WHY Mitsubishi Corp.

Why investors should divest from Mitsubishi Corporation

No Coal, Go Green! Project, March 2020

Mitsubishi Corp.and coal-fired power

- Mitsubishi Corporation (Mitsubishi Corp.), one of Japan's top general trading companies, is engaged in many business areas, from the energy sector to mobility, food, urban development, and more. Its power generation business is active both in Japan and overseas, and according to an industry specific magazine for general trading companies, its equity share of power generation capacity in the IPP businesses overseas is at 6,054 MW (the total power generation capacity is shown as 26,545 MW, including plants under construction, as of September 30, 2019) of which coal accounts for 547 MW. These numbers do not include some projects at the planning stage (described later).
- According to Mitsubishi Corp.'s "ESG Data Book 2019[*1]," the company's coal-fired thermal power plant business totals 669 MW inside and outside Japan (net equity basis as of September 30, 2020, Table 1). However, cogeneration projects are counted in a separate category, and three coal projects are included in a cogeneration list (Table 2) identified as "Decarbonized/Low-Carbon Energy." These should be included with the coal-fired power plant projects.
- As of February 2020, Mitsubishi Corp. is planning a total of four coal-fired power plant projects (two in Japan, two in Vietnam). This number of new planned projects in the portfolio is the highest among Japanese trading companies.
- The German environmental NGO Urgewald states that on a net equity basis Mitsubishi Corp. is involved in 1,869 MW of coal-fired power plants, earning the company a place on Urgewald's "Coal Exit List" which covers global companies involved in the coal business[*2].

Table 1. Mitsubishi Corp.'s coal-fired power plant projects (as of Sept. 2019)

Country	Plant name	Capacity (net equity basis, MW)	Remarks
Chile	Cochrane	213	
Thailand	EGCO-owned coal fired power plant	70	
Taiwan	Ho-Ping	264	
Japan	Suzukawa Energy Center	78	Plan is to convert to wood pellet firing starting April 2022
Japan	Nippon Paper Industries Ishinomaki Energy Center	44	Biomass co-firing
		Total 669	

Table 2. Cogeneration projects (coal) (as of 30-Sept-2019)

Country	Plant name	Capacity (net equity basis, MW)	Remarks
Japan	MC Shiohama Energy Services	98	Gas, coal
Japan	MCM Energy Services	52	Coal & biomass co-firing
Japan	Mizushima Energy Center	56	Coal
		Total 206	

*1 Mitsubishi Corporation "ESG Data Book 2019" https://www.mitsubishicorp.com/jp/en/ir/library/esg/pdf/esgdata/2019/all.pdf
*2 Urgewald "Global Coal Exit List" https://coalexit.org/

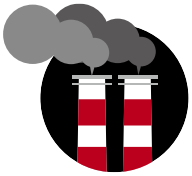
Mitsubishi Corporation's climate policies

Mitsubishi Corp. (MC) revised the 2018 edition of its "ESG Data Book" and announced a policy that in principle it will no longer engage in the development of new coal-fired power generation. The 2019 edition of the Data Book states: "MC has adopted a policy not to enter into any new coal-fired power generation businesses, with the exception of projects [on] which MC has already commenced development. Going forward, paying attention to factors including future technology trends for reducing CO2 emissions (such as CCS), which will become necessary for promoting businesses while considering the environment, as well as progress towards achieving the energy mix of 2030 (including policy trends), MC will aim to reduce its coal-fired power generation capacity on a net equity basis based on 2° C scenario analysis.

This statement includes the words "with the exception of projects [on] which MC has already commenced development," and this refers to four projects, the Vung Ang 2 and Vinh Tan 3 coal-fired power plants in Vietnam and the Nakoso and Hirono power plants in Fukushima Prefecture, Japan. While stating the company will "reduce its coal-fired power generation capacity on a net equity basis," the fact that Mitsubishi Corp. is constructing and operating new plants means that the policy contradicts the reality. Even if the company can reduce its coal-fired power generation capacity on a net equity basis by selling assets or other means, the new construction and operation of coal-fired power plants offsets any benefits, but increasing global CO2 emissions. With the Paris Agreement entering into its implementation phase in 2020, the construction and operation of large power plants is entirely inconsistent with climate policies.

Table 3. Four planned new projects of Mitsubishi Corp.

	Country	Plant name	Capacity	Mitsubishi Corp. share of capacity	Planned operation year
1	Vietnam	Vung Ang 2 Coal-Fired Power Plant	600 MW x 2 units	480 MW	2024
2	Vietnam	Vinh Tan 3 Coal-Fired Power Plant	660 MW x 3 units	388 MW	2024
3	Japan	Large scale IGCC demonstration project (Nakoso)	543 MW	217 MW	2020
4	Japan	Large scale IGCC demonstration project (Hirono)	543 MW	217 MW	2021
			Total 4,266 MW	Total 1,302 MW	



Fact 1: Coal-fired power plant construction in Vietnam

1. The Mitsubishi Corp. connection

Currently, Mitsubishi Corp. is involved as a contractor in two projects under construction in Vietnam: Vung Ang 2 Coal-Fired Power Plant (Hà Tĩnh Province), and Vinh Tan 3 Coal-Fired Power Plant (Bình Thuận Province).

In the case of Vung Ang 2, Mitsubishi Corp. is an investor in the Vung Ang 2 Thermal Power Company (VAPCO), a special purpose vehicle created to implement this project. The investor mix in this company has changed numerous times, but currently it is 100% owned by OneEnergy Ltd.. The company OneEnergy was previously a 50:50 joint venture between CLP Holdings (headquartered in Hong Kong) and Mitsubishi Corp.'s 100% subsidiary Diamond Generating Asia (DGA). However, in 2019, CLP declared a withdrawal from new coal-fired power projects. As of February 2020, the partners are Mitsubishi Corp. (40%) and Japan's Chugoku Electric Power Co. (20%), along with Korea Electric Power Corporation (KEPCO) considering acquiring the remaining 40% that was held by CLP. At any rate, Mitsubishi Corp. has been investing in this project since the start, and even after CLP made the move to exit from coal, rather than showing any change of direction Mitsubishi Corp. has continued to promote it.

As for Vinh Tan 3, the project implementation is done by the Vinh Tan 3 Energy Joint Stock Company (VTEC), in which OneEnergy (noted above) holds 49%, Vietnam's PACIFIC Corporation-Thai Binh Duong Group holds 22%, and the Vietnamese public utility EVN holds 29%. In this project as well, Mitsubishi Corp. has been investing and participating since the start, and even with reports of local environmental pollution and the rising use of renewable energy in Vietnam, the company has not withdrawn but rather has continued to promote the project.

2. ESG topics

Both projects in Vietnam share similar problems, and these have been attracting attention from environmental organizations and investors outside the country.

a. Climate change

Vietnam is a country that is susceptible to the impacts of climate change, with significant inundation and flood damage risks, especially along coastal areas and delta.[*3] The average global temperature has already increased by about 1° C above preindustrial levels, and the climate crises is becoming evident in various parts of the world. No new coal-fired power plants can be built if the world is to achieve the 1.5° C target of the Paris Agreement, and existing power plants must also gradually be closed.

b. Lack of proper public participation

When an Environmental and Social Impact Assessment (ESIA) is prepared, it is essential to have the proper participation of local residents, but with Vung Ang 2 the proponents reportedly did not provide adequate briefings to the affected communities regarding existing problems and new ones that would arise in the future.[*4] Many of the local residents had not been provided information about the project details, and the 2010 ESIA contained no mention of measures to deal with gaps in information awareness.

c. Compound pollution

The planned Vung Ang 2 power plant site is located near an existing steel plant of the Formosa Ha Tinh Steel Corporation, which caused a massive fish die-off in 2016 as a result of extensive marine pollution. There are coal- and gas-fired power plants also owned by Formosa, and PetroVietnam's Vung Ang 1 coal-fired power plant, as well as other facilities. This region is already dealing with a variety of problems, including air pollution, water pollution, and continually increasing amounts of coal ash[*5]. A new coal-fired power plant built here would invite further problems with compound pollution. The planned site for Vinh Tan 3 also comes with serious issues of environmental pollution from coal power, including emissions from the existing Vinh Tan 1, 2, and 4 coal-fired power plants, coal storage yards, ash ponds, and ash and slag released during transportation.[*6]

In recent years, as air pollution has become increasingly serious in Vietnam, universities and research institutes have warned about its negative health impacts.[*7]

d. Huge potential for energy efficiency improvements and renewable energy

Power generation capacity in 2018 in Vietnam was 48,573 MW[*8], and the power mix by source was coal 38.12%, hydro 35.06%, oil and natural gas 18.48%, renewable energy 7.16%, and imports (China, Laos) 1.18%.[*9]

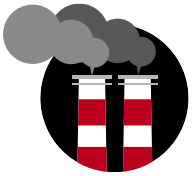
Also, Vietnam's power loss rate was 7.04% in 2018, which means that there is potential for improvement.[*10]

Vietnam has enormous potential for renewable energy. The "Vietnam Energy Outlook Report 2019" by Vietnam's Electricity and Renewable Energy Authority (EREA, under the Ministry of Industry and Trade) and Danish Energy Agency (DEA) estimates that wind and solar power will be cost-effective than coal in 2030 for the first 20 gigawatte (GW) installation in the best suited locations. The Outlook also states that a 40% ratio of renewable energy in the power mix in 2030 in combination with energy efficiency is feasible, will not increase costs, and is needed to limit fuel imports. The UK financial think tank Carbon Tracker analysis entitled "Here comes the sun (and wind)" (June 2019) says that even without regulatory tightening for the climate or air pollution, as early as 2022, the construction of new solar power plants will be less expensive than operating existing coal-fired power plants. The report questions the economic viability of not only new but also existing coal-fired powered plants.

Thus, given the situation in Vietnam, Mitsubishi Corp.'s preoccupation with new coal-fired power plant projects not only conflicts with the global movement away from coal, it also exacerbates economic risks.

Projects Summary: Vietnam

	Vung Ang 2	Vinh Tan 3
Capacity	600MW × 2 units	660MW × 3 units
Technology	Ultra super critical (USC)	Ultra super critical (USC)
Fuel	Coal	Coal
Project implementer	Vung Ang 2 Thermal Power Company (VAPCO) Equity share: OneEnergy(100%) Note: Mitsubishi is a core player in OneEnergy.	Vinh Tan 3 Energy Joint Stock Company (VTEC) Equity share: OneEnergy(49%), Vietnam's PACIFIC Corporation-Thai Binh Duong Group(22%) , EVN (29%)
Operator	VAPCO	VTEC
EPC (expected	Energy China GPEC, GE[*11]	Harbin Electric International Company Ltd. (HEI)[*12] Regarding facilities: Energy China GPEC[*13]
Financial institutions (expected)	Japan Bank for International Cooperation, Bank of Mitsubishi UFJ, Mizuho Bank, Sumitomo Mitsui Banking Corporation, Sumitomo Mitsui Trust Bank[*14] Note: a UK bank (Standard Chartered) and Singaporean banks (OCBC, DBS) were also originally considering financing but withdrew after adopting coal exit policies.[*15]	China Development Bank Corporation (CDB, China)[*16], Bank of Communications, Industrial and Commercial Bank of China (ICBC), China Construction Bank, Bank of China[*17] Note: UK banks (Standard Chartered, HSBC) were also originally considering financing the project but withdrew.[*18]
Insurer (expected)	NEXI	Unknown
Schedule	Construction start: 2020 (planned) Commercial operation start: 2024 (planned)	Construction start: 2020 (planned) Commercial operation start: 2024 (planned)
Location	Ky Loi Commune, Ky Anh District, Ha Tinh Province, Central Vietnam	Vinh Tan Commune, Tuy Phong District, Binh Thuan Province, Southern Vietnam
Project cost	2.2 billion dollars [*19]	2.0 billion dollars [*20]



Fact 2: Large scale IGCC* demonstration projects in Japan

* Integrated coal Gasification Combined Cycle (Hirono, Nakoso)

1. Background and the Mitsubishi Corp. connection

Demonstration projects are underway in Japan for large-scale integrated gasification combined cycle (IGCC) technology in Hirono Town and Iwaki City, Fukushima Prefecture. On August 19, 2015, five companies signed a basic agreement on promoting the "world's most advanced coal-fired power plants" for Fukushima reconstruction, which TEPCO had previously been promoting. Based on this agreement, the five companies as the "Fukushima Reconstruction Power Consortium" are proceeding with plans to build and operate two IGCC plants, one at TEPCO's Hirono Thermal Power Station (Hirono Town, Futaba District) and one at Joban Joint Power Co.'s Nakoso Power Station (Iwaki City), each at approximately 540 megawatts.[21]

On October 1, 2015, Mitsubishi Corp. established the 100% wholly-owned Mitsubishi Corporation Power Ltd. to develop and operate integrated onsite electricity generation, thermal IPP, and renewable energy on the company site.[22]

On August 2, 2016, Hirono IGCC Power GK and Nakoso IGCC Power GK were established at each respective power plant, with the equity breakdown as follows: for Hirono, Mitsubishi Corporation Power (40%), Mitsubishi Heavy Industries (40%), Mitsubishi Electric (10%), and TEPCO Holdings (10%); for Nakoso, Mitsubishi Corporation Power (40%), Mitsubishi Heavy Industries (40%), Mitsubishi Electric (10%), TEPCO Holdings (5%), and Joban Joint Thermal Power (5%). For both joint ventures, Mitsubishi Corporation Power serves as the representative partner, and for both, President and CEO Yoshihiro Iwasaki serves as the executive officer.

2. ESG topics

a. Climate change

The companies claim that IGCC is a "next-generation clean coal technology with higher efficiency and environmental performance," but according to the draft environmental impact statement, the power generation efficiency of this project is about 48% in terms of thermal efficiency (LHV) and the CO2 emission factor is 652.0 g-CO2/kWh. Comparing this with data from Japan's Agency for Natural Resources and Energy, the power generation efficiency of gas turbine combined cycle (GTCC) technology is better, at about 52%, with a CO2 emission factor of 340 g-CO2/kWh, while the efficiency of ultra-high temperature gas turbine combined cycle is about 57%, with 310 g-CO2/kWh, and IGCC emissions are about twice those of LNG-fired thermal power technology. The 5.24 million tons of combined annual CO2 emissions of the two IGCC units in two locations mean that they will still be major carbon emitters. These plants are entirely inconsistent with the 1.5° C target of the Paris Agreement.

b. Air pollution

Numbers published by the companies for flue gas emissions show SOx concentrations at 19 ppm, NOx concentrations at 6 ppm, and particulates at 5 mg/m3N.[23] By comparison, the 19 ppm SOx figure is higher than the 14 ppm at the JERA's Yokosuka thermal power plant (USC, planned to start operation in 2023), for example. When coal with high sulfur content such as lignite is used as a fuel, the SOx concentrations may increase.

Hirono and Iwaki in Fukushima Prefecture were affected by radiation from the accident at the Fukushima Daiichi Nuclear Power Plant in 2011. Local radiation dose data in January 2020 indicated that doses were not below 0.05 μ Sv/h (0.05 μ Sv/h is national average of natural radiation dose), with the reading being about 0.08 μ Sv/h at a monitoring station at the Futatsunuma Comprehensive Park farmers' market near IGCC Hirono, and about 0.06 μ Sv/h at Takenohana Park near IGCC Nakoso. In effect, the construction of these plants exposes the community to the additional risks of air pollution, in addition to the existing risks of radioactivity.[24]

c. Coal power conflicts with Fukushima's efforts to achieve 100% renewable energyc.

The websites of Nakoso IGCC Power GK and Hirono IGCC Power GK state that "We intend to aid the region's economic revitalization and the creation of employment aiming to promote Fukushima to the world as the place for Clean Coal Technology to address the energy industry's global environmental issues with the introduction of cutting-edge IGCC to Fukushima via this project." Their environmental impact statements state that they see these projects as a source of electricity for the reconstruction of Fukushima. On the other hand, after the Great East Japan Earthquake in 2011, Fukushima Prefecture made the promotion of renewable energy a pillar of its reconstruction efforts, and the Fukushima Prefecture Renewable Energy Promotion Vision,[*25] revised in March 2012, states that the government has set the goal of generating at least 100% of Fukushima's primary energy demand from renewable energy by around 2040 in order to create a society that does not rely on nuclear power. Fukushima Prefecture's efforts focus on expanding the introduction of renewable energy and promoting the efficient use of energy as "two wheels of a cart," so the national policy of promoting coal-fired power plants is in direct conflict with those efforts.

Not only should IGCC not be seen as next-generation clean energy, it is also expensive. The University of Tokyo's research advisor Dr. Shozo Kaneko, who was involved in the development of IGCC, has repeatedly emphasized that IGCC increases construction costs by about 20% and says that subsidies are needed, and this shows that the technology is currently not competitive. These projects should be stopped.

Project Summary: Fukushima, Japan

	Large Scale IGCC Demonstration Project (Nakoso)	Large Scale IGCC Demonstration Project (Hirono)
Power generation capacity	543MW	543MW
Technology	Integrated coal Gasification Combined Cycle (IGCC)	Integrated coal Gasification Combined Cycle (IGCC)
Fuel	Coal	Coal
Total cost	∗ Total cost 300 billion yen[*26]	
Project implementation	Nakoso IGCC Power GK	Hirono IGCC Power GK
Investors	Mitsubishi Corporation Power (40%), Mitsubishi Heavy Industries (40%), Mitsubishi Electric (10%), TEPCO Holdings (5%), Joban Joint Thermal Power (5%)	Mitsubishi Corporation Power (40%), Mitsubishi Heavy Industries (40%), Mitsubishi Electric (10%), TEPCO Holdings (10%)
Operator	Nakoso IGCC Power GK	Hirono IGCC Power GK
EPC	Mitsubishi Hitachi Power Systems, Ltd. (MHP) [*27]	
Funding Institutions	Bank of Tokyo-Mitsubishi UFJ, Development Bank of Japan, Mizuho Bank, Sumitomo Mitsui Banking Corporation, Toho Bank [*28]	
Insurer	Unknown	Unknown
Schedule	Sep. 2020 planned operations start	Sep. 2021 planned operations start
Location	20 Oshima, Sanuka-cho, Iwaki City, Fukushima Prefecture	Futatsunuma 58, Oaza Shimokitaba-aza, Hirono-cho, Futaba-gun, Fukushima Prefecture

Stop Coal!
International NGOs and affected people protest against Japanese coal policy and finance in various occasions in the world. This picture is taken at COP25 in 2019.

Footnotes

*3 World Bank, “Climate Risk Country Profile – Vietnam” (2018).
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There are various interantional opposition campaigns against Mitsubishi Corporation. Right picture is a copy of Financial Times ad Australian NGO posted in February, 2020.

No Coal, Go Green!

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