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## Tokyo Electric Power Company Holdings, Inc. (9501: TSE)

## Chubu Electric Power Co., Inc. (9502: TSE)

### Disclosure of Asset Resilience to a Net Zero by 2050 Pathway

#### Executive summary

Despite repeated investor demands to align capital expenditure, production and emissions plans with the Paris climate goals, TEPCO, Chubu and their most carbon-intensive joint venture JERA are moving in the opposite direction by expanding the liquefied natural gas (LNG) and coal power sectors.

**TEPCO, Chubu and JERA's actions are bets against the climate goals of the Paris Agreement, undermining their own net zero emissions commitments.**

TEPCO and Chubu have both made net zero emissions by 2050 commitments,<sup>1</sup> but, through their joint venture, JERA, are pursuing energy-related projects and activities that are incompatible with meeting this goal. The International Energy Agency (IEA)'s landmark [Net Zero Emissions by 2050](#) (NZE2050) scenario made it crystal clear that achieving this goal requires no new gas fields, no new unabated coal-fired power plants, and rapid declines in power generation from coal and gas. As further stated by the IEA, "Also not needed are many of the liquefied natural gas (LNG) liquefaction facilities currently under construction or at the planning stage."

Yet JERA is continuing to develop new coal and gas power stations, and new gas fields and infrastructure. These plans pose unacceptable risks to investors, as they risk exposing TEPCO and Chubu to stranded fossil fuel assets as the world moves to align with the climate goals these companies claim to support. To properly assess the extent of climate-related financial risks they are exposed to, investors are increasingly demanding clear and useful disclosures from the companies they invest in.

Market Forces and Kiko Network have therefore filed shareholder proposals (full details on pages 9 and 10), requesting TEPCO and Chubu disclose an assessment of group-wide energy-related asset resilience under a net zero pathway.

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<sup>1</sup> Note TEPCO only commits to bringing the emissions from energy supply to net zero by 2050.

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We urge investors to engage with TEPCO and Chubu about the subject matter of this proposal to gain further disclosure, and vote for these proposals if such disclosure is not forthcoming.

## Betting against the Paris climate agreement

The [NZE2050](#) is modelled to provide a 50% chance of limiting global warming to 1.5°C. It should be regarded as bullish on future fossil fuel demand, as [other scenarios](#) with less reliance on unproven negative emissions technologies and a higher chance of achieving the Paris Agreement’s 1.5°C goal project coal, oil and gas demand to fall even faster. For example, an [analysis](#) of such scenarios shows that, globally, from a 2020 baseline:

- Coal production falls 69% by 2030 and 82% by 2040
- Oil production falls 31% by 2030 and 59% by 2040
- Gas production falls 28% by 2030 and 45% by 2040.

However, even using the key conclusions of the NZE2050, the below comparison with TEPCO, Chubu and JERA policies and practice demonstrates these companies are betting against the Paris Agreement’s climate goals, and undermining their own net zero by 2050 commitments.

**Table 1. NZE2050 compared with TEPCO, Chubu and JERA policies and practice**

NZE2050 conclusions <sup>2</sup>	TEPCO, Chubu and JERA policies	TEPCO, Chubu and JERA practice
<p>“Beyond projects already committed as of 2021, there are no new oil and gas fields approved for development in our pathway... Also not needed are many of the liquefied natural gas (LNG) liquefaction facilities currently under construction or at the planning stage.”</p> <p>“Inter-regional LNG trade increases from 420 bcm in 2020 over the next five years but it then falls to around 160 bcm [-62%] in 2050”.</p>	<p>No commitments from TEPCO, Chubu or JERA to refrain from developing new gas fields or LNG infrastructure.</p>	<p>The vast majority of TEPCO and Chubu’s exposure to thermal power generation and fuel sourcing is through JERA, which is currently responsible for 15% of Japan’s annual emissions (2020). JERA’s current business plans also see a sizable expansion of its LNG segment.</p> <p>JERA is pursuing significant involvement in the <a href="#">LNG sector</a>, including gas fields, LNG terminals<sup>3</sup> and LNG to power projects<sup>4</sup> in countries such as Australia, Bangladesh, and Vietnam. Many of these projects would not come online until the second half of this decade, by which point LNG trade would have commenced a rapid decline under NZE2050.</p> <p>In December 2021, JERA purchased a 12.5% equity stake in the new <a href="#">Barossa gas</a></p>

<sup>2</sup> NZE2050 statements and data from: IEA [Net Zero by 2050 report](#); [World Energy Outlook 2021](#) and [associated dataset](#)

<sup>3</sup> Bidder for Matarbari LNG Terminal, Shareholder of Summit International which is a sponsor of Matarbari Summit LNG Terminals, the Can Na LNG Terminal and Tien Lang 1 Industrial Park Hai Phong Terminal.

<sup>4</sup> Shareholder of Summit International which is a sponsor of Matarbari Summit LNG Power Plant, Bidder on Bac Lieu and Ca Na 1, Sponsor of Hai Phong Phase 1 and 2

		<p><a href="#">field</a>, a controversial project in northern Australia <a href="#">opposed by First Nations communities</a>, which has been <a href="#">labelled</a> ‘both a major financial risk and a serious climate risk’. In addition, a recent <a href="#">court proceeding</a> filed in Korea is raising doubts on the project’s ability to secure finance.</p>
<p>“Phase-out of unabated coal in advanced economies by 2030” &amp; “Phase-out of all unabated coal power plants by 2040.”</p> <p>“No new final investment decisions should be taken for new unabated coal plants [as of 2021].”</p>	<p>No commitments from TEPCO, Chubu or JERA to phase out coal power by any date.</p>	<p>JERA is constructing 3 additional coal-fired power plants in 2022 (Yokosuka, Taketoyo, Indonesia-Cirebon).</p> <p>Yokosuka, located in the outskirts of Tokyo, is under construction. The Yokosuka project is highly contentious due to <a href="#">local opposition and ongoing litigation</a>.</p> <p>Taketoyo coal-fired power plant Unit 5, located in Aichi prefecture, is slated to start its operation this year.</p> <p>JERA states that it will "phase out all inefficient coal-fired power plants (units) by 2030," but of the 12 coal-fired units owned by JERA, only Hekinan Power Station Unit 1 (700 MW) and Unit 2 (700 MW) would meet the definition of "inefficient coal (SC and Sub-C)."</p> <p>Another project is located in Cirebon, Indonesia. The project is also facing <a href="#">local opposition and ongoing investigation on bribery</a>.</p>
<p>Absolute emissions from power generation fall 57% from 2020-2030.</p>	<p>TEPCO and Chubu have committed to reducing CO<sub>2</sub> emissions by 50% from the electricity sold to customers by 2030 from 2013 levels. This includes emissions from group companies such as JERA.</p> <p>However, if adjusted to a 2020 baseline, TEPCO’s target would only result in a 17% reduction by 2030, from <a href="#">84 megatonnes of carbon dioxide equivalent (MtCO<sub>2</sub>-e) in 2020 to 70 MtCO<sub>2</sub>-e in 2030</a>. For Chubu, the same adjustment equates to a 23% reduction from <a href="#">41.7 MtCO<sub>2</sub>-e in 2020 to 32.4 MtCO<sub>2</sub>-e in 2030</a>. <b>Both of these targets fall woefully short of what the NZE2050 requires.</b></p> <p>JERA aims to reduce emissions intensity by 20% compared to the Japanese government’s benchmark</p>	<p><b>JERA’s operations produce approximately 169 MtCO<sub>2</sub>-e annually, or 15% of Japan’s annual emissions (2020).</b></p> <p>Neither TEPCO, Chubu or JERA have disclosed detailed plans to reduce their absolute emissions in line with NZE2050.</p> <p>As shown above, JERA is developing new highly emissions intensive power generation projects.</p>

	<p>for thermal power generation in FY2030. This does not guarantee an absolute CO<sub>2</sub> emissions reduction and it is entirely possible that JERA's absolute emissions increase, depending on the size and composition of its power generation portfolio.</p>	
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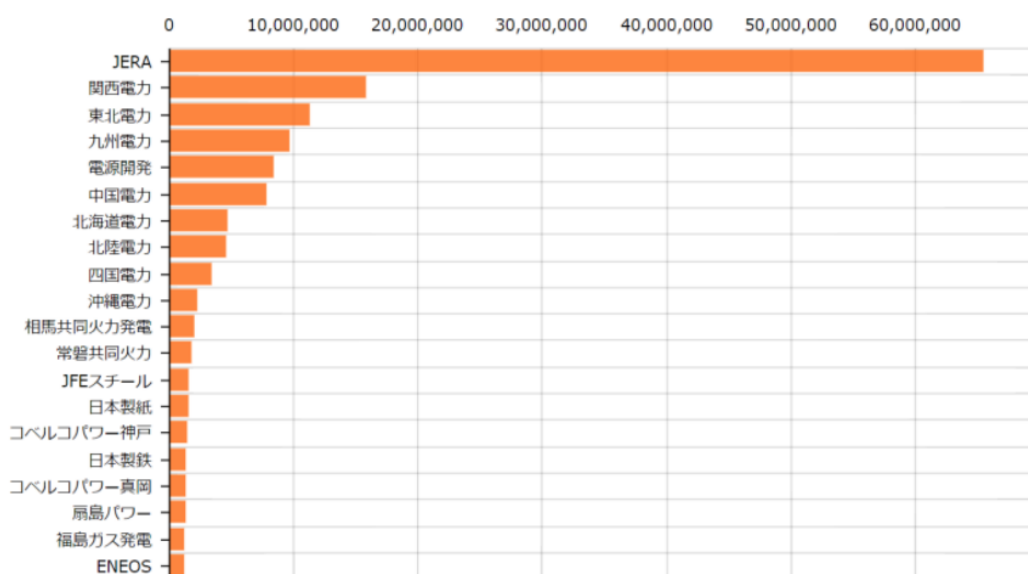
### Significant exposure to coal assets with no clear phase out plan

The electricity TEPCO and Chubu deliver to their customers is predominantly sourced from fossil fuels, accounting for [78%](#) and [70%](#) respectively in 2020. Neither TEPCO, Chubu, nor JERA has a clear coal phase out plan. JERA's domestic thermal power generation capacity [has no equal in Japan](#). JERA supplies [a third of electricity in Japan](#) and is [the largest coal power generator](#).

JERA's "[Zero CO<sub>2</sub> Emissions 2050](#)" announced in October 2020 lacks the near-term detail and ambition to align with the Paris climate goals. Although JERA says it is committed to shutting down inefficient coal-fired power plants in Japan, it is understood that [only one power plant](#) (Hekinan Power Station, Unit 1 and 2) is subject to shutdown. JERA has disclosed no plans to retire the coal-fired power plants in Japan and overseas in line with what climate science requires.

At present, renewable energy accounts for [only 1%](#) of JERA's business through its stake in offshore wind overseas. Although JERA claims renewable energy as one of the pillars of its Zero CO<sub>2</sub> Emissions 2050, the Company has [no quantitative targets](#) to increase renewable energy supply, indicating its willingness to prolong the use of coal.

**Chart 1. Top 20 thermal power generator in Japan by ‘maximum outputs’ in kilowatt**



Source: [Energy Information Centre](#) (October 2021)

### **Doubling down on LNG risk**

As indicated above, JERA is actively pursuing significant expansion in the LNG sector. JERA has stakes in gas fields such as Barossa in Australia. This project is [seen](#) as a significant financial risk on top of the obvious climate risks it presents. In addition, JERA is also involved in approximately five LNG import terminals<sup>5</sup> and LNG to power projects with nameplate capacity of 11.6GW<sup>6</sup> in [countries such as Bangladesh and Vietnam](#). This is particularly concerning in light of the IEA’s finding that many of the LNG facilities currently under construction or at the planning stage are not required in a net zero by 2050 pathway.

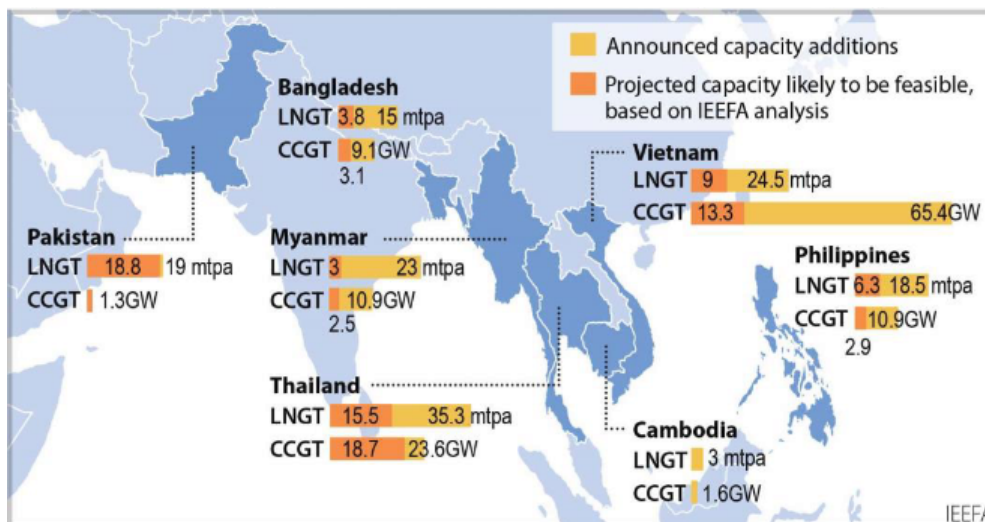
Emerging Asian markets cannot be relied on to replace the LNG demand decline [expected](#) globally under any credible Paris-aligned scenario. Even before taking climate policy into account, [IEEFA analysis](#) examining the proposed pipeline of LNG-to-power projects in Vietnam, Thailand, the Philippines, Cambodia, Myanmar, Pakistan and Bangladesh has found 62% of proposed LNG import terminal capacity and 61% of proposed gas-fired power capacity is unlikely to be built due to unfavourable project and country market fundamentals, and financial market constraints. Where JERA is increasing its exposure to LNG assets in these countries, it risks these investments becoming stranded. The inherent vulnerability of

<sup>5</sup> Bidder for Matarbari LNG Terminal, Shareholder of Summit International which is a sponsor of Matarbari Summit LNG Terminals, the Can Na LNG Terminal and Tien Lang 1 Industrial Park Hai Phong Terminal.

<sup>6</sup> Shareholder of Summit International which is a sponsor of Matarbari Summit LNG Power Plant (2,400MW), Bidder on Bac Lieu (3,200MW) and Ca Na 1 (1,500MW), Sponsor of Hai Phong Phase 1 and 2 (4,500MW)

LNG is echoed by former Governor of the Bank of England, Mark Carney, who recently stated [a shift to renewables is irreversible](#), despite the short-lived price hikes.

### Chart 2. Likely feasibility of proposed LNG capacity additions in emerging Asia



Source: [Examining Cracks in Emerging Asia's LNG-to-Power Value Chain](#)

### IEA's Net Zero Emissions by 2050 and investor expectations

Given the emissions falls required to align with the climate goals of the Paris Agreement and NZE2050, investors are increasingly demanding companies show a clear pathway to achieve their net zero commitments. [Climate Action 100+](#) (CA100+) has identified companies are generally failing to back their net zero commitments up with strategies and plans to achieve them, noting disclosures in areas such as decarbonisation strategy and capital allocation alignment are especially inadequate. Although TEPCO and Chubu are not subject to CA100+, many of the member investors, such as New York City Pension Funds and Government Pension Investment Fund (GPIF) will have stakes in these companies. As outlined below, requests for improved climate-related financial disclosures from utilities around the world have seen strong investor support.

Neither TEPCO, Chubu, nor JERA has set near-term plans genuinely aligned with net zero by 2050, and their short-term emissions reduction targets fall well short of alignment with this goal. This undermines the goal of net zero emissions by 2050, which all three companies have made commitments to.

An update on [the TCFD guidance](#) published in 2021 also reflects such investor concerns and recommends companies set and disclose clear metrics and targets, and sound transition plans, to support and guide their management of climate change transition risks. In Japan, disclosures based on the TCFD recommendations are [required for Tokyo Stock Exchange Prime Market-listed companies](#) from April 2022

onwards, which would include TEPCO and Chubu. Key investor expectations from the TCFD recommendations are as follows:

- Describe how the company's strategy aligns with a global temperature goal (e.g. 1.5°C). **Merely committing to net zero by 2050 is inadequate without 1.5°C-aligned intermediate targets and strategies to achieve them**
- Disclose the assumptions the company adopts for transition plans (e.g. commodity prices, demand scenarios). The assumptions should be applied consistently across the Company in managing the business (e.g. investment decisions)
- Describe how the company's course of action contributes to greenhouse gas (GHG) emissions reduction
- Test the robustness and achievability of the transition plan and targets using multiple climate scenarios, and disclose the results.

**The assumptions being requested in the proposal are based on investor expectations as outlined in the TCFD, Climate Action 100+ and other investor initiatives (see details in [Table 3](#)). Moreover, companies are already providing disclosure on the assumptions being sought from TEPCO and Chubu.**

## **TEPCO and Chubu's inadequate climate targets, metrics, and disclosures**

The disclosures of both TEPCO and Chubu fail to provide decision-critical information, as they lack many of the features discussed above. Specifically, the companies' disclosures do not address the critical question of how resilient their fossil fuel-related assets are to the Paris Agreement or a credible net zero by 2050 pathway, given the companies' own commitments to this goal.

**TEPCO has not conducted [any analysis](#) using the NZE2050. Its latest disclosure (December 2021) is based on the IEA's outdated World Energy Outlook 2019.**

Chubu has conducted [an analysis](#) using NZE2050. However, there is no alignment between the scenario's conclusions and the company's strategies and targets. For example, while Chubu acknowledges key milestones in NZE2050, such as no new or expanded coal mines, oil and gas fields after 2021, and a global phase-out of unabated coal-fired power plants by 2040, these milestones are not included in Chubu's Roadmap and measures for net zero. **Chubu is therefore actively and knowingly misaligning its strategy with a net zero by 2050 pathway.**



TEPCO and Chubu have not disclosed plausible pathways to achieve their own 2030 and 2050 targets. For instance, there is nothing in either company's disclosures to demonstrate the resilience of their carbon intensive assets, current and future, owned by TEPCO Group and Chubu Group, including a joint venture such as JERA, to a net zero by 2050 scenario.

At present, TEPCO and Chubu's assumptions and estimates remain a mystery to investors. Investors also remain uninformed about the details of new technologies TEPCO, Chubu and JERA are proposing as a key foundation of their decarbonization strategies, such as ammonia, hydrogen and carbon capture and storage (CCS), including the life cycle GHG emissions and the cost competitiveness of these technologies.

### **Ammonia claims lack credibility**

JERA has said it would reduce emissions at its coal power stations with the use of ammonia co-firing. However, without clarifying the process by which ammonia would be produced and used in its power plants, the likelihood is that this would not make any significant reduction in overall emissions released and may in fact increase net emissions.

Almost all of today's hydrogen/ammonia production uses fossil fuels as the feedstock, with significant carbon emissions as a result. This is termed "grey hydrogen/ammonia". To achieve emissions reductions, companies are proposing to pair this production with carbon capture and storage (CCS) - so called "blue hydrogen/ammonia". CCS is controversial, with [significant financial and technical uncertainties](#), putting [JERA's claim](#) that it will not procure grey ammonia and will require at least 60% of emissions to be captured in the production process in serious doubt.

Aside from the costs and risks of unreliable, safe and permanent CO<sub>2</sub> storage that has prevented coal power with CCS from becoming an industrial-scale solution for thermal power generation, recent [peer-reviewed research](#) has found blue hydrogen to be only 12% less emissions intensive than grey hydrogen (135 g CO<sub>2</sub>-e/MJ compared to 153 g CO<sub>2</sub>-e/MJ). Furthermore, JERA will allow carbon that is captured in the production of ammonia to be used for enhanced oil recovery, which is common practice in the US and contributes to more fossil fuel production and CO<sub>2</sub> emissions. Finally, a [study](#) by Japanese engineering company JGC estimated including 20% ammonia co-firing at coal power plants would almost double the cost of electricity.

Climate risk-concerned investors should be wary of any company making claims about the future use of ammonia co-firing, as it presents as an expensive, energy-intensive method for generating electricity with emissions reductions that are dubious, to say the least.



If investors are presented with claims of ammonia co-firing, they should receive clear and convincing answers to the following questions before taking those claims seriously:

- To what extent does the use of ammonia at 20% co-firing impact the thermal efficiency of your power generation assets and how will this impact the revenue generated by power generation assets?
- How are you proposing to source ammonia, specifically the split between blue and green ammonia?
- What will be the overall cost of co-firing with 20% ammonia at your power generation assets and how will this impact the cost of electricity generated from your assets?
- What is the scale of absolute emissions generation involved in the process of sourcing and transporting your proposed ammonia feedstock? How does this compare to the emissions that would be reduced at the sites of power generation?

## **Engagement has not led to adequate changes**

NGOs inside and outside of Japan have been engaging with TEPCO and Chubu for many years. Traditional engagement has not been fruitful, with TEPCO and Chubu failing to disclose information about their significant climate risk exposure individually and through JERA. Our interactions with TEPCO, Chubu and JERA have not resulted in further disclosure or actions to demonstrate the companies are appropriately managing these risks or aligning their strategies with their own net zero commitments.

## **Details of shareholder proposals**

The shareholder proposals request TEPCO and Chubu disclose an assessment of Group-wide energy-related asset resilience under a net zero emissions by 2050 scenario. Shareholders require this information as the current asset-related decisions made by TEPCO and Chubu (individually and through their joint-venture JERA) raise significant questions about the assumptions and estimates underlying the Company's energy-related assets. Shareholders require this information to properly assess the extent of climate-related financial risks to which they are exposed.

**We urge investors to engage with TEPCO and Chubu about the subject matter of this proposal to gain the requested further disclosure, and vote for this proposal if such disclosure is not forthcoming.**

While the text submitted to TEPCO and Chubu is in Japanese, we provide an English translation below:

**TEPCO:**

Partial amendment to the Articles of Incorporation (disclosure of asset resilience in line with a Net Zero by 2050 Pathway)

**1. Details of the proposal**

The following clause shall be added to the Articles of Incorporation:

Chapter: “Compatibility with Decarbonized Society”

Clause: “Disclosure of Asset Resilience to a Net Zero by 2050 Pathway”

1. To promote the long-term success of the Company, given the risks and opportunities associated with climate change, the Company shall include annually in its corporate reporting an assessment of how a net zero by 2050 pathway would affect the assumptions, costs, estimates, and valuations underlying the Company’s energy-related assets. The assessment shall include all energy-related assets of all group companies and business segments.
2. Omitting proprietary information, the disclosures shall include key assumptions and estimates, including those related to long-term commodity demand, long-term commodity and carbon prices, asset lives, future asset retirement obligations, capital expenditures and impairments.

**Chubu:**

Partial amendment to the Articles of Incorporation (disclosure of asset resilience in line with a Net Zero by 2050 Pathway)

**1. Details of the proposal**

The following clause shall be added to the Articles of Incorporation:

Chapter: “Compatibility with Decarbonized Society”

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1. To promote the long-term success of the Company, given the risks and opportunities associated with climate change, the Company shall include annually in its corporate reporting an assessment of how a net zero by 2050 pathway would affect the assumptions, costs, estimates, and valuations underlying the Company’s energy-related assets. The assessment shall include all energy-related assets of all group companies and business segments.
2. Omitting proprietary information, the disclosures shall include key assumptions and estimates, including those related to long-term commodity demand, long-term commodity and carbon prices, asset lives, future asset retirement obligations, capital expenditures and impairments.

## Shareholder resolutions in Japan & Amendments to Company Articles of Incorporation

- The proposal to amend the company’s articles of incorporation in part is the most commonly used approach to make shareholder proposals in Japan, and the approach taken in this proposal. [Around two-thirds of the shareholder proposals filed in 2021 took this form.](#)
- Under [Japanese corporate law](#), the [sole legal pathway](#) for a **shareholder proposal on climate change** is via an amendment to a company’s articles of incorporation.
- The legal effect of such shareholder proposals is the same as the “special resolutions” on climate change filed and passed at UK companies including Barclays, BP, Royal Dutch Shell, Rio Tinto and Anglo American, which take binding effect as part of the companies’ constitutions. -- [Client Earth](#)

## Increasing investor support for climate proposals in the utilities sector

Similar requests for disclosures around the world have seen strong investor support. The tables below show some recent examples of shareholder resolutions and investor initiatives, including the TCFD, which encourage the disclosure of GHG emissions and related targets, as well as key assumptions including those related to long-term commodity demand, long-term commodity and carbon prices, asset lives, future asset retirement obligations, capital expenditures and impairments. Table 3 also provides examples of companies making these disclosures.

**Table 2: Examples of climate resolutions seeking disclosure in various jurisdictions**

Company	Year	Country	Status	Resolution Text
Exxon	2022	USA	<a href="#">Filed</a>	Seeking an audited report assessing how applying the assumptions of the IEA Net Zero by 2050 pathway would affect the assumptions, costs, estimates, and valuations underlying its financial statements, including those related to long-term commodity and carbon prices, remaining asset lives, future asset retirement obligations, capital expenditures and impairments.
Duke Energy	2022	USA	<a href="#">Resolution Withdrawn. Agreement Reached</a>	Shareholders request that Duke revise its net zero by 2050 target, and any relevant interim targets, to integrate Scope 3 value chain emissions consistent with guidelines such as the CA100+ and SBTi, or publish an explanation of why the Company does not view inclusion of those emissions as appropriate.
Kansai Electric	2021	Japan	<a href="#">18.3% vote</a>	Amendment to the Articles of Incorporation: <a href="#">Business reform toward the realisation of a carbon-free society through decarbonizing the power generation business</a> , including disclosure of medium to long term climate risks and an emission reduction plan.
Chevron	2021	USA	<a href="#">47.8% vote</a>	Seeking an audited report to shareholders on whether and how a significant reduction in fossil fuel demand,

				envisioned in the IEA Net Zero 2050 scenario, would affect its financial position and underlying assumptions.
BP	2019	UK	BP recommended shareholders vote for the resolution; <a href="#">99% vote</a>	<a href="#">Include in its Strategic Report and/or other corporate reports</a> , as appropriate, for the year ending 2019 onwards, a description of its strategy which the Board considers, in good faith, to be consistent with the goals of Articles 2.1(a) and 4.1 of the Paris Agreement (the 'Paris Goals') as well as capital expenditure...and metrics and targets....

**Table 3: Investor expectations of disclosure of GHG targets and assumptions, and examples of disclosure from other companies' reporting**

Shareholder proposal disclosure requests	Investor expectations	Other companies disclosure
GHG emissions targets	<p>Scope 3 GHG emissions are increasingly understood as an important indicator of risk, as risk is embedded in buying inputs or selling products that are carbon intensive, as stated in the recent <a href="#">TCFD update in 2021</a>. The <a href="#">TCFD update</a> includes setting a reduction in Scope 1, 2 and 3 targets as an example of quantified climate related targets.</p> <p><a href="#">Climate Action 100+</a>, an investor initiative of 700 investors representing \$68 trillion in assets, demands companies take action to reduce greenhouse gas emissions in line with the Paris Agreement. It <a href="#">assesses</a> companies on their short term (up to 2025), medium term (2026 to 2035) and long term (2036 to 2050) GHG reduction targets, including Scope 3.</p> <p>The Net Zero Framework of the <a href="#">Paris Aligned Investment Initiative</a>, a global collaboration supported by four regional investor networks – AIGCC (Asia), Ceres (North America), IIGCC (Europe) and IGCC (Australasia), lists “Short &amp; medium term emissions reduction targets (scope 1, 2 and material scope 3)” and “quantified plan to deliver targets” as key metrics for</p>	<p>According to <a href="#">TCFD analysis</a> of 2,500 organizations within the MSCI All Country World Index (ACWI Index) from 2017–2019, organizations disclosing Scope 3 GHG emissions grew from 28% to 34%.</p> <p><a href="#">BP</a> has set a target to reduce the lifecycle emissions intensity of sold energy products (including physically traded products and marketing sales) by 5% by 2025 from 2019 levels, and 15-20% by 2030.</p> <p><a href="#">Eni</a> has set a target to reduce net scope 1-2 emissions by 65% by 2025 from 2018 levels. The company is also targeting a 35% reduction in scope 1-3 emissions from upstream, midstream and downstream by 2030.</p>

	<p>assessing the alignment of assets (such as investee companies) with a net zero emissions by 2050 pathway.</p>	
<p>Long-term commodity demand</p>	<p>The Institutional Investors Group on Climate Change (European investor group) discuss the importance of disclosure of assumptions related to assets based on accounting standards in their <a href="#">Investor Expectations for Paris-aligned Accounts</a>: “Accounting assumptions or estimates that ignore structural changes to demand that come from Paris-alignment will tend to misrepresent companies’ economic position.”</p> <p>The updated <a href="#">TCFD guidance</a> states: “Disclosure of the amount and extent of an organization’s assets or business activities vulnerable to climate-related transition risks allows users to better understand potential financial vulnerability regarding issues such as possible impairment or stranding of assets, effects on the value of assets and liabilities, and changes in demand for products or services.”</p>	<p><a href="#">Equinor</a> presents net present value sensitivities under four IEA scenarios against the company’s central planning scenario, allowing investors to gauge the company’s own demand expectations. <a href="#">Santos</a> discloses a similar analysis.</p> <p><a href="#">Shell</a> presents its commodity price projections alongside projections from external scenarios, which allows investors to broadly understand the level and direction of the company’s demand assumptions.</p> <p><a href="#">Eni</a> specifies that it views the IEA’s Sustainable Development Scenario as its “main reference for assessing the risks and opportunities associated with energy transition”.</p>
<p>Long-term commodity and carbon prices</p>	<p>The <a href="#">TCFD update</a> discusses the importance of internal carbon prices for:</p> <p><b>Performance measurement</b> – For example, determining carbon-adjusted earnings per share, estimating expected profitability, incentivizing energy saving, identifying revenue opportunities and risks, managing procurement and supply chains</p> <p><b>Position management</b> – For example, valuation of assets</p> <p><b>Investment decisions</b> – For example, identifying low-carbon, high-return investment opportunities, planning capital investments, determining cost-benefit and net present value of projects”</p>	<p>Disclosure of long-term commodity price assumptions is commonplace among energy companies.</p> <p><a href="#">Shell</a> discloses a comparison between its future oil price assumptions and a range of other scenarios.</p> <p><a href="#">Equinor</a> discloses its long-term commodity price assumptions, and states clearly that these are not consistent with achieving the IEA NZE or SDS.</p> <p><a href="#">BP</a> and <a href="#">Eni</a> both disclose long-term commodity price assumptions as well.</p>

<p>Asset lives and future asset retirement obligations, and impairments</p>	<p>IIGCC’s <a href="#">Investor Expectations for Paris-aligned Accounts</a> discuss the importance of disclosure of assumptions related to asset lives based on accounting standards:</p> <ul style="list-style-type: none"> <li>• “disclosure of the key assumptions on which cash flow projections have been based and management’s approach to determining the value assigned to these key assumptions...Where climate-related risks could significantly affect the recoverable amount of a company’s assets, information about how the effect has been factored into recoverable amount calculations would be relevant.”</li> <li>• “...companies to disclose key assumptions used where assets are recognised at fair value. Fair value measurements may incorporate a number of possible scenarios. When the fair value of an asset is affected by climate-related risks including the effect of and potential changes to laws and regulations with respect to managing such risks, a company may need to disclose how it factors climate-related risk into the calculations.”</li> <li>• “Companies are required to provide a brief description of the nature of any contingent liability, and where practicable, an estimate of its financial effect and an indication of the uncertainties relating to the outflow of resources for settling the obligation”</li> </ul>	<p><a href="#">Eni</a> discloses the potential impact of climate-related risks and opportunities on an organization’s financial position in terms of fair value of assets. “In order to verify the resilience of Eni’s asset portfolio, a sensitivity analysis was also carried out on all CGUs (Cash Generating Units) in the upstream sector. The stress test, performed under the IEA SDS scenario, showed that the overall book values of the assets were stable with a reduction in fair value of around 11%, or around 5% in the event of contractual and fiscal recoverability of the costs of direct CO2 emissions.”</p>
<p>Capital expenditures</p>	<p>The <a href="#">TCFD update</a> suggests as a metric “the amount of capital expenditure, financing, or investment deployed toward climate- related risks and opportunities.”</p>	<p><a href="#">BP</a> provides a target for capital allocation “by 2025, more than 40% of our capital expenditure will be in our transition growth businesses, and around 50% by 2030.”</p>

**Table 4: Coal-fired power plants/units owned by JERA**

Plant Name	Unit	Prefecture	City/Town	Capacity (MW)	Start operation	Technology
Hirono	5	Fukushima	Hirono-machi	600.00	Jul. 2004	USC
Hirono	6	Fukushima	Hirono-machi	600.00	Dec. 2013	USC
Hitachinaka	1	Ibaraki	Tokai-mura	1000.00	Dec. 2003	USC
Hitachinaka	2	Ibaraki	Tokai-mura	1000.00	Dec. 2013	USC
Yokosuka	New 1	Kanagawa	Yokosuka	650.00	2023	USC
Yokosuka	New 2	Kanagawa	Yokosuka	650.00	2024	USC
Hekinan	1	Aichi	Hekinan	700.00	Oct. 1991	SC
Hekinan	2	Aichi	Hekinan	700.00	Jun. 1992	SC
Hekinan	3	Aichi	Hekinan	700.00	Apr. 1993	USC
Hekinan	4	Aichi	Hekinan	1000.00	Nov. 2001	USC
Hekinan	5	Aichi	Hekinan	1000.00	Nov. 2002	USC
Taketoyo	5	Aichi	Taketoyo-cho	1070.00	Aug. 2022	USC

## Disclaimer

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