

Assessing Net Zero

Integrity Review of
10 Japanese Companies

ネットゼロを
評価する

日本企業10社の
気候目標レビュー





Assessing Net Zero: Integrity Review of 10 Japanese Companies

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Disclaimer

This report represents the authors' views and interpretations, guided by the methodology of the Corporate Climate Responsibility Monitor, of publicly available information that is self-reported by the companies assessed. Due to the fragmentation, inconsistency and ambiguity of some of the information provided by the assessed companies, as well as the fact that the authors did not seek to validate the public self-reported information provided by those companies, the authors cannot guarantee the factual accuracy of all information presented in this report. Therefore, neither the authors nor Climate Integrate makes representations or warranties as to the accuracy or reliability of any information in this report. The authors and Climate Integrate expressly assume no liability for information used or published by third parties with reference to this report.

Design

Minami Hirayama

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1. About this report

Background

Global CO₂ emissions rose in 2022 and hit a record high after reductions in 2020 and 2021 due to the COVID-19 pandemic. In order to avoid devastating consequences of the climate crisis, rising temperatures need to be stopped at the level of 1.5°C relative to pre-industrial levels. The Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report indicated that limiting warming to 1.5°C or 2°C would require rapid, deep and in most cases immediate greenhouse gas (GHG) reductions.¹ Japanese corporations operating at home and abroad have a substantial responsibility for the climate crisis. There are growing calls from investors and civil society for corporations to transform their business activities to be aligned with the 1.5°C goal of the Paris Agreement. To address climate change, like in many other countries, most large Japanese companies now have some form of net zero targets, many of which include pledges that appear to significantly reduce, or even eliminate, their emissions by 2050. Today there are multiple initiatives to encourage companies to commit to science-based targets (e.g., UNFCCC's Race to Zero,² Science Based Targets Initiatives (SBTi)³), disclose information (e.g., TCFD⁴), and accelerate implementation (e.g., RE100⁵).

The steady increase in the number of corporate net zero targets in recent years, combined with the fragmentation of approaches, means that it is more difficult than ever to distinguish between real climate leadership and greenwashing. The UN report *Credibility and Accountability of Net-Zero Emissions Commitments of Non-State⁶ Entities* released in November 2022 warned the world to have no tolerance for net-zero greenwashing. NewClimate Institute, a climate change policy think tank based in Germany, published the *Corporate Climate Responsibility Monitor* in 2022⁷ and 2023,⁸ and revealed a number of issues with corporate climate strategies. The analyses by NewClimate Institute found that most global companies' strategies do not represent examples of good practice in climate leadership. In its 2023 report, only five of 24 companies' net-zero pledges represent a commitment to deep decarbonization. Identifying and promoting real climate leadership, and distinguishing it from greenwashing, are key challenges that, where addressed, have the potential to unlock greater ambition for global climate change mitigation. This is also the case for Japanese companies.

In Japan, many of the large companies have pledged net-zero targets as well. Their net-zero climate pledges need to be similarly scrutinized in order to ensure Japan's overall alignment to the 1.5°C goal of the Paris Agreement.

Objectives and focus

This report evaluates the transparency and integrity of climate pledges of 10 Japanese companies, based on the methodologies⁹ that were developed by NewClimate Institute for the Corporate Climate Responsibility Monitor 2023 (CCRM2023).¹⁰

The objectives of that report are as follows (excerpted from CCRM2023).

- **Identify and highlight good practice approaches** that can be replicated by other companies, recognizing that companies are experimenting to work out what is constructive and credible practice.
- **Reveal the transparency and integrity of major companies' climate leadership claims** and provide a structured methodology for others to replicate such an evaluation. **Transparency** here refers to the extent to which a company publicly discloses the information necessary to fully understand the integrity of that company's approaches towards the various elements of corporate climate responsibility. **Integrity**, in this context, is a measure of the quality, credibility and comprehensiveness of those approaches.
- **Scrutinize the credibility of companies' plans for offsetting their emissions** through carbon dioxide removals or emission reduction credits, recognizing that voluntary carbon markets are highly fragmented and a lot of uncertainty remains regarding credible and good practice.

We assess and draw insights on transparency and integrity in four main areas of corporate climate action (excerpted from CCRM2023).

- Tracking and disclosure of emissions
- Setting emission reduction targets
- Reducing own emissions
- Taking responsibility for unabated emissions through climate contributions or offsetting

The 10 Japanese companies assessed in this report are selected from large emitting sectors. They comprise two companies each from the electric utility and steel sectors, and one company each from the oil and gas, cement, chemical, transport services, paper and forestry, and automotive-equipment manufacturing sectors (see company assessments for further details on selection criteria).



Methodology

This report is prepared by Climate Integrate in collaboration with NewClimate Institute. Climate Integrate and NewClimate Institute are both not-for-profit think tanks. NewClimate Institute has years of experience with the independent critical analysis of corporate climate action and developed the methodology based on the experiences and the latest scientific evidences, such as the IPCC reports. Climate Integrate applied the methodology developed by NewClimate Institute.

The following description of the methodology is largely excerpted from CCRM2023 for this report.

This report is based on the guiding principles for good practice corporate climate responsibility set out in *Corporate Climate Responsibility: Guidance and Assessment Criteria for Good Practice Corporate Emission Reduction and Net-Zero Targets (Version 3.0)*, developed by the NewClimate Institute (hereinafter referred to as the **“methodology document”**).¹¹ NewClimate Institute has drawn these guiding principles from a combination of scientific literature review, previous work by that report’s authors, and the identification of existing good practices from company case studies.

The guiding principles identified in the methodology document relate to issues where the state of scientific knowledge and debate is rapidly evolving. The contents of the methodology document are based on their interpretation of existing research and current developments.

Following the CCRM2023 objectives, this report on Japanese companies aims to promote transparency based on the philosophy that consumers, shareholders, regulators and observers in general should be able to assess and verify the integrity of a company's claims. Accordingly, the authors follow the data source rules in the methodology document that the company assessments are to be based only on publicly available information that the authors were able to identify. Each rating represents the authors' understanding of publicly available information (from both Japanese and English sources) on the Japanese companies as of April 2023.

In some cases, company information was scattered across different sources (e.g., annual reports, press releases and statements, webpages, or other marketing materials), so it is possible that information may have been misinterpreted in this process, or that relevant information was overlooked.

In this report, we assess the transparency and integrity of companies' strategies based on information that is self-reported by the companies. We do not assess or certify the accuracy or veracity of that information, including GHG emission reporting. In specific cases, we supplement self-reported information with other sources, including companies' responses to the CDP Climate Change 2022 Questionnaire and news stories covered by media outlets, but we cannot guarantee the accuracy of the information we have obtained.



2. Key insights

Climate strategies of all 10 companies rank low in integrity.

The 10 companies analyzed in the report are the largest emitters in their sector in Japan, giving them the large responsibility for economy-wide emission reductions to achieve net zero. These companies are very influential and important in the Japanese economy. For example, ENEOS' market share of domestic petroleum product sales in FY2021 was about 50%,¹² and Toyota is the largest automobile manufacturer in Japan. The total scope 1 and 2 GHG emissions of these 10 companies in FY2020¹³ (414.14 MtCO₂) accounted for 36% of Japan's total GHG emissions in FY2020.¹⁴ However, we found that the companies' emission reduction commitments are insufficient to be aligned with 1.5°C-compatible decarbonization trajectories; targets, measures, and potential offsetting plans remain ambiguous; and the exclusion of detail on the scope of emissions severely undermines any declared targets. This makes the achievement of Japan's national net-zero targets highly uncertain.

Poor emission disclosure limits third-party assessment of their climate efforts.

The 10 companies have a large number of subsidiaries. However, none of them disclose comprehensive emission data of all group companies. Many of them fail to cover the emissions of a large number of consolidated subsidiaries and downstream scope 3 emissions, and do not disclose their climate targets' base year emissions across their supply chains. In addition, we found that some companies do not disclose non-CO₂ greenhouse gas emissions. Overall, the 10 companies significantly lack transparency in GHG emissions disclosure, which makes understanding the full picture of emission status, assessing the integrity of the targets, and tracking of the progress of emission reductions very difficult.

The 10 companies' 2030 targets and 2050 net-zero pledges fall far short of the ambition required to stay below the 1.5°C temperature limit.

All 10 companies have pledged 2030 targets, but we find that these targets can rarely be taken at face value. Their 2030 targets address a limited scope of emission sources, such as only direct emissions (scope 1) or emissions from procured energy (scope 2) and only selected items in other indirect emission categories (scope 3). We also find these companies' 2030 targets to be of poor integrity, as they do not meet 1.5°C-compatible benchmarks provided by scientific literature, such as from the International Energy Agency (IEA) and SBTi's methodologies. Especially, the lack of coal phase-out targets by JERA and J-POWER, as well as the lack of any target for ending new sales of internal combustion engines (ICEs) by Toyota, mean that these companies fail to address what is required for these sectors. Without such targets, they cannot claim that they are aligned with the goal to limit the global temperature increase to 1.5°C,¹⁵ which requires cutting global GHG and CO₂ emissions by 43% and 48%, respectively, between 2019 and 2030.

All 10 companies also have pledged to reach net-zero emissions or carbon neutrality, or made other pledges with similar terminology, but the general quality of those pledges remains very poor.

Companies' proposed measures are insufficient to catalyze the transformational change that is necessary to limit global warming to 1.5°C.

Very few companies in this report present measures targeting emissions across the value chain. Only four of the 10 companies have made long term pledges that include some categories of scope 3 emissions, but their plans lack substance. None of them present reduction plans for all scope 3 GHG emissions. These findings indicate that companies are still barely recognizing their responsibility for emissions upstream and downstream of the value chain.

The majority of companies assessed plans to continue existing measures until 2030, such as improvements in energy efficiency, but their speed of emission reduction and level of emission intensity improvement are not on track to be compatible with the 1.5°C trajectory pathway. Most plan to develop new zero-carbon technologies that might allow sharp reductions after 2030. Development of new technologies is critical to achieve net-zero, especially for the hard-to-abate sectors, such as steel, cement, chemicals and aviation. However, we found that many of the companies are investing in new technologies, such as ammonia and hydrogen co-firing, carbon capture and storage (CCS), despite limited prospects for them to reduce emissions by 2030 and beyond. As a result, their plans actually run the risk of delaying the transformational changes needed to limit global warming to 1.5°C.

The shift to renewable electricity is slow, from both the supply side and demand side.

The three energy suppliers, JERA, J-POWER and ENEOS, all presented plans to increase their investment in renewable electricity to decarbonize energy they supply. However, numerical targets beyond 2030 are not set by any of them. Instead, they emphasize developing new technologies such as co-firing ammonia and hydrogen, and CCS, building supply chains for so-called CO₂-free hydrogen (blue hydrogen and/or carbon dioxide removal offsets), or expansion of sustainable aviation fuel (SAF) and synthetic fuels, rather than the swift transition to renewables. The seven demand side companies' targets and measures are also very weak. Several of them don't have any renewable electricity targets and none of the 10 companies have committed to switching to 100% renewable electricity.

Credibility of offsetting planning - under various guises - is in question.

At least eight of the 10 companies will rely on some form of offsetting towards their targets in the future. The potential role for offsets is left uncertain by most of the companies, thus it is unclear if these companies would limit the use of offsetting to the maximum role indicated by SBTi's Net Zero Standard (10%, albeit under different terminologies) and the ISO Net Zero Guideline (less than 5%, case specific, but in most cases).

We found that the two electric utility companies plan to use offsets. However, the power sector needs to decarbonize fully and the fastest, and the limited offsets available should not be used by electricity generation companies. We also found that three companies are relying on forestry and land-use related offsets (ENEOS, Mitsubishi Chemical and Oji). The demand for such carbon dioxide removals would exceed the potential of the world's natural resources if these practices would be

replicated by other companies. Also, the biological storage of carbon is fundamentally unsuitable for offsetting claims due to the non-permanence of the climate impact. Particularly, Oji relies on carbon removals from its own forests and plantations for neutralizing its energy derived CO₂ emissions although SBTi's guidance requires companies to account for forestry and land-use related emissions and all other energy-related emissions separately and to set a target for each of these emissions.

Companies' insufficient climate pledges need to be immediately addressed to unlock the potential of corporate climate actions in this crucial decade towards 2030.

The findings of this report indicate that Japan's major emitting companies' climate pledges are insufficient and largely ambiguous. In particular, companies' plans for the period up to 2030 fall far short of the efforts needed in this crucial decade for climate action to stand a reasonable chance of limiting global warming to 1.5°C.

This poses serious questions for the integrity of Japan's overall net-zero pathway. Regulators cannot rely on existing voluntary initiatives. They need to ensure compliance with the necessary standards for credible and transparent corporate climate action. The publication of the UN High-Level Expert Group recommendations and the ISO Net Zero Guidelines at COP 27 demonstrated the solidifying consensus on what constitutes good practice for corporate climate responsibility.

It is crucial for the Japanese government to step up and align with the requirements set out in the scientific literature for immediate action towards deep decarbonization. Having focused largely on its own net-zero pledges in recent years, the government must place a renewed and urgent focus on the integrity of companies' emission reduction plans up to 2030, while ensuring that the discourse on longer-term net zero does not distract from this most immediate and unfulfilled objective.

Major Japanese companies need to set ambitious short- and medium-term targets and strengthen measures immediately.

Unfortunately, there are no climate champions among the 10 big Japanese companies assessed in this report, despite the fact that each company has a huge responsibility relating to the climate. They need to review their current targets, especially short- and medium-term targets and measures, and significantly enhance the integrity of climate pledges, using already available benchmarks as indicators. Due to the limited time left to fill the gap to reach the 1.5°C goal, such actions should be taken immediately.

Table 1: Overview of the 10 companies' assessments

<p>● High integrity</p> <p><i>No companies achieved a High rating</i></p>			
<p>◐ Reasonable integrity</p> <p><i>No companies achieved a Reasonable rating</i></p>			
<p>◑ Moderate integrity</p> <p><i>No companies achieved a Moderate rating</i></p>			
<p>◒ Low integrity</p>			
	Headline pledge	Transparency	Integrity
JERA	Net-zero by 2050		
J-POWER	Carbon neutrality by 2050		
Nippon Steel	Carbon neutrality by 2050		
JFE	Carbon neutrality by 2050		
ENEOS	Carbon neutrality by 2050		
Taiheiyo Cement	Carbon neutrality by 2050		
Mitsubishi Chemical	Carbon neutrality by 2050		
ANA	Carbon neutrality by 2050		
Oji	Net-zero by 2050		
Toyota	Carbon neutrality by 2050		
<p>◓ Very low integrity</p> <p><i>No companies received a Very low rating</i></p>			

RATING 5-point scale **● High** **◐ Reasonable** **◑ Moderate** **◒ Low** **◓ Very low** See individual company analyses.

Assessments were made based on public information identified by the authors. A poor rating may not necessarily be an indication that a company's climate strategy is weak, but could also indicate that the information was insufficient to confirm good practice. Ambitious companies can improve their ratings by ensuring that all aspects of their climate responsibility strategies are transparently and accurately disclosed, and in the public domain.

Prepared by Climate Integrate

3. Company assessments

Approach

Company-specific assessments in this report follow the approach used by NewClimate Institute. They include a rating of the transparency and integrity of each company's disclosures and efforts across the key elements of corporate climate responsibility in four key areas: (1) tracking and disclosure of emissions, (2) setting of specific and substantiated targets, (3) reducing emissions, and (4) climate contributions and offsetting.

As defined in Objectives, transparency ratings are primarily based on the extent to which a company publicly discloses the information necessary for an observer to fully understand the integrity of that company's approaches towards the various elements of corporate climate responsibility. Integrity, in this context, is a measure of the quality and credibility of those approaches. A full overview of the rating methodology for transparency and integrity of every indicator is presented in the methodology document.¹⁶

Good practice overview

Table 2 provides an overview of good practice corporate climate responsibility in four areas (excerpted from the methodology document prepared by NewClimate Institute).

1. Tracking and disclosure of emissions

To develop a comprehensive and robust climate strategy, companies need to understand and be transparent about their GHG emission footprints and trajectories. Table 2-1 presents good practice principles and trends for tracking and disclosure of emissions.

2. Setting specific and substantiated targets

Companies' headline-grabbing climate change pledges typically encompass a broad range of target setting approaches. Regardless of the type of target and the terminology used, commitments should send a clear signal about what immediate action is being taken to decarbonize the value chain, and avoid misleading consumers, shareholders, observers and regulators. Table 2-2 presents good practice principles for setting specific and substantiated targets, considering the coverage of emission sources, the explicit specification of an emission reduction target as part of the headline pledge, and the substantiation of long-term visions through interim targets.

3. Reducing emissions

Encompassing measures for deep emission reductions should be the backbone of ambitious corporate climate targets. Table 2-3 presents good practice principles for reducing emissions, including a special focus on good practice for sourcing renewable electricity.

Table 2: Overview of good practice corporate climate responsibility

1 Tracking and disclosing emissions	Good Practice
<p>Comprehensiveness of disclosure</p>	<ul style="list-style-type: none"> • Disclose full details on their GHG emissions on an annual basis in public documents. • Include a breakdown of the data to specific emission sources (including scope 1, 2, 3 and non-GHG climate forcers) • Present historical data for each emission source. • Ensure consistency of emission disclosure across documents.
2 Setting specific and substantiated targets	Good Practice
<p>Short- & medium-term targets towards 2030</p>	<p>Companies should set both</p> <ul style="list-style-type: none"> • short- and medium-term emission reduction targets towards 2030 within 5-year intervals, • and specific long-term emission reduction targets beyond 2030 as a long-term vision for deep decarbonisation.
<p>Long-term targets beyond 2030</p>	<p>All short-, medium-, and long-term targets should</p> <ul style="list-style-type: none"> • be independent from offsetting claims, • align with 1.5°C-compatible trajectories and benchmarks for the sector, and • cover all scope 1, 2 & 3 emissions & non-GHG climate forcers, where relevant.
3 Reducing emissions	Good practice
<p>Emission reduction measures</p>	<ul style="list-style-type: none"> • Implement encompassing and deep decarbonisation measures and disclose details of those measures to support replication and the identification of new solutions. • Refrain from using bioenergy where alternatives to combustion exist, and ensure that any bioenergy they use does not have negative sustainability implications
<p>Renewable electricity</p>	<ul style="list-style-type: none"> • Procure the highest quality renewable electricity available and disclose the full details of that procurement.
4 Climate contributions and offsetting	Good practice
<p>Responsibility for unabated emissions</p>	<ul style="list-style-type: none"> • Pursue high transparency and integrity on climate contributions and any neutralisation claims made today.
<p>Climate contributions</p>	<ul style="list-style-type: none"> • Provide an ambitious volume of financial support to climate change mitigation activities beyond the value chain, without claiming to neutralise the company's own emissions.
<p>Offsetting claims today</p>	<ul style="list-style-type: none"> • Clearly disclose offsetting claims and plans; avoid misleading pledges and claims; avoid risk of distraction by also committing to measures for deep emission reductions; commit to procure only high-quality credits from ambitious projects with a permanent climate impact; and commit to preventing any form of double-counting of climate impacts.
<p>Offsetting plans for the future</p>	

Source: NewClimate Institute

4. Climate contributions and offsetting

Corporate climate leadership includes not only ambitious target setting, but also taking responsibility for unabated emissions. Table 2-4 presents good practice related to two distinct approaches –climate contributions and offsetting– for assuming responsibility for unabated emissions.

Based on the above four areas, specific assessments in this report include a rating of the *transparency* and *integrity* of each company’s approaches, as defined above.

Company selection criteria

This analysis assesses Japanese companies that have pledged a commitment to net zero or carbon neutral climate change mitigation. The key objective of the analysis is to assess the integrity of commitments by influential Japanese corporate actors that are large GHG emitters. This requires careful scrutiny of their plans to determine whether or not these corporate leaders really are setting the right targets, and the policies and measures upon which they are making their plans are sufficient.

We assess 10 companies from eight high-emissions sectors: We selected eight high-emission sectors based on each company’s scope 1 and 2 emissions reported in the CDP Climate Change Report 2021. Among high-emission sectors, companies belonging to the “general” and “metals and mining” sectors were omitted because some of these companies’ activities cover more than one sector, making it difficult to identify the top emitters in these sectors. Instead, we selected two companies from the electric utility and steel sectors each as the top two emitting corporate sectors according to Japan’s National Greenhouse Gas Emissions in FY2020.¹⁷

Companies assessed in this report are: JERA and J-POWER (electric utilities), Nippon Steel and JFE (steel), ENEOS (oil and gas), Taiheiyo Cement (cement), Mitsubishi Chemical (chemical), ANA (transport services), Oji (paper and forestry), and Toyota (transport OEMs). The total scope 1 and 2 GHG emissions of these 10 companies in FY2020 (414.14 MtCO₂) accounted for 36% of Japan’s total GHG emissions in FY2020.¹⁸

All 10 Japanese companies studied have declared a target of achieving net zero GHG emissions or carbon neutrality by 2050. Notably, only ANA and Toyota have set science-based targets, verified by the SBTi, while none of the 10 have yet joined the UN Race to Zero (UN-sponsored initiative for non-state actors to build momentum around the shift to a decarbonized economy) or RE100 (companies that have made a commitment to go “100% renewable”).

Box 1: What are scope 1, 2 and 3 emissions?

The GHG Protocol Corporate Standard classifies a company's GHG emissions into three "scopes."

Scope 1 emissions Direct emissions from owned or controlled sources.

Scope 2 emissions Indirect emissions from the generation of purchased energy.

Scope 3 emissions All indirect emissions (not included in scope 2) that occur in the value chain of the company, covering 15 total categories, further broken down into upstream and downstream emissions.

Category 1: Purchased Goods and Services

Category 2: Capital Goods

Category 3: Fuel- and Energy-Related Activities

Category 4: Upstream Transportation and Distribution

Category 5: Waste Generated in Operations

Category 6: Business Travel

Category 7: Employee Commuting

Category 8: Upstream Leased Assets

Category 9: Downstream Transportation and Distribution

Category 10: Processing of Sold Products

Category 11: Use of Sold Products

Category 12: End-of-Life Treatment of Sold Products

Category 13: Downstream Leased Assets

Category 14: Franchises

Category 15: Investments

Box 2: Ammonia and hydrogen co-firing

JERA and J-POWER are planning to use the co-firing of ammonia and hydrogen in thermal power plants. Studies have pointed out that these technologies have very limited emission reduction potential.* These technologies are unlikely to result in any emission reductions prior to 2030, as they are still early in development. In fact, for the foreseeable future ammonia will mainly be produced using fossil fuels. Thus these technologies will just prolong power generation from fossil fuels. Even after 2030, these technologies are highly unlikely to be developed and deployed at the scale and speed needed in order to reduce CO₂ emissions in a way that would be compatible with the 1.5°C goal of the Paris Agreement, because they have limited cost competitiveness and technical feasibility.

*BloombergNEF, *Japan's Costly Ammonia Coal Co-Firing Strategy*, 2022.

*Climate Integrate, *Japan's Big Plans for Ammonia; Getting Lost on the Road to Decarbonization*, 2022.

*TransitionZero, *Coal-de-Sac: the role of advanced coal technologies in decarbonising Japan's electricity sector*, 2022.

JERA

SECTOR

Electric utilities

REVENUE

40.4 bn USD (2021)

EMISSIONS

188.4 MtCO₂e (2021)

PLEDGE

Net zero by 2050

TRANSPARENCY

Low

INTEGRITY

Low

1 TRACKING AND DISCLOSURE OF EMISSIONS

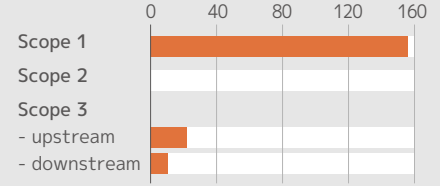
TRANSPARENCY & INTEGRITY

Tracking and disclosure 188.4 MtCO₂e in 2021

Subsidiaries are partly covered.

Major emission sources: 82.5% of CO₂ emissions are from power generation (s1) in FY2021. In Japan, 78% of the emissions were from gas-fired (LNG) power generation, and 22% were from coal-fired power generation.

Disclosure: Coverage is unclear except 2 of 80 consolidated subsidiaries. Emissions in the long-term targets' base year are not disclosed except s1 CO₂ emissions in Japan.



2 SETTING EMISSION REDUCTION TARGETS

TRANSPARENCY

INTEGRITY

Headline target or pledge *Net-zero CO₂ emissions from domestic and overseas operations by 2050*

Short- and medium-term targets (up to 2030)

Reduce carbon emission intensity of thermal power plants by 20% compared to the government energy outlook for FY2030.

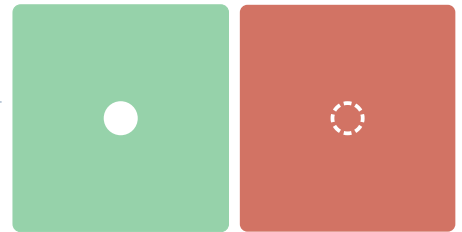
Scope coverage

S1 S2 S3

This target is translated as 2.94% reduction in its emission intensity of s1 in Japan (2.1% full value chain) from 2019 level. Not aligned with the 1.5°C benchmarks.

Own emission reductions
(compared to full value chain in 2019)

2%
by 2030



Long-term vision (beyond 2030)

Net-zero CO₂ from domestic and overseas operations by 2050

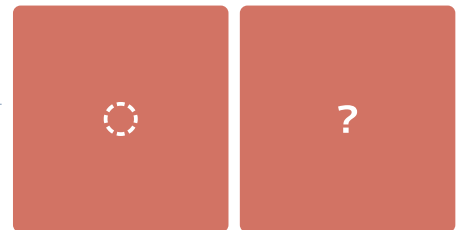
Scope coverage

S1 S2 S3

Cover s1 emissions only (82.7% in FY2021) with carbon offsets in 2050. Falls short of being aligned with 1.5°C pathways.

Own emission reductions
(compared to full value chain in 2019)

?
by 2050



3 REDUCING EMISSIONS

TRANSPARENCY

INTEGRITY

Emission reduction measures

No commitment to phase out unabated coal-fired generation and almost entirely eliminate unabated gas-fired generation. Heavily depends on technology developments such as ammonia or hydrogen co-firing. Not aligned with 1.5°C pathways.



Renewable electricity

5 GW of renewable energy development target by FY2025 globally. No numerical target beyond 2025.



4 CLIMATE CONTRIBUTIONS AND OFFSETTING

TRANSPARENCY

INTEGRITY

Responsibility for unabated emissions

No information identified on how the company takes responsibility for unabated emissions.



Climate contributions

No climate contributions identified.



Offsetting claims today

No offsetting claims today identified.



Offsetting plans for the future

2050 target depends on offsets using technologies such as so-called "CO₂-free LNG," but no further details disclosed.



RATING

Overall 5-point scale ● High ● Reasonable ● Moderate ● Low ● Very low . Average of sections 1-4.

Sections 1-4 5-point scale ● High ● Reasonable ● Moderate ● Low ● Very low . Average of the criteria in each section.

Rating criteria 3-point scale ● High ● Moderate ● Poor . See methodology document for rating criteria.

Transparency refers to the disclosure of information. Integrity refers to the quality and credibility of the approach.

1. JERA [Electric utilities]

The Group has not committed to phase out unabated coal-fired electricity generation. Instead, it promotes ammonia and hydrogen co-firing. The Group does not present a numerical target for renewable energy beyond FY2025.

JERA Co. (JERA) and its group companies (JERA Group) comprise the largest power generation corporate group in Japan, established by TEPCO Fuel & Power and Chubu Electric Power, each having a 50% share, with the Group accounting for about 30% of Japan's total power generation output.¹⁹ The Group's major emissions come from LNG-fired (78% of its power generation in Japan) and coal-fired power generation (22%). CO₂ emissions associated with power generation (scope 1) accounted for 82.5% of the Group's CO₂ emissions in FY2021.²⁰ The Group is the biggest emitting company in Japan, with its domestic scope 1 CO₂ emissions accounting for 12% of the country's total CO₂ emissions in FY2020.^{21 22}

a. Tracking and disclosure of emissions

The Group has 80 consolidated subsidiaries, and discloses scope 1, 2 and 3 GHG emissions from JERA in Japan and two of the 80 consolidated subsidiaries.²³ It is unclear to what extent other consolidated subsidiaries are included in its disclosed emissions. The Group does not disclose its long-term targets' base year emissions except for scope 1 CO₂ emissions in Japan.²⁴ Overall, it is difficult to track the Group's total GHG emissions.

b. Setting emission reduction targets

• Short and medium-term targets (up to 2030)

JERA Group commits to reduce carbon emission intensity of its thermal power plants by 20% compared to that of Japan-wide thermal power plants based on the government's energy outlook for FY2030.²⁵ The Group states only in its response to the CDP that this target is to reduce its carbon emission intensity of scope 1 emissions in Japan by 2.94% below its base year (2019) (2.1% emissions reduction across all emission scopes including overseas business), leading to about 0.478 kg-CO₂/kWh in 2030.²⁶ This is more than three times 1.5°C-aligned sectoral emission pathways (0.05-0.138 kg-CO₂/kWh),^{27 28} and about two times the nation-wide target for FY2030 (0.25 kg-CO₂/kWh) set by the Electric Power Council for a Low Carbon Society (of which the Group is a member) in order to be commensurate with the national 46% GHG reduction target by FY2030.²⁹

• Long-term vision (beyond 2030)

The Group commits to achieve net-zero CO₂ emissions from its domestic and overseas operations by 2050.³⁰ Based on its CDP responses, this target only covers CO₂ scope 1 emissions (82.7% of full value chain in FY2021).³¹ ³² The Group has also set a target to reduce scope 1 CO₂ emissions from its operations in Japan by at least 60% below FY2013 by FY2035.^{33 34}

IEA says that overall net-zero emissions electricity needs to be achieved by 2035 in advanced economies and net-zero by 2040 globally.³⁵ Similarly, SBTi says that companies in the power sector need to achieve a 97% absolute emission reduction below 2020 levels by 2040 to be aligned with net-zero standards.³⁶

Compared to these benchmarks, achieving carbon neutrality by 2050 is too late. As the Group runs its business in advanced economies and emerging markets only,³⁷ overall net-zero emissions electricity needs to be achieved by 2035 or well ahead of 2040. The Group has failed to set targets to be compatible with these net-zero emissions pathways for the power sector.

c. Reducing emissions

• Emission reduction measures

The Group does not specify when it will phase out unabated coal-fired generation and almost entirely eliminate unabated natural gas-fired generation. Instead, the Group's measures heavily rely on technology development such as ammonia and hydrogen co-firing (see Box 2).³⁸

IEA says that power companies need to phase out all unabated coal-fired generation by 2030 in advanced economies and by 2040 globally, and that unabated natural gas-fired generation starts falling by 2030 and is 90% lower by 2040 compared with 2020 globally, in the net-zero emission pathways for the electricity sector.³⁹

Lacking equivalent targets, the Group fails to be in line with IEA's net-zero emissions pathways for the electricity sector.

• Renewable electricity

The Group had 76.6 GW of total power generation capacity in FY2021, including 1.7 GW of renewable energy,⁴⁰ which accounted for only 2.2% of its total capacity. The Group has set a target to develop 5 GW of renewable energy capacity by FY2025 globally,⁴¹ which is 6.5% compared to its current total capacity. The Group does not present a numerical target for renewable energy beyond FY2025.

A 1.5°C compatible trajectory would require that the share of zero-carbon sources in electricity generation reach 74-92%⁴² and renewables at least 60% by 2030 globally.⁴³ IEA also says that power companies need to generate almost 90% of electricity from renewable sources by 2050, with wind and solar PV accounting for nearly 70%, in order to achieve net zero globally by 2050.⁴⁴

Compared to these benchmarks, the Group's renewable energy target for FY2025 is extremely low. The lack of a target for renewable energy beyond FY2025 also makes the Group's 2050 vision incompatible with the 1.5°C-aligned sectoral emission pathways.

d. Climate contributions and offsetting

JERA Group plans to offset CO₂ emissions from its thermal power plants in 2050, with technologies such as so-called "CO₂-free LNG."⁴⁵ The Group does not specify whether or not it plans to use offset credits or direct carbon removal technologies, and the extent to which it relies on offset credits. Based on the IEA's net zero emissions pathways, the electricity sector needs to achieve overall net-zero emissions electricity by 2040 globally and be the first to achieve net-zero emissions.⁴⁶ Electricity generating companies need to achieve zero emissions without relying on limited offsets available.

J-POWER

SECTOR

Electric utilities

REVENUE

9.9 bn USD (2021)

EMISSIONS

61.7 MtCO₂e (2021)

PLEDGE

Carbon neutral by 2050

TRANSPARENCY

Low

INTEGRITY

Low

1 TRACKING AND DISCLOSURE OF EMISSIONS

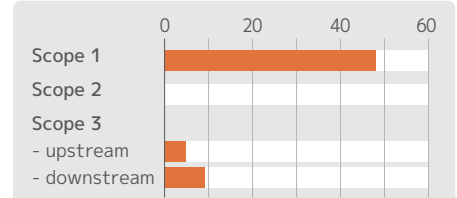
TRANSPARENCY & INTEGRITY

Tracking and disclosure 61.7 MtCO₂e in 2021

Subsidiaries are partly covered.

Major emission sources: 77.7% of total emissions in FY2021 are from s1. 36.2% of its power generation is from domestic coal-fired power.

Disclosure: Covers J-POWER, and 43 subsidiaries of 162 major Group companies. s3 breakdown was reported in FY2021 only. Emissions in the 2030 target's base year are not disclosed except s1 CO₂ emissions in Japan.



2 SETTING EMISSION REDUCTION TARGETS

TRANSPARENCY

INTEGRITY

Headline target or pledge **Carbon neutrality by 2050**

Short- and medium-term targets (up to 2030)

Reduce CO₂ emissions from power generation business in Japan by at least 40% by FY2030 compared to the three years average in FY2017-2019.

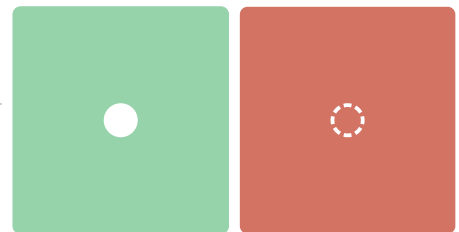
Scope coverage

S1 S2 S3

Own emission reductions
(compared to full value chain in 2019)

?
by 2030

Emissions from s1 of overseas business, s2 and s3 are not covered, and its coverage is only 57.5% of emissions in FY2019.



Long-term vision (beyond 2030)

Carbon neutrality in CO₂ emissions from domestic power business by 2050

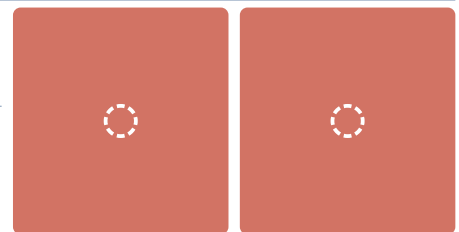
Scope coverage

S1 S2 S3

Own emission reductions
(compared to full value chain in 2019)

?
by 2050

Emissions from s1 of overseas business, s2 and s3 are not covered.



3 REDUCING EMISSIONS

TRANSPARENCY

INTEGRITY

Emission reduction measures

Measures include renewable and nuclear development, reduction of aging coal-fired plants, hydrogen power generation and CCS. No commitment to phase out unabated coal. Not aligned with 1.5°C.



Renewable electricity

Target of developing 1,500 MW of renewable capacity by FY2025 only. No numerical target beyond 2025.



4 CLIMATE CONTRIBUTIONS AND OFFSETTING

TRANSPARENCY

INTEGRITY

Responsibility for unabated emissions

No information identified on how the company takes responsibility for unabated emissions.



Climate contributions

No climate contributions identified.



Offsetting claims today

No offsetting claims today identified.



Offsetting plans for the future

Plan includes utilization and promotion of carbon offset and credit, but no further detail disclosed.



RATING

Overall 5-point scale ● High ● Reasonable ● Moderate ● Low ● Very low . Average of sections 1-4.

Sections 1-4 5-point scale ● High ● Reasonable ● Moderate ● Low ● Very low . Average of the criteria in each section.

Rating criteria 3-point scale ● High ● Moderate ● Poor . See methodology document for rating criteria.

Transparency refers to the disclosure of information. Integrity refers to the quality and credibility of the approach.

2. J-POWER [Electric utilities]

The Group has not committed to phase out unabated coal power generation. Instead, it is promoting ammonia and hydrogen co-firing. The Group plans to develop renewable energy after 2025, but has presented no numerical target.

Electric Power Development Co. (J-POWER) and its Group companies (J-POWER Group) are a power generation Group operating in Japan and overseas.⁴⁷ The Group's major emissions are related to scope 1, which accounted for 77.7% of its total emissions in FY2021. 36.2% of its power generation is from domestic coal-fired power, followed by domestic hydroelectric (34.5%).⁴⁸

a. Tracking and disclosure of emissions

The Group has J-POWER and 162 major group companies, but its emission data covers only J-POWER and 43 of its subsidiaries.⁴⁹ Consolidated subsidiaries in the transmission business and electric power-related business, as well as some equity-method affiliates in the thermal power generation business, such as Samutprakarn Cogeneration and Bhimasena Power Indonesia, are excluded in its disclosed data.⁵⁰ The Group has not disclosed its emissions for the base years (2017-2019), either, except for scope 1 CO₂ emissions in Japan. As a result, the Group's total GHG emissions are unclear and difficult to track.

b. Setting emission reduction targets

• Short- and medium-term targets (up to 2030)

The Group has committed to reduce scope 1 CO₂ emissions from its power generation business in Japan (67.5% of its emissions in FY2021) by at least 40% by FY2030 compared to the 3-year average of FY2017-2019.^{51 52}

The IEA's net-zero emission pathways require the electricity sector to reduce its emissions faster and more than any other sector,⁵³ requiring CO₂ emissions from electricity generation to drop by nearly 60% by 2030 compared to 2020, mainly due to major reductions from coal-fired power plants, and the electricity sector to become a net negative source of CO₂ emissions around 2040.⁵⁴ The Group's 2030 target falls well short of the net-zero emission pathways.

• Long-term targets (beyond 2030)

In its integrated report, the Group commits to achieve carbon neutrality in CO₂ emissions (scope 1) from its domestic power business by 2050.⁵⁵ In its CDP response, the Group presents a target to achieve zero CO₂ emissions from its power business in 2050, covering 100% of scope 1 and 2 CO₂ emissions.⁵⁶

The SBTi Corporate Net Zero Standard requires companies in the power sector to cover at least 95% of scope 1 and 2 emissions and achieve 97% emission reductions below 2020 levels by 2040.⁵⁷ IEA says that overall net-zero emissions electricity needs to be achieved by 2035 in advanced economies and net-zero by 2040 globally.⁵⁸ The UNFCCC Race to Zero campaign calls for the global electricity system to be fully decarbonized by 2040.⁵⁹

Compared to these benchmarks, achieving carbon neutrality by 2050 is too late. As the Group owns power generation facilities in advanced economies and emerging markets only,⁶⁰ overall net-zero emissions electricity needs to be achieved by 2035 or well ahead of 2040. The Group fails to set targets to be compatible with these net-zero emissions pathways for the power sector.

c. Reducing emissions

• Emission reduction measures

The Group plans to phase down aging coal-fired power plants, but the scale and timeline is not specified.⁶¹ The Group has not committed to phase out unabated coal-fired generation.

Rather, the Group indicates that it will continue to use coal-fired power plants until 2050 in Japan.⁶² The Group emphasizes technologies such as ammonia co-firing, upcycling (retrofitting) to hydrogen power generation technologies and CCS that are still under development despite limited prospects for them to reduce emissions by 2030 and beyond.⁶³ The Matsushima GENESIS project, which involves plans to add a gasification system and gas turbines to the aging coal power plant instead of shutting it down, is the Group's first project launched, aiming to achieve zero emission thermal power in the future.⁶⁴

In light of the need to phase out all unabated coal power by 2030 in advanced economies and by 2040 globally, start reducing unabated natural gas-fired generation by 2030 globally, and be 90% lower by 2040 compared to 2020,⁶⁵ the Group's lack of targets to phase out unabated coal-fired generation and its large reliance on unproven technologies mean that the Group is not in line with the net-zero emissions pathways.

• Renewable electricity

Of the Group's owned capacity of the power generation facilities in operation, 38.8% (9,650 MW) is renewables (mostly domestic hydroelectric) and 61.2% is coal and gas, as of March 2022.⁶⁶ The Group aims to develop at least 1,500 MW (compared to FY2017) of renewable energy by FY2025 globally to reach 11,030 MW by FY2025, equivalent to 44.5% of the Group's total capacity in 2022.⁶⁷ The Group plans to develop more after FY2025, but has presented no numerical target.⁶⁸

1.5°C-compatible trajectories would require the share of zero-carbon sources in electricity generation to reach 74-92%⁶⁹ and renewables at least 60%, by 2030 globally.⁷⁰ IEA says that the share of solar PV and wind needs to reach 40% of total electricity generation by 2030 globally, and almost 90% needs to be generated from renewable sources by 2050 globally, with wind and solar PV together accounting for nearly 70%, in order to achieve net zero globally by 2050.⁷¹

The Group's target of raising the share of renewables to 44.5% by FY2025 is not sufficient, considering the Group's large capacity of hydroelectric developed already. The Group needs to increase the share of solar and wind to more than 40% by 2030 to meet global requirements of IEA net zero scenario at a minimum.

d. Climate contributions and offsetting

In its Environmental Action Guidelines, the Group includes utilization and promotion of carbon offsets and credits among its initiatives to reduce GHG emissions, but does not specify any details. Based on the IEA's net-zero emissions pathways, the electricity sector needs to achieve overall net-zero emissions electricity by 2040 globally and be the first to achieve net-zero emissions.⁷² Electricity generating companies need to achieve zero emissions without relying on limited offsets available.

Nippon Steel

SECTOR

Steel

REVENUE

62.0 bn USD
(2021)

EMISSIONS

103.3 MtCO₂e
(2021)

PLEDGE

Carbon neutral
by 2050

TRANSPARENCY

Low

INTEGRITY

Low

1 TRACKING AND DISCLOSURE OF EMISSIONS

TRANSPARENCY & INTEGRITY

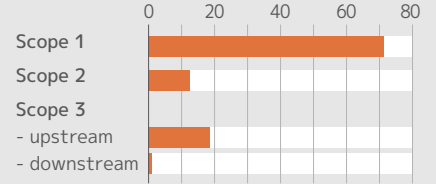
Tracking and disclosure 103.3 MtCO₂e in 2021

Subsidiaries are partly covered.

Major emission sources: Majority of energy-derived CO₂ emissions are s1 and s2 (81.1% in 2021).

Disclosure: Energy-derived CO₂ from s1 and 2 of parent and 10 of its 483 subsidiaries, and from s3 of Nippon Steel are disclosed.

Group does not publicly disclose its response to CDP.



2 SETTING EMISSION REDUCTION TARGETS

TRANSPARENCY

INTEGRITY

Headline target or pledge *Carbon neutrality by 2050*

Short- and medium-term targets (up to 2030)

Reduce energy-related CO₂ emissions from s1 and s2 in Japan by 30% by FY2030 compared to FY2013 levels.

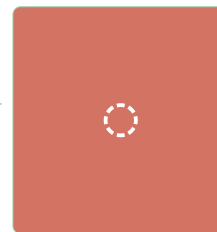
Scope coverage

S1 S2 S3

Own emission reductions
(compared to full value chain
in 2019)

?
by 2030

30% reduction is equivalent to 1.8% per year, which falls short of the corporate net zero standard. No carbon intensity target is set.



Long-term vision (beyond 2030)

Carbon neutral by 2050

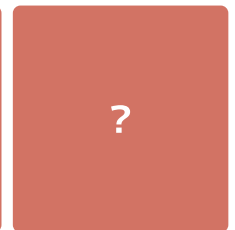
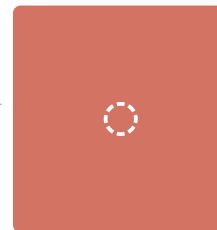
Scope coverage

S1 S2 S3

Own emission reductions
(compared to full value chain
in 2019)

?
by 2050

Carbon neutral in energy-related CO₂ emissions from s1 and s2 of its business in Japan with carbon offsets by 2050. No s3 target.



3 REDUCING EMISSIONS

TRANSPARENCY

INTEGRITY

Emission reduction measures

Measures are mostly based on existing processes, and aim to develop new technologies, incl. high-grade steel production technology in large-size EAFs. But no post-2030 targets and timelines are described for the expansion of EAFs.



Renewable electricity

No disclosure of RE procurement constructs.



4 CLIMATE CONTRIBUTIONS AND OFFSETTING

TRANSPARENCY

INTEGRITY

Responsibility for unabated emissions

No information identified on how the company takes responsibility for unabated emissions.



Climate contributions

No climate contributions identified.



Offsetting claims today

No offsetting claims today identified.



Offsetting plans for the future

Plans to achieve its 2050 target with CCUS and other carbon offset measures, but no further detail disclosed.



RATING

Overall 5-point scale ● High ● Reasonable ● Moderate ● Low ● Very low . Average of sections 1-4.

Sections 1-4 5-point scale ● High ● Reasonable ● Moderate ● Low ● Very low . Average of the criteria in each section.

Rating criteria 3-point scale ● High ● Moderate ● Poor . See methodology document for rating criteria.

Transparency refers to the disclosure of information. Integrity refers to the quality and credibility of the approach.

3. Nippon Steel [Steel]

The Group's key measures include reducing CO₂ emissions in the existing blast furnace-based primary steel-making process and development of large scale electric arc furnace (EAF) by 2030, and hydrogen reduction steelmaking. The speed and scale of emission reductions is unclear.

Nippon Steel Corporation (Nippon Steel) and its Group companies (Nippon Steel Group) are the largest steel-maker in Japan, and ranked the world's fourth largest by volume of crude steel production in 2021.⁷³ Of the Group's reported energy-derived CO₂ emissions, 81.1% were scope 1 and 2 in FY2021.⁷⁴

a. Tracking and disclosure of emissions

Nippon Steel Group has 483 subsidiaries, including 378 consolidated subsidiaries and 105 affiliated companies.⁷⁵ The Group only discloses scope 1 and 2 energy-derived CO₂ emissions from parent and 10 of its 483 subsidiaries, and scope 3 energy-derived CO₂ emissions from the parent.⁷⁶ The Group does not publicly disclose its CDP response.

There are inconsistencies in the data collection boundaries for its emissions, including differences in coverage of energy-derived CO₂ emissions (p.75), CO₂ emissions in the value chain (p.76), and CO₂ emissions reduction scenario (p.24), all within the same Integrated Report (2022). Overall, it is difficult for a third party to track the Group's total GHG emissions, and the Group is below good practice standards.

b. Setting emission reduction targets

• Short and medium-term targets (up to 2030)

The Group's 2030 target is to reduce its scope 1 and 2 energy-related CO₂ emissions in Japan by 30% by FY2030 compared to FY2013 levels.⁷⁷ Companies are required to set a climate target for 2030 covering 95% of their scope 1 and 2 emissions, and reduce those emissions by 4.2% per year in order to align with the SBTi Corporate Net Zero Standard.⁷⁸ A 30% reduction over 17 years (1.8% reduction per year) is not fast enough to meet the standard, and there is an obvious hole in the scope as only energy-related CO₂ emissions are covered.

Climate Action Tracker has shown that emission intensity in steel production needs to reach 1,335-1,350 kgCO₂/tonne steel by 2030.⁷⁹ But it is not possible to compare with this benchmark as the Group has not set a carbon intensity target.

• Long-term targets (beyond 2030)

The Group states that Nippon steel and its major domestic consolidated subsidiaries aim to be carbon neutral in 2050.⁸⁰ It is assumed that this target covers scope 1 and 2 energy-derived CO₂ emissions from the parent and 13 of its subsidiaries in Japan.⁸¹ However, the Group does not present a target for scope 3 and has not disclosed its scope 3 CO₂ emissions in 2013, the base year for its climate targets.

Globally, climate targets of companies in the iron and steel sector need to cover 95% of their scope 1 and 2 emissions and aim to reduce these emissions by 91% below 2020 levels by 2050 in order to be aligned with the SBTi 1.5°C scenario.⁸² The UNFCCC Race to Zero campaign calls

on top companies in the steel sector to achieve-net zero emissions across all emission scopes globally by 2050.⁸³

The Group has not presented a numerical reduction target without offsets (e.g. emissions reduction percentage or carbon intensity). The lack of information makes the coverage and the depth of absolute emissions reduction of its long-term target highly ambiguous and assessment of the target difficult.

c. Reducing emissions

• Emission reduction measures

The Group's key measures declared for 2030 include reducing CO₂ emissions in existing blast furnace (BF) and basic oxygen furnace (BOF) processes. For the long term, the Group aims to develop new technologies, including high-grade steel production in large-size electric arc furnaces (EAFs), hydrogen reduction steelmaking, and CCUS.⁸⁴ A new electric arc furnace (EAF) started commercial operation at the Setouchi Works Hirohata Area in 2022, and technology for high-grade steel production in large-size EAFs will be established by FY2030,⁸⁵ but no further targets and timelines are described for the expansion of EAFs.

In the IEA net-zero emission pathways for the steel sector, the share of scrap in steel production inputs reaches 38% by 2030 and 46% by 2050.⁸⁶ The IEA net-zero emission pathways for 2050 also have the share of hydrogen-based direct reduced iron (DRI) in EAFs reaching 29%, iron ore electrolysis-EAFs 13%, and CCUS-equipped processes 53%, in primary steel production in 2050, and these technologies drive a sharp drop in the share of coal in total energy use from 75% in 2020 to 22% by 2050, of which 90% is used in conjunction with CCUS.⁸⁷

The Group's plan relies heavily on new technologies and does not provide sufficient detail to suggest that it can reduce emissions fast enough to be in line with those benchmarks.

• Renewable electricity

The Group does not provide information on its renewable electricity use in its annual reports. The Group's plan for mass production of high-grade steel in large-size EAFs may increase scope 2 emissions, but the Group sets no target for renewable electricity procurement.

The SBTi corporate Net Zero Standard requires companies to set targets to actively procure at least 80% renewable electricity by 2025 and 100% by 2030.⁸⁸ The absence of a renewable electricity procurement target is a major shortcoming.

d. Climate contributions and offsetting

The Group plans to achieve its 2050 target with CCUS and other carbon offset measures,⁸⁹ but does not specify to what extent it plans to rely on offset credits, and the types and prices for the credits it plans to purchase, making this claim highly ambiguous and questionable.

JFE

SECTOR

Steel

REVENUE

39.7 bn USD
(2021)

EMISSIONS

79.8 MtCO₂e
(2021)

PLEDGE

Carbon neutral
by 2050

TRANSPARENCY

Low

INTEGRITY

Low

1 TRACKING AND DISCLOSURE OF EMISSIONS

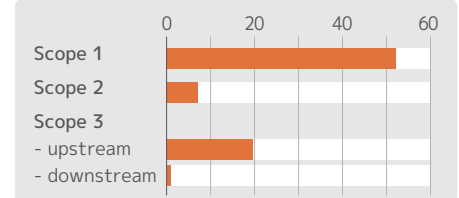
TRANSPARENCY & INTEGRITY

Tracking and disclosure 79.8 MtCO₂e in 2021

Subsidiaries are partly covered.

Major emission sources: Majority of CO₂ emissions is from s1 and s2 (74% in FY2021).

Disclosure: GHG emissions of the three operating companies and 76 of its 412 subsidiaries are disclosed. Group does not publicly disclose its responses to CDP.



2 SETTING EMISSION REDUCTION TARGETS

TRANSPARENCY

INTEGRITY

Headline target or pledge *Carbon neutrality by 2050*

Short- and medium-term targets (up to 2030)

Reduce CO₂ emissions from JFE Steel by 30% or more compared to FY2013 levels.

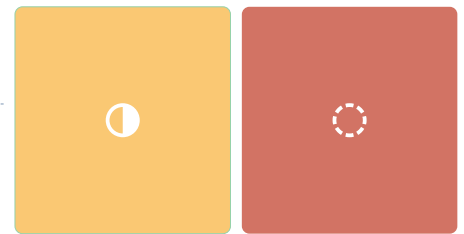
Scope coverage

S1 S2 S3

Covers 90.4% of the group's CO₂ emissions from s1 and s2. Anticipated CO₂ reduction is 1.6% per year. It falls short of corporate net zero standard. No emission intensity target is set.

Own emission reductions
(compared to full value chain in 2019)

?
by 2030



Long-term vision (beyond 2030)

Carbon neutrality in CO₂ emissions from JFE Steel by 2050.

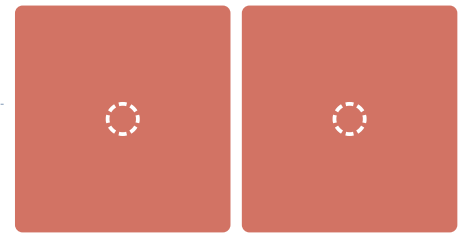
Scope coverage

S1 S2 S3

JFE Steel target covers CO₂ emissions from s1 and s2 of JFE Group by 89.1% in FY2020, but its emissions reduction rate is unclear. Target on JFE Engineering is not a numerical target.

Own emission reductions
(compared to full value chain in 2019)

?
by 2050



3 REDUCING EMISSIONS

TRANSPARENCY

INTEGRITY

Emission reduction measures

Focus on expanding low-carbon technologies to 2030 and commercialization of new technologies, including carbon-recycling blast furnaces and CCU after 2030, with no clarity of timeline and expected impacts.



Renewable electricity

JFE Shoji Corporation plans to reduce CO₂ emissions from its operation in Japan through renewable electricity procurement. JFE Group has not disclosed the amount and the share of renewable electricity procured.



4 CLIMATE CONTRIBUTIONS AND OFFSETTING

TRANSPARENCY

INTEGRITY

Responsibility for unabated emissions

No information identified on how the company takes responsibility for unabated emissions.



Climate contributions

No climate contributions identified.



Offsetting claims today

No offsetting claims today identified.



Offsetting plans for the future

Any plans to offset emissions in the future are not announced.



RATING

Overall 5-point scale ● High ● Reasonable ● Moderate ● Low ● Very low . Average of sections 1-4.

Sections 1-4 5-point scale ● High ● Reasonable ● Moderate ● Low ● Very low . Average of the criteria in each section.

Rating criteria 3-point scale ● High ● Moderate ● Poor . See methodology document for rating criteria.

Transparency refers to the disclosure of information. Integrity refers to the quality and credibility of the approach.

4. JFE [Steel]

The Group plans to expand the use of low-carbon technologies and to accelerate R&D, including new technology for carbon-recycling blast furnaces and carbon capture and utilization (CCU) after 2030, but the timeline is unclear.

JFE Group consists of three operating companies (JFE Steel Corporation, JFE Engineering Corporation, and JFE Shoji Corporation) and other Group companies. JFE Steel was the second largest steelmaker in Japan and the world's 13th biggest steelmaker in 2021.⁹⁰ Of the Group's reported CO₂ emissions in FY2021, 74% were scope 1 and 2.⁹¹

a. Tracking and disclosure of emissions

JFE Group has 412 subsidiaries, including 330 consolidated subsidiaries and 82 affiliated companies.⁹² The Group has disclosed GHG emission data of the three operating companies and 76 of its 412 subsidiaries.⁹³ The Group does not publicly disclose its responses to CDP Climate Change Questionnaires. The Group fails to meet good practices for reporting its total emissions, making it difficult to track performance.

b. Setting emission reduction targets

• Short and medium-term targets (up to 2030)

The Group's 2030 target is to reduce CO₂ emissions from JFE Steel by 30% or more compared to FY2013 levels. Based on the Group's relevant reports, the target covers 90.4% of scope 1 and 2 CO₂ emissions in FY2013 and only anticipates a 1.6% reduction per year.⁹⁴ The Group also plans to reduce emissions by 2 MtCO₂ per year by FY2030 through increasing the use of scrap iron and investing in facility expansion.⁹⁵

Companies need to cover 95% of scope 1 and 2 emissions and reduce emissions by 4.2% per year to align with the SBTi Corporate Net Zero Standard.⁹⁶ A 1.6% reduction per year is not fast enough to meet the standard.

Climate Action Tracker has shown that steel emission intensity needs to reach 1,335-1,350 kgCO₂/tonne steel in 2030.⁹⁷ However, it is not possible to make a comparison with this benchmark as the Group has not set a carbon intensity target.

• Long-term targets (beyond 2030)

The Group aims to achieve carbon neutrality in CO₂ emissions from its steel business by 2050 and contribute to CO₂ emission reductions in society through its engineering business (non-numerical target).⁹⁸ The Group does not clearly report emission scope of the 2050 target for its steel business, but we can assume that this target covers JFE Steel's scope 1 and 2 energy-related CO₂ emissions.⁹⁹

Climate targets of companies in the iron and steel sector need to cover 95% of their scope 1 and 2 emissions and aim to reduce those emissions by 91% below 2020 levels by 2050 in order to be aligned with the SBTi 1.5°C scenario globally.¹⁰⁰

The Group's target covers most of its scope 1 and 2 CO₂ emissions (covering 89.1% of FY2020 emissions, 90.4% of FY2013), but emissions reduction rate without offsets is unclear. The 2050 target on its engineering business is not a numerical target. The claim of "contribution to CO₂ emissions reduction in society" is unclear because the Group does not disclose its downstream scope 3 emis-

sions, including category 11. Therefore, with this information, it would not be admitted to be consistent with the SBTi Corporate Net Zero Standard.

c. Reducing emissions

• Emission reduction measures

The Group's measures focus on expanding the use of low-carbon technologies to reduce emissions and accelerating R&D of new technologies in the transition phase to 2030.¹⁰¹ It was reported that the Group is considering building a new electric arc furnace (EAF) to replace the No.2 blast furnace at its Kurashiki plant in western Japan, but no official announcement has been made yet at the time this paper was written.¹⁰² The Group plans to focus on the commercialization of carbon-recycling blast furnaces, direct-reduction steelmaking and the expansion of CCU applications in the innovation phase after 2030.¹⁰³

In the IEA net-zero emission pathways for the steel sector, the share of scrap in steel production inputs reaches 38% by 2030 and 46% by 2050.¹⁰⁴ The IEA net-zero emission pathways for 2050 also have the share of hydrogen-based direct reduced iron (DRI) in EAFs reaching 29%, iron ore electrolysis-EAFs 13%, and CCUS-equipped processes 53%, in primary steel production in 2050, and these technologies drive a sharp drop in the share of coal in total energy use from 75% in 2020 to 22% by 2050, of which 90% is used in conjunction with CCUS.¹⁰⁵

Compared to these benchmarks, the Group's plan does not provide information to show if it can reduce emissions fast enough, and it relies heavily on new technologies. If the Group aims to start implementation of CCU well before 2050, it would have to fully consider the entire CCUS logistical chain, but the timeline and expected impacts are unclear too.

• Renewable electricity

JFE Shoji Corporation plans to reduce CO₂ emissions from its domestic operations by 5% per year for the period FY2021-2024 compared to FY2019 through renewable electricity procurement, but does not disclose detailed plan for procurement.¹⁰⁶

The Group has not disclosed the amount of renewable electricity procured and the share of renewable electricity in its electricity consumption. The absence of a target for renewable electricity procurement after 2025 is a shortcoming as the SBTi Corporate Net Zero Standard requires companies to set targets to actively procure at least 80% renewable electricity by 2025 and 100% by 2030.¹⁰⁷

d. Climate contributions and offsetting

The Group claims it will achieve carbon neutrality by 2050, but it is unclear if the Group plans to achieve this target without relying on offset credits.

ENEOS

SECTOR

Oil and gas

REVENUE

99.5 bn USD
(2021)

EMISSIONS

214.4 MtCO₂e
(2021)

PLEDGE

Carbon neutral
by 2050

TRANSPARENCY

Low

INTEGRITY

Low

1 TRACKING AND DISCLOSURE OF EMISSIONS

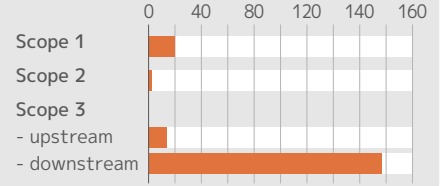
TRANSPARENCY & INTEGRITY

Tracking and disclosure 214.4 MtCO₂e in 2021

Subsidiaries are partly covered.

Major emission sources: Most of the GHG emissions originate in the use phase of the products it sells (82% of its emissions in FY2021).

Disclosure: GHG emissions from s1 and s2 of 78 of 764, and s3 CO₂ emissions of ENEOS Corporation only are disclosed.



2 SETTING EMISSION REDUCTION TARGETS

TRANSPARENCY

INTEGRITY

Headline target or pledge *Carbon neutral by 2050*

Short- and medium-term targets (up to 2030)

Reduce CO₂ emissions from s1 and s2 to 16 MtCO₂ or less by FY2030 (reduce by 46% by FY2030 compared to FY2013). Reduce CO₂ emissions by 10.17MtCO₂ in FY2030 compared to FY2009.

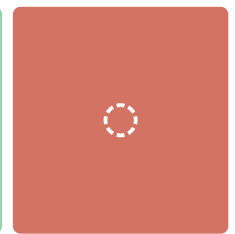
Scope coverage

S1 S2 S3

Reduce CO₂ emissions from s1 and s2 by 2.7% per year which is not in line with corporate net zero standard. No s3 target.

Own emission reductions
(compared to full value chain
in 2019)

?
by 2030



Long-term vision (beyond 2030)

Carbon neutrality in s1 and s2 CO₂ emissions with direct CO₂ removal by FY2040, and remain until FY2050. Carbon neutrality in s3 CO₂ emissions by FY2050.

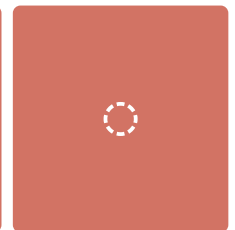
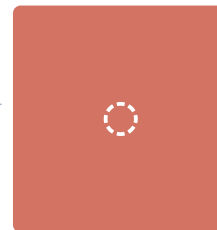
Scope coverage

S1 S2 S3

Own emission reduction without offsets are unclear. No detail plans for 2050 s3 target which accounts for 89.1% of its reported emissions.

Own emission reductions
(compared to full value chain
in 2019)

?
by 2050



3 REDUCING EMISSIONS

TRANSPARENCY

INTEGRITY

Emission reduction measures

Measures include technologies in oil refining and marketing, CO₂-free hydrogen, SAF and synthetic fuels. Agreement in 2022 with the PNG government for future gas field development. No reduction target for oil and gas production.



Renewable electricity

Plans to expand renewable energy development, but scale and timeline are not presented.



4 CLIMATE CONTRIBUTIONS AND OFFSETTING

TRANSPARENCY

INTEGRITY

Responsibility for unabated emissions

No information identified on how the company takes responsibility for unabated emissions.



Climate contributions

No climate contributions identified.



Offsetting claims today

No offsetting claims today identified.



Offsetting plans for the future

Plans to offset CO₂ emissions in FY2040 (16 MtCO₂), including through forest absorption, to achieve carbon neutrality in its s1 and s2 CO₂ emissions by FY2040.



RATING

Overall 5-point scale ● High ● Reasonable ● Moderate ● Low ● Very low . Average of sections 1-4.

Sections 1-4 5-point scale ● High ● Reasonable ● Moderate ● Low ● Very low . Average of the criteria in each section.

Rating criteria 3-point scale ● High ● Moderate ● Poor . See methodology document for rating criteria.

Transparency refers to the disclosure of information. Integrity refers to the quality and credibility of the approach.

5. ENEOS [Oil and gas]

The Group has not declared a numerical target for scope 3, which accounted for 89% of its reported emissions in FY2021. The Group entered into a gas agreement in 2022 with the Papua New Guinea government for future development of the P'nyang Gas Field. The Group's reporting overall lacks transparency.

ENEOS Group is the largest energy and materials company group in Japan, having about a 50% share of domestic sales of petroleum products in FY2021.¹⁰⁸ Most of the Group's GHG emissions originate in the use phase of the products it sells (82% of its GHG emissions in FY2021).¹⁰⁹

a. Tracking and disclosure of emissions

The ENEOS Group consists of 764 companies, including ENEOS Holdings, principal operating companies (i.e., ENEOS Corporation, JX Nippon Oil & Gas Exploration Corporation, and JX Nippon Mining & Metals Corporation) as well as other subsidiaries and affiliated companies. Of the Group's 764 companies, the Group only discloses scope 1 and 2 GHG emissions for 78 companies and scope 3 CO₂ emissions for ENEOS Corporation.¹¹⁰ Slightly different GHG data are reported among its integrated report 2022, ESG Data Book 2022 and its CDP response.^{111 112} The Group overall fails to meet good practices to report its total emissions.

b. Setting emission reduction targets

• Short and medium-term targets (up to 2030)

The Group has committed to reduce its annual scope 1 and 2 CO₂ emissions to 16 MtCO₂ or less by FY2030 (46% reduction by FY2030 compared to FY2013), which is a 2.7% reduction per year on average.¹¹³ The Group has another 2030 target (Long-term Environmental Target) to reduce CO₂ emissions by 10.17 MtCO₂ in FY2030 compared to FY2009.¹¹⁴ Its CDP response shows that this target would reduce its scope 1 and 2 CO₂ emissions by 43.79% by FY2030 compared to FY2009 (2.1% per year).¹¹⁵

The ENEOS Group does not present a 2030 target for scope 3 in its annual reports, but in its CDP response, the Group presented a 2030 target to reduce ENEOS Corporation's scope 3 CO₂ emissions by 57% by 2030 below 2009 (90.73 MtCO₂ emissions in 2030)¹¹⁶ without disclosing its base year emissions.

Presenting different targets in different documents, and having the outdated base year of FY2009 makes the Group's targets untransparent and questionable. Overall, the Group's 2030 targets fall short of the SBTi Corporate Net Zero Standard, which calls on companies to reduce their emissions by 4.2% per year.^{117 118 119}

• Long-term targets (beyond 2030)

The Group plans to achieve carbon neutrality in scope 1 and 2 CO₂ emissions with direct CO₂ removal by FY2040, and remain carbon neutral until FY2050, and aims for carbon neutrality in scope 3 CO₂ emissions by FY2050.^{120 121}

A graph in its Carbon Neutrality Plan shows the amounts of CO₂ emissions covered by the 2030 and 2040 targets,¹²² but the numbers in the graph do not match any amounts of emission data reported in its annual reports or CDP Climate Change 2022.

It is unclear to what extent the Group plans to reduce its scope 1 and 2 emissions by 2040 without offsets.

In addition, the Group does not offer any details of plans for achieving carbon neutrality including scope 3, which accounted for 89.1% of its reported emissions in FY2021.¹²³

The Group's plans lack clarity regarding its emission reductions without relying offsets and details of scope 3 emissions reductions are clearly insufficient. This makes the Group's long-term target ambiguous and difficult to assess.

c. Reducing emissions

• Emission reduction measures

The Group plans to take emission reduction measures that include the use of technologies it has developed in oil refining and marketing, building supply chains for CO₂-free hydrogen, and expanding the use of sustainable aviation fuel (SAF) and synthetic fuels.¹²⁴ The Group has not set a target to reduce its oil and gas production.

In fact, the ENEOS Group entered into a new gas agreement with the Papua New Guinea government in 2022 that provides a framework for future development of the P'nyang Gas Field, expecting it to become a future source of natural gas supply.^{125 126}

In the IEA net zero emissions pathways, no new oil and gas fields should be approved for development from 2021 onward,¹²⁷ and the UNFCCC the Race to Zero campaign calls on top companies in the oil and gas sector to reduce oil and gas production by 40% by 2030 compared to 2019.¹²⁸ The Group fails to meet such benchmarks.

• Renewable electricity

ENEOS Group's total renewable energy power capacity is 1,230 MW, and the Group has presented a plan to expand it. However, it has not presented sufficient details on the scale, timeline, targets of these plans, and contribution to emission reductions. Considering the Group's emission impacts as a major energy supplier, the lack of future targets and clear timelines for renewables make its efforts insufficient.

d. Climate contributions and offsetting

ENEOS Group plans to achieve carbon neutrality with direct carbon removal in its scope 1 and 2 CO₂ emissions by FY2040.¹²⁹ The Group plans to inject 3 MtCO₂ per year by CCS from 2030,¹³⁰ and to achieve carbon neutrality for its scope 1 and 2 emissions from petroleum production processes in FY2040 with CCS, offsets (such as forest absorption) and others to meet the 2040 target.¹³¹ However, the Group does not provide further details about its plans for the use of offsets. Amid increased awareness that the non-permanence of nature-based carbon dioxide removal projects makes them unsuitable for claiming the neutralization of emissions,¹³² the Group does not explain how it is going to address this non-permanence of carbon removal by forest absorption.

Taiheiyo Cement

SECTOR

Cement

REVENUE

6.4 bn USD
(2021)

EMISSIONS

26.6 MtCO₂e
(2021)

PLEDGE

Carbon neutral
by 2050

TRANSPARENCY

Moderate

INTEGRITY

Low

1 TRACKING AND DISCLOSURE OF EMISSIONS

TRANSPARENCY & INTEGRITY

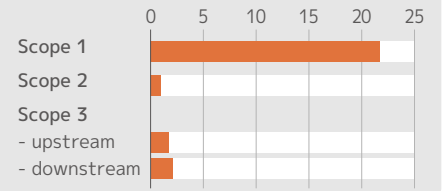
Tracking and disclosure

26.6 MtCO₂e
in 2021

Subsidiaries are partly covered.

Major emission sources: Majority of the emissions are from cement production (92% of its GHG emissions).

Disclosure: CO₂ emissions from its 17 cement plants and quarries are disclosed, but CO₂ emissions and cement emissions intensity in base year are not disclosed in its annual report.



2 SETTING EMISSION REDUCTION TARGETS

TRANSPARENCY

INTEGRITY

Headline target or pledge **Carbon neutrality by 2050**

Short- and medium-term targets
(up to 2030)

Reduce CO₂ emissions from s1 and s2 in Japan by 40% or more compared to 2000.
Reduce CO₂ emissions intensity in s1, 2 and 3 (category 1 and 3 only) by 20% or more compared to 2000.

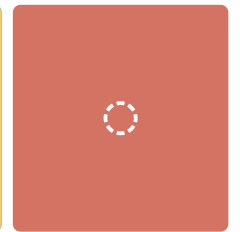
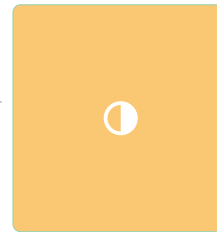
Scope coverage

S1 S2 S3

Reported that 94% of the first target and 60% of the second target were achieved when they were set. Both fall short of the 1.5° C-aligned benchmarks. No target for s3.

Own emission reductions
(compared to full value chain
in 2019)

?
by 2030



Long-term vision
(beyond 2030)

Carbon neutrality in whole supply chain by 2050

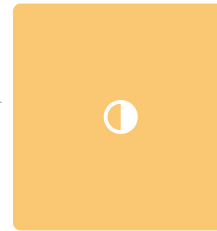
Scope coverage

S1 S2 S3

Target meets corporate net zero standard for s1 and s2, but covers only 41% of s3 which is a gap between 1.5°C trajectory.

Own emission reductions
(compared to full value chain
in 2019)

?
by 2050



3 REDUCING EMISSIONS

TRANSPARENCY

INTEGRITY

Emission reduction measures

Plans to use future technologies, including hydrogen, ammonia and synthetic methane converted from captured CO₂, but does not present a commitment to increase the share of carbon neutral concrete in total global production.



Renewable electricity

Focus on increasing renewable energy from 2030 onward, but no clear target presented.



4 CLIMATE CONTRIBUTIONS AND OFFSETTING

TRANSPARENCY

INTEGRITY

Responsibility for unabated emissions

No information identified on how the company takes responsibility for unabated emissions.



Climate contributions

No climate contributions identified.



Offsetting claims today

No offsetting claims today identified.



Offsetting plans for the future

No indication to use carbon direct removal or offset credits.



RATING

Overall 5-point scale ● High ● Reasonable ● Moderate ● Low ● Very low . Average of sections 1-4.

Sections 1-4 5-point scale ● High ● Reasonable ● Moderate ● Low ● Very low . Average of the criteria in each section.

Rating criteria 3-point scale ● High ● Moderate ● Poor . See methodology document for rating criteria.

Transparency refers to the disclosure of information. Integrity refers to the quality and credibility of the approach.

6. Taiheiyo Cement [Cement]

The Group set two targets for 2030 compared to 2000, but had already achieved 94% of the emission reduction target and 60% of the emission intensity target at the time the targets were set in 2022. Both fall short of net-zero emission pathways.

Taiheiyo Cement Corporation and its Group companies (Taiheiyo Cement Group) are the largest cement company group in Japan with about a 35% share of domestic cement sales.¹³³ Of the Group's GHG emissions, 92% are directly associated with cement production.¹³⁴

a. Tracking and disclosure of emissions

The 278 Group companies consist of Taiheiyo Cement Corporation, 176 subsidiaries (including 112 consolidated subsidiaries) and 101 affiliates.¹³⁵ The Group discloses CO₂ emission data from its 17 cement plants and quarries, but it is unclear to what extent the 278 companies are covered,¹³⁶ making it difficult to track the Group's total emissions.

b. Setting emission reduction targets

• Short and medium-term targets (up to 2030)

The Group has set a FY2030 target to reduce its scope 1 and 2 CO₂ emissions in Japan by 40% or more compared to FY2000 (1.3% reduction per year). The Group has set another FY2030 target to reduce scope 1, 2 and 3 (category 1 and 3 only) emission intensity by 20% or more compared to FY2000.¹³⁷ The Group's CDP 2022 response indicates that the latter target reduces cement emission intensity from 828 kgCO₂/t in 2000 to 662.4 kgCO₂/t by 2030.¹³⁸

The Group reported that it had already achieved 94% of its emission reduction target and 60% of its emission intensity target set in 2022.¹³⁹ Such target-setting with an outdated base year could mislead and unjustifiably give the impression that the Group had already achieved large emission reductions.

The 1.5°C-aligned emissions pathways require companies to reduce their scope 1 and 2 emissions by 4.2% per year¹⁴⁰ and cement emission intensity to 360-420 kgCO₂/t by 2030.^{141 142 143} Thus, the 1.3% annual reduction implied by the Group target falls far short of what is required.

The Group has not set a reduction target for scope 3 emissions, which accounted for 14% of its CO₂ emissions in FY2021,¹⁴⁴ but a 1.5°C-aligned emission pathway for the cement industry requires global scope 3 emissions to be reduced by 69% by 2030 compared to 2019 levels.¹⁴⁵

• Long-term targets (beyond 2030)

Taiheiyo Cement has declared a commitment to achieve carbon neutrality in its entire supply chain by 2050.¹⁴⁶ In its CDP response, the Group explains that this target covers scope 1, 2 and 3 (category 1 and 3) emissions, which together accounted for 81% of its total emissions in 2000, and that it intends to achieve zero emissions by 2050 without carbon removal.¹⁴⁷ The Group also presented a target to achieve zero cement emission intensity for scope 1, 2 and 3 (category 1 and 3) by 2050.¹⁴⁸ Scope 3 category 1 and 3 only cover 41% of the Group's scope 3 CO₂ emissions in FY2021.¹⁴⁹

According to the SBTi Corporate Net Zero Standard, companies in the cement sector need to reduce their

scope 1 and 2 GHG emissions by 94% by 2050 compared to 2020 levels and reduce cement emission intensity to below 30 kgCO₂/t cement by 2050.¹⁵⁰ The Group's 2050 targets appear to be aligned with this standard for scope 1 and 2, though it does not disclose its non-CO₂ GHG emissions.

A 1.5°C compatible trajectory would require that cement companies reduce their scope 3 emissions by 100% by 2050 globally from 2019 levels,¹⁵¹ and as the Group's targets cover only 41% of its scope 3 emissions there is a gap between its targets and the 1.5°C compatible trajectory.

c. Reducing emissions

• Emission reduction measures

According to its roadmap and scenario, the Group plans to slowly reduce emissions until 2030 through measures such as development of low-CO₂ cement using production processes with lower emissions than regular Portland cement.¹⁵² The Group also hopes to sharply reduce its energy-derived CO₂ emissions with future technologies, including the use of hydrogen, ammonia, and synthetic methane produced from captured CO₂, and to reduce raw material-derived CO₂ emissions by utilizing captured CO₂.¹⁵³ The Group does not explain the extent to which each planned measure will reduce its emissions, making the Group plan very opaque.

The UNFCCC Race to Zero campaign calls on top cement companies to increase the share of carbon-neutral concrete in total global production to 25% by 2035 and to 100% by 2050. The Group has not presented such a commitment and plan.¹⁵⁴

• Renewable electricity

The Group's CDP response shows that 19.9% of its total electricity purchased or acquired consisted of renewable electricity in FY2021, and that 11.5% of the total electricity generated by the Group was from renewable sources in FY2021.¹⁵⁵ However, the Group's Technology Development Roadmap indicates that it will focus on improvement of energy efficiency until 2030, and start using more renewable energy only from 2030 onward,¹⁵⁶ a pace that is far too slow.

d. Climate contributions and offsetting

The Group has not indicated plans to use carbon direct removal or offset credits in its integrated report. It is unclear if this means the Group actually has no plans to do so.

Mitsubishi Chemical

SECTOR

Chemicals

REVENUE

36.2 bn USD
(2021)

EMISSIONS

69.7 MtCO₂e
(2021)

PLEDGE

Carbon neutral
by 2050

TRANSPARENCY

Moderate

INTEGRITY

Low

1 TRACKING AND DISCLOSURE OF EMISSIONS

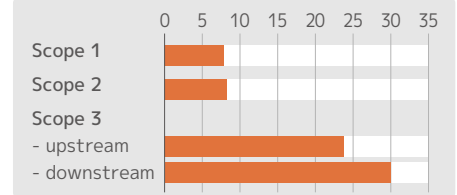
TRANSPARENCY & INTEGRITY

Tracking and disclosure 69.7 MtCO₂e in 2021

Subsidiaries are partly covered.

Major emission sources: 77% GHG emissions originated in s3 in 2021, particularly from purchased goods and services (29%), use of sold products (27%) and end-of-life treatment of sold products (14%).

Disclosure: FY2021 emissions data coverage represents 84.3% of the group's revenue, but unclear to what extent its GHG emissions are disclosed.



2 SETTING EMISSION REDUCTION TARGETS

TRANSPARENCY

INTEGRITY

Headline target or pledge **Carbon neutrality by 2050**

Short- and medium-term targets (up to 2030)

Reduce GHG emissions from s1 and s2 by 29% by FY2030 compared to FY2019 levels.

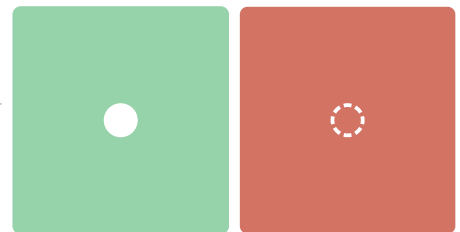
Scope coverage

S1 S2 S3

The group does not set a target for s3 emissions (77% of its GHG emissions in 2021). It does not meet the corporate net zero standard.

Own emission reductions
(compared to full value chain
in 2019)

7%
by 2030



Long-term vision (beyond 2030)

Carbon neutrality in GHG emissions from s1 and s2 by 2050

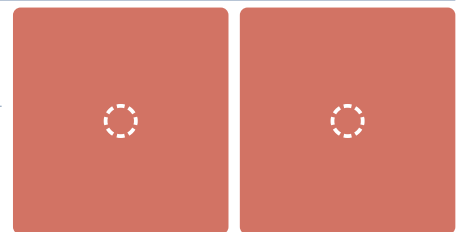
Scope coverage

S1 S2 S3

Target covers s1 and s2 but not for s3 emissions which comprise the majority of the group's emissions.

Own emission reductions
(compared to full value chain
in 2019)

?
by 2050



3 REDUCING EMISSIONS

TRANSPARENCY

INTEGRITY

Emission reduction measures

Measures includes improving emission factor in purchased power and fuel conversion are described, but no details provided. Plans to construct a chemical recycling plant, but not clear if it is in line with the net zero emissions pathways.



Renewable electricity

The share of renewable electricity in the group's total electricity use was only 0.4% in FY2021. No plan or target for renewable electricity is presented.



4 CLIMATE CONTRIBUTIONS AND OFFSETTING

TRANSPARENCY

INTEGRITY

Responsibility for unabated emissions

No information identified on how the company takes responsibility for unabated emissions.



Climate contributions

No climate contributions identified.



Offsetting claims today

No offsetting claims today identified.



Offsetting plans for the future

Plans to use carbon offsets through investment in renewable resources and afforestation, but does not present further details.



RATING

Overall 5-point scale ● High ● Reasonable ● Moderate ● Low ● Very low . Average of sections 1-4.

Sections 1-4 5-point scale ● High ● Reasonable ● Moderate ● Low ● Very low . Average of the criteria in each section.

Rating criteria 3-point scale ● High ● Moderate ● Poor . See methodology document for rating criteria.

Transparency refers to the disclosure of information. Integrity refers to the quality and credibility of the approach.

7. Mitsubishi Chemical [Chemicals]

The Group has not set an emission reduction target for scope 3 emissions, which accounted for 77% of its GHG emissions in 2021, leaving corporate responsibility in the value chain out of scope.

Mitsubishi Chemical Group Corporation and its group companies make the Mitsubishi Chemical Group the largest chemical company group in Japan and one of the world's leading producers of acrylic resin and related raw materials.¹⁵⁷ Of the Group's GHG emissions in FY2021, 77% were scope 3, including purchased goods and services (29% of its GHG emissions), use of sold products (27%) and end-of-life treatment of sold products (14%).¹⁵⁸

The Group is pursuing to carve out its petrochemical business and coal chemical business within a few years, which are large emission sources in the Group.¹⁵⁹

a. Tracking and disclosure of emissions

The Group had 625 subsidiaries as of March 31, 2022.¹⁶⁰ For GHG data, the Group states that the fiscal 2021 data coverage represents 84.3% of the Mitsubishi Chemical Group's revenue.¹⁶¹ From disclosed information, the extent of GHG emissions covered is not clear, which makes tracking of total emissions difficult.

b. Setting emission reduction targets

• Short and medium-term targets (up to 2030)

The Group aims to reduce its scope 1 and 2 GHG emissions by 29% by FY2030 compared to FY2019 levels, which translates to 2.6% per year.¹⁶² The Group has not set short and medium-term targets for scope 3 emissions, which accounted for 77% of its total GHG emissions in FY2021.

To meet the SBTi Corporate Net Zero Standard, scope 1 and 2 GHG emissions need to be reduced by 4.2% per year to 2030, and scope 3 by 2.5% per year.¹⁶³ The slow reduction rates of the Group's 2030 targets fall short of the SBTi Corporate Net Zero Standard.

• Long-term targets (beyond 2030)

The Group plans to reach carbon neutrality in its scope 1 and 2 GHG emissions by 2050, with offsets through investment in renewable resources as one of its key initiatives.¹⁶⁴ As with short and medium-term targets, the Group has not presented a long-term target for scope 3 emissions.¹⁶⁵

To meet the SBTi Corporate Net Zero Standard, scope 1, 2, and 3 GHG emissions all need to be reduced by 90% by 2050 globally compared to 2020 levels.¹⁶⁶ Leaving scope 3 GHG emissions out of scope is a clear shortcoming of the Group's target, and the 2050 targets fall short of the 1.5°C-aligned emission pathways.

c. Reducing emissions

• Emission reduction measures

The Group's short-term plans include building a chemical recycling plant capable of liquefying 20,000 tons of waste plastic each year, with operation scheduled to start in FY2023,¹⁶⁷ and constructing a chemical recycling plant for acrylic resin (PMMA), with operation scheduled to start in FY2024.¹⁶⁸

The Group expects actual emissions to increase along with business growth up to 2030. To reduce emissions,

medium-term plans include reducing scope 1 and 2 GHG emissions by improving emission factors in purchased power, as well as fuel conversion, and process optimization.¹⁶⁹ However, little information is provided about these measures, which makes assessment difficult. In addition, the Group does not provide a plan to reduce scope 3 emissions, which comprise the majority of the Group's emissions.

To be aligned with the IEA's net zero emission pathways, the share of reuse in plastics collection needs to reach 27% by 2030, and 54% by 2050 globally.¹⁷⁰ It is also unclear whether the Group's initiatives will enable it to increase the share of reuse in plastics collection in line with the net zero emission pathways, as the Group does not disclose the share of reuse in plastics collection, and does not disclose a related numerical target.

Overall, the Group has not presented sufficient plans and measures to reduce its emissions in line with the net-zero emissions pathways.

• Renewable electricity

The share of renewable electricity in the Group's total electricity use was only 0.4% in FY2021.¹⁷¹ The Group installed a solar power generation facility in 2017 at the MCC Ogaki Plant and purchased 20 MWh of environmental value (Green Power Certificates) from Ogaki City in March 2022.¹⁷² The Group also states that it will promote the wider use of solar power generation across its operations, but has not presented plans or targets for renewable electricity.¹⁷³

The UNFCCC Race to Zero campaign calls for the chemicals sector to increase the share of renewable electricity in its electricity use to 60% by 2030 and to decarbonize 100% of the industry's electricity use by 2040.¹⁷⁴ The lack of plans and targets for renewable electricity use presents a significant gap versus what is called for by the UNFCCC.

d. Climate contributions and offsetting

The Group plans to use carbon offsets through investment in renewable resources and afforestation, but has not presented further details, including the extent to which it plans to rely on offset credits, as well as the types of renewable resources it will invest in, and prices for the credits it plans to purchase.¹⁷⁵ Amid increased awareness that the non-permanence of nature-based carbon dioxide removal projects makes them unsuitable for claiming the neutralization of emissions,¹⁷⁷ the Group does not explain how it is going to address this non-permanence of carbon removal by afforestation.

SECTOR

Transport services

REVENUE

9.3 bn USD (2021)

EMISSIONS

9.8 MtCO₂e (2021)

PLEDGE

Carbon neutral by 2050

TRANSPARENCY

Moderate

INTEGRITY

Low

1 TRACKING AND DISCLOSURE OF EMISSIONS

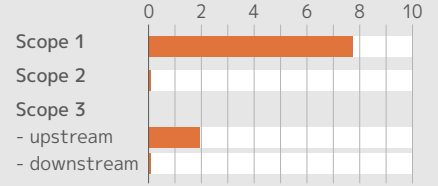
TRANSPARENCY & INTEGRITY

Tracking and disclosure 9.8 MtCO₂e in 2021

Subsidiaries are partly covered.

Major emission sources: Majority of the emissions are from aircraft (79% of CO₂ emissions in FY2021) and S3 upstream (20% of CO₂ emissions in FY2021).

Disclosure: The group consists of 134 subsidiaries and 41 affiliate, including 55 consolidated subsidiaries, but not clear to what extent its group companies are covered.



2 SETTING EMISSION REDUCTION TARGETS

TRANSPARENCY

INTEGRITY

Headline target or pledge *Carbon neutrality by 2050*

Short- and medium-term targets (up to 2030)

Stabilize aircraft net CO₂ emissions to the FY2019 level in FY2030 and reduce annual CO₂ emissions from non-aircraft by 33% or more by FY2030 compared to FY2019.

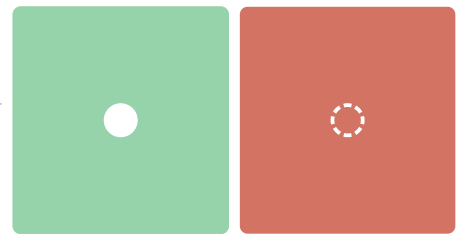
Scope coverage

S1 S2 S3

CO₂ emissions from aircraft to be maintained at the FY2019 level until FY2030, which is not aligned with the 1.5°C benchmarks for the aviation sector.

Own emission reductions
(compared to full value chain in 2019)

0%
by 2030



Long-term vision (beyond 2030)

Achieve carbon neutrality by FY2050

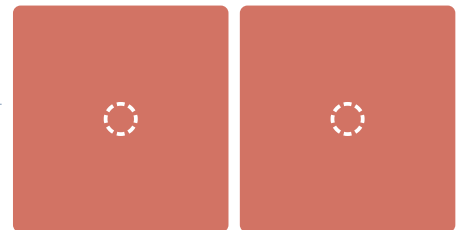
Scope coverage

S1 S2 S3

Estimate doubling CO₂ emissions as a business-as-usual case. No target for s3 and non-CO₂ emissions.

Own emission reductions
(compared to full value chain in 2019)

?
by 2050



3 REDUCING EMISSIONS

TRANSPARENCY

INTEGRITY

Emission reduction measures

Plans to replace at least 10% of aviation fuels with SAF by 2030, and convert them almost entirely to low-carbon fuels by 2050. The 2030 target for SAF roughly meets 1.5°C sectoral benchmarks.



Renewable electricity

Only 1.6% of the Group's electricity consumption was sourced from renewables in FY2020.



4 CLIMATE CONTRIBUTIONS AND OFFSETTING

TRANSPARENCY

INTEGRITY

Responsibility for unabated emissions

Offers its customers the option of offsetting the emissions associated with their flight.



Climate contributions

No climate contributions identified.



Offsetting claims today

No offsetting claims today identified.



Offsetting plans for the future

Plans to neutralize CO₂ emissions through emission trading (3.5% of BAU) and NETs (1% of BAU) by 2030. Achieve carbon neutral without using emission trading schemes by 2050.



RATING

Overall 5-point scale ● High ● Reasonable ● Moderate ● Low ● Very low . Average of sections 1-4.

Sections 1-4 5-point scale ● High ● Reasonable ● Moderate ● Low ● Very low . Average of the criteria in each section.

Rating criteria 3-point scale ● High ● Moderate ● Poor . See methodology document for rating criteria.

Transparency refers to the disclosure of information. Integrity refers to the quality and credibility of the approach.

8. ANA [Transport services]

The Group aims to stabilize emissions from aircraft at the FY2019 level by FY2030 and estimates a doubling of its CO₂ emissions by 2050 from FY2030 levels as a business-as-usual case, based on its forecast of growing traffic. The Group's targets fall short of 1.5°C-aligned emission pathways for the aviation sector.

The All Nippon Airways (ANA) Group is the largest airline company group in Japan, serving 101 airports globally, operating 307 aircraft and carrying 59.6 million passengers and 1.2 million tons of goods annually.¹⁷⁸ The Group's major CO₂ emissions originate from aircraft (79% of FY2021 emissions) and scope 3 upstream (20% of FY2021 emissions).¹⁷⁹

a. Tracking and disclosure of emissions

The Group consists of 134 subsidiaries and 41 affiliates, including 55 consolidated subsidiaries.¹⁸⁰ The Group states that it discloses CO₂ data from "ANA and ANA Group companies," and other gases such as NO_x, fluorocarbons and halons from the "ANA brand," but it is unclear to what extent Group companies are covered in the data.¹⁸¹ The Group does not report on the full climate impact of its aviation activities, including the radiative forcing impact of contrail cirrus. One study found that non-CO₂ climate impacts comprise about two-thirds of the net effective radiative forcing of aviation.¹⁸²

b. Setting emission reduction targets

• Short and medium-term targets (up to 2030)

The Group has set a target of having net CO₂ emissions from aircraft below FY2019 levels (12.33 MtCO₂) in FY2030, and reducing its non-aircraft CO₂ emissions by 33% or more by FY2030 compared to FY2019.¹⁸³ It is assumed that these targets cover scope 1 and 2 CO₂ emissions.^{184 185}

The Group has presented two additional targets to SBTi: to reduce carbon intensity¹⁸⁶ by 29% and to reduce CO₂ emissions from its facilities and airport vehicles by 27.5%, by FY2030 compared to FY2019.¹⁸⁷ SBTi approved these targets as "consistent with reductions required to keep warming to well-below 2°C."¹⁸⁸

However, achieving these targets would only reduce its carbon intensity from 1,010 gCO₂/RTK in FY2019 to 717 gCO₂/RTK in FY2030, while CO₂ emissions from aircraft would merely be maintained (not reduced) at the FY2019 level until FY2030.

To be aligned with IEA net-zero emissions pathways, the aviation sector needs to reduce its CO₂ emissions by 23% by 2030 compared to 2019 levels.¹⁸⁹ The Transition Pathway Initiative's benchmark indicates the average carbon intensity of an airline aligned with the 1.5°C scenario at 616 gCO₂/RTK in 2030.¹⁹⁰

Taken together, the Group's 2030 targets fall short of the 1.5°C-aligned emissions pathways for the aviation sector.

• Long-term targets (beyond 2030)

The Group has set a target to achieve carbon neutrality by FY2050.¹⁹¹ It projects a doubling of its CO₂ emissions by 2050 compared to 2030 levels in a business-as-usual (BAU) case based on its forecast of growing traffic, and plans to reduce its scope 1 and 2 CO₂ emissions by 90%

compared to the BAU level.¹⁹² The Group's targets do not cover scope 3. To meet this target, the Group plans to offset remaining emissions with negative emission technologies (NETs).¹⁹³

To be aligned with IEA net-zero emission pathways the aviation sector needs to reduce its CO₂ emissions by 79% by 2050 compared to 2019 levels.¹⁹⁴ Climate Action Tracker indicates that a 1.5°C compatible pathway would require the international aviation industry to reduce CO₂ emissions by 90% by 2050 compared to 2019 levels, along with making deep cuts to non-CO₂ emissions such as NO_x and water vapor (H₂O), which forms contrail cirrus¹⁹⁵ when emitted at high altitudes.¹⁹⁶

The Group's 2050 target is considered not only insufficient, but also employs misleading practices as it uses a BAU case for a baseline. Targets should be compared with recent baseline emissions, rather than with modeled future emissions. The absence of targets for scope 3 or non-CO₂ emissions is another serious shortcoming.

c. Reducing emissions

• Emission reduction measures

Since 2019, the Group has procured sustainable aviation fuels (SAFs)¹⁹⁷ made from waste oil and residue raw materials, or microalgae, and participated in a demonstration project to develop synthetic SAF.¹⁹⁸ The Group plans to replace at least 10% of aviation fuels with SAF by 2030, and transition almost entirely to low-carbon fuels by 2050.¹⁹⁹

SAFs are a critical tool for reducing emissions from aviation.^{200 201} IEA net-zero emission pathways show the share of biofuels in total aviation energy consumption at 16% by 2030 and 45% by 2050 globally, and the share of synthetic hydrogen-based fuels at 2% by 2030 and 33% by 2050 globally.²⁰² Other benchmarks also show the share of SAFs in global aviation fuel supply needing to reach 10-18% by 2030 and 78-100% by 2050 to limit global warming to 1.5°C.^{203 204}

The Group's 2030 targets for SAFs are roughly consistent with the benchmarks. Whether the targets can be achieved will rely heavily on how swiftly SAFs can be commercially realized. Advanced biofuels, such as nonfood algae or organic wastes could contribute to the transition to low-carbon aviation.²⁰⁵ Synthetic SAFs have a larger abatement potential but are still in the early development stage.²⁰⁶

• Renewable electricity

Only 1.6% of the Group's electricity consumption was sourced from renewables in FY2020.²⁰⁷ The Group plans to increase renewable energy for non-aircraft, but its emissions only accounts 1% of the Group's total.

d. Climate contributions and offsetting

The Group plans to neutralize 3.5% of the BAU level of CO₂ emissions from aircraft flight operations through emission trading schemes and 1% through utilizing NETs such as direct air capture and storage by 2030.²⁰⁸ The Group aims to reduce reliance on emission trading after 2040 and achieve carbon neutrality without using it by 2050. It plans to neutralize 10% through NETs by 2050.

SECTOR

Paper and forestry

REVENUE

13.4 bn USD (2021)

EMISSIONS

11.3 MtCO₂e (2021)

PLEDGE

Net-zero by 2050

TRANSPARENCY

Low

INTEGRITY

Low

1 TRACKING AND DISCLOSURE OF EMISSIONS

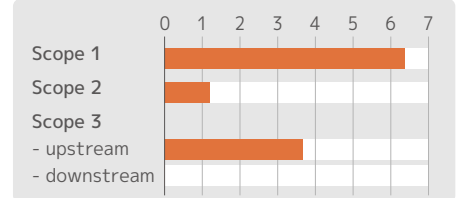
TRANSPARENCY & INTEGRITY

Tracking and disclosure 11.3 MtCO₂e in 2021

Major emission sources: Major non-FLAG emissions originate in s1 and category 1 of s3.

Disclosure: FLAG-related emissions and non-FLAG s3 emissions (except category 1) are not disclosed.

Subsidiaries are partly covered.



2 SETTING EMISSION REDUCTION TARGETS

TRANSPARENCY

INTEGRITY

Headline target or pledge **Net-zero by 2050**

Short- and medium-term targets (up to 2030)

70% GHG reduction (s1 and s2) of non-FLAG activities by FY2030 compared to FY2018 (-20%: energy-related measures, -50%: its forest conservation and plantation).

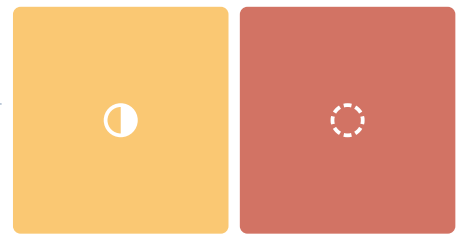
Scope coverage

S1 S2 S3

Target covers s1 and s2 emissions of non-FLAG activities, but uses carbon removal in FLAG activities to neutralize these emissions.

Own emission reductions (compared to full value chain in 2019)

9%
by 2030



Long-term vision (beyond 2030)

Net zero by FY2050 with carbon removal by its forests.

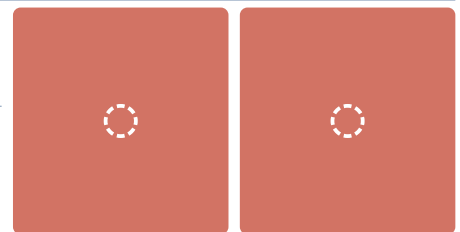
Scope coverage

S1 S2 S3

Plans to use carbon removal in FLAG activities to neutralize non-FLAG emissions. Target does not cover s3 of non-FLAG emissions. No clear FLAG target is set.

Own emission reductions (compared to full value chain in 2019)

?
by 2050



3 REDUCING EMISSIONS

TRANSPARENCY

INTEGRITY

Emission reduction measures

Improve energy efficiency and expand absorption of overseas plantations. Developed policy on deforestation and illegal logging, but does not commit to no-conversion and no-peat-burning.



Renewable electricity

Increase renewables (mostly biomass fuels) to 60% by FY2030. No target on renewable energy beyond FY2030.



4 CLIMATE CONTRIBUTIONS AND OFFSETTING

TRANSPARENCY

INTEGRITY

Responsibility for unabated emissions

Use carbon removal by its FLAG activities to offset its non-FLAG emissions



Climate contributions

No climate contributions identified.



Offsetting claims today

Claims annual net GHG emissions from non-FLAG activities (s1 and s2) subtracting annual net carbon removal by FLAG activities.



Offsetting plans for the future

2030 and 2050 targets largely rely on carbon removal by its forest conservation and plantation to offset its non-FLAG emissions.



RATING

Overall 5-point scale ● High ● Reasonable ● Moderate ● Low ● Very low . Average of sections 1-4.

Sections 1-4 5-point scale ● High ● Reasonable ● Moderate ● Low ● Very low . Average of the criteria in each section.

Rating criteria 3-point scale ● High ● Moderate ● Poor . See methodology document for rating criteria.

Transparency refers to the disclosure of information. Integrity refers to the quality and credibility of the approach.

9. Oji [Paper and forestry]

The Group plans to use carbon removal in its forestry and plantation business activities in order to offset energy-derived emissions, a strategy that undermines the integrity of its targets.

Oji Holdings and its Group companies (Oji Group) are a Japanese manufacturer of paper products. In 2015 it was the fourth largest company in the global forest, paper and packaging industry.²⁰⁹ The Group's major energy- and industry-related emissions (i.e., emissions not originating from forestry, land-use and agriculture, or "non-FLAG emissions") are scope 1 and scope 3 (category 1) emissions.²¹⁰

a. Tracking and disclosure of emissions

The Group has 186 consolidated subsidiaries and 23 equity-method affiliates.²¹¹ It publicly discloses its non-FLAG scope 1, 2, and 3 (category 1) emissions in its integrated report, covering consolidated subsidiaries in Japan and overseas (excluding non-production sites).^{212 213}

In its CDP responses, the Group discloses non-FLAG scope 3 (all categories) emissions, showing scope 3 emissions accounted for 41-52% of its total non-FLAG emissions in the period FY2018-2020.²¹⁴

To track emissions of paper and pulp companies, it is necessary to have comprehensive accounting for both FLAG-related emissions and removals, and energy- and industry-related (non-FLAG) emissions under the SBTi FLAG guidance.²¹⁵ However, the Group does not publicly disclose FLAG-related emissions in its integrated report,^{216 217} which makes tracking of the Group's total emissions very difficult.

b. Setting emission reduction targets

• Short and medium-term targets (up to 2030)

Non-FLAG target

The Group has set a target to reduce its scope 1 and 2 GHG emissions from non-FLAG activities by 70% by FY2030 compared to FY2018 as a milestone for achieving net zero by FY2050.²¹⁸ This 70% reduction consists of 20% (1.7% reduction per year) by energy-related measures,²¹⁹ and 50% by the Group's forest conservation and plantation activities.

SBTi requires Forest and Paper companies to set FLAG targets to address their emissions and removals from agricultural and forestry production, and non-FLAG targets to address all other energy- and industry-related emissions.²²⁰ The Group's targets only cover scope 1 and 2 emissions of non-FLAG activities, but use carbon removal in FLAG activities to neutralize these emissions.^{221 222}

Using carbon removal in forest conservation and plantation to offset the Group's non-FLAG emissions weakens the integrity of its emission reduction claims.

The Group states that it will reduce its scope 3 GHG emissions through collaboration with suppliers, but does not present any numerical targets.

The Group's 20% reduction non-FLAG target falls short of the SBTi Corporate Net Zero Standard (cross-sector), which requires companies to reduce their scope 1 and 2 GHG emissions by 4.2% per year to 2030, and scope 3 emissions by 2.5% per year to 2030.²²³

FLAG target

The Group plans to remove 3.9 MtCO₂ through forest con-

servation and plantation activities and to use the carbon removals to meet its 2030 target for scope 1 and 2 non-FLAG activities (50% reduction by FY2030 compared to FY2018). However, it is unclear what this means because the Group's FLAG emissions are not disclosed in its integrated report.^{224 225}

SBTi requires Forest and Paper companies to set a FLAG target that reduces GHG emissions from their FLAG activities by 3.0% per year to 2030 compared to 2020. The Group has not provided a target as such.

• Long-term targets (beyond 2030)

Non-FLAG target

The Group has set a target to achieve net zero emissions by FY2050, but as with the short- and medium-term target, the Group plans to use carbon removal in FLAG activities to neutralize non-FLAG emissions, making it difficult to assess the integrity of non-FLAG emission reductions.^{226 227}

The target does not cover non-FLAG scope 3 emissions, and the Group does not specify to what extent it intends to use carbon removals or offsets to achieve this target.

This target falls short of the SBTi Corporate Net Zero Standard (cross-sector), which requires companies to reduce their GHG emissions from all emission scopes by 90% by 2050 globally compared to 2020 levels.

FLAG target

The Group plans to use carbon removal in its FLAG activities to offset emissions of non-FLAG activities to achieve the non-FLAG target (net zero emissions by FY2050).

SBTi requires Forest and Paper companies to set a long-term FLAG target that covers at least 95% of FLAG-related scope 1 and 2 emissions and at least 67% of FLAG-related scope 3 emissions, and reduces FLAG GHG emissions by 72% or more by 2050 from base-year levels,²²⁸ but the Group has not set a clear FLAG target.

c. Reducing emissions

• Emission reduction measures

In order to achieve its emission reduction target by FY2030, the Group plans to improve energy efficiency, increase the use of renewables and expand net CO₂ absorption by acquiring 400,000 ha of overseas forest plantations in South America, Oceania, and Southeast Asia.²²⁹

Carbon sequestration in soils and forests is highly vulnerable to natural and anthropogenic disturbances such as forest fire or soil erosion; permanence of sequestration is likely over a period of just years to decades.²³⁰ Amid increased awareness that the non-permanence of nature-based carbon dioxide removal projects makes them unsuitable for claiming the neutralization of emissions,²³¹ the Group does not explain how it is going to address this non-permanence of carbon removal through forest conservation and plantation.

In addition, SBTi requires the inclusion of no-deforestation commitments in the FLAG target-setting and validation process, and views reducing emissions from deforestation as one of the highest priorities across FLAG decarbonization pathways.²³² SBTi recommends that actors make no-deforestation commitments across their

primary deforestation-linked commodities, with a target date no later than 2025, and to make no-conversion and no-peat-burning commitments across their value chains as soon as possible, in alignment with the Accountability Framework initiative (AFI)²³³ guidance on deforestation and conversion of other natural ecosystems.²³⁴

The Group has had a Sustainable Forest Management Policy since 2022 stating that the Group will be complicit in neither deforestation nor illegal logging. However, it has not committed to no-conversion and no-peat-burning across its value chain.²³⁵

• **Renewable electricity**

The Group plans to increase its renewable energy usage

rate to 60% (from 54.7% in FY2021) by FY2030 through reducing coal consumption and solar power installation, and to reduce energy consumption intensity by at least 1% per year (using a five-year average) by FY2030.²³⁶ Most of its renewable energy consumption is in fuel use of biomass such as black liquor,²³⁷ wood residue, and bark.^{238 239} The Group has not set a target for renewable energy beyond FY2030.²⁴⁰

d. Climate contributions and offsetting

The Group's 2030 and 2050 targets largely rely on carbon removal by its forest conservation and plantation (i.e., FLAG) activities to offset its non-FLAG emissions, and this makes the Group's overall reduction measures questionable.

Toyota

SECTOR

Transport
OEMs

REVENUE

247.8 bn USD
(2021)

EMISSIONS

379.7 MtCO₂e
(2021)

PLEDGE

Carbon neutral
by 2050

TRANSPARENCY

Moderate

INTEGRITY

Low

1 TRACKING AND DISCLOSURE OF EMISSIONS

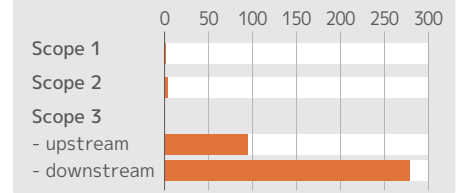
TRANSPARENCY & INTEGRITY

Tracking and disclosure 379.7 MtCO₂e in 2021

Subsidiaries are partly covered.

Major emission sources: Majority of the GHG emissions are the use phase of its sold vehicles (70% in 2021) and purchased goods and services such as steel (22% in 2021).

Disclosure: State that 100% s1 and s2 consolidated subsidiaries are covered, but integrity of downstream s3 disclosure is in question. The amounts of CO₂ emissions covered by each target and the base year CO₂ emissions are not specified.



2 SETTING EMISSION REDUCTION TARGETS

TRANSPARENCY

INTEGRITY

Headline target or pledge *Carbon neutral by 2050*

Short- and medium-term targets (up to 2030)

- > -25% CO₂ throughout the entire vehicle life cycle.
- > -35% global CO₂ during driving from new vehicles.
- > -35% CO₂ from global plants.

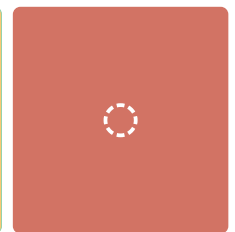
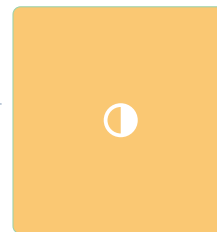
Scope coverage

S1 S2 S3

Claimed that all s1,2 and 3 are covered, but targets cannot be quantified due to lack of historical emission data. Complicated with several target settings and hard to track.

Own emission reductions
(compared to full value chain
in 2019)

?
by 2030



Long-term vision (beyond 2030)

- Zero CO₂ from the entire vehicle life cycle in future.
- 90% global CO₂ from new vehicles by 2050.
- Carbon neutrality by 2035 and zero CO₂ by 2050, in global plants.

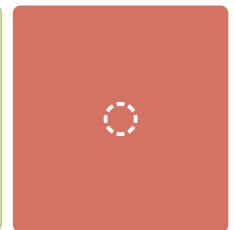
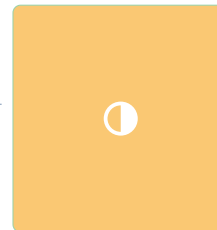
Scope coverage

S1 S2 S3

Claimed that all s1, 2 and 3 are covered, but targets cannot be quantified due to lack of historical emission data. No commitment to zero emissions by 2050 in s3 (98% of its emissions in 2021).

Own emission reductions
(compared to full value chain
in 2019)

?
by 2050



3 REDUCING EMISSIONS

TRANSPARENCY

INTEGRITY

Emission reduction measures

No target to end new sales of ICE cars in all key markets such as the US, China, Japan and the EU. Unclear about reduction of upstream supply chain emissions from purchased goods and services, such as through setting procurement targets for low-carbon steel.



Renewable electricity

Sourcing 25% of electricity from renewables by 2025. No plan or target beyond 2025 are set.



4 CLIMATE CONTRIBUTIONS AND OFFSETTING

TRANSPARENCY

INTEGRITY

Responsibility for unabated emissions

No information identified on how the company takes responsibility for unabated emissions.



Climate contributions

No climate contributions identified.



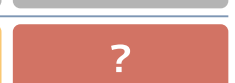
Offsetting claims today

No offsetting claims today identified.



Offsetting plans for the future

Plans to use offset credits to achieve carbon neutrality from its global plants by 2035. Unclear whether and how many offsets are planned to use to achieve carbon neutral by 2050.



RATING

Overall 5-point scale ● High ● Reasonable ● Moderate ● Low ● Very low . Average of sections 1-4.

Sections 1-4 5-point scale ● High ● Reasonable ● Moderate ● Low ● Very low . Average of the criteria in each section.

Rating criteria 3-point scale ● High ● Moderate ● Poor . See methodology document for rating criteria.

Transparency refers to the disclosure of information. Integrity refers to the quality and credibility of the approach.

10. Toyota [Transport OEMs]

The Group has not committed to end new global sales of internal combustion engine (ICE) passenger cars by 2035, or to achieve 100% EVs in its sales by 2050 and scope 3 zero emissions (scope 3 accounting for 98% of its emissions in 2021) by 2050.

Toyota Motor Corporation and its group companies (Toyota Group) is one of the largest automobile manufacturers in the world, producing about 10 million vehicles per year.²⁴¹ Most of its GHG emissions originate in the use phase of its sold vehicles (70% of 2021 emissions) and in purchased goods and services such as steel (22% of 2021 emissions).²⁴²

a. Tracking and disclosure of emissions

The Group has 559 consolidated subsidiaries and 169 affiliated companies.²⁴³ Disclosures of CO₂ and GHG emissions cover Toyota Motor Corporation and its financially consolidated subsidiaries. The company states that 100% of consolidated subsidiaries are covered in its disclosure of scope 1 and 2 CO₂ emissions, but only Toyota Motor Corporation and Daihatsu Motor Co. are covered in CO₂ emissions from the use phase of its sold vehicles.²⁴⁴

The Group's annual reports fail to specify the amount of CO₂ emissions (including in the base years and recent years) covered by its 2030 and 2050 targets.

Recent analysis found that Toyota does not explicitly disclose lifetime mileage used in its scope 3 estimates, and that it underreports its disclosed life-cycle emissions of sold vehicles by 69%, due to unrealistic assumptions on vehicle lifetimes.²⁴⁵

b. Setting emission reduction targets

• Short and medium-term targets (up to 2030)

The Group has set three targets as its 2030 Milestone in annual reports, although it has reported different 2030 targets to SBTi and CDP.

The first target is to reduce CO₂ emissions by 25% or more throughout the entire vehicle life cycle (scope 1, 2 and 3) compared to 2013.²⁴⁶

The second target is to reduce global average CO₂ emissions during driving,²⁴⁷ for its new vehicles sold (i.e., category 11 of scope 3) by 35% or more compared to 2010.²⁴⁸ Interestingly, this target accounts only for selected regions, namely Australia, Brazil, Canada, China, Europe, India, Indonesia, Japan, Saudi Arabia, Taiwan, Thailand, and the United States, and does not include consolidated subsidiaries.²⁴⁹ For category 11 of scope 3 emissions, the Group reported two more 2030 targets to SBTi, one being to reduce emissions intensity (gCO₂e/km) of passenger light duty vehicles and light commercial vehicles by 33.3%, and to reduce emissions intensity (gCO₂e/km) of medium and heavy freight trucks by 11.6% compared to 2019.^{250 251}

The third target is to reduce CO₂ emissions from all global production plants (scope 1, 2 and part of scope 3) by 35% compared to 2013.²⁵²

As a whole, it is difficult to precisely understand the full picture of the Group's targets as it has reported different 2030 targets to the annual reports, SBTi and other sources. While the Group reports that all emission scopes are covered by these targets,²⁵³ it does not publicly specify the amounts of CO₂ emissions in the base years (2010

and 2013).²⁵⁴ Thus it is difficult to quantify its targets' intended emission reductions across the entire value chain, and track and assess their 1.5°C alignment.

Net-zero emission pathways for the automobile industry would require that EVs account for 95-100% of all light-duty vehicle sales by 2030,²⁵⁵ and reach 100% in passenger vehicles and vans sales by 2035 in Toyota's main markets such as China, the EU, Japan and the United States.^{256 257} The Group fails to meet these benchmarks as it presently provides no specific phase-out dates for ICE vehicle sales.

• Long-term targets (beyond 2030)

The Group aims to achieve carbon neutrality by 2050 based on three long-term targets: vehicle life cycle, vehicle use phase, and plants.²⁵⁸

The first target is to completely eliminate all CO₂ emissions throughout the entire vehicle life cycle (scope 1, 2 and 3), but the Group has not specified a target year of this target.²⁵⁹

The second target is to reduce global average CO₂ emissions during driving from its new vehicles sold (i.e. category 11 of scope 3) by 90% compared to 2010 levels by 2050.²⁶⁰ The Group's CO₂ emissions from category 11 of scope 3 accounted for 70% of its reported CO₂ emissions in 2021.²⁶¹ In its CDP response, the Group explains that this target is to reduce 70% of CO₂ emissions from category 11 of scope 3 by 2050 compared to 2013 levels,²⁶² but to be aligned with the 1.5°C sectoral emission pathways the Group needs to phase out ICEs by 2035-2040 in its main markets, including heavy-goods vehicles,²⁶³ and achieve scope 3 zero emissions by 2050.²⁶⁴

The third target is to achieve carbon neutrality in CO₂ emissions from its global plants (scope 1, 2 and part of scope 3) by 2035 with an undefined amount of carbon credits, and zero CO₂ emissions at its global plants by 2050.²⁶⁵ For this 2035 target, the Group has committed to SBTi to reduce scope 1 and 2 absolute GHG emissions by 68% below 2019 by 2035.^{266 267} This was validated by SBTi as being in line with its 1.5°C (scope 1 and 2) and well-below 2°C (scope 3) criteria.

Considering that the Group has not committed to scope 3 zero emissions (scope 3 accounting for 98% of its emissions in 2021)²⁶⁸ by 2050, the Group's long-term targets as a whole fall short of the 1.5°C emission pathways for the road transport sector. This assessment is underlined by the fact that the Group has not set a target to end new sales of ICE passenger cars globally by 2035 (or earlier in advanced economies), which IEA says is necessary to reduce scope 3 emissions in line with the net-zero emission pathways for the road transport sector.²⁶⁹

c. Reducing own emissions

• Emission reduction measures

The Group announced a plan to sell only zero emission vehicles (ZEVs) in western Europe by 2035 (50% by 2030),²⁷⁰ and under its new CEO recently announced plans to sell 1.5 million EVs annually by 2026, and to halve CO₂ emissions per new car sold globally by 2035 compared to 2019.^{271 272} However, it has not committed to end new sales of ICE cars. Neither has the Group signed the Accelerating to Zero Coalition to commit zero-emission vehicle transition in which competing automakers such as Ford,

General Motors and Mercedes-Benz AG committed to exclusively produce electric vehicles by 2035, or earlier, to support limiting global warming to 1.5°C.²⁷³

In order to be aligned with IEA net-zero emission pathways for the road transport sector, automobile manufacturers need to end new sales of passenger ICE cars globally by 2035 and achieve 100% EVs in their sales of cars, two and three wheelers, buses and vans, as well as 99% EVs in heavy trucks by 2050.²⁷⁴ The Climate Action Tracker suggests that, for all key markets such as China, the European Union, and the United States, a 1.5°C compatible trajectory would require that EVs account for 95-100% of all light-duty vehicle sales by 2030,²⁷⁵ and reach 100% in passenger vehicles and vans sales by 2035.²⁷⁶

In addition, it is difficult to see whether the Group is taking an active approach in reducing upstream supply chain emissions from purchased goods and services (i.e., category 1 of scope 3), through efforts such as setting procurement targets for low-carbon steel, for example, although the Group has encouraged its major suppliers to reduce CO₂ emissions in line with its Green Purchasing Guidelines,²⁷⁷ and plans to reduce CO₂ emissions from its own transportation and distribution as well.²⁷⁸

• Renewable electricity

The Group has stated a target of sourcing 25% of its electricity from renewables by 2025, through its plant zero CO₂ emission challenge, but has disclosed no further information.²⁷⁹ No plans or targets beyond 2025 have been announced.

d. Climate contributions and offsetting

The Group plans to use offset credits to achieve carbon neutrality for CO₂ emissions from its global plants by 2035, but has provided no details on the criteria it would set for those credits.²⁸⁰ Given that the Group's SBTi target is to reduce scope 1 and 2 absolute GHG emissions by 68% below 2019 by 2035, these targets might indicate that around 32% of scope 1 and 2 emissions in 2019 will be offset in 2035. However, the company has not disclosed the types and prices for the offset credits it plans to procure, and whether corresponding adjustments would be applied. It remains unclear whether the Group intends to use offsets to achieve carbon neutrality by 2050 and if so, in what quantity.²⁸¹



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