

C0. Introduction

C0.1

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

About Lundbeck: Lundbeck is a global pharmaceutical company highly committed to improving the quality of life of people living with psychiatric and neurological disorders. For this purpose, Lundbeck is engaged in the research, development, production, marketing and sale of pharmaceuticals across the world. The company's products are targeted at disease areas such as depression, schizophrenia, Parkinson's disease and Alzheimer's disease. We acknowledge our responsibility to people who depend on our products and knowledge to safely manage their disease. We produce high quality products, perform pharmacovigilance, continuously evaluate the benefits and risks of our products and take proactive action as warranted. Research and development: Focus on R&D is the most important pillar in Lundbeck's ambition to improve treatment for people living with psychiatric and neurological disorders. We are specialists in our area and have research facilities in Denmark and China, and more than 1,000 employees work in our R&D units. We cooperate closely with strategic partners all over the world, ensuring the best possible foundation for innovation and the development of new treatment solutions. Key figures: Lundbeck employs approximately 5,100 people worldwide, 1,600 of whom are based in Denmark. We have employees in 55 countries, and our products are registered in more than 100 countries. We have production facilities in Denmark, France and Italy and research centres in Denmark and China. Lundbeck generated revenue of approximately DKK 15.6 billion in 2016. Corporate Responsibility: Our Corporate Responsibility approach takes in our business responsibilities, environmental impact and social influence:

- Our business responsibilities are about being fair, transparent and accountable. Lundbeck systematically monitors, evaluates and acts on opportunities and risks to our company in order to develop best practices and business standards.

- Lundbeck works systematically to minimise our environmental impact. The precautionary principle guides our efforts, and we ensure continuous improvements in research, development and production, applying certified environmental management systems.

- We acknowledge our social influence on people, the community and society, and strive to be known as a company that advances responsible social relations. Internally, Lundbeck provides sound people policies covering the Lundbeck Group. Internationally, we promote agreed conventions on human and labour rights and promote access to health through the Lundbeck Institute as well as by donations. By generating profit, we contribute to The Lundbeck Foundation, one of the largest private contributors to public research in health and natural sciences in Denmark. Our Health Safety and Environmental efforts are developed, conducted and controlled through our corporate HSE system that is certified according to ISO 14001. Climate strategy: In 2007 Lundbeck developed our Climate strategy, making a firm commitment to minimizing CO₂ emissions, and confirming our ambition to be among the leaders within the pharmaceutical industry. In 2014 we revised our long term target for the third time and raised the bar to 55% reduction of our scope 1 and 2 CO₂ emission in 2020 compared to 2006. This target we achieved by the end of 2016 with a 58% reduction. In 2017 we will initiate the development of a new CO₂ emission target. This target will include a scope 3 target, because scope 3 has now developed to be the largest contributor to our CO₂ emission, (around 90%).

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
Row 1	January 1 2017	December 31 2017	No	<Not Applicable>
Row 2	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Row 3	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Row 4	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>

C0.3

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

Denmark
France
Italy

C0.4

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

DKK

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 consolidation approach to your Scope 1 and Scope 2 greenhouse gas inventory.

Operational control

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) of the individual(s) on the board with responsibility for climate-related issues.

Position of individual(s)	Please explain
Chief Operating Officer (COO)	The Chief Operating Officer (COO) is attending all board meetings. He is not an official member of the board because the board only consist of 5 external members and 3 elected Lundbeck group representatives. Because the COO is attending in the board meetings he can bring up relevant topics to the board, but the Board is also closely informed about business risks due to their membership in the audit committee. The chairman of the board and two other board members are also member of the audit committee which has the highest responsibility for reporting and discussing business risks including potential climate risks. The COO is member of the Executive Management (EM) and appointed by the Chief Executive Officer (CEO) to be chairman for Lundbecks Health Safety and Environmental (HSE) Council. The (HSE) Council is the committee with the highest level of responsibility for climate change.

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	Please explain
Sporadic - as important matters arise	Reviewing and guiding strategy Reviewing and guiding risk management policies Reviewing and guiding annual budgets Reviewing and guiding business plans	Due to that climate risks in general are considered low compared to other business risks, climate related issues are only discussed at board meetings sporadically when the COO consider it relevant. Because the CEO has appointed the COO to chair the HSE council, the COO has the overall responsibility of defining and evaluating corporate policies, strategies, guidelines and corporate activities and monitoring progress against targets concerning HSE aspects including climate change. The HSE Council have 1 meeting every quarter of the year where e.g. status on energy reductions are discussed. Climate change issues are considered to be one of the significant environmental issues in Lundbeck and are therefore managed and controlled by the HSE Council. This means that Lundbecks Climate Strategy and our longterm CO2 emission target is decided by the HSE Council and aligned with the business strategy.

C1.2

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

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on climate-related issues
Chief Operating Officer (COO)	Both assessing and managing climate-related risks and opportunities	As important matters arise
President	Both assessing and managing climate-related risks and opportunities	Not reported to the board
Risk committee	Assessing climate-related risks and opportunities	Annually
Safety, Health, Environment and Quality committee	Both assessing and managing climate-related risks and opportunities	Not reported to the board
Facility manager	Managing climate-related risks and opportunities	Not reported to the board
Energy manager	Managing climate-related risks and opportunities	Not reported to the board
Environmental, Health, and Safety manager	Both assessing and managing climate-related risks and opportunities	Not reported to the board

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.

i.

The Health Safety and Environmental (HSE) Council is the committee with the highest level of responsibility for climate change. The Executive Vice President of Supply Operations & Engineering (COO), member of the Executive Management (EM), is appointed by the Chief Executive Officer (CEO) to be chairman for Lundbecks HSE Council. EM consist of 5 EVP's and our CEO.

Apart from the Chairman the HSE Council consists of 3 managers (1 Executive Vice President, that is also member of EM, 1 Senior Vice President and 1 Vice President) appointed by the chairman and 3 employees elected by and among HSE representatives in the organisation. Through this all parts of the company (Supply Operations and Engineering, Research & Development and Administrative areas) are represented in the HSE Council. The Environmental, Health and Safety Manager is secretary for the HSE council and prepare presentations and minutes for the meetings.

ii.

The HSE Council acts on behalf of EM in respect to HSE matters including climate change. Decisions in the HSE Council cover all of Lundbeck.

The role of the HSE Council is to:

Define and evaluate corporate policies, strategies, guidelines and corporate activities and targets concerning HSE aspects including climate change.

Evaluate Lundbecks HSE performance quarterly and annually at the meetings.

Communicate corporate decisions to managers and employees at all sites. The chairman of the HSE council can bring new and corporate topics to EM for final decision making.

The Council have 1 meeting every quarter of the year where e.g. status on energy and CO2 emission reductions are discussed.

Climate change issues are considered to be one of the significant environmental issues in Lundbeck and are therefore managed and controlled by the HSE Council. This means that Lundbecks Climate Strategy and our longterm CO2 emission target is decided by the HSE Council.

In order to implement and coordinate the necessary energy and CO2 emission reduction initiatives, Lundbeck has set up a Technical Forum. All Lundbecks production and research sites are represented by their Facility manager in this forum. The forum exchanges experiences and possibilities about technical issues, energy and GHG emission reduction.

At all site energy teams, consisting of Energy managers and engineering and maintenance employees, perform energy screenings and implement energy reducing initiatives.

C1.3

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

Yes

C1.3a

(C1.3a) Provide further details on the incentives provided for the management of climate-related issues.

Who is entitled to benefit from these incentives?

Chief Operating Officer (COO)

Types of incentives

Monetary reward

Activity incentivized

Emissions reduction target

Comment

In the Performance Management System all managers and employees have individual goals, including climate related goals. Once a year the performance is evaluated and scored and the score is determining the size of the bonus. Our COO has the corporate responsibility for climate change. This means that evaluation of our fulfillment of the climate related short term target is influencing the size of the bonus for our COO. The short term target (3% CO2 reduction in 2018 compared to 2017) are created partly by breaking down the corporate long term target about GHG emission and partly by looking into energy forecasts.

Who is entitled to benefit from these incentives?

President

Types of incentives

Monetary reward

Activity incentivized

Energy reduction target

Comment

There is an annual bonus for meeting short term targets related to energy reduction and emission reduction targets that affect scope 1 and 2 emissions. Since we have reached our existing long-term target. The short-term target is based on suggested new long-term target, that will be approved in 2018. The size of the bonus is managed in our Performance Management System. In the Performance Management System all managers and employees have individual goals. Where relevant climate related goals are included. Once a year the performance is evaluated and scored and the score is determining the size of the bonus.

Who is entitled to benefit from these incentives?

Facilities manager

Types of incentives

Monetary reward

Activity incentivized

Energy reduction target

Comment

There is an annual bonus for meeting short term targets related to energy reduction and emission reduction targets that affect scope 1 and 2 emissions. All sites are defining a site specific energy target. The Facility Manager is heading the Corporate Energy Forum and responsible for the cross organizational energy reduction projects. The size of the bonus is managed in our Performance Management System. In the Performance Management System all managers and employees have individual goals, including climate related goals. Once a year the performance is evaluated and scored and the score is determining the size of the bonus.

Who is entitled to benefit from these incentives?

Environmental, health, and safety manager

Types of incentives

Monetary reward

Activity incentivized

Emissions reduction target

Comment

There is an annual bonus for meeting short term targets related to GHG emission reduction targets. The Environmental/sustainability managers and specialists are rewarded monetary if they complete activities that supports energy reducing activities. For instance by carrying out campaigns or motivate employees in other ways to behave in an energy conscious way. The size of the bonus is managed in our Performance Management System where Environmental/sustainability managers and specialists have individual climate goals. Once a year the performance is evaluated and scored and the score is determining the size of the bonus.

Who is entitled to benefit from these incentives?

All employees

Types of incentives

Monetary reward

Activity incentivized

Energy reduction project

Comment

All employees in Lundbeck are covered by a Performance Management System. Through this system individual goals, including eventually climate related goals can be set. Especially employees that are a part of the local energy team can have individual energy goals. The employee participates twice a year in performance dialogues. Once a year the employee performance is evaluated and scored and good initiatives are recognized through the scoring system. The score is used as input to the bonus system and salary adjustments.

Who is entitled to benefit from these incentives?

Other, please specify (All employees (900 people) in SOE)

Types of incentives

Monetary reward

Activity incentivized

Efficiency project

Comment

Every year an implemented initiative is rewarded by a monetary gift. The initiative must support Lundbecks Business principles. Energy reducing activities supports many of these Business principles and can therefore also be rewarded.

Who is entitled to benefit from these incentives?

Other, please specify (All employees (900 people) in SOE)

Types of incentives

Other non-monetary reward

Activity incentivized

Energy reduction project

Comment

Every month an implemented initiative is rewarded and communicated to all employees in Supply Operations and Engineering. The initiative must support Lundbecks Business principles. Energy reducing activities supports many of these Business principles and can therefore also be rewarded.

Who is entitled to benefit from these incentives?

All employees

Types of incentives

Other non-monetary reward

Activity incentivized

Behavior change related indicator

Comment

All employees can be recognized with a story in Lundbecks HSE newsletter. The criteria is, that they have participated in implementing a good HSE initiative this also includes energy reducing initiatives.

Who is entitled to benefit from these incentives?

All employees

Types of incentives

Other non-monetary reward

Activity incentivized

Energy reduction project

Comment

An annual HSE award, including a gift, is given to a good HSE initiative. Energy reducing initiatives can be chosen as well as other

C2. Risks and opportunities

C2.1

(C2.1) Describe what your organization considers to be short-, medium- and long-term horizons.

	From (years)	To (years)	Comment
Short-term	0	3	The local business plans for the individual business units uses typically 1 – 2 year for short-term planning and definition of annual goals.
Medium-term	3	10	Lundbeck do not use the term “medium”. Lundbecks long-term financial business planning and long term climate target runs from 3 – 10 years.
Long-term	10	20	Due to the long perspective for climate risks and the existence of climate scenarios, we are looking further than the ordinary used 10 year planning. Through our assessment of future climate risks, we do know what risks we need to mitigate. Our major future climate risks coincide with some of the risks already identified today as business risks. For example, the risk of accidental fire on our own sites. Mitigating actions are therefore already initiated.

C2.2

(C2.2) Select the option that best describes how your organization's processes for identifying, assessing, and managing climate-related issues are integrated into your overall risk management.

Integrated into multi-disciplinary company-wide risk identification, assessment, and management processes

C2.2a

(C2.2a) Select the options that best describe your organization's frequency and time horizon for identifying and assessing climate-related risks.

	Frequency of monitoring	How far into the future are risks considered?	Comment
Row 1	Six-monthly or more frequently	>6 years	The risk management system includes our global operations in all countries we are operating in. Assessment of risks related to climate change is an integral part of our risk management. The principal aim of our risk management is to strike the right balance between risk exposure and value generation. Our risk management processes are constantly updated to match internal and external requirements. Once a year a two-dimensional risk 'heat map' is prepared by our audit committee and shared with Executive Management (EM) and the Board of Directors. This gives our EM an accurate overview of activities and resources, and a basis for decision-making on risk exposure and derived opportunities. We use a Financial Long-term plan for strategic and financial planning. Both results from the risk management system and input concerning business opportunities are used in this model. The result is presented to the EM and the COO brings relevant information and decisions to the Board of Directors.

C2.2b

(C2.2b) Provide further details on your organization's process(es) for identifying and assessing climate-related risks.

Identification of risks at company and asset level:

RISKS on both COMPANY and ASSET level are identified and managed in a common risk management system. Our fundamental risk management principle is that risks, in addition to central monitoring and coordination, must be managed by decentralized business units as they have the most extensive knowledge of such risks and the best possibility of mitigating the exposure. The individual business units take a systematic approach to monitor, identify, quantify and respond to risks. Furthermore, we have defined reporting, decision-making and follow-up procedures and routines. The decentralized risk evaluation in the business units is regularly reported and processed by the risk management organization and evaluated by our central Risk Office. The manager of the Corp. HSE dep. has a specific focus on climate change risks at company level eg regulatory risks, and the site facility managers has focus on risks at asset level. Two important input to risks is our regularly insurance inspections and our materiality assessment that confirms our focus on actions to mitigate climate change. Climate change risks, at both COMPANY and ASSET level, are also evaluated at HSE Council meetings quarterly. The project manager for the Climate Strategy reports to the HSE Council about climate related opportunities and risks. E.g. are regulatory requirements evaluated in the HSE Council. The Chairman of the HSE Council reports into the risk management system.

Processes for assessing size and scope of risks and how relative significance is being determined:

The principal aim of the risk management is to strike the balance between risk exposure and value creation. Materiality of the risks is determined by combining the individual risks probability and impact. RISKS are assessed both as gross risks and net risks. The assessment of gross risk assumes that no mitigating actions have been implemented, whereas net risk assessment takes into account implemented mitigating actions and their anticipated effect. Lundbeck strives to have as many risks mitigated as possible. Lundbecks corporate risk register provides a consolidated picture of our risk exposure by detailing each risk, risk category and type. The risk descriptions give details of the event, its current status, the status of the response, an assessment of likelihood and potential impact, and the person responsible for managing the risk.

Risk terminologies:

Our reporting process defines 6 risk categories: 1. Research and development 2. Market conditions 3. Infrastructure, IT and resource. Risks related to climate change issues, including reputational, regulatory, physical and other climate related risks, is categorized under 3. Infrastructure. 4. Reputational 5. Legal 6. Financial. The risk categories are defined into three risk types: external, actionable or strategic. Climate change risks are typically defined as external or actionable risks. Using this information, the Risk Office assesses the overall risk exposure and discusses it with the Executive Management. Finally a two-dimensional risk 'heat map' is reviewed by our audit committee and shared with the Board of Directors annually.

Definition of substantial financial and strategic impact:

By combining the individual risks probability and impact the final risk is determined as low, medium or high. Both medium and high risk level can be considered as substantial for the company. Depending on the probability risks from EBIT value 50MDKK an up can be categorized from low to high. Risks with an EBIT value from 500MDKK are considered medium risks even though the situation is unlikely to happen.

C2.2c

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

	Relevance & inclusion	Please explain
Current regulation	Relevant, sometimes included	All environmental and climate related regulations are followed monthly. E.g. regulations concerning energy and carbon taxes are always considered since this influences our revenue. At the moment, our total energy costs constitute a very small part of our revenue, so the risk related to increasing prices and taxes is considered low and therefore not mentioned in the corporate risk register yet.
Emerging regulation	Relevant, sometimes included	All emerging regulation concerning environmental and climate related issues is followed regularly during the year and once a year risks and opportunities related to emerging regulation are considered. This is followed by plans for preparing and implementing new requirements in the organization. Energy costs, reporting requirements and energy efficiency requirements are examples on typical areas that are risk assessed. So far the risks related to the development in these areas are considered low and therefore not yet mentioned in the corporate risk register.
Technology	Not relevant, explanation provided	Our interest in technology lies in the opportunities for improving the energy or production efficiency of our sites. All technologies that can contribute to reduce or recycle our energy consumption present an opportunity for the company to reduce our risk related to increasing energy prices and taxes. The development in technologies that we are using are therefore followed regularly and opportunities included in the future business planning. E.g. we always switch to more energy efficient equipment, when we are renewing old equipment like pumps and the like.
Legal	Relevant, sometimes included	One of our business principles is to be responsible. It is therefore a high priority to be in compliance with all legislation. We continuously follow and implement new legislation in the organization. An example is our implementation of the directive on energy efficiency (Directive 2012/27/EU) on all sites that need to comply with the directive. So far we have not experienced any legally related climate risks that have substantial impact on our business. E.g. the Energy directive have only minor financial impact on our business and is therefore not included in our risk register. Legal changes that give rise to increasing energy prices will occasionally be reported in our risk register if the prices more than doubles. Today the energy costs only constitute app. 0.4% of our revenue.
Market	Not relevant, explanation provided	We do not expect shifts in demand for our products due to climate change. We only make medicines for 4 disease areas: Depression, Schizophrenia, Parkinson's disease and Alzheimer's disease. We do not assume that these diseases are impacted by climate changes during the next 10 years. Neither do we expect changes in our supply needs. Our products are solely based on chemicals and chemical synthesis and not dependent on biological raw materials, that could be affected by climate changes.
Reputation	Relevant, always included	Our reputation concerning all HSE and ethical issues are of great importance for the organization. It influences our ability to attract employees and our cooperation with the authorities. All our production sites are covered by environmental approvals and therefore affected by our relation to the authorities. Potential less confidence at authorities can delay delay approvals of future production and through this delay our launch of new products. A delay on app 6 month is estimated to cost app. 3,000 MDKK and can be used as an indicator on this risk. The risk is considered as a medium risk but actionable in our risk register.
Acute physical	Relevant, always included	Acute physical risks including extreme weather events resulting in loss of production capacity are relevant for both our own sites and certain groups of our suppliers and are considered as medium risks. We do have several mitigating actions like dual sourcing and back up production possibilities in place. At our headquarter we have established catch bassins because we about 6 years ago experienced big damages due to heavy rain. A worst case scenario would be a big damage at our production facilities at our headquarter site due to flooding. Such a damage is estimated to cost 10 - 20 MDKK and therefore considered an infrastructural low risk in our risk management system.
Chronic physical	Relevant, always included	Chronic physical risks like drought and rising temperatures are primarily relevant for certain groups of our suppliers situated in India and China, but because eg increasing temperatures can affect the stability of the weather at many other geographic locations, we cannot exclude the risk of more frequent extreme weather events at our own sites. The risks are loss of production capacity and comparable with the risk mentioned for acute physical risks primarily risk of heavy rain. A worst case scenario would be a big damage at our production facilities at our headquarter site due to flooding. Such a damage is estimated to cost 10 - 20 MDKK and therefore considered an infrastructural low risk in our risk management system.
Upstream	Relevant, always included	Upstream risks are representing a complex picture of risks. Significant are risks related to our suppliers for the production, but also partners and suppliers for our research and development activities can experience different climate risks mainly related to acute physical risks like floodings and storms. This can affect the reliability of our suppliers. A worst case scenario due to missing deliveries are estimated to app. 180 MDKK and therefore registered as a medium risk in our risk register.
Downstream	Relevant, sometimes included	Downstream risks are representing a complex picture of risks, but are mainly related to different kind of transportation. Many of our transportation and traveling suppliers are already aware of future climate risks and how to mitigate these. Therefore we consider the risk as low and it is therefore rarely included in our risk register.

C2.2d

(C2.2d) Describe your process(es) for managing climate-related risks and opportunities.

RISKS on both COMPANY and ASSET level are identified and managed in a common risk management system. Our fundamental risk management principle is that risks, in addition to central monitoring and coordination, must be managed by decentralized business units as they have the most extensive knowledge of such risks and the best possibility of mitigating the exposure. The individual business units take a systematic approach to monitor, identify, quantify and respond to risks. Furthermore, we have defined reporting, decision-making and follow-up procedures and routines. The decentralized risk evaluation in the business units is regularly reported in our risk register and processed by the risk management organization and evaluated by our central Risk Office. The Risk Office assesses the overall risk exposure and discusses it with the Executive Management. Finally a risk 'heat map' is reviewed by our audit committee and shared with the Board of Directors.

OPPORTUNITIES are identified and managed by the organisations decentralized business units as they have the most extensive knowledge. Evaluation of opportunities and decisions are taken in the units. Some opportunities are implemented immediately e.g. most energy reducing activities are identified and implemented in the units. Strategic opportunities are reported up in the line organization following defined procedures for decision making. Climate change OPPORTUNITIES are decided on the basis of the priorities in our business strategy. On the short timeline 1-2 years many decisions are taken in the decentralized units eg energy reduction plans. On the long timeline, more than 2 years, opportunities are evaluated and decided according to our Financial Long-term plan.

Climate change risks and opportunities, at both COMPANY and ASSET level, are also evaluated at HSE Council meetings quarterly. The project manager for the Climate Strategy reports to the HSE Council about climate related opportunities and risks. E.g. are regulatory requirements evaluated in the HSE Council. The Chairman of the HSE Council reports into the risk management system.

An example on a physical risk is the risk for serious weather events that affect production capacity at our own sites or at our suppliers and partners. This type of risk are analyzed in our Business Impact Analysis Report and several mitigating actions are performed eg. we have established catch basins at our headquarter site, prepared possibilities for transferring of production to another site and prepared dual sourcing options. We believe that our mitigating actions can turn into an opportunity because we have reduced the impact of eg. a breakdown on our own sites or at our suppliers' sites.

An example on a transitional risk that are included in our risk register is the reputational risk related to our suppliers. This risk is mitigated by having our Code of conduct that suppliers are required to comply with. In all our contracts our suppliers and partners sign, that they will comply with our code of conduct and that they give us access to perform audits at their sites. Additionally we have been developing a supplier evaluation process during the last 10-15 years. It covers all our first-tier suppliers globally and includes questionnaires and evaluation of the responses. Our most critical suppliers undergo an extended evaluation with audits and follow up visits. Our supplier evaluation process are continuously being updated. Latest we have expanded our standard questionnaires to our suppliers with questions concerning their climate policy and target. This will in the future give us the possibility to map our suppliers climate performance and hopefully motivate them to make climate targets.

Of transitional opportunities, we consider that changes in international agreements can affect the regulation eg. On energy and carbon pricing and taxes and raise the prices. Since we have worked focused the last ten years on minimizing our energy consumption and following reduced our operational costs, we believe this can turn into an opportunity in the future.

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

Transition risk

Primary climate-related risk driver

Policy and legal: Increased pricing of GHG emissions

Type of financial impact driver

Policy and legal: Increased operating costs (e.g., higher compliance costs, increased insurance premiums)

Company- specific description

Regulation concerning fuel/energy taxes motivates the company to reduce the use of energy. In the coming years it is likely that the energy prices will raise in the countries Lundbeck has production (Denmark, Italy and France) and that regulatory incentive towards favoring renewable energy will be introduced. E.g. in Denmark we expect in the future to see price differentiation between night and day because intelligent grid solutions will be implemented. This means increased operational costs because the electricity will be more expensive during daytime where we produce.

Time horizon

Medium-term

Likelihood

Very likely

Magnitude of impact

Low

Potential financial impact

65000000

Explanation of financial impact

Today our total energy costs only constitute about 0.4% of our revenue (app. 65 MDKK compared to our revenue at 1,234 MDKK). We expect that energy prices and taxes will rise in the future in most parts of the world, but the risks from these changes are considered low, because it constitutes a very small part of our total operational costs. Even though the prices were doubled to around 130 MDKK (an increase on 65 MDKK), the energy cost will still be low compared to our revenue.

Management method

At all Lundbecks sites for research, development and production we have implemented systematic procedures at all our sites in order to identify existing and coming HSE legislation, including legislation related to climate issues. Already when coming regulation is identified, Lundbeck consider what consequences (positive or negative) the regulation may have, and necessary actions are taken. Relevant managers and employees are informed about the changes and if necessary, procedures are optimized in order to meet the changes. When it comes to energy, we are minimizing the negative financial impact by reducing our energy consumption. One example is our continuous implementation of "Energy on demand" where we only use energy when it is needed. We are also selling our energy savings in Denmark for 0.35 DKK/kWh to energy suppliers. An important tool in this work is our CO2 strategy including our long term reduction target. Our strategy secure that we have a high focus on energy efficiency at all our sites. Since 2006 our energy reduction activities have reduced our annual electricity costs with around 25 MDKK. In order to reduce the financial impact of changing energy prices Lundbeck also seek to make contracts with energy suppliers with fixed energy prices for a number of years. These activities ensure that the risk continuously is kept at a very low level.

Cost of management

2000000

Comment

The costs associated with energy saving activities differ from year to year. In 2017 we invested 1 MDKK in energy activities and because we have established dedicated teams of internal engineering and maintenance employees that spent around 5-10% of their working hours on energy optimization, the cost for internal resources (man hours) equals to around 1 MDKK. In 2018 we expect to spend 1 MDKK on energy projects and again around 1 MDKK on internal resources (man hours). Costs related to tracking legislation are considered as ordinary costs that is necessary for running an efficient business.

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Transition risk

Primary climate-related risk driver

Policy and legal: Other

Type of financial impact driver

Policy and legal: Increased operating costs (e.g., higher compliance costs, increased insurance premiums)

Company- specific description

Danish regulation have requirements about energy efficiency in new buildings. Also the IE directive require that we work with energy efficiency in our chemical production because of the cross-cutting BREF document about energy efficiency. Finally the European directive on energy efficiency was implemented in national legislation in 2014. It require that we perform energy review at our Danish and Italian sites. These legislation's influence on both the cost for investments in new buildings at our production sites in Denmark, France and Italy and on our operational costs. The initial cost for implementing the Energy Efficiency directive was app. 200,000 DKK and we expect that similar changes in the regulation in Denmark, France and Italy where we produce will be implemented. Many of these costs will be payed back on the long run, because the regulations typically will focus on initiatives that contribute to lower our energy consumption and therefore the overall result is lower energy use at our sites.

Time horizon

Short-term

Likelihood

Virtually certain

Magnitude of impact

Low

Potential financial impact

200000

Explanation of financial impact

Danish regulation have requirements about energy efficiency in new buildings. Also the IE directive require that we work with energy efficiency in our chemical production because of the cross-cutting BREF document about energy efficiency. Many of the legislations influence on both the cost for investment in new buildings and our operational costs. The initial costs varies a lot but have a tendency to rise. But most of the costs are payed back on the long run, because the general result is lower energy use at our sites. Another climate related legislation is the European directive on energy efficiency that was implemented in national legislation in 2014. It require that we perform energy review at our Danish and Italian sites. Cost related to implementing the energy efficiency directive was app. 200.000 DKK.

Management method

At Lundbecks sites for research, development and production we have implemented systematic procedures in order to identify existing and coming HSE legislation, including legislations related to climate issues. When regulation is identified, Lundbeck consider the consequences of the regulation and necessary actions are taken in order to meet the changes. E.g. we have been able to reduce our costs related to an EU energy directive, because we have been able to include it in existing HSE systems. The energy requirements for new buildings, energy review and energy efficiency have motivated the company to implement a procedure for energy review and for energy considerations in new or rebuilding activities. The procedure is used at all research, development and production sites. An example on how we implement energy conscious buildings is our office building in Denmark. Here we have established intelligent light control, hybrid ventilation and night cooling. We presume this has reduced the energy use in this building by 5% a year. An example on our work with energy review and optimization is our establishment of energy teams at our sites. The energy teams screen the energy consumption and implement "Energy on demand". E.g. have these activities resulted in 0.9% reduction of the energy consumption at our headquarter in 2017 compared to 2016. Our energy saving activities continuously reduces our energy costs and through this keeps the impact of this risk at a low level.

Cost of management

2000000

Comment

The costs associated with investments in energy savings differ from year to year. In 2017 we spent 1 MDKK on energy investments. In 2018 the spend is expected to be 1 MDKK. The cost for having established energy teams is around 1 MDKK a year. The investment in energy saving systems in the new office building is not related to regulatory requirements, but a good investment and in line with our strategy. Costs related to tracking legislation are considered as ordinary costs that is necessary for having an efficient business. Costs in 2016 related to implementation of the energy directive is estimated to 200,000 DKK, but in 2017 these costs were reduced to around 50,000 DKK/year.

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Transition risk

Primary climate-related risk driver

Policy and legal: Other

Type of financial impact driver

Policy and legal: Increased operating costs (e.g., higher compliance costs, increased insurance premiums)

Company- specific description

New International agreements can affect the development of national legislation and national plans concerning energy prices, energy reduction and the use of renewable energy. Denmark is leading in regard to regulation on energy reduction and renewable energy. Therefore it is not expected that International agreements will affect the national plans in Denmark on the short run, but we cannot exclude that they will be affected on the long run. We cannot either exclude that national plans and regulation in the other countries we operate in will be affected by international agreements like the Paris Agreement. New international agreements could result in new cap and trade schemes, increased carbon taxes, requirements about the use of renewable energy and the like. All resulting in increased costs for energy.

Time horizon

Medium-term

Likelihood

More likely than not

Magnitude of impact

Low

Potential financial impact

65000000

Explanation of financial impact

Changes in international agreements are closely related to the financial risks associated with rising energy prices, taxes and the like. Today our total energy costs only constitute about 0.4% of our revenue (around 65 MDKK compared to our revenue on 17,234 MDKK). We do expect that energy prices and taxes will rise in the future, but the risks from these changes are considered low. Even though the prices were doubled to 130 MDKK (an increase on 65 MDKK), the energy cost will still be low compared to our revenue.

Management method

At Lundbecks sites for research, development and production we have implemented systematic procedures at all our sites in order to identify existing and coming HSE legislation, including legislations related to climate issues. Once a month we search the internet for new and coming legislation. Already when upcoming regulation is identified, Lundbeck consider what consequences (positive or negative) the regulation may have, and necessary actions are taken. Relevant managers and employees are informed about the changes and if necessary, procedures are optimized in order to meet the changes. Furthermore we track the development in National, European and International plans concerning climate change to consider an eventually impact on Lundbecks CO2 strategy and our business. These activities makes it possible to implement necessary changes in our business in the most efficient way and through this keep the risk at a low level. E.g. we have been able to reduce our costs related to the EU energy efficiency directive. The directive gives companies the possibility of integrating energy mappings and reviews in existing systems instead of paying external consultants for this work. Because we identified the directive in time, we were able to implement energy mapping and energy reviews in our existing HSE system instead of paying app 1 MDKK to an external consultant. Additionally this solution increases our awareness and possibilities for reducing our energy consumption and -costs.

Cost of management

0

Comment

Costs related to tracking new and coming legislation, National, European and International plans and our reporting activities are considered as ordinary costs that is necessary for having an efficient business. It is costs we have, because it is activities we have as a part of our general attitude and strategies and necessary for driving our business efficiently. The mentioned example with implementation of energy mapping and review in our HSE system did initially cost app. 200,000 DKK, but since 2017 these costs were reduced to around 50,000 DKK/year. which is much less than the cost for an external consultant on 1 MDKK and can therefore not be calculated as extra cost for the management method.

Identifier

Risk 4

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Transition risk

Primary climate-related risk driver

Policy and legal: Increased pricing of GHG emissions

Type of financial impact driver

Policy and legal: Increased operating costs (e.g., higher compliance costs, increased insurance premiums)

Company- specific description

It is likely that carbon taxes can rise in the future. In Denmark we already have high carbon taxes. At our Danish sites we pay 3.5 MDKK in carbon tax. This has a minor impact on the operational costs. Regulation concerning carbon taxes motivates the company to reduce the use of energy, because it reduces the pay back time on energy projects and through this makes energy projects good business. In Lundbeck most energy projects with pay back times on less than 3 years are implemented immediately.

Time horizon

Short-term

Likelihood

Very likely

Magnitude of impact

Low

Potential financial impact

3500000

Explanation of financial impact

Today our total energy tax only constitute about 3.5 MDKK which is very low compared to our revenue on 17,234 MDKK. We expect that taxes will rise in the future in most parts of the world, but the risks from these changes are considered low, because it constitutes a very small part of our total operational costs. Even though the taxes were doubled, (an increase on 3.5 MDKK) the energy cost will still be low compared to our revenue.

Management method

Regulation concerning carbon taxes motivates the company to reduce the use of energy. It is likely that carbon taxes can rise in the future. In Denmark we already have high carbon taxes. This has an impact on the operational costs. At the same time this reduces the pay back time on energy projects and through this makes energy projects good business and reduces the total energy costs on the long run. Since 2006 our annual energy costs has been reduced with app. 25 MDKK due to energy saving initiatives.

Cost of management

2000000

Comment

The costs associated with investments in energy saving activities differ from year to year. In 2017 the investment was 1 MDKK and 1 MDKK for internal resources e.g. our energy teams. In 2018 we expect to spend 1 MDKK on energy projects and 1 MDKK for our internal resources.

Identifier

Risk 5

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Transition risk

Primary climate-related risk driver

Policy and legal: Other

Type of financial impact driver

Technology: Write-offs and early retirement of existing assets due to technology changes

Company- specific description

International regulations like REACH (Chemical regulation) and regulation about Best Available Technology (BAT) like the IE Directive do affect the energy efficiency of a production. E.g. REACH require Lundbeck to have confined production which increases the need for ventilation and BAT require optimization of our air emission system and substitution of dangerous chemicals. These new systems and production methods increase and changes our energy consumption. E.g. we expect that the new air emission system will change a small part of our scope 3 emissions to scope 1 emissions, because we can incinerate our waste solvents to produce energy for the system.

Time horizon

Short-term

Likelihood

Very likely

Magnitude of impact

Low

Potential financial impact

100000

Explanation of financial impact

Environmental regulation can require investments in the production equipment and then reduce the available capital in the company on the short run. Some intentions in the environmental regulation like REACH, BAT and recycling of solvents will rise the energy consumption and energy costs, but e.g. recycling of solvents also decreases our cost significantly because raw material costs decreases. Because our total energy costs only constitute around 0.4% of our revenue, an increase in energy consumption will have little impact on our revenue. An example is a new requirement for emission cleaning that means that we must install an oxidizer. We expect to fuel the oxidizer with our own solvent waste. By this we minimize our waste management cost, but at the same time we change our scope 3 waste emissions to scope 1 emission. In order to reach our climate target we will have to buy more GO's estimated to cost 50,000 - 100,000 DKK/year.

Management method

In order to minimize the financial implications related to environmental legislation we have implemented systematic procedures at all our sites in order to identify existing and coming HSE legislation. When coming legislation is identified, Lundbeck consider what consequences the regulation may have. We start immediately a process where we identify the most necessary changes and plan how the changes can be implemented in the most efficient way. In this way it is possible to keep the investments and eventually interruptions in the production at a low level. The new requirements with improved cleaning of our solvent emission is a good example to illustrate, that because we start planning the implementation early, it has been possible to identify a solution where we use solvent waste as energy source and by this move a scope 3 emission to a scope 1 emission. By this we minimize the increase in our total CO2 inventory (scope 1, 2 and 3 in total) even though our total energy consumption will increase due to implementation of the new equipment..

Cost of management

0

Comment

The cost of an eventual change of the production differs, but we are convinced that it is beneficial to act proactively. If regulatory requirements aren't identified until the authorities monitor the company, the changes often have to be implemented fast with bigger investments and consequences for production. Costs related to tracking legislation are estimated to 66,000 DKK, but are considered as ordinary costs that is necessary for having an efficient business and not specifically related to climate changes. The cost for buying GOs in order to reach our climate target (50,000 - 100,000 DKK/year) is not included in the cost yet, because the solution has not yet been implemented.

Identifier

Risk 6

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Transition risk

Primary climate-related risk driver

Policy and legal: Enhanced emissions-reporting obligations

Type of financial impact driver

Policy and legal: Increased operating costs (e.g., higher compliance costs, increased insurance premiums)

Company- specific description

In Denmark we are obliged to report about our corporate climate performance in a public annual report. Both in Denmark, Italy and

France where we have production, we are also legally required to report about energy management to the authorities. Due to the rising awareness concerning climate changes and what impact they may have. It is likely, that the legally required climate reporting will expand e.g. by including scenario analysis in the reporting. This will increase our operating costs because of the increased amount of time we will use on making analysis, evaluation and reporting. Because CDP already asks about scenario analysis we have already performed a qualitative scenario analysis, which minimizes an eventual extra cost, if it enters the legislation. We also expect in the future, that we will be presented for new climate reporting requirements by CDP before it is implemented in the legislation. At the moment we are spending app. 0.15 MDKK on our CDP response which can be used as an indication of the increased cost for future legally required climate reporting.

Time horizon

Current

Likelihood

Virtually certain

Magnitude of impact

Low

Potential financial impact

150000

Explanation of financial impact

The time use for the regulatory required reporting is low, because we would make our data collection and reporting even though we did not have regulatory requirements on reporting. We estimate that the cost related to current regulatory requirements on climate change is around 3,500 DKK. We expect that future climate reporting obligations will develop to be in line with the CDP reporting. The cost for our CDP reporting can therefore be used as an indicator on future increased operating costs.

Management method

Because of our statement about reporting publicly about our environmental impacts, we have implemented a corporate procedure about collecting HSE data including energy data and most of the data required by the authorities. This means that the HSE departments at all our research, development and production sites collect local HSE data and send them to the corporate HSE department. The data are then verified by external auditors (Deloitte) and used for regulatory required reporting, voluntary reporting and other kinds of stakeholder reporting. Furthermore we have implemented systematic procedures at all our sites in order to identify existing and coming HSE legislation, including legislation related to reporting requirements. Already when coming regulation in draft is identified, Lundbeck consider what consequences the regulation may have, and necessary actions are taken. Eg we have implemented the new EU Energy efficiency directive in our HSE system. For climate reporting obligations we believe that our participation in CDPs response programme is a good preparation for future requirements. Our current cost on 0.15 MDKK for our CDP response can therefore be used as an indication on our cost of management.

Cost of management

150000

Comment

The costs related to comply with regulatory reporting is not considered extra costs because we would do the reporting even though it wasn't a requirement. Furthermore our reporting to the environmental authorities in Denmark has become easier, as they accept our CDP response as climate reporting. The cost for the CDP response is estimated to 0.15 MDKK. The tracking of legislation and International plans is activities that are necessary for driving our business efficient and not considered extra costs.

Identifier

Risk 7

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Physical risk

Primary climate-related risk driver

Acute: Increased severity of extreme weather events such as cyclones and floods

Type of financial impact driver

Reduced revenue from decreased production capacity (e.g., transport difficulties, supply chain interruptions)

Company- specific description

Extreme weather situations that damage buildings can occur at Lundbecks own sites. 6 years ago we experienced several serious damages at our headquarter site due to floodings and storms. The total cost for repairs was app 8 MDKK. This initiated several activities that secured our production facilities and other buildings so they better can resist similar situations with heavy rainfall or storms. E.g. we have established catch basins at two locations at our headquarter site.

Time horizon

Current

Likelihood

About as likely as not

Magnitude of impact

Low

Potential financial impact

20000000

Explanation of financial impact

Lundbecks own sites are located in low and medium risk areas. Nevertheless we have experienced weather situations during the last 6 years at two sites affecting our business in minor degree. A few years ago in USA we had to shut down our site for a few days due to a heavy storm and in Denmark heavy rain and storm caused damage to our buildings 6 years ago. A worst case scenario would be a big damage to our production facilities at our headquarter site in Denmark. A loss related to such a situation is estimated to 10 - 20 MDKK.

Management method

At all our production sites inspections from our insurance company are performed. The reports from these inspections are a valuable input for identification of critical facilities or buildings at our sites and are used as input in our facility management plans. Furthermore we have made a criticality analysis at our headquarter in Denmark, indicating where we find the biggest risks at the site and what buildings that are most exposed to damages from extreme weather situations. The criticality analysis has resulted in the implementation of an action plan including activities that secure our buildings towards heavy rainfall and storms. One specific example is that we have build a new park area containing a catch basin, and in connection with the building of a new office building we have established another underground catch basin that can consume twice the amount of water from a normal rain situation. We have also implemented pump installations and secured fragile installations like power stations. These installations keep the financial risks at a low level, because we can avoid e.g. to close down production facilities due to extreme weather situations.

Cost of management

5000000

Comment

In 2012 and 2013 the total cost for repairs was around 8 MDKK. From 2013 to 2016 we did spend app. 5 MDKK on preventive activities. In 2016 we finalized the last preventive activities on our action plan. Forward new buildings and equipment will be secured when they are established and therefore integrated in the total cost for the project. The spend on preventive activities can be related to the cost of management and implementation of our preventive activities on our action plan.

Identifier

Risk 8

Where in the value chain does the risk driver occur?

Supply chain

Risk type

Physical risk

Primary climate-related risk driver

Acute: Increased severity of extreme weather events such as cyclones and floods

Type of financial impact driver

Reduced revenue from decreased production capacity (e.g., transport difficulties, supply chain interruptions)

Company- specific description

Physical risks like exposure to extreme weather events can affect Lundbecks partners and suppliers. Most of our suppliers and partners are situated in Europe and USA at locations where extreme weather situations rarely have a character that affect product reliability. A part of our suppliers and partners are located outside Europe and USA, typically in India and China primarily at locations that are considered to have a low or medium risk for extreme weather events. Even though the risk is low - medium, we know from our own sites, that also are located in low and medium risk areas, that extreme weather events do happen once in a while (see risk 7). Therefore we cannot exclude, that extreme weather situations can affect supplier reliability.

Time horizon

Current

Likelihood

About as likely as not

Magnitude of impact

Medium-low

Potential financial impact

180000000

Explanation of financial impact

Until now Lundbeck have not experienced problems with supplier and partner reliability due to extreme weather situations. Because we cannot exclude, that extreme weather situations can affect supplier reliability we have very strong methods in place to manage such situations. In a worst case scenario the financial impact due to missing deliveries is estimated to app.180 MDKK.

Management method

In order to keep the risks related to break down at our suppliers and partners low, we have implemented a system where we carefully monitor supply and maintain an inventory that will help us overcome any breakdown in production. To mitigate production risks we currently have production and packaging facilities at four independent sites. And both of our chemical plants are capable of manufacturing the active ingredients we buy at our suppliers. In this way we have enhanced production flexibility. Additionally we have second sources in place for critical raw materials for our active ingredients, meaning that we can switch supply to another supplier if needed. Every year the supplier reliability is evaluated and mitigating actions implemented. Furthermore we ensure suppliers and partners adherence to our company's ethical standards and we annually conduct multiple audits of Lundbecks suppliers which include an evaluation of their exposure to physical risks. Audit activities are planned and executed in accordance with the current risk picture. Our audit process is based on Lundbecks CSR policy and the UN Global Compact Principles. All suppliers are asked to sign a mutual commitment to comply with human rights, employee rights, environmental protection and anti-corruption in our contracts e.g. to have a precautionary approach to environmental challenges like climate change. These activities reduce risks to our business and continuously keep them at a low level.

Cost of management

5200000

Comment

Lundbeck do have operational costs related to keep our inventory of products and for driving the system where we systematically monitor and audit our suppliers. In 2017 we performed 171 audits estimated to around 5.2 MDKK. These costs cannot be referred to have direct relation to risks related to extreme weather situations. Suppliers can have production delays or break down due to many other reasons. Lundbeck would have these risk reducing activities even though there were no risks related to extreme weather situations.

Identifier

Risk 9

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Transition risk

Primary climate-related risk driver

Policy and legal: Other

Type of financial impact driver

Policy and legal: Increased costs and/or reduced demand for products and services resulting from fines and judgments

Company- specific description

Bad press is a medium risk for Lundbeck. We believe that bad press can reduce our ability to attract and retain talented employees and investors and decrease our stakeholders e.g. authorities confidence in our capabilities. Especially the environmental authorities confidence in our capabilities is important because it often improves the communication with the authorities and following increases flexibility and reduces processing time for necessary approvals. All our production sites are covered by environmental approvals and therefore affected by our relation to the environmental authorities. Currently, we do not consider climate issues as the most significant factor in relation to bad press, but as climate change becomes more pronounced, we believe that it can have a greater impact on our future risk picture.

Time horizon

Medium-term

Likelihood

Unlikely

Magnitude of impact

Medium

Potential financial impact

3000000000

Explanation of financial impact

If our reputation deteriorates it can lead to loss of talented employees and loss of authorities confidence in our capabilities. The cost related to loss of employees is around 5 MDKK (estimated on the basis that 1% of our vacancies cannot be filled again). Potential less confidence at authorities can delay approval of the production of new medicines and following delayed launch and finally reduced sales period because patents are taken early in the development phase. A worst case scenario is estimated to a delay on 6 month. A reduction of the sales period with 6 month is estimated to 3,000 MDKK and can be used as indicator on an estimated financial implication.

Management method

Lundbeck seek to motivate and retain our employees through individual recognition and development opportunities. We also monitor employee satisfaction in order to improve the working environment. Lundbeck also believe that a clear attitude to public reporting and a responsible business strategy is important for a good reputation. Therefore we have stated in both our corporate responsibility strategy and in our CO2 strategy, that we want to report publicly about our initiatives concerning climate changes. E.g. we communicate about climate changes in our CDP response and our Corporate responsibility report. Lundbeck is also recognized by the FTSE4Good index series and comply fully with the Climate Change Criteria. These initiatives aim to show potential employees, authorities and other stakeholders our effort in managing risks concerning climate changes. We do take climate changes seriously and since 2006 we have had an ambitious CO2 target and reduced our CO2 emission by 64%.

Cost of management

2150000

Comment

Costs related to recognition, development and improving the environment can not be related to climate change, because it is activities we would do anyway in order to have a strong business. Except from our response to CDP our public reporting activities are neither considered extra costs because of climate change issues. The cost for the CDP response is estimated to 0.15 MDKK. The costs associated with energy saving activities differ from year to year. In 2017 we did spent 1 MDKK and in 2018 we expect to spend 1 MDKK on energy savings. Apart from that we spend around 1 MDKK/year on internal resources, because we have dedicated energy teams at all sites that carry out energy screenings and -savings.

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?

Direct operations

Opportunity type

Resource efficiency

Primary climate-related opportunity driver

Use of more efficient production and distribution processes

Type of financial impact driver

Reduced operating costs (e.g., through efficiency gains and cost reductions)

Company- specific description

New International agreements can affect the development in national legislation and national plans concerning energy prices, the use of renewable energy, product efficiency and building requirements. At Lundbeck we already focus on minimizing our energy

consumption and through this we keep these cost at a low and competitive level. Since 2006 we have reduced our energy consumption by 35%. At some locations we have also started to use renewable energy sources, which we believe can become a future requirement. Today 25% of our energy consumption that relates to scope 1 emission is covered by renewables and until now the cost for renewables has been lower than the cost for gas oil. We also believe that both the CDP questionnaire and the Science based targets initiative can be used as indicator for upcoming requirements so by having an approved SBT target and by implementing new CDP requirements like scenario analysis this year, we will be well prepared on future requirements and therefore have an advantage compared to other companies.

Time horizon

Medium-term

Likelihood

More likely than not

Magnitude of impact

Low

Potential financial impact

25000000

Explanation of financial impact

We believe that reduced operational costs affect our revenue positively. If we did not implement energy savings our operational costs would increase because of increased taxes and prices and through this reduce our revenue. Due to our work with energy savings we have reduced our annual energy costs with around 25 MDKK and through this reduced the operational costs. We will continue to reduce our energy consumption and the following costs in the coming years. Since 2006 we have reduced our energy consumption by 35%. Implementation of renewable energy sources have also until now only had positive financial impact, because the prize for bio fuel has been lower than the gas oil we used before. Bio fuel has therefore contributed to reduced operational costs because of lower costs on bio oil compared to the cost on fossil fuels.

Strategy to realize opportunity

The headquarter of Lundbeck is placed in Denmark where there already is an ambitious climate strategy and regulation, that Lundbeck comply with. Because Lundbeck want to be a responsible company we do have a climate strategy and climate targets that we continuously want to develop in accordance with new initiatives like the Science based targets initiative. We also have a constant focus on producing more for less and optimization of our energy consumption and through this reduce our operational costs. Additionally we try to implement new regulation and adapt to national and international plans in the most efficient way. We have systematic procedures at all our sites in order to identify existing and coming HSE legislation, including legislation related to climate issues. Once a month we search the internet for new and coming national and EU legislation. If the legislation or plans are relevant for Lundbeck we consider what consequences it may have, and necessary actions are taken. We believe this make our company less vulnerable towards e.g. increased energy prices and that it can become an advantage for Lundbeck compared to companies, who has not prepared for more ambitious climate agreements and more strict regulation on climate changes. Our strategy about having Science based targets and implementation of new CDP requirements like scenario analysis will also be an advantage, because these initiatives can be used as an indication on future legal requirements.

Cost to realize opportunity

2150000

Comment

The annual costs on energy saving activities differ. In 2016 we did spent 1 MDKK and in 2017 we expect to spend 1 MDKK on energy savings. Apart from that we spend around 1 MDKK/year on internal resources, because we have dedicated energy teams at all sites that carry out energy screenings and -savings. Costs related to tracking legislation are considered as ordinary costs that is necessary for having an efficient business. We track legislation because it is necessary for driving our business and required by our internal systems. The annual cost for development of climate targets and working with CDP requirements is app. 150,000 DKK.

Identifier

Opp2

Where in the value chain does the opportunity occur?

Customer

Opportunity type

Markets

Primary climate-related opportunity driver

Access to new markets

Type of financial impact driver

Increased revenues through access to new and emerging markets (e.g., partnerships with governments, development banks)

Company- specific description

The amount of voluntary agreements and voluntary analyses made for investors, like UN Global Compact, CDP and FTSE4GOOD are very likely to increase in the future. Our participation in these activities can improve the reputation of our company and reduce the risk of bad press. This can improve our possibilities to attract and retain talented employees and our stakeholders confidence in our capabilities. Latest (2017/2018) we have developed a qualitative scenario analysis which we believe can be a requirement from our investors and banks in the future. We believe that early implementation of such and other future requirements can be an advantage compared to our competitors.

Time horizon

Medium-term

Likelihood

More likely than not

Magnitude of impact

Low

Potential financial impact

5000000

Explanation of financial impact

Having the right and talented employees and a good reputation is important for our competitiveness and the continuous development of the company. If we did not support voluntary agreements we believe we would damage our reputation. Bad reputation can lead to loss of talented employees which is estimated to around 5 MDKK/year (1% of our employee turnover). We have not yet experienced climate related requests from either investors or banks, so until now a potential financial impact in this context is not calculated.

Strategy to realize opportunity

Lundbeck have stated in both our corporate responsibility strategy and in our CO2 strategy, that we want to be a responsible company and report publicly about our initiatives concerning climate changes. As a consequence of that we follow the development in voluntary questionnaires and legal requirements and implement relevant initiatives and procedures in our business. E.g. we have implemented a corporate procedure about collecting HSE data including energy data. The HSE departments at all our research, development and production sites collect the local HSE data and send them to the Corporate HSE department. The data is used for internal and external voluntary and compulsory reporting and other kinds of stakeholder reporting. We communicate publicly about climate changes on our homepage, in our CDP response and in our Corporate responsibility report. Lundbeck is also recognized by the FTSE4Good index series and comply fully with the Climate Change Criteria. In 2017/2018 we developed a qualitative scenario analysis in order to be prepared on potential future requirements from stakeholders and banks. All these initiatives aim to show potential employees, authorities and other stakeholders how we manage climate changes and that we are a responsible company.

Cost to realize opportunity

150000

Comment

Except from our response to CDP our voluntary reporting are not considered extra costs in regards to climate change issues. The cost for the CDP response is estimated to 0.15 MDKK.

Identifier

Opp3

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resource efficiency

Primary climate-related opportunity driver

Use of more efficient production and distribution processes

Type of financial impact driver

Reduced operating costs (e.g., through efficiency gains and cost reductions)

Company- specific description

Lundbecks suppliers, partners and our own sites can be affected by extreme weather situations. Like for all companies this can in worst case lead to stock outs in the production. Lundbeck has set up several systems to avoid stock outs e.g. we have second sources in place for critical products and raw materials. Additionally our own chemical plants are capable of manufacturing the active ingredients we buy at suppliers. Every year our mitigating actions related to supply is evaluated and adjusted. We believe that by having these systems we have an advantage on the long run because we can avoid stock outs and because of that be more

attractive to our customers.

Time horizon

Medium-term

Likelihood

About as likely as not

Magnitude of impact

Low

Potential financial impact

20000000

Explanation of financial impact

Reduced operational costs affect our revenue positively. By having management methods that secure our sites and our supply chain eg. second sources for our active ingredients and critical raw materials, ensure that we can avoid expensive consequences from extreme weather events. This can be an advantage compared to other companies that do not have such systems in place. Extreme weather events can give rise to breakdown at our own sites, suppliers and partners and result in rebuilding activities and stock outs. A worst case scenario is a breakdown in our production at our headquarter site. This may cause a financial impact on around 10 - 20 MDKK.

Strategy to realize opportunity

In order to overcome situations with breakdown we carefully monitor supply and maintain an inventory that will help us overcome any breakdown in production. We have second sources in place on main products for our active ingredients and both of our chemical plants are capable of manufacturing the active ingredients we buy at our suppliers. Lundbeck also seek to enhance our production flexibility by having five independent productions and packaging sites. Risks related to break down at our suppliers and partners are minimized by ensuring adherence to our company's ethical standards including having a precautionary approach to environmental challenges like climate change. We annually conduct multiple audits in accordance with the current risk picture and by having a close dialogue it is possible to initiate necessary actions if extreme weather events should occur. At all our production sites inspections from our insurance company are performed. This provide valuable input for identification of critical facilities or buildings and are used as input in our facility management plans. At our headquarter we have also made a criticality analysis, showing the biggest risks at the site. This has resulted in implementation of activities that secure our buildings towards heavy rainfall and storms e.g. we have build a park area containing a catch basin. All these activities make Lundbeck less vulnerable towards the consequences of climate changes and can turn into an advantage.

Cost to realize opportunity

5000000

Comment

The activities that relate to securing our supply chain and the deliveries from our suppliers and partners are not considered cost related to climate changes. It is activities we do due to other business related reasons. The preventive solutions we implement in order to secure our own sites against extreme weather situations were from 2013 to 2016 app. 5 MDKK. In 2016 we finalized the last preventive activities on our action plan. Forward new buildings and equipment will be secured when they are implemented and therefore integrated in the total cost for the project. The spend on preventive activities can be related to the cost of management and implementation of our action plan.

Identifier

Opp4

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resource efficiency

Primary climate-related opportunity driver

Other

Type of financial impact driver

Other, please specify (Increased stock price)

Company- specific description

A good reputation is important for our competitiveness and the continuous development of the company. Reputation is a driver for opportunities for Lundbeck due to the fact that we believe it can increase our ability to attract and retain talented employees and increase confidence at our stakeholders e.g. the authorities confidence in our capabilities. Especially the environmental authorities confidence in our capabilities is important because it often improves the communication with the authorities and following increases flexibility and reduces processing time for necessary approvals. All our production sites are covered by environmental approvals

and therefore affected by our relation to the environmental authorities. By having a clear attitude to public reporting and a responsible business strategy we believe we have a good reputation, which can help to avoid loss of employees and improve the authorities confidence in our capabilities. Every year we evaluate our public reporting and implement relevant new initiatives. Our scenario analysis is an example on how we continuously develop our voluntary reporting on climate change.

Time horizon

Medium-term

Likelihood

More likely than not

Magnitude of impact

Low

Potential financial impact

505000000

Explanation of financial impact

If our reputation deteriorates it can lead to loss of talented employees and loss of confidence in our capabilities at our stakeholders. Loss of employees is around 5 MDKK (estimated on the basis that 1% of our vacancies cannot be filled again). Strong confidence and communication with authorities can increase flexibility and shorten the time defining and issuing approvals. As an indication of the financial impact the impact of lost sales for a period of 1 months can be used. This is estimated to 500MDKK.

Strategy to realize opportunity

Lundbeck believe that a clear attitude to public reporting and a responsible business strategy is important for a good reputation. Therefore we have stated in both our corporate responsibility strategy and in our CO2 strategy, that we want to report publicly about our initiatives in regards to climate changes. Two examples on how we communicate about climate changes are our CDP response and our Corporate responsibility report. Lundbeck is also recognized by the FTSE4Good index series and comply fully with the Climate Change Criteria. Every year we evaluate our public reporting and implement relevant new initiatives. Our scenario analysis is an example on how we continuously develop our voluntary reporting on climate change. These initiatives aim to employees and other stakeholders our effort in acting responsible. We do take climate changes seriously and we have been working targeted with energy reduction since 2006 and have continuously developed our CO2 target and strategy. So far we have reduced our CO2 emission with 64% since 2006 and in 2017 we initiated the development of a new Science based target and a scenario analysis.

Cost to realize opportunity

2150000

Comment

Except from our response to CDP our public reporting activities are not considered extra costs due to climate change issues. The cost for the CDP work is estimated to 0.15 MDKK. The costs associated with energy saving activities differ from year to year. In 2017 we spent 1 MDKK and in 2018 we expect to spend 1 MDKK on energy savings. Apart from that we spend around 1 MDKK/year on internal resources, because we have dedicated energy teams at all sites that carry out energy screenings and -savings.

C2.5

(C2.5) Describe where and how the identified risks and opportunities have impacted your business.

	Impact	Description
Products and services	Not impacted	All our products are made via chemical synthesis and not dependent on natural resources. Due to this we do not expect, that our products will be impacted by climate changes. Our products are pharmaceutical products that must follow strict medical regulation and neither our products or the packaging materials are allowed to change due to climate risks or opportunities. The cost for producing our products can be affected if e.g. energy prices increases all over the world, but we expect that this risk will be very low and we are reducing the risk because we are planning to increase our cooperation with our suppliers concerning climate changes and necessary mitigating actions like implementation of climate targets and factory optimizations.
Supply chain and/or value chain	Impacted for some suppliers, facilities, or product lines	For critical suppliers, we have insurance coverage and dual source in place. Every year our suppliers risks and reliability is evaluated via our risk management process and our mitigating actions like dual sourcing and stock buffers are improved. E.g. are we expecting to be able to reduce our annual insurance cost in a few years because one of our critical partners are building a new production site so they in the future will have two sites that can produce our products and through this reducing the risk in their supply chain and following in ours. It is evaluated that this initiative reduces our business impact risk with app. 12%. We also have a thorough evaluation process of all our suppliers that include audits at critical suppliers. These activities increase our operational costs, but reduces our insurance costs and most important reduce risks of production delays. In 2017 we improved our supplier questionnaires by introducing questions about climate strategy and targets. This can give us more information about our suppliers climate performance and preparedness towards climate changes. Our initiative with development of a new science based target including a scope 3 target will also increase our dialogue with our suppliers and partners about climate changes and hopefully motivate them to develop climate targets.
Adaptation and mitigation activities	Impacted	We have had several adaptation and mitigation activities running like building two catch basins, reduction of our office square meters with 33,000 m2 and sold buildings with a requirement for energy optimization. We have also prepared 20 parking lots for electrical vehicles and are planning to prepare more parking lots for electrical vehicles. Dual sourcing and preparation of the possibility to move production from one of our own site to another are also mitigating activities that are evaluated and improved every year via our risk management process.
Investment in R&D	Impacted for some suppliers, facilities, or product lines	The way our investment in Research and Development are affected is through requirements to our CRO's to comply with our code of conduct and by our audits: Both activities have the purpose to ensure proper conditions at their sites. In the coming years they will be enrolled in our scope 3 target and by this increase their focus on climate targets and adaptation to climate changes.
Operations	Impacted	During the last ten years, we have optimized all our 4 production sites and reduced our energy consumption with 64 % since 2006. When we renovate or buildings we implement energy efficient solutions like mechanical ventilation. When we are renewing equipment, we prioritize energy efficient and low carbon solutions. These activities affect the financial planning by needs for investments in specific solutions, but it often also reduces the operational cost on the long run.
Other, please specify	Impacted	We have increased our disclosure and reporting activities especially on climate change issues eg by responding to Carbon Disclosure Project.

C2.6

(C2.6) Describe where and how the identified risks and opportunities have factored into your financial planning process.

	Relevance	Description
Revenues	Not yet impacted	We have had several mitigating actions that have required investments related to different climate risks and opportunities, but in most cases these activities are also closely related to other business risks, with greater impact on our business like e.g. fire risks and other challenges in our own production or supply chain. The primary reason for implementing these mitigating actions are related to other risks than climate risks, but they do reduce the climate risks at the same time. The impact on our revenue can therefore not be connected directly with climate risks and so far we have managed to increase our revenue parallel with these investments. Other activities like investments in energy reducing activities reduces costs on the long run and usually these activities have a very short payback time and the cost is very low compared to our revenue.
Operating costs	Impacted for some suppliers, facilities, or product lines	Operating costs can be affected by changes in energy and carbon pricing and taxes, but because our energy costs only constitute a very small part of our revenue the impact is low. Additionally we have implemented energy reducing activities that have reduced our total annual energy costs by 25 MDKK and through this reduced our cost. Another more significant area is our mitigating actions to secure stable deliveries of raw materials and stable production capacity. We use resources to have second source in place and eventually for moving production to another site. Our preventive audit activities also affect our operating costs. Un till now we have not experienced problems with deliveries and production stability due to climate risks. The mitigating actions are initiated to secure general business continuity and to avoid other more current risks like fire accidents.
Capital expenditures / capital allocation	Impacted for some suppliers, facilities, or product lines	Capital expenditures and allocations is affected by transitional risks like requirements to new buildings, increasing energy prices and reputation. When buildings are renovated or new buildings are raised energy considerations are integrated in the decision process for choosing solutions and set up. At the moment, an old factory building is being strongly renovated and new energy efficient solutions are implemented in the new design. In a few years, a new air emission system will be installed at one of our chemical sites solely because of new regulation. In both cases the new solutions require investments and increases capital expenditures. The magnitude of impact differs from case to case eg the new air emissions system is expected to require an investment on up to 20 MDKK.
Acquisitions and divestments	Impacted for some suppliers, facilities, or product lines	In the recent years more than 700 employees have been relocated with the purpose of gathering employees in less squaremeters. This has made it possible to sell a large office building, reduce the office area with 33,000 m2 and following reduce energy consumption. To future-proof the sold-out building, it has been sold with the condition that it must be energy-optimized in connection with the forthcoming reconstruction of the building. A similar exercise was performed some years ago, where Research and Development activities in USA was moved to our Danish Research and Development facilities. This made it possible to sell the building for other purposes and hereby reduce our energy consumption without reducing of our activities.
Access to capital	Not yet impacted	We have not experienced, that climate issues have affected our access to capital. Our company and in general the pharmaceutical sector is considered to have low to medium climate risks, and therefore we do not expect that our access to capital will be affected in the nearest future but maybe in 5 to 10 years time. E.g. it is likely that banks will ask about scenario analysis prior to lending out capital. In order to meet this potential requirement we have prepared a qualitative scenario analysis and we follow continuously the development in new climate change related requirements both compulsory and voluntary requirements like CDP and FTSE4Good.
Assets	Impacted for some suppliers, facilities, or product lines	Our assets have already been impacted by serious climate events. Eg our headquarter functions has experienced heavy rain and following flooding. Repairs and following mitigating actions amounted app. 13 MDKK. The mitigating actions included eg. to establish two large catch basins at the site. One was established underneath a building that was being completely re-built and the other is made as an outside park area in several levels. The park area will apart from water from our own site be gathering water from the surrounding municipal roads and neighboring companies. Both basins was gradually implemented over a 4 year period and integrated in the financial planning process. The mitigating actions has reduced the likelihood of a damaging situation to happen, but a worst case scenario would be a big damage in our production area due to flooding. A loss related to such a scenario is estimated to 10 - 20 MDKK.
Liabilities	Not yet impacted	In general all our investments and other costs specifically related to climate issues are low compared to our revenue and our liabilities.
Other	Please select	

C3. Business Strategy

C3.1

(C3.1) Are climate-related issues integrated into your business strategy?

Yes

C3.1a

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

Yes, qualitative

(C3.1c) Explain how climate-related issues are integrated into your business objectives and strategy.

i.

The therapeutic areas Lundbeck serve as a pharmaceutical company is only marginally dependent on climate change. However, our contribution to mitigating climate change influences the way we conduct our business. In a pharmaceutical business like Lundbeck it is primarily about taking advantage of our opportunities to act responsibly and reduce costs. Both are integrated in our business strategy; In our principles and in our objectives. Our focus has been on reducing energy consumption, improving energy efficiency and integrating renewable energy solutions; all factors that support our climate target and reduces our GHG emissions. In the years to come it is unlikely, that we can continue to reduce our energy consumption. Therefore, our focus on renewable energy will increase and our engagement with suppliers about their climate performance will increase as well.

When making important business decisions climate change issues are also included through our risk management system where the individual business units report about identified risks eg. risks identified in our scenario analysis. Risks for acute weather events like flooding at our own sites or at our suppliers are the most sever climate risks we have identified. Results from the risk management system are evaluated and reported to executive management and mitigating actions like dual sourcing are initiated.

ii.

We have defined our target to reduce CO2 emissions by 55% in 2020 compared to 2006. This target is approved as a science based target, but due to that we reached the target by the end of 2017, we are in the process of defining a new science based target.

iii.

The most substantial business decisions in 2017 were to:

- initiate the development of a new Science based target. Our new target will include GHG reductions and scope 3 targets including a huge increase in our engagement with our suppliers, which strongly support our business strategy about being responsible.
- finalize our restructuring programme that included relocation of more than 700 of employees on fewer square meters. This has made it possible to divest several office buildings and following reduce energy consumption and CO2 emissions.
- include energy efficient solutions in a big renovation of an old production building and by this keep the energy consumption at a minimum.
- prepare a qualitative scenario analysis and communicate it to relevant departments in the organization. The most serious consequences of the identified climate risks coincide with the consequences from a fire at our own sites or at our suppliers and are already identified in our Business Impact Analysis and therefore already included in our risk management system.
- establish parking lots for electrical vehicles. This paves the way for more employees to drive in electrical vehicles and to include electrical vehicles in the company car program.

iv. Following Climate change aspects have influenced the business strategy:

- Adaptation: Our continuous focus on efficiency in our production supports our work with "energy on demand", reduced energy consumption and GHG emissions. By reducing energy costs we optimize the resilience of our operations towards rising energy prices and taxes.
- Regulatory changes: Legislation about Energy review, building efficiency and Best Available Technology set up requirements to companies. These requirements are continuously implemented in new or existing procedures. Changes in guidelines like CDP and Science based targets influence on our business eg. our strategy for engagement with suppliers.
- Experienced physical climate changes like heavy rainfall and storms have influenced our strategy around climate change adaptation of our buildings so they can withstand eg floodings. Since 2012 we have invested app 13 MDKK in climate adaptation of our buildings.

V. Our short term business strategy i.e. 1-2 years has been influenced by climate change.

- The most important component of the short term strategy is saving energy and reducing GHG emissions. For 2018 our annual target

is a 3% CO2 reduction compared to 2017.

- Our focus on integrated approach where teams of engineers and maintenance employees challenge habits and conventional thinking to identify new ways to reduce energy use. This approach has resulted in several energy reductions. In 2017 we reduced our ventilation activities reduced our annual CO2 emission with 57 t CO2.

- Our strategy about maintenance of our facilities is influenced by the need to reduce energy consumption and mitigate climate change risks. We continuously develop our sites so they are energy efficient and can resist weather events e.g. by building water reservoirs in order to avoid damages from heavy rain.

Vi. Our long-term business strategy i.e. +3 years has been influenced by climate change:

- The most important component is the development of our long-term Climate targets. In 2017 we initiated the development of a new Science based target.

- Another component is our focus on production efficiency where we produce more with less. An example is our cooperation with the technical university of Denmark where we develop continuous production and get a more flexible and less energy consuming production. Another example is our implementation of principals from "Green Chemistry" in our development of new medicines. This enables us to produce more with less resulting in reduced scope 3 emissions.

vii. The overall focus on production efficiency and energy savings reduces GHG emissions and operating costs. It secures our ability to produce more efficiently and thereby support our future business. This combined with our increased focus on renewable energy, will provide us with a strategic advantage over our competitors because we anticipate that fossil fuels will be increasingly regulated leading to increasing prices. Our focus on energy savings has today reduced our annual electricity costs in DK with around 25 MDKK compared to 2006.

Our mitigating actions related to our production like securing our sites against weather events and our dual sourcing strategy are also advantage, because it secures our ability produce and deliver medicine to the patients on time.

We also believe that our climate target, our public communication about climate performance and the approval of our Science based CO2 reduction target enhances our reputation and improves our standing in external ratings.

viii. In international and national energy plans it is expected that companies act responsibly. Being responsible is one of Lundbecks business principles and taking voluntary action to reduce our GHG emissions, is considered an act of responsibility. Since 2006 we have had a long-term CO2 reduction target and in 2016 we decided to support the Paris agreement and the Danish INDC stronger by having our target approved as a Science based target.

C3.1d

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

Climate-related scenarios	Details
IEA 450	<p>To supports the Paris agreement we have chosen IEA450 and RCP2.6. The RCP2.6 corresponds to the SDA method and our SBT target. Boundaries and time horizons: We have tried to make the scenario analysis cover our value chain from research to sales activities including upstream and downstream suppliers. We have also made some considerations related to changing needs for our pharmaceuticals at our customers due to climate changes. We do not have a fixed time horizon because the input we have used in our analysis have different time horizons. Our headquarter functions and two of our 4 productions sites are situated in Denmark and the last two production sites are situated in Europe. Both Denmark and EU are operating with climate targets in 2030 and 2050. Due to this we have used 2030 and 2050 as time horizons when we consider the transition scenarios. For the physical scenarios, we have used the forward looking scenarios in 2020 and 2040 fAqueduct atlas from WRI, and also glanced at a few scenarios for 2100. Our business long-term planning runs usually up to 10 years ahead, therefore the 2030 scenarios are weighted highest in our analysis. Input: The most important inputs in our analysis are: - Guidance documents on scenario analysis from TCFD and CDP - The chosen public scenarios - Our identified risks and opportunities described in our CDP response. Assumptions and methods: We have primarily followed the method described in the TCFD guideline and used a top-down approach: 1. Decided with relevant managers that we should make a scenario analysis 2. Looked into already identified risks and opportunities covering both transitional and physical changes. 3. Decided on public scenarios and identification of the potential impact of the scenarios on: CO2 taxes. energy pricing, policy regulation, technology, reputation, production disruptions, supply chain disruptions, physical damage to assets and changes in demand for our products. 4. Compared the scenarios with our identified risks and opportunities. In this process, we did not find any major new risks, but we did have to reconsider the impact of the change eg. the increase in the energy prices in the RCP 2.6 scenario were much higher than the one we had estimated. 5. Compared the result with our business strategies and mitigating actions and the input in our risk management system to evaluate if adjustments were needed. Changes from the reference scenarios: Since our long-term business planning only runs up to ten years ahead, we have adjusted some of the consequences in the scenarios. Results and outcomes: We have not identified any new actions we need to implement, but been affirmed, that we must continue to (in prioritized order): 1. Develop our GHG reduction targets and scope 3 targets. 2. Implement energy efficient solutions at our 4 sites especially when renovating and building new. 3. Secure our 4 sites towards eg flooding. 4. Prepare our site parking lots for electrical vehicles 5. Secure our supply chain to ease change of production site and have dual sourcing for critical raw materials and services. 6. Increase our engagement with suppliers concerning climate adaptation and performance The results from the scenario analysis have been communicated to our facility managers and included in our risk management system. Influence on business strategy: The results of our scenario analysis emphasize the importance of our existing work with development of our climate targets according to the SBT guideline. By having a SBT target we continue reduce our CO2 emissions and we increase our cooperation with suppliers and partners which improve many of the results of the scenario analysis. Monitoring procedures: Once a year, when we prepare our CDP response, the scenario analysis will be updated and the results will reported to relevant managers and in the risk management system. We will use the analysis internally, but will develop it if investors and banks shows interest in it.</p>
Other, please specify (RCP8.5)	<p>In order to choose a scenario that represent business as usual we have chosen RCP8.5. In reality we will probably end up somewhere between RCP2.6 and 8.5, but by using these two scenarios we believe we cover the full picture of possible changes. Boundaries and time horizons: Our scenario analysis cover our value chain from research to sales activities including upstream and downstream suppliers. We have also made some considerations related to changing needs for our pharmaceuticals at our customers due to climate changes. We do not have a fixed time horizon because the input we have used in our analysis have different time horizons. Our headquarter functions and two of our 4 productions sites are situated in Denmark and the last two production sites are situated in Europe. Both Denmark and EU are operating with climate targets in 2030 and 2050. Due to this we have used 2030 and 2050 as time horizons when we consider the transitions scenarios. For the physical scenarios, we have used the Aqueduct atlas from WRI where they use forward looking scenarios in 2020 and 2040, but we have also glanced at a few scenarios for 2100. Our business long-term planning runs usually up to 10 years ahead, therefore the 2030 scenarios are weighted highest in our analysis. Input: The most important inputs in our analysis are: - Guidance documents on scenario analysis from TCFD and CDP - The chosen public scenarios - Our identified risks and opportunities described in our CDP responses. Assumptions and methods: We have primarily followed the method described in the TCFD guideline and used a top-down approach: 1. Decided with relevant managers that we should make a scenario analysis 2. Looked into already identified risks and opportunities covering both transitional and physical changes. 3. Decided on public scenarios and identification of the potential impact of the scenarios on: CO2 taxes. energy pricing, policy regulation, technology, reputation, production disruptions, supply chain disruptions, physical damage to assets and changes in demand for our products. 4. Compared the scenarios with our identified risks and opportunities. In this process, we did not find any major new risks. 5. Compared the result with our business strategies and mitigating actions and the input in our risk management system to evaluate if adjustments were needed. Changes from the reference scenarios: Since our long-term business planning only runs up to ten years ahead, we have adjusted some of the consequences in the scenarios. Results and outcomes: We have not identified any new actions we need to implement, but been affirmed, that we must continue to (in prioritized order): 1. Secure our sites towards eg flooding. 2. Secure our supply chain to ease change of production site and have dual sourcing for critical raw materials and services. 3. Increase our engagement with suppliers concerning climate adaptation and performance 4. Develop our GHG reduction targets and scope 3 targets. 5. Implement energy efficient solutions at our sites especially when renovating and building new. The results from the scenario analysis have been communicated to relevant managers in the organization and included in our risk management system. Influence on business strategy: The results of our scenario analysis emphasize the importance of our existing work with development of our climate targets according to the SBT guideline. By having a SBT target we continue reduce our CO2 emissions and we increase our cooperation with suppliers and partners which improve many of the results of the scenario analysis. Monitoring procedures: Once a year, in relation with the preparation of the CDP response, the scenario analysis will be updated and the results will be reported to relevant managers and in the risk management system. We will use the analysis internally, but will develop the analysis further if investors and banks shows interest.</p>

C4. Targets and performance

C4.1

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

Absolute target

C4.1a

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

Target reference number

Abs 1

Scope

Scope 1 +2 (market-based)

% emissions in Scope

100

% reduction from base year

45

Base year

2010

Start year

2016

Base year emissions covered by target (metric tons CO2e)

38004

Target year

2020

Is this a science-based target?

Yes, this target has been approved as science-based by the Science-Based Targets initiative

% achieved (emissions)

100

Target status

Underway

Please explain

We have the same target as the target we reported on in 2017: target abs 1. By the end of 2017 we had reached our target with a 55% CO2 reduction compared to 2010. Since we have reached the target, we are in the process of defining a new Science based target. We expect to submit our new target for approval during 2018.

Target reference number

Abs 2

Scope

Scope 1 +2 (market-based)

% emissions in Scope

100

% reduction from base year

55

Base year

2006

Start year

2014

Base year emissions covered by target (metric tons CO2e)

47200

Target year

2020

Is this a science-based target?

No, but we are reporting another target that is science-based

% achieved (emissions)

100

Target status

Underway

Please explain

We have the same target as the target we reported on in 2017: target abs 2. By the end of 2017 we had reached our target with a 64% CO2 reduction compared to 2006. Since we have reached the target, we are in the process of defining a new Science based target. We expect to submit our new target for approval during 2018.

Target reference number

Abs 3

Scope

Scope 1 +2 (market-based)

% emissions in Scope

100

% reduction from base year

5

Base year

2016

Start year

2016

Base year emissions covered by target (metric tons CO2e)

19943

Target year

2017

Is this a science-based target?

No, but we are reporting another target that is science-based

% achieved (emissions)

100

Target status

Expired

Please explain

In order to support our long-term climate target we set annual targets every year. In 2017 we reached our target by far with a CO2 reduction of 13% compared to 2016. In 2018 we have set a new annual target with a 3% CO2 reduction compared to 2017.

C4.2

(C4.2) Provide details of other key climate-related targets not already reported in question C4.1/a/b.

Target

Energy usage

KPI – Metric numerator

In 2017 our energy consumption must be reduced by 3% compared to 2016. The target is covering all the energy consuming facilities that impact on our annual CO2 reduction target.

KPI – Metric denominator (intensity targets only)

Base year

2016

Start year

2016

Target year

2017

KPI in baseline year

98226

KPI in target year

93413

% achieved in reporting year

100

Target Status

Expired

Please explain

The target is covering all the energy consuming facilities that are included in our annual CO reduction target. The target is covering all headquarter functions, all research and developments activities and all our production sites.

Part of emissions target

The target is supporting target Abs 3

Is this target part of an overarching initiative?

Other, please specify (The target support our SBT target: Abs1)

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 projects at each stage of development, and for those in the implementation stages, the estimated CO2e savings.

	Number of projects	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	9	
To be implemented*	1	61
Implementation commenced*	8	160
Implemented*	9	170
Not to be implemented	0	

C4.3b

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

Activity type

Energy efficiency: Processes

Description of activity

Other, please specify (Reduce humidification in laboratories)

Estimated annual CO2e savings (metric tonnes CO2e)

2

Scope

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in CC0.4)

3825

Investment required (unit currency – as specified in CC0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

11-15 years

Comment

The replacement is due to corrosion of the existing boiler. The new boiler will have an efficiency of 97,5 % against actual 90% mainly due to heat fume recovery system.

Activity type

Energy efficiency: Building services

Description of activity

Lighting

Estimated annual CO2e savings (metric tonnes CO2e)

2

Scope

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in CC0.4)

771

Investment required (unit currency – as specified in CC0.4)

11000

Payback period

11-15 years

Estimated lifetime of the initiative

6-10 years

Comment

Upgrade and lighting in Research and development facilities

Activity type

Energy efficiency: Processes

Description of activity

Other, please specify (Reduce ventilation activities)

Estimated annual CO2e savings (metric tonnes CO2e)

57

Scope

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in CC0.4)

167000

Investment required (unit currency – as specified in CC0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

3-5 years

Comment

Activity type

Energy efficiency: Building fabric

Description of activity

Other, please specify (New heating installations)

Estimated annual CO2e savings (metric tonnes CO2e)

3

Scope

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in CC0.4)

13000

Investment required (unit currency – as specified in CC0.4)

20000

Payback period

1-3 years

Estimated lifetime of the initiative

21-30 years

Comment

Activity type

Energy efficiency: Building fabric

Description of activity

Maintenance program

Estimated annual CO2e savings (metric tonnes CO2e)

7

Scope

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in CC0.4)

19000

Investment required (unit currency – as specified in CC0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

16-20 years

Comment

Activity type

Energy efficiency: Processes

Description of activity

Other, please specify (Optimize ventilation)

Estimated annual CO2e savings (metric tonnes CO2e)

49

Scope

Scope 2 (market-based)

Voluntary/Mandatory

Please select

Annual monetary savings (unit currency – as specified in CC0.4)

143000

Investment required (unit currency – as specified in CC0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

11-15 years

Comment

Activity type

Energy efficiency: Processes

Description of activity

Process optimization

Estimated annual CO2e savings (metric tonnes CO2e)

9

Scope

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in CC0.4)

26000

Investment required (unit currency – as specified in CC0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

11-15 years

Comment**Activity type**

Energy efficiency: Building fabric

Description of activity

Insulation

Estimated annual CO2e savings (metric tonnes CO2e)

20

Scope

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in CC0.4)

60000

Investment required (unit currency – as specified in CC0.4)

30000

Payback period

<1 year

Estimated lifetime of the initiative

11-15 years

Comment

Activity type

Other, please specify (Equipment closed down)

Description of activity

<Not Applicable>

Estimated annual CO2e savings (metric tonnes CO2e)

21

Scope

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in CC0.4)

63000

Investment required (unit currency – as specified in CC0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

11-15 years

Comment

C4.3c

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

Method	Comment
Dedicated budget for energy efficiency	Lundbeck has a budget for energy saving investments every year. In 2017 Lundbeck invested around 1 MDKK. Apart from the energy efficiency projects this budget is used for energy screenings. We have established dedicated teams of internal engineers and maintenance employees who challenge habits and conventional thinking to identify new ways to reduce energy use. These teams have successfully identified possibilities for closing down equipment when it is not in use, optimizing ventilation and temperature control etc. In 2018 the dedicated budget is 1 MDKK.
Internal price on carbon	In 2017 energy savings was integrated in our ordinary maintenance and rebuilding activities. Some of these activities require financial investments and are managed through our internal finance system for investments. If the activity includes energy savings, the savings can be sold to an energy supplier and the benefit from this is included in the cost for the activity resulting in a lower return on investment. This is considered as an internal price on carbon. Due to this energy activities, can be favored over other activities. In 2017 energy efficiency projects with a total investment on 1 MDKK was identified and approved for implementation.
Partnering with governments on technology development	At our chemical factory in Lumsås, Denmark we have a partnership with the Danish Technical University about optimising equipment in the production towards continuously production. This will result in much more efficient equipment using less raw materials and less energy.
Internal incentives/recognition programs	Lundbeck uses monetary reward to managers that has a specific responsibility about energy savings. The reward consists of an annual bonus for meeting short term targets related to energy reduction and GHG emission reduction targets. The short term target is created by breaking down the corporate long term target about GHG emission to business functions. The size of the bonus is managed in our Performance Management System.
Compliance with regulatory requirements/standards	The implementation of the Directive on energy efficiency has driven an improvement of our energy screening and mapping. This improve our possibilities for identifying even more potentials for energy savings in the future. Once a year our Danish sites are audited by an external auditor and an energy specialist that challenges our efforts on energy reducing activities. Lundbecks research, development and production sites and our headquarter are covered by our HSE system, that is certified according to ISO 14001 and OHSAS 18001. This require that HSE considerations (including energy and GHG emissions) are made every time we make investments and/or make changes. For example when old windows need to be replaced, they are replaced with low energy windows. Compliance with the SBT guidance is also a strong driver for investing in emission reduction activities both at our own sites and at our suppliers.
Employee engagement	Lundbeck involves employees in energy saving initiatives. Employees participate in; mapping energy using equipment, discussing possibilities for closing down equipment when it is not in use and running local energy campaigns in the organization. The annual achievements of the energy saving activities are published in our Health Safety and Environmental Management review, The UN Global Compact Progress report and in our internal HSE newsletter.

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?

No

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 2006

Base year end

December 31 2006

Base year emissions (metric tons CO2e)

14282

Comment

Lundbeck have no structural changes in our organization in 2017 that trigger a recalculation of base year emissions, as our organization has made no changes through acquisitions and/or divestments, the methodology or boundary used to calculate our emissions. Hence, we need not to recalculate our base year emissions in order to directly compare it with our current emissions.

Scope 2 (location-based)

Base year start

January 1 2006

Base year end

December 31 2006

Base year emissions (metric tons CO2e)

32996

Comment

Our Scope 2 base year is calculated only according to the location-based method. We have not recalculated using a market-based method for our base year total for our Scope 2 emissions, as we have no available specific information/emission factors from 2006.

Scope 2 (market-based)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Our Scope 2 base year is calculated only according to the location-based method. We have not recalculated a market-based method for our base year total for our Scope 2 emissions, as we have no available specific information/emission factors from 2006.

C5.2

(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 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?

Row 1

Gross global Scope 1 emissions (metric tons CO2e)

6266

End-year of reporting period

<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

Lundbeck have used the Scope 2 accounting method (GHG Protocol Scope 2 Guidance, January 2015). The market based approach is used in our annual reporting of CO2 emissions. The location based approach is used only for CDP reporting purposes.

C6.3

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

Row 1

Scope 2, location-based

12224

Scope 2, market-based (if applicable)

10978

End-year of reporting period

<Not Applicable>

Comment

The market based approach is used in our annual reporting of CO2 emissions. The annual emission factor is calculated as a mean of the factors of the last 3 years to reduce major fluctuations. The location based approach is used only for CDP reporting purposes.

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

Global sales offices in Europe, Africa, Asia and North/South America are excluded.

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 the source is excluded

Technically our sales offices are not included in our GHG inventory in our CO2 Strategy - hence we report them as exclusions. The emissions from sales offices are 'not relevant' to Lundbeck, as they do not make up a large proportion of our overall emissions. Our estimate is that no more than 10% originates from energy consumption in our global sales office buildings. Data from global sales offices are not included due to the vast number of very small facilities making it difficult to gather data. The challenge is difficulties in retrieving information and unreliable data. CO2 emissions are only accounted for sites with research, development and/or production and headquarter functions. In total 4 sites (2 in Denmark, 1 in Italy and 1 in France). This covers about 45% of the organization (regarding employees FTE), but 90% or more of the total energy consumption.

C6.5

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

Purchased goods and services

Evaluation status

Relevant, calculated

Metric tonnes CO2e

113569

Emissions calculation methodology

New in 2017: 2016 spend data from the 9 biggest categories in "Purchased goods and service" was investigated (Commercial CRO Development, Consultancy, Raw materials, Packaging materials, Other sourcing areas, Professional Services, Marketing, Royalties, Commercial CRO Research). METHODE: Lundbeck use an EXIOBASE v3 database to calculate the CO2 emission for the top 9 categories. In the database 2016 spend data is converted to CO2 emissions. The value is a constant of 113569 tones CO2/year for 5 years (2021). The data revealed that this emission is quite high (it is 50,5% of our total combined scope 1+2+3 in 2017) – a big increase compared to 2016, where Lundbeck did not use this method. In 2016 it only accounted for 3,2 % - as we had only data from critical chemical suppliers and suppliers of packaging materials). Data is generated in the Lundbeck corporate sourcing system and cover more than 95-100% of the spend.

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

0

Explanation

CO2 emission from 2016 spend data on purchased goods (9 largest categories). Constant value of 113569 tones CO2/year until reevaluated in 5 years (2021). Calculation of Lundbeck's scope 3 GHG emissions are based on economic spend data from Lundbeck and the multi-regional hybrid input-output database Exiobase. Exiobase is a global detailed multi-regional environmentally extended input output database. The Exiobase v3 database (<http://www.exiobase.eu/>) is the product of in total four large EU funded projects under the 6th and 7th framework programmes: FORWAST (<http://forwast.brgm.fr/>), EXIOPOL (<http://www.feemproject.net/exiopol/>), CREEA (<http://www.creea.eu/>) and DESIRE (<http://fp7desire.eu/>). Exiobase can be used for national level footprints (<http://www.exiobase.eu/index.php/9-blog/27-creea-booklet>) as well as for detailed corporate footprints, e.g. see <http://lca-net.com/p/2343>. Source for EXIO databasen: Merciai S, Schmidt J (2017). Methodology for the construction of global multi-regional hybrid supply and use tables for the EXIOBASE v3 database. Journal of Industrial Ecology, early on line view 12 December 2017. <http://onlinelibrary.wiley.com/doi/10.1111/jiec.12713/full>

Capital goods

Evaluation status

Relevant, calculated

Metric tonnes CO2e

29087

Emissions calculation methodology

New in 2017: 2016 spend data from the 4 biggest categories in "Capital goods" was investigated (IT/Telecommunication, Lab equipment, Building and machines, FM services: Office and Canteen-related). METHODE: Lundbeck use an EXIOBASE v3 database to calculate the CO2 emission for the top 4 categories. In the database 2016 spend data is converted to CO2 emissions. The value is a constant of 29087 tones CO2/year for 5 years (2021). The data revealed that this emission is quite high (it is 12,9% of our total combined scope 1+2+3 in 2017) – a big increase compared to 2016, where Lundbeck did not use this method. In 2016 it accounted for 0 % - as we had no data. Data is generated in the Lundbeck corporate sourcing system and cover more than 95-100% of the spend.

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

0

Explanation

CO2 emission from 2016 spend data on Capital goods (4 largest categories). Constant value of 29087 tones CO2/year until reevaluated in 5 years (2021). At Lundbeck we focus on low energy consuming equipment as an important parameter when buying new equipment. We always conduct a risk assessment when sourcing new equipment to e.g. assess the energy consumption or use of raw materials. Emissions from the use of capital goods by Lundbeck is accounted for in scope 1 or scope 2. Calculation of Lundbeck's scope 3 GHG emissions are based on economic spend data from Lundbeck and the multi-regional hybrid input-output database Exiobase. Exiobase is a global detailed multi-regional environmentally extended input output database. The Exiobase v3 database (<http://www.exiobase.eu/>) is the product of in total four large EU funded projects under the 6th and 7th framework programmes: FORWAST (<http://forwast.brgm.fr/>), EXIOPOL (<http://www.feemproject.net/exiopoli/>), CREEA (<http://www.creea.eu/>) and DESIRE (<http://fp7desire.eu/>). Exiobase can be used for national level footprints (<http://www.exiobase.eu/index.php/9-blog/27-creea-booklet>) as well as for detailed corporate footprints, e.g. see <http://lca-net.com/p/2343>. Source for EXIO databasen: Merciai S, Schmidt J (2017). Methodology for the construction of global multi-regional hybrid supply and use tables for the EXIOBASE v3 database. Journal of Industrial Ecology, early on line view 12 December 2017. <http://onlinelibrary.wiley.com/doi/10.1111/jiec.12713/full>

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

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

Emissions calculation methodology

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

Explanation

Lundbeck do not have production of fuels and energy purchased and consumed year that are not included in scope 1 or scope 2. Emissions from the combustion of fuels or electricity consumed is already accounted for in our scope 1 and 2 (Market based Scope 2 method is used). Extraction, production, and transportation of fuels is not part of our business - nor is generation of energy (electricity, steam, heating, and cooling). Lundbeck is a very energy low production, hence upstream/downstream emissions of purchased fuel/electricity (mining of coal, refining of gasoline, transmission and distribution of natural gas, production of biofuels etc.) is not a significant factor on our scope 3 emissions.

Upstream transportation and distribution

Evaluation status

Relevant, calculated

Metric tonnes CO2e

10900

Emissions calculation methodology

New in 2017: 2016 spend data from distribution. METHODE: Lundbeck use an EXIOBASE v3 database to calculate the CO2 emission. In the database 2016 spend data is converted to CO2 emissions. The value is a constant of 10900 tones CO2/year for 5 years (2021). The data revealed that this emission is 4.8% of our total combined scope 1+2+3 in 2017. In 2016 Lundbeck did not use this method and was accounted as 0 % - as we had no data. Data is generated in the Lundbeck corporate sourcing system and cover more than 95-100% of the spend.

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

0

Explanation

Scope 3 emissions from transportation of products purchased by Lundbeck. CO2 emission from 2016 spend data Upstream transportation and distribution. Constant value of 10900 tones CO2/year until reevaluated in 5 years (2021). Calculation of Lundbeck's scope 3 GHG emissions are based on economic spend data from Lundbeck and the multi-regional hybrid input-output database Exiobase. Exiobase is a global detailed multi-regional environmentally extended input output database. The Exiobase v3 database (<http://www.exiobase.eu/>) is the product of in total four large EU funded projects under the 6th and 7th framework programmes: FORWAST (<http://forwast.brgm.fr/>), EXIOPOL (<http://www.feemproject.net/exiopoli/>), CREEA (<http://www.creea.eu/>) and DESIRE (<http://fp7desire.eu/>). Exiobase can be used for national level footprints (<http://www.exiobase.eu/index.php/9-blog/27-creea-booklet>) as well as for detailed corporate footprints, e.g. see <http://lca-net.com/p/2343>. Source for EXIO databasen: Merciai S, Schmidt J (2017). Methodology for the construction of global multi-regional hybrid supply and use tables for the EXIOBASE v3 database. Journal of Industrial Ecology, early on line view 12 December 2017. <http://onlinelibrary.wiley.com/doi/10.1111/jiec.12713/full>

Waste generated in operations

Evaluation status

Relevant, calculated

Metric tonnes CO2e

4376

Emissions calculation methodology

Only waste from Denmark is in this scope (Chemical waste and waste for reuse). 10 fractions are accounted for: glass, paper, cardboard, plastic PET, plastic LPDE, rubble, chemical waste, wood, concrete and rock wool). The emission accounts for 1,9% of our total combined scope 1+2+3 emission in 2017. The web-based calculator "Klimakompasset" is used to sum up the specific emissions from the different types of waste. Chemical waste is calculated in co-operation with our national waste disposal facility "Ekochem". Primary data originates from Denmark only and is 85% of the total - data is extrapolated to 100% by using the number of FTE outside Denmark.

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

85

Explanation

Waste generated in operations: The web-based calculator "Klimakompasset" is used to sum up specific CO2 emissions from different types of waste. Klimakompasset: www.klimakompasset.dk Liquid Chemical waste: The web-based calculator at KommuneKemi/Nord: <http://www.nordgroup.eu/> is used to sum up specific CO2 emissions from liquid chemical waste.

Business travel

Evaluation status

Relevant, calculated

Metric tonnes CO2e

6859

Emissions calculation methodology

Transportation of employees in business related activities (air travel and employees driving in own car for business meetings). AIR TRAVEL: Our travel company "BCD Travel" reports data to Lundbeck about emissions from fuel by plane in many countries, primary in Europe (Denmark, Belgium, France, Netherlands, Ireland, Sweden, Switzerland, Greece, Austria, Finland, Iceland, Norway, China). The emission factor used is 0.28 kg CO₂/flight mile. PRIVATE CAR: Emissions from private car in Denmark, driving to and from business related meetings. Our employees report their mileage (km) in a central system and the total mileage (km) is converted to liters of fuel (1 liter of fuel = 15 km). The fuel is then converted to kg CO₂ emission (1 liter of fuel = 2.5 kg/CO₂). The data covers about 75% of the total Lundbeck travel activity from air and car. Extrapolated to 100% the number is 6859. The emission accounts for 3.1% of our total combined scope 1+2+3 emission in 2017.

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

100

Explanation

GHGP is the Green House Gas Protocol. Factors and calculations for conversion are for global data (<http://ghgprotocol.org/about-ghgp>).

Employee commuting

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

Emissions calculation methodology

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

Explanation

Scope 3 emissions from transportation of employees between their home and worksite is not considered relevant. Currently we have not investigated this area. In order to assess emissions, we will have to conduct specific surveys on some major sites and use this data to estimate emission for all sites taking into account average commuting modes (bus, car, train, subway, plane, boat, bicycle, walk) depending on the site location. We have not yet planned this survey and do not intend to do this within the next few years, as this will be very time costly and the result not very accurate, as it is based on a lot of assumptions. The Average-data method, will be used for this purpose, as the Fuel-based method and the Distance-based method will be almost impossible to complete. Employee commuting does not contribute significantly to scope 3 emissions (based on screening as most of our sites are located in urban areas). Emissions from employee commuting is not relevant to the business goals.

Upstream leased assets

Evaluation status

Relevant, calculated

Metric tonnes CO2e

4536

Emissions calculation methodology

The emissions are based on reports from the leasing companies on company cars leased by Lundbeck. There is available information on 168 company cars in Lundbeck (registered in Denmark (161) and Italy (7)). This corresponds to about 8% of the total number of cars on a corporate level (1300 cars, primarily used by our managers and sales force locally in 55 countries). The total emission from upstream leased assets is calculated for all 1300 cars at Lundbeck. The emission accounts for 2.0% of our total combined scope 1+2+3 emission in 2017. Lundbeck receive the amount of fuel used and make a calculation to CO₂ emission. The emission factors used is 2.65 kg CO₂/liter diesel and 2.35 kg CO₂/l gasoline.

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

8

Explanation

Downstream transportation and distribution

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

4687

Emissions calculation methodology

Transportation of products to end user. Emissions from fuel by transportation in Denmark, Europe and overseas. Each transportation mode is taken into account (truck, railway, ship, airplane). Trucks with EURO Norm 4 (using less fuel and emitting less particles and CO₂) or above are preferred. METHODE: Companies have to send in a report on CO₂ emissions every 3 months to Lundbeck (this is part of our written contract with the transportation company). The emission accounts for 12,1% of our total combined scope 1+2+3 emission in 2017. All calculations have been done by the companies by adopting the internationally recognized 'GHG Protocol Product Lifecycle Accounting and Reporting Standard'.

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

100

Explanation

Processing of sold products

Evaluation status

Relevant, calculated

Metric tonnes CO₂e

33392

Emissions calculation methodology

Lundbeck have CMO activities at our site in France and Italy as well as global marketing activities, congress, events. The CO₂ emission for the production of the products is already calculated as a part of the total energy consumption (and scope 1 and 2 emission) from Lundbeck production. New in 2017: 2016 spend data on Processing of sold products (in 4 major categories: CMO, global marketing activities, congress, events. METHODE: Lundbeck use an EXIOBASE v3 database to calculate the CO₂ emission. In the database 2016 spend data is converted to CO₂ emissions. The value is a constant of 33392 tones CO₂/year for 5 years (2021). The data revealed that this emission is 14.9% of our total combined scope 1+2+3 in 2017. In 2016 Lundbeck did not use the same method and only data for CMO was accounted for - as we had no data for global marketing activities, congress, events. Data is generated in the Lundbeck corporate sourcing system and cover more than 90-100% of the spend. The emission accounts for 14.9% of our total combined scope 1+2+3 emission in 2017.

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

0

Explanation

Calculation of Lundbeck's scope 3 GHG emissions are based on economic spend data from Lundbeck and the multi-regional hybrid input-output database Exiobase. Exiobase is a global detailed multi-regional environmentally extended input output database. The Exiobase v3 database (<http://www.exiobase.eu/>) is the product of in total four large EU funded projects under the 6th and 7th framework programmes: FORWAST (<http://forwast.brgm.fr/>), EXIOPOL (<http://www.feemproject.net/exiopoli/>), CREEA (<http://www.creea.eu/>) and DESIRE (<http://fp7desire.eu/>). Exiobase can be used for national level footprints (<http://www.exiobase.eu/index.php/9-blog/27-creea-booklet>) as well as for detailed corporate footprints, e.g. see <http://lca-net.com/p/2343>. Source for EXIO databasen: Merciai S, Schmidt J (2017). Methodology for the construction of global multi-regional hybrid supply and use tables for the EXIOBASE v3 database. Journal of Industrial Ecology, early on line view 12 December 2017. <http://onlinelibrary.wiley.com/doi/10.1111/jiec.12713/full>

Use of sold products

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

Emissions calculation methodology

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

Explanation

Lundbeck produce pharmaceuticals - not equipment designed to consume or save energy, hence we do not see any CO2 emission regarding use of sold products (both direct use-phase emissions and indirect use-phase emissions). The products sold are expected to have a insignificant lifetime emission, nor emissions associated with maintenance of sold products during use. Therefore this category is not relevant to us as this category are not expected to be significant.

End of life treatment of sold products

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

Emissions calculation methodology

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

Explanation

Lundbeck does not see any major emission producing activities regarding end of life treatment of sold products. The disposal of unused pharmaceuticals from the end user/hospitals/pharmacy, is not consider a big issue, as most pharmaceuticals are used for treatment (consumed by the patient) and do not end up as waste. The end-of-life treatment methods used by consumers is disposal by urin/feaces in waste water or by waste of unused medicin (flushing in toilet or disposed in the wastebin). The CO2 emission from incineration of the pharmaceuticals in very minor and not further evaluated by Lundbeck. Therefore this is not relevant to us as medicin is not using a lot of energy (emitting CO2) when handled as waste (incinerated). The category is not expected to be significant.

Downstream leased assets

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

Emissions calculation methodology

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

Explanation

Lundbeck does not have any products leased to customers or other activities regarding downstream leased assets, therefore this area has not been evaluated as this is not relevant to us. The category is not expected to be significant.

Franchises

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

Emissions calculation methodology

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

Explanation

Lundbeck have no business operating under a license to sell or distribute another company's goods or service,s nor other franchise activities, therefore this area has not been evaluated as this is not relevant to us. The category is not expected to be significant.

Investments

Evaluation status

Relevant, calculated

Metric tonnes CO2e

154

Emissions calculation methodology

METHODE: Lundbeck use corporate Partnership production data to calculate the CO2 emission. The number of products/items is multiplied by our intensity figure of "ton CO2 per unit produced". The data show this emission is 0.1% of our total combined scope 1+2+3 in 2017. Data is generated by the Lundbeck corporate reporting system and cover more than 95-100% produced by our Partners.

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

100

Explanation

Operation of investments (partnerships and co-production with other companies).

Other (upstream)

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

Emissions calculation methodology

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

Explanation

Lundbeck do not see any major activities regarding other upstream activities, therefore this area has not been evaluated as this is not relevant to us. The category is not expected to be significant.

Other (downstream)

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

Emissions calculation methodology

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

Explanation

Lundbeck do not see any major activities regarding other downstream activities, therefore this area has not been evaluated as this is not relevant to us. The category is not expected to be significant.

C6.7

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

Yes

C6.7a

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

19

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

1.0006

Metric numerator (Gross global combined Scope 1 and 2 emissions)

17244

Metric denominator

Other, please specify (Million DKK)

Metric denominator: Unit total

17234

Scope 2 figure used

Market-based

% change from previous year

21.6

Direction of change

Decreased

Reason for change

REDUCTION ACTIVITIES: Decrease of 21.6 % primarily due to higher revenue in 2017 compared to 2016. The change is also due to lower emission factors in 2017 and a long range of energy reducing activities. 2017: 17244 tons CO2/17234 million DKK = 1 tons/CO2 per million DKK.

Intensity figure

0.000007323

Metric numerator (Gross global combined Scope 1 and 2 emissions)

17244

Metric denominator

unit of production

Metric denominator: Unit total

2354627717

Scope 2 figure used

Market-based

% change from previous year

33.6

Direction of change

Decreased

Reason for change

REDUCTION ACTIVITIES: Lundbeck has a 33,6% decrease in our intensity figure of "ton CO2 per unit produced", due to an increase in finished goods production of 5.6% in 2017 compared to 2016. In praxis it is difficult to use the production of medicine as a KPI, because of different types of medicine (size, type and production method of pills, tablets, ampules, pill boxes etc. is not the same) hence not possible to directly compare from year to year. Normally no other units than financial revenue is used at Lundbeck for measuring our emissions, as this is the most suitable figure for year to year comparison. 2016: 0.000011029 tons CO2/unit produced. 2017: 17244 tons CO2/2354.6 million units = 0.000007323 tons CO2/unit produced - equivalent to 7.3 g CO2 per unit produced.

Intensity figure

3.368

Metric numerator (Gross global combined Scope 1 and 2 emissions)

17244

Metric denominator

full time equivalent (FTE) employee

Metric denominator: Unit total

5120

Scope 2 figure used

Market-based

% change from previous year

13.9

Direction of change

Decreased

Reason for change

REDUCTION ACTIVITIES: Increase of 20 employees in 2017 compared to 2016 (0.4%). Our emission intensity figure decreased by 13.9% in 2017 compared to 2016. 2016 = 3.910 tons CO₂/per FTE. 2017: 17244 tons CO₂/5120 FTE = 3.368 tons CO₂/per FTE.

C7. Emissions breakdowns

C7.1

(C7.1) Does your organization have greenhouse gas emissions other than carbon dioxide?

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 CO ₂ e)	GWP Reference
CO ₂	6176	IPCC Fifth Assessment Report (AR5 – 100 year)
HFCs	90	IPCC Fifth Assessment Report (AR5 – 100 year) <i>R404a: 12.3 kg in 2017. GWP: 3300 kg/CO₂/kg. Source: http://www.engineeringtoolbox.com/Refrigerants-Environment-Properties-d_1220.html R134a: 8,15 kg in 2017. GWP 1300 kg/CO₂/kg. Source: IPCC Fifth Assessment Report, 2014 (AR5), http://www.ghgprotocol.org/sites/default/files/ghgp/Global-Warming-Potential-Values%20%28Feb%2016%202016%29_1.pdf R407c: 24 kg in 2017. GWP: 1600 kg/CO₂/kg. Source: http://www.engineeringtoolbox.com/Refrigerants-Environment-Properties-d_1220.html</i>

C7.2

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

Country/Region	Scope 1 emissions (metric tons CO ₂ e)
Denmark	2178
Italy	2722
France	1366

C7.3

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

- By facility
- By activity

C7.3b

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

Facility	Scope 1 emissions (metric tons CO2e)	Latitude	Longitude
Site Valby, Denmark	1953	55.658035	12.516765
Site Lumsås, Denmark	225	55.94317	11.512057
Site Padova, Italy	2722	45.410201	11.926138
Site Elaiapharm, France	1366	43.628082	7.051954

C7.3c

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

Activity	Scope 1 emissions (metric tons CO2e)
Biooil	19
Methane	4088
Gasoil	164
F -gas (LPG)	44
Towngas/Citygas	1861
HFC (R404a, Ri34a, R407c)	90

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 in market-based approach (MWh)
Denmark <i>Purchased and consumed low-carbon electricity and heat in Denmark: Originates from grid mix of electricity and grid mix of district heating. 32.3% of the electricity originates from renewable energy sources (wind mills, solar, water, biogas). 60.2% of the fuel used for generating district heating originates for biofuels (hay, biomass, organic waste, wood pellets). Self generated: Steam is made by use of towngas. Cooling by use of electricity.</i>	8142	7407	21926	16223
Italy <i>Purchased electricity only. Self generated: Steam and heat is made by use of methane. Cooling by use of electricity.</i>	3070	2489	6948	0
France <i>Purchased electricity only. Self generated: Steam and heat is made by use of methane. Cooling by use of electricity.</i>	1012	1082	6372	0

C7.6

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

By facility

By activity

C7.6b

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

Facility	Scope 2 location-based emissions (metric tons CO2e)	Scope 2, market-based emissions (metric tons CO2e)
Site Valby, Denmark	6607	5968
Site Lumsås, Denmark	1535	1439
Site Padova, Italy	3070	2489
Site Elaiapharm, France	1012	1082

C7.6c

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

Activity	Scope 2, location-based emissions (metric tons CO2e)	Scope 2, market-based emissions (metric tons CO2e)
Purchased electricity	10518	9605
Purchased district heating	1706	1373

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		<Not Applicable>		Not relevant for Lundbeck in 2017.
Other emissions reduction activities	110	Decreased	0.6	The overall decrease in consumption of electricity in 2017 was 8.0% (3254 MWh) compared to 2016 (Closure of Site Paramus in USA attributes to 2812 MWh. This figure is not part of the energy reduction activities - please see "Divestment"). Hence the total reduction in electricity is: 442 MWh. If CO2 emission factors are the same the reduction in CO2 due to energy reduction activities is 110 ton CO2. This corresponds to 0.6% of the emission value. The overall reduction is due to New boiler, Upgrade and lighting in Research and development facilities, Optimize and Reduce ventilation activities, New heating installations, Maintenance program, Process optimization, Insulation, Equipment closed down.
Divestment	1425	Decreased	7.1	The Site in Paramus, USA have been finally closed down in 2017. Activities are moved to Site Valby. Hence the activities have been terminated compared to 2016. Energy consumption in 2016 was 6009 MWh. Energy consumption for Site Paramus in 2017 was 0 MWh. Total 2017= 93413 MWh. A reduction of 6609 MWh (6.1%). The CO2 emission was reduced to 0. The reduction in global CO2 emission (due to this site closure) from 2016 to 2017 was 1425 tons CO2 (7.1%).
Acquisitions		<Not Applicable>		Not relevant for Lundbeck in 2017.
Mergers		<Not Applicable>		Not relevant for Lundbeck in 2017.
Change in output	366	Decreased	1.8	Due to the difference in the production portfolio (mix of products produced, change in production mode, steam and moisture requirements), the consumption of towngas/citygas and methane has decreased by 5.4% in 2017 (1792 MWh) compared to 2016. Consumption 2017 = 31146 MWh. Consumption 2016 = 32938 MWh. This decrease represents 366 tons CO2, if emission factors are the same as 2016. (1.8% of the total reduction in CO2 emission in 2017).
Change in methodology	51	Decreased	0.3	Lower CO2 emission factors in 2017 have been in our favor. This is relevant for electricity in France and electricity and district heating in Denmark. The emission factors France was reduced by 6.9 % in 2017 compared to 2016 (Electricity: from 0,2453 to 0,1698 ton CO2/MWh). In Denmark emission factors was reduced by 9.7% (District heating: from 0,1009 to 0,0982 ton CO2/MWh) and reduced 8.5% (Electricity: from 0,2943 to 0,2497 ton CO2/MWh) compared to 2016. The emission factor for electricity in Italy went up by 9.9%. The total emission (score 1 and 2) in 2017 was 17244 tons CO2. If the factors had been the same as in 2016 the CO2 emission would have been 18618 tons CO2 (USA excluded, please see "Divestment"). A difference of 51 tons CO2 - equivalent to 0.3% of the total CO2 reduction in 2017.
Change in boundary		<Not Applicable>		Not relevant for Lundbeck in 2017.
Change in physical operating conditions	11	Decreased	0.1	Change in weather conditions in Denmark (warm winter) resulted in Lundbeck using less District heating for heating office space and production areas. Use of District heating in 2016 = 14096 MWh. Use in 2017 = 13984 MWh. Difference of 112 MWh (0.8%). Corresponding to 11 tons CO2 if the emission factors was the same as 2016. This is equivalent to 0.1% of the total CO2 reduction in 2017.
Unidentified	736	Decreased	3.6	Total reduction in CO2 emission in 2017 = 13,5% compared to 2016. The above documented reductions add up to 9.9%. Resulting in 3.6% is not documented reductions. This corresponds to 736 tons CO2. This is primarily based on various minor energy savings due to production changes in 2017 compared to 2016.
Other		<Not Applicable>		Not relevant for Lundbeck in 2017.

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 Scope 2 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 0% but less than or equal to 5%

C8.2

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

	Indicate whether your organization undertakes this energy-related activity
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	No
Consumption of purchased or acquired cooling	No
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 MWh
Consumption of fuel (excluding feedstock)	LHV (lower heating value)	10167	31776	41943
Consumption of purchased or acquired electricity	<Not Applicable>	7805	29680	37485
Consumption of purchased or acquired heat	<Not Applicable>	8418	5566	13984
Consumption of purchased or acquired steam	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired cooling	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	0	<Not Applicable>	0
Total energy consumption	<Not Applicable>	26390	67022	93412

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	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)

Vegetable Oil

Biooil (by-product from the production of sunflower- and rapeseed oil). Used for heat/steam/cooling in Site Lumsås, Denmark. 60% for generation of steam and 40% for generation of heat.

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

10167

MWh fuel consumed for the self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

4067

MWh fuel consumed for self-generation of steam

6100

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self- cogeneration or self-trigeneration

<Not Applicable>

Fuels (excluding feedstocks)

Methane

Used at our sites in France and Italy for heat and steam. 40% for heat and 60% for steam.

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

20004

MWh fuel consumed for the self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

8002

MWh fuel consumed for self-generation of steam

12002

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self- cogeneration or self-trigeneration

<Not Applicable>

Fuels (excluding feedstocks)

Town Gas

Used at our site i Valby Denmark. 100% for steam production. Heat originates from District heating.

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

10954

MWh fuel consumed for the self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

10954

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self- cogeneration or self-trigeneration

<Not Applicable>

Fuels (excluding feedstocks)

Liquefied Petroleum Gas (LPG)

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

188

MWh fuel consumed for the self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self- cogeneration or self-trigeneration

<Not Applicable>

Fuels (excluding feedstocks)

Diesel

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

630

MWh fuel consumed for the self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

0

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self- cogeneration or self-trigeneration

<Not Applicable>

C8.2d

(C8.2d) List the average emission factors of the fuels reported in C8.2c.

Diesel

Emission factor

0.2664

Unit

metric tons CO2 per MWh

Emission factor source

Denmark: <http://www.key2green.dk/n%C3%B8gletal-varme>

Comment

Liquefied Petroleum Gas (LPG)

Emission factor

0.235

Unit

metric tons CO2 per MWh

Emission factor source

Denmark: http://www.engineeringtoolbox.com/co2-emission-fuels-d_1085.html

Comment

Methane

Emission factor

0.20432

Unit

metric tons CO2 per MWh

Emission factor source

Italy and France: <http://key2green.dk/n%C3%B8gletal-naturgas>

Comment

Town Gas

Emission factor

0.17

Unit

metric tons CO2 per MWh

Emission factor source

Denmark: <http://www.hofor.dk/baeredygtige-byer/beregn-co2/miljoedeklaration-bygas-2/>

Comment

Vegetable Oil

Emission factor

0.00186

Unit

metric tons CO2 per MWh

Emission factor source

<https://nlmv.dk/>

Comment

Proof of sustainability (document) provided by the supplier NLM Vantinge.

C8.2e

(C8.2e) 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	0	0	0	0
Heat	8002	8002	4067	4067
Steam	22956	22956	6100	6100
Cooling	0	0	0	0

C8.2f

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

Basis for applying a low-carbon emission factor

Off-grid energy consumption from an on-site installation or through a direct line to an off-site generator owned by another company

Low-carbon technology type

Biomass (including biogas)

MWh consumed associated with low-carbon electricity, heat, steam or cooling

10167

Emission factor (in units of metric tons CO₂e per MWh)

0.00186

Comment

Biooil (by-product from the production of sunflower- and rapeseed oil). Used for heat/steam in Site Lumsås, Denmark. CO₂ emission from the use of biooil in 2017 was only 19 tons CO₂, as the emission factor (provided by the supplier) is: 0.00186 tons CO₂ pr. MWh.

Basis for applying a low-carbon emission factor

Grid mix of renewable electricity

Low-carbon technology type

Concentrated solar power (CSP)

Wind

Hydropower

Biomass (including biogas)

MWh consumed associated with low-carbon electricity, heat, steam or cooling

24165

Emission factor (in units of metric tons CO₂e per MWh)

0.24967

Comment

Lundbeck do not produce any electricity ourselves, but more than 32.3% of the electricity in the national grid in Denmark in 2017 was originated from renewable energy sources (wind mills, solar, water, biogas). The share of renewable energy in adjusted gross energy consumption increased from having covered 29.1% in 2016 to covering 32.3% in 2017. This includes an increase in the consumption of wind power and in the use of biogas. <http://www.mynewsdesk.com/danish-energy-agency/pressreleases/significant-increase-in-the-consumption-of-renewable-energy-in-2017-2470744>

Basis for applying a low-carbon emission factor

Other, please specify (Grid mix of district heating)

Low-carbon technology type

Biomass (including biogas)

MWh consumed associated with low-carbon electricity, heat, steam or cooling

Emission factor (in units of metric tons CO₂e per MWh)

0.0982

Comment

2017: 60.2% of the fuel used for generating district heating in Denmark originates for biofuels (hay, biomass, organic waste, wood pellets). Source: <https://www.hofor.dk/wp-content/uploads/2018/06/Milj%C3%B8deklaration-2017-15-06-2018.pdf>

C9. Additional metrics

C9.1

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

Description

Waste

Metric value

1600

Metric numerator

Tonnes of solvents

Metric denominator (intensity metric only)**% change from previous year**

60

Direction of change

Increased

Please explain

Recovery of solvents: After purifying the used solvents by distillation to virgin quality, they can be reused in all processes repeatedly. So far, this has successfully been adopted for toluene, tetrahydrofurane and acetonitrile. In parallel, several solvents are reused in specific processes. Target for 2017: 40% of selected solvents from chemical production. During 2017, Lundbeck recycled 56% of the nine most used solvents. This eliminated the need to purchase approx. 1,600 tons of solvents, which consequently saved additional resources for external production and transportation. In 2016 recovery eliminated the need to purchase approx. 1,600 tons of solvents.

Description

Energy use

Metric value

19

Metric numerator

Tones of CO2. Calculated from liters of biooil

Metric denominator (intensity metric only)**% change from previous year**

5.6

Direction of change

Increased

Please explain

Biooil: CO2 reducing project by using biooil (by-product from the production of sunflower- and rapeseed oil). Used for heat/steam in Site Lumsås, Denmark. CO2 emission from the use of biooil in 2016 was only 18 tons CO2. In 2017 it was 19 due to higher production (22.8%). The emission factor (provided by the supplier) is: 0.00186 tons CO2 pr. MWh. By not using gas oil (fossil fuel) we reduce the emission of CO2.

Description

Other, please specify (Supplier evaluation)

Metric value

0

Metric numerator

Number of suppliers not approved

Metric denominator (intensity metric only)**% change from previous year**

100

Direction of change

Decreased

Please explain

Supplier evaluation: HSE audits (questionnaires and on-site visits) are conducted on our main chemical suppliers in high risk countries alongside quality audits. On these audits questions on energy consumption and CO2 emission are always addressed. If

standards on environmental issues (waste water, air pollution, soil pollution, waste management etc..) are not acceptable the supplier is not approved. In 2017 of 16 audits - 1 supplier was not approved. In 2017 the number was 0 (of 11 audits) not approves suppliers.

Description

Waste

Metric value

7.26

Metric numerator

Million DKK (Danish kroners)

Metric denominator (intensity metric only)

% change from previous year

21

Direction of change

Increased

Please explain

Scrap: Reduce scrap from pharmaceutical production due to several process optimizations. Less packaging materials used (cardboard, plastic and paper) and less API and other raw materials going to waste. Saved 6 mio DKK on re-packaging and better management of market changes in 2016. Unfortunately the same was not seen in 2017 - despite focus on learnings/CAPAs are reported in the consolidated monthly scrap report.

Description

Energy use

Metric value

24548

Metric numerator

m3 office space

Metric denominator (intensity metric only)

% change from previous year

7.5

Direction of change

Increased

Please explain

Reduce building mass and office space: To accumulate more employees on less space (open office landscape) to save energy and cost. 2016-2017: Office space reduced by 26,527 m2. 2017-2018: Office space reduced by 24,548 m2. Change: -7.5%

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 and/or Scope 2 emissions and attach the relevant statements.

Scope

Scope 1

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

3

Statement HSE Lundbeck signed 240118.pdf

Assurance statement - Deloitte - 2017.pdf

Assurance Letter.pdf

Page/ section reference

1: Verification statement from Deloitte. One page. Attachment: "Statement HSE Lundbeck signed 240118.pdf" 2: Supplementary information from Deloitte on the CDP Verification template to address all issues required. On page 2. Attachment: "Assurance statement - Deloitte - 2017.pdf" 3: Assurance Letter.pdf - One page

Relevant standard

ASAE3000

Proportion of reported emissions verified (%)

100

Scope

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

3

Statement HSE Lundbeck signed 240118.pdf

Assurance statement - Deloitte - 2017.pdf

Assurance Letter.pdf

Page/ section reference

1: Verification statement from Deloitte. One page. Attachment: "Statement HSE Lundbeck signed 240118.pdf" 2: Supplementary information from Deloitte on the CDP Verification template to address all issues required. On page 2. Attachment: "Assurance statement - Deloitte - 2017.pdf" 3: Assurance Letter.pdf - One page

Relevant standard

ASAE3000

Proportion of reported emissions verified (%)

100

C10.1b

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

Scope

Scope 3- at least one applicable category

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Attach the statement

1

Assurance statement - Deloitte - 2017.pdf

Page/section reference

Deloitte have made third party verification for Business Travel. This category corresponds to 3.3 % of our total Scope 3 emission. 1: Supplementary information from Deloitte on the CDP Verification template to address all issues required. On page 2. Attachment: "Assurance statement - Deloitte - 2017.pdf"

Relevant standard

ASAE3000

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
C6. Emissions data	Year on year change in emissions (Scope 1) 5.4% decrease in 2017 compared to 2016.	ASAE3000	Verified by Deloitte during our annual review of HSE data in January 2018. Emission Scope 1, 2017 = 6266 Tons CO2. Emission Scope 1, 2016 = 6626 Tons CO2. Reduction Scope 1, 2016-2017 = 360 Tons CO2 (-5.4%). Statement HSE Lundbeck signed 240118.pdf Assurance statement - Deloitte - 2017.pdf
C6. Emissions data	Year on year change in emissions (Scope 2) 17.6% decrease in 2017 compared to 2016.	ASAE3000	Verified by Deloitte during our annual review of HSE data in January 2018. Emission Scope 2 (market based), 2017 = 10978 Tons CO2. Emission Scope 2 (market based), 2016 = 13317 Tons CO2. Reduction Scope 2, 2016-2017 = 2339 Tons CO2 (-17.6%). Statement HSE Lundbeck signed 240118.pdf Assurance statement - Deloitte - 2017.pdf

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C5. Emissions performance	Year on year change in emissions (Scope 1 and 2) 13.5% decrease in 2017 compared to 2016.	ASAE3000	Verified by Deloitte during our annual review of HSE data in January 2018. Emission Scope 1+2, 2017 = 17244 Tons CO2. Emission Scope 1+2, 2016 = 19943 Tons CO2. Reduction Scope 1+2, 2016-2017 = 2698 Tons CO2 (-13.5%). Statement HSE Lundbeck signed 240118.pdf Assurance statement - Deloitte - 2017.pdf
C6. Emissions data	Year on year change in emissions (Scope 3) For business travel only! 41.2% increase in 2017 compared to 2016.	ASAE3000	Scope 3 from Business travel has been verified by Deloitte in April 2018. Emission Scope 3 (Business travel), 2017 = 5487 Tons CO2. Emission Scope 3 (Business travel), 2016 = 3885 Tons CO2. Increase Scope 3 (Business travel), 2016-2017 = 1602 Tons CO2 (41.2%). The increase is primarily due to data from Lundbeck China now are available in the scope from 2017. Out of the total 8.394.617 Miles traveled for subs, China alone cover 6.857.681 Miles (81.7%). For the rest of the subs the number is 1.536.936 miles, which is less (22.5%) than 2016. Assurance statement - Deloitte - 2017.pdf
C4. Targets and performance	Progress against emissions reduction target 63.5% decrease in 2017 compared to base year 2006.	ASAE3000	Verified by Deloitte during our annual review of HSE data in January 2018. Reduction target is 55% by 2020 compared to base year 2006. Emission factors for base year (2006) are location based only! Emission factors for (scope 2) in 2017 are market based only! Total reduction from 2006-2017 = 63.5%. Target achieved! Assurance statement - Deloitte - 2017.pdf
C6. Emissions data	Change in Scope 1 emissions against a base year (not target related) 56.1% decrease in 2017 compared to base year 2006.	ASAE3000	Verified by Deloitte during our annual review of HSE data in January 2018. Base year 2006. Emission Scope 1, 2006 = 14282 Tons CO2. Emission Scope 1, 2017 = 6266 Tons CO2. Reduction Scope 1, 2006-2017 = 8016 Tons CO2 (-56.1%) Assurance statement - Deloitte - 2017.pdf
C6. Emissions data	Change in Scope 2 emissions against a base year (not target related) 66.7% decrease in 2017 compared to base year 2006.	ASAE3000	Verified by Deloitte during our annual review of HSE data in January 2018. Base year 2006. Emission factors for base year (2006) are location based only! Emission Scope 2, 2006 = 32996 Tons CO2. Emission Scope 2, 2017 = 10978 Tons CO2 (market based). Reduction Scope 2, 2006-2017 = 22018 Tons CO2 (-66.7%). Assurance statement - Deloitte - 2017.pdf
C6. Emissions data	Change in Scope 3 emissions against a base year (not target related) 15.0% increase in 2017 compared to base year 2016.	ASAE3000	Scope 3 from Business travel has been verified by Deloitte in April 2018. Base year 2013. Emission Scope 3 (Business travel), 2013 = 6455 Tons CO2. Emission Scope 3 (Business travel), 2017 = 5487 Tons CO2. Reduction Scope 3 (Business travel), 2013-2017 = 968 Tons CO2 (15.0%) Assurance statement - Deloitte - 2017.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.

Denmark carbon tax

C11.1c

(C11.1c) Complete the following table for each of the tax systems in which you participate.

Denmark carbon tax

Period start date

January 1 2017

Period end date

December 31 2017

% of emissions covered by tax

45

Total cost of tax paid

3516897

Comment

In Denmark all pay carbon emission tax from fuel combustion .

C11.1d

(C11.1d) What is your strategy for complying with the systems in which you participate or anticipate participating?

Lundbeck wants to be a responsible company and therefore also comply with existing and future legislation. To assure compliance with legislation we monitor national and EU legislation both in Denmark, Italy and France where our own sites are located. As soon as new legislation is identified, we plan the implementation. Carbon tax is a part of the law in Denmark and as responsible company we do pay the required taxes. We do expect this legislation will continue and maybe develop in the future.

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

Drive energy efficiency

GHG Scope

Scope 1

Scope 2

Application

Our indirect Carbon price applies primarily to our engineering and maintenance departments because these departments are driving all maintenance, repairs, rebuilding and new building activities.

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

1400

Variance of price(s) used

The price is changing every year depending on the contract with our supplier. There has been a tendency towards the price is falling. The price only applies to the Danish sites as it is only in Denmark it is possible to sell our energy reductions.

Type of internal carbon price

Internal trading

Impact & implication

In Denmark energy suppliers and other consultancies have a price on energy reductions related to scope 2. This means that it is possible to sell energy reductions to these companies. The actual price/MWh saved energy are fixed in a contract between the energy supplier and the company. When new projects in Lundbeck are identified, typically in the Engineering department, energy savings and carbon reductions are calculated and the benefit from selling the energy reductions is included in the final calculations for the project. The pricing system means that projects with large energy reduction potentials are favored. Eg. a large investment in optimizing our control system for temperature and humidity reducing our CO2 emissions with 271 tons CO2 was reduced with around 1.2 MDKK because we could sell the energy reduction. Because we have worked with energy reductions for several years our future possibilities for implementing energy reducing activities are becoming lower. This combined with the development in the energy price towards lower prices means that the pricing system in the future will have less influence on the implementation of energy reducing activities..

C12. Engagement

C12.1

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

Yes, our suppliers

Yes, other partners in the value chain

C12.1a

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

Type of engagement

Engagement & incentivization (changing supplier behavior)

Details of engagement

Other, please specify (Assist chem. suppliers at on-site audits)

% of suppliers by number

5

% total procurement spend (direct and indirect)

1

% Scope 3 emissions as reported in C6.5

2

Rationale for the coverage of your engagement

METHODE: Lundbeck wants to act responsibly and wants to influence our suppliers to act accordingly on their climate performance. We have a firm Due Diligence Process of our partners to assess them before signing a contract. Lundbeck conduct on-site HSE audits (questionnaires and visits) on our main chemical suppliers only. Energy consumption, CO2 and climate change is always a part of the audit, to try to improve the performance at the suppliers. If any unconformities' are reported, we visit (re-visit) the suppliers the raise the standard and level at site. This helps us keep close contact to all existing and new suppliers.

Impact of engagement, including measures of success

MEASURE OF SUCCESS: Our target is to visit all (50-60) Chemical suppliers in developing countries at on-site audit every 3-4 years. We wish to put focus on energy consumption and climate change at our chemical suppliers by conducting audits. All relevant suppliers receive a self-assessment questionnaire regarding HSE, issued by our CSR department. By now 55 (equivalent to 100%) of our existing or dormant chemical suppliers in India, China, Russia, Singapore and Taiwan have been visited. Data on energy consumption is always a part of these audits. We always aim to get more suppliers to engage and accept HSE audit by Lundbeck.

Comment

Total CO2 emission from suppliers is 12,879 (calculated as 2016 spend data from the category "Raw materials" was investigated. The part from the critical chemical suppliers audited at on-site audit in 2017 corresponds to approx. 30%. Hence 3,864tons CO2.

C12.1c

(C12.1c) Give details of your climate-related engagement strategy with other partners in the value chain.

Logistic suppliers (down stream) for transportation for raw materials and finished products:

METHODE: Trucks with EURO Norm 4 (using less fuel and emitting less particles and CO2) or above are preferred. In our written contract with the transportation company to document CO2 emissions every 3 months. We also focus on optimal and effective packing of the trucks, so all space in the truck is being used the best way possible. This lower our own scope 3 emissions and raise the awareness on CO2 emission and climate change at the supplier.

STRATEGY: Lundbeck use these data to track, if we can do better next year (Local target of 5% CO2 reduction in 2017 compared to 2016).

MEASURE OF SUCCESS: The emission was reduced 2.8% in 2017 compared to 2016. Our target was not achieved in 2017, due to more transportation of goods by air instead of by sea (we prefer sea, as this result in a lower CO2 emission and a lower cost). But due to risk of stock-out and urgent matters, we had to use air. The total transportation of goods (downstream) accounted for 2.1% of Lundbeck total scope 1+2+3 emissions in 2017.

Questionnaire from Lundbeck Sourcing department to key suppliers:

METHODE: Sourcing will add an environmental questions in a mandatory questionnaire to key suppliers. If relevant for the purchasing process, the questions can also have specific climate/CO2 focus, as these two questions are incorporated:

1. Does your company have a CO2 emission target?
2. What is the CO2 emission target?

STRATEGY: The information will be used for specific target setting, as well as scope 3 emission calculation used for our work towards a science based target.

MEASURE OF SUCCESS: Suppliers will report back upon our request. If two suppliers offer the same, but have different climate profile, this can be a criteria in Sourcing for choosing new suppliers.

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
Energy efficiency	Support with minor exceptions	Via the Confederation of Danish Industries we initiated and participated in a working group with the Danish Energy Agency (The national authority on energy) and representatives from the Certifying bodies in Denmark that are certifying companies according to the legislation. The purpose was to clarify the interpretation of the Danish implementation of the Directive on energy efficiency. Lundbeck and a few other companies had experienced differences in the interpretation of the Danish legislation. Lundbeck participated by delivering a document explaining the differences we had experienced and by participating in meetings. The result of the working group was an official document that clarified how the legislation must be interpreted signed by The Danish Energy Agency. Based on this document the Danish Energy Agency published a guidance document primo 2018 describing how you via ISO 14001 and one section in ISO 50001 can comply with the legislation. Parallel the Confederation of Danish Industries prepared a checklist for companies and certifying bodies. Again we participated with comments in this process.	Lundbeck support the regulation in the Directive on energy efficiency, and we do consider the legislation must be implemented equally in all companies that are covered by the directive. The guidance document and the checklist promotes an equal implementation in Denmark. Unfortunately, there are still differences in the interpretation in the other European countries Lundbeck operates in.

C12.3b

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

No

C12.3e

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

Lundbeck continuously engage with different kind of stakeholders:

Trade associations:

- EFPIA, European Federation of Pharmaceutical Industries Ass.: Lundbeck is member of a working group in the organization where all environmental and climate related legislation is discussed. In 2016 we participated in preparation of the final draft of a White Paper that commits the pharmaceutical industry to: • Establish climate change policies/strategies based on materiality and impact for individual companies• Develop actions that support science-based CO2e reduction targets• Contribute to increase energy efficiency and aim to use more energy from renewable sources• Strive to harmonize GHG reporting based on recognized calculation methodologies and publicly disclose CO2e performance. In 2017 the working group is continuously discussing challenges and benefits related to the white paper especially challenges concerning scope 3 targets including supplier engagement are in focus.

- Via The Danish Association of the Pharmaceutical Industry (Lif) Lundbeck has participated in partnerships with the Danish Agency for Environmental Protection. The purpose of the partnerships is to influence new BREF documents. In 2017 we have participated in a new partnership concerning revision of Common Waste Gas Treatment in the Chemical Sector (WGC BREF'en). We expect also to participate in a future partnership when the BREF about Energy Efficiency will be revised.

Other:

UN Global Compact: UN Global Compact have 10 principles where 3 are related to environment which include climate change:- Businesses should support a precautionary approach to environmental challenges;- Undertake initiatives to promote greater environmental responsibility; and- Encourage the development and diffusion of environmentally friendly technologies. Lundbeck have signed the 10 principles in UN Global Compact and we annually provide funds to the UN Global Compact Foundation. Furthermore, we participate in the UN Global Compact Nordic Network, which is a forum for exchange of knowledge and best practice within the 10 principles, including energy conservation and climate change strategies. As part of the UN Global Compact commitment, we publicly report our CSR performance, challenges and targets.

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?

It is described in Lundbecks HSE management system how internal and external communication is coordinated in the company. All communication with authorities, trade associations and participation in other networks is coordinated and primarily performed by the Corporate HSE department. It is solely managers and employees from the Corporate HSE department that make written input to new legislation. Lundbecks Corporate HSE department is responsible for managing Lundbecks Climate strategy and for the follow up on all Lundbecks climate initiatives and the long-term target. This means that it is the same managers and employees that are responsible for the climate strategy, that participate in the network activities and the commenting on new legislation. This ensures consistent communication about our climate strategy. Furthermore Lundbeck participate in interviews with external journalists concerning climate issues. This can indirectly influence on policy makers. Managers that participate in such interviews have always, prior to the interview, coordinated and agreed on the content of the answers with the Corporate HSE department. The internal communication concerning climate issues is coordinated and controlled through Lundbecks HSE Council and HSE organization and through Lundbecks HSE management system that is certified according to ISO 14001 and OHSAS 18001 and in compliance with DIRECTIVE 2012/27/EU according energy efficiency.

(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

Document: UN Global Compact Report. Location: Public on our corporate homepage.

<http://lundbeck.com/global/sustainability/environment> http://lundbeck.com/upload/global/files/pdf/sustainability/COP/COP_2017.pdf

Status

Complete

Attach the document

1

COP_2017.pdf

Content elements

Governance

Strategy

Risks & opportunities

Emissions figures

Emission targets

Publication

In voluntary communications

Document: Position on climate change Location: Public on our corporate homepage.

<http://lundbeck.com/global/sustainability/environment/health-safety-environment-strategy>

<http://lundbeck.com/upload/global/sustainability/HSE/2018/Position%20on%20Environmental%20footprint%202018.doc>

Status

Complete

Attach the document

1

Position on climate change 2018 (3).doc

Content elements

Governance

Strategy

Emission targets

Publication

In voluntary communications

In Lundbeck Magazine at p. 18-19 there is an article about how we take action to promote sustainability. Once a year we make this magazine and public it at: <http://www.lundbeck.com/global/about-us/lundbeck-magazine>

Status

Complete

Attach the document

2018-02-07_Lundbeck_Magazine_2018-2019.pdf

Content elements

Governance

Strategy

Risks & opportunities

Publication

In voluntary communications

At our homepage we announce our CDP result once a year. <https://www.lundbeck.com/global/about-us/features/2017/lundbeck-listed-among-worlds-climate-elite>

Status

Complete

Attach the document

News about CDP score at the internet.docx

Content elements

Emission targets
Other metrics

Publication

In voluntary communications

At our homepage we publish information about our climate attitude and performance and we have an interactive tool where you eg can find emission and consumption data back to 2006. <https://www.lundbeck.com/global/sustainability/environment/reporting>

Status

Complete

Attach the document

Information about climate strategy and performance at the internet.docx

Content elements

Strategy
Emissions figures
Emission targets

Publication

In voluntary communications

At our homepage we publish our HSE policy and corporate targets that includes energy reduction and our annual CO2 reduction target. Policy: <https://www.lundbeck.com/global/sustainability/environment/health-safety-environment-policy> Targets: <https://www.lundbeck.com/global/sustainability/environment/health-safety-environment-strategy>

Status

Complete

Attach the document

HSE Policy and targets.docx

Content elements

Strategy
Emission targets

C14. Signoff

C-FI

(C-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.

C14.1

(C14.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1	Our Executive Vice President is member of the Executive Management and appointed by the Cheif Executive Officer to be chairman for Lundbecks HSE Council.	Chief Operating Officer (COO)

SC. Supply chain module

SC0.0

(SC0.0) If you would like to do so, please provide a separate introduction to this module.

SC0.1

(SC0.1) What is your company's annual revenue for the stated reporting period?

	Annual Revenue
Row 1	17234000000

SC0.2

(SC0.2) Do you have an ISIN for your company that you would be willing to share with CDP?

Yes

SC0.2a

(SC0.2a) Please use the table below to share your ISIN.

	ISIN country code (2 letters)	ISIN numeric identifier and single check digit (10 numbers overall)
Row 1	dk	0010287234

SC1.1

(SC1.1) Allocate your emissions to your customers listed below according to the goods or services you have sold them in this reporting period.

Requesting member

Johnson & Johnson

Scope of emissions

Scope 1

Emissions in metric tonnes of CO₂e

3

Uncertainty (±%)

10

Major sources of emissions

- Natural gas, methane and biooil for heating, steam and cooling purposes at the two chemical sites. - Gasoil and Citygas primarily for steam production at the two DK sites.

Verified

Yes

Allocation method

Allocation based on the number of units purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Production of pharmaceuticals requires several process steps. Depending on the production capacity at our chemical sites some of the process steps can be made at one of the site and some process steps at the other site. The pharmaceutical production of the products delivered to Johnson and Johnson have been made at our site in DK. Therefore the major GHG sources on our two chemical sites and the DK pharmaceutical site have been included in the listing of the sources of emission. The GHG emission is calculated by multiplying the number of product units with the intensity figure per production unit. Our intensity figure is a combined scope 1 and 2 figure based on our total scope 1 and 2 emission from all our production and Research sites. Scope 1 is calculated by multiplying the proportion of scope 1 constituted by the total scope 1 and 2 emission.

Requesting member

Johnson & Johnson

Scope of emissions

Scope 2

Emissions in metric tonnes of CO2e

5

Uncertainty (±%)

10

Major sources of emissions

Electricity for light and equipment and district heating for heating.

Verified

Yes

Allocation method

Allocation based on the number of units purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Production of pharmaceuticals requires several process steps. Depending on the production capacity at our chemical sites some of the process steps can be made at one of the site and some process steps at the other site. The pharmaceutical production of the products delivered to Johnson and Johnson have been made at our site in DK. Therefore the major GHG sources on our two chemical sites and the DK pharmaceutical site have been included in the sources of emission. The GHG emission is calculated by multiplying the number of product units with the intensity figure per production unit. Our intensity figure is a combined scope 1 and 2 figure based on our total scope 1 and 2 emission from all our production and Research sites. Scope 2 is calculated by multiplying the proportion of scope 2 constituted by the total scope 1 and 2 emission.

Requesting member

Johnson & Johnson

Scope of emissions

Scope 3

Emissions in metric tonnes of CO2e

92

Uncertainty (±%)

15

Major sources of emissions

The scope 3 emission is a mix of all our scope 3 emissions since all activities in scope 3 are directly or indirectly included in the process developing, producing or selling our products.

Verified

No

Allocation method

Allocation based on the number of units purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

The emission is calculated by multiplying our total scope 3 emission with the percentage the product amount for Johnson and Johnson accounts for. Lundbeck's scope 3 GHG emissions are primarily based on economic spend data from Lundbeck and the multi-regional hybrid input-output database Exiobase. But some data we also get directly from our suppliers e.g. for downstream transportation. Exiobase is a global detailed multi-regional environmentally extended input output database. The Exiobase v3 database (<http://www.exiobase.eu/>) is the product of in total four large EU funded projects under the 6th and 7th framework programmes: FORWAST (<http://forwast.brgm.fr/>), EXIOPOL (<http://www.feemproject.net/exiopoll/>), CREEA (<http://www.creea.eu/>) and DESIRE (<http://fp7desire.eu/>). Exiobase can be used for national level footprints (<http://www.exiobase.eu/index.php/9-blog/27-creea-booklet>) as well as for detailed corporate footprints, e.g. see <http://lca-net.com/p/2343>. Source for EXIO databasen: Merciai S, Schmidt J (2017). Methodology for the construction of global multi-regional hybrid supply and use tables for the EXIOBASE v3 database. Journal of Industrial Ecology, early on line view 12 December 2017. <http://onlinelibrary.wiley.com/doi/10.1111/jiec.12713/full>

Requesting member

CVS Health

Scope of emissions

Scope 3

Emissions in metric tonnes of CO2e

601

Uncertainty (±%)

50

Major sources of emissions

The emission is located in Lundbecks scope 3, but accumulated as our suppliers scope 1, 2 and 3 together. The major sources of emission in scope 1 is probably methan gas, in scope 2 electricity and scope 3 is a mix of all the scope 3 emissions we have in our scope 3.

Verified

No

Allocation method

Allocation based on the number of units purchased

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

The products for CVS Health are solely produced at Lundbecks suppliere in scope 3. At the moment we have not been able to get precise data from our suppliers about the CO2 emission from these products. Instead we have informed about the total scope 1, 2 and 3 emission if the products had been produced at our own sites, because we expect that the CO2 is comparable at our suppliers. If the products had been produced at Lundbecks own sites the scope 1 emission had been: 15 ton, Scope 2: 31 ton and Scope 3: 555 ton. Especially scope 3 is subject to great uncertainty e.g. we do not expect that our suppliers have the same amount of research and development elated to their production as we have.

SC1.2

(SC1.2) Where published information has been used in completing SC1.1, please provide a reference(s).

In our CDP investor response 2018 all data are public. In section 6 you can find intensity data and detailed scope 1, 2 and 3 data.

SC1.3

(SC1.3) What are the challenges in allocating emissions to different customers, and what would help you to overcome these challenges?

Allocation challenges	Please explain what would help you overcome these challenges
Diversity of product lines makes accurately accounting for each product/product line cost ineffective	Different products, weight and packaging sizes emit different amounts of GHG emissions. This makes it very complicated to make an exact calculation of the emission the different product units we have. Installation of energy meters on relevant production equipment could be one step on the way to more precise calculation. Another challenge is that we do not have a method for calculating our research and development activities on product level. Research and development and especially legally required clinical studies and analyses emit huge amounts of CO2.
Other, please specify (Lack of data)	When products are produced solely by scope 3 suppliers and we do not have detailed data from our suppliers. Allocation becomes very uncertain.

SC1.4

(SC1.4) Do you plan to develop your capabilities to allocate emissions to your customers in the future?

Yes

SC1.4a

(SC1.4a) Describe how you plan to develop your capabilities.

We expect to increase the dialogue about climate changes and product specific emissions in the future. This will make our scope 3 data more precise and it will increase our possibilities for allocating CO2 emissions for products produced solely in our scope 3.

SC2.1

(SC2.1) Please propose any mutually beneficial climate-related projects you could collaborate on with specific CDP Supply Chain members.

Requesting member

Johnson & Johnson

Group type of project

Relationship sustainability assessment

Type of project

Assessing products or services life cycle footprint to identify efficiencies

Emissions targeted

Actions that would reduce both our own and our customers' emissions

Estimated timeframe for carbon reductions to be realized

3-5 years

Estimated lifetime CO2e savings

Estimated payback

3-5 years

Details of proposal

Establishment of a single database or similar solution where companies can exchange experiences on different climate issues like: Specific energy reducing initiatives, good ways to buy carbon credits, good ways to reduce scope 3 emissions, tools to forecast GHG emissions, tools to allocate CO2 emissions to customers, tools to motivate suppliers to establish climate targets etc.

Requesting member

CVS Health

Group type of project

Relationship sustainability assessment

Type of project

Assessing products or services life cycle footprint to identify efficiencies

Emissions targeted

Actions that would reduce both our own and our customers' emissions

Estimated timeframe for carbon reductions to be realized

Other, please specify (5 - 10 years)

Estimated lifetime CO2e savings

Estimated payback

Cost/saving neutral

Details of proposal

Both the timeframe and the CO2 savings is very difficult to define since it depends on how the cooperation with the supply chain develop.

SC2.2

(SC2.2) Have requests or initiatives by CDP Supply Chain members prompted your organization to take organizational-level emissions reduction initiatives?

No

SC3.1

(SC3.1) Do you want to enroll in the 2018-2019 CDP Action Exchange initiative?

No

SC3.2

(SC3.2) Is your company a participating supplier in CDP's 2017-2018 Action Exchange initiative?

No

SC4.1

(SC4.1) Are you providing product level data for your organization's goods or services, if so, what functionality will you be using?

Yes, I will provide data

SC4.1a

(SC4.1a) Give the overall percentage of total emissions, for all Scopes, that are covered by these products.

1

SC4.2a

(SC4.2a) Complete the following table for the goods/services for which you want to provide data.

Name of good/ service

Cipramil

Description of good/ service

Anti depressive medicine

Type of product

Final

SKU (Stock Keeping Unit)

1

Total emissions in kg CO2e per unit

18333

±% change from previous figure supplied

Date of previous figure supplied

July 2 2017

Explanation of change

Last time we reported was in CDP 2017. Here the total emission was 636232 kg/unit. A big change to this year due to a big change in the size of the Stock keeping Unit.

Methods used to estimate lifecycle emissions

GHG Protocol Product Accounting & Reporting Standard

Name of good/ service

Lexapro

Description of good/ service

Anti depressive medicine

Type of product

Final

SKU (Stock Keeping Unit)

1

Total emissions in kg CO2e per unit

81628

±% change from previous figure supplied

Date of previous figure supplied

July 2 2017

Explanation of change

Last time we reported was in CDP 2017. Here the total emission was 1033089 kg/unit. A big change to this year due to a big change in the size of the Stock keeping Unit.

Methods used to estimate lifecycle emissions

GHG Protocol Product Accounting & Reporting Standard

SC4.2b

(SC4.2b) Complete the following table with data for lifecycle stages of your goods and/or services.

Name of good/ service

Cipramil

Please select the scope

Scope 1, 2 & 3

Please select the lifecycle stage

Cradle to gate

Emissions at the lifecycle stage in kg CO2e per unit

18333

Is this stage under your ownership or control?

No

Type of data used

Primary and secondary

Data quality

In order to inform about Cradle to gate we need all scope 1, 2 and 3. Last year we completed our scope 3 inventory, which gives us the possibility to inform about Cradle to gate emissions. The only topics we have not included is the transport that our customers have and CO2 emissions from the incineration of the empty packaging at our customers and eventually incineration of unused medicine. Scope 1 and 2 is under our control but many of our scope 3 emissions are we not in control of. Details about ownership and emissions can be read in our CDP response.

If you are verifying/assuring this product emission data, please tell us how

We are not verifying these data.

Name of good/ service

Lexapro

Please select the scope

Scope 1, 2 & 3

Please select the lifecycle stage

Cradle to grave

Emissions at the lifecycle stage in kg CO2e per unit

81628

Is this stage under your ownership or control?

No

Type of data used

Primary and secondary

Data quality

In order to inform about Cradle to gate we need all scope 1, 2 and 3. Last year we completed our scope 3 inventory, which gives us the possibility to inform about Cradle to gate emissions. The only topics we have not included is the transport that our customers have and CO2 emissions from the incineration of the empty packaging at our customers and eventually incineration of unused medicine. Scope 1 and 2 is under our control but many of our scope 3 emissions are we not in control of. Details about ownership and emissions can be read in our CDP response.

If you are verifying/assuring this product emission data, please tell us how

We are not verifying these data.

SC4.2c

(SC4.2c) Please detail emissions reduction initiatives completed or planned for this product.

Name of good/service	Initiative ID	Description of initiative	Completed or planned	Emission reductions in kg CO2e per unit
All our products	Initiative 1	We cannot specify which our our energy reducing initiatives that are specifcly related to one type of product because most of our initiatives are related to our facilities and therefore impact all our products. A complete list of out energyreducing activities can be seen in section 4.3b	Completed	170000
All our products	Initiative 2	We cannot specify which our our energy reducing initiatives that are specifcly related to one type of product because most of our initiatives are related to our facilities and therefore impact all our products. Of energy reduucing examples can be mentioned insulation, adjustment to energy on demand and renewal of old equipment like pumps.	Ongoing	160000

SC4.2d

(SC4.2d) Have any of the initiatives described in SC4.2c been driven by requesting CDP Supply Chain members?

No

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

	Public or Non-Public Submission	I am submitting to	Are you ready to submit the additional Supply Chain Questions?
I am submitting my response	Public	Investors Customers	Yes, submit Supply Chain Questions now

Please confirm below

I have read and accept the applicable Terms