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Mr. Ken Saito
Minister of Economy Trade and Industry of Japan
1-3-1, Kasumigaseki, Chiyoda-ku
Tokyo, 100-8901, Japan

Mr. Nik Nazmi bin Nik Ahmad
Minister of Natural Resources and Environmental Sustainability
Level 1 – 4, Podium 2 & 3, Wisma Sumber Asli No.25
Persiaran Perdana, Precinct 4
Federal Government Administrative Centre
62574 Putrajaya, Malaysia.

Mr. Mohd Rafizi bin Ramli
Minister of Economy
Menara Prisma, No. 26, Persiaran Perdana,
Precint 3, Federal Government Administrative Centre
62675 Putrajaya, Malaysia

Dear Honourable Ministers,

OPEN LETTER
We must reduce carbon at the source
Japan should not dump carbon dioxide into Malaysia

We are writing to express our deep concern over recent developments regarding plans for the export of Carbon Dioxide (CO_2) emissions from Japan to Malaysia for storage after the capture of the emissions.

We understand that the Japanese government is promoting carbon capture and storage (CCS) to capture hard-to-abate carbon, and has set a goal of storing 120-240 million tons of CO_2 by 2050 (which is equivalent to approximately 10-20% of Japan's current emissions) and commercialising CCS by 2030. Two of the projects selected by Japan Organization for Metals and Energy Security (JOGMEC) assume Japan would export CO_2 overseas. Malaysia is one of the countries mentioned many times in the policies as a potential destination of CO_2.

Recently, a consortium of companies signed a Memorandum of Understanding on March 1st, 2024, to jointly study carbon capture and storage and the establishment of potential CCS value chains from carbon dioxide (CO_2) capture and accumulation in Tokyo Bay, shipping, and CO_2 storage in Malaysia.

The amount of CO_2 to be captured is expected to be around 3 million to 6 million tonnes per year and is projected to start operation by 2030.[1]

This practice does not only exacerbate the climate crisis but is fundamentally against the principle of climate justice, particularly by dumping CO_2 in countries in the Global South like Malaysia. Further, it is an unproven technology with high risk, high cost and comes with long-term liability. Relying on such technology will only delay real climate action in Japan.

Capturing CO_2 and transporting it to other countries results in significant problems such as raising costs and safety concerns. Japan must cut the emissions at source and should not export or dump CO_2 in other countries.

Firstly, there are **significant technical and financial challenges** associated with CCS.

CCS technology has been studied since the 1970s, but there are not many examples of this technology being demonstrated in real-world applications. What has been implemented is a type of enhanced oil recovery (EOR), in which captured CO_2 is injected into oil fields to increase the amount of crude oil extracted, which promotes increased fossil fuel production, leading to further carbon emissions.

The Japanese government is considering exporting CO_2 as a "cheaper" option but this does not take into account that the majority of projects globally using CCS have had unique engineering challenges that have led to underperformance and cost blow-outs. This happened to the Gorgon CCS project in Australia, which is around the same size as the proposed Kasawari CCS project in Malaysia. The Gorgon CCS project in Australia, by oil giants Chevron, was expected to capture at least 80% of the carbon dioxide emissions from the production of LNG (liquefied natural gas).[2] However, it has never operated up to its claimed capacity. The Guardian reported in April 2023 that emissions from Chevron's gas project with the world's largest industrial carbon capture system rose by more than 50%.[3] Gorgon agreed to pay to offset its target shortfall of 5.23 million tonnes of carbon dioxide, which is estimated to cost Gorgon between US$100 million and US$184 million.[4]

Who will account for this if this happens to the CO_2 exported from Japan to Malaysia? Who pays for this although any payment will not guarantee safety for generations to come? This will certainly undermine Malaysia's own emissions reduction efforts.

Many CCS projects in the past have failed. 43% of the CCS projects planned between 1995 and 2018 were either cancelled or postponed for various reasons such as lack of funding. Furthermore, 78% of

[1] Mitsubishi Corp. et al, "ENEOS, JX Nippon, Mitsubishi Corporation and PETRONAS to Evaluate and Establish CCS Value Chains from Tokyo-Bay to Malaysia", March 1, 2024, https://www.mitsubishicorp.com/jp/en/pr/archive/2024/html/0000053068.html
[2] Adam Morton, "Emissions from WA Gas Project with World's Largest Industrial Carbon Capture System Rise by More than 50%," The Guardian, April 20, 2023, sec. Environment, https://www.theguardian.com/environment/2023/apr/21/emissions-wa-gas-project-chevron-carbon-capture-system-pilbara-coast.
[3] Morton, op. cit.
[4] Bruce Robertson and Milad Mousavian, "Gorgon Carbon Capture and Storage: The Sting in the Tail" (Institute for Energy Economics and Financial Analysis (IEEFA), April 2022), https://ieefa.org/sites/default/files/2022-04/Gorgon-Carbon-Capture-and-Storage-The-Sting-in-the-Tail_April-2022.pdf.

large-scale projects (those that capture more than 30,000 tons of CO_2 per year) were either cancelled or postponed.[5]

Second, **environmental and social risks** are a further major concern, including the possibility of inducing earthquakes as a result of ground injections, the risk of CO_2 leakage[6], increased water stress, and ocean acidification. Over 500 international, US and Canadian organizations sent an open letter to policymakers calling on them to "reject carbon capture and storage" in July 2021.[7] A CCS project in Algeria where CO_2 had been injected into depleted gas fields from 2004 was suspended in 2011 when movement was observed in the layers of the ground that was supposed to prevent CO_2 from leaking out, provoking concerns of leakage.[8] The same happened with the Norwegian's Sleipner CCS where CO_2 migrated upwards faster than expected.[9] Compressed CO_2 is highly hazardous upon release and can result in the asphyxiation of humans and animals.[10] In 2020, a CO_2 transport pipeline that was part of an EOR project in Mississippi, USA was damaged, resulting in the evacuation of about 300 people.[11] 49 people were hospitalised with carbon dioxide poisoning.[12]

The technologies used to recover CO_2 from exhaust gas include the chemical absorption method (which separates CO_2 by chemically absorbing it into a solvent such as amine) and the physical absorption method (which separates CO_2 by absorbing it into a physical solvent under high pressure). The amine absorption method generates harmful chemicals such as amine compounds in the process of absorbing, separating, and recovering CO_2, and there are concerns regarding the impacts it will have on ecosystems and the environment.[13]

Thirdly, exporting CO_2 emissions perpetuates **energy inefficiency with significant increase in energy consumption**. However, CCS is highly unreliable capturing only less than 1% of global emissions currently[14] or 0.1% of global energy-related carbon emissions in 2022[15].

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[5] Nan Wang, Keigo Akimoto, and Gregory F. Nemet, "What Went Wrong? Learning from Three Decades of Carbon Capture, Utilization and Sequestration (CCUS) Pilot and Demonstration Projects," Energy Policy 158 (November 2021): 112546, https://doi.org/10.1016/j.enpol.2021.112546; For more cost analysis of CCS, also see AIGCC "Carbon Capture and Storage in the decisive decade for decarbonisation - The case for Asia" https://www.aigcc.net/wp-content/uploads/2021/12/AIGCC-CCS-Report_final.pdf

[6] "Deep Trouble: The Risks of Offshore Carbon Capture and Storage (November 2023)," Centre for International Environmental Law (blog), accessed March 19, 2024, https://www.ciel.org/reports/deep-trouble-the-risks-of-offshore-carbon-capture-and-storage-november-2023/

[7] Letter to Policy Makers Re: Carbon capture is not a climate solution (19 July 2021) - https://www.ciel.org/wp-content/uploads/2021/07/CCS-Letter_FINAL_US-1.pdf and https://www.ciel.org/wp-content/uploads/2021/07/CCS-Letter_FINAL_CAN-1.pdf

[8] Massachusetts Institute of Technology, "In Salah Fact Sheet: Carbon Dioxide Capture and Storage Project," Carbon Capture and Sequestration Technologies @ MIT, accessed February 19, 2024, https://sequestration.mit.edu/tools/projects/in_salah.html

[9] Grant Hauber, "Norway's Sleipner and Snøhvit CCS: Industry Models or Cautionary Tales?" (Institute for Energy Economics and Financial Analysis, June 2023), https://ieefa.org/resources/norways-sleipner-and-snohvit-ccs-industry-models-or-cautionary-tales

[10] Centre for International Environmental Law (CIEL), "Carbon Capture and Storage," Centre for International Environmental Law (blog), accessed October 09, 2022, https://www.ciel.org/issue/carbon-capture-and-storage/

[11] Dan Zegart, "Gassing Satartia: Carbon Dioxide Pipeline Linked to Mass Poisoning | HuffPost Impact" August 26. 2021, https://www.huffpost.com/entry/gassing-satartia-mississippi-co2-pipeline_n_60ddea9fe4b0ddef8b0ddc8f; Delaney Nolan, "Louisiana Rushes Buildout Of Carbon Pipelines, Adding To Dangers Plaguing Cancer Alley," August 24, 2023, https://theintercept.com/2023/08/24/carbon-pipeline-ccs-air-products-louisiana/

[12] Zegart op. cit.; Nolan op. cit.

[13] Ministry of Environment of Japan, "Commissioned Study Report on Environmentally Friendly CCS Introduction", 2014, https://www.env.go.jp/earth/ccs/h26_report.html

[14] World Resources Institute, "7 Things to Know About Carbon Capture, Utilization and Sequestration | World Resources Institute," November 13, 2023, https://www.wri.org/insights/carbon-capture-technology.

[15] Amandine Denis-Ryan, "Fact Sheet: Carbon Capture and Storage (CCS) Has a Poor Track Record" (e Institute for Energy Economics and Financial Analysis (IEEFA) e, February 8, 2024), https://ieefa.org/resources/fact-sheet-carbon-capture-and-storage-ccs-has-poor-track-record

Any CCS project requires significant energy inputs and all of CCS infrastructure poses risks to the public and environment. Running carbon capture equipment is also energy-intensive and increases the overall emissions of the facility where the capture equipment is installed.[16] The most energy intensive part is for the capture and compression of carbon, with additional amounts needed for transportation and storage. Capture and compression alone require 330–420 kWh per tonne of CO2 captured. CCS projects increase the energy demand of the facility they capture carbon from by 15%–25% on average.[17]

The fourth challenge is the issue of ensuring **permanent storage**. For CCS to be a viable option for decarbonisation, it is important to make sure that carbon can be stored in a stable state permanently. IPCC uses the word "durably" to describe the storing of CO_2 in geological, terrestrial, or ocean reservoirs, or in products for CDR (Carbon Dioxide Removal). There is no clear definition for the length that "durably" entails, but some have suggested at least 200-300 years.[18] A legal system that can guarantee the maintenance of sequestered carbon for such a long period is not feasible in practice. After the monitoring period conducted by the utility company ends, if the government takes over responsibilities and finances the management of the expected large amount of carbon at public expense, we will only be leaving this problem for future generations to deal with. Why should Malaysian taxpayers or the Global South bear such long-term liability for keeping the CO_2 dumped by rich countries?

Cross-border transport of carbon dioxide for permanent geological storage below the seabed is in practice a dumping of waste. The need for such export in situations where a country does not have sufficient suitable geological storage capacity but may still wish to use CCS to reduce emissions domestically is unjustifiable. We need rich countries to undertake deep, rapid and sustained emission reductions at home and at the source.

Dumping CO_2 is irresponsible and only transfers the burden to the Global South and this is nothing but carbon colonialism. The Global South is not Japan's waste dumping site.

We urge the Japanese Government to recognise the grave consequences of exporting CO_2 emissions and stop doing so.

Also, both governments should not subsidise CCS projects as it effectively transfers the responsibility of polluters to taxpayers. Target 18 of the Global Biodiversity Framework requires governments to identify by 2025 and eliminate, phase out or reform incentives including subsidies that are harmful to biodiversity. We urge the Malaysian Government not to accept the CO_2.

[16] CIEL "Deep Trouble: The Risks of Offshore Carbon Capture and Storage (November 2023), https://www.ciel.org/wp-content/uploads/2023/11/Deep-Trouble-The-Risks-of-Offshore-Carbon-Capture-and-Storage.pdf
[17] Angela Carter, Laura Cameron "Why Carbon Capture and Storage Is Not a Net-Zero Solution for Canada's Oil and Gas Sector The Bottom Line: Unpacking the future of Canada's oil & gas", February 9, 2023, https://www.iisd.org/articles/deep-dive/carbon-capture-not-net-zero-solution
[18] Article 6.4 Mechanism Information note, Removal activities under the Article 6.4 mechanism Version 04.0, https://unfccc.int/sites/default/files/resource/a64-sb005-aa-a09.pdf

Both governments should cooperate for a just and fair transition prioritising investments in renewable energy, energy efficiency, and sustainable development that benefit both local and global environment.

Thank you for your attention to this critical matter and we seek your timely response in this regard.

Yours sincerely,

Meenakshi Raman
President
Sahabat Alam Malaysia / Friends of the Earth Malaysia
Email: foemalaysia@gmail.com

Ayumi Fukakusa
Deputy Executive Director
Friends of the Earth Japan
Email: info@foejapan.org

CC:
Mr. Fumio Kishida, Prime Minister of Japan
Dato' Seri Anwar bin Ibrahim, Prime Minister of Malaysia and Minister of Finance
Ms. Yoko Kawakami, Minister of Foreign Affairs
Ms. Shintaro Ito, Minister of Environment
Mr. Shunichi Suzuki, Minister of Finance
Mr. Nobumitsu Hayashi, Governor of Japan Bank for International Cooperation (JBIC)
Mr. Ichiro Takahara, Chairman and CEO of Japan Organization for Metals and Energy Security (JOGMEC)
Mr. Atsuo Kuroda, Chairman and CEO of Nippon Export and Investment Insurance (NEXI)
Mr. Katsuya Kananishi, Representative Director, President and CEO of Mitsubishi Coorporation
Tan Sri Tengku Muhammad Taufik Tengku Kamadjaja Aziz, President & Group Chief Executive Officer, Executive Director of Petronas
Mr. Tomohide Miyata, Representative Director and Executive Vice President of ENEOS Corporation
Mr. Toshiya Nakahara, President and CEO of JX Nippon Oil & Gas Exploration Corporation