

C0. Introduction

C0.1

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

Caring Deeply. Working Fearlessly. Changing Lives.™

At Biogen, our mission is clear: we are pioneers in neuroscience. Since our founding in 1978 as one of the world’s first global biotechnology companies by Charles Weissmann, Heinz Schaller, Kenneth Murray and Nobel Prize winners Walter Gilbert and Phillip Sharp, Biogen has led innovative scientific research with the goal over the last decade to defeat devastating neurological diseases. Millions of people around the world are affected by multiple sclerosis, Alzheimer’s disease, Parkinson’s disease and amyotrophic lateral sclerosis (ALS). Many people also suffer from less common diseases such as spinal muscular atrophy (SMA) and progressive supranuclear palsy (PSP). We believe that no other disease area holds as much need or as much promise for medical breakthroughs as neuroscience.

Biogen has some of the world’s best neurologists and neuroscientists. We engage with physicians and scientific leaders around the world with the aim to further medical research. Our focus on neuroscience, our deep scientific expertise and our courage to take risks make us leaders in the research and development of medicines to transform neuroscience to benefit society. Our technology and engineering capabilities create novel ways to seamlessly transition products from development to manufacturing with the intent of bringing our high-quality medicines to market faster.

We respect the contributions of health care providers caring for people living with neurological diseases. We honor the important role of caregivers, families and friends who care about them.

Biogen is committed to working with advocacy and patient organizations as they serve the communities they represent. Recognizing the challenges facing health care systems today, we collaborate with regulatory authorities and customers such as health care providers and payers, so that those in need can access our medicines. Professional, ethical, and compliant, we hold ourselves accountable to deliver value to our shareholders. Biogen contributes to the communities where we live. We are committed to our employees, diversity and inclusion, and environmental sustainability.

We care deeply about making a difference.

We work fearlessly. We do not give up even when challenged, pursuing innovation in all that we do.

We are humbled by the opportunity to change lives.

Biogen is listed on the Global Select Market of the NASDAQ Stock Market under the symbol BIIB. Our global headquarters in Cambridge, Mass., is also home to our research operations and small-scale manufacturing facility, with an international headquarters in Zug, Switzerland, and world-class manufacturing facilities in Research Triangle Park (RTP), N.C., and Solothurn, Switzerland. We offer therapies globally through direct affiliate presence in more than 34 countries and a network of distribution partners in more than 70 additional countries.

C0.2

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

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

C0.3

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

- Argentina
- Australia
- Austria
- Belgium
- Brazil
- Canada
- Chile
- China
- China, Hong Kong Special Administrative Region
- Colombia
- Czechia
- Denmark
- Finland
- France
- Germany
- Hungary
- Ireland
- Italy
- Japan
- Mexico
- Netherlands
- New Zealand
- Norway
- Poland
- Portugal
- Republic of Korea
- Singapore
- Slovakia
- Slovenia
- Spain
- Sweden
- Switzerland
- United Kingdom of Great Britain and Northern Ireland
- United States of America
- Uruguay

C0.4

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

USD

C0.5

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

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

Position of individual(s)	Please explain
Director on board	Board-level Responsibility: The vision, commitment and oversight for our Biogen Healthy Climate Healthy Lives strategy starts at the very top of our organization. The Risk Committee of the Board of Directors oversees Biogen's risk governance framework and infrastructure. In 2019, this committee discussed topics such as information technology, cybersecurity, workplace safety, climate change, and other material risks. Executive-level Responsibility: At the executive management level, our strategy is overseen by the Biogen Healthy Climate Healthy Lives working group, which is sponsored by our executive vice president for Pharmaceutical Operations and Technology, and includes members of Biogen's senior leadership team. The duties of this group are governed by the Biogen Healthy Climate Healthy Lives Charter, which includes, among other functions, setting strategy, driving implementation, reviewing progress and aligning resources. The working group meets four times per year, reports to the executive council twice per year, and to the Board once per year.

C1.1b

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

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Scope of board-level oversight	Please explain
Scheduled – some meetings	<ul style="list-style-type: none"> Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Monitoring and overseeing progress against goals and targets for addressing climate-related issues 	<Not Applicable>	The vision, commitment and oversight for our Global Impact Strategy starts at the very top of our organization. The Risk Committee of the Board of Directors oversees Biogen’s risk governance framework and infrastructure. In 2018, this committee met five times and discussed topics such as information technology, cybersecurity, workplace safety, climate change and other material risks. To date climate change has not had an outsized impact on the organizations and is considered a secondary issue by stakeholders. Extreme weather events have occurred that resulted in re-evaluation of existing risk management measures such as in the supply chain with Hurricane Maria.

C1.2

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

Name of the position(s) and/or committee(s)	Reporting line	Responsibility	Coverage of responsibility	Frequency of reporting to the board on climate-related issues
Chief Operating Officer (COO)	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	Annually

C1.2a

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

At the executive management level, our strategy is overseen by the Biogen Healthy Climate Healthy Lives working group, which is sponsored by our executive vice president for Pharmaceutical Operations and Technology (this role is the equivalent of a COO), and includes members of Biogen’s senior leadership team. The duties of this group are governed by the Biogen Healthy Climate Healthy Lives Charter, which includes, among other functions, setting strategy, driving implementation to company targets, reviewing progress and aligning resources. The working group meets four times per year, reports to the executive council twice per year, and to the Board once per year.

In 2017, Biogen also added its first Stakeholder Advisory Council, made up of external stakeholders who help to review trends, benchmark our peers and recommend improvements to goals and initiatives Our Environmental, Health, Safety & Sustainability and Human Performance organization manages day-to-day execution of Biogen’s Global Impact Strategy, although the breadth of our strategy extends beyond environmental matters to include patients, community investments and other key issues

C1.3

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

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

C1.3a

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

Entitled to incentive	Type of incentive	Activity incentivized	Comment
All employees	Monetary reward	Emissions reduction project Energy reduction project Efficiency project	The Biogen Innovation Fund provides funding for projects that provide innovative solutions to solve business challenges. Past award winners have included energy efficiency and environmental conservation projects.
All employees	Monetary reward	Emissions reduction project Energy reduction project Efficiency project	BIG (Biogen Great) is Biogen's Recognition and Rewards Program. BIG has three over-arching criteria for recognizing the contributions of fellow employees: Living Our Values, Achieving Excellence and Teaming and Leading.
All employees	Monetary reward	Emissions reduction project Energy reduction project Efficiency project	Our annual global EHS+S Awards recognize non-EHS+S employees who go beyond their regular duties to embrace and strengthen our commitment to sustainability, wellness and safety.
Environment/Sustainability manager	Monetary reward	Emissions reduction target Company performance against a climate-related sustainability index	Sustainability managers are required to develop annual goals / targets related to emissions reductions and energy reductions and are measured on that performance.
Chief Operating Officer (COO)	Monetary reward	Emissions reduction target	COO has annual goals / targets related to the Biogen Healthy Climate Healthy Lives strategy.

C2. Risks and opportunities

C2.1

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

Yes

C2.1a

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

	From (years)	To (years)	Comment
Short-term	0	2	
Medium-term	2	5	
Long-term	5	10	

C2.1b

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

A substantive financial or strategy impact on our business would entail a material impact on product development, manufacturing, or delivery. With climate-related risks, examples of a material impact would include a physical plant shutdown for any extended period of time (greater than a hour) due to weather or power outage and a delay of over one month for supplier materials due to extreme weather or other climate-related event.

C2.2

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

Value chain stage(s) covered

Direct operations
Upstream

Risk management process

Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment

More than once a year

Time horizon(s) covered

Short-term
Medium-term
Long-term

Description of process

One component of Biogen's Enterprise Risk Management process is to proactively reach out to managers across the organization each year to flag changing and emerging risks that should be added into the overall ERM process. In 2019, the Task Force on Climate-related Financial Disclosures recommendations was one of the topic flagged for inclusion into the overall ERM process. This program proactively fosters collaboration and at all levels, reducing risk before and after the fact. Biogen's Enterprise Risk Management Committee meets bimonthly to discuss risk management initiatives and provide governance for the organization's Enterprise Risk Management, Business Continuity and Crisis Management functions. The group is representative of all major functions within the organization and its members are charged with promoting risk awareness and culture within their respective business areas. At the business level, Biogen is identifying, assessing and responding to climate-related risks on multiple fronts. Procurement identified short-term disruptions to upstream supply chain risks as a significant area of concern and integrated software to rapid identify, assess and respond to severe events with the most notable example in recent past being Hurricane Marie in Puerto Rico. The Global EHS+S department continues to provide support through high level screening of our facilities towards the medium and long-term impacts of a changing climate such as water security. The opportunities related to climate change are managed by the Biogen Healthy Climate Healthy Lives strategy, which will leverage innovation towards a low carbon economy to drive production efficiency and employee engagement in the medium to long-term. Our pledge to transition our fleet to electric vehicles by 2025 and integrate green chemistry principles across all stages of product development being two examples.

C2.2a

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

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	Biogen has significant operations located in areas with ongoing carbon-related regulations, specifically the Switzerland carbon tax, and EU ETS. While the biopharmaceutical industry has a low carbon intensity, changes in current regulations can present financial risks.
Emerging regulation	Relevant, always included	Biogen has significant operations located in areas with emerging regulations, specifically Massachusetts and the United States as a whole. While the biopharmaceutical industry has a low carbon intensity, introduction of new regulations have the potential to present financial risks.
Technology	Not relevant, explanation provided	Technological improvements that support a transition to a low carbon economy are viewed as potential opportunities rather than risks. However, these opportunities are not relevant to Biogen's core business strategy.
Legal	Not relevant, explanation provided	Biogen's business strategy and sphere of operation are unrelated to climate-related legal considerations.
Market	Not relevant, explanation provided	As a biopharmaceutical company, the cost of goods sold is a much smaller percentage of the sales price compared to most other sectors. As a result, market risks related to shifts in supply and demand of commodities, products and services are not sufficiently relevant at this time given Biogen's size.
Reputation	Relevant, sometimes included	Climate change is a serious risk to human health and our business. The World Health Organization identifies climate change as "the greatest threat to global health in the 21st century." The direct and indirect impacts to health are already being felt around the world due to extreme weather events, the spread of infectious diseases, and degradation of air quality. These impacts often burden the most vulnerable and least served portions of our society (e.g., children, elderly, and the poor) the hardest. As a science-based company focused on improving the quality of life, stakeholders may set expectations related to Biogen's efforts towards climate change. For example, Biogen operates in a highly competitive industry where human and intellectual capital is essential for success. Loss of highly-qualified employees to competitors due to falling short of expectations could place Biogen's research and development efforts at risk.
Acute physical	Relevant, always included	One of the most significant risk stems from changes in precipitation and usual weather patterns. Biogen's physical locations and its supply chain are exposed to increased volatile and extreme weather events (snow storms, hurricanes, and droughts).
Chronic physical	Relevant, sometimes included	Biogen's operational footprint is largely located in areas without known significant long-term climate impacts (e.g. droughts, and heat waves). As a result relevance is on a specific case-by-case basis such as new facility siting.

C2.3

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

Yes

C2.3a

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

Identifier

Risk 1

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Emerging regulation	Carbon pricing mechanisms
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Primary potential financial impact

Increased indirect (operating) costs

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

The most significant risk consists of the establishment of federal legislation on greenhouse gas emissions that mandates GHG reductions and/or establishes a non-revenue neutral carbon tax (beyond those regions with carbon taxes already in place such as Denmark). To mitigate this risk, Biogen is taking proactive steps to source 100% of its electricity consumption and thus associated GHG emissions from renewable sources as well as continuing to invest in sustainable innovation internally.

Time horizon

Medium-term

Likelihood

More likely than not

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

1300000

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

The extent of financial impact on Biogen will ultimately depend on the exact approach taken by regulators. The impact assumes a \$20/MTCO₂e tax on carbon and \$0/MWH premium for long-term renewable electricity supply contracts. Additionally, there may be a supplier cost pass-through resulting from regulatory actions, but not quantifiable at this time.

Cost of response to risk

250000

Description of response and explanation of cost calculation

To mitigate this risk, Biogen is taking proactive steps to source 100% of its electricity consumption from renewable sources as well as continuing to invest in sustainable innovation internally. The extent that our current renewable electricity strategy of purchasing and retiring RECs can mitigate this impact is less certain, but not quantifiable at this time. For the future, we are evaluating alternative purchasing strategies of renewable electricity such as a PPA or direct contract to further mitigate against this risk.

Comment**Identifier**

Risk 2

Where in the value chain does the risk driver occur?

Upstream

Risk type & Primary climate-related risk driver

Acute physical	Increased severity and frequency of extreme weather events such as cyclones and floods
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Primary potential financial impact

Decreased revenues due to reduced production capacity

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

A significant risk stems from changes in precipitation and weather patterns. Biogen's physical locations and its supply chain are exposed to increasingly volatile and extreme weather events (snow storms, hurricanes, and droughts). We have seen an increase in volatile and extreme events at two of our major locations in recent years, specifically in the form of hurricanes and snow storms. Each of these extreme events has impacted business operations and transportation of goods/services/employees.

Time horizon

Short-term

Likelihood

Very unlikely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

1500000

Potential financial impact figure – minimum (currency)

<Not Applicable>

Potential financial impact figure – maximum (currency)

<Not Applicable>

Explanation of financial impact figure

The estimated financial impact assumes a 1-day unplanned shutdown of our RTP Drug Substance facility due to impacts to the facility or a key supplier. Small impacts around \$100,000 resulting from temporary office closers are a more likely occurrence.

Cost of response to risk

500000

Description of response and explanation of cost calculation

Biogen is actively managing this risk via implementing redundancy into our sites and investing in the Resilinc supply chain disruption monitoring software system. This software was able to mitigate supply chain impacts resulting from the Maria Hurricane that impacted many of our biopharmaceutical supply chain partners in Puerto Rico. A Business Continuity Plan for Drought Conditions and Emergency Response plans are in place for inclement weather and wildfires. The estimated cost of management is based on our redundancy and software investments.

Comment

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Chronic physical	Changes in precipitation patterns and extreme variability in weather patterns
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Primary potential financial impact

Increased direct costs

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

Changing climates could result in water scarcity issues that would limit water available for manufacturing operations in North Carolina.

Time horizon

Long-term

Likelihood

Very unlikely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

1000000

Potential financial impact figure – maximum (currency)

2000000

Explanation of financial impact figure

The estimated cost of obtaining a sufficient supply of water would be between \$1 and \$2 million annually. The estimated cost is based on trucking in 50 percent of the water needed by the manufacturing operations in North Carolina. This is an annual cost.

Cost of response to risk

50000

Description of response and explanation of cost calculation

Biogen is managing this risk by working with stakeholders to ensure a sufficient supply of water and increasing water recycling at the RTP Drug Substance facility. On an annual basis we conduct water assessments to understand potential issues of water scarcity in the regions of operation. Additionally, a few years ago Biogen coordinated with the City of Cary to replace potable water use with grey water use for irrigation as a means to further reduce demand on the local water system.

Comment

C2.4

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

Yes

(C2.4a) 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

Primary potential financial impact

Reduced indirect (operating) costs

Company-specific description

Climate Change is a powerful issue that can be leveraged to communicate the importance of carbon emission reductions across our value chain. There is an operational cost savings opportunity embedded in that message as well as carbon reduction projects are also often energy reduction projects. Leveraging the message to obtain project funding to hasten reductions in operational cost is a key opportunity.

Time horizon

Medium-term

Likelihood

Very likely

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

25000

Potential financial impact figure – maximum (currency)

1000000

Explanation of financial impact figure

Depending on the portfolio of efficiency projects implemented, energy reduction savings are estimated to be between \$25,000 and up to \$1,000,000 annually.

Cost to realize opportunity

1000000

Strategy to realize opportunity and explanation of cost calculation

To manage this opportunity Biogen applies carbon impacts to all process and operational projects to understand the holistic impact. Biogen's recently completed energy audits across all its manufacturing sites and incorporated carbon impacts to support the prioritization of the projects as well as to make a case for budgetary funding. Our Green Chemistry program is also looking at and evaluating carbon impacts as part of its process. Recently Biogen collaborated with a contracted manufacturer to eliminate two process steps, which helped reduce the carbon impact of the materials needed for the process by 44%.

Comment

Depending on the efficiency selected, costs are estimated to be between \$100,000 and up to \$1,000,000 one-time cost.

Identifier

Opp2

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Energy source

Primary climate-related opportunity driver

Participation in carbon market

Primary potential financial impact

Reduced indirect (operating) costs

Company-specific description

A significant opportunity resulting from climate change could be financial benefits from carbon pricing legislation, specifically the MA S2545, which was passed by the State of Massachusetts Senate. While the final passage and follow-up regulation wording remain uncertain, the positive financial impact could be significant to Biogen's MA tax bill due to GHG reduction measures that have been and are continuously being undertaken at the Cambridge headquarters, specifically the generation of power and steam using an efficient natural gas-fired cogeneration unit.

Time horizon

Medium-term

Likelihood

More likely than not

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

150000

Potential financial impact figure – maximum (currency)

250000

Explanation of financial impact figure

Preliminary estimations indicate Biogen would receive an annual net rebate of between \$150,000 and \$250,000 for each \$10/MTCO_{2e}. The bill indicates a starting fee of around \$20/MTCO_{2e}.

Cost to realize opportunity

10000

Strategy to realize opportunity and explanation of cost calculation

Biogen is monitoring possible legislation, continuing to be transparent regarding its emissions, and implementing measures reducing its overall environmental footprint. Examples of management efforts to reduce the overall environmental footprint are outlined in the energy efficiency improvements in section C4.3.

Comment**Identifier**

Opp3

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resource efficiency

Primary climate-related opportunity driver

Other, please specify (Employee productivity)

Primary potential financial impact

Reduced indirect (operating) costs

Company-specific description

Reputational opportunities to attract and retain employees. Biogen operates in a highly competitive industry where human and intellectual capital is essential for success. Loss of highly-qualified employees to competitors would place Biogen's research and development efforts at risk.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

<Not Applicable>

Potential financial impact figure – minimum (currency)

5000

Potential financial impact figure – maximum (currency)

1000000

Explanation of financial impact figure

The impact of any one hire or keeping one individual will vary depending on their criticality to a specific department or product. The estimated financial implications range could range from \$5,000 to \$1 million.

Cost to realize opportunity

220000

Strategy to realize opportunity and explanation of cost calculation

Biogen communicates its citizenship and sustainability activities to its employees and potential recruits to help bolster its reputation as a responsible corporate citizen. Specific examples include via Earth Day fairs, promotion of EV charging stations and Biogen Bus program as well as our through the annual Corporate Social Responsibility report.

Comment

Our budget varies depending upon the activities we are implementing. For example, in 2017, we spent about \$170,000 to offset our Scope 1 and 2 to maintain carbon neutrality and around \$50,000 on the Biogen Bus and EV charging stations programs.

C3. Business Strategy

C3.1

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

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

C3.1a

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

Yes, qualitative and quantitative

C3.1b

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

Climate-related scenarios and models applied	Details
2DS	<p>Our Science-based Carbon Target utilized the Science Based Target Initiative’s Sectorial Decarbonization Approach (SDA). The SDA methodology is based on the 2°C scenario (2DS) developed by the International Energy Agency (IEA) as part of its publication, Energy Technology Perspectives (ETP) 2014 (IEA, 2014). It was developed by CDP, WRI and WWF with the technical support of Ecofys as a consultancy partner. The methodology was created with input from a group of technical advisors, two public stakeholder workshops and one online workshop, and aims to provide businesses with a sector-specific and research-backed method to set their emissions goals. The accompanying SDA tool allows companies to enter their data and determine their science-based targets according to the method and is regularly updated with recent ETP data. Our carbon target provides us with a long-term perspective (out to 2030) on how our business must transform across all aspects as related to the emission of carbon. Given this long-term perspective, assumptions regarding company growth, the transition of utility grids to renewables, global transportation efficiency improvements, and supplier efficiency improvements. On an annual basis we review this long-term scenario analysis to determine which aspects of the company are on-track and which need further development and if prior assumptions need to be amended. The results of this analysis are reported to the Biogen Healthy Climate Healthy governance team and recently have largely reaffirmed the business objective and strategy surrounding the focus on identifying and implementing innovative improvements to the manufacturing process. Other notable findings from the analysis include additional work needs to be done towards reducing the impact of our suppliers and company vehicles. Specifically with the company vehicle finding, a strategy is being developed to integrate electric vehicles into our fleet. A resulting example on our innovative in manufacturing strategy is in 2017 Biogen opened a new facility in Research Triangle Park for the synthesis of antisense oligonucleotides (ASOs), which are modified RNA molecules used in the treatment of neurological disorders. This new ASO facility and manufacturing platform will produce materials for both our clinical pipeline and commercial products. Our prior ASO purification process used flammable solvents, such as ethanol and methanol, which created hazardous waste. Utilizing green chemistry best practices, a cross-functional team developed a new, more responsible process, replacing the use of ethanol and methanol with a method using salts and water. In addition, we also simplified our filtration process and replaced lyophilization with an ultrafiltration technology that enables a ready-to-fill drug substance. This improved purification process eliminates all solvents in downstream processing, removing over 1,500 liters of hazardous waste per kilogram of product produced. In addition, cycle times are decreased by 50 percent, and the amounts of material, water and energy used – and associated GHG emissions – are also reduced. Finally, the new approach significantly improves the product’s purity levels, making it industry-leading and ensuring we are able to deliver the best quality product for patients. The first clinical batch of ASO was successfully manufactured with this new process in November 2017.</p>

C3.1d

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

	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Yes	At Biogen, while we strive each day to produce ground-breaking treatments, we also aim to do it while improving our environmental performance. This focus on integrating green chemistry principles into our drug development has had a positive impact on the production of clinical assets. We aim to integrate green chemistry into all stages of drug development by 2030.
Supply chain and/or value chain	Yes	We are developing a responsible supplier program to engage and inspire our supplier partners to improve their practices wherever their starting point is. Climate will be a key component of this program with expectations of suppliers to set science-based targets and source renewable electricity. We believe suppliers moving towards a low carbon economy will be able to accelerate innovation in product development and resource efficiency.
Investment in R&D	Yes	At Biogen, while we strive each day to produce ground-breaking treatments, we also aim to do it while improving our environmental performance. This focus on integrating green chemistry principles into our drug development has had a positive impact on the production of clinical assets. We aim to integrate green chemistry into all stages of drug development by 2030.
Operations	Yes	The Biogen Healthy Climate Healthy Lives strategy will have a significant impact on our operations. There are significant regulatory, financial and reputation risks related to the emission of greenhouse gases and other air pollutants. Over the course of the next couple decades we have the opportunity to demonstrate leadership on the issues of climate and clean air by eliminating our impact entirely. With our new strategy, Biogen is the first multinational company to commit to transitioning away from the emission of greenhouse gases and other air pollutants across its global footprint.

C3.1e

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

	Financial planning elements that have been influenced	Description of influence
Row 1	Capital expenditures Assets	Biogen continuously explores innovative options to improve the resilience and reliability of its manufacturing facilities. Recently Biogen evaluated the capital purchase of a new cogeneration unit for one of its facilities. This capital project is considered a long-term investment - 5 to 10 years given the potential payback and life span of the unit. As part of the financial assessment, climate-related risks were incorporated into the model. In this case, regulatory risk around carbon emissions was a key consideration. The findings with climate-related risks included concluded that the benefits did not outweigh the now greater risks posed by the unit.

C3.1f

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

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

Year target was set

2016

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 1+2 (market-based) +3 (upstream & downstream)

Base year

2013

Covered emissions in base year (metric tons CO2e)

379288

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

100

Target year

2030

Targeted reduction from base year (%)

35

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

246537.2

Covered emissions in reporting year (metric tons CO2e)

491674

% of target achieved [auto-calculated]

-84.6593768173149

Target status in reporting year

Underway

Is this a science-based target?

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

Please explain (including target coverage)

For more information, see our target on sciencebasedtargets.org. Full wording of our target is as follows: "Biogen commits to a 35% reduction of absolute emissions across its entire value chain (scopes 1, 2 and 3) by 2030 from a 2013 base-year. Biogen adjusted its approach to engaging suppliers in 2017 to align with standard best practices. Scope 3 emissions are noticeably higher as they are no longer 100% matched with renewable energy certificates. Consequently, Biogen is evaluating its strategy towards achieving its 35% Absolute Reduction by 2030 target.

C4.2

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

Target(s) to increase low-carbon energy consumption or production
Other climate-related target(s)

C4.2a

(C4.2a) Provide details of your target(s) to increase low-carbon energy consumption or production.

Target reference number

Low 1

Year target was set

2014

Target coverage

Company-wide

Target type: absolute or intensity

Absolute

Target type: energy carrier

Electricity

Target type: activity

Consumption

Target type: energy source

Renewable energy source(s) only

Metric (target numerator if reporting an intensity target)

Percentage

Target denominator (intensity targets only)

<Not Applicable>

Base year

2013

Figure or percentage in base year

1

Target year

2014

Figure or percentage in target year

100

Figure or percentage in reporting year

100

% of target achieved [auto-calculated]

100

Target status in reporting year

Achieved

Is this target part of an emissions target?

Sourcing of 100% renewable electricity is a key component of our climate Science-based Target.

Is this target part of an overarching initiative?

RE100

Please explain (including target coverage)

RE100 member Biogen has maintained its achievement of 100% renewable electricity across 30 of the markets in which they operate. In total, this equates to 99.94% of their global demand, with 0.06% remaining unmet in South Korea and New Zealand, where Biogen is facing barriers to sourcing RE in accordance with the strict RE100 criteria. We look forward to working with our RE100 members to improve supply in these markets.

C4.2b

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

Target reference number

Oth 1

Year target was set

2020

Target coverage

Company-wide

Target type: absolute or intensity

Absolute

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

Low-carbon vehicles	Percentage of battery electric vehicles in company fleet
---------------------	--

Target denominator (intensity targets only)

<Not Applicable>

Base year

2020

Figure or percentage in base year

1

Target year

2027

Figure or percentage in target year

100

Figure or percentage in reporting year

1

% of target achieved [auto-calculated]

0

Target status in reporting year

New

Is this target part of an emissions target?

Yes, transitioning our fleet to electric vehicles is a key component of reducing our dependence on fossil fuels, which impacts both climate and human health.

Is this target part of an overarching initiative?

EV100

Please explain (including target coverage)

Biogen is headquartered in Cambridge, Massachusetts and is one of the world's first global biotechnology companies, leading in innovative scientific research with the goal to defeat devastating neurological diseases. As a member of EV100, Biogen has committed to 100% electrification of 1,605 vehicles and deployment of charging infrastructure for workplace charging at 30 corporate locations.

C4.3

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

Yes

C4.3a

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

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	6	1100
To be implemented*	0	0
Implementation commenced*	6	10700
Implemented*	5	1300
Not to be implemented	3	100

C4.3b

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

Initiative category & Initiative type

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

Estimated annual CO2e savings (metric tonnes CO2e)

630

Scope(s)

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

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

300000

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

800000

Payback period

1-3 years

Estimated lifetime of the initiative

16-20 years

Comment

In 2019 we completed an LED lighting conversion across our Cambridge campus.

Initiative category & Initiative type

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

Estimated annual CO2e savings (metric tonnes CO2e)

240

Scope(s)

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

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

40000

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

15000

Payback period

<1 year

Estimated lifetime of the initiative

6-10 years

Comment

Secondary Pump Differential Pressure Reset + Condenser Water Temp Reset - Implement secondary pump differential pressure reset on secondary pumps. Integrate with PLC automation upgrade.

Initiative category & Initiative type

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

Estimated annual CO2e savings (metric tonnes CO2e)

270

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

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

24000

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

20000

Payback period

<1 year

Estimated lifetime of the initiative

3-5 years

Comment

In 2019 we performed an IR/UST survey of all campus steam traps and replaced faulty traps.

Initiative category & Initiative type

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

Estimated annual CO2e savings (metric tonnes CO2e)

90

Scope(s)

Scope 1
Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

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

15000

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

25000

Payback period

1-3 years

Estimated lifetime of the initiative

3-5 years

Comment

This project allows confirmation and trending of various controllers including HHW and CWS for heating and dehumidification. There were multiple cases where it was confirmed controllers were operating and full open for dehumidification vs. controlling to set point. We have now gone in this year and managed set points to maintain humidity and balancing against human comfort.

Initiative category & Initiative type

Transportation	Company fleet vehicle replacement
----------------	-----------------------------------

Estimated annual CO2e savings (metric tonnes CO2e)

60

Scope(s)

Scope 1

Voluntary/Mandatory

Voluntary

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

0

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

10000

Payback period

No payback

Estimated lifetime of the initiative

3-5 years

Comment

To support Biogen's commitment to establishing a science-based greenhouse gas (GHG) reduction target, Biogen Portugal has been working to implement a sustainable transportation strategy for our workers in the field. In 2018 Biogen Portugal had a vision of having a fleet of completely electric vehicles (EV) and in 2019 the team began implementation. This initiative serves as a pilot to help us understand how to expand our transition to a fossil fuel free fleet.

C4.3c

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

Method	Comment
Employee engagement	Biogen is launching an Employee Resource Network dedicated to climate and health, which will allow employees across the globe to engage with leadership in reducing their department/office's dependency on fossil fuels.
Internal incentives/recognition programs	Biogen offers internal incentives/recognition programs, such as The Biogen Innovation Fund, our annual global EHS+S Awards, and the BIG (Biogen Great) Recognition and Rewards Program.
Compliance with regulatory requirements/standards	Biogen prioritizes projects associated with ensuring compliance with regulatory requirements/standards.
Dedicated budget for other emissions reduction activities	Biogen has a dedicated budget for purchasing of renewable electricity as well as for activities that overseen by Biogen's new climate and health initiative.
Internal finance mechanisms	When Biogen replaces equipment at its end of life, it chooses more efficient technology as replacements.
Other	Biogen uses a forecasting tool to help select and prioritize projects that will help us reduce our environmental footprint.

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 2013

Base year end

December 31 2013

Base year emissions (metric tons CO2e)

54081

Comment

Scope 2 (location-based)

Base year start

January 1 2013

Base year end

December 31 2013

Base year emissions (metric tons CO2e)

38019

Comment

Scope 2 (market-based)

Base year start

January 1 2013

Base year end

December 31 2013

Base year emissions (metric tons CO2e)

44177

Comment

C5.2

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

The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

C6. Emissions data

C6.1

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

Reporting year

Gross global Scope 1 emissions (metric tons CO2e)

67031

Start date

<Not Applicable>

End date

<Not Applicable>

Comment

C6.2

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

Row 1

Scope 2, location-based

We are reporting a Scope 2, location-based figure

Scope 2, market-based

We are reporting a Scope 2, market-based figure

Comment

C6.3

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

Reporting year

Scope 2, location-based

36802

Scope 2, market-based (if applicable)

106

Start date

<Not Applicable>

End date

<Not Applicable>

Comment

Our Scope 2 market-based figure consists of emissions related to purchased district steam for our Cambridge, MA facility and electricity from small offices located in nations where renewable energy certificate attributes are not available (e.g. South Korea, New Zealand). As an early member of RE100, a collaborative initiative of businesses committed to achieving 100 percent renewable energy, Biogen's operations around the world have been powered by renewable electricity since 2014. This past year, we purchased and retired renewable energy certificates equivalent to the amount of electricity consumed at each of our locations (except as noted above), including: • Green-e certified renewable energy certificates • Guarantees of Origin • International RECs for Brazil and China • Renewable energy certificates

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?

No

C6.5

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

Purchased goods and services

Evaluation status

Relevant, calculated

Metric tonnes CO2e

334954

Emissions calculation methodology

1) Biogen engages with its top suppliers by carbon impact each year, suppliers engaged over the past three years represent over 41% of its purchased goods and services impact. 2) Trucost's environmentally extended input-output (EEIO) model is utilized to apply emissions factors to the remaining suppliers, based on corporate-wide spend data mapped to corresponding industry sectors. This model uses a combination of actual supplier data (where available) and industry-level data.

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

41

Please explain

Purchased goods and services are considered relevant due to the relationship and significance to Biogen's business. There are no boundary exclusions for this source; note that Biogen does combine other sources within this category, including upstream and downstream transportation and distributions, which are a minor component of the purchased goods and services Biogen purchases.

Capital goods

Evaluation status

Relevant, calculated

Metric tonnes CO2e

32759

Emissions calculation methodology

1) Trucost's EEIO model is utilized to apply emissions factors to all suppliers based on corporate-wide spend data mapped to corresponding industry sectors. This model uses a combination of actual supplier data (where available) and industry-level data

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

0

Please explain

Capital goods are considered relevant due to the relationship and significance to Biogen's business. There are no boundary exclusions for this source.

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

Evaluation status

Relevant, calculated

Metric tonnes CO2e

10515

Emissions calculation methodology

1) Non-renewable electricity, purchased steam and fossil fuels well-to-tank and transmission losses were calculated using emissions factors from UK DBEIS. 2) Renewable electricity transmission and distributions losses were calculated using grid loss factors from the World Bank. There are no additive emissions associated with this step as renewable electricity has an emission factor of 0. 3) Upstream emissions associated with municipal water consumption is calculated using the UK DBEIS water supply emission factor.

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

0

Please explain

There are no boundary exclusions for this source

Upstream transportation and distribution

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Please explain

Biogen captures emissions associated with upstream transportation and distribution within its Purchased Goods and Services emission inventory. As such a separate calculation of this category is not relevant.

Waste generated in operations

Evaluation status

Relevant, calculated

Metric tonnes CO2e

645

Emissions calculation methodology

Generated waste and wastewater discharge are multiplied by applicable waste type and disposal method UK DBEIS emission factors.

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

0

Please explain

There are no boundary exclusions for this source.

Business travel

Evaluation status

Relevant, calculated

Metric tonnes CO2e

24083

Emissions calculation methodology

Business travel primary data consisting of air, rail and vehicle use is provided by Biogen's travel vendors. For air travel, emission factors incorporating 9% uplift but no radiative forcing is utilized and passenger distance is measured for the reporting year based on the ticket date of the flight rather than the booking date. All rental vehicles are assumed to utilize gasoline. The following sources are considered de minimis: taxi and other car services such as Uber, nonnational rail, and boat.

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

100

Please explain

There are no boundary exclusions for this source.

Employee commuting

Evaluation status

Relevant, calculated

Metric tonnes CO2e

9516

Emissions calculation methodology

In early 2017, Biogen conducted a global employee commuting survey the results of which were used to determine average commuting distance and transportation split. These factors were multiplied by the number of employees and days of work for each Biogen location.

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

100

Please explain

There are no boundary exclusions for this source.

Upstream leased assets

Evaluation status

Relevant, calculated

Metric tonnes CO2e

0

Emissions calculation methodology

Based on floor space of each leased asset multiplied a standard intensity value for the building use type. Biogen did not have any upstream leased assets in 2018.

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

100

Please explain

There are no boundary exclusions for this source. As Biogen has in the past utilized upstream leased assets, this category remains relevant.

Downstream transportation and distribution

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Please explain

Biogen captures emissions associated with downstream transportation and distribution within its Purchased Goods and Services emission inventory. As such a separate calculation of this category is not relevant.

Processing of sold products

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Please explain

Determined to not be relevant because Biogen does not sell products for further processing.

Use of sold products

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Please explain

Determined to not be significant based on the Lawrence Berkeley National Lab report "Optimization of Product Life Cycles to Reduce Greenhouse Gas Emissions in California" (2005) publication, which reports use-phase emissions of 0 kg CO2e for over the counter drugs. Biogen's prescription drugs were assumed to have the same emissions from use.

End of life treatment of sold products

Evaluation status

Relevant, calculated

Metric tonnes CO2e

12065

Emissions calculation methodology

Trucost's EEIO model is utilized along with average waste disposal routes for United States and rest of world.

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

0

Please explain

There are no boundary exclusions for this source.

Downstream leased assets

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Please explain

Determined to be not relevant because Biogen does not act as a lessor of owned properties to other parties.

Franchises

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Please explain

Determined to be not relevant because Biogen does not have any franchises.

Investments

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Please explain

Determined to be not relevant because Biogen does not make the types of financial investments outlined in the Scope 3 guidance document for this category.

Other (upstream)

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Please explain

All upstream categories covered above.

Other (downstream)

Evaluation status

Not relevant, explanation provided

Metric tonnes CO2e

<Not Applicable>

Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

Please explain

All downstream categories covered above.

C6.7

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

No

C6.10

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

Intensity figure

0.000005

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

67137

Metric denominator

unit total revenue

Metric denominator: Unit total

14378000000

Scope 2 figure used

Market-based

% change from previous year

8

Direction of change

Decreased

Reason for change

The considerable reduction in emission per unit of revenue in 2019 was largely related to improvements made to Biogen's next-generation manufacturing processes allowing for greater production with less equipment.

C7. Emissions breakdowns

C7.1

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

Yes

C7.1a

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

Greenhouse gas	Scope 1 emissions (metric tons of CO2e)	GWP Reference
CO2	66253	IPCC Fifth Assessment Report (AR5 – 100 year)
CH4	45	IPCC Fifth Assessment Report (AR5 – 100 year)
N2O	105	IPCC Fifth Assessment Report (AR5 – 100 year)
PFCs	0	IPCC Fifth Assessment Report (AR5 – 100 year)
HFCs	468	IPCC Fifth Assessment Report (AR5 – 100 year)
Other, please specify (HFCFs)	110	IPCC Fifth Assessment Report (AR5 – 100 year)
Other, please specify (CFCs)	50	IPCC Fifth Assessment Report (AR5 – 100 year)
SF6	0	IPCC Fourth Assessment Report (AR4 - 100 year)
NF3	0	IPCC Fifth Assessment Report (AR5 – 100 year)

C7.2

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

Country/Region	Scope 1 emissions (metric tons CO2e)
Argentina	19
Australia	16.8
Austria	68.7
Belgium	97.1
Canada	430.1
Chile	0.4
Colombia	5.2
Czechia	101
Denmark	2971.9
Finland	28.3
France	616.3
Germany	1923.4
Hungary	64.6
Ireland	2.4
Italy	652
Japan	258.9
Netherlands	52.2
Norway	12
Mexico	0.6
Poland	200.8
Portugal	45.1
Slovakia	142.7
Slovenia	9.5
Spain	291.4
Sweden	94.4
Switzerland	6859
United Kingdom of Great Britain and Northern Ireland	381.4
Brazil	17.2
United States of America	51627.4
Republic of Korea	37
New Zealand	0.7
China	3.1

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
Research Triangle Park, North Carolina - Drug Product	6693.4	35.898	-78.861
Research Triangle Park, North Carolina - Drug Substance	10842.1	35.898	-78.861
Cambridge, Massachusetts	28886.3	42.366	-71.087
Hillerød, Denmark	2914.5	55.922	12.276
Affiliate Offices (Various locations around the world)	5882.3	42.366	-71.087
US Commercial Fleet (Various locations)	5129.8	42.366	-71.087
Solothurn, Switzerland	6682.6	47.222448	7.57963

C7.3c

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

Activity	Scope 1 emissions (metric tons CO2e)
Stationary Fuel Combustion	56507.7
Mobile Fuel Combustion	9895
Fugitive Refrigerant Emissions	628.3

C7.5

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

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted for in Scope 2 market-based approach (MWh)
United States of America	32537.5	76.2	102154.5	101838.8
Denmark	2257.5	0	14911.1	14911.1
Argentina	33.6	0	95.4	95.4
Australia	128.7	0	172.5	172.5
Austria	16.5	0	102.1	102.1
Belgium	17	0	98.7	98.7
Brazil	12.7	0	108.6	108.6
Canada	20.8	0	145.6	145.6
Chile	1.2	0	2.8	2.8
Colombia	4.3	0	32.2	32.2
Czechia	30.1	0	60	60
Finland	6.1	0	57.2	57.2
France	31.1	0	448.2	448.2
Germany	149.5	0	356.9	356.9
Hungary	6	0	22.5	22.5
Ireland	3.3	0	8.7	8.7
Italy	182.9	0	559.2	559.2
Japan	58.7	0	112	112
Mexico	2	0	4.1	4.1
Netherlands	37.9	0	86.4	86.4
New Zealand	0.4	0.4	3.7	0
Norway	3.3	0	396.5	396.5
Poland	130.8	0	183.4	183.4
Portugal	53.8	0	149.1	149.1
Slovakia	14.7	0	91.9	91.9
Slovenia	17.6	0	67	67
Republic of Korea	29.2	29.2	81	0
Spain	84	0	289.9	289.9
Switzerland	679.2	0	23501.6	23501.6
United Kingdom of Great Britain and Northern Ireland	213.6	0	864.9	864.9
Sweden	1.7	0	136	136
China	21.4	0	34.2	34.2

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 (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Research Triangle Park, North Carolina - Drug Product	8450	0
Research Triangle Park, North Carolina - Drug Substance	21674.2	0
Cambridge, Massachusetts	2376.6	76.2
Hillerød, Denmark	2243	0
Affiliate Offices (Various locations around the world)	1409.8	29.6
Solothurn, Switzerland	648.4	0

C7.6c

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

Activity	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Electricity	36726	30
Steam	76	76

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	26	Increased	0	RE100 member Biogen has maintained its achievement of 100% renewable electricity across 30 of the markets in which they operate. In total, this equates to 99.94% of our global demand, with 0.06% remaining unmet in South Korea and New Zealand, where Biogen is facing barriers to sourcing RE in accordance with the strict RE100 criteria. We look forward to working with our RE100 members to improve supply in these markets. Expansion of our office space in South Korea resulted in an increase of 26 MTCO2e from purchased electricity compared to the previous year. [26/68,509 = <0.1%]
Other emissions reduction activities	330	Decreased	0.5	Biogen conducts emission reduction activities related each year to lower resource uses by its facilities and production processes. Due to its 100% renewable electricity usage, the value presented here only considers changes in direct combustion of fossil fuels at the sites and fleet. These projects includes HVAC and steam production improvements and with an aggregated estimated 330 MTCO2e reduction [-330 / 68,509 = -0.5%].
Divestment	2200	Decreased	3	Biogen sold its Hillerød manufacturing facility to Fujifilm on July 31 2019. The estimated emissions the facility would have generated over the August-December time period is 2,200 MTCO2e [-2,200 / 68,509 = -3.0%
Acquisitions	0	No change	0	No significant acquisitions impacting emissions were made in 2019.
Mergers	0	No change	0	No mergers occurred in 2019.
Change in output	702	Increased	1	Production of our treatment for spinal muscular atrophy (SMA), Spinraza , increased significantly in 2019. Emissions associated with Spinraza and as well as a ramp up of our biosimilars portfolio is estimated at 702 MTCO2e. [702 / 68,509 = 1.0%]
Change in methodology	0	No change	0	No methodology changes occurred in 2019.
Change in boundary	0	No change	0	No boundary changes occurred in 2019.
Change in physical operating conditions	0	No change	0	Weather variability has minor impacts to energy usage each year associated with building heating and cooling, but cannot be quantified apart from the more significant trends in production output.
Unidentified	0	No change	0	None
Other	430	Increased	0.6	Biogen's new biologics manufacturing facility in Solothurn expanded its operational testing in 2019. Emissions related to the facility were 430 MTCO2e. [430 / 68,509 = 0.6%]

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 undertook this energy-related activity in the reporting year
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	No
Consumption of purchased or acquired steam	Yes
Consumption of purchased or acquired cooling	No
Generation of electricity, heat, steam, or cooling	No

C8.2a

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

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total (renewable and non-renewable) MWh
Consumption of fuel (excluding feedstock)	HHV (higher heating value)	0	352158	352158
Consumption of purchased or acquired electricity	<Not Applicable>	144937	85	145022
Consumption of purchased or acquired heat	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired steam	<Not Applicable>	0	316	316
Consumption of purchased or acquired cooling	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Total energy consumption	<Not Applicable>	144937	352559	497496

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 heat	Yes
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	Yes

C8.2c

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

Fuels (excluding feedstocks)

Natural Gas

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

306493

MWh fuel consumed for self-generation of electricity

<Not Applicable>

MWh fuel consumed for self-generation of heat

35000

MWh fuel consumed for self-generation of steam

121647

MWh fuel consumed for self-generation of cooling

<Not Applicable>

MWh fuel consumed for self-cogeneration or self-trigeneration

149846

Emission factor

53.1148

Unit

kg CO2e per million Btu

Emissions factor source2018 Update <https://www.epa.gov/climateleadership/center-corporate-climate-leadership-ghg-emission-factors-hub>**Comment**

Cambridge facility contains a cogeneration plant to generate facility's steam needs as well as partial electricity need.

Fuels (excluding feedstocks)

Diesel

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

17063

MWh fuel consumed for 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

0

Emission factor

2.59411

Unit

kg CO2e per liter

Emissions factor sourceUK Department for Environment, Food & Rural Affairs (Defra) - 2019 | <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2019-stationary-fuel-diesel-biofuel-blend-volume-direct>**Comment**

Used in commercial fleet vehicles

Fuels (excluding feedstocks)

Motor Gasoline

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

24851

MWh fuel consumed for 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

0

Emission factor

2.20904

Unit

kg CO2e per liter

Emissions factor source

UK Department for Environment, Food & Rural Affairs (Defra) - 2019 | <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2019> - Stationary Fuel - Gasoline / Petrol (Biofuel Blend) (Volume) (Direct)

Comment

Used in commercial fleet vehicles

Fuels (excluding feedstocks)

Fuel Oil Number 2

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

3751

MWh fuel consumed for 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

0

Emission factor

10.24409

Unit

kg CO2e per gallon

Emissions factor source

UK Department for Environment, Food & Rural Affairs (Defra) - 2019 | <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2019> - Stationary Fuel - Fuel Oil (Distillate - No.2) (Volume) (Direct)

Comment

Backup generators

C8.2e

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

Sourcing method

Green electricity products (e.g. green tariffs) from an energy supplier, supported by energy attribute certificates

Low-carbon technology type

Wind

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

North America

MWh consumed accounted for at a zero emission factor

3269

Comment

Biogen signed a supplier contract with Calpine Energy Solutions for 100% renewable power for our Weston, Massachusetts office facility.

Sourcing method

Unbundled energy attribute certificates, Renewable Energy Certificates (RECs)

Low-carbon technology type

Biomass

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

North America

MWh consumed accounted for at a zero emission factor

98716

Comment

In the United States and Canada, our operations are matched with 100% renewable electricity through the purchase and retirement of Green-e certified RECs.

Sourcing method

Unbundled energy attribute certificates, Guarantees of Origin

Low-carbon technology type

Biomass

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

Europe

MWh consumed accounted for at a zero emission factor

42392

Comment

In the EU, our operations are matched with 100% renewable electricity through the purchase and retirement of EECS Guarantees of Origin.

Sourcing method

Unbundled energy attribute certificates, International REC Standard (I-RECs)

Low-carbon technology type

Wind

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

South America

MWh consumed accounted for at a zero emission factor

240

Comment

In South America, our operations are matched with 100% renewable electricity through the purchase and retirement of I-RECs from wind farms in Brazil.

Sourcing method

Unbundled energy attribute certificates, other - please specify (Japan Green Power Certificates)

Low-carbon technology type

Biomass

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

Japan

MWh consumed accounted for at a zero emission factor

112

Comment

In Japan, our operations are matched with 100% renewable electricity through the purchase and retirement of Green Power Certificates from a biomass facility.

Sourcing method

Unbundled energy attribute certificates, other - please specify (Australian RECs)

Low-carbon technology type

Wind

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

Australia

MWh consumed accounted for at a zero emission factor

173

Comment

In Australia, our operations are matched with 100% renewable electricity through the purchase and retirement of Australian RECs (large generation certificates) from a wind farm in Australia.

Sourcing method

Unbundled energy attribute certificates, International REC Standard (I-RECs)

Low-carbon technology type

Solar

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

Mexico

MWh consumed accounted for at a zero emission factor

5

Comment

In Mexico, our operations are matched with 100% renewable electricity through the purchase and retirement of I-RECs from the Aura Solar I project.

Sourcing method

Unbundled energy attribute certificates, International REC Standard (I-RECs)

Low-carbon technology type

Wind

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

China

MWh consumed accounted for at a zero emission factor

35

Comment

In China, our operations are matched with 100% renewable electricity through the purchase and retirement of I-RECs from the Datang New Energy Phase I to V Wind PP Tongxin facility.

C9. Additional metrics

C9.1

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

C10. Verification

C10.1

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

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

C10.1a

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

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

FINAL ERM CVS 2019 Assurance Statement Biogen_21Apr.pdf

Page/ section reference

The ERM CVS assurance statement is publicly available here: https://www.biogen.com/content/dam/corporate/en_us/yir/PDFs/ERM_CVS_2019_Assurance_Statement_Biogen.pdf. The referenced data table outlining assured data values, including all emission, energy, water and waste data, can be found here: https://biogen.com/en_us/yearinreview /datatable.html.

Relevant standard

ERM GHG Performance Data Assurance Methodology

Proportion of reported emissions verified (%)

100

C10.1b

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

Scope 2 approach

Scope 2 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

FINAL ERM CVS 2019 Assurance Statement Biogen_21Apr.pdf

Page/ section reference

The ERM CVS assurance statement is publicly available here:

https://www.biogen.com/content/dam/corporate/en_us/yir/PDFs/ERM_CVS_2019_Assurance_Statement_Biogen.pdf. The referenced data table outlining assured data values, including all emission, energy, water and waste data, can be found here: https://biogen.com/en_us/yearinreview /datatable.html.

Relevant standard

ERM GHG Performance Data Assurance Methodology

Proportion of reported emissions verified (%)

100

Scope 2 approach

Scope 2 location-based

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

FINAL ERM CVS 2019 Assurance Statement Biogen_21Apr.pdf

Page/ section reference

The ERM CVS assurance statement is publicly available here:

https://www.biogen.com/content/dam/corporate/en_us/yir/PDFs/ERM_CVS_2019_Assurance_Statement_Biogen.pdf. The referenced data table outlining assured data values, including all emission, energy, water and waste data, can be found here: https://biogen.com/en_us/yearinreview /datatable.html.

Relevant standard

ERM GHG Performance Data Assurance Methodology

Proportion of reported emissions verified (%)

100

C10.1c

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

Scope 3 category

Scope 3: Purchased goods and services

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

FINAL ERM CVS 2019 Assurance Statement Biogen_21Apr.pdf

Page/section reference

Assurance covers all 15 Scope 3 categories. The ERM CVS assurance statement is publicly available here:

https://www.biogen.com/content/dam/corporate/en_us/yir/PDFs/ERM_CVS_2019_Assurance_Statement_Biogen.pdf. The referenced data table outlining assured data values, including all emission, energy, water and waste data, can be found here: https://biogen.com/en_us/yearinreview /datatable.html.

Relevant standard

ERM GHG Performance Data Assurance Methodology

Proportion of reported emissions verified (%)

100

C10.2

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

Yes

C10.2a

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

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C8. Energy	Energy consumption	ERM CVS' assurance methodology, based on the International Standard on Assurance Engagements ISAE 3000 (Revised) and ISAE 3410 for GHG emissions	All related energy, water and waste data that rolls up to our climate data is third party assured.

FINAL ERM CVS 2019 Assurance
Statement Biogen_21Apr.pdf

C11. Carbon pricing

C11.1

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

Yes

C11.1a

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

EU ETS

C11.1b

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

EU ETS

% of Scope 1 emissions covered by the ETS

4

% of Scope 2 emissions covered by the ETS

0

Period start date

January 1 2019

Period end date

July 31 2019

Allowances allocated

0

Allowances purchased

3200

Verified Scope 1 emissions in metric tons CO2e

3200

Verified Scope 2 emissions in metric tons CO2e

0

Details of ownership

Facilities we own and operate

Comment

Biogen sold its biologics manufacturing operations in Hillerød, Denmark to Fujifilm on July 31.

C11.1d

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

The EU ETS applies to our Hillerød manufacturing facility. Our strategy for complying with the requirements of the ETS are to 1) purchase allowances to cover the calculated verified emissions associated with the facility and 2) continue our innovation and energy efficiency work to reduce our obligations under the ETS. One example is Hillerød obtaining ISO50001 certification in 2016.

C11.2

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

No

C11.3

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

Yes

C11.3a

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

Objective for implementing an internal carbon price

Change internal behavior
Drive energy efficiency
Stress test investments

GHG Scope

Scope 1
Scope 2

Application

As part of Biogen's carbon neutrality strategy, we purchase and retire carbon offsets. The average price per offset serves as a real price on carbon to the business. One application of this internal price on carbon was against energy efficiency projects identified at all of our major facilities in 2016 to determine their full financial impact. We have also piloted the use of higher shadow prices to stress test long-term energy impacting projects.

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

1.3

Variance of price(s) used

Shadowing pricing used for stress testing investments has ranged from USD10 to USD50 based on the range of pricing included in previously bills circulated within the United States congress.

Type of internal carbon price

Shadow price
Offsets

Impact & implication

The impact of shadow pricing and offsets can be significant. As one example, in 2015 we assessed the finances of a cogeneration plant at one of our sites with the inclusion of a variety of shadow prices. The price on carbon ultimately has a meaningful impact on the long-term financial viability of the project.

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

Run an engagement campaign to educate suppliers about climate change

% of suppliers by number

0.01

% total procurement spend (direct and indirect)

25

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

30

Rationale for the coverage of your engagement

The intent of Biogen's multi-year supplier engagement program is to further understand the true impact of its largest suppliers from a climate impact perspective. Preliminary carbon emissions are calculated for all suppliers using Trucost's environmentally extended input-output (EEIO) model. The top non-capital goods suppliers are selected from the list for the engagement process. The engagement consists of requesting primary energy data from suppliers as well as more detailed life cycle analysis/footprinting data associated with the specific goods and services purchased by Biogen.

Impact of engagement, including measures of success

By engaging with 10 of our top impacting suppliers each year, Biogen is able to initiate discussions with suppliers about the importance of manufacturing in a sustainable manner and also better understand how suppliers are managing risks. The quantitative impact of this engagement is around an aggregate emissions reduction of 5 percent through the use of actual carbon emission data from vendors as compared to estimates made by the EEIO model. Success is largely measured by securing positive engagement with the supplier through an open communication channel and receipt of company-level emission data at a minimum. Biogen typically achieves a 50% success rate for its supplier engagement typical of past engagement. Biogen procures goods and services from a variety of suppliers, both small and large. While many have established environmental performance programs, some do not. As a result, the supplier engagement program also provides incentivization for companies to further develop its environmental collection and reporting capabilities.

Comment

C12.1d

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

Approximately 70 percent of our carbon impacts are driven by goods and services provided by our supply chain partners. In order to meet our full value-chain emissions reduction goal, we have developed a strategy consisting of working closely with our high impact suppliers to better understand their contributions to our carbon footprint and their climate strategies. Since 2015, we have engagement with suppliers that collectively are responsible for around half our purchased goods and services emissions (Scope 3 - Category 1).

This initiative, which consists of sharing data to better understand the carbon impact of the goods and services we purchase, has resulted in more accurate accounting of our footprint and often a decrease in our overall carbon footprint. Examples of this engagement include Thermo Fisher Scientific and General Electric (GE), which provide materials for the production of our therapies. For this example, we learnt that the resins we purchase are more carbon intensive than the industry average, while media provided by GE has nearly half the carbon footprint of basic organic chemicals. We will continue to expand this work with suppliers, supporting their emissions reductions through the sharing of best practices and identifying opportunities for improvement.

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

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
Clean energy generation	Support with minor exceptions	At a local level, Biogen engages with policy makers on key issues as needed. In Cambridge, Biogen is a member of the Kendall Square EcoDistrict, which is working to drive sustainability actions within the square and larger Cambridge community such as through district-scale energy projects and bike infrastructure improvements. Biogen's Hillerød facility is collaborating through its Symbiosis network, where it has been working to address food waste, wastewater, safety and employee wellness efforts. We believe that leadership on climate change also means engaging stakeholders and being advocates for sustainable climate policies. To foster this, we are participating in advocacy initiatives with other likeminded businesses around the world to increase awareness that climate change is a business issue to be addressed. In recent years, we showed our support to a number of climate advocacy initiatives: RE100, the White House American Business Act on Climate Pledge, We Mean Business coalition, and the EPA Green Power Partnership.	Biogen seeks access to diverse energy sources, including the development of cost-effective renewable energy sources, to further diversify our portfolio, ensure reliability, eliminate our climate change impact, and strengthen our carbon neutrality strategy.

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?

All of our activities that influence climate change policy are managed by the global EHS+S and Government Affairs groups with oversight from the Biogen Healthy Climate Healthy Lives working group, which is sponsored by our executive vice president for Pharmaceutical Operations and Technology, and includes members of Biogen's senior leadership team. Biogen's Climate Change Position Statement recognizes that climate change is a serious risk to human health and our business, and that international bodies and national governments have an important role to play in providing a framework for a transition to a low-carbon economy and fulfilling our collective obligations under the Paris Agreement. We use the Climate Change Position Statement to guide our engagement with stakeholders and to ensure that all of our direct and indirect activities are consistent with our overall climate change strategy.

C12.4

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

Publication

In voluntary sustainability report

Status

Complete

Attach the document

Biogen 2019 Year in Review Report (index only).pdf

Page/Section reference

The attached document is Index for our Year in Review report, which can be found online at https://www.biogen.com/en_us/yearinreview. Emission data can be found at https://www.biogen.com/en_us/yearinreview/datatable.html while discussion on our climate strategy and targets can be found at https://www.biogen.com/en_us/yearinreview/sustainablesience.html

Content elements

Governance
Strategy
Emissions figures
Emission targets
Other metrics

Comment

Publication

In mainstream reports

Status

Complete

Attach the document

Biogen 2019 Annual Report.PDF

Page/Section reference

Page 6 discusses our commitment to environmental sustainability

Content elements

Strategy
Emission targets

Comment

Items discussed include our approach to reducing emissions and our 100% renewable electricity commitment.

C15. 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.

Attached to this submission is our RE100 annual progress report.
Biogen_RE100 Reporting Spreadsheet 2020.xlsx

C15.1

(C15.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1	Executive Vice President, Pharmaceutical Operations and Technology	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.

Biogen uses a three-pronged approach to maintaining carbon neutrality: measuring and continually improving the accuracy of emissions data, driving reductions internally and working with our suppliers, and investing in reputable renewable electricity instruments and carbon offsets. Biogen became one of the first companies to achieve sourcing 100% renewable electricity in 2014 and maintained that status in the last reporting year with a commitment to continue doing so moving forward. This is the result of a multiyear initiative that emphasizes measuring our emissions and improving data quality, reducing our operational carbon footprint, and working with suppliers to do the same.

Starting in 2015 we began working closely with our suppliers to better understand their contribution to our carbon footprint and demonstrate our interest in their climate strategy. In 2018 we engaged with 10 suppliers, which collectively represented 31 percent of our supply chain carbon emissions. This initiative has resulted in more accurate accounting of our footprint. In the future, we plan to expand our work with suppliers to focus on supporting their carbon footprint reductions through best practices sharing and identifying opportunities for improvement. For those vendors that supply products and services that relate directly to the safety and integrity of our products and the continuity of our manufacturing process, we have intensified our focus on implementing a proactive supply-chain assessment process. In 2018, we assessed over 900 supplier sites. This annual process evaluates the risks associated with our critical supplier base from an environmental, social and governance perspective across multiple factors, including water risks. Through this rigorous process we have not identified any at-risk suppliers, but we will continue to monitor these risks annually. We are also an active participant in the Pharmaceutical Supply Chain Initiative, which supports better social, economic and environmental outcomes for all those who make up the pharmaceutical supply chain.

SC0.1

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

	Annual Revenue
Row 1	14378000000

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	US	09062X1037

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

CVS Health

Scope of emissions

Scope 1

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO₂e

944

Uncertainty (±%)

10

Major sources of emissions

Combustion of natural gas for steam and space heating; Gasoline and diesel associated with fleet vehicle use

Verified

No

Allocation method

Allocation based on the market value of products purchased

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

GHG sources are tracked via invoices (electricity, natural gas) or in some cases estimated (fleet vehicle fuel use) and have been verified by CVS ERM. The allocation calculation assumes emissions per dollar of product value is roughly equivalent and that office-related activities in non-product facilities support each product in a roughly equivalent manner. Note: As part of Biogen's carbon neutrality commitment, Biogen purchases carbon offsets to neutralize 100% of its direct emissions. Thus, when including offsets, allocation to CVS Health would be 0 MTCO_{2e}.

Requesting member

CVS Health

Scope of emissions

Scope 2

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO_{2e}

1

Uncertainty (±%)

10

Major sources of emissions

Purchased Steam

Verified

No

Allocation method

Allocation based on the market value of products purchased

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

Electricity and purchased steam use is tracked from utility invoices and has been verified by ERM CVS. The same allocation method and assumptions are used for Scope 2 as Scope 1. There are no emissions associated with electricity consumption as 100 percent of the electricity consumed by the applicable Biogen facilities is from renewable sources and has been since 2014. This commitment to renewable electricity reduced the allocation of emissions to CVS Health by 517 MTCO_{2e}. Additionally, Biogen purchases and retires carbon offsets for emissions associated with purchased steam, reducing CVS Health's allocation to 0 MTCO_{2e}.

Requesting member

CVS Health

Scope of emissions

Scope 3

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO_{2e}

5980

Uncertainty (±%)

25

Major sources of emissions

Category 1 Purchased Goods and Services - 4718 MTCO_{2e}; Category 2 Capital Goods - 461 MTCO_{2e}; Category 3 Upstream/Downstream Energy and Water - 148 MTCO_{2e}; Category 5 Waste - 9 MTCO_{2e}; Category 6 Business Travel - 339 MTCO_{2e}; Category 7 Employee Commuting - 134 MTCO_{2e}; Category 12 Product End of Life - 170 MTCO_{2e}; Categories 4, 8, 9, 10, 11, 13, 14, and 15 are either included within another category, de minimis, or not relevant.

Verified

No

Allocation method

Allocation based on the market value of products purchased

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

Emissions are calculated from a variety of methodologies: Categories 1, 2 and 12 are based on Trucost's EEIO model based on Biogen's spend. Categories 3, 5 and 6 use UK BEIS emissions factors against tracked electricity, natural gas, water, waste, and air travel values. Category 7 uses employee commuting surveys and UK BEIS emission factors. Similar to Scope 1 and 2, the allocation calculation assumes emissions per dollar of product value is roughly equivalent and that office-related activities in nonproduct facilities support each product in a roughly equivalent manner. Uncertainty is higher as this assumption becomes more challenging when related to upstream and downstream emissions.

Requesting member

Johnson & Johnson

Scope of emissions

Scope 1

Allocation level

Facility

Allocation level detail

Allocation is determined by identifying the number of Biogen employees at the RTP Drug Product and Hillerød facilities focused on the Johnson and Johnson products, which is calculated based on the breakdown of batch production by volume. The total percentage of Biogen employees focused on Johnson and Johnson products is then multiplied by the company-level emissions.

Emissions in metric tonnes of CO₂e

3697

Uncertainty (±%)

5

Major sources of emissions

Combustion of natural gas for steam and space heating.

Verified

No

Allocation method

Allocation based on the volume of products purchased

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

This calculation assumes each facility's emissions are equally distributed per unit volume of batch production and that office-related activities at other Biogen locations are insignificant. Note: As part of Biogen's carbon neutrality commitment, Biogen purchases carbon offsets to neutralize 100% of its direct emissions. Thus, when including offsets, allocation to Johnson and Johnson would be 0 MTCO₂e.

Requesting member

Johnson & Johnson

Scope of emissions

Scope 2

Allocation level

Facility

Allocation level detail

Allocation is determined by identifying the number of Biogen employees at the RTP Drug Product and Hillerød facilities focused on the Johnson and Johnson products, which is calculated based on the breakdown of batch production by volume. The total percentage of Biogen employees focused on Johnson and Johnson products is then multiplied by the company-level emissions.

Emissions in metric tonnes of CO₂e

0

Uncertainty (±%)

0

Major sources of emissions

None

Verified

No

Allocation method

Allocation based on the volume of products purchased

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

The same allocation method and assumptions are used for Scope 2 as Scope 1. There are no emissions associated with Scope 2 as 100 percent of the electricity consumed by the applicable Biogen facilities is from renewable sources and has been since 2014. This commitment to renewable electricity reduced the allocation of emissions to Johnson and Johnson from this source by 7253 MTCO₂e.

Requesting member

Johnson & Johnson

Scope of emissions

Scope 3

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO₂e

25304

Uncertainty (±%)

50

Major sources of emissions

Purchased goods and services and Capital Goods (Categories 1 and 2). Biogen includes upstream and downstream transportation and distribution (Categories 4 and 9) emissions within purchased goods and services for reference.

Verified

No

Allocation method

Allocation based on the volume of products purchased

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

This methodology is limited in its accuracy as spend on purchased goods and services / capital goods specific to production at the two facilities of interest is unknown.

Requesting member

Johnson & Johnson

Scope of emissions

Scope 3

Allocation level

Facility

Allocation level detail

Production specific to Johnson and Johnson is conducted at Biogen's RTP Drug Substance and Hillerød manufacturing facilities. Allocation of greenhouse gases is based on the percentage of batch production by volume associated with Johnson and Johnson compared to the total for each facility during the calendar year. Each facility's emissions are multiplied by this percentage to come up with the total allocation.

Emissions in metric tonnes of CO2e

580

Uncertainty (±%)

5

Major sources of emissions

Upstream and downstream waste, water, fuel and energy-related activities (Categories 3 and 5).

Verified

No

Allocation method

Allocation based on the volume of products purchased

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

The same assumptions are used for this GHG source as Scopes 1 and 2. Biogen's purchasing of 100 renewably sourced electricity reduced the allocation of emissions to Johnson and Johnson from this source.

Requesting member

Johnson & Johnson

Scope of emissions

Scope 3

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO2e

1657

Uncertainty (±%)

50

Major sources of emissions

Business Travel (Category 6)

Verified

No

Allocation method

Allocation based on the volume of products purchased

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

The accuracy of this method is limited as the specific number of employees working on the Johnson and Johnson account is unknown

Requesting member

Johnson & Johnson

Scope of emissions

Scope 3

Allocation level

Facility

Allocation level detail

Production specific to Johnson and Johnson is conducted at Biogen's RTP Drug Substance and Hillerød manufacturing facilities. Allocation of greenhouse gases is based on the percentage of batch production by volume associated with Johnson and Johnson compared to the total for each facility during the calendar year. Each facility's emissions are multiplied by this percentage to come up with the total allocation.

Emissions in metric tonnes of CO2e

800

Uncertainty (±%)

15

Major sources of emissions

Employee Commuting (Category 7)

Verified

No

Allocation method

Allocation based on the volume of products purchased

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

The accuracy of this method is limited as the specific number of employees working on the Johnson and Johnson account is unknown.

Requesting member

Johnson & Johnson

Scope of emissions

Scope 3

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO2e

0

Uncertainty (±%)

0

Major sources of emissions

All other Scope 3 Categories (8, 10, 11, 12, 13, 14 and 15)

Verified

No

Allocation method

Allocation based on the volume of products purchased

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

There is no allocation of emission from these sources as they are either not relevant to Biogen, have 0 emissions (upstream leased assets), or are not relevant to Johnson and Johnson (product end-of-life).

Requesting member

NHS England

Scope of emissions

Scope 1

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO2e

2388

Uncertainty (±%)

10

Major sources of emissions

Combustion of natural gas for steam and space heating; Gasoline and diesel associated with fleet vehicle use.

Verified

No

Allocation method

Allocation based on the market value of products purchased

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

GHG sources are tracked via invoices (electricity, natural gas) or in some cases estimated (fleet vehicle fuel use) and have been verified by CVS ERM. The allocation calculation assumes emissions per dollar of product value is roughly equivalent and that office-related activities in non-product facilities support each product in a roughly equivalent manner. Note: As part of Biogen's carbon neutrality commitment, Biogen purchases carbon offsets to neutralize 100% of its direct emissions. Thus, when including offsets, allocation to CVS Health would be 0 MTCO2e.

Requesting member

NHS England

Scope of emissions

Scope 2

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO2e

4

Uncertainty (±%)

Major sources of emissions

Purchased steam

Verified

No

Allocation method

Allocation based on the market value of products purchased

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

Electricity and purchased steam use is tracked from utility invoices and has been verified by ERM CVS. The same allocation method and assumptions are used for Scope 2 as Scope 1. There are no emissions associated with electricity consumption as 100 percent of the electricity consumed by the applicable Biogen facilities is from renewable sources and has been since 2014. This commitment to renewable electricity reduced the allocation of emissions to CVS Health by 1307 MTCO_{2e}. Additionally, Biogen purchases and retires carbon offsets for emissions associated with purchased steam, reducing CVS Health's allocation to 0 MTCO_{2e}.

Requesting member

NHS England

Scope of emissions

Scope 3

Allocation level

Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO_{2e}

15126

Uncertainty (±%)

25

Major sources of emissions

Category 1 Purchased Goods and Services - 11934 MTCO_{2e}; Category 2 Capital Goods - 1167 MTCO_{2e}; Category 3 Upstream/Downstream Energy and Water - 375 MTCO_{2e}; Category 5 Waste - 23 MTCO_{2e}; Category 6 Business Travel - 858 MTCO_{2e}; Category 7 Employee Commuting - 339 MTCO_{2e}; Category 12 Product End of Life - 430 MTCO_{2e}; Categories 4, 8, 9, 10, 11, 13, 14, and 15 are either included within another category, de minimis, or not relevant.

Verified

No

Allocation method

Allocation based on the market value of products purchased

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

Emissions are calculated from a variety of methodologies: Categories 1, 2 and 12 are based on Trucost's EEIO model based on Biogen's spend. Categories 3, 5 and 6 use UK BEIS emissions factors against tracked electricity, natural gas, water, waste, and air travel values. Category 7 uses employee commuting surveys and UK BEIS emission factors. Similar to Scope 1 and 2, the allocation calculation assumes emissions per dollar of product value is roughly equivalent and that office-related activities in nonproduct facilities support each product in a roughly equivalent manner. Uncertainty is higher as this assumption becomes more challenging when related to upstream and downstream emissions.

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

Biogen's 2019 data can be found publicly in its 2020 CDP Climate Change disclosure as well as in its 2019 Year in Review, available online at https://www.biogen.com/en_us/yearinreview.html. All Biogen greenhouse gas values were assured by an independent third-party using the ERM CVS' assurance methodology, based on the International Standard on Assurance Engagements ISAE 3000 (Revised) and ISAE 3410 for GHG emissions.

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
Other, please specify (Breakdown of Scope 3 emissions)	While Scope 1 allocation could be improved further through the use of life cycle analysis techniques to identify the specific impact of each production process, Scope 3 provides the largest challenge. Purchased goods and services is by far Biogen's largest area of impact and presents a significant challenge in attempting to allocate spend to individual production processes. We have not evaluated ways to overcome this challenge at the present time.

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.

Biogen plans to strategically conduct additional submetering as well as life cycle assessments for certain production processes to better understand their impacts. This may allow Biogen to shift from towards product and production specific allocations.

SC2.1

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

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 2020-2021 CDP Action Exchange initiative?

No

SC3.2

(SC3.2) Is your company a participating supplier in CDP's 2019-2020 Action Exchange initiative?

No

SC4.1

(SC4.1) Are you providing product level data for your organization's goods or services?

No, I am not providing data

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

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

Please confirm below

I have read and accept the applicable Terms