



Energy Transition in Taiwan: A Rising Success or a Doomed Failure?

The Good, The Bad, and the Ugly of Energy Politics in Taiwan

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The Good Side

Ambitious Goals for RE and Carbon Reduction

The Good Side: Ambitious Goal for RE

Type of Renewables	Current Capacity (as of 15.11.2017)	Planned Capacity by 2025
Solar	1.286GW	20GW
Onshore Wind	0.682GW	1.2GW
Offshore Wind	0.136GW	5.5GW
Biogas	0.741GW	0.813GW
Geothermal	0GW	0.2GW

The Good Side: Ambitious Goal for RE

- ▶ The current goal of adding RE capacity is a significant improvement compared to that planned by the previous government.
- ▶ For example, between 2008 to 2016, under the former presidency, Taiwan only installed 750MW of solar.
- ▶ Since 2016, the number has doubled to more than 2GW. We expect to have 2.5 GW of solar end of the year and 4.5 GW by 2020.
- ▶ Before 2016, the 2030 goal for solar was just 6.2 GW; we are now aiming for 20 GW by 2025.

The Good Side: Ambitious Goal for RE

- ▶ Offshore wind also kicked off greatly since 2017.
- ▶ This year, all of the planned 5.5 GW before 2025 was given permission to build; they will be given either a FIT or auction scheme, depending on the exact year the manufactures really start their projects.
- ▶ A total of 11 GW of offshore wind potential is expected before 2030.

The Good Side: Ambitious Goal for ICE Phase Out

- ▶ The Taiwanese government has pledged to ban the sell of combustion engine motorcycles by 2035 and cars by 2040.
- ▶ In the near term, stricter air quality law will effectively phase out all the vehicles that are older than 15 to 20 years old, and also diesel cars.

The Good Side: Ambitious Goal for Carbon Emission Reduction

Sectors	2015 Carbon Emissions (Mtonne CO ₂ e)	2020 Carbon Emissions Goal (Mtonne CO ₂ e)	Carbon Emission Change 2015-2020	Carbon Emission Reduction Contribution
Energy	31.060	32.305	4.0%	-55.6%
Manufacture	147.775	146.544	-0.8%	55.0%
Transportation	37.279	37.211	-0.2%	3.0%
Building	59.077	57.530	-2.6%	69.1%
Agriculture	5.344	5.318	-0.5%	1.2%
Environment	4.109	3.496	-14.9%	27.4%
Carbon Emission Intensity of Electricity (kg CO ₂ e/ kWh)	0.528	0.492	-6.8%	NA

The Good Side: Ambitious Goal for Carbon Emission Reduction

- ▶ The goal of the energy transition process is to ultimately meet Taiwan's own Intended National Determined Contribution published in 2015, which stated that compared to 2005, annual carbon emission should be reduced by 20% by 2030 and 50% by 2050. This is a reduction of about 53 Million tonnes of CO₂ eq by 2030 and 133 Million tonnes by 2050.
- ▶ Compared to other East Asia countries, this goal is quite ambitious. For example, South Korea only promised to tame its annual carbon emission to around 535 Million tonnes of CO₂ eq by 2030, which is roughly the same level as 2005.



The Bad Side

Shenao Coal Power Plant, and the Myth of Reliable Baseload

Shenao Coal Power Plant, and the Myth of Reliable Baseload

- ▶ The coal power plant project Shenao was proposed and passed environment impact analysis this year.
- ▶ It would be completed no earlier than 2025; by then, renewable and other dispatchable sources (mainly conventional gas) will be more than enough to cover the peak demands and peak residual loads with a wide reserve margin.
- ▶ The government's stance of a "necessary, clean, and reliable" baseload contradicts to what a grid with a lot of VRE really needs: power system flexibility.
- ▶ It is our major concern that despite the ambitious goal of RE, the government and the major utilities still seem to not yet embrace the new paradigm of flexibility necessary for the energy transition.

Shenao Coal Power Plant, and the Myth of Reliable Baseload

- ▶ Under the myth of baseload, Shenao is portrayed as the unavoidable replacement of the halted project of NPP 4 nearby for some.
- ▶ In fact, Shenao was proposed when the former government assumed that NPP 4 could be finished.
- ▶ Later, after a perpetual construction and forever budget raise of nearly two decades, the government was forced to stop NPP 4 in 2015. By that time, Shenao was still an undetermined project then. Seeing this history, it is easy to tell that they were never being presented as a “either-or” pair of options.
- ▶ To the contrary, both projects would pose obstacles to flexible operations of the future grid, by 2025 and beyond. We need neither Shenao nor NPP 4, if a genuine energy transition is to be unfolded.



The Ugly Side

Nuke Lobbyists Fight Back along with RE Naysayers

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- ▶ The baseload myth continues to haunt energy discussions in Taiwan, and a small but determined group of nuclear advocates help to keep the myth at the core of discussion.
- ▶ To regain voices, the nuke lobbyists (usually are also RE naysayers) launched an anti-energy transition referendum recently.

Nuke Lobbyists Fight Back along with RE Naysayers

- ▶ Though they claim the referendum aims to “go green with nuclear”, and that the referendum also supports RE growth, the formal text of the referendum does not include any content regarding development of RE. It is merely a referendum that wishes to abolish the “nuclear phase out” article in the electricity act.
- ▶ Meanwhile, nuke lobbyists put much of their effort on bashing the predictable variability of solar and wind power. Advanced transition regions, South Australia for example, is depicted as having an unreliable grid due to having penetration of VRE.
- ▶ “VRE can never become baseload” is the main tune of these nuke advocates.

Nuke Lobbyists Fight Back along with RE Naysayers

- ▶ Former president from 2008 to 2016, Mr. Ma of the Chinese Nationalist Party (KMT), is the most well-known supporter for this referendum. He once famously claimed that Taiwan needs 60% of baseload by 2025; he envisioned a power system with 20% of nuke and 40% of coal.
- ▶ Interestingly, this scenario has 10% more coal on the grid than our current energy policy by 2025.
- ▶ Also, Mr. Ma never truly elaborated how a 20% nuke could be feasible. In fact, in his government energy policy plans released in 2015, there were scenarios that coal might constitute to nearly 50% of electricity by 2025, even if some nukes are kept on line.
- ▶ The reason of this “more nuke and coal” dilemma is, of course, his mistrust of renewable energy development.

Nuke Lobbyists Fight Back along with RE Naysayers

- ▶ Other nuke advocates propose a wide variety of scenarios, most ignore the socio-political, if not technical feasibility of life extension of NPP and extra plans for nuclear waste disposal.
- ▶ The historical mistreatments of nuclear wastes on indigenous lands are also overlooked by nuke advocates; in some cases they would even attack the indigenous people for being too greedy for asking reimbursement while opposing the nuclear waste.

The background features a white triangle pointing downwards, centered on a white background. The triangle is surrounded by abstract, overlapping green shapes in various shades of green, some with a fine grid pattern. The overall aesthetic is clean and modern.

A New Hope

Dim though it seems, 2018 might be the turning point for Energy
Transition in Taiwan

2018: The Turning Point for Energy Transition in Taiwan

Events that are or will take place this year:

- ▶ (Very likely) Solar capacity passed 2.5 GW.
- ▶ (Very likely) Coal consumption peak passed.
- ▶ (Likely) Carbon emission peak passed.
- ▶ (Almost certain) First nuclear reactor decommissioning at the end of the year.
- ▶ (Almost certain) Final legal deadline for extension application of reactor 2 of NPP 2 passed, effectively end the possibility of extending life of NPP 1 and 2.
- ▶ (Ongoing) Shipping of fuel rods of NPP 4 began. Once all the rods return to US, the dismantling of the project can begin around 2020.

2018: The Turning Point for Energy Transition in Taiwan

- ▶ Anti-energy transition referendum is highly unlikely to pass; besides Mr. Ma and his small group of followers, the main opposition party does not support the referendum. In fact, the party actually officially supports another anti-nuclear food (food from Fukushima district) referendum.
- ▶ Anti-nuclear sentiments in the KMT governed New Taipei city, where NPP 1,2, and 4 are located, is still strong. the major, Mr. Chu, explicitly refused to sign the petition of the referendum when asked about the issue on the city council. Mr. Ho, the major candidate of the party for the election to come in November, also stated similar stance on nuclear: no safety, no usage.
- ▶ It is therefore almost impossible to have a U-turn regarding with nuclear policies in Taiwan.
- ▶ Let alone the fact that nuke advocates would need at least 4.7 million votes that agree with their referendum to get it passed, a scale of mobilization still not yet being seen by the civil sector without help of the two major parties.



We Shall Overcome in November.

And regain initiative once more in December.