal financial impact. Result: An actual risk level of 10 to 40 m€/year.

Cost of response to risk

550000

Description of response and explanation of cost calculation

To mitigate the risk of a future loss of the competitiveness protection rules for renewable LANXESS uses the following strategy: 1) Reduce energy demand. According to its business objectives and strategy LANXESS follows a reduction pathway to reduce its specific energy consumption for 25% until 2025. 2) Generate awareness of the regulatory risk through dialogue with political stakeholders. Example: Situation: It requested by political leaders to understand the relevance of such exemptions for the chemical industry. Task: It is the task of our political department to explain the impacts on energy intensive industries. Action: LANXESS works together in working groups of the Germany Chemical Association VCI and elaborates papers to explain the impact to political leaders. Result: As a consequence of the political dialogue in the recent political coalition agreement it was announced that the structure of the renewables law will principally remain unchanged and the exemption will stay in place. Cost of Management: In the context of the LANXESS Climate Neutral 2040 strategy, Lanxess will invest 100 m€ in climate protection projects by 2025. This results in a total of up to €20,000,000 per year for climate protection projects. These projects include the energy efficiency projects mentioned under 1). In addition to this risk, also other risks are also minimized with this investment. It is therefore not possible to precisely allocate the sum to the individual risks. The awareness generation of the regulatory risk mentioned under 2) is rather insignificant in terms of costs compared to the 20,000,000 both in terms of absolute amount and fluctuation in the individual years and can therefore be neglected.

Comment

Identifier

Risk 4

Where in the value chain does the risk driver occur?

Downstream

Risk type & Primary climate-related risk driver

Market	Changing customer behavior
--------	----------------------------

Primary potential financial impact

Decreased revenues due to reduced demand for products and services

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

LANXESS supplies products to numerous customers almost worldwide. The number of customers considering sustainability-related information in their supply relationships (e.g. sustainability criteria in supplier performance reviews, sustainability characteristics of purchased products) is constantly increasing. Given LANXESS significant corporate carbon footprint and its portfolio comprising products with a high GHG intensity (e.g. caprolactam, adipic acid or high-value chemicals), company engagement and performance in climate protection is a typical area of consideration within sustainability. For example, several major customers of LANXESS, representing about 7% of our sales, requested information on our climate protection activities through the CDP Supply Chain Program in 2019. Lack of corporate engagement and performance in this area (e.g. receiving a low score in supplier performance reviews, limited ability to address customer-specific questions on climate-related topics around purchased products) poses a risk to impact the customer relationship such that LANXESS products face lower demand or even get delisted completely by the customer.

Time horizon

Medium-term

Likelihood

About as likely as not

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

40000000

Potential financial impact figure – maximum (currency)

60000000

Explanation of financial impact figure

LANXESS estimates the impact of changing customer behaviour to be substantial. For example, if the customers requesting information on our climate protection activities through the CDP Supply Chain Program (customers with CDP Supply Chain request representing 7% of our sales in 2019) reduce demand by 10% due to a low CDP score this would result in loss of sales in the order of 40-60m€ p.a.

Cost of response to risk

20750000

Description of response and explanation of cost calculation

LANXESS attempts to minimize this risk through two measures. 1) As part of the Climate Neutral 2040 Strategy, LANXESS is investing up to €100m by 2025 in climate-related projects to reduce the PCF of many products overall. 2) LANXESS exchanges with customers (e.g. bilateral discussions, supplier performance reviews, CDP Supply Chain program) on its carbon footprint, climate protection strategy & measures – information which is also reported transparently through public media (e.g. Annual Report, website). Further, customer-specific requests related to climate are addressed. In this context the '3 dimensional product portfolio sustainability assessment' was implemented, as the following case study illustrates. Case study: Situation: Sustainability figures, especially CO2 emissions, are becoming more and more important. It is becoming important to be able to evaluate and communicate these figures not only at Group level but also at product level. Task: Upgrade portfolio assessment to be able to analyse sustainability issues and figures to get to more sustainable product portfolio. Action: LANXESS established a '3 dimensional product portfolio sustainability assessment'. There, the portfolio was assessed in terms of economic, environmental and social sustainability. Result: This enables us to strengthen products that have a significant positive environmental effect and to identify products with a high potential to green-house gas emission reduction. Explanation of cost: In the context of the LANXESS Climate Neutral 2040 strategy, Lanxess will invest 100 m€ in climate protection projects by 2025. This results in a total of up to €20,000,000 per year for climate protection projects. These projects include the energy efficiency projects mentioned under 1). In addition to this risk, also other risks are also minimized with this investment. It is therefore not possible to precisely allocate the sum to the individual risks. Regarding 2) ~5 FTE (cost of ~€150,000 each p.a.) in corporate units are dedicated to support the customer dialogue on sustainability, including climate change. Contributions by marketing managers in business units result in no specific additional costs as they are covered by their standard budgets.

Comment

C2.4

(C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.4a

(C2.4a) Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Opp1

Where in the value chain does the opportunity occur?

Downstream

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

Today there are more than 1.2 billion vehicles on the roads globally, and over 900 million of them are passenger cars. This figure is expected to rise to two billion by 2035, driven by continuously rising mobility needs especially in emerging markets. Transportation-related emissions of CO2, pollutants and noise are increasing. Therefore enabling mobility with less to no emissions is a key opportunity to provide added value to society. One relevant option is to reduce the weight of cars and trucks as much as possible. LANXESS' lightweight polymer high-tech plastics and composites are applied in countless vehicle parts and lead to lighter vehicles which require less energy input. This not only poses a significant business opportunity for LANXESS, but reduces the emissions. Example: A "typical" substitution of 130 - 200 kg of steel in a car like a Golf goes along with a weight reduction of 100 - 170 kg. 100 kg less weight, equals 0,5 l/100 km driven or 11,7 g less CO2.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

50000000

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

The opportunity is expected to add an additional sales volume for engineering plastics increasing sales by approximately 50m€ per year. The calculation is based on a selected set of parts which will be substituted in the next years by engineering plastics. The set of parts are multiplied by the estimated number of produced cars and then multiplied by the actual share of wallet from LANXESS at the relevant car manufactures. This leads to 20-30 kt of material multiplied with the relevant prices (1.50-3.00€/kg), leading to approximately 50m€ additional sales per annum.

Cost to realize opportunity

3000000

Strategy to realize opportunity and explanation of cost calculation

LANXESS assessed both the market dynamics and the key technology developments. Together with the major car manufactures we develop new lightweight solutions for selected components of the car. To drive this opportunity LANXESS has installed dedicated teams comprising R&D and application development specialists in every region, with a know-how hub in EMEA serving the other teams globally. To realize this opportunity (development of the selected car components) until 2022, LANXESS will add additional resources, especially R&D headcount. Case Study: Situation: In the upcoming years LANXESS will focus on lightweight solutions for new mobility solutions. In order for the market to be aware of LANXESS product solutions, clear marketing concepts and exchange of information with experts of our customer industries are required. Task: LANXESS will provide thriving opportunities to intensify the contact with customer industries and generate new business opportunities. Action: LANXESS participates at big exhibitions like the K in Düsseldorf and provides experts events on how our engineering plastics comply with new mobility concepts. Result: The respective Business Units was able to sign new customer contracts for engineering plastics. Cost to realize opportunity: The additional resources required to leverage the opportunities amount to approximately 3m€. This refers to 2/3 to additional headcounts [~2.000.000€; calculated as average personal cost per FTE (150.000€ p.a. on average) times average working time for this opportunity] as well as technical equipment [~1.000.000 in sum for several investments].

Comment

Identifier

Opp2

Where in the value chain does the opportunity occur?

Downstream

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Primary potential financial impact

Increased revenues through access to new and emerging markets

Company-specific description

As for climate change and the upcoming decarbonization, products of LANXESS will be needed to construct a low carbon society. LANXESS continuously identifies, assesses, evaluates and manages upcoming sustainability and low-carbon trends in its downstream markets. The low carbon energy transition requires energy storage technologies to store energy generated by renewable energies and allow for electro-mobility. To enable affordable energy storage technology new battery technology has to be developed – ideally based on cost competitive available components. Lithium-ion batteries play a key role in future technology solutions for mobility, energy storage and consumer electronics. The trend towards electro-mobility in particular is driving investment in the mass production of battery cells. Europe alone will account for up to a third of global production capacity for battery cells by 2025. The demand for processed chemicals and materials, which account for approx. 60-70% of total battery cell costs, is correspondingly high. LANXESS is one of the leading manufacturers of hydrofluoric acid and phosphorus chemicals, two important starting materials for lithium hexafluorophosphate (LiPF₆), which acts as a conducting salt in electrolytes for lithium ion cells. Due to the massive build-up of production capacities for lithium-ion batteries in Europe, the demand for this electrolyte component will also grow strongly. With this integrated raw material base, we can ensure the supply of a LiPF₆ and electrolyte production in Europe. LANXESS also believes it is well positioned to meet the growing global demand for lithium for battery chemicals, because LANXESS has unique strategic position at Chempark Leverkusen for the setup of a LiPF₆ production in Europe. Further LANXESS offers a raw material platform & integrated asset structure for LiPF₆ manufacturers and has a integrated asset structure and the raw materials base provides ideal platform to establish a local LiPF₆ production in EU. LANXESS plans to cooperate with the Canadian company Standard Lithium Ltd. for the commercial production of battery-compatible lithium from the brine that LANXESS is mining in El Dorado, Arkansas, USA, to produce bromine products. Standard Lithium is contributing an innovative process for extracting high-purity lithium directly from brine. The technical and economic feasibility of the project is currently being examined.

Time horizon

Medium-term

Likelihood

Very likely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

50000000

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

The EU-Commission expects a demand of Lithium-Ion-Batteries (LIB) of ~300 GWh in 2025 for Europe. It is expected, that capacities for ~200 GWh will be build up until 2025 in Europe. The "Batterieforum Berlin 2019" expected, that the ~200 GWh will lead 8-9bn€ revenues p.a. for chemicals, including chemicals for electrolyte, cathode, anode and separator. Deutsche Bank expected the electrolyte to stand for 15% of this revenues. Thereof ~50% is for the electrolyte salt. Taking a margin of 30% into

account and 80% raw material cost for electrolyte formulation, the raw materials for electrolyte salt (LiPF₆) will have a value of above 300m€ (8bn€ x 15% x 50% x (1-30%) x 80%) in Europe. LANXESS is backwards integrated and can participate in this production with the key raw materials hydrofluoric acid, phosphorous chemicals and Li-chemicals. LANXESS is well positioned and has an integrated asset network, so a ~15% share of the ~300m€ of raw materials in Europe, leading to ~50m€ sales, seems to be a realistic opportunity.

Cost to realize opportunity

250000

Strategy to realize opportunity and explanation of cost calculation

Within the LANXESS organization the different materials are part of different business units. To tackle this opportunity effectively, LANXESS has installed a cross functional unit to prepare technical and marketing concepts to realize new opportunities in battery technologies. Situation: LANXESS will drive the opportunity with thorough focus to create additional sales. Task: In order to have a cross functional approach the cross functional unit is working on new concepts for innovation and marketing in battery technology. Action: The newly created business development positions analyse the different technologies and market players and coordinate the R&D activities and go-to market approaches of the different business units. In the materials business unit additionally a specialised development team has been installed to work together with the selected OEMs for the automotive industry to design new components. Result: LANXESS was able to generate new contracts for battery technologies. Cost to realize opportunity: LANXESS set-up a business development specialist on battery technologies to guide and coordinate all activities. The costs break down to the salary of the marketing specialist (150.000€ p.a.) plus the time of several other strategy manager with very different costs per FTE (100.000€ p.a. - 250.000€ p.a.) multiplied by the time required to develop the outcome.

Comment

Identifier

Opp3

Where in the value chain does the opportunity occur?

Downstream

Opportunity type

Products and services

Primary climate-related opportunity driver

Development of climate adaptation, resilience and insurance risk solutions

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

Regarding climate adaptation increased water stress in many regions and countries is direct consequence of climate change. Opportunities and not only challenges can be found in water scarcity and pollution. Experts estimate the annual water demand to reach 6,900 bn m³ in 2030, creating a shortfall of 2,700 bn m³. Contamination of water supplies is increasing at the same time due to an increasing rate of urbanization and water scarcity due to climate change. The need for safe drinking water is increasing as municipal sources vary from rivers to underground water to seawater along coastal areas. All these sources are often polluted and contain a significant amount of dissolved metals. This global water supply gap of approx. 40 % creates a business opportunity for LANXESS, as solution provider for water treatment and water extraction technologies. The market for ion exchange resins will grow at a CAGR of 4% from 2019-2024, with higher growth rates for the specialty segment. This will increase the market from 1.6bn€ in 2019 to 1.9bn€ in 2024. LANXESS's approach is win a significant share of this absolute growth of ~300m€.

Time horizon

Medium-term

Likelihood

Very likely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

50000000

Potential financial impact figure – maximum (currency)

100000000

Explanation of financial impact figure

The market for ion exchange resins will grow at a CAGR of 4% from 2019-2024, with higher growth rates for the specialty segment. This will increase the market from 1.6bn€ in 2019 to 1.9bn€ in 2024. LANXESS is a relevant player in the ion exchange resins market. The mentioned growth is based on feasibility studies. If LANXESS manages to generate 15%-30% of this growth, this would lead to a sales increase of 50-100m€.

Cost to realize opportunity

100000000

Strategy to realize opportunity and explanation of cost calculation

To accompany this fast market growth and to gain a significant share of this growth, LANXESS invested in R&D collaborations with educational scientific institutes and R&D cooperation with customer and plans increase its production capacities for ion exchange resins and s as illustrated in following Case Study: Example: Situation: The demand for products to implement water purification is increasing. Task: LANXESS is to expand its production capacities in order to serve the demand for water purification products. Action: LANXESS launched a project in 2019 that analysed the markets in the individual regions in terms of supply demand development, growth potential and differentiation by product group. It also looked at various countries and sites where a new plant could be built. Result: LANXESS announced in 2020, that it is currently planning to build a new production facility, for which it plans to invest between 80m€ and 120m€ in the coming years. Cost to realize opportunity: LANXESS will continue to expand its business with ion exchange resins in the future. LANXESS is currently planning to build a new production facility, for which it plans to invest between 80m€ and 120m€ in the coming years. The cost of the R&D activities is not significant compared to the high amount of the investment sum for the new plant. In addition, due to the early planning phase, the investment sum is still subject to high fluctuations. Therefore, the costs here were calculated with the average of the 80m€ as minimum and the 120m€ as maximum for the investment sum for the new plant.

Comment

C3. Business Strategy

C3.1

(C3.1) Have climate-related risks and opportunities influenced your organization's strategy and/or financial planning?

Yes, and we have developed a low-carbon transition plan

C3.1a

(C3.1a) Does your organization use climate-related scenario analysis to inform its strategy?

Yes, qualitative

C3.1b

(C3.1b) Provide details of your organization's use of climate-related scenario analysis.

Climate-related scenarios and models applied	Details
2DS Nationally determined contributions (NDCs)	We have used qualitative scenario analysis in order to inform the development of our climate neutral strategy. The AREAS CONSIDERED have been our own direct operations worldwide, Scope 1 and 2. The TIME HORIZON has been up to 2050. We have IDENTIFIED several SCENARIOS being suitable for our purpose: The IEA 2DS scenario has been used to understand the global process of decarbonisation and its implications for the chemical industry as a whole worldwide. Next, we have contributed to the Working Groups developing the "Roadmap treibhausgasneutrale Chemie in Deutschland" by VCI (German Chemical Industry Association), which deals specifically with the decarbonisation of chemicals industry in Germany (including specialty chemicals companies such as ourselves) and described several pathways including their prerequisites regarding policy, technology, infrastructure and supply of CO2-free power and fuels. We have used the decarbonisation paths described as an input of our scenario analysis. We have adopted the underlying ASSUMPTIONS in accordance with our own industrial expertise tailoring them to our technology base, e.g. regarding market readiness of key technologies or availability of hydrogen in the regions we operate. In order to assess the impact of the political environment in the countries we operate in, NDCs have been analysed as scenarios as well, especially the EU's NDC and the corresponding EU Green Deal. Furthermore, we have analysed emerging regulations on national level such as the upcoming German national emission trading scheme ("BEHG") supplementing the EU-ETS. SUMMARY OF THE RESULTS: The scenarios described above revealed the necessity and feasibility of the decarbonisation of our operations, but also several potential bottlenecks regarding technology development. Improvements of energy efficiency are crucial, but will not be sufficient. The supply with power from renewable sources has turned out to be a critical element, in particular as other sectors (e.g. transport) increase their demand at the same time. The development and early maturing of specific process engineering technologies is expected to be a prerequisite for economical success. Of special importance are long-term cost savings associated with a more efficient use of resources. HOW THIS HAS INFORMED OUR STRATEGY The results described above, i.e. the feasibility of the decarbonisation of our operations have encouraged us to define the Lanxess-Climate-Neutral-2040-Strategy. We have set an ambitious climate protection target. By 2040, the Group intends to become climate neutral and eliminate its greenhouse gas emissions from around 3.2 million metric tons of CO2e today. Already by 2030, LANXESS aims to cut its emissions by 50 percent compared to the current level to around 1.6 million metric tons of CO2e. To do so, LANXESS is taking a three-pronged approach to become climate neutral by 2040. (i) Launch major impact projects for climate protection (ii) Decouple emissions and growth (iii) Strengthen process and technological innovations: CASE STUDY: SITUATION: Our carbon neutral 2040 strategy has been publicly released on November 13, 2019. TASK: In order to implement it successfully, major impact projects for climate protection need to be launched. Over the next few years, LANXESS will put into action special projects to significantly lower greenhouse gases. ACTION: The Group is currently building a facility for the decomposition of nitrous oxide at its Antwerp, Belgium, site. The new facility will begin operations in 2020. RESULT: The new facility will reduce annual greenhouse gas emissions by around 150,000 metric tons of CO2e. After a second expansion in 2023, CO2e emissions will fall by another 300,000 metric tons.

C3.1d

(C3.1d) Describe where and how climate-related risks and opportunities have influenced your strategy.

	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Yes	Specialty chemicals company LANXESS has the ability to provide materials contributing to the mitigation of and adaptation to climate change. Furthermore, our technical capabilities allow us to be very carbon efficient. We aim to capitalise on these advantages and thereby to manage our climate related risks and opportunities. Thus we have adopted our strategy in the business areas Products & Services, Supply and value chain, R&D and operations in accordance to this rationale. This has a long term time horizon: We have started to act according to this strategy over a decade ago and this is not limited in time. With respect to the business area Products & Services our strategy has three pillars: a) Reduction of the product carbon footprint of all our products. To achieve this, we are conducting our Climate Neutral 2040 strategy. Please refer to "Operations" below for details. b) We produce materials required for decarbonisation technologies, e.g. energy storage technologies. LANXESS' special thermoplastics can be made conductive and flame retardant. Thus, they are ideal material for use in batteries e.g. in electric and hybrid vehicles. In addition, LANXESS produces the basic components for the electrolyte. We expect that Li based batteries with this technology will penetrate the market fast and allow for zero emission mobility and more decentralized (solar/wind) energy production and storage. c) We produce materials suitable for technologies helping to adapt to climate change and to mitigate its consequences. The following CASE STUDY shall illustrate this. SITUATION: The demand for products to implement water purification is increasing. TASK: LANXESS is to expand its production capacities in order to serve the demand for water purification products. ACTION: LANXESS has entered into new sales and distribution agreements in selected countries (e.g. Turkey) to scale market reach fast. This activities focus on LANXESS' supply of Reverse Osmosis membrane elements specifically developed for seawater desalination. The new elements underwent thorough pre- marketing testing in desalination plants on the Red Sea in Egypt over a period of several months. RESULT: LANXESS is achieving an increasing revenue with water related sustainability solutions and is participating in the growing market segment.
Supply chain and/or value chain	Yes	Specialty chemicals company LANXESS has the ability to provide materials contributing to the mitigation of and adaptation to climate change. Furthermore, our technical capabilities allow us to be very carbon efficient. We aim to capitalise on these advantages and thereby to manage our climate related risks and opportunities. Thus we have adopted our strategy in the business areas Products & Services, Supply and value chain, R&D and operations in accordance to this rationale. This has a long term time horizon: We have started to act according to this strategy over a decade ago and this is not limited in time. With respect to the business area Supply and Value Chain our strategy has three pillars: a) To reduce the product carbon footprint of our products (PCF) we engage with our suppliers accordingly. For tracking the PCFs we improve our scope 3 evaluation and establish PCF calculations. b) To be able to produce chemical products required for decarbonisation technologies, we cooperate closely with our customers, e.g. in the automotive and in the battery industry. The following Case study shall illustrate this. c) To be able to produce chemical products suitable for technologies helping to adapt to climate change and to mitigate its consequences, the same approach applies: We cooperate closely with our customers, e.g. for water purification and treatment. This does not only lead to new applications of our products, but also requires to joint product development. CASE STUDY: SITUATION: In the automotive sector the climate driven change to light vehicles has started years ago. TASK: LANXESS High Performance Materials businesses aim to work closely together with the automotive industry to develop lightweight solutions to reduce the CO2 emissions from cars. ACTION: Together with the major car manufactures we develop new lightweight solutions for selected components of the car. LANXESS has installed dedicated teams comprising R&D and application development specialists in every region. RESULT: LANXESS' lightweight polymer high-tech plastics and composites are applied in countless vehicle parts and lead to lighter vehicles which require less energy input. The realisation of this opportunity is expected to add an additional sales volume for engineering plastics increasing sales by approximately 50m€ per year.
Investment in R&D	Yes	Specialty chemicals company LANXESS has the ability to provide materials contributing to the mitigation of and adaptation to climate change. Furthermore, our technical capabilities allow us to be very carbon efficient. We aim to capitalise on these advantages and thereby to manage our climate related risks and opportunities. Thus we have adopted our strategy in the business areas Products & Services, Supply and value chain, R&D and operations in accordance to this rationale. This has a long term time horizon: We have started to act according to this strategy over a decade ago and this is not limited in time. With respect to the business area R&D our strategy has three pillars: a) To reduce the product carbon footprint of our products (PCF) we perform several process technology related R&D projects. b) To be able to produce chemical products required for decarbonisation technologies, we perform several joint R&D Projects with our customers, e.g. in the automotive and in the battery industry. This approach ensures, that we are able to adapt our products to their requirements. c) For chemical products required to adapt to climate change and to mitigate its consequences (e.g. water purification), the same approach is applied. The following shall illustrate R&D related challenges: SITUATION: The necessary technologies to transform the chemical industry into a low carbon industry are not readily available. They require a high amount of R&D invest. For LANXESS, for instance the maleic acid production-technology is crucial. TASK: Several technological challenges are of general nature and very similar among the different players in the chemical industry. It is of advantage to collaborate in consortia in order to be faster and to dilute costs. ACTION: LANXESS exchanges ideas on which technologies to address to reduce CO2 emissions with technology experts from the chemical industry. Our innovation and technology experts identify the most promising collaboration partners. Therefore, the climate summit hosted by the World Economic Forum was founded in order to accelerate the development and upscale low carbon emitting technologies for chemical production. RESULT : A series of low carbon emitting technologies was identified. The outcome of the initiative is the consolidation of alliances for the collaborative implementation of the prioritized technologies.
Operations	Yes	Specialty chemicals company LANXESS has the ability to provide materials contributing to the mitigation of and adaptation to climate change. Furthermore, our technical capabilities allow us to be very carbon efficient. We aim to capitalise on these advantages and thereby to manage our climate related risks and opportunities. Thus we have adopted our strategy in the business areas Products & Services, Supply and value chain, R&D and operations in accordance to this rationale. This has a long term time horizon: We have started to act according to this strategy over a decade ago and this is not limited in time. Our Climate Neutral 2040 strategy has been launched 2019, it focusses on improvements of our Operations: Despite increasing production volumes, emissions of greenhouse gases in the individual business units are set to decline. In addition to technological efficiency, changes to governance instruments play a role, with the impact on the company's carbon footprint becoming an investment criterion for organic growth and acquisitions. Lowering CO2e was introduced as an assessment criterion in the bonus system for senior management. Over the next few years, LANXESS will put into action special projects to significantly lower greenhouse gases. For example, the Group is currently building a facility for the decomposition of nitrous oxide at its Antwerp, Belgium, site. The new facility will begin operations in 2020 and reduce annual greenhouse gas emissions by around 150,000 metric tons of CO2e. After a second expansion in 2023, CO2e emissions will fall by another 300,000 metric tons. With these projects and other measures, LANXESS will decrease its CO2e emissions by a total of 800,000 metric tons by 2025, investing up to EUR 100 million in the process. Case Study: SITUATION: Carbon emission of our Indian sites are some 190 kt, of this 40 kt in scope 1 and 150 kt in scope 2 (market based). TASK: Reduction of these emissions ACTION: LANXESS is switching the entire energy supply at its Indian sites to renewable energy sources. There, the Group is massively expanding its supply of biomass and solar power and will no longer use coal or gas in the future. RESULT: This will cut CO2e emissions by a further 150,000 metric tons from 2024.

C3.1e

(C3.1e) Describe where and how climate-related risks and opportunities have influenced your financial planning.

	Financial planning elements that have been influenced	Description of influence
Row 1	Revenues Direct costs Capital expenditures Capital allocation Acquisitions and divestments Liabilities	Climate-related risks and opportunities have influenced our financial statements in several ways and since many years. As the related effects are not limited in time, they are of course also influencing our financial planning. Its time horizon is five years. Prominent examples are revenues and indirect costs: Revenues are influenced due to the sales of chemical products required for decarbonisation technologies (e.g. lightweight materials for automotive and batteries), and of products being suitable for technologies helping to adapt to climate change and to mitigate its consequences, such as water purification. Indirect costs are i.a. influenced by the need to buy certificates for compliance in the EU-ETS and by the costs for such certificates included in power prices. The following CASE STUDY shall illustrate the influence of climate-related risks and opportunities in case of CAPEX: SITUATION: In 2019 LANXESS has elaborated its Climate Neutral 2040 strategy, which has been launched in November 2019. TASK: The respective financial requirements for Capex within the coming 5 years have to be estimated in order to be budgeted in our financial planning. ACTION: Projects which are to be realised until 2025 have been shortlisted. Over the next few years, LANXESS will put into action special projects to significantly lower greenhouse gases. For example, the Group is currently building a facility for the decomposition of nitrous oxide at its Antwerp, Belgium, site. The new facility will begin operations in 2020 and reduce annual greenhouse gas emissions by around 150,000 metric tons of CO2e. After a second expansion in 2023, CO2e emissions will fall by another 300,000 metric tons. In addition, LANXESS is switching the entire energy supply at its Indian sites to renewable energy sources. There, the Group is massively expanding its supply of biomass and solar power and will no longer use coal or gas in the future. This will cut CO2e emissions by a further 150,000 metric tons from 2024. The respective Capex-requirement as well as their expected timing have been estimated by our technical experts. RESULT: With these projects and other measures, LANXESS will decrease its CO2e emissions by a total of 800,000 metric tons by 2025, investing up to EUR 100 million in the process. This has been budgeted in our financial planning.

C3.1f

(C3.1f) Provide any additional information on how climate-related risks and opportunities have influenced your strategy and financial planning (optional).

i) How the business strategy has been influenced (i.e. the internal process):

At LANXESS we recognize our responsibility regarding environmental and climate protection challenges. Our climate protection activities are integrated into our Corporate Strategy and are part of our Corporate Responsibility Strategy and Corporate Policies. We publish annual a report on GHG emissions and energy consumption, which is integrated in the Annual Report. We actively screen our production processes and product portfolio for opportunities to improve our environmental footprint and provide solutions to society. Our internal process for collecting and processing information that influences our strategy consists of the following activities: Ongoing analysis of the production processes and potential savings developed by our experts in the business units and the corporate R&D group leads us to appropriate investment projects. The ideas and suggestions of our employees are another important source of improvement. In the strategic assessment of risks and opportunities, we analyse cost savings related to energy consumption and energy costs. We implement and optimize the measures at our sites. For capital investment projects the impact of the production processes related to energy consumption and greenhouse gas emissions are carefully evaluated. Actual and upcoming regulations with business impact are regularly analysed.

ii) Business decisions influenced by climate change: The most important business decisions influenced by climate change is the following: LANXESS has set 2019 new long-term climate targets: Target 2018-2025: "Reduce absolute Scope 1 and Scope 2 emissions by 25% until 2025, 50% until 2030 and >90% until 2040 for the LANXESS Group (basis year 2018: ~3,200 kt)". Furthermore LANXESS has integrated climate protection into its Corporate Policy. The Board has given climate strategy the highest priority among the environmental impact topics and has aligned the Corporate Strategy accordingly. Specific sustainability criteria and the climate impact of production sites are analysed throughout the evaluation of potential M&A targets. As a result, individual targets were delisted in 2019.

iii) Aspects of climate change influencing our strategy: We aim to increasingly capitalize on the trends of mobility, urbanization, water as well as agriculture and align our portfolio accordingly. Making mobility more environmentally friendly is one of the greatest technical challenges of our time. We significantly contribute towards mastering this challenge with innovative plastics and composites for lightweight construction. This help to reduce energy consumption and emissions of vehicles and thus contribute to the mitigation of climate change. LANXESS understands the sources of climate change as well as our impact on the environment and actively contributes to the aims of society to reduce the impact of climate change and also the causes. We regularly review our strategy with the objective of reducing emissions and making LANXESS resilient to risks related to climate change. As one strategic element we established a '3 dimensional product portfolio sustainability assessment'. There, we assess our portfolio in terms of economic, environmental and social sustainability. This enables us to strengthen products that have a significant positive environmental effect and to identify products with a positive contribution to green-house gas emission reduction. We focus our R&D efforts on achieving business growth through products, applications and solutions that enable us not only to make an important contribution to climate protection - while also reducing costs - but also help to conserve resources and energy. With our products and knowledge we set the sustainable foundations to facilitate our customers' sustainable products and processes while developing opportunities for green business for LANXESS.

iv) Long term strategy changes: We see significant changes ahead, not only regarding the way the chemical industry will create value but also for our customer industries such as the automotive industry (changing from metal based cars to lightweight cars etc.). We are positioning LANXESS in a strategic manner to profit from these developments. We carefully analyse global long-term trends and market developments on an annual basis as part of the 'Corporate Strategy Process'. We apply an end-customer perspective to better understand the long-term demand developments of our customers. This gives us an advance to work on products at risk and to strengthen products with an advantage.

v) Strategic Advantage: LANXESS has been working to improve energy and raw material efficiency along the entire value added chain for many years. The reduction of energy consumption and GHG is often accompanied by significant financial benefit, and efficient production processes offer considerable advantages compared to our competitors. LANXESS' products provide important contributions to meet the challenges of climate protection of our time. Our communication about sustainable solutions help to improve LANXESS' reputation and to attract talents.

C4. Targets and performance

C4.1

(C4.1) Did you have an emissions target that was active in the reporting year?

Both absolute and intensity targets

C4.1a

(C4.1a) Provide details of your absolute emissions target(s) and progress made against those targets.

Target reference number

Abs 1

Year target was set

2019

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 1+2 (market-based)

Base year

2018

Covered emissions in base year (metric tons CO2e)

3250000

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

100

Target year

2025

Targeted reduction from base year (%)

25

Covered emissions in target year (metric tons CO2e) [auto-calculated]

2437500

Covered emissions in reporting year (metric tons CO2e)

2752500

% of target achieved [auto-calculated]

61.2307692307692

Target status in reporting year

New

Is this a science-based target?

Yes, we consider this a science-based target, but this target has not been approved as science-based by the Science-Based Targets initiative

Please explain (including target coverage)

Our target setting approach: LANXESS has assessed its reduction targets based on the CDP criteria (published in the CDP's Technical Note on Science Based Targets). We concluded that the three targets together are sufficiently ambitious according to CDP. The targets apply to all of LANXESS' global business operations and cover 100% of GHG emissions (scope 1 and scope 2). After overachievement of existing targets, LANXESS set three new targets based on 2018 with ~3,200kt CO2e. In the meantime, more recent information is available, so that LANXESS has emitted 3,250kt CO2e for the year 2018. However, the targets will not be adjusted: 1. short term target is reduction of 3,200 kt CO2e in 2018 to 2,400 kt CO2e in 2025 (25% reduction of emissions; 4% reduction yoy); 2. mid-term target is reduction to 1,600 kt CO2e in 2030 (50% reduction of emissions; 8% reduction yoy); 3. long-term target is to become climate neutral until 2040 (>90% reduction of emissions; 15% reduction yoy). In order to become climate-neutral, the last emissions (< 300,000 tons) will be reduced through compensation measures. We came to the conclusion that the targets fulfill the requirements of the SBT and CDP approach.

Target reference number

Abs 2

Year target was set

2019

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 1+2 (market-based)

Base year

2018

Covered emissions in base year (metric tons CO2e)

3250000

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

100

Target year

2030

Targeted reduction from base year (%)

50

Covered emissions in target year (metric tons CO2e) [auto-calculated]

1625000

Covered emissions in reporting year (metric tons CO2e)

2752500

% of target achieved [auto-calculated]

30.6153846153846

Target status in reporting year

New

Is this a science-based target?

Yes, we consider this a science-based target, but this target has not been approved as science-based by the Science-Based Targets initiative

Please explain (including target coverage)

Our target setting approach: LANXESS has assessed its reduction targets based on the CDP criteria (published in the CDP's Technical Note on Science Based Targets). We concluded that the three targets together are sufficiently ambitious according to CDP. The targets apply to all of LANXESS' global business operations and cover 100% of GHG emissions (scope 1 and scope 2). After overachievement of existing targets, LANXESS set three new targets based on 2018 with ~3,200kt CO2e. In the meantime, more recent information is available, so that LANXESS has emitted 3,250kt CO2e for the year 2018. However, the targets will not be adjusted: 1. short term target is reduction of 3,200 kt CO2e in 2018 to 2,400 kt CO2e in 2025 (25% reduction of emissions; 4% reduction yoy); 2. mid-term target is reduction to 1,600 kt CO2e in 2030

(50% reduction of emissions; 8% reduction yoy); 3. long-term target is to become climate neutral until 2040 (>90% reduction of emissions; 15% reduction yoy) . In order to become climate-neutral, the last emissions (< 300,000 tons) will be reduced through compensation measures. We came to the conclusion that the targets fulfill the requirements of the SBT and CDP approach.

Target reference number

Abs 3

Year target was set

2019

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 1+2 (market-based)

Base year

2018

Covered emissions in base year (metric tons CO2e)

3250000

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

100

Target year

2040

Targeted reduction from base year (%)

91

Covered emissions in target year (metric tons CO2e) [auto-calculated]

292500

Covered emissions in reporting year (metric tons CO2e)

2752500

% of target achieved [auto-calculated]

16.821639898563

Target status in reporting year

New

Is this a science-based target?

Yes, we consider this a science-based target, but this target has not been approved as science-based by the Science-Based Targets initiative

Please explain (including target coverage)

Our target setting approach: LANXESS has assessed its reduction targets based on the CDP criteria (published in the CDP's Technical Note on Science Based Targets). We concluded that the three targets together are sufficiently ambitious according to CDP. The targets apply to all of LANXESS' global business operations and cover 100% of GHG emissions (scope 1 and scope 2). After overachievement of existing targets, LANXESS set three new targets based on 2018 with ~3,200kt CO2e. In the meantime, more recent information is available, so that LANXESS has emitted 3,250kt CO2e for the year 2018. However, the targets will not be adjusted: 1. short term target is reduction of 3,200 kt CO2e in 2018 to 2,400 kt CO2e in 2025 (25% reduction of emissions; 4% reduction yoy); 2. mid-term target is reduction to 1,600 kt CO2e in 2030 (50% reduction of emissions; 8% reduction yoy); 3. long-term target is to become climate neutral until 2040 (>90% reduction of emissions; 15% reduction yoy) . In order to become climate-neutral, the last emissions (< 300,000 tons) will be reduced through compensation measures. We came to the conclusion that the targets fulfill the requirements of the SBT and CDP approach.

C4.1b

(C4.1b) Provide details of your emissions intensity target(s) and progress made against those target(s).**Target reference number**

Int 1

Year target was set

2016

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 1

Intensity metric

Metric tons CO2e per metric ton of product

Base year

2015

Intensity figure in base year (metric tons CO2e per unit of activity)

0.253

% of total base year emissions in selected Scope(s) (or Scope 3 category) covered by this intensity figure

100

Target year

2025

Targeted reduction from base year (%)

25

Intensity figure in target year (metric tons CO2e per unit of activity) [auto-calculated]

0.18975

% change anticipated in absolute Scope 1+2 emissions

-9

% change anticipated in absolute Scope 3 emissions

0

Intensity figure in reporting year (metric tons CO2e per unit of activity)

0.28

% of target achieved [auto-calculated]

-42.6877470355732

Target status in reporting year

Underway

Is this a science-based target?

Yes, we consider this a science-based target, but this target has not been approved as science-based by the Science Based Targets initiative

Please explain (including target coverage)

Our target setting approach: LANXESS has assessed its reduction targets based on the CDP criteria (published in the CDP's Technical Note on Science Based Targets). We concluded that the three targets together are sufficiently ambitious according to CDP. The targets apply to all of LANXESS' global business operations and cover 100% of GHG emissions (scope 1 and scope 2). After overachievement of existing targets, LANXESS set three new targets based on 2018 with ~3,200kt CO2e. In the meantime, more recent information is available, so that LANXESS has emitted 3,250kt CO2e for the year 2018. However, the targets will not be adjusted: 1. short term target is reduction of 3,200 kt CO2e in 2018 to 2,400 kt CO2e in 2025 (25% reduction of emissions; 4% reduction yoy); 2. mid-term target is reduction to 1,600 kt CO2e in 2030 (50% reduction of emissions; 8% reduction yoy); 3. long-term target is to become climate neutral until 2040 (>90% reduction of emissions; 15% reduction yoy). We came to the conclusion that the targets fulfill the requirements of the SBT and CDP approach. In line with the absolute targets the Scope 1 emissions intensity will also be reduced to 0.19 until 2025.

Target reference number

Int 2

Year target was set

2019

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 2 (market-based)

Intensity metric

Metric tons CO2e per metric ton of product

Base year

2015

Intensity figure in base year (metric tons CO2e per unit of activity)

0.461

% of total base year emissions in selected Scope(s) (or Scope 3 category) covered by this intensity figure

100

Target year

2025

Targeted reduction from base year (%)

48

Intensity figure in target year (metric tons CO2e per unit of activity) [auto-calculated]

0.23972

% change anticipated in absolute Scope 1+2 emissions

-40

% change anticipated in absolute Scope 3 emissions

0

Intensity figure in reporting year (metric tons CO2e per unit of activity)

0.29

% of target achieved [auto-calculated]

77.2776572668113

Target status in reporting year

Underway

Is this a science-based target?

Yes, we consider this a science-based target, but this target has not been approved as science-based by the Science Based Targets initiative

Please explain (including target coverage)

Our target setting approach: LANXESS has assessed its reduction targets based on the CDP criteria (published in the CDP's Technical Note on Science Based Targets). We concluded that the three targets together are sufficiently ambitious according to CDP. The targets apply to all of LANXESS' global business operations and cover 100% of GHG emissions (scope 1 and scope 2). After overachievement of existing targets, LANXESS set three new targets based on 2018 with ~3,200kt CO2e. In the meantime, more recent information is available, so that LANXESS has emitted 3,250kt CO2e for the year 2018. However, the targets will not be adjusted: 1. short term target is

reduction of 3,200 kt CO₂e in 2018 to 2,400 kt CO₂e in 2025 (25% reduction of emissions; 4% reduction yoy); 2. mid-term target is reduction to 1,600 kt CO₂e in 2030 (50% reduction of emissions; 8% reduction yoy); 3. long-term target is to become climate neutral until 2040 (>90% reduction of emissions; 15% reduction yoy) . We came to the conclusion that the targets fulfill the requirements of the SBT and CDP approach. In line with the absolute targets the Scope 2 emissions intensity will also be reduced to 0.23 until 2025.

C4.2

(C4.2) Did you have any other climate-related targets that were active in the reporting year?

Other climate-related target(s)

C4.2b

(C4.2b) Provide details of any other climate-related targets, including methane reduction targets.

Target reference number

Oth 1

Year target was set

2019

Target coverage

Company-wide

Target type: absolute or intensity

Intensity

Target type: category & Metric (target numerator if reporting an intensity target)

Energy consumption or efficiency	MWh
----------------------------------	-----

Target denominator (intensity targets only)

metric ton of product

Base year

2015

Figure or percentage in base year

2.06

Target year

2025

Figure or percentage in target year

1.239

Figure or percentage in reporting year

1.41

% of target achieved [auto-calculated]

79.1717417783191

Target status in reporting year

Revised

Is this target part of an emissions target?

Yes, this energy efficiency target is part of the LANXESS CO₂ reduction targte: "LANXESS will become climate neutral by 2040"

Is this target part of an overarching initiative?

No, it's not part of an overarching initiative

Please explain (including target coverage)

This LANXESS energy management target covers all LANXESS locations and also contributes to our CO₂ reduction target.

C4.3

(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.

Yes

C4.3a

(C4.3a) Identify the total number of initiatives at each stage of development, and for those in the implementation stages, the estimated CO2e savings.

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	29	
To be implemented*	17	5150
Implementation commenced*	31	16150
Implemented*	60	7300
Not to be implemented	4	

C4.3b

(C4.3b) Provide details on the initiatives implemented in the reporting year in the table below.

Initiative category & Initiative type

Energy efficiency in production processes	Reuse of steam
---	----------------

Estimated annual CO2e savings (metric tonnes CO2e)

2160

Scope(s)

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

269000

Investment required (unit currency – as specified in C0.4)

532000

Payback period

1-3 years

Estimated lifetime of the initiative

>30 years

Comment

Three projects implemented in 2019 use residual steam, e.g. to preheat process water or to reduce the steam consumption of a distillation column.

Initiative category & Initiative type

Energy efficiency in production processes	Machine/equipment replacement
---	-------------------------------

Estimated annual CO2e savings (metric tonnes CO2e)

580

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

50000

Investment required (unit currency – as specified in C0.4)

120000

Payback period

1-3 years

Estimated lifetime of the initiative

6-10 years

Comment

Installation of new filters to increase the solids content. This led to a lower consumption of natural gas.

Initiative category & Initiative type

Energy efficiency in production processes	Machine/equipment replacement
---	-------------------------------

Estimated annual CO2e savings (metric tonnes CO2e)

1130

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

342000

Investment required (unit currency – as specified in C0.4)

10810000

Payback period

11-15 years

Estimated lifetime of the initiative

21-30 years

Comment

In 4 projects equipment were replaced to reduce or avoid the use of natural gas (new burners or appliances with better insulation)

Initiative category & Initiative type

Energy efficiency in production processes	Machine/equipment replacement
---	-------------------------------

Estimated annual CO2e savings (metric tonnes CO2e)

200

Scope(s)

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

71000

Investment required (unit currency – as specified in C0.4)

104000

Payback period

1-3 years

Estimated lifetime of the initiative

21-30 years

Comment

4 projects implemented in 2019 resulted in lower electricity consumption by replacing equipment with more energy efficient ones.

Initiative category & Initiative type

Energy efficiency in buildings	Lighting
--------------------------------	----------

Estimated annual CO2e savings (metric tonnes CO2e)

45

Scope(s)

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

31000

Investment required (unit currency – as specified in C0.4)

116000

Payback period

4-10 years

Estimated lifetime of the initiative

>30 years

Comment

In 7 projects outdated lighting was replaced by new LED lighting.

Initiative category & Initiative type

Energy efficiency in production processes	Process optimization
---	----------------------

Estimated annual CO2e savings (metric tonnes CO2e)

1170

Scope(s)

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

2180000

Investment required (unit currency – as specified in C0.4)

5249000

Payback period

1-3 years

Estimated lifetime of the initiative

>30 years

Comment

Production and control processes were optimized in 12 implemented projects. For example, load-dependent speed controls or switch-offs for pumps and fans were introduced, product flows were diverted or cooling circuits were converted.

Initiative category & Initiative type

Energy efficiency in production processes	Smart control system
---	----------------------

Estimated annual CO2e savings (metric tonnes CO2e)

190

Scope(s)

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

17800

Investment required (unit currency – as specified in C0.4)

13500

Payback period

<1 year

Estimated lifetime of the initiative

21-30 years

Comment

2 projects for intelligent control of the condensate discharge.

Initiative category & Initiative type

Energy efficiency in production processes	Process optimization
---	----------------------

Estimated annual CO2e savings (metric tonnes CO2e)

1800

Scope(s)

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

119000

Investment required (unit currency – as specified in C0.4)

1575000

Payback period

11-15 years

Estimated lifetime of the initiative

21-30 years

Comment

Change of Column packing for 2 columns to reduce steam consumption. 1 Project to reduce steam usage in extraction and 1 project to redesign a steam boiler.

Initiative category & Initiative type

Energy efficiency in buildings	Insulation
--------------------------------	------------

Estimated annual CO2e savings (metric tonnes CO2e)

25

Scope(s)

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

9000

Investment required (unit currency – as specified in C0.4)

9000

Payback period

1-3 years

Estimated lifetime of the initiative

6-10 years

Comment

Uninsulated pipes will be insulated. Degraded insulation will be replaced.

C4.3c**(C4.3c) What methods do you use to drive investment in emissions reduction activities?**

Method	Comment
Compliance with regulatory requirements/standards	Operating in compliance with legal standards is the prerequisite of our business activity. Additional internal standards help to raise our level of ambition and steer our active climate oriented portfolio management.
Dedicated budget for low-carbon product R&D	In order to steer low carbon investment decisions R&D is required because relevant low carbon technologies are to be developed. LANXESS provides such dedicated budget. 100m€ should be invested until 2025 to support the goal to become climate neutral until 2040 and reach the 2025 milestone (2400 kt CO ₂ e).
Partnering with governments on technology development	Climate protection and climate mitigation require new alliances and partnerships across industries and towards governments. LANXESS is striving to be part of the solution and is therefore collaborating in several relevant initiatives. The initiatives drive investments into the technologies of the future.

C4.5**(C4.5) Do you classify any of your existing goods and/or services as low-carbon products or do they enable a third party to avoid GHG emissions?**

Yes

C4.5a**(C4.5a) Provide details of your products and/or services that you classify as low-carbon products or that enable a third party to avoid GHG emissions.****Level of aggregation**

Group of products

Description of product/Group of products

LANXESS' high-performance plastics like Durethan or composite materials like TEPEX, highly durable and resistant, but at the same time lighter components for vehicle manufacturers can be produced. As a composite material with steel or aluminium, parts withstand the highest loads but are up to 40 percent lighter than conventional parts. Organic sheet made of woven glass fiber and Durethan are even 100 percent metal-free and made with glass fiber reinforcements. After all, a 100-kilogram weight reduction results in fuel savings that can reach half a liter per 100 kilometers and 11.65 g less CO₂ per kilometer travelled.

Are these low-carbon product(s) or do they enable avoided emissions?

Low-carbon product

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Please select

% revenue from low carbon product(s) in the reporting year**% of total portfolio value**

<Not Applicable>

Asset classes/ product types

<Not Applicable>

Comment**C5. Emissions methodology****C5.1**

(C5.1) Provide your base year and base year emissions (Scopes 1 and 2).

Scope 1

Base year start
January 1 2007

Base year end
December 31 2007

Base year emissions (metric tons CO2e)
3491000

Comment

Scope 2 (location-based)

Base year start
January 1 2009

Base year end
December 31 2009

Base year emissions (metric tons CO2e)
3491000

Comment

Scope 2 (market-based)

Base year start
January 1 2009

Base year end
December 31 2009

Base year emissions (metric tons CO2e)
2356000

Comment

C5.2

(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.
The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

C6. Emissions data

C6.1

(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO2e?

Reporting year

Gross global Scope 1 emissions (metric tons CO2e)
1383000

Start date
<Not Applicable>

End date
<Not Applicable>

Comment

C6.2

(C6.2) Describe your organization's approach to reporting Scope 2 emissions.

Row 1

Scope 2, location-based
We are reporting a Scope 2, location-based figure

Scope 2, market-based
We are reporting a Scope 2, market-based figure

Comment
LANXESS decided to calculate and report CO2 Scope 2 for both methods. In order to be able to influence our scope 2 emissions as far as possible, we focusing our activities on the "market-based" method.

C6.3

(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO2e?

Reporting year

Scope 2, location-based
1769700

Scope 2, market-based (if applicable)
1369400

Start date
<Not Applicable>

End date
<Not Applicable>

Comment

C6.4

(C6.4) Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?

Yes

C6.4a

(C6.4a) Provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure.

Source
Storage-only and office facilities

Relevance of Scope 1 emissions from this source
Emissions are not relevant

Relevance of location-based Scope 2 emissions from this source
Emissions are not relevant

Relevance of market-based Scope 2 emissions from this source (if applicable)
Emissions are not relevant

Explain why this source is excluded
Storage-only facilities and office buildings are normally leased assets outside of our production plants. The emissions calculated for these assets are integrated in our Scope 3 reporting. Storage facilities and office buildings within production sites are integrated in our Scope 1+2 emission reporting. The emissions from LANXESS owned storage facilities or office buildings outside the reporting boundary are estimated to be less than 0.1% of Scope 1+2 emissions.

C6.5

(C6.5) Account for your organization's gross global Scope 3 emissions, disclosing and explaining any exclusions.

Purchased goods and services

Evaluation status
Relevant, calculated

Metric tonnes CO2e
10995600

Emissions calculation methodology
a) Activity data: Based on the LANXESS business data management system, qualitative and monetary amounts of purchased goods and services were determined. b) Emission factors: The factors of major purchased goods and services (65.8 % of total spend) were determined based on the Ecoinvent V3.6 database. c) Methodology, calculation and assumptions: For calculating the GHG emissions, amounts-taken from the business data management system-were multiplied with the respective emission factors. The coverage ratio amounts 65.8 % of total spend from purchased good and services. Subsequently, the resultant amount of CO2e Scope 3 was extrapolated to 100%.

Percentage of emissions calculated using data obtained from suppliers or value chain partners
0

Please explain

Capital goods

Evaluation status

Relevant, calculated

Metric tonnes CO2e

521700

Emissions calculation methodology

a) Activity data: Based on the LANXESS business data management system, qualitative and monetary amounts of purchased capital goods were determined. b) Emission factors: The factors of major purchased capital goods (78.4 % of total spend) were determined based on the DEFRA Tables Annex 13 (2012) (constant exchange rates and adjusted for inflation). c) Methodology, calculation and assumptions: For calculating the GHG emissions, monetary amounts-taken from the business data management system-were multiplied with the respective emission factors. The coverage ratio amounts 78.4 % of total spend. Subsequently, the resultant amount of CO2e Scope 3 was extrapolated to 100 %.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Fuel-and-energy-related activities (not included in Scope 1 or 2)

Evaluation status

Relevant, calculated

Metric tonnes CO2e

340150

Emissions calculation methodology

a) Activity data: Amounts of purchased energy sources (fuels) used in the reporting period were determined based on the LANXESS "HSE Performance data system". b) Emission factors: The Cradle-to-Gate and WTT (Well-to-tank) emission factors were determined based on the corresponding DEFRA Tables. T&D (Transmission and Distribution) emission factors were taken from IEA list (T&D loss adjustment). c) Methodology, calculation and assumptions: The GHG emissions for extraction, production and transportation of fuels for our own energy production were calculated by multiplying the purchased quantity of fuel with the corresponding cradle-to-gate emission factors. For electricity purchased from an external supplier, the CO2e emissions for extraction, refining and transport of primary fuels before their use in power generation were calculated by multiplying the respective amounts with the identified factors per country. Similarly, the CO2e emissions of grid losses and the WTT (well-to-tank) emissions of grid losses were calculated by multiplying the specific power rate for each country with the respective factor. Emissions from steam were calculated by multiplying the purchased quantity of steam with the corresponding WTT - heat and steam emission factors. As cooling energy and compressed air is mostly generated by using electricity, we transferred the purchased amounts of cooling energy and compressed air into electricity and calculated the CO2e emissions analogue to purchased electricity.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Upstream transportation and distribution

Evaluation status

Relevant, calculated

Metric tonnes CO2e

547600

Emissions calculation methodology

a) Activity data: Amounts of purchased resources were determined based on the LANXESS business data management system. b) Emission factors: The average emission factors for transport by truck, rail and ship) were determined based on the DEFRA Tables "Freighting goods" and "WTT - delivery vehs & freight". c) Methodology, calculation and assumptions: To calculate the GHG emissions the amounts of delivered goods were summarized in continental and intercontinental transports. Based on the LANXESS sites average distances per transport route were determined. The amounts determined for each transport mode were multiplied with the emission factors in tonnes/km. This was done for the transport itself as well as for the preliminary stage of the transport. Since raw material supply by plane is of no importance for LANXESS , this is not included in the calculation.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Waste generated in operations

Evaluation status

Relevant, calculated

Metric tonnes CO2e

858200

Emissions calculation methodology

a) Activity data: The amount of waste-generated during production processes-were determined based on the LANXESS "HSE Performance data system". A distinction was made according to the disposal routes incineration (without energy recovery) and disposal. b) Emission factors: Analogous to Appendix A of the WBCSD Chemical Sector Standard "Guidance for Accounting and Reporting Corporate GHG Emissions in the Chemical Sector Value Chain" a GWP of 1 was assumed for burning and a GWP of 13 for dumping (50 % CO2e with GWP = 1 and 50 % methane with GWP = 25). c) Methodology, calculation and assumptions: The carbon content of disposed waste was assumed to be 80 %. To calculate the GHG emissions the amount of disposed waste per disposal route was multiplied with the carbon content and the respective GWP. Recycled waste was not integrated in our calculation.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Business travel

Evaluation status

Not relevant, calculated

Metric tonnes CO₂e

13000

Emissions calculation methodology

a) Activity data: The number of kilometers for short-, medium- and long-haul flights and travelled kilometers by rail have been determined via our external Travel Management. The number of hotel stays was determined by division "Global Procurement & Logistics". b) Emission factors: The emission factors for air and rail travel were obtained from the DEFRA Tables. The emission factor for hotel stays was determined to be an average value based on the sustainability information from Sissotel, Rezidor, Melia and Hilton. c) Methodology, calculation and assumptions: In order to calculate the GHG emissions for air and rail travel the actual travelled distances were multiplied with the respective emission factors for short-, medium- and long-haul. The degree of business trips for air- and rail travel covered by external travel management is 93%. The determined Scope 3 emissions were extrapolated to 100%. The GHG emissions for hotel stays were calculated by multiplying the number of all nights with the corresponding emission factor. The degree of the determined hotel stays in relation to overall LANXESS is 93%. The determined Scope 3 emissions were extrapolated to 100%.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Employee commuting

Evaluation status

Not relevant, calculated

Metric tonnes CO₂e

21300

Emissions calculation methodology

a) Activity data: Number of employees in the reporting year. b) Emission factors: The emission factors for individual modes of transport were taken from the DEFRA Table "Business travel - land". c) Methodology, calculation and assumptions: It was assumed that 50 % of employees travelled by car, 12.5 % by rail, 12.5 % by bus or tram to work. 25 % of our employees live in the immediate vicinity of our sites and come by foot or by bicycle to work. The average distances from home to work were adopted with 30km for car / train and 20km for bus / tram. The average number of working days per employee and per year was assumed as 220 days. To calculate the GHG emissions the average distance to work was multiplied with the number of trips and the emission factor per mode of transport.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Upstream leased assets

Evaluation status

Not relevant, calculated

Metric tonnes CO₂e

31500

Emissions calculation methodology

a) Activity data: Leased cars: The LANXESS Fleet Management determined the number of leased vehicles and the vehicle kilometers as defined in the leasing contracts in 2018. Leased office and storage space: This space was determined by the LANXESS department "Corporate Real Estate & Facility Management". Leased equipment: The magnitude of CO₂e emissions through leased equipment has been evaluated as not relevant. b) Emission factors: Leased cars: The emission factors for leased vehicles in Germany were provided by the vehicle manufacturers themselves. For all other vehicles, emission factors were determined based on the DEFRA Table for "unknown medium passenger cars". Leased office and storage space: The standard factors for energy use per square meter office and warehouse space as well as the emission factors per kWh were determined based on Annex A of the "Guidance for Accounting & Reporting Corporate GHG Emissions in the Chemical Sector Value Chain". c) Methodology, calculation and assumptions: The GHG emissions of the leased vehicles were calculated based on the emission factors and the vehicle kilometers which were defined in the leasing contracts. The GHG emissions of leased office space were calculated based on average energy and emission factors differentiated according to Europe and "Rest of World".

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Downstream transportation and distribution

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

492800

Emissions calculation methodology

a) Activity data: Leased storage space: This space was determined by the LANXASS department "Global Category Management Logistics Services". Transport information, like number of shipment, weight of freight as well as source and destination information were taken from the LANXESS Transport & Logistics Information System. b) Emission factors: Leased storage space: The standard factors for energy use per square meter office and warehouse space as well as the emission factors per kWh were determined based on Annex A of the "Guidance for Accounting & Reporting Corporate GHG Emissions in the Chemical Sector Value Chain". Emission factors to calculate the GHG emissions for each mode of transportation of sold products were determined based on DEFRA 2019 Tables. c) Methodology, calculation and assumptions: The GHG emissions of leased storage space were calculated based on average energy and emission factors differentiated according to Europe and "Rest of World". GHG emissions from the transportation of sold products to our customers were calculated from an external service provider. In a first step this provider calculated the shipping distance for each transport process based on the LANXESS transport information. This was made for all used transport modes separately. The calculated shipping distance was multiplied by the shipping weight and led to the Payload-distance (tonne-kilometre). In a last step, the Payload-distance for each transport mode was multiplied by the corresponding average emission factor and added to the final CO₂ emission value.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Processing of sold products

Evaluation status

Not relevant, explanation provided

Metric tonnes CO₂e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

LANXESS produces exclusively intermediate products, which are processed further by our customers to other intermediate or final products. The various types of processing are not tracked by LANXESS. Therefore, it is not possible for us, to calculate the GHG emissions from the processing of sold products in a decent manner that is reliable, complete, accurate and consistent with annual data. This approach is consistent with the contents of the WBCSD Chemical Sector Standard "Guidance for Accounting and Reporting Corporate GHG Emissions in the Chemical Sector Value Chain".

Use of sold products

Evaluation status

Not relevant, explanation provided

Metric tonnes CO₂e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

LANXESS produces exclusively intermediate products, which are processed further by our customers to other intermediate or final products. The various types of processing are not tracked by LANXESS. Also the conditions of use of the end products based on LANXESS intermediate products are not known which does not allow for calculating the emissions belonging to that category.

End of life treatment of sold products

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

5269850

Emissions calculation methodology

a) Activity data: Volume of products sold from the LANXESS business data management system. The volume of inorganic products sold is taken from the yearly product Portfolio Assessment. b) Emission factors: Analogous to Appendix A of the WBCSD Chemical Sector Standard "Guidance for Accounting and Reporting Corporate GHG Emissions in the Chemical Sector Value Chain" a GWP of 1 was assumed for burning and a GWP of 13 for dumping (ratio of 50 % CO₂e with GWP = 1 and 50% methane with GWP = 25). c) Methodology, calculation and assumptions: For calculating GHG emissions it was assumed that all sold products within the reporting year have to be disposed by either incineration or landfilling at the end of its life cycle which releases CO₂ or its equivalent. The relevant amounts that do not contain carbon (e.g. iron oxide pigments, hydrochloric acid or other inorganic products) were removed from the considered volume of sold products. The carbon content was determined based on the information provided by the Intergovernmental Panel on Climate Change (IPCC). For the category of chemicals a carbon ratio of 80% is assumed. Based on our share we estimate a share of disposal routes of 60% for incineration, 20% landfilling and 20% recycling. The total amount of emissions was calculated by multiplying the quantities with the carbon content, the disposal route and the emission factor.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Downstream leased assets

Evaluation status

Not relevant, explanation provided

Metric tonnes CO₂e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

Not relevant since the estimated GHG emissions belonging to that category are below 0.001 % of total CO₂e Scope 3 emissions.

Franchises

Evaluation status

Not relevant, explanation provided

Metric tonnes CO₂e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

Not relevant for LANXESS. We do not own or operate franchises.

Investments

Evaluation status

Not relevant, explanation provided

Metric tonnes CO₂e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

LANXESS holds a share of 40 % in joint venture Currenta. Currenta provides Lanxess with energy. The emissions from energy production are included in our Scope 2 reporting. The percentage of total CO₂e Scope 3 emissions from the remaining joint venture is insignificant below 0,1 %.

Other (upstream)

Evaluation status

Metric tonnes CO₂e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

Other (downstream)

Evaluation status

Metric tonnes CO₂e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners

<Not Applicable>

Please explain

C6.7

(C6.7) Are carbon dioxide emissions from biogenic carbon relevant to your organization?

Yes

C6.7a

(C6.7a) Provide the emissions from biogenic carbon relevant to your organization in metric tons CO2.

	CO2 emissions from biogenic carbon (metric tons CO2)	Comment
Row 1	183800	

C6.10

(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO2e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.

Intensity figure
0.000405

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)
2752400

Metric denominator
unit total revenue

Metric denominator: Unit total
6802000000

Scope 2 figure used
Market-based

% change from previous year
10

Direction of change
Decreased

Reason for change
Total revenues decreased by only 5.5%, while combined Scope 1 and Scope 2 emissions decreased by approximately 15.3% compared to 2018. The decrease in emissions is mainly due to lower energy consumption (approximately -0.4%) due to energy efficiency projects (e.g. Reuse of steam, Machine/equipment replacement, Process optimization), lower emission factors for purchased energy and the decision to report Business Unit Leather under discontinued operations in 2019.

Intensity figure
0.581

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)
2752400

Metric denominator
Other, please specify (Volume sold (in metric tonnes))

Metric denominator: Unit total
4738900

Scope 2 figure used
Market-based

% change from previous year
0.85

Direction of change
Decreased

Reason for change
Intensity figure 2018 has been revised to 0.586 due to recalculated emission value 2018. Total amount of volume sold decreased by 14.6%, while combined Scope 1 and Scope 2 emissions decreased only by approximately 15.3% compared to 2018. The decrease in emissions is mainly due to lower energy consumption (approximately -0.4%) due to energy efficiency projects (e.g. Reuse of steam, Machine/equipment replacement, Process optimization), lower emission factors for purchased energy and the decision to report Business Unit Leather under discontinued operations in 2019.

C7. Emissions breakdowns

C7.1

(C7.1) Does your organization break down its Scope 1 emissions by greenhouse gas type?
Yes

C7.1a

(C7.1a) Break down your total gross global Scope 1 emissions by greenhouse gas type and provide the source of each used greenhouse warming potential (GWP).

Greenhouse gas	Scope 1 emissions (metric tons of CO2e)	GWP Reference
CH4	1300	IPCC Second Assessment Report (SAR - 100 year)
N2O	509300	IPCC Second Assessment Report (SAR - 100 year)
HFCs	300	IPCC Second Assessment Report (SAR - 100 year)
CO2	872100	IPCC Second Assessment Report (SAR - 100 year)

C7.2

(C7.2) Break down your total gross global Scope 1 emissions by country/region.

Country/Region	Scope 1 emissions (metric tons CO2e)
Argentina	1036
Australia	0
Belgium	649844
Brazil	5915
Canada	9659
China	6173
France	369
Germany	294673
India	32920
Italy	0
Japan	0
Mexico	414
Republic of Korea	0
Russian Federation	0
Singapore	0
Taiwan, Greater China	1
United Kingdom of Great Britain and Northern Ireland	2860
United States of America	379136

C7.3

(C7.3) Indicate which gross global Scope 1 emissions breakdowns you are able to provide.
By business division

C7.3a

(C7.3a) Break down your total gross global Scope 1 emissions by business division.

Business division	Scope 1 emissions (metric ton CO2e)
Advanced Intermediates	448700
Engineering Materials	637850
Performance Chemicals	92700
Specialty Additives	203750

C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4

(C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4) Break down your organization's total gross global Scope 1 emissions by sector production activity in metric tons CO2e.

	Gross Scope 1 emissions, metric tons CO2e	Net Scope 1 emissions , metric tons CO2e	Comment
Cement production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals production activities	1383000	<Not Applicable>	Coverage: 100% production activities including associated administration activities.
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Electric utility activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Metals and mining production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (upstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (midstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (downstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport OEM activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport services activities	<Not Applicable>	<Not Applicable>	<Not Applicable>

C7.5

(C7.5) Break down your total gross global Scope 2 emissions by country/region.

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted for in Scope 2 market-based approach (MWh)
Argentina	622	850	1771	0
Australia	187	220	252	0
Belgium	73697	77619	438149	0
Brazil	1481	196	12719	0
Canada	6902	3542	48400	0
China	114627	104114	195408	0
France	2311	216	5062	0
Germany	1188288	878004	3014406	0
India	134722	88748	187609	0
Italy	21232	12932	69865	0
Japan	412	377	792	0
Mexico	8572	4367	17960	0
Russian Federation	181	181	603	0
Singapore	196	208	497	0
Republic of Korea	87	74	169	0
Taiwan, Greater China	1713	1184	2748	0
United Kingdom of Great Britain and Northern Ireland	3309	2620	13339	0
United States of America	211161	193948	510310	0

C7.6

(C7.6) Indicate which gross global Scope 2 emissions breakdowns you are able to provide.
By business division

C7.6a

(C7.6a) Break down your total gross global Scope 2 emissions by business division.

Business division	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Advanced Intermediates	1062128	777465
Engineering Materials	145388	148340
Performance Chemicals	284230	229684
Specialty Additives	277954	213911

C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7

(C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7) Break down your organization's total gross global Scope 2 emissions by sector production activity in metric tons CO2e.

	Scope 2, location-based, metric tons CO2e	Scope 2, market-based (if applicable), metric tons CO2e	Comment
Cement production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals production activities	1769700	1369400	Coverage: 100% production activities including associated administration activities.
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Metals and mining production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (upstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (midstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (downstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport OEM activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport services activities	<Not Applicable>	<Not Applicable>	<Not Applicable>

C-CH7.8

(C-CH7.8) Disclose the percentage of your organization's Scope 3, Category 1 emissions by purchased chemical feedstock.

Purchased feedstock	Percentage of Scope 3, Category 1 tCO2e from purchased feedstock	Explain calculation methodology
Ammonia		LANXESS sources from a broad basis of chemical feedstocks. Looking at LANXESS's Scope 3, Category 1 emissions these are the three biggest shares of purchased feedstock. As this is sensitive information with view to our competitors, we cannot provide this figure.
Aromatics extraction		LANXESS sources from a broad basis of chemical feedstocks. Looking at LANXESS's Scope 3, Category 1 emissions these are the three biggest shares of purchased feedstock. As this is sensitive information with view to our competitors, we cannot provide this figure.
Specialty chemicals		LANXESS sources from a broad basis of chemical feedstocks. Looking at LANXESS's Scope 3, Category 1 emissions these are the three biggest shares of purchased feedstock. As this is sensitive information with view to our competitors, we cannot provide this figure.

C-CH7.8a

(C-CH7.8a) Disclose sales of products that are greenhouse gases.

	Sales, metric tons	Comment
Carbon dioxide (CO2)	0	
Methane (CH4)	0	
Nitrous oxide (N2O)	0	
Hydrofluorocarbons (HFC)	0	
Perfluorocarbons (PFC)	0	
Sulphur hexafluoride (SF6)	0	
Nitrogen trifluoride (NF3)	0	

C7.9

(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?
Decreased

C7.9a

(C7.9a) Identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined), and for each of them specify how your emissions compare to the previous year.

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption	46700	Increased	1.44	In 2019 the use of biomass decreased which means an increasing Scope1 emissions. Compared to the total Scope 1 and Scope 2 emissions issued in the previous year (3,250,000 t) the emissions increase by about 1.44%. [Calculation: (46,700 / 3,250,000) x 100 = 1.44%].
Other emissions reduction activities	7300	Decreased	0.22	In 2019 LANXESS reduced its Scope 1 and Scope 2 emissions by about 7,300 metric tons (t) of CO2e from implementing 61 emission reduction activities. Compared to the total Scope 1 and Scope 2 emissions issued in the previous year (3,250,000 t) we reduced the emissions by about 0.23%. [Calculation: (-7,300 / 3,250,000) x 100 = -0.23%]. The main focus of our emission reduction activities was on increasing energy efficiency of processes.
Divestment	0	No change	0	No change within the reporting year
Acquisitions	0	No change	0	No change within the reporting year
Mergers	0	No change	0	No change within the reporting year
Change in output	46700	Decreased	1.44	The decreased volume of products sold in the reporting year, led also to lower Scope 1 and Scope 2 emissions. Calculated on decreased volume of products sold and assumed that no emission reduction activities would have been realized, the CO2e emission would have decreased by -46,700 metric tons (t) or -1.44% [Calculation: (-46,700 / 3,250,000) x 100 = -1.44%]
Change in methodology	187900	Decreased	5.78	In 2019 LANXESS has started a project to update the energy supplier emission factors for purchased electricity, steam and heat. New and revised emission factors from our energy supplier led to decreased Scope 2 emissions. Compared to the previous year Scope 1 & 2 emissions (3,250,000 t) the emission decreased in the reporting year by 187,900 metric tons (t) or 5.78%. [Calculation: (-187,900/ 3,250,000) x 100 = -5.78%].
Change in boundary	263900	Decreased	8.12	In 2019 the board decided to divest the business unit "Leather chemicals", therefore they were reported under discontinued operations in the financial reporting and were also excluded from the environmental reporting boundary. Compared to the total Scope 1 and Scope 2 emissions of the previous year (3,250,000 t), emissions were reduced by about 8.12%. [Calculation: (-263,900 / 3,250,000) x 100 = -8.12%].
Change in physical operating conditions	0	No change	0	No change within the reporting year
Unidentified	0	No change	0	No change within the reporting year
Other	38500	Decreased	1.18	Changed plant utilization and modifications in our product portfolio led decreased combined Scope 1 & 2 emissions by 1.19%. [Calculation: (-38,500 / 3,250,000) x 100 = -1.19%].

C7.9b

(C7.9b) Are your emissions performance calculations in C7.9 and C7.9a based on a location-based Scope 2 emissions figure or a market-based emissions figure?

Market-based

C8. Energy

C8.1

(C8.1) What percentage of your total operational spend in the reporting year was on energy?

More than 5% but less than or equal to 10%

C8.2

(C8.2) Select which energy-related activities your organization has undertaken.

	Indicate whether your organization undertook this energy-related activity in the reporting year
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	Yes
Consumption of purchased or acquired steam	Yes
Consumption of purchased or acquired cooling	Yes
Generation of electricity, heat, steam, or cooling	Yes

C8.2a

(C8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total (renewable and non-renewable) MWh
Consumption of fuel (excluding feedstock)	LHV (lower heating value)	472193	2676062	3148255
Consumption of purchased or acquired electricity	<Not Applicable>	0	1674901	1674901
Consumption of purchased or acquired heat	<Not Applicable>	0	5757	5757
Consumption of purchased or acquired steam	<Not Applicable>	0	1884031	1884031
Consumption of purchased or acquired cooling	<Not Applicable>	0	144145	144145
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	0	<Not Applicable>	0
Total energy consumption	<Not Applicable>	472193	6384896	6857089

C-CH8.2a**(C-CH8.2a) Report your organization's energy consumption totals (excluding feedstocks) for chemical production activities in MWh.**

	Heating value	Total MWh
Consumption of fuel (excluding feedstock)	LHV (lower heating value)	3148255
Consumption of purchased or acquired electricity	<Not Applicable>	1674901
Consumption of purchased or acquired heat	<Not Applicable>	5757
Consumption of purchased or acquired steam	<Not Applicable>	1884031
Consumption of purchased or acquired cooling	<Not Applicable>	144145
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	0
Total energy consumption	<Not Applicable>	6857089

C8.2b**(C8.2b) Select the applications of your organization's consumption of fuel.**

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	Yes
Consumption of fuel for the generation of heat	No
Consumption of fuel for the generation of steam	Yes
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	No

C8.2c**(C8.2c) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel type.****Fuels (excluding feedstocks)**

Bituminous Coal

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

110684

MWh fuel consumed for self-generation of electricity

55342

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

55342

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

2.64

Unit

metric tons CO2e per metric ton

Emissions factor source

Own conversion table based on 2006 IPCC Guidelines for National Greenhouse Gas Inventories

Comment

Fuels (excluding feedstocks)

Fuel Oil Number 4

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

19661

MWh fuel consumed for self-generation of electricity

9830

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

9831

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

3.12

Unit

metric tons CO2e per metric ton

Emissions factor source

Own conversion table based on 2006 IPCC Guidelines for National Greenhouse Gas Inventories

Comment

Fuels (excluding feedstocks)

Diesel

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

13525

MWh fuel consumed for self-generation of electricity

6762

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

6763

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

3.22

Unit

metric tons CO2e per metric ton

Emissions factor source

Own conversion table based on 2006 IPCC Guidelines for National Greenhouse Gas Inventories

Comment

Fuels (excluding feedstocks)

Natural Gas

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

2369448

MWh fuel consumed for self-generation of electricity

1184724

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

1184724

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

0.202

Unit

metric tons CO2e per MWh

Emissions factor source

Own conversion table based on 2006 IPCC Guidelines for National Greenhouse Gas Inventories

Comment

Fuels (excluding feedstocks)

Liquefied Petroleum Gas (LPG)

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

2634

MWh fuel consumed for self-generation of electricity

1317

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

1317

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

2.99

Unit

metric tons CO2e per metric ton

Emissions factor source

Own conversion table based on 2006 IPCC Guidelines for National Greenhouse Gas Inventories

Comment

Fuels (excluding feedstocks)

Liquefied Natural Gas (LNG)

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

18

MWh fuel consumed for self-generation of electricity

9

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

9

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

2.83

Unit

metric tons CO2e per metric ton

Emissions factor source

Own conversion table based on 2006 IPCC Guidelines for National Greenhouse Gas Inventories

Comment

Fuels (excluding feedstocks)

Motor Gasoline

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

3610

MWh fuel consumed for self-generation of electricity

1805

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

1805

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

3.12

Unit

metric tons CO2e per metric ton

Emissions factor source

Own conversion table based on 2006 IPCC Guidelines for National Greenhouse Gas Inventories

Comment

Fuels (excluding feedstocks)

Wood Waste

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

320584

MWh fuel consumed for self-generation of electricity

160292

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

160292

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

1.78

Unit

metric tons CO2e per metric ton

Emissions factor source

Own conversion table based on 2006 IPCC Guidelines for National Greenhouse Gas Inventories

Comment

Fuels (excluding feedstocks)

Other, please specify (Biomass)

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

151428

MWh fuel consumed for self-generation of electricity

75714

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

75714

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

1.18

Unit

metric tons CO2e per metric ton

Emissions factor source

Own conversion table based on 2006 IPCC Guidelines for National Greenhouse Gas Inventories

Comment

Fuels (excluding feedstocks)

Other, please specify (Energy sources based on crude oil)

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

156482

MWh fuel consumed for self-generation of electricity

78241

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

78241

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

0.202

Unit

metric tons CO2e per MWh

Emissions factor source

Own conversion factor for sweet gas analogous to natural gas based on 2006 IPCC Guidelines for National Greenhouse Gas Inventories

Comment

Fuels (excluding feedstocks)

Other, please specify (Ethanol)

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

181

MWh fuel consumed for self-generation of electricity

90

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

91

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

<Not Applicable>

Emission factor

0.96

Unit

metric tons CO2e per metric ton

Emissions factor source

Own conversion table based on 2006 IPCC Guidelines for National Greenhouse Gas Inventories

Comment

C8.2d

(C8.2d) Provide details on the electricity, heat, steam, and cooling your organization has generated and consumed in the reporting year.

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	1338031	1338031	236096	236096
Heat	0	0	0	0
Steam	1338031	1338031	236097	236097
Cooling	0	0	0	0

C-CH8.2d

(C-CH8.2d) Provide details on electricity, heat, steam, and cooling your organization has generated and consumed for chemical production activities.

	Total gross generation (MWh) inside chemicals sector boundary	Generation that is consumed (MWh) inside chemicals sector boundary
Electricity	1338031	1338031
Heat	0	0
Steam	1338031	1338031
Cooling	0	0

C8.2e

(C8.2e) Provide details on the electricity, heat, steam, and/or cooling amounts that were accounted for at a zero emission factor in the market-based Scope 2 figure reported in C6.3.

Sourcing method

None (no purchases of low-carbon electricity, heat, steam or cooling)

Low-carbon technology type

<Not Applicable>

Country/region of consumption of low-carbon electricity, heat, steam or cooling

<Not Applicable>

MWh consumed accounted for at a zero emission factor

<Not Applicable>

Comment

C-CH8.3

(C-CH8.3) Does your organization consume fuels as feedstocks for chemical production activities?

Yes

C-CH8.3a

(C-CH8.3a) Disclose details on your organization's consumption of fuels as feedstocks for chemical production activities.

Fuels used as feedstocks

Other, please specify (Total feedstock)

Total consumption

5140000

Total consumption unit

metric tons

Inherent carbon dioxide emission factor of feedstock, metric tons CO2 per consumption unit

0.7

Heating value of feedstock, MWh per consumption unit

Heating value

LHV

Comment

As our feedstock is considered as confidential business information, we calculated the emission factor from the average carbon content of our total feedstock. Please also remember that a large proportion of our carbon feedstock is not converted to CO2, but is raw material for higher-value products. Due to the differentiated raw material portfolio and the different types of use, we do not believe that it makes sense to calculate a correct heating value from the given information.

C-CH8.3b

(C-CH8.3b) State the percentage, by mass, of primary resource from which your chemical feedstocks derive.

	Percentage of total chemical feedstock (%)
Oil	25
Natural Gas	5
Coal	0
Biomass	5
Waste (non-biomass)	10
Fossil fuel (where coal, gas, oil cannot be distinguished)	0
Unknown source or unable to disaggregate	0

C9. Additional metrics

C9.1

(C9.1) Provide any additional climate-related metrics relevant to your business.

C-CH9.3a

(C-CH9.3a) Provide details on your organization's chemical products.

Output product Adipic acid Production (metric tons) Capacity (metric tons) Direct emissions intensity (metric tons CO2e per metric ton of product) Electricity intensity (MWh per metric ton of product) Steam intensity (MWh per metric ton of product) Steam/ heat recovered (MWh per metric ton of product) Comment
Output product Caprolactam Production (metric tons) Capacity (metric tons) Direct emissions intensity (metric tons CO2e per metric ton of product) Electricity intensity (MWh per metric ton of product) Steam intensity (MWh per metric ton of product) Steam/ heat recovered (MWh per metric ton of product) Comment
Output product Polymers Production (metric tons) Capacity (metric tons) Direct emissions intensity (metric tons CO2e per metric ton of product) Electricity intensity (MWh per metric ton of product) Steam intensity (MWh per metric ton of product) Steam/ heat recovered (MWh per metric ton of product) Comment
Output product Specialty chemicals Production (metric tons) Capacity (metric tons) Direct emissions intensity (metric tons CO2e per metric ton of product) Electricity intensity (MWh per metric ton of product) Steam intensity (MWh per metric ton of product) Steam/ heat recovered (MWh per metric ton of product) Comment

C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6

(C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6) Does your organization invest in research and development (R&D) of low-carbon products or services related to your sector activities?		
	Investment in low-carbon R&D	Comment
Row 1	Yes	

C-CH9.6a

(C-CH9.6a) Provide details of your organization's investments in low-carbon R&D for chemical production activities over the last three years.

Technology area	Stage of development in the reporting year	Average % of total R&D investment over the last 3 years	R&D investment figure in the reporting year (optional)	Comment
Waste heat recovery	Large scale commercial deployment	≤20%		CO2 reductionen via steam input reduction for plant in Leverkusen. Vapours from the stripper are fed directly into the low-boiling column. The use of vapours replaces the previous use of steam (CO2 reduction of approximately 1200t/year).
Process step integration	Large scale commercial deployment	≤20%		The introduction of a system for online monitoring of steam traps and timely repair of steam traps leads to a significant reduction in steam losses. (saving of more than 4000 t CO2 per year)
Radical process redesign	Large scale commercial deployment	≤20%		Energy optimization of the heat holding phase of a steam-driven device in Uerdingen leads to steam savings. The savings correspond to a CO2 reduction of approximately 250 tCO2 per year.

C10. Verification

C10.1

(C10.1) Indicate the verification/assurance status that applies to your reported emissions.

	Verification/assurance status
Scope 1	Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	Third-party verification or assurance process in place
Scope 3	Third-party verification or assurance process in place

C10.1a

(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements.

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

LXS_AR2019_EN_web2.pdf

Page/ section reference

Page 44 and Page 231-232 In 2019 the board decided to divest the business unit "Leather chemicals", therefore they were reported under discontinued operations in the financial reporting and are not more part of the reported LANXESS revenue or EBITDA. We have adjusted the environmental data and targets accordingly. This results in a small difference between the figures in this chapter and the publicly available information

Relevant standard

ISAE3000

Proportion of reported emissions verified (%)

100

C10.1b

(C10.1b) Provide further details of the verification/assurance undertaken for your Scope 2 emissions and attach the relevant statements.

Scope 2 approach
Scope 2 location-based

Verification or assurance cycle in place
Annual process

Status in the current reporting year
Complete

Type of verification or assurance
Limited assurance

Attach the statement
LXS_AR2019_EN_web2.pdf

Page/ section reference
Page 44 and Page 231-232 In 2019 the board decided to divest the business unit "Leather chemicals", therefore they were reported under discontinued operations in the financial reporting and are not more part of the reported LANXESS revenue or EBITDA. We have adjusted the environmental data and targets accordingly. This results in a small difference between the figures in this chapter and the publicly available information.

Relevant standard
ISAE3000

Proportion of reported emissions verified (%)
100

Scope 2 approach
Scope 2 market-based

Verification or assurance cycle in place
Annual process

Status in the current reporting year
Complete

Type of verification or assurance
Limited assurance

Attach the statement
LXS_AR2019_EN_web2.pdf

Page/ section reference
Page 44 and Page 231-232 In 2019 the board decided to divest the business unit "Leather chemicals", therefore they were reported under discontinued operations in the financial reporting and are not more part of the reported LANXESS revenue or EBITDA. We have adjusted the environmental data and targets accordingly. This results in a small difference between the figures in this chapter and the publicly available information.

Relevant standard
ISAE3000

Proportion of reported emissions verified (%)
100

C10.1c

(C10.1c) Provide further details of the verification/assurance undertaken for your Scope 3 emissions and attach the relevant statements.

Scope 3 category

Scope 3: Fuel and energy-related activities (not included in Scopes 1 or 2)

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

2019 PwC Assurance - Scope 3 Emissions, PSTIQ and LTIFR - Contractors.pdf

Page/section reference

In 2019 the board decided to divest the business unit "Leather chemicals", therefore they were reported under discontinued operations in the financial reporting and are not more part of the reported LANXESS revenue or EBITDA. We have adjusted the environmental data and targets accordingly. This results in a small difference between the figures in this chapter and the publicly available information.

Relevant standard

ISAE3000

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: End-of-life treatment of sold products

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

2019 PwC Assurance - Scope 3 Emissions, PSTIQ and LTIFR - Contractors.pdf

Page/section reference

In 2019 the board decided to divest the business unit "Leather chemicals", therefore they were reported under discontinued operations in the financial reporting and are not more part of the reported LANXESS revenue or EBITDA. We have adjusted the environmental data and targets accordingly. This results in a small difference between the figures in this chapter and the publicly available information.

Relevant standard

ISAE3000

Proportion of reported emissions verified (%)

100

C10.2

(C10.2) Do you verify any climate-related information reported in your CDP disclosure other than the emissions figures reported in C6.1, C6.3, and C6.5?

Yes

C10.2a

(C10.2a) Which data points within your CDP disclosure have been verified, and which verification standards were used?

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C9. Additional metrics	Other, please specify (Volume sold)	ISAE3000	LANXESS also uses a number of other data to evaluate environmental performance. These numbers also have an impact on the environment sustainability. LXS_AR2019_EN_web2.pdf
C9. Additional metrics	Other, please specify (Energy consumption)	ISAE3000	LANXESS also uses a number of other data to evaluate environmental performance. These numbers also have an impact on the environment sustainability. LXS_AR2019_EN_web2.pdf
C9. Additional metrics	Other, please specify (Water)	ISAE3000	LANXESS also uses a number of other data to evaluate environmental performance. These numbers also have an impact on the environment sustainability. LXS_AR2019_EN_web2.pdf
C9. Additional metrics	Other, please specify (Wastewater)	ISAE3000	LANXESS also uses a number of other data to evaluate environmental performance. These numbers also have an impact on the environment sustainability. LXS_AR2019_EN_web2.pdf
C9. Additional metrics	Other, please specify (Waste)	ISAE3000	LANXESS also uses a number of other data to evaluate environmental performance. These numbers also have an impact on the environment sustainability. LXS_AR2019_EN_web2.pdf
C9. Additional metrics	Other, please specify (Air emissions (other than CO2))	ISAE3000	LANXESS also uses a number of other data to evaluate environmental performance. These numbers also have an impact on the environment sustainability. LXS_AR2019_EN_web2.pdf

LXS_AR2019_EN_web2.pdf

C11. Carbon pricing

C11.1

(C11.1) Are any of your operations or activities regulated by a carbon pricing system (i.e. ETS, Cap & Trade or Carbon Tax)?

Yes

C11.1a

(C11.1a) Select the carbon pricing regulation(s) which impacts your operations.

EU ETS

C11.1b

(C11.1b) Complete the following table for each of the emissions trading schemes you are regulated by.

EU ETS

% of Scope 1 emissions covered by the ETS

27

% of Scope 2 emissions covered by the ETS

0

Period start date

January 1 2019

Period end date

December 31 2019

Allowances allocated

781661

Allowances purchased

0

Verified Scope 1 emissions in metric tons CO2e

372626

Verified Scope 2 emissions in metric tons CO2e

0

Details of ownership

Facilities we own and operate

Comment

C11.1d

(C11.1d) What is your strategy for complying with the systems you are regulated by or anticipate being regulated by?

EU ETS

With regard to the EU emissions trading, LANXESS' power plants and some of its chemical plants will be under the regime of the fourth EU-ETS trading period (2021-2030). The aim is to comply with all the compliance requirements and to be one of the most efficient players in every area. We are aiming for a balanced situation with respect to allowances. Our allowance management system is geared towards satisfying the compliance requirements. EU ETS installations are embedded in our group wide energy and environment management system. Our strategy is to reduce our emissions gradually and project wise according to our low carbon transition plan. This will help us to address shortages in the EU ETS.

This is illustrated by following Case Study:

- 1) Situation: To continue manufacturing products at the Leverkusen Verbund site that are both cost competitive and have a low CO2 footprint, production must be continuously optimized.
- 2) Task: The energy consumption of ASM (Alterungsschutzmittel - Antioxidants) plant in Leverkusen, which is an essential component of the Verbund site, should be further optimised.
- 3) Action: A new additional heat exchanger for boiler feed water heating was put into operation. This minimizes the energy that is released unused into the environment and thus saves energy and CO2 emissions.
- 4) Result: About 500 t CO2 can be saved by this project per year.

C11.2

(C11.2) Has your organization originated or purchased any project-based carbon credits within the reporting period?

No

C11.3

(C11.3) Does your organization use an internal price on carbon?

Yes

C11.3a

(C11.3a) Provide details of how your organization uses an internal price on carbon.

Objective for implementing an internal carbon price

Change internal behavior
Drive energy efficiency
Drive low-carbon investment

GHG Scope

Scope 1
Scope 2

Application

LANXESS applies a GHG shadow price in its Business Strategy Review since 2017. With the help of a shadow price of 135 €/ton CO2e emitted the sustainability of the sites were assessed. This applies to Scope 1 and Scope 2 emissions. By comparing the sustainability with the financial profitability of the site we are able to come to an integrated understanding of our sites, make transparent GHG impacts in relations to our sites and foster information exchange on low-carbon opportunities with our Business Units.

Actual price(s) used (Currency /metric ton)

135

Variance of price(s) used

None.

Type of internal carbon price

Shadow price

Impact & implication

The application of a shadow price in our business strategy review helps us to increase awareness and understanding for climate and energy related topics throughout our whole executive and management team and refrain from bad investment that counteract our ambition to move towards a low carbon performance. It helps to point out which sites and installations as well as product are emission intensive. It also supports scenarios with globally increasing prices over time. The outcome of the last business strategy review was that certain reduction opportunities were identified. It provided food for thought on the relevance to reduce emissions at one of our major sites. In the aftermath colleagues from the technical, the strategy and the regulatory department caught up to discuss new ideas to move forward at this site. In summary an internal carbon price is a successful vehicle to increase awareness and to assess the long term sustainability of products and sites.

Objective for implementing an internal carbon price

Drive energy efficiency
Drive low-carbon investment
Stress test investments

GHG Scope

Scope 1
Scope 2

Application

Investment projects (capital expenditure, acquisitions, Energy efficiency measures, carbon reduction projects)

Actual price(s) used (Currency /metric ton)

Variance of price(s) used

Differentiated, evolutionary pricing driven by the specific assessment, e.g. geography and timeframe of an investment.

Type of internal carbon price

Shadow price

Impact & implication

Carbon pricing is considered in internal assessments of major capital investment projects and M&A projects. LANXESS has set up a structured process to evaluate investment projects (e.g. capital expenditures, acquisitions as well as CO2 reduction an energy efficiency measures). The process considers a project base case as well as the option to assess alternative scenarios. Carbon pricing can be attributed to any case depending on strategic goals as well as the expected likelihood and magnitude of impact. In this way, it directly affects the evaluation of economic viability of the capital expenditure business case. Carbon pricing containing Scope 1 & Scope 2 emissions. The price of carbon considered depends on various factors driven by the specific assessment, e.g. geography and timeframe of an investment. Sometimes, several pricing scenarios are used to evaluate uncertainties in future regulatory environments.

C12. Engagement

C12.1

(C12.1) Do you engage with your value chain on climate-related issues?

Yes, our suppliers
Yes, our customers

C12.1a

(C12.1a) Provide details of your climate-related supplier engagement strategy.

Type of engagement

Information collection (understanding supplier behavior)

Details of engagement

Collect climate change and carbon information at least annually from suppliers

% of suppliers by number

19

% total procurement spend (direct and indirect)

55

% of supplier-related Scope 3 emissions as reported in C6.5

33

Rationale for the coverage of your engagement

Description of engagement: LANXESS is a founding member of the Together for Sustainability (TfS) initiative of leading chemical companies for the global standardization of supplier evaluations and auditing. Link: <http://www.tfsinitiative.com> With the help of TfS, we obtain reliable sustainability information of our raw material suppliers and providers of technical goods/services, with the goal to promote sustainable development in the supply chain including energy efficiency and greenhouse gas reduction. The initiative aims to develop and implement a global program for the responsible supply of goods and services and improve suppliers' environmental and social standards. The evaluation process is based on third-party online assessments and/or on-site audits and is simplified for both suppliers and TfS member companies by a globally applicable questionnaire. With the help of the questionnaires and audit reports we obtain relevant information about our suppliers energy efficiency and climate protection performance and their measures to improve the performance. This helps us to understand our own sustainability impact in the supply chain. The initiative has grown from 6 founding members to 22 members by the end of 2019 and represents the most relevant chemical companies worldwide. Rationale for Coverage: Until the end of 2019 about 5000 relevant suppliers had conducted either assessments or audits – this represents more than 55% of spend and 19% of our number of suppliers. The relevant procurement volume comprises all suppliers from which we procure more than 20.000 € of goods or services per year. Since the start of the TfS initiative more than 10.000 suppliers have had their sustainability performance rated within the TfS initiative based on EcoVadis assessments and TfS Audits. A total of 4.499 sustainability assessments were shared among TfS Members in 2019, and 309 new TfS audit reports were received by the TfS initiative.

Impact of engagement, including measures of success

How success is measured: (1) The score in the TfS third-party online assessments provides a score that displays the overall sustainability performance of the supplier. It can be positively influenced by reporting on energy consumption and GHG emissions, as well as energy and emission reduction projects. The scoring is 1-100. Our supplier's TfS scoring is per average 46,4/100 points and therefore above the average of the total amount of suppliers audited (43,1/100 points). No relevant trend with weak points were identified in 2019. Besides the score, each individual company receives detailed proposals for improvement or corrective action. (2) In addition we measure the success of our own engagement by the percentage of our purchase volume to which our engagement of supplier audit applies. Since the start of the TfS initiative more than 10.000 suppliers have had their sustainability performance rated within the TfS initiative based on EcoVadis assessments and TfS Audits. A total of 4.499 sustainability assessments were shared among TfS Members in 2019, and 309 new TfS audit reports were received by the TfS initiative. Impact of engagement: During TfS on-site audits, suppliers' internal policies, reports, prevention devices and testing methods are examined against standard procedures for emission prevention, measurement, and control. Example of positive outcome of our engagement: Currently the positive outcome is on the side of LANXESS as we understand further the impact of our supply chain emissions. For example a major part of our suppliers are other major chemical companies that provide energy and climate improvement measures as LANXESS does. However there are also suppliers from emerging markets where there are less environmental, energy and GHG reduction requirements. We learnt that this should be a focus of our planned and targeted strategic measures to improve supplier sustainability. The concept is currently under development and will start in 2020.

Comment

C12.1b

(C12.1b) Give details of your climate-related engagement strategy with your customers.

Type of engagement

Collaboration & innovation

Details of engagement

Run a campaign to encourage innovation to reduce climate change impacts

% of customers by number

20

% of customer - related Scope 3 emissions as reported in C6.5

Portfolio coverage (total or outstanding)

<Not Applicable>

Please explain the rationale for selecting this group of customers and scope of engagement

Description of engagement: LAXESS continuously invests into R&D. In 2019 LAXESS invested 114 m. € into R&D. Our spending's can be attributed to process improvement projects which are the prerequisite to improve the climate footprint of our production assets and product and application development which are the prerequisite for new products in the market. Here we work closely together with our customers to meet their demands. The engagement therefore is part of our sales activities as it has a major sales share. LAXESS engagement is to work closely together with our customers to accelerate the substitution of steel for engineering plastics in automobile to reduce CO2 emissions per driven kilometre. This substitution is necessary to fulfil climate related targets worldwide In the automotive sector the climate driven change to light vehicles has started years ago. LAXESS High Performance Materials businesses work closely together with the automotive industry to develop light weight solutions to reduce the CO2 emissions from cars. Scope 3 emissions covered from Engagement: The reduction of emission occurs at the customer of our customer, the end-consumer of cars. Therefore LAXESS is not able to report the total amount of Scope 3 covered. However a "typical" substitution of 130 - 200 kg of steel in a car like a Golf goes along with a weight reduction of 100 - 170 kg. 100 kg less weight, equals 0,5 l/100 km driven or 11,7 g less CO2. Measure of success: Beside helping to fulfil the climate targets worldwide, these products are responsible for a continues growth above GDP in the last years and a EBITDA Margin ~ 20% in the materials segment. So the measure is the sales increase of these light weight products.

Impact of engagement, including measures of success

The success is measured in the emission reduction of the customer during product application. A "typical" substitution of 130 - 200 kg of steel in a car like a Golf goes along with a weight reduction of 100 - 170 kg. 100 kg less weight, equals 0,5 l/100 km driven or 11,7 g less CO2. LAXESS looks for collaboration opportunities to increase market reach and sales even faster. Impact of engagement: These products are responsible for a continues growth above GDP in the last years and a EBITDA Margin ~ 20% in the materials segment. The fleet emission targets of the EU will put further pressure on the OEMs to reduce emissions. Therefore, further collaboration with LAXESS customers is expected to substitute even more parts of the cars by light weight solutions to reduce emissions. So light weight products are expected to further grow above GDP.

C12.3

(C12.3) Do you engage in activities that could either directly or indirectly influence public policy on climate-related issues through any of the following?

Direct engagement with policy makers

Trade associations

Other

C12.3a

(C12.3a) On what issues have you been engaging directly with policy makers?

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
Cap and trade	Support	LANXESS is an active member of the " Working Group Emission Trading " ("Arbeitsgruppe Emissionshandel") of the German Ministry for the Environment (BMUB). The group is meant as a stakeholder dialogue of the ministry with the industry. LANXESS is also chairman of the VCI (Chemical industry association) committee on climate protection and emissions trading and is closely involved in future legislative projects. By this as well as by active memberships in a number of other national and European associations we take the opportunity to let policy makers benefit from our knowledge and to discuss the impact of the Emission Trading Regulations on affected companies. Our aim is to maximize the emission reduction effect of the scheme and to minimize its impact on international competition. Since LANXESS is very energy intensive in terms of heat demand we have continued our focus on the importance of a proper allocation of certificates for heat supply in industry. This has been presented e. g. at the regional ministry of economy in North Rhine-Westphalia.	Build-up an Emission Trading Scheme (ETS) with maximal impact on emission reduction and limited impact on international competition.
Carbon tax	Support with major exceptions	In the same working groups established for ETS the introduction of carbon tax has been discussed. At ETS expert level a parallel introduction of such systems is considered as adverse to carbon emission targets and thus in most cases rejected.	Carbon tax or further carbon pricing concepts may not disrupt the cap and trade approach of the emission trading systems. Thus carbon tax systems need to be limited to those sectors which are not yet covered by the ETS. Even then the risk of carbon leakage needs to be considered seriously especially in case of regional or national tax systems.
Energy efficiency	Support with minor exceptions	LANXESS is actively accompanying the update of the European and national energy efficiency legislation. The focus of the update is on the efficiency target setting and measures to achieve the targets in the period from 2020 until 2030.	An EU energy efficiency target needs to consider external effect like economic cycles and allow for economic growth especially for the EU industrial sector. Energy efficiency potentials of the building sector need to be lifted with more consequence in the upcoming period from 2020 onwards.
Energy efficiency	Support with minor exceptions	Combined Heat and Power generation (CHP) especially via combined application of gas and steam turbines have the highest degree of efficiency in fuel based energy generation with values up to 96% with respect to fuel input. LANXESS still considers to keep the CHP as beneficial concept for steam and power supply. Yet the latest updates of the CHP support regulation in Germany as well as the Renewable Energy Act has significantly reduced the options for common projects with external energy suppliers.	Allow for joint CHP projects by accepting financial support for industrial CHP as well. Overcome conflicts with exemption rules for renewable fees for self-generated electric power.
Other, please specify (Decarbonization and Circular Economy) <i>Decarbonization and Circular Economy</i>	Support with major exceptions	LANXESS has taken part in a broad stakeholder dialogues and think tanks about the perspectives of the industry and especially the chemical industry with respect to the actual term decarbonization which is used to describe the path away from products and processes with high impact on the emission of greenhouse gases.	Decarbonization for the chemical industry needs to be translated into "climate neutral" economy in combination with an increasing "de-fossilization" of its feedstock. In this sense an approach is needed which allows various circular pathways along the chain of economic value and also takes into account the positive climate relevant effects of chemicals products in service life.

C12.3b**(C12.3b) Are you on the board of any trade associations or do you provide funding beyond membership?**

Yes

C12.3c**(C12.3c) Enter the details of those trade associations that are likely to take a position on climate change legislation.****Trade association**

VCI (German Chemical Industry Association)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

VCI is committed to international standards for sustainability and works closely with global organizations for the promotion of sustainable development, climate protection and resource efficiency. Furthermore, the VCI maximizes the impact of the German chemical industry on climate protection, promotes exchange of ideas and concepts and tries to avoid competitive disadvantage of international markets.

How have you influenced, or are you attempting to influence their position?

LANXESS is involved with the VCI regarding important issues related to the German chemical industry, including climate change. LANXESS holds the chair of the VCI committee "Climate Protection and Emissions Trading" (Fachausschuss Klimaschutz & Emissionshandel).

Trade association

CEFIC (European chemical industry council)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

CEFIC engages with policy makers from the EU on the key role of the chemical industry in providing solutions to mitigate GHG emissions and adapt to climate change. CEFIC advocates for the a business environment in which the chemical industry can realize this potential best. Furthermore, CEFIC functions are to provide a basis for further direct engagement activities.

How have you influenced, or are you attempting to influence their position?

LANXESS has a Corporate Membership and provides input in relevant program councils and working groups

Trade association

VIK (Industrial Energy Producers and Consumers Association)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

LANXESS is an energy intensive enterprise. VIK monitors the impact of the German energy-intensive industry on climate protection, drives the exchange of ideas and concepts to minimize the impact, and engages on political level to avoid competitive disadvantage of its members in international markets.

How have you influenced, or are you attempting to influence their position?

Participation in committees and working groups with the focus on: climate protection, renewable energies and energy efficiency. Active positioning in the regular meetings, discussions, policy documents etc.

Trade association

PlasticsEurope

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

LANXESS produces large volumes of engineering plastics. Especially in automotive application they are often applied in lightweight construction to reduce fuel consumption. Moreover LANXESS provides a number of additives which lead to an optimized performance and extended lifecycles of the plastic materials in their applications. PlasticsEurope aims for the plastics industry to be a responsible partner to policy-makers and other stakeholders. Plastics Europe encourages the manufacture of plastics using the most efficient, resource saving processes which include minimizing the environmental impact. This association identifies specific actions the industry can take in the areas of energy efficiency, resource efficiency, consumer protection and climate protection. Plastics can help tackle climate change through the efficient use of resources. For example, if half of all buildings were insulated to the highest standards that plastics can deliver, the EU could reduce CO2 emissions in buildings by 35%, or 340 million tons. This would exceed the Kyoto targets for EU 27 for the sector, and would be close to half of the more stringent EU target for the year 2020. PlasticsEurope is an official Associate of the Sustainable Energy EU Campaign, as part of the plastics industry's efforts to contribute to an increasingly energy efficient society.

How have you influenced, or are you attempting to influence their position?

LANXESS is Board Member of Plastics Europe in Brussels and Germany and has an active role in many plastics related working groups.

Trade association

IGBCE/ „Innovationsforum Energiewende“

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

Since climate policies may have an impact on the social situation of LANXESS employees a close connection the workers association is beneficial for the company. „Innovationsforum Energiewende“ is a common initiative from trade union IGBCE and their related enterprises. Various topics related to climate change policies and “Energiewende” (Energy market design with increasing part of renewable sources) are addressed and influenced by this group.

How have you influenced, or are you attempting to influence their position?

LANXESS is part of the steering group and provides its expertise on climate change policies in the various working groups

Trade association

BDI (Federation of German Industries)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

BDI is “the voice of German industry”. BDI engages with German policy makers on the key role of the industry in providing solutions to a broad spectrum of issues, e.g. mitigate GHG emissions and adapt to climate change. BDI advocates for the a business environment in which the industry can realize this potential best.

How have you influenced, or are you attempting to influence their position?

LANXESS supports the BDI through active participation in several committees and working groups.

Trade association

IN4Climate.NRW

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

IN4climate.NRW is a platform for knowledge sharing, dialogue and collaboration, which was launched by the North Rhine-Westphalian state government. Here, experts from industry, science and politics work together to develop innovative strategies and solutions for climate neutral industrial processes and products. Civic groups are also involved in the discussions.

How have you influenced, or are you attempting to influence their position?

LANXESS is actively involved in IN4Climate.NRW in order to accelerate the necessary transformation processes towards climate neutrality. Together with the Wuppertal Institute we chair the Innovation Team 2 and the working group Circular Economy.

C12.3e

(C12.3e) Provide details of the other engagement activities that you undertake.

LANXESS is actively involved in several information and opinion shaping activities via associations or other political stakeholders. Members of the LANXESS board as well the environmental policy experts from LANXESS have addressed issues of future climate change and sustainable energy policy in their regular meetings with such political stakeholders (e.g. members of the parliament and minister of economy) on EU-, national and regional level.

C12.3f

(C12.3f) What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?

LANXESS implemented a process to discuss, evaluate and assess its political activities on energy supply, energy efficiency and climate change with respect to LANXESS overall climate change strategy in a steering committee. This committee includes members from all internally relevant stakeholder groups, such as the corporate development group, the legal department, the purchasing department, the investor relations group, the corporate communications group as well as the largest and most energy intensive business units. In the case that new developments are identified as important for LANXESS and require strategic or operational response, they are communicated to the relevant execution committees who drive the response activities. Especially the HSEQ committee is responsible for compliance in all global health, safety and environmental regulatory affairs. It is led by a board member and consists of the heads of the Business Units. For Health and Safety Issues a special Occupational Safety Committee (ASA) exists. Finally the Operational Business Management (OBM) - Located in the respective Business Units - is responsible for the implementation of any measures at the operations level. In the case of critical regulatory and political developments, they are addressed directly to the LANXESS board members and/or to the corporate risk committee.

C12.4

(C12.4) Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

Publication

In mainstream reports

Status

Complete

Attach the document

LXS_AR2019_EN_web2.pdf

Page/Section reference

Strategy is addressed on page 47 Risk & Opportunities are addressed on page 48 Emission Figures are addressed on pages 3, 44 Emission Targets are addressed on pages 9,27

Content elements

Strategy
Risks & opportunities
Emissions figures
Emission targets

Comment

Annual Report 2019

Publication

In voluntary communications

Status

Complete

Attach the document

Climate-Neutral 2040 - LANXESS becomes climate-neutral.pdf

Page/Section reference

Complete website is about climate

Content elements

Strategy
Emissions figures
Emission targets

Comment

LANXESS created own homepage to publish new CO2 reduction target. <https://www.climateutral2040.com/>

Publication

In voluntary communications

Status

Complete

Attach the document

LXS_FactBook2019_191126.pdf

Page/Section reference

Strategy is addressed on page 21 Emission targets are addressed on page 21

Content elements

Strategy
Emission targets

Comment

Lanxess Factbook published 2019