

Marubeni's Coal Problem

A Japanese Multinational's Power Business Is at Risk



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**Tim Buckley, Director of Energy Finance Studies,
Australasia (tbuckley@ieefa.org) and**

**Simon Nicholas, Energy Finance Analyst
(snicholas@ieefa.org)**

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Executive Summary

Marubeni's coal-fired power business is significantly exposed to the rapid changes taking place in global energy markets.

It has become increasingly clear that renewable energy technology will dominate power capacity build-out over the rest of this century.

The company faces major reputational risk issues with current and potential investors as global demands for action on carbon emissions continue to grow from governments, investors and civil society. Examples of shareholder value losses driven by companies' continued presence in the coal-fired power sector are becoming increasingly commonplace.

Figure 1: Marubeni's Recent Coal-Fired Power Projects

Country	Project Name	Status	Capacity (MW)
Botswana	Morupule B extension	Shelved	300
Egypt	Marsa Matruh	Announced	4,000
Indonesia	Cirebon 2	Construction	1,000
Japan	Kamisu	Construction	112
Japan	Akita	Pre-permit	1,300
Mongolia	Tavan Tolgoi	Pre-permit	450
Myanmar	Tanintharyi	Shelved	2,000
Philippines	Pagbilao Unit 3	Operating	420
South Africa	Thabametsi	630 MW approved	1,200
Thailand	Mae Moh (4 new units)	Construction	600
Vietnam	Nghi Son 2	Approved	1,200
Total			12,582

Source: Company reports, IEEFA estimates.

Senior members of the Japanese government are now emphasizing how the nation's support for coal-fired power build-out domestically and overseas is failing to meet increasing global expectations for action on carbon emissions. Japanese banks and investors are seriously considering joining global financial institutions in turning away from the coal industry as it makes increasingly less financial sense to support it in the wake of the massive technological disruption caused by cheap renewable energy.

Marubeni's Power Business & Plant Group was the single largest contributor to overall net profit for the year to 31 March 2018. The company is exposed to an overall reduction in profitability if the returns from this business unit decline.

As the global electricity generation transition gains pace, moving fossil fuel-based power businesses toward their inevitable end, tremendous opportunities will emerge for companies that can expand further into clean energy technology.

With innovation central to its management philosophy, Marubeni—to its credit—recognizes that major transitions require companies to be prepared to abandon old approaches that no longer make business sense going forward.

As the company state in its 2017 annual report:

“We will decisively divest assets that lack a clear strategic rationale and strategically exit businesses that are past their prime.”

This report finds that Marubeni has reached an energy crossroads; the company is deeply involved in coal-fired power and renewable energy projects both domestically and overseas, yet only the latter has a sustainable and growing future.

Among the factors that leave Marubeni’s coal-fired power business strategically exposed:

- **Increasing pressure on the Japanese government to end its support for coal-fired power.** An energy taskforce set up to advise the Japanese foreign ministry stated in February 2018 that Japan’s current energy policies are damaging the nation’s global competitiveness. “For too long Japan has turned a blind eye to global trends, such as the dramatic decrease in the price of renewables and the inevitable shift to decarbonisation in the face of climate change,” Foreign Minister Tarō Kōno said in January of this year.
- **Growing criticism of Japanese export credit and development agencies for their support of coal-fired power.** Agencies such as the Japan International Cooperation Agency (JICA) undoubtedly do important work funding infrastructure projects in developing countries. However, where this includes support for coal-fired power, such efforts are contrary to Japan’s climate-risk commitments and to common business sense.
- **Rising calls among global investors for action to significantly reduce carbon emissions.** In the lead-up to the June 2018 G7 summit, a group of major international investors with a cumulative US\$26 trillion of assets under management called for a phase-out of coal-fired power. The 288 investor signatories to the statement included Allianz Global Investors, HSBC Global Asset Management and Nomura Asset Management (a major Marubeni shareholder). The group also called for the end of subsidies for fossil fuels and a meaningful price on carbon. Amundi, Europe’s largest asset manager with US\$1.6 trillion under management, has stated that global investment has reached a clear tipping point with regard to climate change. Major investors are increasingly taking such risks seriously in their decision-making.
- **The fact that global and Japanese banks alike are turning away from the coal industry.** RBS announced in May 2018 that it will no longer provide project finance for new coal-fired power stations and coal mines. This follows recent moves by other European banks such as ING, Credit Agricole, Deutsche and BNP Paribas. Japan’s Sumitomo Mitsui Financial Group has indicated that it may rethink its stance towards coal. This move is almost certain to eventually be followed by other major Japanese coal financiers that include Mizuho Financial Group and Mitsubishi UFJ Financial Group, the largest bank lenders to Marubeni.
- **The fact that insurance for coal-fired power plants is becoming increasingly expensive and harder to come by.** Japan’s second largest insurer, Dai-ichi Life Insurance, announced in May 2018 that it will no longer provide finance for overseas coal-fired

power projects. This significant announcement was the first time a Japanese financial institution committed to restrict coal finance. Nippon Life Insurance, Japan's largest insurer, announced in July that it will also stop financing coal-fired power both in Japan and overseas. These companies are amongst the top 10 lenders to the company as at 31 March 2018.

- **The trend among Japan's trading houses toward recognizing the risks associated with coal.** Mitsubishi Corp. has moved to sell its stake in Australian thermal coal mines. Mitsui and Co. has stated that it has no plans to invest in new thermal coal. Sojitz is planning to reduce its exposure to thermal coal. Marubeni itself no longer has any investments in operational thermal coal mines.
- **The significant inroads being made by renewable energy into all of the power markets where Marubeni is planning and building coal-fired power plants.** In countries like Vietnam, Indonesia and Egypt where Marubeni is active in developing new coal-fired power, Japanese companies are also investing in renewables, Marubeni amongst them.
- **Mounting public opposition to Marubeni's current coal-fired power projects across Asia and Africa.** South Africa, Vietnam and Indonesia are examples of places where Marubeni faces committed opposition to its coal projects. Public opposition can often cause significant delays and increased costs to coal-fired power projects.

Marubeni's own shareholders, too, will be increasingly concerned about the risk of continuing in the coal-fired power sector as the transition toward renewable energy continues globally. Power utilities such as Engie, RWE and E.On, which made their move away from coal late and as a result suffered sustained shareholder value destruction, have since reinforced their planned transition to renewables and heavily restructured their businesses. Companies in the coal-fired power equipment sector, such as GE, Siemens and Mitsubishi Heavy Industries, have suffered similar declines in shareholder value as orders dry up. These companies are now faced with the need to realign their businesses to better suit the energy markets of the future in order to avoid further shareholder value destruction.

To avoid this fate, Marubeni needs to cease further coal-fired power development.

Fortunately, the company is already operating in the renewables space globally and has gained experience that can enable its Power Business & Plant Group to flourish if the company fully commits to transition. Marubeni's Chairman, Teruo Asada, has previously called for the Japanese government to encourage domestic renewable energy investment, and the company has clearly acknowledged the opportunities that transition can offer:

"We look upon recent major changes in our business environment as a tremendous chance for general trading companies to create new high-growth business opportunities. We in the Marubeni Group have the power to resolve such societal issues and create new business opportunities amid change"

– Marubeni Integrated Report 2017.

Meanwhile, momentum around renewable energy has increased the attractiveness of the sector, as can be seen in several developments:

- **Japanese banks have turned towards renewable energy financing.** Mitsubishi UFJ Financial Group and Sumitomo Mitsui Financial Group have been amongst the largest lead arrangers globally for clean energy asset financing in recent years. These two banks in particular have moved into offshore wind in Europe and are now moving into the growing Taiwan market. Japan's domestic offshore wind market is increasingly ripe for development.
- **Japan's Export Credit Agencies have started to finance renewable energy projects globally.** The Japan Bank for International Cooperation (JBIC) and Nippon Export and Investment Insurance (NEXI) have supported Japanese technology in Egyptian wind power and Indonesian geothermal power projects. JICA has also funded Indonesian geothermal projects, a Mongolian wind farm, and a solar PV project in Jordan.
- **Substantial opportunities in renewable energy await Marubeni in markets where it has experience.** The fast-developing offshore wind markets of Taiwan and Japan present opportunities for Marubeni to utilize its European experience. The Middle East, a market where Marubeni already has a high-profile presence in solar PV, has seen a dramatic take-off of solar energy activity. Marubeni's geothermal experience may benefit the company if it takes part in a roll-out of geothermal technology across Indonesia and East Africa. And the electric vehicles (EV) sector, which Marubeni has already identified as a key growth area, is poised to grow significantly.

Japan is home already to a number of clean-energy champions that include Panasonic, SoftBank, and MHI Vestas. Other Japanese trading houses are increasingly active in renewable energy.

Marubeni's renewables experience positions it to join this group and become recognised as a global clean energy leader. To succeed in this, it will need to abandon its strategically challenged coal-fired power development business.

Introduction

Driven by ever-growing global carbon and pollution concerns, Japan is facing increasing pressure against both its domestic reliance on coal-fired power and its strategy of pushing its subsidised coal-fired power technology onto developing countries.

The use of coal at home and abroad has historically been championed by Japan's Ministry of Economy, Trade and Industry (METI). However, challenges to METI's prevailing views are beginning to emerge.

In 2017, growing recognition of Japan's need to cut carbon emissions led to the national environment minister asking METI to reconsider plans for a new domestic coal-fired power plant.¹ The plant is part of larger plans in Japan to build a new generation of domestic coal-fired plants, although some of the proposals in question have stalled in the face of declining Japanese electricity demand.

Japan's foreign ministry has also voiced criticism of the nation's energy policy. Foreign Minister Tarō Kōno in January 2018 describing current renewable energy targets as "lamentable."

"For too long Japan has turned a blind eye to global trends, such as the dramatic decrease in the price of renewables and the inevitable shift to decarbonisation in the face of climate change," Kōno said.²

An energy task force set up to advise the foreign ministry stated in February 2018 that Japan's current energy policies are damaging the nation's global competitiveness.³ "It is obvious that Japan is lagging," the task force concluded, placing the foreign ministry firmly at odds with METI. Both the foreign and environment ministries have committed to sourcing 100% renewable energy for their own electricity needs.

This stance against expansion of coal-fired power has been joined by some of Japan's major insurance firms. Nippon Life Insurance Co., the largest such firm in Japan, has announced it will stop financing new coal-fired power plants both in Japan and overseas due to climate concerns.⁴ Dai-ichi Life Insurance Co., the second largest Japanese insurance company, has also announced that it will stop financing overseas coal-fired power plants.⁵

Japan's major banks appear set to follow these examples. Sumitomo-Mitsui Banking Corp. has said it is rethinking⁶ its support for coal and that it may restrict financing to ultra-supercritical technology (many Marubeni coal power projects use less efficient, outdated supercritical and subcritical technology).

¹ <https://www.reuters.com/article/us-japan-environment-coal/japan-environment-minister-to-urge-to-rethink-on-coal-project-media-idUSKBN1AB0SE>

² <https://www.japantimes.co.jp/opinion/2018/01/19/commentary/japan-commentary/energy-neglect-holds-japan-back/-WvKrJVCW3zJ>

³ <https://www.reuters.com/article/us-japan-energy/japan-task-force-echoes-foreign-minister-calls-to-back-renewables-over-coal-nuclear-idUSKCN1G40UX>

⁴ <https://r.nikkei.com/article/DGXMZO29873510W8A420C1EE9000?s=3>

⁵ <https://digital.asahi.com/articles/DA3S13483061.html?rm=150>

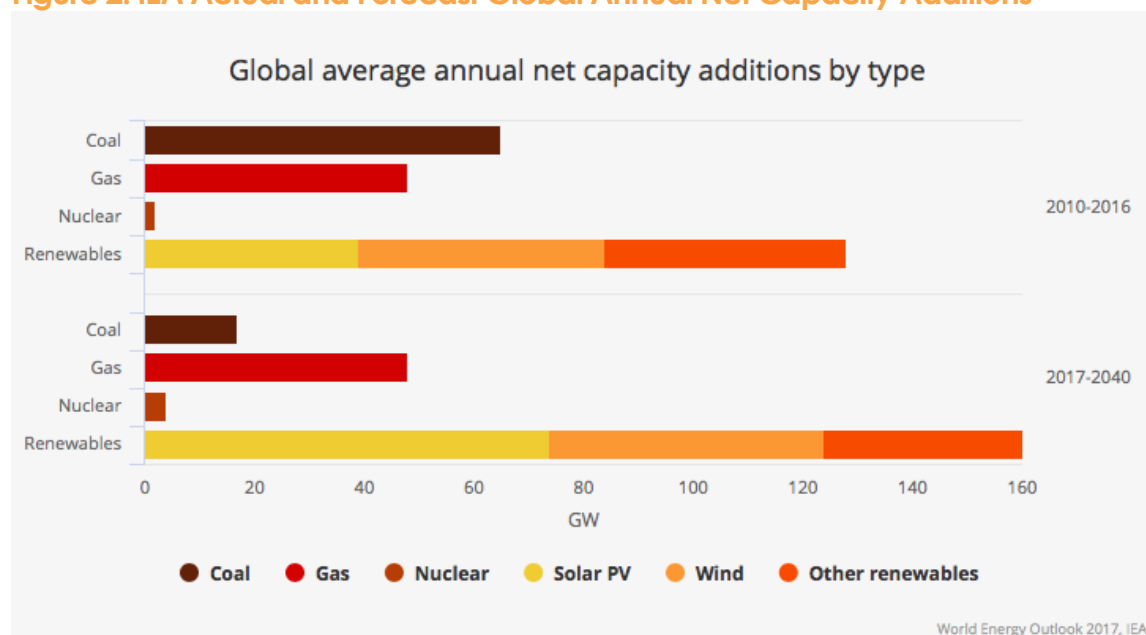
⁶ <https://www.bloomberg.com/news/articles/2018-05-16/sumitomo-mitsui-signals-it-may-curb-coal-fired-power-financing>

These trends have arisen as Japan's major competitors in the overseas coal-fired power construction industry have moved forward with new policies. South Korea will rely less on coal-fired power going forward whilst scaling up its renewable energy ambition and the International Energy Agency (IEA) projects that South Korea's coal imports could almost halve by 2040. China, whilst continuing to build coal-fired power plants overseas, is clearly also angling for preeminence in the global new energy sector.⁷ China's growing dominance in solar technology, electric vehicles (EVs) and batteries could come at Japan's expense.

Marubeni, as a Japanese company that builds coal-fired power plants overseas but is also active in renewable energy, is at a crossroads. The company has already seen some plans for its overseas coal-fired power expansion cancelled in favour of renewables.⁸ As Japanese financial institutions have started to turn away from coal, the company's coal-fired power plant construction program is becoming increasingly controversial, particularly in "frontier" countries — those that currently have little or no coal-fired capacity and have the potential to leapfrog directly to renewables unless they become locked into new coal-based generation. Marubeni is prominently named on the "Coal Plant Developers List" and "Global Coal Exit List," databases on key builders of coal-fired power plants being targeted by a coalition of campaigners⁹ whose work has led financial institutions to divest from companies on the lists. Over the past year, Europe's three largest insurance companies - Allianz, AXA and Generali - have announced the exclusion of major coal plant developers from their investment portfolios and thus dropped their investments in Marubeni.

How Marubeni responds to these trends will determine whether it is dragged down by increasingly controversial and outmoded coal-fired projects, or sees its Power Business & Plant Group thrive by investing in renewable energy installations that are bound to leave fossil-fuel based construction far behind in this century (see Figure 2).

Figure 2: IEA Actual and Forecast Global Annual Net Capacity Additions



Source: IEA World Energy Outlook 2017.

⁷ <http://ieefa.org/ieefa-report-china-continues-position-global-clean-energy-dominance-2017/>

⁸ <https://www.reuters.com/article/croatia-energy-idUSL8N15L0HF>

⁹ <https://coalexit.org/biggest-coal-plant-developers-worldwide>

Introducing Marubeni

Marubeni is one Japan's major "sogo shosha," the large general trading companies that run businesses across a wide range of products and services.

Marubeni itself contains the following business units:

- **Food & Consumer Products** trades in grain, other food commodities, clothes and footwear. It provides logistics and healthcare services and includes an insurance, finance and real estate division.
- **Chemical & Forest Products** includes the provision of chemical products, fertilizers, and agricultural services and includes a construction materials and paper division.
- **Energy & Metals** includes the production and trade of oil, gas and uranium, trading of steel products, aluminium smelting, development of coal, iron ore and copper mines, and trading of iron ore and other materials.
- **Power Business & Plant** includes Marubeni's overseas independent power producer (IPP) business, its overseas power project engineering, procurement, construction (EPC) unit and its domestic power production unit. This division involves engineering of, and investment in, oil, gas and chemical plants, water facilities and transport infrastructure.
- **Transportation & Industrial Machinery** includes automotive production line services; construction and mining machinery services; automobile trading, financing and leasing; merchant shipping and aircraft leasing.

New technology is integral to Marubeni's outlook, with innovation central to the company's management philosophy:

"In accordance with the spirit grounded in 'Fairness, Innovation and Harmony,' the Marubeni Group is proudly committed to social and economic development and safeguarding the global environment by conducting fair and upright corporate activities."¹⁰

In its 2017 annual report, the company also acknowledges how the transformational nature of technology alongside the rise of increasingly cheap and more efficient renewable energy is rapidly disrupting traditional electricity markets all over the world:

"With society currently in the midst of a major transformation, we realize that age-old conventional wisdom may no longer hold true."¹¹

Marubeni notes also the opportunity that such transformation offers companies that are able to exploit such trends by creating businesses that can lead new and emerging sectors:

¹⁰ Marubeni Integrated Report 2017, p. 1

¹¹ Marubeni Integrated Report 2017, p. 6

“We look upon recent major changes in our business environment as a tremendous chance for general trading companies to create new high-growth business opportunities. We in the Marubeni Group have the power to resolve such societal issues and create new business opportunities amid change.”¹²

Marubeni also acknowledges the importance to any conglomerate of recognizing when a particular business unit is no longer a good strategic fit. In fast-changing sectors it is important to move away from such units quickly before value destruction takes hold and Marubeni in its 2017 annual report highlights how it is ready to take action where such outmoded business units are identified:

“We will decisively divest assets that lack a clear strategic rationale and strategically exit businesses that are past their prime ...”¹³

Furthermore, Marubeni has acknowledged that the Paris Climate Agreement means that initiatives to reduce greenhouse gases are not just the responsibility of national governments and that there are growing expectations that companies will do their part:

“With the entry into force of the Paris Agreement in 2016, there is a strengthening of the international framework for reducing greenhouse gases that goes beyond the regulations of individual nations. The Marubeni Group is seeing global demands for efforts related to issues that are materializing around the world, such as climate change and biodiversity, and the Group recognizes that there are expectations for companies to demonstrate creativity, innovation, and leadership in the Group resolution of such global concern.”¹⁴

The Marubeni business unit that is most affected by the rise of renewable energy and the global trend away from coal-fired power is its Power Business division. Amongst other activities, this division provides EPC services for overseas power plants and is itself an investor in overseas IPP projects and offers power services including operations and maintenance.

Power Business

Marubeni's Power Business Division sits within its Power Business & Plant Group. As at 31 March 2018, Marubeni held total power generation capacity of 12,219 MW with 454 MW in Japan and the rest spread around the world with the majority in Asia and Africa (see Figure 3). Power Business Division assets totalled US\$7.2bn, or 11.5% of a Marubeni Group total of US\$62.6bn. Net profit for the fiscal year to 31 March 2018 in the Power Business Division amounted to US\$407m, representing 21% of Marubeni Group's net profit.

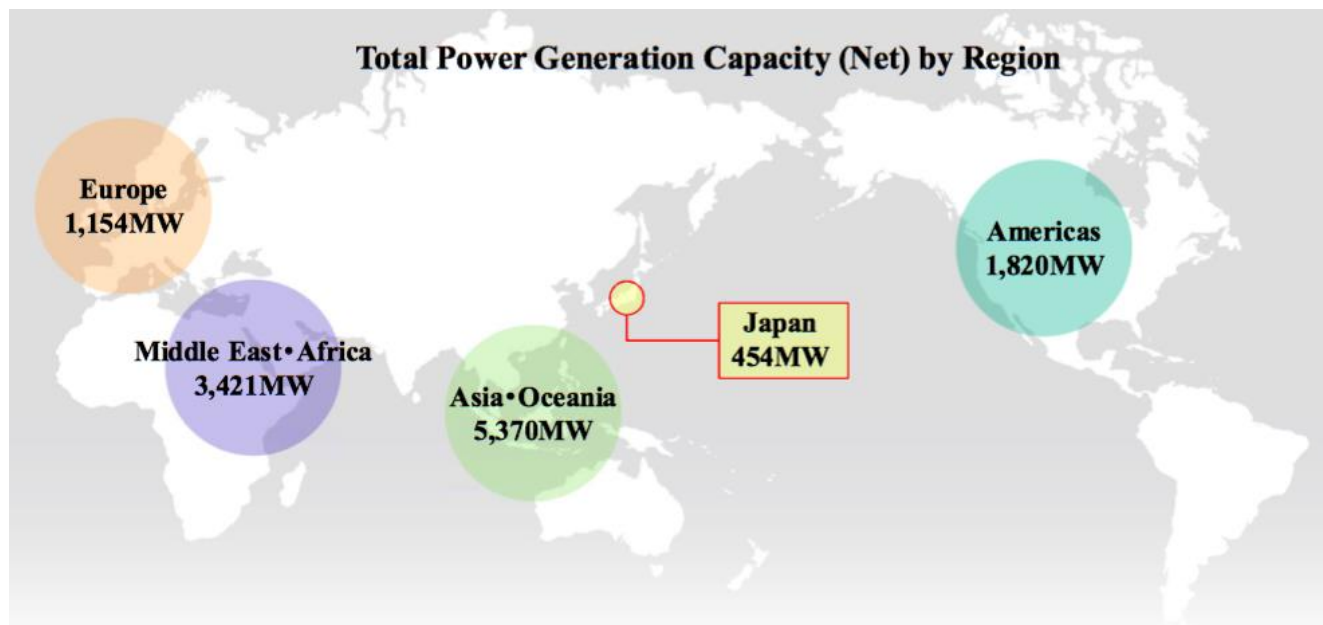
The Marubeni Group's total net profit of US\$1.9bn for the year ending in March 2018 showed a 36% increase over the prior year, with the biggest contributions to the increase coming from the Metals & Mineral Resources and Food divisions. The group's net profit was fairly evenly distributed between its divisions, but the Power Business Division was the single largest contributor to overall net profit. Marubeni has forecast that the Power Business Division's net profit will decline by 13% to US\$354m in the fiscal year to 31 March 2019. The company is exposed to overall reduction in net profit if the returns of the Power Business Division decline.

¹² Marubeni Integrated Report 2017, p. 9

¹³ Marubeni Integrated Report 2017, p. 32

¹⁴ Marubeni Integrated Report 2017, p. 35

Figure 3: Marubeni's Total Net Power Generation Capacity by Region



Source: Marubeni Consolidated Financial Results for Fiscal Year Ended 31 March 2018.

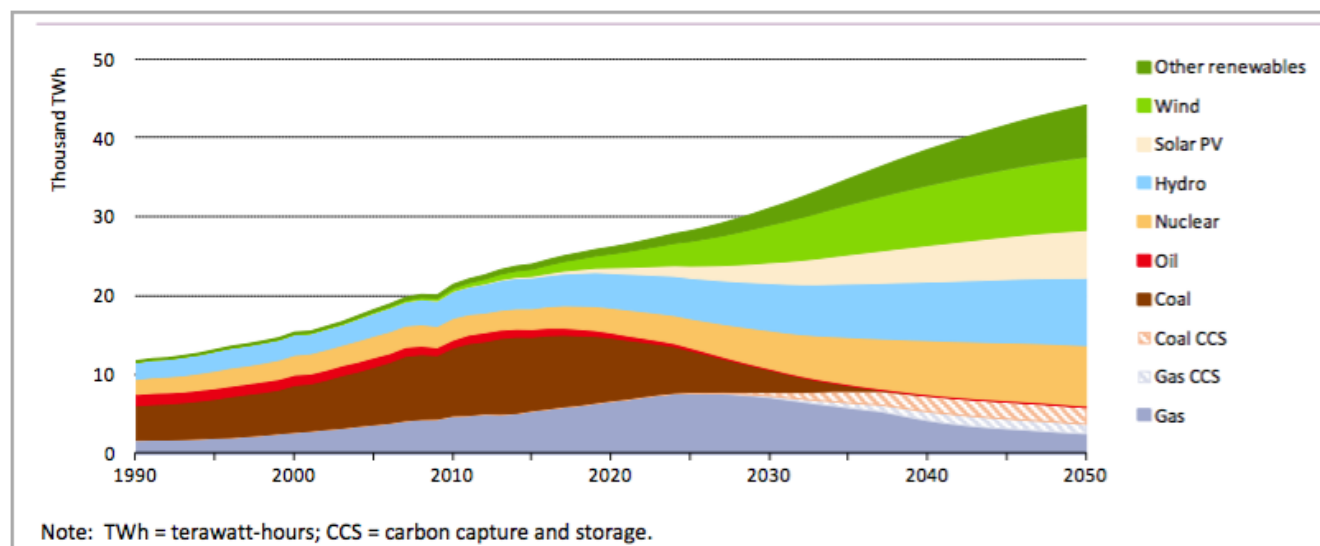
Technology Agnosticism Ignores a Growing Reality

Marubeni's installed power generation capacity and EPC projects utilise a full range of technologies. The company is a major constructor of technologically advanced gas-fired generation, with recent projects in developing countries that include Bangladesh, Indonesia and Myanmar.

While Marubeni has not entirely ignored the rise of renewable energy (see Marubeni and Renewable Energy section), it seems largely agnostic as it continues to focus much of its power-generation attention on its coal-fired power build-out, particularly in developing countries that will not benefit in the long run from such investments. Coal-fired power stations have operational lives of 40-50 years, and their build-out in developing countries potentially locks those countries into long-term dependence on expensive fossil fuel imports and prevents them from fully benefitting from the continually decreasing cost of renewable energy.

Furthermore, Marubeni's technology agnosticism ignores the fast-developing reality that even the conservative and cautious International Energy Agency (IEA) now accepts—that throughout the rest of the first half of this century coal-fired power investment will decline significantly as renewable energy investment booms (see Figures 2 and 4).

Figure 4: Global Electricity Generation by Source in the IEA's 66% 2°C Scenario



Source: IEA - Perspectives for the Energy Transition 2017.

Embracing New Technology

The global transition from fossil fuels to renewables need not mean that Marubeni is left behind, especially given its focus on innovation and its demonstrated commitment to new technology. The company's deployment of new technologies includes its use of blockchain to accept cryptocurrency payments for energy services.¹⁵ Marubeni has also recently signed a memorandum of understanding (MoU) with Nokia to develop the next generation of "Internet of Things" services to its customers, including within its energy businesses.¹⁶ The company is also looking at the fast-emerging electric vehicles¹⁷ sector, which the company's president and CEO, Fumiya Kokubu, highlighted in a February 2018 interview as a growth area for Marubeni. In that interview, Kokubu also acknowledged the threat that technology change poses to a company that does not adapt:

"If we stick to our current business model, half of our current businesses will disappear in 10 years"¹⁸

Although coal-fired power generation will not disappear anytime soon, all indications are that the sector is in permanent decline. Many developed countries have already reached the point where it is all but certain that no more coal-fired power stations will be built (Japan is currently a key exception to this trend). While developing countries generally are not at this stage yet, the time is fast-approaching when the advantages offered by cheaper, sustainable renewables will drive market changes in those countries too.

With the global energy transformation now well underway, Marubeni is in a position to utilise its financial strength and renewable energy experience by fully embracing and investing in the energy technology of the future and moving away from the technology of the last century.

¹⁵ <https://oilprice.com/Energy/Energy-General/Blockchain-Tech-Is-Transforming-The-Energy-Industry.html>

¹⁶ <https://globenewswire.com/news-release/2018/03/01/1401816/0/en/Nokia-and-Marubeni-Corporation-launch-IoT-services.html>

¹⁷ <https://www.upi.com/Energy-News/2018/04/23/Faster-EV-chargers-to-allay-range-anxiety/5411524477352/>

¹⁸ <https://asia.nikkei.com/Business/Trends/Half-our-business-will-vanish-in-10-years-Marubeni-chief?page=1>

Marubeni's Overseas Coal Projects

Despite the rapid transformation taking place in the power-generation sector, Marubeni remains committed to coal-fired electricity development globally, with many projects in developing and “frontier” countries where coal-fired power generation is relatively new but faces growing pressure from the fast-growing uptake of deflationary renewables.

Botswana

Marubeni, along with its 50:50 consortium partner POSCO of South Korea, has planned to construct a subcritical, 300 MW, US\$800m expansion of the **Morupule B** coal-fired power plant in Botswana. Funding for the project was to include US\$600m from a lending consortium including the export credit agencies (ECA) the Japan Bank for International Cooperation (JBIC) and the Export-Import Bank of Korea (KEXIM).¹⁹

Morupule B is Botswana's only coal-fired plant and has had a history of breakdowns. It was built by China National Electric Equipment Corp. and commissioned in 2012 at a cost of almost US\$1bn.²⁰ The plant has been unable to run at full capacity, leaving customers to rely on power imports and diesel generators to make up the shortfall.

More recently, repairs at Morupule B have allowed Botswana to export power to the Southern African Power Pool (SAPP).²¹ Separately the 120 MW Morupule A plant is expected to come back on line after a US\$200m, six-year refurbishment by South Korea's Doosan Heavy Industries. These improvements may have influenced the Botswanan government's decision not to provide Marubeni and POSCO with a US\$800m guarantee on the Morupule B expansion. As a result, the project proposal has now stalled and the underlying power purchase agreement (PPA) has expired. It has been reported that Marubeni and POSCO may sue the Botswanan government over a US\$400m breach of contract clause.²²

With Botswana's current electricity demand covered by existing plants, the nation has an opportunity to fully embrace renewable energy to meet its future demand growth. Botswana is an ideal place to build solar power projects across all scales. It has excellent solar resources, a low population density and a track record of sound economic management.²³ Botswana's relative lack of power capacity, common to many African countries, can help it avoid the classic challenge of transitioning from an electricity system based on fossil fuels to one built on renewables, a challenge that many other countries face, including Botswana's neighbour South Africa.²⁴

Following a Botswanan government call for submission of expressions of interest in a 100 MW solar project, 166 companies placed a bid for the tender — and Marubeni was one of them.²⁵ With Marubeni's push to build coal-fired power generation in Botswana apparently having fizzled, the company may still be well placed to develop solar opportunities in this country.

¹⁹ <http://www.mmegi.bw/index.php?aid=68289&dir=2017/april/21>

²⁰ <https://af.reuters.com/article/africaTech/idAFL8N1PO3IY>

²¹ <https://southern-timesafrica.com/site/news/botswana-starts-power-exports>

²² <http://www.mmegi.bw/index.php?aid=71069&dir=2017/august/18>

²³ https://www.moodys.com/research/Moodys-affirms-Botswanas-A2-rating-Outlook-stable--PR_382811

²⁴ <https://www.ft.com/content/c168de08-9f8f-11e6-891e-abe238dee8e2>

²⁵ <http://www.mmegi.bw/index.php?aid=69776&dir=2017/june/23>

South Africa

Marubeni, along with South Korean state-owned electricity utility KEPCO, intends to build a new coal-fired power plant in South Africa. The **Thabametsi project**, a proposed 1,200 MW subcritical coal-fired plant, of which the first 630 MW has received environmental clearances, continues to be highly controversial and was recently the subject of a landmark legal case.

The original proposal for the Thabametsi plant at Lephalale in Limpopo Province was made by South African mining company Exxaro and French electricity utility Engie (then known as GDF Suez). Following forceful public opposition, Engie withdrew from the project in 2015.

Thabametsi is one of two new coal-fired power plants on the drawing board under South Africa's Coal Baseload Independent Power Producer (IPP) program. The plans for these new plants come at a time when electricity demand in South Africa is in decline (see Figure 5) and the nation has excess power capacity.²⁶

Figure 5: Generated Power Sent Out by Eskom 2006-16 (GWh)



Source: Eskom, Bloomberg.

Part of the controversy over the Thabametsi project is that its greenhouse gas emissions would be no lower than some existing, obsolete coal plants in South Africa. Thabametsi would have a higher emissions intensity than the average across all of state-owned utility Eskom's operating plants²⁷ because of the relatively high nitrous oxide emissions from the outdated subcritical technology to be used at Thabametsi (in addition to carbon dioxide emissions). The plant is also controversial for its potential water impacts.

The project is listed on the "Dirty Dozen" list²⁸ of 12 projects compiled by activists who question the public financing being used to construct certain new fossil fuel projects around the world. This dubious distinction ensures that Thabametsi will remain firmly in the sights of activists.

²⁶ http://meridianeconomics.co.za/wp-content/uploads/2017/11/CoalGen-Report_FinalDoc_ForUpload-1.pdf

²⁷ Savannah Environmental: Thabametsi Power Station – Climate Change Study and Palaeontological Impact Assessment, June 2017

²⁸ <https://www.fin24.com/Economy/sa-power-plant-listed-4th-dirtiest-in-worlds-dirty-dozen-20171212>

Challenges to environmental authorisation for Thabametsi led to South Africa's first climate change lawsuit, which resulted in a court order for the minister for environmental affairs to reconsider an appeal against environmental approval for the plant, taking its climate change impact into account.²⁹ The Minister went on to uphold the authorisation, despite the high climate impacts as demonstrated in Thabametsi's climate change impact assessment, however the project now faces further court proceedings.³⁰

Although a final PPA for Thabametsi is yet to be confirmed, South Africa's Council of Scientific and Industrial Research (CSIR) has calculated an average coal tariff for Thabametsi and the Khanyisa plant, another coal-fired project under the same independent power producer (IPP) program. Based on an evaluation of tariffs offered by the proponents.³¹ Allowing for inflation and subtracting the carbon price that was bundled into the evaluation tariffs, CSIR calculates an average tariff of ZAR1.03/kWh.³² The cost of new renewable energy in South Africa is currently 40% lower than this average tariff even after omitting the cost of carbon. Both solar and wind achieved costs of ZAR0.62/kWh in the last round of renewables bidding in 2016.³³ Recent research suggests that the Thabametsi and Khanyisa plants would cost an additional US\$1.5bn over the least-cost alternative.³⁴

The recent resumption of South Africa's renewable energy program, with invitations for bidders of up to US\$4bn worth of projects to begin in November 2018,³⁵ will lead to the expansion of wind and solar installations in a nation with excellent renewable resources. Although South Africa is highly dependent on coal-fired power, ongoing installation of ever-cheaper renewable energy is set to disrupt the status quo of the electricity market in a way that has already happened in Europe and the U.S., and increasingly, China and India.

Europe in particular has seen huge disruption amongst major utilities that until recently were highly dependent on coal-fired power. Large power companies such as E.On and RWE in Germany have split themselves up in search of new business models in response to the downward pressure on power prices resulting from renewables. Further significant reorganisations are on the horizon.³⁶

The falling costs and improving efficiencies of renewables, coupled with the potential for further carbon tax increases within the lifetime of any new fossil fuel-fired plant, means investment in new coal-fired power everywhere is fraught with risk. Three new coal-fired power plants brought online in the Netherlands in 2015 by Engie, RWE and Uniper proved to be fundamentally out of step with the fast-changing electricity market and saw impairment losses of €3.5bn in value by the end of 2016.³⁷ Although electricity markets like South Africa's lag the transition seen in Europe, the future is clear: coal-fired power in South Africa will enter a permanent decline.

²⁹ <https://cer.org.za/news/victory-in-sas-first-climate-change-court-case>

³⁰ <https://www.businesslive.co.za/bd/companies/energy/2018-02-08-limpopos-coal-fired-power-station-gets-green-light/>

³¹ <http://www.energy.gov.za/files/media/pr/2016/Coal-IPP-factsheet.pdf>

³² http://www.ee.co.za/wp-content/uploads/2016/10/New_Power_Generators_RSA-CSIR-14Oct2016.pdf

³³ http://www.ee.co.za/wp-content/uploads/2016/10/New_Power_Generators_RSA-CSIR-14Oct2016.pdf

³⁴ Ireland, Gregory & Burton, Jesse. 2018. "An assessment of new coal plants in South Africa's electricity future: the cost, emissions, and supply security implications of the coal IPP programme". Energy Research Centre, University of Cape Town, Cape Town, South Africa.

³⁵ <https://www.bloomberg.com/news/articles/2018-06-01/south-africa-plans-to-add-up-to-4-billion-of-renewable-projects>

³⁶ <https://www.reuters.com/article/us-e-on-innogy-rwe/rwe-e-on-reshape-german-power-sector-in-innogy-asset-swap-deal-idUSKCN1GN02P>

³⁷ <http://ieefa.org/ieefa-report-dutch-coal-mistake-shows-three-new-plants-netherlands-failing-live-expectations-risk-becoming-climate-risk-stranded-assets/>

European operators such as RWE, E.On and Engie have suffered significant shareholder value destruction partly due to their coal exposure. Engie's strategic response has been to turn away from coal-fired power, and since abandoning the Thabametsi project, the company has gone on to announce its global divestment from coal-fired power and has been selling or closing coal-based plants around the world. The company is well underway in offloading nearly US\$19bn of coal, oil and gas projects and reinvest the proceeds in renewable energy, energy efficiency and network upgrades.^{38 39}

Rapidly-Transitioning Engie Leaving Marubeni in Its Wake

Whilst Marubeni pushes on with its Thabametsi power project, Engie—the project's former proponent—is rapidly ramping up investment in renewable energy across Africa. One of its African renewables projects is even benefiting from Japanese export credit agency (ECA) funding that has historically flowed to Japanese-built coal-fired power plants (see below).

In South Africa, Engie, the largest shareholder in the Aurora wind farm in the province of Western Cape, developed the combined 21 MW Aurora-Rietvlei Solar Power and Vredendal Solar Power Park and is developing the Kathu concentrated solar power (CSP) plant in Northern Cape.⁴⁰ The company has also commissioned two gas peaking plants and is investing in energy services in South Africa.⁴¹

Elsewhere, Engie has agreed to purchase and fund Fenix International, a provider of off-grid solar systems, with a view to rolling out such energy solutions in at least 10 African countries over the next five years. The company plans to invest US\$1.8bn across Africa in technologies such as off-grid solar, micro-grids and battery storage.⁴²

In Senegal, Engie recently won tenders for two utility-scale solar plants totalling 60MW, both of which will sell electricity at less than €0.04/kWh.⁴³ Engie is contracted also to build, own and operate a 250 MW wind farm in Egypt with consortium partners that include Toyota Tsusho and Eurus Energy of Japan plus Orascom Construction of Egypt.⁴⁴ The Japanese involvement means that the project has attracted Japanese ECA funding from JBIC. Another Japanese ECA, Nippon Export and Investment Insurance (NEXI), is to provide insurance cover for the commercial lenders. Engie is also involved in geothermal projects in Indonesia that are receiving support from JBIC, the Japanese International Cooperation Agency (JICA) and NEXI (see page 32).

As global diplomatic pressure mounts on Japan to cease the provision of ECA finance and support for coal-fired power plants, more and more of such funding will flow to renewables projects being developed by the many Japanese technology companies working in this space. Marubeni would do well to make sure it is the beneficiary of such ECA support.

³⁸ <https://www.bloombergquint.com/business/2018/03/28/engie-to-close-coal-plants-in-chile-after-mulling-potential-sale>

³⁹ <https://www.reuters.com/article/us-engie-germany/frances-engie-exploring-sale-of-german-power-plants-sources-idUSKCN1GJ20Y>

⁴⁰ <http://www.engie-africa.com/en/businesses/south-africa/>

⁴¹ <https://www.engie.com/en/journalists/press-releases/major-step-developing-energy-services-southern-africa-acquires-thermaire-ampair/>

⁴² <https://www.bloomberg.com/news/articles/2017-10-19/engie-agrees-to-buy-solar-power-firm-fenix-to-expand-in-africa>

⁴³ <https://www.pv-magazine.com/2018/04/06/engie-wins-senegals-60-mw-pv-tender-with-bids-under-e0-040-kwh/>

⁴⁴ <https://www.engie.com/en/journalists/press-releases/engie-wind-power-park-in-egypt/>

Egypt

In March 2016, Marubeni, along with Egypt's El Sewedy Electric, signed an agreement with Egypt's state-owned electricity utility to conduct a feasibility study for a 2,000 to 4,000 MW coal-fired power station on Egypt's northern coast.⁴⁵ The **Marsa Matruh project** proposal calls for ultra-supercritical technology.

However, the status of that plant is now unclear given that Egypt is now moving forward with the 6,000 MW Hamrawein coal-fired power station on the nation's eastern coast.⁴⁶ Three international consortiums bid for the Hamrawein project; a Chinese consortium that includes Shanghai Electric and Dongfang Electric, a U.S. group led by GE, and a Japanese-Egyptian consortium that includes Mitsubishi-Hitachi Power Systems, Toyota Tsusho Corp. as well as El Sewedy Electric. In June 2018, it was reported that Shanghai Electric/Dongfang bid had been selected as the winner.⁴⁷

Egypt is at a physical and technological crossroads; the nation lies on the path of China's Belt and Road Initiative connecting Mediterranean Europe with East Africa, the Middle East, and South Asia — attracting significant Chinese financial support for infrastructure development. At the same time, Egypt is taking a technology agnostic approach to its power capacity expansion, adding a major build of renewables projects to its coal-fired power proposals.^{48 49}

Japanese ECA funding has already been made available for Egyptian renewables projects. In addition to Engie's and Toyota Tsusho's 250 MW wind project,⁵⁰ Marubeni is part of a consortium intending to build 700 MW of onshore wind in an initiative that is approaching financial close on its first phase.⁵¹

Having apparently lost out on a coal-fired power opportunity whilst moving forward on its wind power project, Marubeni's involvement in the fast-developing power market of Egypt is a telling example of the direction that Marubeni's power division needs to go — a move that should increasingly be backed by Japanese ECA finance.

Vietnam

In Vietnam, as in South Africa, Marubeni is in a consortium with KEPCO to build a coal-fired power plant—Japan and Korea again representing two of the three major exporters of coal-fired power plant technology (the third being China).

The **Nghi Son 2 project** is a proposed supercritical 1,200 MW plant in Thanh Hoa province that reached financial close in April 2018. Japanese ECA funding is being provided; JBIC and KEXIM are lenders to the project along with several Japanese commercial banks (Sumitomo

⁴⁵ <https://www.reuters.com/article/marubeni-egypt-plant/japans-marubeni-may-build-coal-power-plant-in-egypt-idUSL3N16A3LG>

⁴⁶ <https://www.reuters.com/article/egypt-coal/egypt-gets-bids-for-coal-fired-power-plant-to-announce-winner-next-week-idUSL5N1SR08Z>

⁴⁷ <http://www.globalconstructionreview.com/news/chinese-consortium-build-worlds-largest-coal-fired/>

⁴⁸ <https://dailynewsegypt.com/2018/05/27/egypt-begins-transition-to-regional-energy-trade-hub-this-year/>

⁴⁹ https://renewablesnow.com/news/scatec-solar-aims-at-35-gw-by-end-2021-starting-construction-in-egypt-614424/?utm_source=Renewables+Now_subscribers+and+newsletter&utm_campaign=4e1e9283bf-Renewables_Now_The_Daily_Newsletter_15_06_15_2017_&utm_medium

⁵⁰ <https://www.engie.com/en/journalists/press-releases/engie-wind-power-park-in-egypt/>

⁵¹ <https://www.bloomberg.com/news/articles/2018-01-17/marubeni-and-abu-dhabi-s-masdar-in-900-million-egypt-wind-plan>

Mitsui Banking Corp., Mitsubishi UFJ Financial Group, Mizuho Bank and Shinsei Bank), Singapore banks DBS Bank and OCBC Bank as well as Maybank of Malaysia.⁵² Total project finance amounted to US\$1.9bn, with JBIC and KEXIM each providing US\$560m of subsidised state capital. The ECAs have also provided political risk guarantees.⁵³ The full construction cost, if the project remains on budget, will be US\$2.5bn. The project follows Marubeni's completion of the Nghi Son 1 power project in 2014.

However, as part of a growing trend, Standard Chartered Bank pulled out of the funding consortium after an environmental campaign pointed out that financing the controversial power plant would put the bank in breach of its own energy and climate change policy,⁵⁴ although Standard Chartered did not actually specify a reason for pulling out of the project.

The Nghi Son 2 project is part of a wave of recent Japanese investments in Vietnam that have pushed South Korea down to second in the list of foreign direct investment in Vietnam after having led for three years.⁵⁵ Other projects locking in Japanese fossil-fuel technology in Vietnam include Sumitomo's US\$2.6bn Van Phong 1 coal-fired power plant in Khanh Hoa (also receiving JBIC finance) and Mitsui Oil Exploration's US\$1.3bn gas pipeline in Kien Giang.

Marubeni has a long history of building fossil-fuelled power plants in Vietnam. In May 2017, the Marubeni-built, subcritical, Thai Bin 1,600MW coal-fired power station was connected to the grid.⁵⁶ The company was awarded the construction contract for the project in December 2013.⁵⁷ The project was funded by JICA.

Part of the Singapore banks' resistance to pressure to withdraw from the Nghi Son 2 project on environmental and climate grounds is their opinion that a rapid transition to renewable energy is not yet feasible.⁵⁸ However, Vietnam has recently seen a growing number of renewable projects announced, which suggests that such technology can play an increasingly major role in the nation's power capacity expansion. A recent boom in solar projects in Vietnam has been helped partly by the government's decision to cancel two nuclear power proposals, with solar being earmarked to replace those projects.⁵⁹

Recent solar projects include a 168 MW plant in Ninh Thuan province, which received approval in April 2018 and has begun construction.⁶⁰ If the project is completed on schedule by June 2019 it will be operational well before the Nghi Son 2 coal-fired project. A consortium including Japanese company Europe Clean Energies Japan is to develop a 44 MW project in Cu Jut district.⁶¹ Meanwhile, Thailand's largest solar energy company, Superblock, has a US\$1.8bn investment plan to install 700 MW of wind power in Vietnam, with construction on the first phase already started and with the complex expected to be operational by 2020.⁶²

⁵² <https://www.straitstimes.com/asia/se-asia/dbs-and-ocbc-among-lenders-of-245-billion-for-vietnam-coal-power-plant>

⁵³ <https://www.jbic.go.jp/en/information/press/press-2018/0413-010921.html>

⁵⁴ <http://www.eco-business.com/news/1200-megawatt-vietnam-coal-plant-gets-funding-but-standard-chartered-pulls-out-over-climate-policy-conflict/>

⁵⁵ <https://asia.nikkei.com/Politics-Economy/International-Relations/Japan-returns-as-top-investor-in-Vietnam>

⁵⁶ <https://asian-power.com/power-utility/news/evn-commissions-600-mw-thai-binh-1-coal-fired-power-plant>

⁵⁷ <https://www.marubeni.com/en/news/2014/release/TB1Eng.pdf>

⁵⁸ <https://www.straitstimes.com/asia/se-asia/dbs-and-ocbc-among-lenders-of-245-billion-for-vietnam-coal-power-plant>

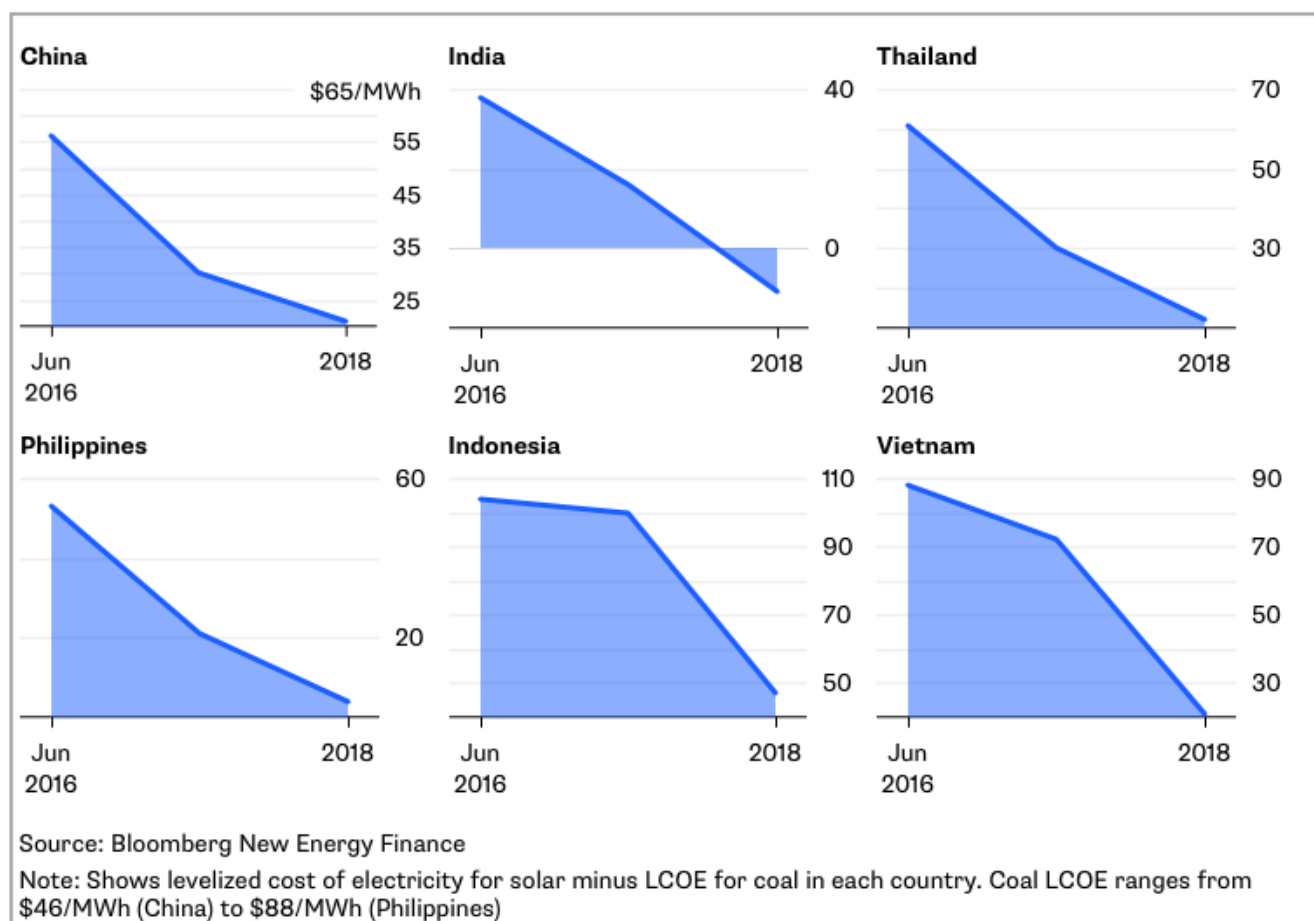
⁵⁹ <https://e.vnexpress.net/news/business/solar-power-construction-takes-off-in-vietnam-after-nuclear-plans-scrapped-3708674.html>

⁶⁰ <https://www.pv-magazine.com/2018/06/08/construction-begins-on-168-mw-project-in-vietnam/>

⁶¹ <https://www.pv-tech.org/news/univergy-to-develop-44.4mw-solar-project-in-vietnam>

⁶² <https://www.reuters.com/article/us-thailand-vietnam-windfarm/thailands-biggest-solar-firm-plans-1-76-billion-in-vietnam-wind-projects-idUSKBN1FT155>

Figure 6: The Price Premium for Solar Generation Over Coal in Asia Has Slumped



Other recent renewable projects include a 48 MW solar plant to be built for Vietnamese conglomerate TTC by Japanese company Sharp Corp., part of TTC's plan to build 1GW of solar across the country.⁶³ This year has seen the start of construction on a 30 MW solar project in Ninh Thuan province⁶⁴, announcement of a plan by Sterling and Wilson to build 300 MW of solar in Vietnam by mid 2019⁶⁵, a proposal for a 50 MW solar plant by Scatec Solar,⁶⁶ and California-based Vasari Energy's plans for up to 200 MW of fixed and floating solar.⁶⁷

In June of this year, a Thai/Vietnamese consortium announced intentions to build the largest solar PV plant in Southeast Asia — a 420 MW project at Tay Ninh.⁶⁸ In the same month, Quang Bihn province signed a memorandum of understanding with Ayala Group of the Philippines to build a 352 MW wind project.⁶⁹

⁶³ <https://www.pv-tech.org/news/round-up-sharps-48mw-in-vietnam-final-term-for-arena-ceo-abb-supplies-dubai>

⁶⁴ <https://www.pv-tech.org/news/pen-vn-starts-constructing-13mw-solar-project-in-vietnam>

⁶⁵ <https://www.businesswire.com/news/home/20180409005808/en/Sterling-Wilson-Plans-300-MW-Solar-PV>

⁶⁶ <https://energy.economictimes.indiatimes.com/news/renewable/norways-scatec-solar-plans-new-power-plants-in-southeast-asia/62668682>

⁶⁷ <https://www.pv-tech.org/news/vasari-plans-180mw-of-ground-mount-and-floating-solar-in-vietnam>

⁶⁸ <https://www.pv-tech.org/news/b.grimm-adn-xuan-cau-to-develop-southeast-asias-largest-solar-project>

⁶⁹ <http://manilastandardtoday.com/business/power-technology/269201/ayala-to-build-big-vietnam-wind-project-.html>

Vietnam is also an increasingly important global centre for solar manufacturing. China's GCL, one of the world's largest solar producers, launched a solar cell manufacturing facility in Vietnam in July 2017.⁷⁰ In December 2017, U.S. solar manufacturer First Solar announced that it would build its second module plant in Vietnam.⁷¹

Coal-fired power in Vietnam is highly controversial, and campaigns against its expansion are gaining global recognition.⁷² In 2016, the president of the World Bank, Jim Yong Kim, warned clearly of the emissions impact of a major Asian coal build-out, specifically mentioning Vietnam's coal plans.⁷⁴ Investors are progressively distancing themselves from coal. Industry analysts are increasingly coming to terms with the fact that Asian nations will pivot away from coal as has been the case in China, India and South Korea. A lack of investors in new coal mining projects could lead to tightening supply, higher coal prices and lower profits for coal plant operators, which would only hasten this trend.⁷⁵

Responding to pollution and emissions concerns, Vietnam's Ministry of Finance has recently revealed plans to increase environmental taxes on coal by 50%.⁷⁶ In June 2018, Vietnam announced a significantly increased ambition for renewable energy, aiming to triple electricity output from renewable sources and for 26% of households to use solar by 2030.⁷⁷

With renewables only getting cheaper, Japanese companies are already working on renewable energy projects in Vietnam. Marubeni would do well to acknowledge that Vietnam is a key location for an expanded commitment to renewable energy — the technology that will dominate power capacity build-out through the rest of this century.

Indonesia

Marubeni, the consortium leader on the 660 MW Cirebon coal-fired power plant in West Java, Indonesia, also leads the consortium intending to build an ultra-supercritical 1,000 MW **Cirebon 2 extension**, with an expected construction cost of US\$2.2bn. The generated electricity is contracted through an IPP agreement to Indonesian state power utility PLN for 25 years.

In April 2017, financial close was reached on US\$1.7bn of project financing led by JBIC, which contributed US\$731m. KEXIM was also involved, lending US\$418m. The Bank of Tokyo-Mitsubishi UFJ, Mizuho Bank, Sumitomo-Mitsui Banking Corp and ING accounted for the rest. ING acted as lead arranger, although since then the bank has updated its policy on financing coal-fired power and will reduce its exposure to the sector to “close to zero” by 2025.⁷⁸ NEXI has insured the finance provided by the private banks.

⁷⁰ <https://www.pv-magazine.com/2018/04/24/gcl-poly-energy-offers-110m-loan-to-subsiary/>

⁷¹ <https://www.pv-tech.org/news/first-solar-building-second-1.2gw-production-plant-in-vietnam>

⁷² <http://www.atimes.com/hsbc-standard-chartered-making-a-killing-on-coal-in-se-asia/>

⁷³ <http://www.vir.com.vn/long-an-power-centre-hits-delays-55642.html>

⁷⁴ <https://www.theguardian.com/environment/2016/may/05/climate-change-coal-power-asia-world-bank-disaster>

⁷⁵ <https://www.reuters.com/article/us-column-russell-coal-asia/asia-coal-industry-sees-blue-skies-ignores-storm-clouds-russell-idUSKBN1IB0IL>

⁷⁶ <https://e.vnexpress.net/news/business/proposed-environmental-tax-on-coal-would-inflate-electricity-price-expert-3751757.html>

⁷⁷ <https://www.reuters.com/article/us-vietnam-energy/vietnam-sets-out-green-ambitions-with-bold-targets-for-solar-rare-earth-idUSKCN1J00U1>

⁷⁸ <https://www.ing.com/Newsroom/All-news/ING-further-sharpens-coal-policy-to-support-transition-to-low-carbon-economy.htm>

In its November 2017 release on Cirebon project financing, JBIC stated that the project “introduces efficient and environmentally friendly technology to Indonesia.”⁷⁹ Campaign groups disagree with this assessment, and a local environmental group won a court ruling, the day after financial close was announced, that said an environmental permit for the project had been issued illegally.⁸⁰ Proponents have since re-applied for and received the necessary environmental clearance, but the plant remains controversial. Talks are said to be occurring with a view to adding an additional 1,000 MW (Cirebon 3) unit, although this has not been confirmed yet.⁸¹

Marubeni's plans in Indonesia come at a time when the country's proposed coal-fired power capacity build-out is facing increasing uncertainty. State-owned PLN recently cut its planned electricity build-out by as much as 22 GW over the next 10 years due to lower-than-expected demand growth.

Indonesia's large thermal coal reserves have led to a technological lock-in of coal-fired technology that is thanks in part to a growing number of coal-based IPPs at a time when renewable technology offers greater flexibility in energy planning as well as air pollution and carbon benefits.⁸² Excessive coal-fired power generation construction has led to over-capacity in Indonesia, which will lead to significant capacity-based payments to IPPs for power plants that stand idle. State-owned PLN, and ultimately, Indonesian consumers, bear the cost. Whilst PLN continues to constantly over-estimate demand increases, IPP payments are becoming dependent on increasingly unstable subsidies and tariffs. PLN is not averse to renegotiating IPP power purchase agreements to reduce costs.

Coal-fired power producers in Indonesia face increasing political and regulatory risk in the face of over-capacity, the declining cost of renewable technology, and pollution concerns. Investors will not be able to ignore these risks going forward as Indonesia's forecast generation mix looks increasingly out-of-step with global market trends.⁸³

Indonesia's technological coal lock-in has been partly enabled by Japanese, Chinese and South Korean equipment suppliers and finance houses, assisted by the ECAs of those three nations. However, environmental impacts are of increasing importance to long-term investors, and with even Japanese banks⁸⁴ and insurers beginning to turn away from coal, now is the time for suppliers like Marubeni, which has renewable as well as coal technology capability, to provide a more flexible and future-proof power system that reflects the transition happening around the world.

Thailand

In March 2015, Marubeni announced its intentions to build a US\$1bn replacement for four units of the coal-fired **Mae Moh power plant** in conjunction with the French engineering company Alstom.⁸⁵ The 600 MW replacement for the original units 4 to 7 will use ultra-

⁷⁹ <https://www.jbic.go.jp/en/information/press/press-2017/1114-58532.html>

⁸⁰ <https://news.mongabay.com/2017/04/indonesian-court-revokes-environmental-license-for-the-cirebon-coal-plant-expansion/>

⁸¹ <https://newsbase.com/topstories/marubeni-partners-build-new-power-plant-indonesia>

⁸² <http://ieefa.org/ieefa-report-indonesias-state-power-company-remains-out-of-sync-with-global-shift-in-electricity-generation/>

⁸³ http://ieefa.org/wp-content/uploads/2018/04/PLN-A-Power-Company-out-of-Step-With-Global-Trends_April-2018.pdf

⁸⁴ <https://www.bloomberg.com/news/articles/2018-05-16/sumitomo-mitsui-signals-it-may-curb-coal-fired-power-financing>

⁸⁵ <https://www.marubeni.com/en/news/2015/release/00008.html>

supercritical technology and, as with the existing plant, will be fuelled by brown coal (lignite) from the adjacent mine. The replacement project is due to be operational by the end of 2018.⁸⁶

Marubeni and Alstom also built the original units of Mae Moh, Thailand's largest coal-fired power plant (2,400 MW). More recently, Marubeni has entered into a memorandum of understanding (MoU) to provide a technical upgrade to the plant. In its press release announcing the MoU, Marubeni stated that the low quality of the plant's fuel results in an unstable heat rate, an issue that Marubeni will seek to address.⁸⁷ Since winning the Mae Moh replacement contract, Alstom has exited the power generation business to focus on transport engineering. It sold its power business to GE in 2015 for US\$10.3bn. This doubling down on thermal power has proved disastrous for GE (see page 34).

In addition to the technical issues that arise from the quality of the coal and the high carbon emissions that result from burning lignite, the mine itself has raised questions. In March 2018, the latest in a series of landslides at the mine damaged infrastructure and led to an evacuation order for people living in the area.⁸⁸ Over the first three months of 2018, lignite production in Thailand dropped 10.5% year on year with the shortfall made up with expensive coal imports. Overall coal consumption in Thailand for the first quarter of 2018 was down 0.5%, with consumption by power plants down 1.3%.⁸⁹

In Thailand the construction of coal-fired power plants has become increasingly controversial - in line with similar concerns seen worldwide.⁹⁰ Meanwhile, Thailand is raising its renewable energy ambitions. The nation's target of 30% of final energy consumption from renewables by 2036 is driven in part by its need for energy security as its domestic gas reserves become depleted. The International Renewable Energy Agency (IRENA), which Thailand joined in 2015, states that this ambition could reach 37% by 2036.⁹¹ With the Mae Moh mine expected to be depleted in the mid 2030s, renewable energy will become ever more important if Thailand is to address its carbon emissions whilst avoiding the cost and energy security concerns that come with relying on imported coal and liquid natural gas (LNG).

In June 2018, in a move of significance to the Thai energy sector, Engie announced that it had sold its majority holding in Thai independent power producer Glow⁹² to state-controlled petrochemical company PTT. This move is part of Engie's drive to cut carbon emissions and focus on low-carbon power. After the sale, Engie no longer operates any coal-fired power plants in Asia-Pacific. PTT's acquisition is likely a defensive move, given its coal assets in Indonesia and the fact that Glow supplies power to the company.

Myanmar

In 2014 it was reported that Marubeni was to build an ultra-supercritical, 1,800-2,000 MW coal-fired power plant in southern Myanmar for a total investment of US\$2.8-3.2bn.⁹³ Although sited in Myanmar, the **Tanintharyi plant** was to export 80% of its electricity to neighbouring

⁸⁶ <https://asia.nikkei.com/Business/Companies/Thailand-to-replace-generating-units-at-major-coal-plant>

⁸⁷ https://www.marubeni.com/en/news/2017/release/20170926_2.pdf

⁸⁸ <http://www.nationmultimedia.com/detail/national/30341280>

⁸⁹ <https://www.platts.com/latest-news/coal/hanoi/thailands-april-coal-imports-jump-22-on-year-26966766>

⁹⁰ <https://www.bangkokpost.com/opinion/opinion/1469061/no-such-thing-as-clean-coal-power>

⁹¹ <http://www.irena.org/publications/2017/Nov/Renewable-Energy-Outlook-Thailand>

⁹² <https://www.engie.com/en/journalists/press-releases/asia-pacific-thus-no-longer-operate-any-coal-fired-assets/>

⁹³ <https://af.reuters.com/article/idAFL3N0S51KS20141010>

Thailand. In March 2015, a Marubeni executive confirmed that a Tanintharyi feasibility study was underway.⁹⁴ However, there appears to be have been no progress since then, and the project has presumably been shelved.

Marubeni's activity in Myanmar coincides with that of JICA's. The Japanese government agency facilitates the uptake of Japan's technology overseas and has been highly active in Myanmar, co-developing the Thilawa Special Economic Zone with the government. JICA, along with Marubeni, Mitsubishi and Sumitomo, owns 49% of the joint venture that develops and manages the zone.⁹⁵ A number of Japanese companies have set up shop in the special economic zone, although a shortage of power has reportedly limited its development.⁹⁶ Marubeni has one small power plant in the zone and has plans to build a new 400 MW gas-fired plant to increase supply.⁹⁷

JICA is undoubtedly providing important assistance to Myanmar. It is helping stimulate agricultural activity and has established an institute to provide training in information technology and communications. However, JICA has also been promoting Japanese coal-fired power technology and is doing so in a country that has previously been reliant on hydro power and is now seriously considering renewable energy to complement it.⁹⁸

According to World Bank statistics, only 57% of the population of Myanmar has access to electricity.⁹⁹ Barring a highly expensive grid build-out, new fossil-fuel powered power stations alone will not be of development assistance to those not on the power grid, and the Myanmar government, citing community opposition, has so far refused to allow any new coal plants to be approved.¹⁰⁰ This will make it difficult to build more coal plants in Myanmar.

JICA can be of significant, further assistance to Myanmar, whilst still promoting Japanese EPC and technology, by driving the development of distributed renewable energy, which would make an immediate difference to the great majority of the people of Myanmar living off-grid. Renewables are already establishing a foothold in Myanmar; a 220 MW solar plant is planned for the country's Magway region, part of a pipeline of 1.5 GW of solar development.¹⁰¹

Japanese corporations which have developed world-leading renewables technology, can play a major role in such a program, and Marubeni can play an important part.

Philippines

In the Philippines, Marubeni has an interest in the recently built 420 MW, third unit at the coal-fired **Pagbilao power station** via Team Energy Corp., its joint venture with Japanese electricity utility Tokyo Electric Power Company (TEPCO). Team Energy also currently operates the first two units of the power plant, which has a total capacity of 735 MW.¹⁰²

⁹⁴ <https://www.mmtimes.com/business/technology/13711-coal-study-under-way-in-tanintharyi.html>

⁹⁵ <https://thediplomat.com/2017/11/china-faces-increasing-competition-in-myanmar/>

⁹⁶ <https://www.bangkokpost.com/news/asean/1376415/myanmar-powers-up>

⁹⁷ <https://www.mmtimes.com/business/14754-marubeni-inks-mou-for-country-s-largest-gas-plant.html>

⁹⁸ <https://www.mmtimes.com/news/making-myanmar-energy-powerhouse.html>

⁹⁹ <https://data.worldbank.org/country/myanmar?view=chart>

¹⁰⁰ <http://sea-globe.com/overcoming-the-outages-how-to-keep-the-lights-on-in-myanmar/>

¹⁰¹ <https://www.pv-magazine.com/2018/06/28/basic-energy-buys-stake-in-2-thai-epc-firms-working-on-220-mw-myanmar-pv-project/>

¹⁰² <http://thestandard.com.ph/business/power-technology/255379/pagbilao-energy-set-to-operate-1-b-coal-fired-power-plant-in-february.html>

While Marubeni has a long track record of developing fossil-fuel based power projects in the Philippines, this latest project is going forward at a tipping point in the nation's power development. High electricity prices, partly driven by expensive imported coal, diesel and oil imports, mean that renewable energy alternatives can already outcompete fossil-fuel based generation across much of the Philippines archipelago.¹⁰³ Meanwhile, stranded asset risk across the coal-fired electricity-generation sector is rising, driven by an over-commitment to coal-fired power, increasing debate about introducing a coal tax and a trend toward falling power prices, which in turn is driven by the deflationary nature of renewables and accelerating policies on retail competition.

Coal-fired power plant owners in the Philippines are moving already to avoid this stranded asset risk. In May 2018, Ayala Group, one of the Philippines largest listed companies, announced that its AC Energy power generation arm would seek to sell 50% of its coal-fired power assets.¹⁰⁴ Coal-fired power currently accounts for about 80% of Ayala's power portfolio, with the rest coming from wind, solar and geothermal sources. The company is now seeking to redress a balance too heavily weighted toward a fuel source with a declining outlook, whilst raising capital to invest in power projects with a more sustainable future.

Shortly after Ayala's announcement, it was reported that Ayala's AC Energy is investing US\$30m in UPC Renewables for a 50% share of its Australian business. AC Energy is also providing a US\$200m facility to drive UPC's plans for a 600 MW solar plant in New South Wales and a 1,000 MW wind project in Tasmania.¹⁰⁵

In addition, AC Energy has formed a joint venture with a local government in Vietnam to develop a 352 MW wind farm in Quang Binh province with a total investment of US\$439m. AC Energy has previously partnered with BIM Group in Vietnam to develop over 300 MW of solar power projects in Ninh Thuan province.¹⁰⁶

AC Energy's current Philippines coal-fired power investments include a stake in South Luzon Thermal Corp. which operates a 244 MW power plant in Calaca. The company had already reduced its holding in this company, when it sold a 20% stake to Marubeni in December 2016.¹⁰⁷ At the time, Marubeni stated that its acquisition would provide opportunities for further power projects in conjunction with AC Energy and the other owners in the future.

In the 18 months since that deal was made, the continuing decline in the cost of renewable energy has changed the development outlook of the Philippine's power sector significantly. Clearly aware of this, Ayala and its AC Energy subsidiary are reducing its exposure to coal-fired power before it's too late, whilst embracing more renewables. The Marubeni/TEPCO Team Energy joint venture is now also at a crossroads, with its CEO having stated that it is actively considering renewable energy expansion (although conceding that the company will also consider thermal power projects) whilst stating, "Let's see how the energy sector would shape over the next few years".¹⁰⁸

¹⁰³ <http://www.eco-business.com/opinion/electricity-in-the-philippines-does-not-need-to-be-so-expensive-or-dirty/>

¹⁰⁴ [http://manilastandardtoday.com/business/power-technology/266079/ayala-selling-1-billion-coal-plants.html - .WwKdbgw2Ng1.twitter](http://manilastandardtoday.com/business/power-technology/266079/ayala-selling-1-billion-coal-plants.html#.WwKdbgw2Ng1.twitter)

¹⁰⁵ <https://reneweconomy.com.au/upc-lands-investor-advance-huge-wind-solar-projects-17801/>

¹⁰⁶ <https://www.evwind.es/2018/07/01/ayala-group-to-build-wind-power-plant-in-vietnam/63829>

¹⁰⁷ <http://www.bworldonline.com/content.php?section=Corporate&title=marubeni-acquires-20&37-stake-in-operator-of-calaca-power-plant&id=138049>

¹⁰⁸ <https://business.mb.com.ph/2018/06/09/japanese-jv-firm-eyeing-new-projects/>

In Mindanao, the second largest island of the Philippines, the City Council of Ozamiz recently revoked a resolution that supported the construction of a 300 MW coal-fired power plant whilst another resolution called for more renewable energy to supply the city. The Provincial Council of South Cotabato has also rejected a proposed coal mining project.¹⁰⁹

Given the way the energy sector is transforming globally, and if Marubeni is keen to work on Philippines power projects with local partners, it will need to change its focus away from coal and onto clean energy technology that can harness geothermal, wind, solar and hydro.

Mongolia

In 2016, Marubeni won a tender to build the coal-fired, subcritical, 450 MW **Tavan Tolgoi plant** adjacent to one of the world's largest unexploited coking and thermal coal deposits.¹¹⁰ Part of the output from the power station would supply the Oyu Tolgoi copper and gold mine.¹¹¹ The proposal is believed to be in the pre-permit development stage with no 2018 update publicly available.

The Mongolian government is reportedly attempting to develop the Tavan Tolgoi deposits by selling up to 30% of the mine project. Two previous attempts at development failed, in 2011 and 2015, with the latter proposal involving Japan's Sumitomo Corp.¹¹²

Japan's Coal Investment Push

The profiles of Marubeni's current coal-fired projects outlined in the previous section reveal a clear trend around how Japan's export credit agencies often support and enable the construction of coal-fired power projects in developing economies using often outdated, carbon intensive Japanese technology.

Japan's public finance for fossil fuels is about double that of any other G7 country at approximately US\$9bn annually. The biggest beneficiaries of this public money are fossil-fuelled power plant developers.¹¹³

Japanese Public Financing of Overseas Coal Projects

The Japan Bank for International Cooperation (JBIC) and Nippon Export and Investment Insurance (NEXI) are two of the largest ECA financiers for coal-fired power plants globally among a group that is dominated by institutions from China, Japan and South Korea. Funding by such public institutions enables subsidised projects to be built in developing countries by lowering risk for commercial lenders. JBIC was the eighth-largest lender to Marubeni as at 31 March 2018 (see Annexure III).

JICA provides project support in developing nations that will use Japanese technology, including coal-fired power. In Bangladesh, JICA effectively drafted the nation's Power

¹⁰⁹ <https://mindanaoexaminer.com/proposed-coal-fired-power-plant-coal-mine-project-shelved/>

¹¹⁰ <http://ubpost.mongolnews.mn/?p=18643>

¹¹¹ <http://www.marketwired.com/press-release/turquoise-hill-resources-ltd-oyu-tolgoi-signs-new-power-purchase-agreement-nyse-trq-2216008.htm>

¹¹² <https://www.bloomberg.com/news/articles/2018-06-29/mongolian-parliament-oks-plan-to-sell-30-of-tavan-tolgoi-mine>

¹¹³ <http://www.atimes.com/wasted-energy-japan-trumps-us-on-coal/>

System Development Plan. The plan sets Bangladesh on a path toward dependence on expensive imported coal and LNG for its electricity generation system, technology that Japanese EPC companies are of course able to provide. Marubeni itself was shortlisted to develop the Matarbari imported coal-fired power plant but the project eventually went to a consortium that included Sumitomo Corp., Toshiba Corp. and IHI Corp.¹¹⁴ The US\$4.5bn cost of the project will be largely financed by a US\$3.7bn subsidised loan from JICA.

JICA is active on a number of infrastructure projects in Bangladesh including the Dhaka metro rail project, which is designed to bring much-needed traffic and transport improvements to the nation's capital city. Marubeni is part of the consortium that will build the railway line for the project, which will contribute to Bangladesh's sustainable development.¹¹⁵ It is hard to square the benefit of such Japanese-funded projects with support for coal-fired power in a nation that is amongst the most at risk to climate change. Because of such support, Japanese ECA financing of coal-fired power has led to sustained pressure from campaigners concerned with carbon emissions; this pressure represents an ongoing reputational risk to Japan, its ECAs and the companies involved in coal-fired power construction.

Whilst developing Asian economies remain the key markets for Japan's public finance institutions, Japan has increasingly shown an interest in Africa, a continent that has an opportunity as it develops to largely skip polluting, fossil-fuelled power generation technology.

Japan and Africa

Africa's need for significant power capacity build-out has drawn the attention of Japanese government financing institutions and companies that include Marubeni, which sees opportunities in Africa across many of its business activities.¹¹⁶ In 2017, Marubeni added Morocco to the growing list of African countries where it is active,¹¹⁷ and it is now reportedly considering re-entering Zimbabwe.¹¹⁸

As African countries expand their power capacities, a key question will be whether they will take the opportunity to benefit from the falling cost of renewable energy in countries with more developed renewables programs, and whether they will leapfrog directly to clean energy,¹¹⁹ avoiding the decades-long lock-in of fossil fuel-based power plants and the negative externalities associated with them.

Countries that are home to companies with expertise in coal- and gas-fired power plants are seeking to push this technology onto developing countries in Africa, just as they have done across Asia. These technology-export countries include China, South Korea and Japan.

In 2017, the Japan-Africa Energy Initiative was announced, an agreement by which the Japanese government will make available US\$6bn to the African Development Bank (AfDB) in concessional and non-concessional finance to fund power plant construction and related

¹¹⁴ <http://www.thedailystar.net/frontpage/matarbari-port-be-turned-deep-sea-port-1515973>

¹¹⁵ <https://www.moneycontrol.com/news/business/lt-construction-bags-rs-3191-cr-order-for-dhaka-metro-2575721.html>

¹¹⁶ <http://www.biztechafrica.com/article/japans-marubeni-corporation-looks-africa/7593/>

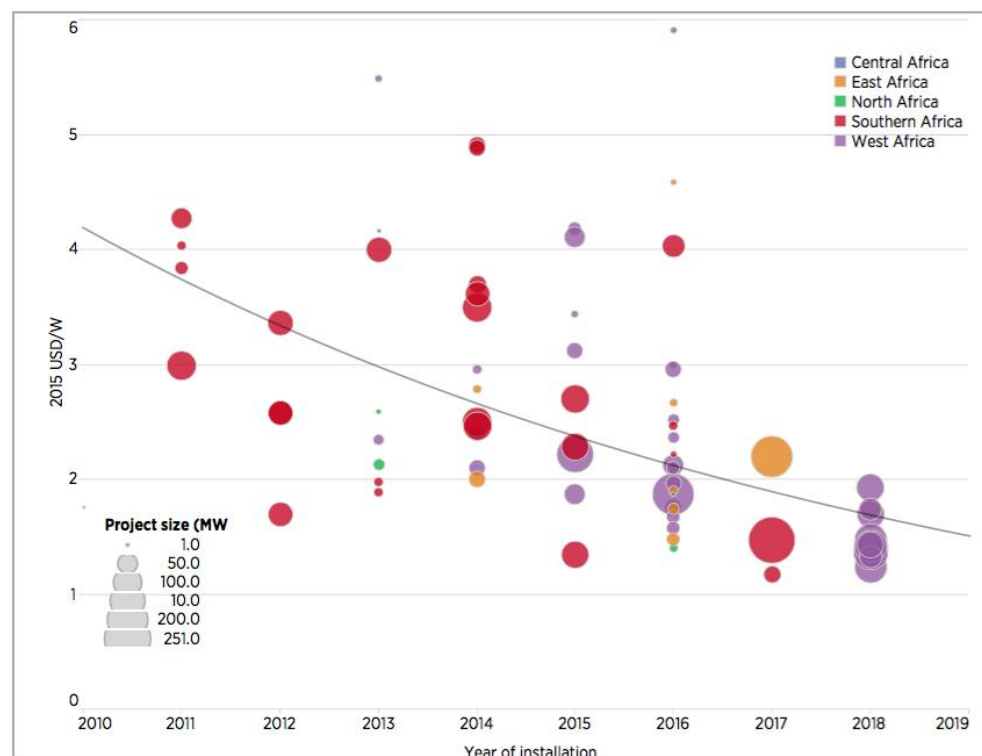
¹¹⁷ <https://www.moroccoworldnews.com/2017/04/213767/marubeni-first-japanese-company-obtain-casablanca-finance-city-status/>

¹¹⁸ <https://www.newsday.co.zw/2018/07/japanese-firm-plots-zim-return/>

¹¹⁹ <https://www.ft.com/content/c168de08-9f8f-11e6-891e-abe238dee8e2>

infrastructure.¹²⁰ This development is intended to help push Japanese so-called “clean coal” ultra-supercritical technology across the continent.¹²¹ This comes at a time when declining costs are allowing renewable technology to make inroads across Africa, helping bring electricity to off-grid communities that coal-fired power stations cannot reach.

Figure 7: Operating and Proposed Utility-Scale Solar PV Project Installed Costs in Africa, 2011-2018



Source: IRENA.

A number of competing schemes to increase renewable energy investment in Africa have begun to make the Japan-Africa Energy Initiative look quite dated less than a year after its inception. In April 2018, the AfDB signed a joint declaration with the India-led International Solar Alliance (ISA) to drive the expansion of solar power across Africa.¹²² The agreement will help develop financing for off-grid solar solutions and utility-scale solar installations. It will also support the AfDB's 10 GW Desert to Power initiative. The programme, launched by the AfDB in January 2018 aims to bring solar power into the Sahel region via off-grid and on-grid projects. In May 2018 it was announced that the Green Climate Fund will join the initiative.¹²³ Meanwhile, the AfDB is coming under pressure to stop financing coal-fired power plants in Africa.¹²⁴

¹²⁰ <https://www.afdb.org/en/news-and-events/launch-of-the-japan-africa-energy-initiative-remarks-by-akinwumi-adesina-president-of-the-african-development-bank-letter-of-intent-signing-ceremony-at-the-africa-union-summit-17155/>

¹²¹ <http://www.globalconstructionreview.com/news/japan-gifts-6bn-african-power-projects/>

¹²² <http://www.ee.co.za/article/development-bank-to-drive-africas-solar-development.html> - .Wult4RmuY0M

¹²³ <https://www.pv-tech.org/news/gcf-and-africa50-join-afdb-desert-to-power-programme>

¹²⁴ <https://independent.ng/stop-funding-coal-powered-plants-in-nigeria-gifsep-others-urge-afdb-2/>

The African Union, which has its own renewable energy initiative, signed an MoU in May 2018 with the IEA to form a strategic partnership to drive the uptake of clean energy.¹²⁵ The partnership is designed to promote renewable energy, energy efficiency, and energy security across the continent. In the same month, at a meeting of the Japan-Africa Public-Private Economic Forum in Johannesburg, the South African energy minister stated that the Japanese private sector can use a number of existing African initiatives to help solve the continent's energy challenges, especially since most of the initiatives focus on encouraging clean and renewable energy solutions.¹²⁶

Japan's ECAs are already enabling renewables in Africa, as is the case with JBIC and NEXI support for a 250 MW wind installation in Egypt. Given Japan's expertise, with its renewable technology companies and a leading position in energy efficiency, it makes sense for Japan's public finance institutions to expand further into the renewables space.¹²⁷ As the world moves from fossil-fuelled power plants toward renewables Japan would do well to make sure it is backing the right horse.

With momentum starting to swing behind renewable energy in Africa, in line with the rest of the world, Marubeni has an opportunity now to pivot and capitalise on its renewables experience. The company can benefit from the growing support for renewables in Africa and from the absence of the kind of local opposition such as that faced over its proposed South African coal-fired power plant.

A Change in Japan's Energy Focus?

Japan has seen criticism of its pro-coal policies from within its own government, specifically from its environment and foreign ministers, and from its financial sector, too, where assessments against coal are increasingly being made by its banks and insurance companies.

This has coincided with international investors turning their backs in growing numbers on coal. The trend, as it continues, will make it more difficult and more expensive for Japanese conglomerates to find financing for coal-fired projects, especially if policy changes require the ECAs to reduce lending for coal. It seems likely, too, that the influential Organisation for Economic Co-operation and Development's (OECD) export credit group will make further efforts toward aligning export credit policies with climate change targets.¹²⁸

That said, unless Japan's policy of public finance support for coal doesn't change, the country will face growing pressure and criticism globally of the sort that was brought to bear in the run-up to the June 2018 G7 summit.¹²⁹

¹²⁵ <https://www.iea.org/newsroom/news/2018/may/iea-and-african-union-sign-strategic-partnership-on-sustainable-energy-for-all.html>

¹²⁶ <https://www.esi-africa.com/japan-africa-forge-alliances-to-bolster-cross-sector-collaboration/>

¹²⁷ <http://www.atimes.com/wasted-energy-japan-trumps-us-on-coal/>

¹²⁸ <http://www.oecd.org/newsroom/statement-from-participants-to-the-arrangement-on-officially-supported-export-credits.htm>

¹²⁹ <https://www.nrdc.org/experts/han-chen/japan-second-worst-g7-reforming-fossil-fuel-subsidies>

Investors Moving Away From Coal

Investor and financier support for the coal industry is draining away at an increasingly rapid rate.

In the lead-up to the June 2018 G7 summit, a group of major international investors with a cumulative US\$26 trillion of assets under management called for a phase-out of coal-fired power.¹³⁰ The 288 investor signatories to the statement included Allianz Global Investors, HSBC Global Asset Management and Nomura Asset Management. The group also called for the end of subsidies for fossil fuels and for a meaningful price on carbon. Asset managers like Nomura comprise most of the largest shareholders in Marubeni (see Annexure I).

This is a significant development that shows where investment in global power capacity is going. Four of the G7 nations are already members of the Powering Past Coal Alliance—among G7 countries, only Japan, the U.S. and Germany are not.

Amundi, Europe's largest asset manager with US\$1.6 trillion under management, has stated that global investment has reached a clear "tipping point" with regard to climate change as major investors increasingly take the issue seriously in their decision-making.¹³¹ Amundi has created low-carbon indexes that are outperforming the market as a whole (Figure 8). Major investors, including the Japanese Government Pension Investment Fund, are moving their portfolios into such indexes. Amundi is part-owned by Credit Agricole, one of Marubeni's largest bank lenders (see Annexure II).

Figure 8: Amundi's Low-carbon MSCI Tracking Fund Performance vs, MSCI Performance



Source: Bloomberg.

¹³⁰ <https://www.reuters.com/article/us-climatechange-investors/big-investors-urge-g7-to-step-up-climate-action-shift-from-coal-idUSKCN11Z0ZP>

¹³¹ <https://www.bloomberg.com/news/articles/2018-05-31/europe-s-largest-asset-manager-sees-tipping-point-on-climate>

A U.K. parliamentary select committee recommended in June 2018 that the government by 2022 should make disclosure of exposure to climate change risks mandatory for large companies and asset owners such as pension funds.¹³² The recommendation is designed to encourage investment decisions that support long-term sustainability rather than short-term returns. Thanks to early efforts by the Bank of England to increase the consideration of climate risk, the U.K. is leading in this area, but such decisions will increasingly be followed globally as the Task Force on Climate Disclosures recommendations are increasingly adopted.

This year has already seen a number of financial institutions distance themselves from the coal industry and add their names to the already significant and growing list of banks, insurers and investors that have ceased supporting coal.

AXA's announced in December 2017 its decision to divest from companies planning more than 3 GW of new coal plants, Generali announced in February 2018 its divestment from companies planning new coal facilities. SCOR as well as other French insurers committed to divest or no longer invest in companies on the Coal Plant Developers List and Global Coal Exit Lists.

May 2018 saw insurance giant Allianz announce that it will immediately stop insuring individual coal-fired power stations and coal mines and cease any coal insurance by 2040.¹³³ It will also bar all companies planning to build more than 500 MW of new coal-fired generation capacity from its investment portfolio.¹³⁴ In June 2018, reinsurance major Hannover Re's announcement that it would divest from companies that derive more than 25% of their revenue from coal put close to half of the world's reinsurers at a remove from coal.¹³⁵ The following month, another reinsurance giant, Swiss Re, announced that it would stop insuring or reinsuring companies that have more than 30% exposure to thermal coal, stating that "Swiss Re supports a progressive and structured shift away from fossil fuels."¹³⁶ Swiss Re stopped investing in companies with at least 30% thermal coal exposure in 2016.

Europe's largest bank, HSBC, announced in April 2018 that it would stop funding new coal-fired power plants following similar recent moves by other European banks such as ING, Credit Agricole, Deutsche and BNP Paribas.¹³⁷ HSBC made an exception by considering finance for plants in Bangladesh, Indonesia and Vietnam, but those exceptions are on the table for only five years. RBS followed in May, declaring that it would no longer provide project finance for new coal-fired power stations and coal mines.¹³⁸ HSBC, Credit Agricole and ING are amongst Marubeni's largest bank lenders (see Annexure II).

¹³² <https://www.parliament.uk/business/committees/committees-a-z/commons-select/environmental-audit-committee/news-parliament-2017/greening-finance-report-published-17-19/>

¹³³ <https://www.reuters.com/article/us-allianz-climatechange/allianz-cuts-back-on-coal-insurance-after-environmentalist-criticism-idUSKBN1I511D>

¹³⁴ <https://www.insurancebusinessmag.com/au/news/breaking-news/allianz-succumbs-to-pressure-reveals-it-will-stop-insuring-coal-firms-99779.aspx>

¹³⁵ <https://www.reinsurancene.ws/hannover-re-to-step-away-from-coal-investment/>

¹³⁶ http://www.swissre.com/media/news_releases/nr_20180702_swiss_re_establishes_thermal_coal_policy.html

¹³⁷ <https://www.reuters.com/article/us-hsbc-strategy-fossil-fuels/hsbc-to-stop-financing-most-new-coal-plants-oil-sands-arctic-drilling-idUSKBN1HR1NR>

¹³⁸ https://www.theguardian.com/business/2018/may/29/rbs-cuts-lending-to-new-coal-and-arctic-oil-projects?CMP=share_btn_tw

Significantly, Japanese banks are also now indicating a change in their outlook toward coal—and the largest ones are coming under increasing opposition-campaign pressure as they are amongst the biggest funders of coal globally.

Sumitomo Mitsui Financial Group has indicated that it may rethink its stance toward coal,¹³⁹ a move almost certain to be followed eventually by major Japanese coal financiers Mizuho Financial Group and Mitsubishi UFJ Financial Group. In June 2018, Mizuho released a statement that recognized the need for action to tackle climate change and noted global concern about the role coal-fired power plays in carbon emissions.¹⁴⁰ This is highly significant, as Mizuho and Mitsubishi UFJ were by far the largest bank lenders to Marubeni over 2014-17 whilst Sumitomo Mitsui was amongst the top five (see Annexure II).

The week before Sumitomo Mitsui's acknowledgement, in May 2018, Japan's second-largest insurer, Dai-ichi Life Insurance, announced it would no longer provide financing for overseas coal-fired power projects. This announcement was the first time a Japanese financial institution committed to restricting coal finance. It was not the last. Nippon Life Insurance, Japan's largest insurer, announced in July 2018 that it will cease financing all coal-fired power stations in Japan and overseas.¹⁴¹ These two developments have special significance for Marubeni, as both of these insurance companies were amongst the top 10 lenders to the company as of 31 March 2018 (see Annexure III) (four of the 10 are Japanese insurance companies).

Some of Japan's trading houses have also begun to recognize the risks associated with coal. Mitsubishi Corp. has moved to sell its stake in Australian thermal coal mines. Mitsui and Co. stated in 2017 that, due to environmental concerns, it had no plans to invest in new thermal coal mines. Sojitz Corp. is also planning to reduce its exposure to thermal coal.¹⁴²

Marubeni itself no longer has any operating thermal coal investments after having sold its stake in the Dartbrook mine in New South Wales, Australia, in 2016. Marubeni owns 20% of Glencore's Ravensworth Underground mine, which has been in care and maintenance since 2014 and 17% of the West Wallsend/Macquarie project, where coal mining has been completed.

With names like Allianz and Dai-ichi joining the likes of Zurich and Axa, about 10% of all insurance assets have already been shielded from coal. That figure could double by the end of 2018.¹⁴³ The initial effect will leave coal-fired power plants and coal mines seeking coverage from a smaller pool of insurers, and at a higher price. With an increasing number of banks also refusing to finance coal, reaching financial close on any coal-fired power plants will get progressively more difficult. At a recent coal industry conference, the deputy CEO of Indonesian independent power producer PT Adaro Power acknowledged that obtaining finance for coal-fired power plants was growing more problematic.¹⁴⁴

¹³⁹ <https://www.bloomberg.com/news/articles/2018-05-16/sumitomo-mitsui-signals-it-may-curb-coal-fired-power-financing>

¹⁴⁰ https://www.mizuho-fg.co.jp/release/pdf/20180613release_jp.pdf

¹⁴¹ <https://www.reuters.com/article/us-japan-coal-divestment/japans-nippon-life-to-stop-financing-coal-fired-power-idUSKBN1KD08P>

¹⁴² <https://www.reuters.com/article/japan-coal-traders-idUSL3N1JA36T>

¹⁴³ <https://www.smh.com.au/business/the-economy/insurance-industry-shift-from-coal-could-mean-higher-power-prices-20180518-p4zg68.html>

¹⁴⁴ <http://ieefa.org/ieefa-op-ed-losses-make-indonesian-electric-company-a-high-risk-bet/>

Japanese Coal-Fired Power Projects Cancelled

Whilst four of the G7 members have joined the Powering Past Coal Alliance, Japan has been lagging and indeed is the outlier with its intention to build a new generation of coal-fired power plants. Since 2012, 50 new coal-fired power plants have been proposed in Japan. However, an increasing number of these proposals have been taken off the table and the number of projects in the development pipeline has dropped to 35. With Japan's electricity demand in decline, renewables continuing to be rolled out, and the government determined to restart nuclear power plants, that number looks set to decline further.

Most recently, Sumitomo has announced that its proposed Sendai-Takamatsu power plant will be switched to run on biomass instead of coal, and J-Power has scrapped a plan to replace ageing power plants with 1,200 MW of new coal-fired power generation.¹⁴⁵ This follows a decision by utility Kansai Electric Power in 2017 to scrap plans to convert its 1,200 MW Aiko power station from oil to coal.¹⁴⁶ Also in 2017, the Japanese environment minister urged Chubu Electric Power to reconsider its plans to build a new coal-fired power plant over concerns that Japan will struggle to meet its commitment emissions reduction targets.¹⁴⁷

Marubeni, by contrast, has the 112 MW Kamisu coal-fired power station under construction. An original joint venture partner, Osaka Gas, pulled out over concerns about carbon emissions and the prospect of nuclear power restarts. In July 2018, the Japanese Ministry of Economy, Trade and Industry (METI) announced a policy to restrict the construction of low efficiency coal-fired power plants, recognising the high carbon emissions of such plants. This will virtually prohibit the further construction small plants (those below 112.5 MW).¹⁴⁸

Marubeni, in a joint venture with Kansai Electric Power, also has the Akita 1,300 MW coal-fired power proposal in development planning. With an expected commissioning date of 2024, the proposal would seem uncertain given an expected continuation of power demand decline and further nuclear restarts. Add to this the fact that renewables will be more widespread in Japan and significantly cheaper by 2025, further eating away at the business model of coal-fired power. The proposal has failed to attract the backing of the environment ministry.¹⁴⁹

Japanese Financing of Renewable Energy Projects

Public and private finance in Japan is already moving into renewable energy, and more such activity is likely. Several years of strong domestic investment in solar PV—amounting to US\$20-30bn per year—have given Japanese technology firms and investors important expertise in the renewables sector. From 2013-2015, Japan was the second-largest installer of solar PV behind China.

Japanese companies are now taking this expertise overseas. Softbank is seeking to develop 20 GW of solar projects in India,¹⁵⁰ a nation previously dependent on coal-fired power but whose fast-paced energy transition will see future capacity expansion dominated by

¹⁴⁵ <https://af.reuters.com/article/commoditiesNews/idAFL3N1S45AN>

¹⁴⁶ <https://www.reuters.com/article/us-japan-coal-idUSKBN15G3T3>

¹⁴⁷ <https://www.reuters.com/article/us-japan-environment-coal-idUSKBN1AH3KS>

¹⁴⁸ <https://www.nikkei.com/article/DGXMZO3339145025072018MM8000/>

¹⁴⁹ <https://www.bloomberg.com/news/articles/2015-11-13/japan-minister-says-she-won-t-support-2-coal-power-projects>

¹⁵⁰ <https://economictimes.indiatimes.com/industry/energy/power/softbank-िल्स-team-up-to-power-20-gw-solar-parks/articleshow/64347960.cms>

renewable energy. Japanese technology companies have also recently become active in Vietnam's growing solar market.¹⁵¹

In 2017, JERA—the joint venture between Tokyo Electric Power Corp. and Chubu Electric Power Corp—acquired a 10% stake in leading Indian renewables company ReNew Power for US\$200m.¹⁵² In a smaller but still significant move, Mitsui and Co. acquired SunEdison's commercial and industrial rooftop solar division, stating that distributed solar will be a key growth area in Japan and overseas.¹⁵³

Japan's financial institutions have also placed significant emphasis on renewables projects overseas. Banks especially have been attracted to renewable energy infrastructure investments abroad based on their strong annuity yields backed by long-term PPAs from mostly highly-rated utilities. Mitsubishi UFJ Financial Group (MUFG) and Sumitomo Mitsui Financial Group have been amongst the largest lead arrangers globally for clean energy asset financing in recent years. These two banks in particular have moved into offshore wind in Europe and are now moving into the growing Taiwan market.¹⁵⁴ This experience places these banks in a strong position to support the developing Japanese domestic offshore wind industry.¹⁵⁵

The Japanese ECAs have also begun to make a transition to renewable energy by funding new energy projects overseas that utilise Japanese technology and expertise.

As well as providing funding for the 250 MW wind farm in Egypt, JBIC and NEXI have also supported Japanese technology in an Indonesian geothermal project along with major Japanese banks. Financial close on the 90 MW Rantau Dedap project was reached in March 2018. The main proponent of the project is a consortium that includes Engie, PT Supreme Energy, Tohoku Electric Power Corp and Marubeni.

JICA has also been active in the renewables space via its Leading Asia Private Infrastructure Fund (LEAP).¹⁵⁶ This fund provided US\$390 million of debt funding for ReNew Power at the same time that JERA obtained a 10% stake in the Indian renewables developer.

LEAP also provided a US\$109 million loan to the 80MW Muara Laboh geothermal project in West Sumatra, a project being developed by Sumitomo, Engie and Supreme Energy assisted by credit guarantees from NEXI. JBIC is also part of the financing consortium.¹⁵⁷ In addition, JICA has agreed to provide soft loans worth US\$70.4 million through the state-owned infrastructure financing firm PT Indonesia Infrastructure Finance to develop renewable power projects.¹⁵⁸ JICA has also financed the 50 MW Tsetsii Wind Farm in Mongolia, part-owned by SoftBank¹⁵⁹, and a 200 MW solar PV installation in Jordan.¹⁶⁰

¹⁵¹ <https://www.pv-tech.org/news/jgc-to-build-49mw-solar-project-in-vietnam-for-ttc-group>

¹⁵² <https://energy.economictimes.indiatimes.com/news/renewable/japans-jera-picks-10-per-cent-in-renew-power-for-200-million/57142052>

¹⁵³ http://www.mitsui.com/jp/en/release/2017/1222451_10832.html

¹⁵⁴ <https://cleantechnica.com/2018/06/12/taiwans-120-megawatt-formosa-1-offshore-wind-farm-reaches-financial-close/>

¹⁵⁵ <http://ieefa.org/ieefa-update-japan-investing-heavily-overseas-renewables/>

¹⁵⁶ https://www.jica.go.jp/english/news/press/2015/160330_01.html

¹⁵⁷ <http://www.thinkgeoenergy.com/new-infrastructure-fund-of-aid-funding-109m-for-muara-laboh-geothermal-project/>

¹⁵⁸ https://www.jica.go.jp/english/news/press/2017/171211_01.html

¹⁵⁹ https://www.jica.go.jp/english/news/press/2016/160928_01.html

¹⁶⁰ <https://www.reuters.com/article/emirates-jordan-renewables/abu-dhabis-masdar-seals-188-mln-funding-for-jordan-solar-project-idUSL8N1PC3RP>

As international pressure on Japanese ECA financing for coal-fired power intensifies, their support for renewable energy projects, backing Japan's world-leading technology, appears to be increasingly available.

Japan's Potential New Energy Leaders

As a global technology leader, Japan is home to a number of companies that have the potential to become world leaders in renewable energy and the nation's clean energy champions. Such companies include leading lithium-ion battery maker Panasonic, which, in partnership with Tesla, manufactures at the Gigafactory in the U.S. state of Nevada. The company is planning to double automotive revenues by 2022 and is scaling up its battery-manufacturing capacity globally.

In addition to its reported intention to invest up to US\$100bn in Indian solar capacity,¹⁶¹ SoftBank is intending to pursue a highly ambitious project in Saudi Arabia involving the construction of 200 GW of solar power capacity.¹⁶² This continues SoftBank's global energy leadership, which also involves plans for a northeast Asia "supergrid" involving Japan, South Korea, China, Mongolia and Russia.¹⁶³

MHI Vestas, a joint venture between Mitsubishi Heavy Industries and Danish wind turbine manufacturer Vestas, was launched in 2014 and is a leading global provider of offshore wind turbines. With turbines installed across the world's leading offshore wind markets around Europe, the joint venture is in an ideal position to benefit from the developing Asian wind markets of Taiwan and Japan, potentially followed by South Korea and India.

A number of Japan's major trading houses, including Marubeni, have been expanding into the rapidly developing overseas offshore wind power markets for years, moves that will allow them to gain further expertise that will help them develop Japanese offshore wind power developments that are now on the horizon.

Mitsubishi and its project partners are expected to begin construction of a 950 MW offshore wind project in the U.K. in 2018.¹⁶⁴ Sumitomo is reportedly close to acquiring a stake in European offshore wind developments from Engie,¹⁶⁵ adding to its European offshore wind holdings.

Japanese trading houses are also involved in Taiwan's burgeoning offshore wind market (Figure 9). In May 2018, Mitsui and Co. acquired a 20% stake in Taiwanese offshore wind developer Yushan Energy. This will allow the company to benefit from Taiwan's ambitious drive into offshore wind as the nation turns away from nuclear power and coal and toward renewables. Mitsubishi Corp. is also working on offshore wind development in Taiwan, and Mitsui has recently entered into a joint venture with major Chinese solar manufacturer GCL-Poly to invest in new-energy and infrastructure projects.¹⁶⁶

¹⁶¹ <https://www.reuters.com/article/us-softbank-group-india/japans-softbank-to-invest-up-to-100-billion-in-india-solar-power-project-nhk-idUSKBN1JA3C8>

¹⁶² <https://www.reuters.com/article/us-saudi-softbank-group/softbank-vision-fund-saudi-arabia-to-create-worlds-biggest-solar-power-firm-idUSKBN1H40DN>

¹⁶³ <https://www.ft.com/content/4b04ed8e-bf8b-11e7-b8a3-38a6e068f464>

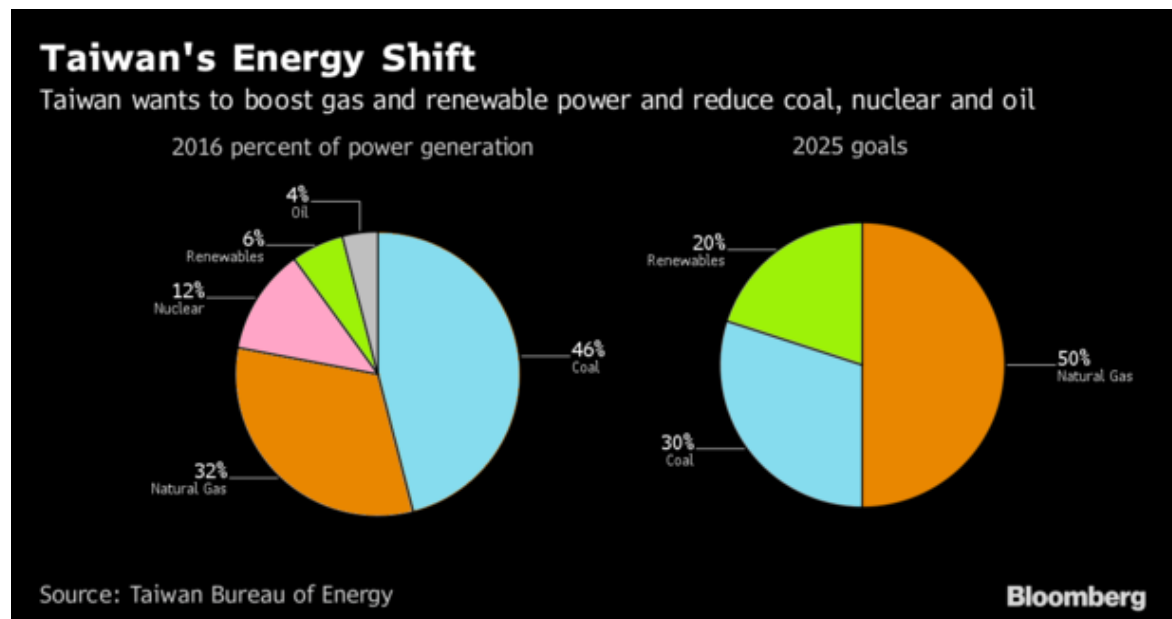
¹⁶⁴ <https://www.bloomberg.com/news/articles/2018-05-28/-dawn-of-asia-offshore-wind-boom-lures-japanese-trading-houses>

¹⁶⁵ <https://www.bloomberg.com/news/articles/2018-04-09/offshore-wind-churns-out-big-bank-payoff-as-deals-jump-to-record>

¹⁶⁶ <https://www.pv-tech.org/news/gcl-poly-and-mitsui-team-in-jv-for-new-generation-energy-and-infrastructure>

As a trading house that already has experience in renewable energy installations, Marubeni has the potential to become one of Japan's new energy leaders. However, as it stands, the company is more closely associated with the construction of coal-fired power plants than renewable energy capacity.

Figure 9: Taiwan's Energy Transition Has Begun



Source: Bloomberg, Taiwan Bureau of Energy.

Shareholder Value at Risk

With global investors moving away from coal at an ever-greater pace, risks are growing for companies that maintain their presence in the coal-fired power sector. These include the risk of significant financial losses from these operations as well as the risk that a company's reputation amongst investors deteriorates. There are already important examples of such risks manifesting themselves within the thermal power sector.

Globally, the financial woes of GE since it doubled down on the thermal power sector have been highly prevalent and have led to major losses and significant reputational costs. GE bought the power business of Alstom (a former consortium partner of Marubeni) in 2015 for US\$10.3bn, significantly increasing the latter's exposure to coal and gas.¹⁶⁷ The deal has proved to be nothing less than a financial disaster for GE as declining renewables costs have led to plummeting orders for fossil-fuelled power plants. GE's power division profits fell by 45% in 2017 and GE as a result cut its dividend—only the second time it has done so since the Great Depression.

GE is belatedly now predicting that thermal power plant sales going forward will be weak, and it is preparing for this trend to last.¹⁶⁸ A write-down of the Alstom business appears to be

¹⁶⁷ <https://www.reuters.com/article/us-ge-power/how-general-electric-gambled-on-fossil-fuel-power-and-lost-idUSKCN1G60I3>

¹⁶⁸ <https://www.reuters.com/article/us-ge-divestiture/ge-breakup-leaves-it-with-best-and-worst-performers-idUSKBN1JM0ZT>

on the cards in the near future.¹⁶⁹ The purchases of Alstom, one of GE's largest acquisitions ever, was seen as highly strategic at the time given the expected long-term growth of the thermal power sector. However, the outlook for coal demand and thermal capacity build-out almost immediately soured. GE's power equipment division, which absorbed Alstom, is to cut 12,000 jobs in its latest restructuring.¹⁷⁰

Figure 10: GE Share Performance (Orange) vs. S&P 500 Index (Purple) Over 10 Years



Source: Thompson Reuters.

Figure 10 shows the shareholder value destruction that began not long after the Alstom acquisition, which has resulted in the company that was once the world's most valuable being removed altogether from the Dow Jones. The company was a 19th-century founding member of the index.

GE was the worst performer on the Dow in 2017 and was repeating the feat in 2018 until it was dropped from the index. The loss of US\$140bn of market value over the last year has resulted in a plan to divest assets to reset the business and pay down debt in a move that essentially amounts to a break-up of the conglomerate.¹⁷¹ Once restructuring is complete, the company will bear little resemblance to the corporation it used to be. The company's power equipment division is to be kept, in slimmed-down form. Importantly, GE's renewable energy business, where it is particularly strong in wind power, is to be retained.

Siemens, a key competitor to GE, has also seen renewable energy materially and unexpectedly reduce demand for its thermal power turbines. Siemens is reportedly considering the strategic options for its power and gas unit, which could include a sale or a combination with a rival. A sale may not be easy given that rivals face similar issues—a global downturn in thermal power plant orders as the world turns toward more and more renewable energy. With renewable technology set to get cheaper long into the future, power utilities are unwilling to commit to expensive coal and gas-based generation. In November 2017,

¹⁶⁹ <https://www.bloomberg.com/gadfly/articles/2018-01-22/ge-alstom-writedown-could-be-next-shoe-to-drop>

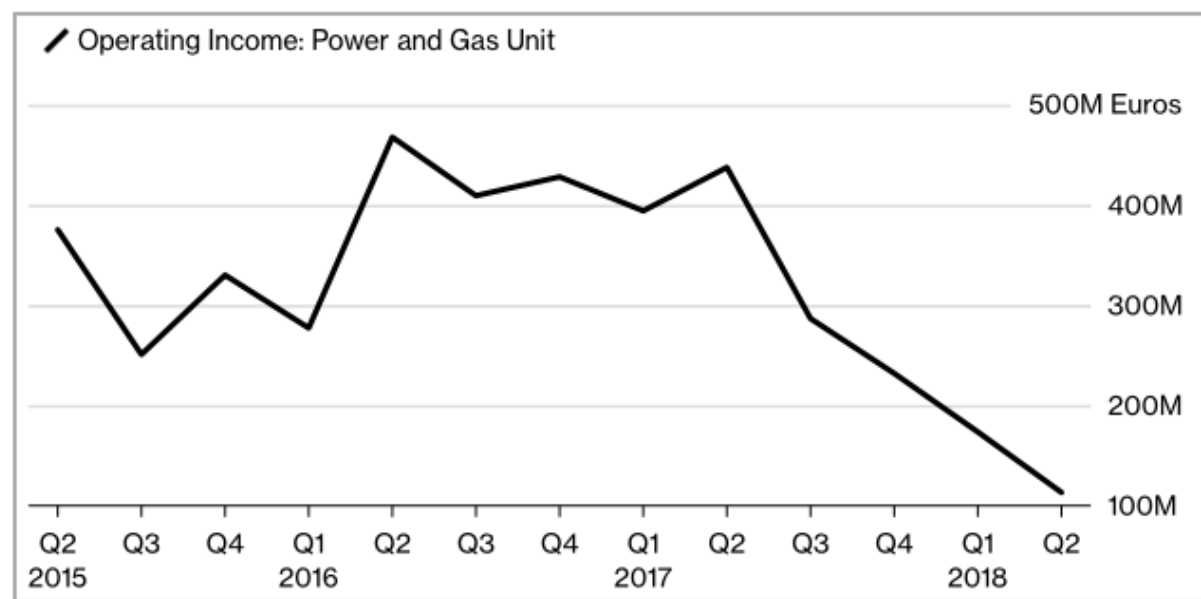
¹⁷⁰ <https://www.ft.com/content/8eab12bc-795c-11e8-bc55-50daf11b720d>

¹⁷¹ <https://www.afr.com/news/world/ge-becomes-the-last-19th-century-company-kicked-out-of-the-dow-20180620-h11lt2>

Siemens announced 6,900 job cuts within its power and gas division as well as factory closures.¹⁷² The company has lowered its forecast for power turbine sales in 2018.

Siemens' CEO has previously stated that the company's power turbine operations will not form part of its "industrial core," a major reversal for a business previously seen as the company's flagship unit.

Figure 11: Siemens Power and Gas Division Profits Have Slid as Orders Slow



Source: Bloomberg.

The company's situation could have been much worse. Siemens attempted to spoil GE's acquisition of Alstom's power business with an offer to split the Alstom business between itself, Mitsubishi Heavy Industries and Hitachi. Siemens would have taken the gas turbine business whilst the Japanese companies would have taken the steam turbine, grids and hydro businesses.

The fact that Mitsubishi Heavy Industries (MHI) did not take part in the Alstom deal has likely saved it from worse financial results as well. Even so, MHI has seen declining profitability in its power systems division, which contributes the majority of the company's operating income. For the financial year ended 31 March 2017, orders for power system products dropped 16% whilst operating income dropped 29%. This year, operating income has stabilised but orders have dropped by an additional 17%.

In its latest medium-term business plan, MHI signalled a structural shift in its thermal power systems business and said that it is "to be ready for scale-down of coal-fired thermal business from 2021."¹⁷³ The ongoing impact of renewable energy and environmental regulation worldwide has led MHI to expect orders for thermal power turbines to dry up by 2020.¹⁷⁴ The company is responding by restructuring and reducing costs, but it has recognised that coal-fired power in particular faces a weak future.

¹⁷² <https://www.bloomberg.com/news/articles/2018-06-13/siemens-said-to-consider-sale-of-flagship-gas-turbine-business>

¹⁷³ Mitsubishi Heavy Industries 2018 Medium-Term Business Plan, May 8 2018, p. 23

¹⁷⁴ <https://asia.nikkei.com/Business/Companies/Mitsubishi-Heavy-to-shrink-power-business-before-orders-run-dry>

The declining outlook for thermal power, and coal-fired power in particular, has not surprisingly had a significant impact on MHI shareholder value (Figure 12). After tracking the Nikkei 225 closely for years, the company's share price performance has badly underperformed the market since the end of 2015. Global shareholders, including those of Marubeni (see Annexure I), are likely to have significant, growing concerns about companies that maintain their presence in the coal-fired power sector given the deep financial impacts and value destruction being created by disruptive renewable energy technology. The lesson from the poor performance of companies such as GE, Siemens and MHI is that any delay in a company's transition away from coal will lead to negative impacts on shareholder value.

This message is also reinforced by the performance of power utilities such as Engie that have underperformed the market due to late action on transition away from coal and toward renewables. Engie's response to its underperformance has been an accelerated disposal of coal-fired assets globally with the company now no longer operating any coal-fired power plants in the Asia-Pacific region.

Marubeni shareholders such as BlackRock, the company's largest, are likely to be increasingly wary of the risks of remaining in the coal development business going forward. In his January 2018 letter to CEOs, Larry Fink, CEO of BlackRock, noted that "society increasingly is turning to the private sector and asking that companies respond to broader societal challenges"¹⁷⁵, citing environmental impacts as being amongst the issues companies must address.

Despite being a diversified conglomerate, Marubeni would do well to be mindful of these shareholder value impacts and should take steps to move away from coal sooner rather than later to avoid the type of value destruction experienced by some of its peers.

Figure 12: Mitsubishi Heavy Industries Share Performance (Orange) Vs Nikkei 225 Index (Purple) Over 10 Years



Source: Thompson Reuters.

¹⁷⁵ <https://www.blackrock.com/corporate/investor-relations/larry-fink-ceo-letter>

Unfortunately, rather than moving away from coal, Marubeni currently appears to be seeking further opportunities in the sector.

Marubeni is part of a consortium set to build a A\$500m (US\$372m) coal-to-hydrogen demonstration project in Victoria, Australia. The pilot project won't involve carbon capture and storage (CCS) but if it were to be commercialised and expanded in the future then CCS would be needed in order for the hydrogen produced and shipped to Japan to be considered "clean."¹⁷⁶ The CCS element is particularly fraught with risk, as demonstrated by the failed Kemper coal plant in the U.S., where ballooning costs and delays resulted in the cancellation of the coal gasification and carbon capture element of the project. Shareholders were required to absorb US\$6.4bn in losses.¹⁷⁷

Marubeni's involvement in a coal-to-hydrogen project in Australia comes as Siemens is already piloting hydrogen production from renewable energy there.¹⁷⁸ The role of hydrogen in the global energy markets of the future is still uncertain. However, given the unproven status of CCS, it would seem that producing hydrogen from renewable energy is already the more prudent way forward. This fact further demonstrates why Marubeni should increase its focus on renewable energy as the financial and reputational risks surrounding the coal sector continue to increase.

Thankfully, Marubeni is an increasingly significant player in the renewables space globally, providing an excellent basis for the company to move forward and create a power business fit for the rest of this century.

Marubeni and Renewable Energy

Marubeni's 2017 annual report identifies development of renewable energy in both developed and developing countries as a key opportunity for the company. It also notes that offshore wind installation is already one of the strengths of Marubeni's power business.¹⁷⁹

Furthermore, Marubeni's Chairman, Teruo Asada, has called for the Japanese government to encourage domestic renewable energy investment—a promising sign that the company is preparing for a future power system based on clean energy sources.¹⁸⁰

The company's offshore wind experience overseas gives Marubeni the potential to exploit opportunities domestically as the Japanese market develops. Marubeni has been active in offshore wind in Europe for a number of years and has only recently sold its share of the Westernmost Rough offshore wind project in British water to Macquarie's Green Investment Group. It is also thought to be divesting its holding in the Gunfleet Sands offshore project. Marubeni stated after the sale of its Westernmost Rough stake that it intended to increase its renewable energy capacity to 20%, up from 10%.¹⁸¹

¹⁷⁶ <https://www.smh.com.au/business/the-economy/reality-check-on-a-half-billion-dollar-brown-coal-hydrogen-project-20180412-p4z98n.html>

¹⁷⁷ <https://www.elp.com/articles/2018/02/kemper-plant-once-clean-coal-model-ends-in-shareholders-eating-losses.html>

¹⁷⁸ <https://www.siemens.com/au/en/home/company/press-centre/hydrogen-demonstration-park.html>

¹⁷⁹ Marubeni Integrated Report 2017, p. 78

¹⁸⁰ <https://www.reuters.com/article/us-japan-energy-idUSKCN1020XH>

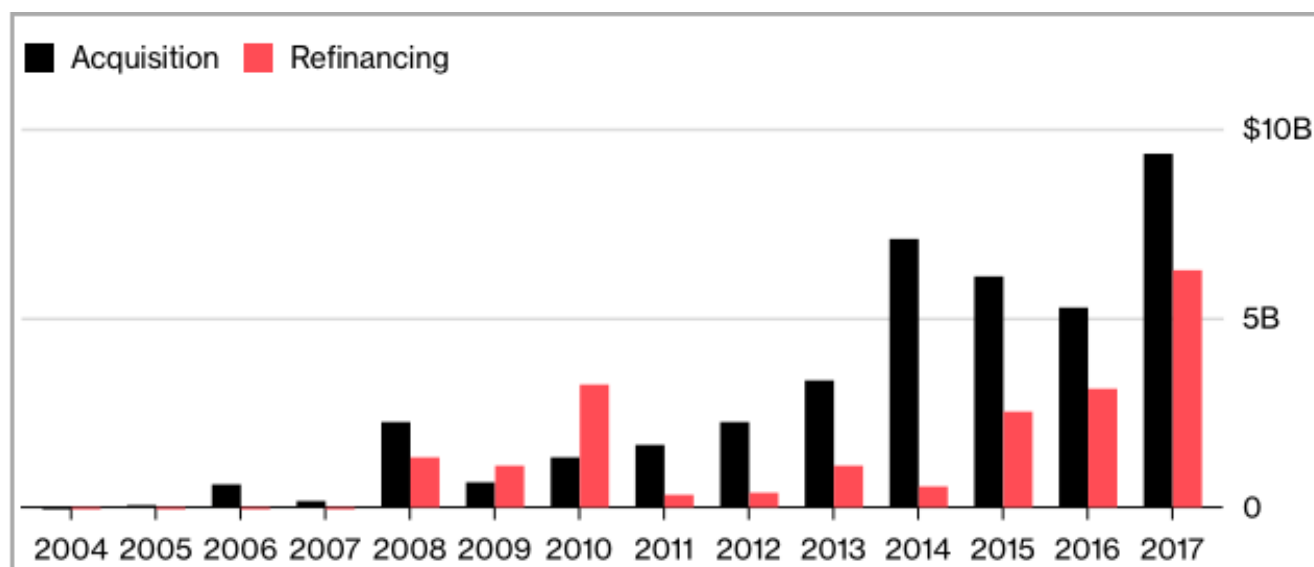
¹⁸¹ <https://www.reuters.com/article/us-britain-windpower/macquarie-group-unit-buys-stake-in-uks-westernmost-rough-wind-farm-idUSKBN1H315L>

Growing interest from institutional investors in European offshore wind farms has led to a surge in transactions with a record US\$9.4bn in project stakes being sold in 2017, up 77% on the year before.¹⁸² Many of these investors are attracted by the large scale of these projects and the prospect of long-term, stable cash flows. This increased activity is a strong sign of a maturing industry that will provide Marubeni and other developers plenty of further opportunities globally. Marubeni has already turned its attention to the fast-developing Taiwan offshore wind industry.¹⁸³ Marubeni is also part-owner of Seajacks International Ltd., a U.K.-based offshore wind installer that is seeking to expand its operations globally.¹⁸⁴

Although offshore wind development in Japan has been slow to date, the government is now working on legislation that should help the sector take off in the near future.¹⁸⁵ Japan's biggest utility, TEPCO, has recently announced a shift away from baseload generation with a plan to build 6 to 7 GW of renewable power both in Japan and abroad. This will include significant investment in Japanese offshore wind.¹⁸⁶

Marubeni is well placed to use its experience gained in the Europe in the domestic market and already has two projects off the coast of the northern prefecture of Akita. The company has been among those experimenting with floating offshore wind for a number of years, a technology that is likely to play a major role in the often-deep waters off the coast of Japan.¹⁸⁷ In January 2018, Marubeni signed a cooperation agreement with Norway's Statoil to collaborate on fixed and floating offshore wind projects in Japan.¹⁸⁸

Figure 13: Acquisition and Refinancing Deals for European Offshore Wind Projects Have Surged



Source: Bloomberg New Energy Finance.

¹⁸² <https://www.bloomberg.com/news/articles/2018-04-09/offshore-wind-churns-out-big-bank-payoff-as-deals-jump-to-record>

¹⁸³ <https://asia.nikkei.com/Business/Companies/Marubeni-to-build-offshore-wind-farm-in-Taiwan>

¹⁸⁴ <http://www.seajacks.com/about-seajacks/investor-relations/>

¹⁸⁵ <https://www.bloomberg.com/news/articles/2018-05-28/-dawn-of-asia-offshore-wind-boom-lures-japanese-trading-houses>

¹⁸⁶ https://reneweconomy.com.au/japans-tepcos-plans-7gw-renewables-roll-out-in-pivot-away-from-nuclear-72286/?utm_source=RE+Daily+Newsletter&utm_campaign=0b4f803a37-EMAIL_CAMPAIGN_2018_07_26_03_38&utm_medium=email&utm_term=0_46a1943223-0b4f803a37-40324

¹⁸⁷ <https://www.marubeni.com/en/news/2015/release/20150622e.pdf>

¹⁸⁸ <http://renews.biz/109859/statoil-marubeni-ink-offshore-pact/>

The company is also a growing player in onshore wind overseas. In Egypt, Marubeni is part of a consortium intending to build 700 MW of onshore wind on a deal that is approaching financial close for its first project phase.¹⁸⁹ Given that JBIC and NEXI have already provided support for wind power in Egypt, it would seem further opportunity exists for Japanese ECAs to back Japanese expertise in this sector.

Marubeni also has a history in solar PV.

Domestically, Marubeni has been constructing solar power plants for a number of years as the Fukushima nuclear disaster and subsequent generous tariffs drove Japanese solar installations in its aftermath.¹⁹⁰ Marubeni entered the Japanese residential solar market in March 2015.¹⁹¹

Overseas, Marubeni entered the fast-developing Latin American solar market in April 2015 when it agreed to invest in a 146 MW solar project in Chile with French utility EDF.¹⁹² Marubeni also entered the solar module testing business in the U.S. in 2018.¹⁹³

Marubeni's highest-profile solar project is the huge 1.2 GW Abu Dhabi project, where the levelised cost of electricity (LCOE) is reported to be below US\$30/MWh.¹⁹⁴ Marubeni is part of a consortium on the project that includes China's JinkoSolar and the Abu Dhabi Water and Electricity Company.

The Middle East is undergoing a surge in solar investment that represents a significant opportunity for companies in the sector, especially those that have already entered the local market. GTM Research expects solar tenders totalling 8 GW in 2018 with installed capacity across the region to reach 22 GW by 2023.¹⁹⁵ Already in 2018, Marubeni has been shortlisted for a 300 MW solar project in Saudi Arabia after bidding for the project with a tariff of US\$26.6/MWh.¹⁹⁶ In April 2018, Marubeni was announced as one of the pre-qualifiers for a 500 MW solar project in Oman.¹⁹⁷

With Japan's SoftBank now leading a massive proposed solar investment drive in Saudi Arabia with an intended 200 GW of solar development, the opportunities for Marubeni in solar across the Middle East are now substantial.

Japan's expertise in geothermal energy technology provides openings as well for Japanese companies in other geologically active countries. In Indonesia, Marubeni is part of a consortium, which also includes Engie, that has reached financial close on the 90 MW Rantau Dedap geothermal project. Financial support for the project has been sourced from the Asian Development Bank, Japanese ECAs JBIC and NEXI as well as a consortium of Japanese commercial banks—Mizuho Bank, Bank of Tokyo-Mitsubishi UFJ, and Sumitomo Mitsui Banking Corp.¹⁹⁸

¹⁸⁹ <https://www.bloomberg.com/news/articles/2018-01-17/marubeni-and-abu-dhabi-s-masdar-in-900-million-egypt-wind-plan>

¹⁹⁰ https://www.pv-magazine.com/2014/04/24/marubeni-mega-solar-plant-goes-online-in-japan_100014894/

¹⁹¹ <https://www.marubeni.com/en/news/2015/release/00012.html>

¹⁹² https://www.marubeni.com/en/news/2015/release/150414_eng.pdf

¹⁹³ <https://www.marubeni.com/en/news/2018/release/00006.html>

¹⁹⁴ <https://www.pv-tech.org/news/jinkosolar-in-deal-to-build-1.2GWp-solar-plant-in-Abu-Dhabi>

¹⁹⁵ <https://www.pv-magazine.com/2018/04/25/middle-east-to-add-8-gw-of-pv-in-2018-says-gtm-research/>

¹⁹⁶ <https://www.pv-tech.org/news/saudi-arabia-picks-local-firm-over-record-breaker-masdar-for-300mw-solar>

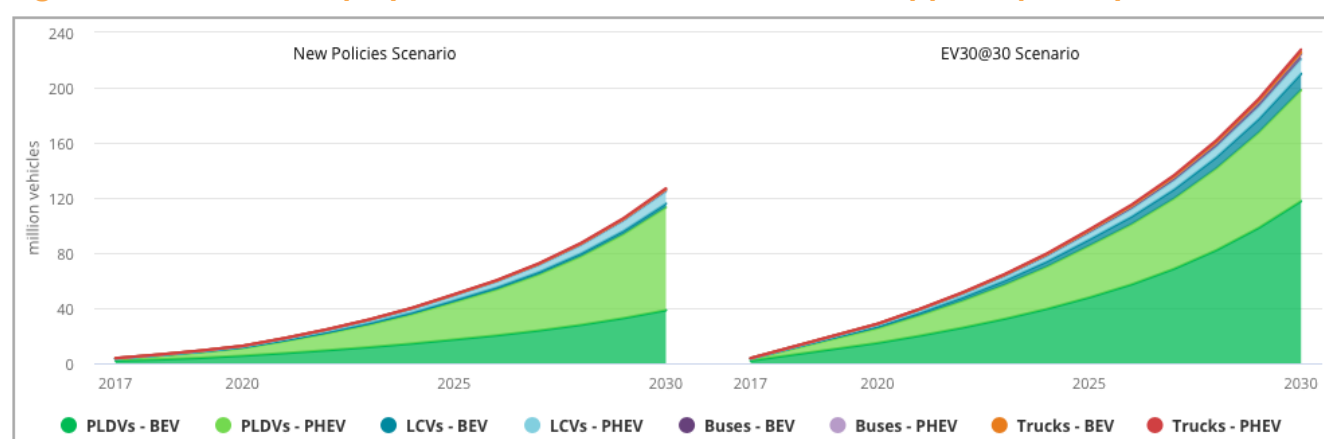
¹⁹⁷ <https://www.pv-magazine.com/2018/04/30/oman-reveals-pre-qualified-developers-for-500-mw-solar-tender/>

¹⁹⁸ <http://www.thinkgeoenergy.com/rantau-dedap-geothermal-projects-secures-540m-loan-from-jbic-adb-and-others/>

Meanwhile Kenya, on Africa's active Great Rift Valley, has an opportunity to significantly add to its existing geothermal capacity in order to meet growing electricity demand without resorting to expensive and polluting fossil fuel imports. This provides openings in Kenya, and in other countries along the Great Rift Valley, for companies with existing geothermal expertise.

In the fast-growing battery and electric vehicle (EV) sectors, Marubeni in May of this year signed a memorandum of understanding with Swedish battery manufacturer Northvolt AB. The two companies are to build a business that serves the growing demand for lithium-ion batteries in Europe. Northvolt is planning to build Europe's largest battery cell plant with Marubeni to provide equipment, support battery storage sales and develop a battery-recycling business.¹⁹⁹ In April 2018, Marubeni announced that it is to supply ultra-fast EV chargers to a US\$2bn EV infrastructure project in the U.S.²⁰⁰

Figure 14: Global EV Deployment to 2030 Under Current and Stepped-up Policy Scenarios



Source: International Energy Agency/OECD.

Given the expected rapid deployment of EVs over the next decade (Figure 14), it is no surprise that Marubeni already sees this is a growth sector. Marubeni President and CEO Fumiya Kokubu stated in February 2018 that “We need to expand our operations in growth areas like electric vehicles.”²⁰¹

Conclusion

It has become increasingly clear that renewable energy technology will dominate power capacity build-out globally over the rest of this century.

This trend increases the risk of shareholder value losses and declining revenues for fossil fuel-based business units, but also signals tremendous opportunities for companies that expand further into clean energy technology.

With innovation central to its management philosophy, Marubeni Group—to its credit—has openly acknowledged that major transitions require companies to be prepared to abandon

¹⁹⁹ <https://www.marubeni.com/en/news/2018/release/00014.html>

²⁰⁰ <https://www.marubeni.com/en/news/2018/release/00007.html>

²⁰¹ <https://asia.nikkei.com/Business/Trends/Half-our-business-will-vanish-in-10-years-Marubeni-chief?page=2>

old approaches that no longer make business sense.

In addition to opportunity and risk, there is also a growing expectation that major corporations will be amongst those that show leadership in resolving issues such as carbon emissions and related climate-change risk. Marubeni—again to its credit—has acknowledged this expectation.²⁰²

Senior members of the Japanese government are now emphasizing how planned coal-fired power build-out domestically and overseas fails to live up to such expectations. Furthermore, Japanese banks and investors are now joining global financial institutions in turning away from the coal industry as it makes less and less financial sense to support the industry in the wake of massive technological disruption caused by cheap renewable energy.

Marubeni's own shareholders will be increasingly concerned about coal-fired power sector risk as the transition toward deflationary and disruptive renewable energy continues. Major global power utilities such as Engie that have belatedly moved away from coal have suffered shareholder value destruction and have reinforced their planned transition to renewables. Companies in the coal-fired power equipment sector, such as GE, Siemens and Mitsubishi Heavy Industries, have suffered similar declines in shareholder value as orders dry up. These companies—whose experiences collectively serve as a warning to others—are now faced with the need to realign their businesses to better suit the energy markets of the future in order to avoid further shareholder value destruction.

Marubeni, fortunately, is already operating in the renewables space globally and has gained significant experience there that will enable its Power Business & Plant Group to flourish—so long as the company fully commits to the global energy transition.

A growing list of energy companies, led by NextEra and ENEL have made their move already, and Marubeni's power division now risks being left behind—even becoming irrelevant—if it does not embrace the momentum around renewable energy.

With Marubeni currently better known globally for building coal-fired power plants than for developing renewables, the company would do well also to bring its coal-related activity to a close rather than remaining exposed to the financial and increasing reputational risks that comes from being closely linked to such an industry.

Happily, Marubeni has stated that it will be firm in its decisions about the fate of businesses that no longer make business and reputational sense.²⁰³

²⁰² Marubeni Integrated Report 2017, p. 35

²⁰³ Marubeni Integrated Report 2017, p. 32

Annexure I

Top 30 Marubeni Shareholders

Investor Name	Shareholding	Country
Asset Management One Co., Ltd.	3.65%	Japan
Sumitomo Mitsui Trust Bank, Limited	3.57%	Japan
Nomura Asset Management Co., Ltd.	2.48%	Japan
Sompo Japan Nipponkoa Insurance Inc	2.42%	Japan
Meiji Yasuda Life Insurance Company	2.41%	Japan
BlackRock Japan Co., Ltd.	2.40%	Japan
The Vanguard Group, Inc.	2.25%	United States
Mizuho Bank, Ltd.	1.73%	Japan
BlackRock Institutional Trust Company, N.A.	1.63%	United States
BlackRock Fund Advisors	1.38%	United States
Norges Bank Investment Management (NBIM)	1.18%	Norway
Nikko Asset Management Co., Ltd.	1.13%	Japan
Daiwa Asset Management Co., Ltd.	1.04%	Japan
Aeon Co Ltd	0.81%	Japan
Northern Trust Investments, Inc.	0.77%	United States
Grantham Mayo Van Otterloo & Co LLC	0.63%	United States
Mizuho Trust & Banking Co., Ltd.	0.58%	Japan
Mitsubishi UFJ Kokusai Asset Management Co., Ltd.	0.53%	Japan
AQR Capital Management, LLC	0.49%	United States
AllianceBernstein L.P.	0.48%	United States
APG Asset Management	0.47%	Netherlands
TD Asset Management Inc.	0.45%	Canada
BlackRock Advisors (UK) Limited	0.42%	United Kingdom
BlackRock Asset Management Ireland Limited	0.41%	Ireland
BNY Mellon Asset Management North America Corporation	0.41%	United States
CPP Investment Board	0.37%	Canada
Old Mutual Global Investors (UK) Limited	0.37%	United Kingdom
BlackRock Investment Management (UK) Ltd.	0.35%	United Kingdom
Dimensional Fund Advisors, L.P.	0.34%	United States
Citizen Watch Co Ltd	0.30%	Japan

Source: Thompson Reuters.

Annexure II

Top Bank Lenders to Marubeni 2014-17

Bank	Country	Total (US\$m)
Mizuho	Japan	6,990
Mitsubishi UFJ Financial Group	Japan	6,788
Citi	U.S.A	905
Credit Agricole	France	406
Sumitomo Mitsui Financial Group	Japan	290
ING Group	Netherlands	221
ANZ	Australia	116
HSBC	U.K.	101
Standard Chartered	U.K.	101
Bank of America	U.S.A	101

Source: Banktrack.

Annexure III

Balance of Borrowings at 31 March 2018 By Major Lender

Lender	Balance at 31 March 2018 US\$m
Meiji Yasuda Life Insurance Company	1,461
Mizuho Bank	1,418
Development Bank of Japan	1,114
Nippon Life Insurance Company	1,060
Sumitomo Mitsui Banking Corporation	1,027
The Bank of Tokyo-Mitsubishi UFJ, Ltd.	930
The Dai-ichi Life Insurance Company Ltd	911
Japan Bank for International Cooperation (JBIC)	665
Sumitomo Life Insurance Company	479
Sumitmo Mitsui Trust Bank Ltd	469

Source: Marubeni Business Report 1st April 2017 to 31st March 2018.

Institute for Energy Economics and Financial Analysis

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About the Authors

Tim Buckley

Tim Buckley, IEEFA's director of energy finance research, Australasia, has 25 years of financial market experience covering the Australian, Asian and global equity markets from both a buy and sell side perspective. Tim was a top-rated Equity Research Analyst and has covered most sectors of the Australian economy. Tim was a Managing Director, Head of Equity Research at Citigroup for many years, as well as co-Managing Director of Arkx Investment Management P/L, a global listed clean energy investment company that was jointly owned by management and Westpac Banking Group.

Simon Nicholas

Simon Nicholas is a research analyst with IEEFA in Australia. Simon holds an honours degree from Imperial College, London and is a Fellow of the Institute of Chartered Accountants of England and Wales and has 16 years' experience working within the finance sector in both London and Sydney at ABN Amro, Macquarie Bank and Commonwealth Bank of Australia.

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