INVESTOR BRIEFING

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Tokyo Electric Power Company Holdings, Inc. (TSE: 9501) (TEPCO)
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Integrity matters: TEPCO and Chubu must demonstrate capital alignment with a net zero by 2050 pathway

The strategies of TEPCO, Chubu and their most carbon-intensive joint venture JERA Co., Inc. (JERA) are consistent with the world failing to meet the Paris Agreement's climate goals, contradicting the companies' own commitments to achieve carbon neutrality/net zero CO_2 emissions by 2050. To properly assess the extent of climate-related financial risks they are exposed to, investors are increasingly scrutinising the integrity of transition plans of the companies they invest in. TEPCO, Chubu and JERA's transition plans lack credibility, as key assumptions and estimates for these plans are not disclosed or tested against a net zero by 2050 pathway despite repeated requests from investors.

Market Forces and Kiko Network have therefore filed shareholder proposals (full details on pages 8 and 9), requesting disclosures demonstrating alignment of strategic capital investments with a net zero by 2050 pathway. Investors are urged to request these disclosures through engagement with TEPCO, Chubu and JERA.

At the upcoming TEPCO and Chubu AGMs, investors are urged to vote:

- **FOR the 'Capital Alignment' shareholder proposals (see pages 8 and 9).**
- **AGAINST the directors who sit on JERA's board of directors (see page 8).**

Key Points

- TEPCO, Chubu and their joint venture JERA's 'transition' plans, including the capital investment plans, fail to align with a 1.5-degree or a net zero by 2050 pathway, or even meaningfully reduce emissions. Instead, these plans double down on fossil fuels, undermining the companies' own climate commitments.
- This misalignment threatens shareholder value: TEPCO and JERA are already seeking additional loans as a result of their continued reliance on thermal power generation, and there is no sign of a shift from this reliance.
- JERA hopes to create a massive fossil fuel-produced ammonia/hydrogen supply chain, an extremely high-cost approach that would cost TEPCO and Chubu shareholder value.
- JERA is pursuing major liquified natural gas (LNG) expansion plans in South and Southeast Asia, despite clear indications of demand destruction in those markets.
- TEPCO and Chubu must address the risky misalignment between their strategies and climate commitments through the improved disclosures requested in the 'Capital Alignment' shareholder proposals.

TEPCO, Chubu and JERA's transition plans fail to align with net zero by 2050 pathway

According to the International Energy Agency (IEA)'s net zero by 2050 pathway (NZE), **global absolute emissions from power generation and heat need to fall by 51% by 2030 compared to 2021, and developed nations need to reach net zero electricity by 2035**. TEPCO, Chubu and JERA's transition plans diverge from NZE, despite each company having committed to the goal of net zero emissions by 2050. Their significant planned new fossil fuel projects demonstrate plans to perpetuate fossil fuel based energy systems by replacing existing fossil fuel facilities with other fossil fuel based facilities, including fossil ammonia and hydrogen co-firing.

Table 1: TEPCO, Chubu and JERA's transition plans fail to support net zero by 2050 commitments

	Plans for "decarbonisation"	Concerns	
TEPCO* *Net zero CO_2 emissions from energy supply in FY2050.	Reduce CO_2 emissions by 50% from the electricity sold to customers by FY2030 from FY2013 levels. This includes emissions from group companies such as JERA.	If adjusted to a 2020 baseline, **TEPCO's target would only result in just a 17% reduction by 2030**, from 84 megatonnes of carbon dioxide equivalent ($MtCO_2$-e) in 2020 to 70 $MtCO_2$-e in 2030. Electricity delivered in FY2021 was 77% fossil fuel sourced and highly susceptible to fuel price volatility.	No disclosure of power generation/delivery portfolio targets for 2030 and 2050.
Chubu		If adjusted to a 2020 baseline, **Chubu's target would only result in just a 23% reduction** from 41.7 $MtCO_2$-e in 2020 to 32.4 $MtCO_2$-e in 2030. Electricity delivered in FY2021 was 64% fossil fuel sourced and highly susceptible to fuel price volatility.	
JERA	20% ammonia co-firing by 2030	JERA power plants would still be firing 80% coal by the time global absolute emissions from electricity and heat need to fall by 51% from 2021. This is five times more carbon intensive than what is required by 2030 to align with a net zero by 2050 pathway.	No details about how these targets would be achieved - there are no phase-out or decommissioning plans for thermal capacity by year or by asset.

	At least 60% CO_2 emissions reduction by 2035 in Japan (base year 2013)	**Advanced economies must reach net zero in the electricity sector by 2035**. JERA traded 37 million tonnes of LNG in FY2021, which is equivalent to 50% of Japan's annual LNG imports, and 10% of globally traded LNG in 2021.	
	Transition bonds	These will be used for • replacing old thermal power plants with new thermal power plants • demonstrating the co-firing of fossil fuels and ammonia/hydrogen produced from fossil fuels with **no plans or requirements to forecast, report, or even deliver any emissions savings**.	

TEPCO, Chubu and JERA's "net zero" plan seek to rely on fossil fuels to solve the climate crisis caused by fossil fuels. This includes fossil ammonia, fossil hydrogen, and carbon capture and storage (CCS) with bare minimum renewables added and without plans to phase out thermal power generation. As a British think tank TransitionZero estimates, "**20% co-firing of the cheapest grey ammonia is set to double the fuel costs compared to coal**," and "**despite claims, ammonia co-firing does little to reduce emissions**."

Pursuing these strategies risks significant wasted shareholder capital. JERA itself acknowledges this, but does not provide any quantitative or useful risk analysis:

> "*The Group has been… building a demonstration project for co-firing with ammonia, a promising fuel technology that does not emit CO2**,** with the aim to commence full-scale operation by the fiscal year ending 31 March 2031.* ***If, despite its substantial investments in such new technologies, the Group is unable to achieve results*** *from its research and development as anticipated, or if another kind of technology that is more favourable than the Group's hydrogen or ammonia technologies becomes prevalent,* ***the Group's business strategy, results of operations and financial condition may be materially adversely affected****. In addition,* ***the cost of power generation by firing hydrogen or ammonia is currently significantly more expensive than that of coal-fired power generation****. Accordingly, acceleration of the use of new technologies may lead to increases in costs, which may materially adversely affect the Group's profitability and financial condition*."

Given the clear risk to shareholder value, investors are urged to question the integrity of TEPCO, Chubu and JERA's current commitments and transition plans, which could impact the credibility of investors' own climate pledges.

Reliance on thermal power generation causing financial troubles

Japanese utilities are facing financial struggles[1] due to reliance on imported fossil fuel-based power generation. TEPCO and JERA have been facing significant problems, reportedly seeking funds. Seeking emergency loans is not likely a one-off issue, so long as the companies continue relying on imported fossil fuels. For example, TEPCO's scenario analysis acknowledges the huge financial risks posed by a transition to carbon neutrality, stating "Revenue worsens as a result of soaring natural resource prices". The company says it will "Put together [a] highly competitive power portfolio" to address this risk, yet JERA's domestic power is sourced entirely by LNG, coal and oil, except a 2.3% stake in a solar power company. In fact, far from announcing plans to significantly reduce its portfolio's reliance on fossil fuels with thermal phase-out plans, **JERA is planning on opening new thermal power stations** as shown in Table 2 below:

Table 2: JERA's planned thermal power stations in Japan

Plant name	Status
Yokosuka (coal) 1,300 megawatts	expected to start in 2023/2024 (Unit 1: currently under trial operation and may start commercial operation in June; Unit 2: expected to start in February 2024)
Anegasaki (gas) 1,300 megawatts	expected to start in 2023 (Unit 1: commercially operated since February 2023; Unit 2 and 3: expected to start in April and August 2023 respectively)
Goi (gas) 2,340 megawatts	expected to start in 2024/2025 (Unit 1: expected to start operation in August 2024; Unit 2 in November 2024; and Unit 3 in March 2025)

TEPCO and Chubu are missing the opportunity to achieve energy security by reducing reliance on imported fossil fuels. As a recent study revealed, Japan is capable of supplying 90% of electricity from clean energy sources by 2035 without coal or new gas power plants. Nevertheless, JERA is lobbying the government to subsidise its fossil fuel plans, including stable procurement of LNG, ammonia/hydrogen produced from fossil fuels and the development of unproven fuel ammonia/hydrogen mixed combustion technologies rather than retiring existing thermal power plants. This leaves the companies and the Japanese energy system vulnerable to geopolitical events and out of line with the transition to a low carbon economy required to meet their climate commitments.

[1] See also this article.

JERA, TEPCO and Chubu ignoring lowered LNG demand in emerging Asia

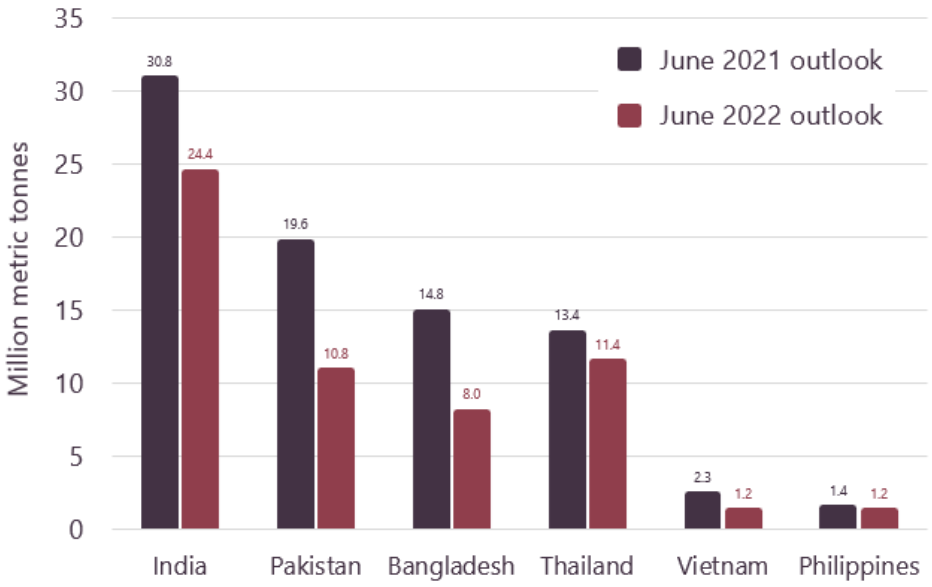
JERA's growth plans are focused on emerging Asia, with an additional 11.6 gigawatts capacity of 5 proposed LNG to power projects in Bangladesh and Vietnam alone. Pushing for additional thermal power plants could block the necessary shift to renewables. For example, **Southeast Asia can install 300 gigawatts of renewable capacity by 2030 in a cost-effective manner** and TEPCO, Chubu and JERA should seize this climate opportunity. Developing Asian countries are increasing renewable capacity installation targets. Indonesia aims to source 25% of its electricity from renewables, including the addition of 4.68 gigawatts of solar power capacity, by 2030. Similarly, Bangladesh has drafted a plan to achieve a 40% renewable energy target by 2041. TEPCO and Chubu, through JERA, are instead risking shareholder value by pursuing a strategy that doubles down on volatile LNG and fails to capitalise on clean energy opportunities.

LNG demand projections in key markets have been cut due to limited availability and high prices, which are expected to continue for years to come. The Institute for Energy Economics and Financial Analysis has stated "in Pakistan and Bangladesh, an inability to afford LNG cargoes resulted in gas and power shortages, stunting economic growth in key sectors and straining critical foreign exchange reserves" and "**as long as unaffordable LNG prices and procurement challenges persist, 96.7 billion U.S. dollars of proposed LNG-related infrastructure projects in Pakistan, Bangladesh, Vietnam, and the Philippines will face a heightened risk of underutilization or cancellation**".[2]

In reality, some developing Asian countries are experiencing the overcapacity of electricity, making investing in new thermal power plants unjustifiable. For example, in Bangladesh, about 60% of the installed capacity for electricity was unused in 2020-2021. In Indonesia, the Java-Bali grid has been experiencing overcapacity issues for many years, amounting to an excess supply of 5 gigawatts in 2022, which could potentially delay the commercial operation date of a JERA-owned coal power plant, Cirebon 2. JERA is exposed to similar risks through its holdings in companies such as Summit Power in Bangladesh and Aboitiz Power in the Philippines. The chart below compares LNG demand forecasts for 2025 as of June 2021 and June 2022 in these countries, showing significant downward revisions.

[2] See also https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/lng/123022-asian-lng-markets-to-brace-for-more-uncertainty-macro-risks-in-2023

Chart 1: LNG demand in 2025 in South and Southeast Asia



Recreated from Bloomberg New Energy Finance, Global LNG Market Outlook 2022-26

Transition plans without key disclosures leave investors in the dark

Despite significant exposure to fossil fuels, TEPCO, Chubu and JERA's transition plans do not disclose key assumptions and estimates, such as LNG trading plans, commodity price outlooks, and expected cost reductions in renewables. This lack of disclosure leaves investors unable to assess the potential viability of these companies' strategic reliance on developing a "fossil" ammonia/hydrogen supply chain from energy supply to power generation.

In particular, the assumptions and estimates underpinning these companies' planned strategic (capital) investments are unknown. This is a critical issue because non-disclosure can hide financial risk and "incentivises firms to trade on unsustainable assumptions."

Global companies facing similar energy transition risks to TEPCO, Chubu and JERA are more transparent in disclosing relevant information. Some even demonstrate that "climate-related risks can be accounted for and properly disclosed in financial statements" and disclose analysis of sensitivities to net zero 2050 pathways. The table below provides some disclosure examples from global companies that are involved in LNG supplies and power generation.

Table 3: Disclosure examples from companies similarly situated

Items	Disclosure examples
Capital expenditure (capex)	**Enel** discloses (in Euros and as a proportion of total) historical capex dedicated to low-carbon products, services and technologies. The company also provides medium-term capital allocation targets by technology type and phase-out targets for coal and gas assets.
Coal and gas phase-out announcement/ alignment	**Enel** provides medium-term capital allocation targets by technology type and phase-out targets for coal and gas assets.
Potential impairments/ remaining asset lives	**Shell** discloses a sensitivity analysis for the carrying values of its gas assets using a range of price scenarios, including the IEA NZE. **National Grid** discloses remaining useful lives for relevant assets, taking the energy transition into account.
Gas demand	**Equinor** presents net present value sensitivities under four IEA scenarios against the company's central planning scenario, allowing investors to gauge financial risk as well as the company's demand expectations. **Santos** discloses a similar analysis.
Alignment of financial statements with drive to net zero	**Eni "**performed a sensitivity of its Oil & Gas CGUs to using NZE2050 commodity and CO2 prices in its value in use impairment assessments. It concluded that, using such assumptions, it had headroom in excess of 30% compared to the carrying amount of such CGUs. Eni noted that this is in comparison to approximately 90% headroom using Eni's own scenario when testing value in use of its Oil & Gas CGUs, and 75% headroom when Eni assessed these carrying amounts against the IEA SDS." (analysis conducted by CTI). **Equinor** provides sensitivity to NZE2050 commodity and CO_2 prices. "A calculation of a possible effect of using the prices (including CO_2 prices) in a 1.5°C compatible Net Zero Emission by 2050 Scenario as estimated by the International Energy Agency (IEA) could result in an impairment of around USD 7 billion before tax." (analysis conducted by CTI).

TEPCO and Chubu must disclose key information related to strategic capital investments for investors to evaluate whether the companies' transition plans are tenable, avoiding wasted shareholder capital, and capitalising on climate opportunities in a low carbon economy.

Investor action required

In the face of accelerating policy, market and investor commitments towards achieving net-zero emissions by 2050, the 'Capital Alignment' shareholder proposals seek credible transition plans to avoid the financial shocks of stranded assets, wasted capital and unpredictable revenues. The inadequacy of the companies' current transition plans will exacerbate these risks. If JERA is a "mega-venture leading to a clean energy economy," as it claims, it must align itself with the rest of the world to achieve a true decarbonised society.

As set out in the integrated reports of TEPCO and Chubu, Mr. Seiji Moriya (TEPCO Holdings director, JERA director) and Mr. Satoru Katsuno (Chubu Electric chairman, JERA director) are responsible for supervising JERA's achievement of zero CO_2 emissions by 2050. JERA's failures to align its strategy with this goal and manage climate risk by putting into place a Paris-aligned transition plan as outlined in this briefing also warrant votes against these two directors, both of whom are up for reelection.

At the upcoming TEPCO and Chubu AGMs, investors are urged to vote:

- **FOR the 'Capital Alignment' shareholder proposals.**
- **AGAINST the directors who sit on JERA's board of directors.**

Shareholder Proposal Text

Chubu Electric: Partial amendment to the Articles of Incorporation (Alignment of capital allocation with a net zero by 2050 pathway)

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

Chapter: "Transition Plan"

Clause: "Alignment of capital allocation with 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 set and disclose a policy demonstrating how it will align material strategic capital investments with a net zero by 2050 pathway as per the Company's Zero Emissions Challenge 2050 (hereinafter referred to as "this policy").
2. To support this policy, the Company shall assess and report how a net zero by 2050 pathway would affect the assumptions, costs, estimates and valuations underlying the Company's strategic capital investments, inclusive of all group companies and business segments. The disclosures shall omit proprietary information.

Shareholder Proposal Text

TEPCO: Partial amendment to the Articles of Incorporation (Alignment of capital allocation with a net zero by 2050 pathway)

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

Chapter: "Transition Plan"

Clause: "Alignment of capital allocation with 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 set and disclose a policy demonstrating how it will align material strategic capital investments with a net zero by 2050 pathway as per the Company's 2050 Carbon Neutrality Declaration (hereinafter referred to as "this policy").
2. To support this policy, the Company shall assess and report how a net zero by 2050 pathway would affect the assumptions, costs, estimates and valuations underlying the Company's strategic capital investments, inclusive of all group companies and business segments. The disclosures shall omit proprietary information.

Shareholder resolutions in Japan and 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