Takeda's 2022 TCFD Report

Aligned with the Task Force on Climate-Related Financial Disclosures (TCFD) Framework

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Contents

Executive Summary 3

Key Points in Response to TCFD Recommendations 3

TCFD Assessment Details 8

Governance 8

G.1 Board oversight of climate-related risks and opportunities 8

G.2 Management's role in assessing and managing climate-related risks and opportunities 8

Strategy 11

S.1 Description of climate-related risks and opportunities identified by the organization over time horizons (short-, medium-, and long-term) 11

S.2 Impact of climate on our business, strategy, and financial planning 12

S.3 Resilience of strategy to climate-related risks and opportunities 18

Risk Management 21

R.1 Climate Risk Identification 22

R.2 Climate Risk Management & Integration 22

Metrics & Targets 23

M.1 Measuring Risk Exposure 23

M.2 Greenhouse Gas Emissions 23

M.3 Targets 26

Looking Ahead 28

Legal Disclaimers 29

Appendix I: Definitions of Key Terms 30

Executive Summary

Climate change is undoubtedly one of the greatest challenges facing humanity. Should the increases in the frequency and severity of extreme weather events, rising ocean levels or the spread of vector-borne illnesses predicted by some models be realized, society will be impacted at every level. At Takeda, we recognize that climate change presents both risks and opportunities, not only to our business operations and supply chain, but to patients, our employees, and the communities where we operate. We are committed to consistently working to improve our operations and to mitigate risk so that we continue to meet our obligations to patients and other stakeholders. We also believe that companies should be transparent about business risks and support the Task Force on Climate-Related Financial Disclosures (TCFD) framework for assessing and disclosing climate change-related physical and transition risks and opportunities.

In accordance with the TCFD framework, Takeda undertook a climate risk and opportunities analysis in FY2020 (the "FY2020 Climate Risk Analysis") that included modeling three climate scenarios across calendar year 2030 and calendar year 2050 time horizons. It should be noted that approximately 90 percent of Takeda's direct operations (by asset value) and associated geographies were included within the scope of this initial assessment. Through this process, we were able to identify six climate-related risk categories with direct applicability to Takeda. While the climate and scenario modeling incorporated within this analysis were useful in providing directional representations of the future, we understand that modeling contains simplified assumptions and that predicted outcomes may differ materially from actual events. Accordingly, while we were able to assess all risk categories qualitatively, achieving an analysis providing quantifiable financial impact results of sufficient detail and accuracy for disclosure remains an ongoing task. In the future, we will be working to improve the data quality and accuracy of our models and expand the scope of the climate risk and opportunities analysis to include an assessment of potential impacts within our critical supply chain. Key findings have been summarized in this report as contemplated under the TCFD framework.

Key Points in Response to TCFD Recommendations

Takeda's Response to the Core Elements of Climate-Related Financial Disclosures

Governance**:** *Disclose the organization's governance around climate-related risks and opportunities*

> Takeda's Board of Directors (BOD) has ultimate responsibility for the administration of our affairs, including those related to business risk and financial disclosures. The BOD delegates decision-making authority in respect of the execution of operational matters to certain executive-level management committees, including the Business & Sustainability Committee (BSC) and the Risk, Ethics and Compliance Committee (RECC). The BSC is responsible for the oversight of Takeda's climate action strategy and associated goals/commitments. The RECC is responsible for oversight and decision matters related to Takeda's Enterprise Risk Management (ERM) Program, including mitigation plans for material risks, and the Global Monitoring Program. The BOD receives regular updates from the President and CEO, and management committees. The climate action strategy is operationalized and executed by Takeda's purpose-led environmental sustainability program - the Planet Imperative (described further below). The Planet Imperative is sponsored by, and accountable to, Takeda's Executive Team.

Strategy**:** *Identify, assess, and disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning*

> Based on the results of the FY2020 Climate Risk Analysis, Takeda has identified several applicable climate change-related risks and opportunities. Despite uncertainties in the climate and scenario modeling, we were able to arrive at a qualitative assessment of the potential

impacts of identified risks to better assess the possible significance to Takeda's operations. In the future, we will expand the scope of our climate risk analysis to include our critical supply chain. We will also continue incorporating climate risk into our business strategy and ERM Program to enhance business resilience.

The predicted extent of climate change impacts is very dependent on the scenario model applied. To demonstrate the stark contrast between an Aggressive Mitigation Scenario and a "business as usual" No Climate Action Scenario (see Table 2 for details), we have summarized the key findings of our FY2020 Climate Risk Analysis in Table 1 for predicted 2030 impacts.

While understanding the limitations of this initial assessment, Takeda believes that it is well positioned to address identified climate-related risks. While our facilities may face increased exposure to physical risks due to more frequent and intense extreme weather (e.g., extreme heat, wildfire conditions, and wet weather) particularly in No Climate Action Scenario, most of our operations are indoors and climate-controlled, which should help to mitigate worker productivity impacts. They are also generally located in urbanized areas not typically exposed to wildfires or flooding. **Accordingly, significant operational impacts related to climate change are not anticipated under any of the modeled scenarios prior to the 2030 time horizon**. Beyond 2030, model predictions are subject to significant uncertainty depending on the extent of the global response to counter climate change, and other natural and geopolitical factors. Accordingly, Takeda will work to improve modeling accuracy to the extent practicable and continue to monitor actual climate trends so that appropriate actions can be taken to address changes to physical risks as they are identified.

Takeda is also preparing to mitigate potential transition risks from energy and carbon pricing increases through our existing, ambitious climate action strategy. The following measures are key elements:

- Maintaining carbon neutrality from FY2020 (for FY2019 GHG emissions) through reducing greenhouse gas (GHG) emissions from our operations and procuring high-quality carbon offsets to address GHG emissions that cannot yet be eliminated. Takeda's carbon offset selection criteria and purchases are reviewed by an external review committee at least annually.
- Achieving a 40% reduction in GHG emissions related to our operations (i.e., Scopes 1 and 2) from FY2016 baseline by FY2025 and net-zero[1] greenhouse gas emissions for Scopes 1 and 2 before 2035.
- Achieving net-zero GHG emissions for our entire value chain (including currently estimated[2] Scope 3 GHG emissions) before 2040.
- Achieving 100% of purchased electricity as renewable (including Renewable Energy Certificates)
- Monitoring/commenting on pending climate-related regulation in local, regional, and national contexts as it applies to our global operations
- Partnering with peers and innovation leaders to identify and invest in promising low carbon energy technologies

Risk Management: *Disclose how the organization identifies, assesses, manages, and integrates climate-related risks*

[1] Takeda defines "net-zero" in accordance with the Science Based Targets initiative Corporate Net-Zero Standard
[2] A lack of transparency into, and a difficulty measuring, actual Scope 3 emissions remains an important challenge to overcome as part of these efforts.

Takeda has a robust, multi-layer, and multi-faceted ERM Program. This program provides a framework for identifying, measuring, responding to, reporting, and monitoring internal and external risks at all levels of the organization, including our supply chain. Climate-related physical and transition risks identified to date are addressed through our existing global and site risk management processes.

Takeda takes both a "top down" and a "bottom-up" approach for assessing and addressing climate-related risks. Takeda's top-down approach for any identified climate risks with potential company-wide impacts are addressed through the Planet Imperative and related governance. Site specific climate-related operational risks are identified through bottom-up escalations from site and facility level risk assessments, while supply chain risks are captured through supplier screening in our Third-Party Risk Management Program (TPRM).

As we embark on the next steps of our TCFD alignment journey, we will be looking for opportunities to fully embed the measurement and reporting of physical and transition climate-related risks into our overall ERM framework and financial planning processes.

Metrics and Targets**:** *Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities*

We have established a Climate Action Program to implement Takeda's climate strategy and to determine and track key performance indicators (KPIs) and metrics. Within the Climate Action Program, workstreams are focused on a variety of goals including minimizing direct, indirect and supply chain carbon emissions, increasing renewable energy investment and use, and supporting high-value carbon sequestration and removal projects while maintaining carbon neutrality across our supply chain. We are also cognizant of the potential for climate-related impacts on water resources and have implemented an internal water risk management program to identify operations in areas of high water stress and to mitigate associated risks to the extent practicable. A FY2021 subset of the metrics used to track progress on our climate strategy follows. For further details, see "M.2 Greenhouse Gas Emissions."

Category/Metric	FY2021 Data	3rd-Party* Verified
Greenhouse Gas Emissions (Thousand MTCO2e)		
Scope 1 Emissions	316	√
Scope 2 Emissions (Location Based)	283	√
Scope 2 Emissions (Market Based)	178	√
Estimated Scope 3 Emissions (all applicable categories)	4,462	√
Air Emissions (Metric Tons)		
Sulphur Oxides (SOx) and Nitrous Oxides (NOx) Emissions	115	√
Carbon Neutrality (for FY2020 emissions. FY2021 offsets will be purchased in FY2022)		
Percent Reported GHG Emissions Mitigated by Purchased Voluntary Emissions Reductions (VERs) and Renewable Energy Certificates (RECs)	100%** (for FY2020)	√

* Applicable FY20 Takeda environmental metrics data was verified by Apex Companies, LLC

** VERs and RECs purchases lag by one fiscal year due to the reporting schedule

Table 1: Summary of key findings from FY2020 Climate Risk Analysis (Aggressive Mitigation Scenario vs. No Climate Action Scenario)

Principal Risk/ Opportunity	Risk Type	Risk/Opportunity Description	Potential Impact Under Aggressive Mitigation Scenario	Potential Impact Under No Climate Action Scenario
Disease acceleration	Physical and Transition	Climate change will accelerate the emergence of disease, with the potential for regional and global disruption, creating both a risk and an opportunity for Takeda. The risk relates to the health of key stakeholders (patients, donors, and employees), and the opportunity relates to the potential for new products to prevent or treat these diseases or increasing demand for existing products.	Emergence and spread of disease will not be markedly different from present day. Takeda will continue to support the health and well-being of its key stakeholders, as well as invest in R&D for existing and potential future vaccines.	Diseases such as Norovirus will continue to have a global spread with infection rates increasing indirectly through climate change. Increased temperature and rainfall in select regions may increase cases of Dengue, Zika, and Norovirus, which could potentially impact Takeda's workforce, communities and plasma donors. These projected impacts may present an opportunity to expand Takeda's vaccine market.
Energy/Carbon pricing and policies *Policy & legal*	Transition	Energy costs and policies create both risks and opportunities for Takeda. Mandates and regulation of the energy markets affect Takeda's choices of energy sources ultimately impacting energy costs, including cost of operations and ability to meet GHG emissions reduction targets. Emerging carbon pricing policies may result in additional expenses for Takeda's direct operations and potentially pass-through costs from the supply chain, (e.g., transportation, distribution, production). The opportunity relates to Takeda's ability to reduce exposure and increase resilience through resource efficiencies and reduced GHG emissions.	Under an "aggressive mitigation scenario", low-carbon sources of electricity account for almost two-thirds of total generation worldwide. Under this scenario, overall energy prices would remain relatively flat while carbon tax expenses increase. Like other companies of similar size and energy footprint, Takeda could be exposed to significant cost increases – particularly related to carbon pricing schemes. Takeda's aggressive decarbonization strategy and timeline will help to mitigate this exposure and could provide a competitive business advantage.	Under a "no climate action scenario", the mix of commercially available energy sources will not shift at a significantly more rapid pace than today, making Takeda's GHG reduction targets potentially difficult to meet, particularly in developing markets. Overall energy prices are expected to increase while carbon prices remain relatively flat. Like other companies of similar size and energy footprint, Takeda could be exposed to significant energy cost increases. Takeda's aggressive energy demand reduction strategies would help to mitigate this exposure and could provide a competitive business advantage.
Direct operations risk *Acute and chronic*	Physical	**Acute** (e.g., wildfire, flood) and **chronic** (e.g., sustained higher temperatures, water stress) physical hazards can potentially disrupt Takeda's product R&D, manufacturing, and distribution. Because Takeda has a global footprint, its operations are potentially vulnerable to a spectrum of climate impacts. Takeda can act now to help ensure that all critical facilities and infrastructure are resilient against these potential risks.	Under this scenario, modeled effects of physical risks on operating expenses and productivity are limited, since climate change impact would be minimized. Some existing acute and chronic risks could be exacerbated by predicted increases in operating expenses to address more extreme heat days and the potential impacts of severe storms and flooding. Sites in Japan and Switzerland are projected to experience 11-27 more days spent in heatwaves annually. Sites in Switzerland, Ireland, and Germany are at highest risk of additional extreme wet weather days.	Under this scenario, modeled effects of physical risks on operating expenses and productivity are projected to result in higher exposure of assets. This is driven especially by predicted increases in physical exposure to extreme heat days, wildfires, and the impacts of severe storms and flooding. Sites in Austria, Brazil, Germany, Ireland, Japan and Switzerland are projected to experience 11-27 more days spent in heatwaves annually and face the highest change in number of severe fire weather days. Sites in Ireland, Germany, and Switzerland are projected to have at least a 13% increase in extreme rain days, with Ireland facing increased cyclone exposure as well.
Reputational impacts *Reputation*	Transition	Leaders in climate action experience reputational benefits, while high emitters do not. Patients, employees, healthcare providers, and other key stakeholders may decide to engage with, or avoid Takeda because of its position or performance related to climate change. Takeda's strong environmental sustainability commitment represents an opportunity in the area.	Significant societal push for emissions reduction, leading to high expectations placed on Takeda and other businesses. Takeda could lose access to capital and/or struggle to compete in the market of stakeholder expectations are not met. Conversely, there may be a benefit if patients, healthcare providers, investors and employees choose to work with Takeda because of its strong role and reputation for climate action.	Under this scenario, the world follows a path in which social, economic, and technological trends do not shift markedly from historical patterns. Expectations of Takeda will not drastically change from present day, and its existing climate targets will be sufficient for recruiting/retaining talent. Takeda's existing approach to ESG and associated disclosures will be sufficient to avoid reputational risk.
Impacts to the workforce	Physical and Transition	Under a "No Climate Action" scenario, Takeda's workforce may be directly or indirectly impacted through disease acceleration or forced migration. Leaders in climate action have reputational benefits that may attract or retain talent. The transition to a low-carbon economy can impact Takeda's ability to recruit and retain top talent, resulting from perceptions of Takeda's climate goals and associated progress.	No significant physical impacts identified under this scenario. Significant societal push for GHG emissions reductions, could lead to high expectations placed on Takeda. If Takeda doesn't keep pace with stakeholder expectations for climate action, higher talent turnover, reduced engagement, and an inability to attract talent could result. Conversely, Takeda strong commitment to climate action may create an opportunity to attract and retain talent.	The world follows a path in which social, economic, and technological trends do not shift markedly from historical patterns. Physical impacts of climate change will likely be increasingly visible, potentially leading to increased employee illness, absenteeism, and climate-induced displacement. Expectations of Takeda will not drastically change from present day, and its existing climate targets will be sufficient for recruiting/retaining talent – minimizing the potential for reputational impact.
Supplier risk	Physical and Transition	**Acute** and **chronic** physical hazards could disrupt the operations of Takeda's key suppliers including warehousing, shipping and raw materials, impacting Takeda's ability to meet customer needs and demands. Suppliers may also be impacted by transition risk, which could create pass-through cost increases or potential reputational risk for Takeda.	At present, supplier risk has been identified as a potential climate-related risk to Takeda; however, its impacts have yet to be quantified. We will continue to enhance our understanding of this impact in future.	At present, supplier risk has been identified as a potential climate-related risk to Takeda; however, these impacts have yet to be quantified. We will continue to enhance our understanding of potential impacts in future.

To date, we are on track to reach our Science-Based Target Initiative (SBTi)-approved GHG emissions reduction goals including achieving a 40% reduction (from 2016 baseline) in scope 1 and scope 2 GHG emissions by 2025 and net-zero emissions by 2040. We will be accelerating this goal during our next SBTI certification effort consistent with our recently announced commitment of achieving net-zero before 2035. We are also on track with implementing our strategy for working with our suppliers to adopt science-based reduction targets and expect that at least 2/3 of our currently estimated scope 3 emissions will be covered by science-based target by 2024. We are also working with our six manufacturing sites in highly-stressed watersheds to decrease water risk and we have set a company-wide goal to reduce freshwater withdrawals 5% (from 2019 baseline) by 2025.

Looking Ahead

Overall, Takeda believes that it has a strong understanding of the identified climate risks and opportunities under the selected climate scenarios. Although none of currently identified risks appears to be financially significant in the near term, we recognize that could change over time if society cannot alter the current climate change trajectory. Takeda also recognizes that this initial assessment is only the beginning of this process and that we must refine our assumptions and expand the scope of our climate-related risk assessment to derive the most benefit. We will continue working to increase our understanding of possible climate risk factors by improving the capabilities of our predictive models through the development of more comprehensive data sets and by expanding our assessment to include our critical supply chain. Most importantly, we will continue to do our part to strive for ambitious GHG emissions reductions with the acknowledgement that the best strategy to address climate-related risks is a proactive one.

TCFD Assessment Details

Governance

At Takeda, our purpose-led and values-based approach drives all our actions, decisions, and commitments across our Patient, People and Planet imperatives underpinned by Data and Digital. Our approach is integrated into how we do business – throughout our entire value chain from research and development (R&D) to product distribution – taking into consideration how our work affects our patients, people in the communities we serve, and the planet. Takeda acknowledges the significant challenges that accompany climate-related risk management as well as the importance of identifying opportunities to facilitate the transition to a low-carbon economy. As a result, we are incorporating climate-related risks and opportunities more fully into our existing governance structure. As we continue to refine our approach to climate risk management, our governance of these risks and opportunities may evolve as well.

G.1 Board oversight of climate-related risks and opportunities

Takeda's Board of Directors (BOD) has ultimate responsibility for, and oversees, the administration of our affairs, including those related to business risk, financial disclosures, and climate matters. The BOD delegates the responsibilities for decision-making with respect to some of the important business decisions to management under the Company's Articles of Incorporation. Relative to climate change, the Business and Sustainability Committee (which is a management committee responsible for corporate strategy and governance, purpose-led sustainability, and business development matters), and the Risk, Ethics and Compliance Committee (which is a management committee responsible for risk management, business ethics and compliance matters) play key roles. The BOD oversees and supervises the management's execution of these matters through regular committee reports. In addition, as of October 2021, the BOD has also been provided access to a regularly updated Corporate Philosophy Dashboard, which includes key climate-related performance indicators to monitor progress towards environmental sustainability goals and targets.

G.2 Management's role in assessing and managing climate-related risks and opportunities

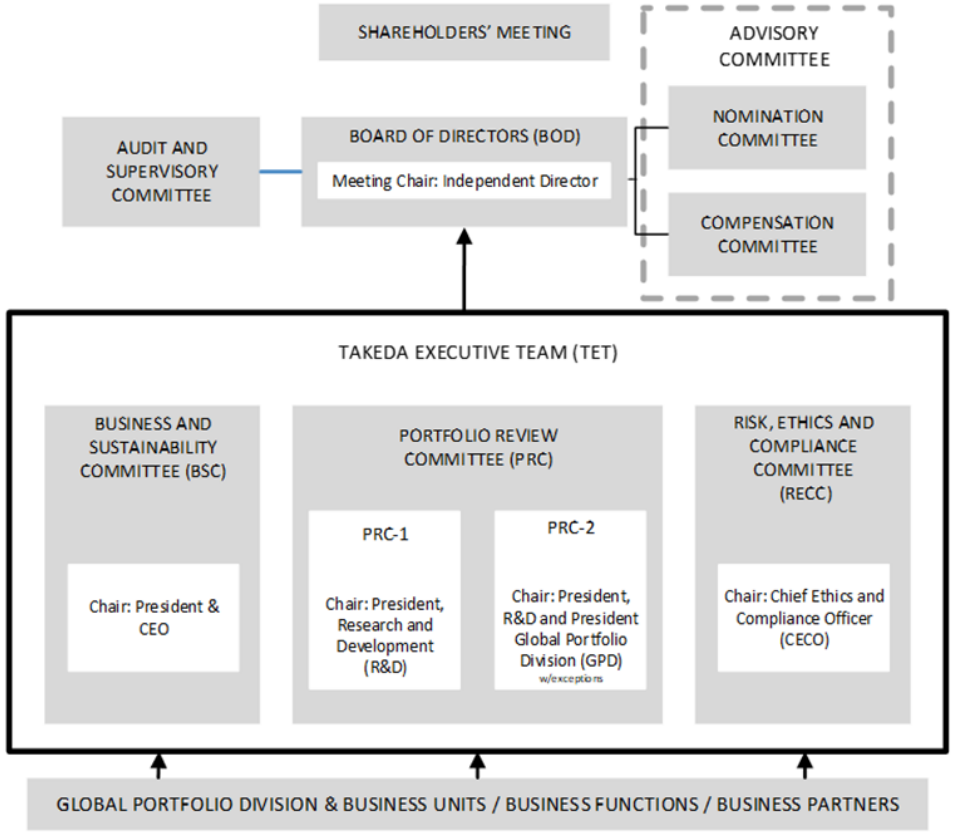
Executive-Level Governance

Takeda has two executive-level management committees responsible for corporate governance around climate-related issues: The Business and Sustainability Committee (BSC) and the Risk, Ethics and Compliance Committee (RECC) as shown in Figure 1.

1. The Business and Sustainability Committee (BSC) consists of Takeda Executive Team members (the quorum always includes the President and CEO, and CFO). The committee is chaired by the President and CEO and includes Takeda's Chief Global Corporate Affairs and Sustainability Officer. The primary responsibility of the BSC is to discuss and make decisions on important execution matters relating to corporate management and business development, including Takeda's climate action strategy and associated goals and commitments. The BSC (formerly the Business Review Committee) approved Takeda's Global Environment, Health & Safety Policy in FY2019, its Climate Change Position Paper in FY2020, and all externally communicated environmental sustainability goals to date. The BSC is also responsible for reviewing and approving this inaugural TCFD prior to release. The BSC currently meets approximately twice monthly.

2. The Risk, Ethics, and Compliance Committee consists of Takeda Executive Team members and is chaired by the Chief Ethics and Compliance Officer (CECO). The RECC is responsible for oversight and decision matters related to Takeda's ERM Program, including mitigation plans for material risks, and the Global Monitoring Program. The RECC meets approximately quarterly.

Figure 1: Takeda's governance structure



The Role of Our CEO

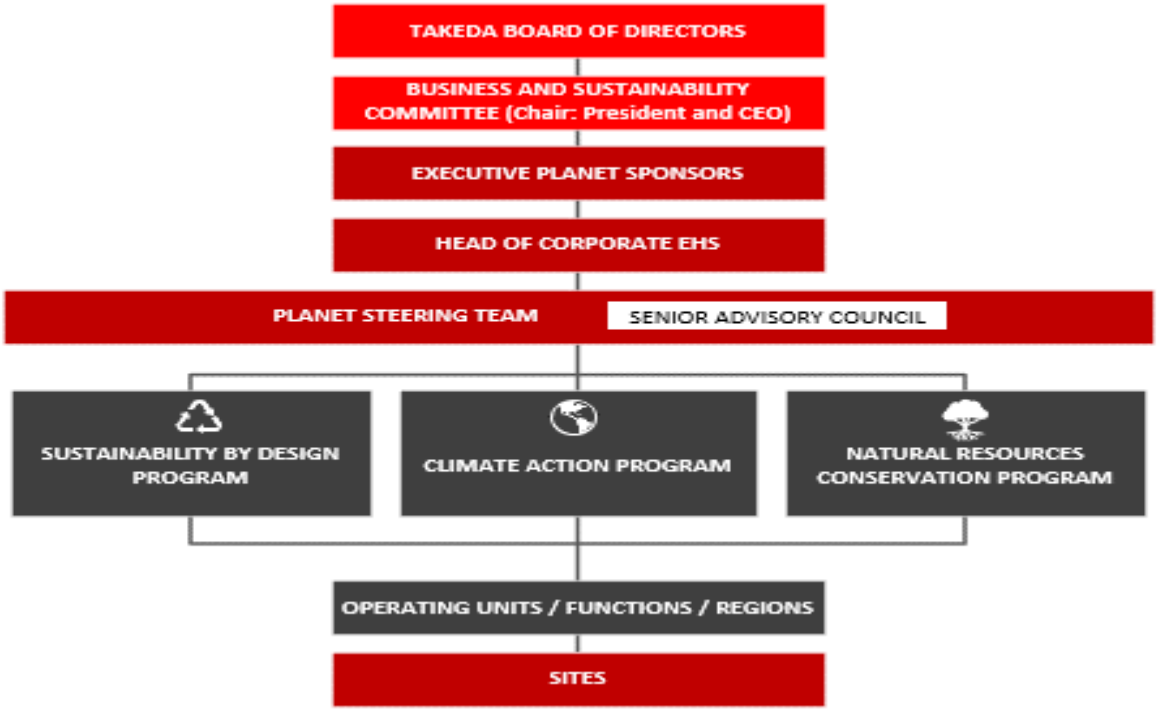
Strategic direction related to climate goals is a core priority for Takeda Executive Team. In 2019, our CEO took the lead in shaping the initial climate goal-setting effort for the Company and challenged the business to set aggressive and transparent climate-related goals. Our CEO validated and promoted Takeda's 2020 ambition to be 100% carbon neutral for our entire value chain and to achieve net-zero GHG emissions in our operations by 2040. He continues to drive for acceleration of Takeda's climate targets recently announcing Takeda's intention to achieve net-zero for our scopes 1 and 2 emissions before 2035 and for our entire value chain before 2040. Additionally, our CEO continues to be a climate champion on the world stage through active participation in multiple forums focused on climate change, including the World Economic Forum's CEO Climate Leaders organization.

Planet Imperative Governance

Takeda's purpose-led environmental sustainability program is called the Planet Imperative and represents our strong commitment to harness our unique capabilities to deliver a high standard of environmental leadership that protects our planet's natural systems and human health. Initiatives under the Planet Pillar are sponsored by two members of the Takeda Executive Team: The Global Manufacturing Supply Officer (GMSO) and the President of Takeda's Global Oncology Business. The Executive Co-Sponsors advise on strategy, ensure leadership engagement and report directly to the CEO. The GMSO oversees the Corporate Environment, Health, and Safety function, which includes the Environmental Sustainability Team. The GMSO also oversees and is responsible for Takeda's manufacturing network, which is a major contributor to Takeda's environmental footprint, including Scopes 1, 2, and 3 GHG emissions.

The Planet Imperative currently consists of three programs dedicated to various aspects of environmental sustainability (see Figure 2):

Figure 2: Takeda's Planet Imperative governance structure



- The Sustainability by Design Program, which focuses on integrating life cycle thinking within product design to minimize environmental footprint across our value chain.
- The Natural Resources Conservation Program, which focuses on reducing direct environmental impacts from our operations.
- The Climate Action Program, which focuses on implementing and operationalizing Takeda's climate strategy to minimize GHG emissions throughout our value chain.

The Planet Steering Team is led by the Global Head of Environmental Sustainability and Risk and responsible for the oversight of these programs. Program Leaders track progress and report milestone status and key performance indicators to the Senior Advisory Council and the Planet Steering Team monthly. Senior Advisory Council members are assigned to each program and are

responsible for clearing obstacles and facilitating implementation of program elements to achieve Planet goals. The Planet Steering Team reports to the Executive Co-Sponsors at least quarterly and elevates issues to the BSC as appropriate.

Strategy

S.1 Description of climate-related risks and opportunities identified by the organization over time horizons (short-, medium-, and long-term)

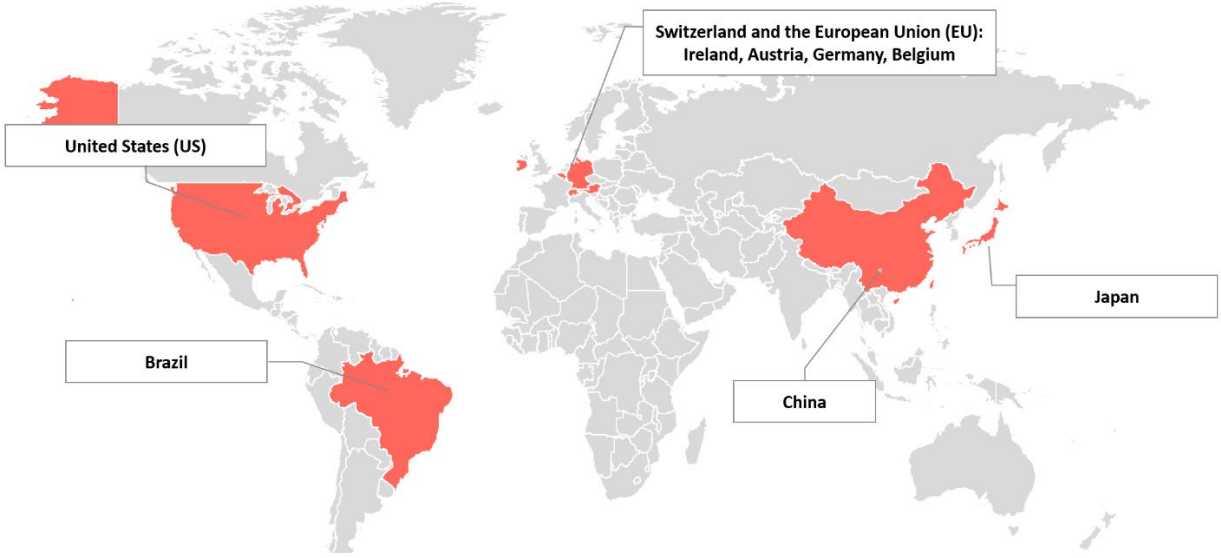
Takeda's FY2020 Climate Risk and Opportunity Analysis

Takeda recognizes that climate change generates societal risks and opportunities and that the associated impacts must be identified and proactively managed to minimize negative effects on society while responsibly capitalizing on opportunities. Understanding the potential relevance and impact of climate-related risks and opportunities over the short-, medium-, and long-term, Takeda has taken action to identify them through a third-party executed FY2020 Climate Risk Analysis. Through this analysis of our direct operations, we identified several potential climate-related risks and opportunities in alignment with the recommendations of the TCFD.

Time Horizon, Region, and Scenario Selection

Under the FY2020 Climate Risk Analysis, we considered two time horizons: 2030 and 2050. We assessed existing and emerging climate-related risks and opportunities to our business, strategy, and financial planning across nine key business regions, over each time horizon. The nine regions in scope (see Figure 3) constitute approximately 91% of Takeda's owned and leased assets by property value: United States, Brazil, Switzerland, EU (Ireland, Austria, Belgium, Germany), China, and Japan.

Figure 3: Regions considered in Takeda's FY2020 Climate Risk Analysis



We also identified and evaluated our operational climate-related risks under three internationally accepted climate scenarios as selected by a third party consultant: *Aggressive Mitigation, "Middle of the Road" Mitigation, and No Mitigation* as shown in Table 2. These models varied based on the level of predicted global response to mitigate the effects of climate change.

Table 2: Description of climate scenarios considered in our FY2020 Climate Risk Analysis

	Aggressive Mitigation	Middle of the Road Mitigation	No Mitigation
Transition risk scenario	International Energy Agency-World Energy Outlook (IEA WEO) Sustainable Development Scenario (SDS)	Stated Policies Scenario (STEPS) [2020 IEA WEO]	Current Policies Scenario (CPS) [2019 IEA WEO]
Physical risk scenario	Intergovernmental Panel on Climate Change Representative Concentration Pathways (IPCC RCP) 2.6	IPCC RCP 4.5	IPCC RCP 8.5

We note that the global mean surface air temperature change by the end of the 21st century (2081-2100) associated with RCPs 2.6, 4.5, and 8.5 is 1.0°C (likely range 0.3-1.7°C), 1.8°C (likely range 1.1-2.6°C) and 3.7°C (likely range 2.6-4.8°C), respectively, according to the IPCC's Fifth Assessment Report, Summary for Policymakers

Risks and Opportunities Identified for Selected Time Horizons

By reviewing industry practices and climate publications, conducting peer benchmarking, and engaging with internal stakeholders across geographies and business functions, we identified six risk categories and associated opportunities across the two time horizons and nine geographies. The risks/opportunities identified, and their descriptions are presented in Table 3.

S.2 Impact of climate on our business, strategy, and financial planning

After identifying and characterizing the most applicable risk and opportunity categories potentially facing Takeda due to climate change, we modeled potential future impacts to our business under select scenarios and time horizons. As previously noted, these models use simplified assumptions and there was a wide range of predicted outcomes based on various model inputs. While the continued improvement and refinement of the model will be an ongoing project, the modeling effort did provide valuable insight into the potential severity of impacts to which Takeda could be exposed under various climate scenarios. This insight will allow us to take appropriate action to limit our exposure while potentially capitalizing on opportunities presented.

While supply chain risk was identified as being potentially significant through this initial process, we have not yet fully assessed or quantified the potential impact of suppliers' climate-related risks on our business but will do so in the future. We have detailed our methodologies for analyzing impacts related to each identified risk in Table 4.

Potential Impacts from Transition Risks and Opportunities

Based on the globally consistent data available today, we believe we have a strong understanding of how climate policy and associated risks might impact our financial planning. Preliminary, explorative estimates of expected trends in energy costs and policies and carbon pricing and policies have provided a qualitative, directional assessment of risk exposure, and we intend to pursue further improvement and refinement of the model and associated results. Our findings on the potential impacts of transition risks on our business are summarized in Table 5.

Table 3: Description of Takeda's risks and opportunities identified and analyzed in the FY2020 Climate Risk Analysis

Identified risk	Type of risk	Risk / Opportunity description
Disease acceleration	Physical and Transition	Climate change is accelerating the emergence of some diseases, with the potential for regional and global disruption, creating both a risk and an opportunity for Takeda. The risk relates to the health of key stakeholders (e.g., employees and their families, key suppliers, plasma donors, etc.) and the opportunity relates to the potential for new products to prevent or treat these diseases or increasing demand for existing products.
Energy/Carbon pricing and policies *Policy & legal*	Transition	Energy costs and policies create both risks and opportunities for Takeda. Mandates and regulation of the energy markets affect Takeda's choices of energy sources ultimately impacting energy costs, including cost of operations and ability to meet GHG emissions reduction targets. Emerging carbon pricing policies may result in additional expenses for Takeda's direct operations and potentially pass-through costs from the supply chain, (e.g., transportation, distribution, production). The opportunity relates to Takeda's ability to reduce exposure and increase resilience through resource efficiencies and reduced GHG emissions.
Direct operation risk *Acute and chronic*	Physical	**Acute** (e.g., wildfire, flood) and **chronic** (e.g., sustained higher temperatures, water stress) physical hazards can potentially disrupt Takeda's product R&D, manufacturing, and distribution. Because Takeda has a global footprint, its operations are potentially vulnerable to a spectrum of climate impacts. Takeda can act now to help ensure that all critical facilities and infrastructure are resilient against these potential risks.
Reputational impacts *Reputation*	Transition	Leaders in climate action experience reputational benefits, while high emitters do not. Patients and healthcare providers, investors, and other stakeholders may decide to engage with or avoid Takeda because of its position on climate change, or climate-related commitments. Takeda's strong environmental sustainability commitment represents an opportunity in the area.
Impacts to the workforce *Reputation*	Transition and Physical	Perceptions of Takeda's climate strategy, goals and associated progress c.an impact Takeda's ability to recruit and maintain top talent. Perceived leaders in climate action may better attract or retain talent. While the primary focus is on transition risk, potential physical impacts on our workforce must also be considered.
Supplier risk	Transition and Physical	**Acute** and **chronic** physical hazards could disrupt the operations of Takeda's key suppliers including warehousing, shipping and raw materials, impacting Takeda's ability to meet customer needs and demands. Suppliers may also be impacted by transition risk, which could create pass-through cost increases or potential reputational risk for Takeda.

Table 4: Methodologies for analyzing the impact associated with each principal risk category (supplier risk is not included)

Identified risk/ opportunity	Risk Assessment Methodology
Disease acceleration *Market*	Leveraged metrics associated with extreme heat, total annual rainfall, and humidity. These were combined with socioeconomic factors to understand the overall impact (e.g., some locations that are projected to experience greater incidence of Norovirus due to climate change are also likely to experience impacts associated with climate migration, such as population crowding or displacement). Factors assessed under scenario considering our vaccine products under development, future projections for the prevalence of Dengue, Zika, and Norovirus, and a literature review of the impacts of climate change on public health.
Energy/Carbon pricing and policies *Policy & legal*	Analyzed the impact of potential energy policies through a review of Nationally Determined Contributions (NDCs), current and potential future climate policies by region, and carbon market mechanisms for select geographies. The outputs generated from this qualitative analysis include the geographical climate policy summary and climate-related transition risk impacts for Takeda's key regions, by scenario. Calculated the potential annual cost of carbon emissions and energy consumption to our business based on projections for future emissions/consumption.
Direct operations risk *Acute and chronic*	Assessed the exposure and potential financial impact of the most prominent physical climate-related risks to Takeda, including extreme heat, wet weather extremes, sea level rise, wildfires, and water stress. Each risk was assessed under three scenarios: IPCC Representative Concentration Pathways (RCPs) 2.6, 4.5, and 8.5. The data underlying our physical risk assessment includes the IPCC Fifth Assessment Report, historic and future projections from ten CMIP5 global climate models, peer-reviewed scientific journal publications, and datasets from NASA, The Global Facility for Disaster Reduction and Recovery, the World Resources Institute, and others.
Reputational impacts *Reputation*	Conducted stakeholder engagement through interviews and surveys combined with literature review, assessment of current trends, pressures, expectations of companies to address climate change, and research on managing reputational risks.
Impacts to the workforce *Reputation*	Sought to better understand our potential workforce impacts related to transition risk and the physical impacts of climate on our workforce, through collecting stakeholder perspectives, literature review, assessment of current trends and expectations of companies to address climate change, climate-related displacement and migration, and country-level readiness to address climate change.

Table 5: Summary of potential impacts from transition risks to Takeda under each scenario

Identified transition risk	Aggressive Climate Action	Middle of the Road Mitigation	No Climate Action
Disease acceleration *Market*	Under an Aggressive Climate Action scenario, no marginal financial impacts to Takeda were identified for the selected time horizons.	Projected changes in temperature, humidity, rainfall and extreme weather events will likely lead to higher incidence of Norovirus, Dengue and Zika. An additional 900 million people are projected to be exposed to Zika year-round and 2.5B people at least one month per year.	Projected changes in temperature, humidity, rainfall and extreme weather events will likely lead to higher incidence of Norovirus, Dengue and Zika. An additional 2.25 billion people are projected to be at risk of infection with Dengue. The global population at risk for Zika is projected to increase to 2.7B people.
		Indirect impacts for both the No Climate Action and Middle of the Road Mitigation include changes in donor base for plasma donations or clinical trials, if donors are unwell, prohibited from participating, or are unable to access donation centers, or trial participants stop participating. This has the potential to impact Takeda's Plasma Derived Therapies revenue segment. The underlying benefit is a projected increased demand for our existing and potential future vaccine products.	
Energy/Carbon Pricing and Policies *Policy & legal*	By 2030, low-carbon sources of electricity account for almost two-thirds of total generation worldwide, allowing Takeda to meet its targets and keep energy costs low. By 2050, low-carbon sources of energy are abundant and affordable, which Takeda benefits from-both from a cost and climate-target perspective. Carbon prices range from $43-$63/ton (2030).	By 2030, current carbon pricing and Emissions Trading Scheme (ETS) initiatives remain limited to EU, China, and Japan. Prices remain low leading to minimal cost impacts on Takeda and making it easier to meet Takeda's targets. By 2050, carbon pricing is slowly adopted by more jurisdictions globally, yet price levels remain modest. Carbon prices range from $17-$34/ton (2030) and $35-52 (2050).	Under a No Climate Action scenario, no marginal financial impacts to Takeda were identified for the selected time horizons.
Reputational impacts *Reputation*	We recognize that there will be increased societal pressure for emissions reductions and Takeda places great focus on assuring we remain on path to carbon reduction targets to ensure our competitive advantage in the market.	Meeting our 2040 climate commitments earlier than anticipated will be a top priority. Physical impacts will be visible and continually monitored/managed through ERM. Stakeholder demands for ESG disclosure will increase, and Takeda will continue to make progress and communicate on sustainability and ESG concerns.	By 2050, we expect that Takeda's current 2040 GHG reduction targets and that these targets will have met the climate leadership expectation of current/potential talent. Takeda will have an enhanced brand, reputation, competitive advantage, access to capital, and relationships with stakeholders if we are able to position ourselves as a sustainability/ESG leader in our industry.
Impacts to the workforce *Reputation*	There will be a significant societal push for corporate emissions reductions, leading to high expectations that can manifest into an increased risk of talent turnover and reduced engagement as a result of increasing focus on climate action by the younger generations. The results of our FY2020 Climate Risk Analysis highlighted opportunities for Takeda's workforce if adequate mitigation is achieved.	Under both the No Climate Action and Middle of the Road Mitigation scenarios, we can expect that leaders in climate action have reputational benefits that may attract or retain talent. The transition to a low-carbon economy can impact Takeda's ability to recruit and maintain top talent, resulting from perceptions of Takeda's climate goals and associated progress. Climate-related physical impacts such as climate-related injuries or diseases will remain visible and significant through the world and could impact workforce productivity due to illness/absenteeism. Climate-related diseases could also increase the spread of disease among our workforce/communities and decrease ability to access care. Takeda's response to employee's needs could further enhance or negatively impact our reputation.	

Potential Impacts from Physical Risks and Opportunities

To characterize potential impacts from physical risks and opportunities across our global asset portfolio, we leveraged peer-reviewed literature to estimate the financial consequences of climate change on our operational expenses and productivity losses across select scenarios and time horizons. In the future, we plan to expand our analysis to include physical impacts to our supply chain. Under all three climate scenarios, the potential impacts related to extreme heat, water scarcity, and disease acceleration appear to be more significant to our business than wet extremes, wildfire, and sea level rise. The potential impacts of each hazard to our operations are summarized in Table 6 as general events that could impact our facilities worldwide, depending on location, facility preparedness, climate scenario, and time horizon.

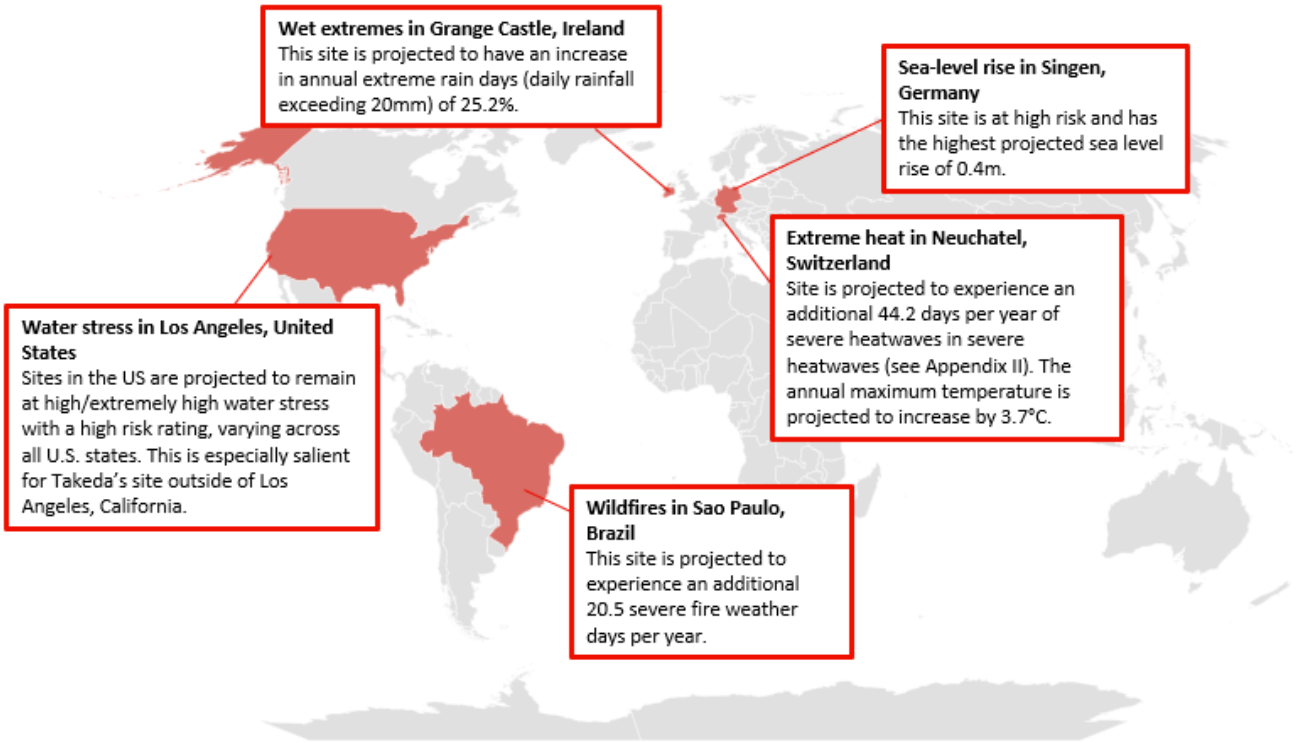
Table 6: Summary of potential impacts from physical risks to Takeda under all scenarios

Physical hazard	Potential Impact to Takeda's Global Assets
Extreme Heat **Wet Extremes** **Wildfire**	• Operational disruptions (e.g., office closure, facility repairs, lost work time) may manifest in lost revenue • Changes in the frequency and/or severity of extreme weather events can lead to increased structural damages to Takeda's assets, increased insurance premiums, interruption of supply chain operations, increased utility and energy costs, and declining property value, which may lead to significant financial, reputational and workforce safety impacts. • Disruptions to shipment and delivery of time and temperature-sensitive products • Increased emissions due to increased energy consumption for cooling, which could prevent Takeda from reaching stated climate goals and targets • Decreased productivity and absenteeism of workforce within labs, manufacturing, warehouses and distribution centers where employees could be most impacted by extreme heat • Major risk in key product manufacturing in coastal regions (e.g., Japan) due to increased frequency and intensity of typhoons
Water (Manufacturing and Lab sites only)	• See the Spotlight on Water Stress section for the results of our site-specific analysis
Sea Level Rise	• Sea level rise at coastal sites may require us to proactively harden (or potentially relocate) facilities and operations to ensure resilience.

Disclaimer: *Future climate model projections are intended to give insight into the expected trends for different regions where Takeda operates. Further analysis of climate change data and orographic conditions needs to be considered at a site-level to understand specific risks related to assets, infrastructure and operations. All global climate models (GCMs) are from the Coupled Model Intercomparison Project Phase 5 (CMIP5) that are published in the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5). These are the most widely used global climate models and model selection ensures a widespread are captured in results.*

Future physical risks at all 190 Takeda sites were modeled during the FY20 Climate Risk Analysis. Figure 4 highlights a sample of particularly relevant locations, as these represent a selection of sites that are projected to experience significant changes in the longer term if model prediction prove true.

Figure 4: Map of select Takeda manufacturing and lab sites with potential impacts due to physical climate-related risks



Spotlight: Water stress impacts on manufacturing and R&D sites

As our manufacturing and R&D sites have needs for high water quality and consistent supply, we determined that water risk is an important area for which we need to develop an in-depth understanding of potential operational impacts. As such, we conducted an analysis of water stress impacts on all manufacturing, R&D, and large hub office sites in FY2019 to identify the highest risk sites to prioritize our risk mitigation efforts. We aim to repeat this assessment every 3-5 years going forward to fine tune our understanding of water stress impacts and track changes over time.

Step 1: Cross-reference data from two globally accepted water risk models, the WRI Aqueduct (Current Risk and 2030 RCP 8.5) and the WWF Water Risk Filter (Basin Risk) to identify sites in areas most affected by water stress. In cases where models disagreed significantly (e.g., low risk vs. moderate or high risk), these sites were excluded from the list of highest risk locations unless other data from local sites supported a high risk rating.

Step 2: Incorporate site-level water stress surveys with feedback and insights from Takeda staff to compare local perspectives to model results.

Step 3: For those sites considered “high” or “very high” risk, examine research performed by local subject matter experts and leverage GIS mapping tools to include more granular aspects related to each location such as trends of water availability, quality, accessibility, political/regulatory aspects, and reputational elements that affected water stress factors at each site.

Based on the findings of this analysis, we arrived at a final set of six highest priority manufacturing sites at risk for water stress in the near-term: Tianjin (China), Bekasi (Indonesia), Pisa (Italy), Naucalpan (Mexico), and Los Angeles and Thousand Oaks (USA). As such, we are focusing our water risk mitigation initiatives at these sites, including investing in upgrades for more water efficient equipment/machinery, increasing water treatment and recycling, and ensuring sharing of best practices. We are also continuing to monitor water-related risks at all sites through our annual environmental aspect, impacts and opportunities assessment as part of our EHS Management System to ensure visibility and resiliency.

S.3 Resilience of strategy to climate-related risks and opportunities

Takeda is continuing to take a proactive stance on building resilience towards climate-related risks and opportunities identified. To prepare for the previously mentioned impacts associated with the transition and physical risks, Takeda has identified strategies for continued operational success. We are investing in areas such as vaccine research and development to address projected disease acceleration and we are developing energy efficiency and renewable energy strategies to reduce GHG emissions. The spotlight below highlights the significant investment we have made in decarbonizing our value chain.

Spotlight: Decarbonizing our value chain

Takeda is making focused changes in distribution and logistics to meet our emissions reduction goals. This has the additional benefit of mitigating future risk of increased cost of carbon. Takeda is shifting from high-carbon emitting aircraft and roadway transport to low-carbon emitting ship and rail transport modes. Changes are currently taking place in our key geographies including Japan, Europe, and Latin America with our Air2Sea and Road2Rail programs, and we are working to expand the workstream globally.

Our commitment to achieving carbon neutrality through the procurement of renewable energy and verified carbon offsets has added costs of approximately $1.5 billion JPY (approximately $13MM USD) per year as of FY21. In the short term, these costs will likely increase based on the trajectory of the carbon offsets market. However, these costs are expected to decline over time as our reliance on carbon offsets decreases and we approach net-zero before 2040.

We are adopting new ways to assess the carbon impacts of projects using new tracking tools to measure the performance of sites toward global GHG reduction targets and to help decision-makers assess the potential carbon impact of various investment decisions.

We continue to find ways to strengthen our business resilience strategy and ensure our climate change preparedness. Our key focus areas include:

- Monitoring evolving carbon and energy prices and policies and evaluating the potential implications on Takeda's operations. Our main priority areas are Japan, the US, and the EU as these are the main regions where policies and incentives are forecasted to become increasingly aggressive.
- Assessing the decarbonization technology pathways to assist in decarbonizing operations, achieving targets, and assessing cost of carbon abatement. This provides us with the opportunity to determine least cost of carbon abatement pathways and delivery schedules, therefore reducing financial exposure.
- Expanding Scope 3 GHG emissions reduction efforts through engaging with suppliers on shared energy transition and decarbonization initiatives.
- Formalizing climate risk integration within existing ERM procedures.

Addressing Transition Risk Resilience

In addition to our decarbonization strategy, we are strengthening our resilience to other risks and opportunities including disease acceleration, energy/carbon costs, reputational impacts, and workforce impacts. In Table 7, we describe in detail the approach taken to create resilience for these risks.

Table 7: Resilience of Takeda's strategy to address transition risks and opportunities

Identified transition risk	Resilience of Takeda's strategy to address transition risk/opportunity
Disease acceleration *Market*	• We are significantly investing in research and development through the launch of our global "Access to Medicines" strategy and participating in the WIPO Research Consortium (promoting R&D for treatments and vaccines for neglected tropical diseases such as Zika, Dengue, and Norovirus). • We are participating in Global Health Innovative Technology Fund (GHIT Fund) to leverage activities (including drugs, vaccines, and diagnostics) for the acceleration of Japanese innovation to combat infectious diseases in the developing world.. • We are continuing our commitment to strengthening healthcare platforms in developing countries predicted to be more severely affected by the impacts of climate change and developing support for disease mitigation at the country-level through "Our blueprint for Innovative Health Care Access" and "Bridges to Development" CSR programs. • We also monitor the well-being of our workforce focusing on preventing lifestyle diseases, supporting early detection and treatment of cancer, responding to health issues unique to women, and supporting mental health.
Energy/Carbon Pricing and Policies *Policy & legal*	• We have incorporated controls in the current climate action strategy to lessen impacts of carbon and energy pricing and to meet our renewable energy goals including setting science-based GHG reduction and supplier engagement targets, switching to on-site or off-site renewable energy, purchasing voluntary Renewable Energy Credits (RECs) or carbon credits where emissions can't be eliminated, and obtaining ISO 40001 certifications for manufacturing sites.
Reputational resilience *Reputation*	• We proactively mitigate reputational risks through aggressive climate action, and we will continue to maintain progress toward our carbon reduction targets, monitor climate disclosure trends and investor concerns, report on climate risk transparently, and monitor peer climate actions. We also partner with external third parties to address water stress in high-risk areas.
Workforce resilience *Reputation*	• Our analysis showed that while employee displacement is more likely to happen in markets with a low adaptive capacity to climate change, Takeda's markets generally follow a trend toward global-average climate readiness.

Addressing Physical Risk Resilience

Currently, severe weather planning is integrated in Takeda's risk assessment and mitigation process. Takeda experienced the effects of extreme weather events firsthand during the 2017 hurricane season when hurricanes Harvey, Irma, and Maria negatively impacted logistics and product sales in affected market areas, such as Puerto Rico. As a result of the Covid-19 pandemic and associated regulatory and logistical challenges, our approach to enhanced supplier relationships was tested. In these situations, and Takeda was able to work closely with our critical suppliers and leverage our supplier network to ensure that our commitments were met, thereby demonstrating our resilience to unforeseen challenges.

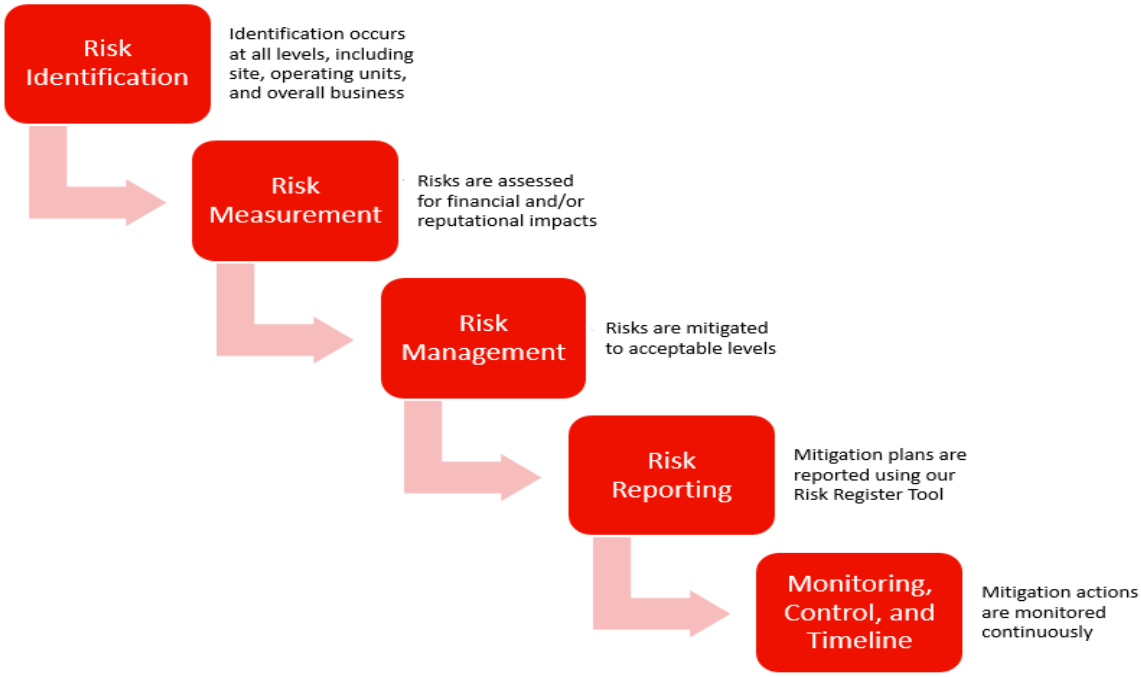
Costs to manage identified physical risks are assessed for each project and incorporated into Takeda's financial planning cycle. As an example, Takeda's Hikari, Japan, manufacturing site is in a coastal area with severe weather and flooding risk (likely to be exacerbated in the future by climate change and associated sea level rise). Through the site risk management process, the risk was deemed high enough to warrant the construction of a fortified barrier to mitigate the flooding risk to an acceptable level. Accordingly, funding was allocated, and the barrier was constructed in 2017. We recognize that we can still improve by specifically targeting physical climate risk and fully incorporating it into our strategic decision making. The outcomes from the FY2020 Climate Risk Analysis allowed us to deepen our understanding of how we could be impacted, and we are building on this understanding to inform our future resiliency efforts.

To mitigate the potential for the rise of severe physical risks, we are doing our part to aggressively reduce our carbon footprint through energy and water conservation efforts and through transitioning to renewable energy. To address potential physical risks, we can proactively modify or relocate facilities and operations. We can also take aggressive actions to decrease water dependence while working within our communities to mitigate water source stress. To mitigate the potential for physical risk in our supply chain, we screen key suppliers for climate change-related risks to ensure that unacceptable risks are not assumed through our supply chain. Suppliers identified as high risk may be subject to additional auditing or rejection if the risks are not adequately addressed.

Risk Management

At Takeda, risk management has been central to our continued operation and leadership in providing lifesaving medications to patients, supporting sustainable healthcare systems, and addressing unmet medical needs. Our ERM procedures present a standardized approach for identifying, measuring, responding to, reporting, and monitoring internal and external risks that may materially impact Takeda's financial condition or reputation. As climate change has progressed, we have responded by integrating the assessment of climate risks and opportunities throughout our existing ERM system.

Figure 5: Flow of Takeda's risk management process



R.1 Climate Risk Identification

Risk identification is the first step of our ERM procedures. Takeda assesses risks through both "bottom-up" and "top-down" perspectives to capture risks at all levels of our organization. Ultimately, climate-related risks are identified in the same manner—through our existing top-down and bottom-up ERM processes.

The bottom-up process starts with Takeda facilities or "sites" identifying and assessing physical, supply chain, and other risks on at least an annual basis. Physical and transitional climate-related risks are also discussed during annual EHS reviews, including site-level aspects, impacts and opportunities and/or facility and infrastructure assessments. Climate-related supplier risks are identified and assessed as part of Takeda's Third-Party Risk Management Program.

The "top-down" approach begins with strategic imperatives and climate milestones determined by the Board of Directors and CEO and cascaded to affected business units and functions. Affected business units and functions are responsible for discerning, addressing or escalating risks at each level when developing implementation plans. Lastly, any identified risks with the potential for material impacts are escalated to the RECC for review and incorporation into the approved risk register.

R.2 Climate Risk Management & Integration

Prior to FY2020, Takeda largely relied on established and operational risk management processes to address physical and other risks that could be faced by individual sites or the Company as a whole. Climate risk was peripherally assessed as part of these established processes, but not formally integrated into our ERM Program. As a global company, adjusting our ERM Program requires a staged implementation along with a solid foundation of empirical research. After conducting our FY2020

Climate Risk Analysis, we gained necessary insight and have begun the process of formally integrating climate considerations to best respond to climate risks and opportunities.

Metrics & Targets

Metrics and targets are essential to our climate strategy. Without aggressive targets, it is likely that we would not challenge ourselves to achieve so much. Without metrics, we could not assess our performance or demonstrate progress toward these targets. They enable us to quantify our climate risk exposure, create better systems of managing risk, and monitor the effectiveness of our corrective and preventative actions. Further, targets can be cohesively and transparently integrated into our strategy and governance - including the potential for linking them to management compensation. As we expand the scope of our climate strategy, we are keen to explore additional metrics that will help drive performance and accurately capture the impact of strategy and resilience measures taken.

To achieve Takeda's targets, the Planet Steering Team has established three programs and dedicated cross-functional workstreams to develop and implement strategy. Tracking key milestones and metrics inform the implementation strategy and ensure that we can measure progress toward our GHG emissions, water withdrawal, and energy efficiency goals (see Table 8) and act, as appropriate, to course correct. These metrics are tracked and reported internally monthly, then compiled, third-party verified and reported externally annually in our Annual Report.

M.1 Measuring Risk Exposure

In the FY2020 Climate Risk Analysis, we qualitatively assessed assets at risk from physical and transition impacts of climate change for each of our nine key geographic regions using a climate model to understand our future exposure. While the model remains subject to refinement and improvement, the results were useful in directionally aligning our climate risk mitigation strategy and priorities.

M.2 Greenhouse Gas Emissions

Takeda has made reducing GHG emissions a top priority. We met our 2020 environmental goals ahead of schedule, including reducing GHG emissions by 33.7% compared to 2005 levels. In April 2020, we committed to being carbon neutral across our value chain each year beginning FY2019 by reducing GHG emissions, transitioning to renewable energy and procuring high quality renewable energy and carbon offsets for any remaining emissions. We have also set more ambitious targets. Specifically, we have pledged the following:

- To reduce Scope 1 and 2 GHG emissions by 40% (from 2016 levels) by 2025, and to be net-zero before 2035.
- To engage with our suppliers representing two thirds of our total currently estimated Scope 3 emissions to encourage them to adopt science-based GHG reduction targets, and to reduce currently estimated Scope 3 GHG emissions to achieve net-zero (from estimated 2018 levels) before 2040.

These targets and our current year progress, as measured in metric tons of CO_2e, are detailed in Table 8.

Table 8: Metrics gathered to assess current state and progress on environmental goals (FY2021)

Category/Metric	FY 2021	3rd Party Assured
Energy (Terajoules or percentages)		
Purchased Electricity (Non-Renewable)	1,780	√
Purchased Electricity (Renewable)	1,300	√
Onsite Generated Renewable Electricity	5	√
Percent Electricity Sourced as Renewable (not including purchase of RECs)	42%	√
Supplied Heating and Cooling	102	√
Fuel Consumption	5,100	√
Greenhouse Gas Emissions (Thousand $MTCO_2e$)		
Scope 1 Emissions	316	√
Scope 2 Emissions (location-based methodology)	283	√
Scope 2 Emissions (market-based methodology)	178	√
Estimated Scope 3 (all applicable categories)	4,462	√
Carbon Neutrality* (for FY2020 emissions. FY2021 offsets will be purchased in FY2022)		
Purchased Verified Emission Reductions (VERs)-Thousand $MTCO_2e$	4,657*	√
Purchased RECs-Terajoules	2,185*	√
Percent Reported GHG Emissions Mitigated by Purchased VERs and RECs	100%*	√
Air Emissions (Metric Tons)		
Sulphur Oxides (SOx) and Nitrous Oxides (NOx) Emissions	115	√
Water (Thousand Cubic Meters)		
Water Withdrawal	11,300	√
Water Withdrawal in Areas with High or Extremely High Water Risk	1,090	√
Wastewater Discharged	8,580	√
Water Consumed	2,710	√
Water Consumed in Areas with High-Extremely High Water Risk	165	√
Waste (Metric Tons or percentages)		
Total Waste Generated	87,300	√
Percent Waste Diverted from Landfill (Recycled, Incinerated, Other)	79%	√

* The purchase of VERs and RECs lag by one fiscal year due to the reporting schedule.

Takeda uses the operational control approach to determine organizational boundaries for GHG emissions data. As defined by the GHG Protocol Corporate Accounting and Reporting Standard (GHG Protocol), "the company has operational control over an operation if the former or one of its subsidiaries has the full authority to introduce and implement its operating policies at the operation", (World Resources Institute, 2016).[3] Also in accordance with the GHG Protocol, total emissions are reported for CO_2, CH_4, N_2O, and HFCs using the IPCC Fifth Assessment Report (AR5) 100-year Global

[3] These operations cover owned properties, which include manufacturing sites, research and development facilities, plasma collection centers, office spaces, and warehouses, but do not include residential properties, land (independent of space, i.e., botanical garden) or parking areas. With respect to leased properties, Takeda applies International Financial Reporting Standard (IFRS) 16 to assess whether it has operational control of such properties. Additionally, Takeda excludes from its emission reporting new site construction until the site is under Takeda's operating control, unless Takeda is contractually responsible for emissions prior to possession. With respect to vehicle emissions, Takeda relies on actual fuel usage or, if fuel usage data is unavailable, estimates usage based on the distance driven and average fuel economy figures.

Warming Potentials to calculate CO_2 equivalent (CO_2e) data and have been third-party verified by Apex Companies LLC.[4]

Table 9: Emissions data from base year, current year, and progress towards goals for each type of GHG scope emissions

Emissions Scope	Base Year (metric tons of CO_2e)	FY2021 (metric tons of CO_2e)	Progress	Goals
Scope 1	317,922 (2016)	316,000	0.6% reduction	2025: Reduce total scope 1 and market-based scope 2 GHG emissions 40% from 2016 levels Before 2035: Achieve net-zero GHG emissions
Scope 2 (location-based)[1]	368,250 (2016)	283,000	23% reduction	
Scope 2 (market-based)[2]	372,244 (2016)	0 (incl. offsets)	100% reduction	
Scope 3[3]	4,183,000 (2018)	4,462,000	6.7% increase	Before 2040: Achieve net-zero GHG emissions

[1] IAW Greenhouse Gas (GHG) Protocol., location-based emissions incorporate average emissions data for the region-wide grid on which a company facility is located

[2] IAW Greenhouse Gas (GHG) Protocol, market-based emissions include utility supplier-specific emissions data for more precise accounting

[3] Estimated emissions based on Trucost methodology (spend-based)

We are working in stages to eliminate GHG emissions from Takeda operations. As seen in Table 9, we have made significant progress towards our goals in reducing Scope 1 and 2 emissions. We recognize that we still have many challenges to overcome to achieve our goals, including:

- Compensating for business growth,
- A lack of cost effective low/no carbon energy alternatives for some Scope 1 emissions particularly for thermal energy applications,
- Limitations imposed on equipment and operations to protect product quality,
- The lack of renewable energy infrastructure in certain countries/regions
- The limited maturity of suppliers to measure, report, and reduce GHG emissions
- The challenges associated with effectively engaging suppliers to adopt science based GHG emissions,
- A lack of transparency into, and difficulty measuring, actual Scope 3 emissions[5]

[4] With respect to small office locations (fewer than 100 employees) or leased properties for which Takeda-specific energy bills are unavailable, Takeda estimates energy usage by reference to comparable facilities. In the event of instances of missing data due to data management issues or data source failures, Takeda estimates energy usage using past comparable usage.

[5] Our understanding of our scope 3 emissions is subject to continuous improvement and refinement. Estimating such emissions is a complex task requiring inputs from a wide range of third parties. Accordingly, even more so than scopes 1 and 2 emissions, scope 3 emissions figures are the subject of a broad range of assumptions and of significant uncertainties. While Takeda believes that all assumptions and estimates it applies to evaluations of its currently estimated scope 3 emissions are reasonable, its understanding of its scope 3 emissions, including all references to such emissions contained herein, is subject to potentially significant change as such assumptions and estimates are refined and tested.

We are reliant on carbon offsets to maintain carbon neutrality. In seeking organizations from which to purchase carbon offsets (alternatively known as Verified Emission Reductions, VERs), we seek to maximize our impact by following our Carbon Offset Procurement Guidelines, which contains selection criteria including but not limited to:

- Additionality: Project would not have occurred without the additional financial incentive provided by revenue generated through offset sales
- Leakage: Projects must demonstrate that no leakage or displacement of emissions has occurred
- Measurable and Verified: Carbon offsets must be measurable and verified by independent, third-party auditors
- Permanence: Carbon offset projects must provide permanent reductions in greenhouse gas emissions. Where the risk of non-permanence is a concern, mechanisms must be in place to mitigate this risk
- Preference for projects that demonstrate co-benefits in addition to carbon reductions, are located where Takeda has a corporate presence, and are of recent vintage (i.e., within 3 years of emissions to be offset)

Following these guidelines, we were excited to partner with several developers in calendar year FY2021 (for FY2020 emissions) to support worthwhile projects, which provide third-party verified carbon offsets including the following: Acre Amazonian Rainforest Conservation in Brazil (15,000 metric tons), Mai Ndombe Forest Conservation Project in DRC (50,000 metric tons), Qianbei Afforestation Project in China (10,000 metric tons), Madre de Dios Amazon Forest Conservation Project in Peru (50,000 metric tons), the Kulera REDD and Cookstoves Project in Malawi (15,000 metric tons).

An internal price has not been developed for carbon as we have found that a more powerful driver in reducing our emissions is the leadership of our CEO, the establishment of Science Based Targets Initiative-aligned GHG reduction targets and reduction commitments from all areas of our Company. We may reconsider this approach in the future.

M.3 Targets

Supplier Engagement

At Takeda, we pride ourselves upon our Climate Program, which takes a holistic view in assessing and addressing the lifecycle environmental impacts of our products and business activities. Considering that upstream and downstream supply chain emissions account for 85-90% of Takeda's total GHG emissions, we have set a goal to ensure that suppliers representing 67% of our currently estimated Scope 3 emissions will have third-party validated science-based targets by 2024. We support this goal by engaging with our suppliers through annual surveys, direct discussions on GHG reductions, hosting partner value summits and communicating our position on performance standards through our Supplier Code of Conduct.

In 2020, we hosted our second Partner Value Summit, featuring a Sustainable Supply Chain Workshop, and we are planning a third summit in the fall of 2022, dedicated to purpose-led sustainability. All suppliers onboarded through Takeda's risk management system are required to acknowledge Takeda's Supplier Code of Conduct. We have modified our supplier Code of Conduct to include greenhouse gas emissions and energy efficiency measures. To support this and help suppliers understand our expectations, we are developing training and a toolkit for environmental management.

Further, we aim to collect climate change and carbon information at least annually from suppliers, as this data becomes available. To do so, Takeda uses the EcoVadis platform, a digital system that allows for large-scale supplier sustainability assessment. This platform helps us to understand the sustainability

performance of all our suppliers, especially high-risk suppliers, and allows for key performance indicators (KPI) monitoring and we use the scorecards generated to identify candidates for on-site audits. Currently, 413 of our higher impact suppliers have completed CSR performance scorecards through our EcoVadis platform. Out of the participating suppliers, 79% have reported on energy consumptions and GHGs, and 38% are responding to the CDP Climate survey. In FY2021, we increased our CSR Scorecards to 643; the average score increased 3.3 points over FY20. As members of the Responsible Health Initiative (RHI) through EcoVadis, Takeda has further committed to add an additional 50 scorecards in calendar year 2022; each member of the RHI has made a similar commitment.

In terms of greenhouse gas commitments and reporting, Takeda is actively engaging with the top 67% GHG emitting suppliers to influence them to make ambitious greenhouse gas reduction commitments. Further, Takeda sends an annual survey to these suppliers, asking for their Scope 1, 2 and 3 emissions to the extent possible. In 2022, Takeda will focus on working with these suppliers to increase their maturity and capability and track their development towards these commitments.

Energy Efficiency and Management

Our operations, especially manufacturing, make up the largest part of our environmental footprint. To address related carbon emissions, we are focusing on increasing energy efficiency in production processes, especially those involving thermal energy (heating and cooling), electrification of facilities and the use of renewable energy. In 2021, we invested in energy efficiency and renewable energy projects that will eliminate approximately 47,000 metric tons of CO_2e. Further, in 2021, 73% of our manufacturing sites were certified to the International Standards Organization (ISO) 14001 Environmental Management Systems. Our goal is to have all manufacturing sites certified to ISO 14001 and ISO 45001 by approximately 2025 pending further COVID19 delays. In addition, this year we reached 42% of total energy consumed from renewable sources including wind, solar, and hydropower. Additionally, we obtain third-party assurance of our percentage of energy from renewable sources.

Water Usage

Takeda's Global EHS Policy also includes a focus on water security; as fresh water supplies are increasingly threatened, we are reducing our reliance and impacts on water sources through the implementation of projects to decrease water withdrawal and to ensure the water treatment systems adequately protect the environment from the release of active pharmaceuticals. We have set a company-wide goal to reduce freshwater withdrawals by 5% (relative to 2019 levels) by 2025 and we are assessing wastewater treatment facilities and procedures at all our manufacturing operations to ensure that wastewater discharges do not cause any watershed impairment. In areas classified as high water risk (based upon WRI Aqueduct and WWF Water Risk Filter tool risk definitions), we are taking a more direct and detailed approach to understand the specific stressors affecting the associated water sources and to develop site water risk mitigation plans.

Takeda's largest water users and associated risks are at manufacturing and, to a much lesser extent, R&D sites, as adequate quantities of potable fresh water are necessary in the manufacturing of Takeda's pharmaceutical products. Accordingly, water supply restrictions could possibly lead to manufacturing and supply interruptions. We also acknowledge that excessive use of water within water-stressed regions (such as Tianjin, China and California, USA) can harm relationships and our reputation with local communities. To mitigate water risks, we continue to improve our knowledge of local water risk profiles and to invest in new equipment, manufacturing processes, and water management strategies to both improve our water use efficiency and identify opportunities to help address local water stress.

Further, as part of Takeda's Supplier Standard Due Diligence process for risk screening, suppliers are assessed for their water-related risks based on the following factors: water consumption, location in

water stressed regions, long-term strategies for future water sourcing and management, and wastewater management. The suppliers flagged with high water-related risks are required to go through the Enhanced Supplier Due Diligence process, which can include an on-site audit. Since we began this process three years ago, more than 11,000 suppliers have been assessed.

Looking Ahead

Building on our long history of environmental stewardship, Takeda continues to incorporate environmental considerations into our values and decision-making. We continue to expand our knowledge and will follow the science to better identify, understand and respond to climate risks and opportunities. We recognize that we can make a difference and are taking meaningful action to minimize our environmental footprint. Aligning our efforts with TCFD expectations and producing this disclosure is another step forward.

Takeda will continue to:

- Refine and improve our methods and systems for managing climate risk, measuring, and quantifying impacts, and integrating the ESG principles throughout our company's operations and financial planning.
- Improve the communication of our ESG progress and the quality of our disclosures (e.g., Takeda's annual CDP disclosures, Annual Report, and TCFD disclosure).
- Monitor the effectiveness of our initiatives through innovative, evidence-based solutions.
- Develop our interdepartmental and interdisciplinary collaboration on challenges posed by climate change.

In the near-term, Takeda has two key areas of focus: 1) reducing our carbon footprint across our value chain, and 2) enhancing climate risk integration into existing strategic planning and ERM processes. We are successfully transitioning to renewable or low carbon alternatives at many of our locations and are targeting the energy efficiency of our manufacturing and related processes. We will continue to engage our suppliers and provide them with support and guidance so that they can better support Takeda in reaching our Scope 3 emissions reduction goals. Throughout this process, Takeda is committed to transparency in sharing our metrics and progress with stakeholders.

The core of our business centers upon human health, which is integrally connected to a healthy environment as a basic human need. Accordingly, protecting the planet is essential to our mission and we are determined to be a leader - driving and influencing the transformational changes necessary to prevent the most disastrous effects of climate change.

Legal Disclaimers

The companies in which Takeda Pharmaceutical Company Limited ("Takeda") directly and indirectly owns investments are separate entities. In this report, "Takeda" is sometimes used for convenience where references are made to Takeda and its subsidiaries in general. Likewise, the words "we", "us" and "our" are also used to refer to subsidiaries in general or to those who work for them. These expressions are also used where no useful purpose is served by identifying the particular company or companies.

Forward-Looking Statements

This press release and any materials distributed in connection with this document may contain forward-looking statements, beliefs or opinions regarding Takeda's future business, future position, and results of operations, including estimates, forecasts, targets and plans for Takeda. Without limitation, forward-looking statements often include words such as "targets", "plans", "believes", "hopes", "continues", "expects", "aims", "intends", "ensures", "will", "may", "should", "would", "could" "anticipates", "estimates", "projects" or similar expressions or the negative thereof. These forward-looking statements are based on assumptions about many important factors, including the following, which could cause actual results to differ materially from those expressed or implied by the forward-looking statements: the extent to which our internal energy conservation measures and future advancements in renewable energy or low carbon energy technology will enable us to reduce our GHG emissions; the likelihood that physical and transition risks (financial and regulatory driven risks) associated with climate change (whether or not such risks are specifically described herein) will be realized, the severity of any realized risks and our ability to mitigate those risks; the economic circumstances surrounding Takeda's global business, including general economic conditions in Japan and the United States; competitive pressures and developments; changes to applicable laws and regulations, including global health care reforms; challenges inherent in new product development, including uncertainty of clinical success and decisions of regulatory authorities and the timing thereof; uncertainty of commercial success for new and existing products; manufacturing difficulties or delays; fluctuations in interest and currency exchange rates; claims or concerns regarding the safety or efficacy of marketed products or product candidates; the impact of health crises, like the novel coronavirus pandemic, on Takeda and its customers and suppliers, including foreign governments in countries in which Takeda operates, or on other facets of its business; the timing and impact of post-merger integration efforts with acquired companies; the ability to divest assets that are not core to Takeda's operations and the timing of any such divestment(s); and other factors identified in Takeda's most recent Annual Report on Form 20-F and Takeda's other reports filed with the U.S. Securities and Exchange Commission, available on Takeda's website at: https://www.takeda.com/investors/sec-filings/ or at www.sec.gov. Takeda does not undertake to update any of the forward-looking statements contained in this document or any other forward-looking statements it may make, except as required by law or stock exchange rule. Past performance is not an indicator of future results and the results or statements of Takeda in this press release may not be indicative of, and are not an estimate, forecast, guarantee or projection of Takeda's future results.

Appendix I: Definitions of Key Terms

- **Climate Action Program for Sites (CAPS)** – within the Global Manufacturing and Supply Projects Portfolio, this program oversees all projects that are under development or in execution to reduce emissions to meet Takeda's climate goals. Each site must identify projects to meet Takeda's 2025 climate goals of 40% reduction in emissions.
- **Carbon Dioxide Equivalent (CO_2e)** – metric measure used to compare the emissions from various greenhouse gases based on their global-warming potential, by converting amounts of other greenhouse gases to the equivalent amount of carbon dioxide with the same global warming, for ease of comparison.
- **Carbon neutral** – making no net release of carbon dioxide equivalent to the atmosphere; this can be achieved through offsetting emissions through the purchase of carbon offsets or credits.
- **Corporate Social Responsibility (CSR)** – the practices and policies undertaken by corporations that are intended to have a positive impact on behalf of an organization.
- **Environmental Health and Safety (EHS)** – Takeda's department that oversees the environmental, health, and safety regulations, programs, and strategic initiatives of the company.
- **Environmental, Social, and Governance (ESG)** – risks or considerations that are identified and managed by an organization; disclosure of the organization's exposure to ESG risks/considerations is becoming more commonplace.
- **Greenhouse Gas (GHG) emissions** – any gas capable of absorbing infrared radiation (net heat energy) emitted from Earth's surface and reradiating it back to Earth's surface.
- **Intergovernmental Panel on Climate Change Representative Concentration Pathways (IPCC RCP)** – a greenhouse gas concentration trajectory adopted by a leading body of scientists.
- **Intergovernmental Panel on Climate Change Shared Socioeconomic Pathways (IPCC SSP)** – a set of assumptions that project future prices of carbon by world region.
- **International Energy Agency/ World Energy Outlook (IEA WEO)** – the gold standard of long-term energy analysis; it also outlines an integrated way to meet multiple sustainable development goals: limiting the global temperature rise in line with the Paris Agreement, addressing air pollution, and ensuring universal access to energy.
- **Net-zero** – means achieving net-zero in accordance with the Science Based Targets Initiative's Net-Zero Standard. In general, the standard requires GHG emissions reductions across scopes 1, 2, and 3 of 90-95% and neutralization of any remaining GHG emissions through carbon removals.
- **Operational Control** - A company has operational control over an operation if the former or one of its subsidiaries has the full authority to introduce and implement its operating policies at the operation.
- **Science Based Targets Initiative (SBTi)** – a partnership between Carbon Disclosure Project, the United Nations Global Compact, World Resources Institute, and the World Wildlife Fund for Nature. The mission of this organization is to drive ambitious climate action in the private sector by enabling companies to set science-based emissions reduction targets.
- **Scope 1 emissions** - are direct GHG emissions from operations that are owned or controlled by a company.

- **Scope 2 emissions** - are indirect GHG emissions from the generation of purchased or acquired electricity, steam, heat, or cooling that is consumed by operations owned or controlled by a company.
- **Scope 3** - emissions are all indirect GHG emissions not otherwise included in a registrant's Scope 2 emissions, which occur in the upstream and downstream activities of a company's value chain.
- **World Resources Institute Aqueduct Water Risk Atlas (WRI Aqueduct)** – the WRI Aqueduct Water Risk Atlas evaluates, maps, and scores water risks globally based on 12 indicators in two timeframes (2030 and 2040) and three scenarios (Pessimistic, Business as Usual, and Optimistic).
- **World Wildlife Fund Water Risk Filter (WWF Water Risk Filter)** – the WWF Water Risk Filter 5.0 enables companies to financial institutions to explore, assess, value, and respond to water risk with this tool based on water risks with climate change and socio-economic changes integrated in three different pathways (Pessimistic, Current Trend, and Optimistic), with two timeframes (2030 and 2050). It also provides "Basin Story Maps" of large watersheds, country profiles, and case studies.