

# Glasgow COP-26: Japan and Australia Weigh their Energy Options

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**Abstract:** *The 26<sup>th</sup> Conference of the Parties to the UN Framework Convention on Climate Change, meeting in Glasgow in November 2021, attracted a high level of global attention because it was, in effect, a meeting uniquely tasked with finding a formula for human survival. This paper considers the proposals from Japan and Australia. Both accepted the need to achieve zero carbon emission by 2050, but neither offered realistic proposals for how that would be done, and the Japanese formula tied the move towards zero carbon to drastic expansion of its nuclear energy sector. This paper discusses the most recent Japanese government energy policy paper, with particular attention to the way that carbon and nuclear objectives are coordinated, and locates Japan and Australia in the context of the global division between pro- and anti-nuclear energy countries.*

Trade and Industry Minister Kajiyama Hiroshi's statement of intention to maintain coal-fired power plants, Brazil, for multiple reasons but especially the deforestation of the Amazon, and Australia, for Prime Minister Scott Morrison's refusal to acknowledge a link between climate change and the raging fires over large areas of his country, and for being "the world's third biggest fossil fuel exporter."

In 2021, both countries were represented by their Prime Ministers, Australia (as at Madrid two years earlier) by Scott Morrison, and Japan by Kishida Fumio, then only weeks in office. Both announced commitment to zero net carbon emissions by 2050, and both proposed interim targets for 2030, although neither committed to the steps by which they would reach either goal. Both were again awarded a dunce's cap prize, in the Australian case the grand "Colossal Fossil" award of overall distinction for "breathtaking climate ineptitude."<sup>2</sup>

## 1. Glasgow Fossils

One prize that both Japan and Australia were hoping not to be awarded at the COP-26 world conference in Glasgow is the one known as the "Fossil Prize," awarded by the global NGO Climate Action Network to the country or countries least committed to taking the steps necessary to avoid climate disaster.<sup>1</sup> In December 2019 at Madrid, both were reluctant recipients of the award, along with Brazil, at the opening day of COP 25: Japan, for then



**Hamaoka Nuclear Power Plant, Omaezaki, Shizuoka Prefecture, Japan.**

**This plant has not operated since May 2011 despite the building of a huge wall around it to protect against tsunamis.**

## 2. Climate Action and the 6<sup>th</sup> Energy Plan

Japan offered Glasgow a 46 per cent cut in carbon emissions over 2013 levels by 2030, with a vague suggestion that 50 per cent might be possible. Its position was spelled out in detail in the 6th Strategic Energy Plan, drawn up in August and formally adopted by cabinet on the very eve of Glasgow in October 2021.<sup>3</sup> The Strategic Plan set 2030 targets for renewables (“natural” energy sources) at 36 to 38 per cent (effectively doubling the 2019 target of 18 per cent), nuclear 20 to 22 per cent (unchanged), and thermal (gas, coal, oil, in other words fossil) 20, 19, and 2 per cent respectively. All these targets were problematic and fell short of what was needed.

For Australia, Morrison offered merely to achieve zero net carbon emissions by mid-century and in the interim, to 2030, to cut emissions by 26 to 28 per cent over 2005 levels (the same goal the country had set itself in 2015).<sup>4</sup> Furthermore, at the end of October 2021, Australia claimed to be on track to

“exceed this by up to 35 % below 2005 levels by 2030.”<sup>5</sup> However, both before and after Glasgow Morrison made clear his attachment to the fossil fuel industry. Furthermore, while the doubling of renewables and slashing of fossil fuel burning were commendable goals and a significant advance on targets set in 2019,<sup>6</sup> the experts consulted by the independent Climate Action Tracker insisted they were not enough, to be compatible with the 1.5C warming limit agreed at Paris in 2015 “a domestic greenhouse gas reduction of more than 60% below 2013 levels by 2030” [i.e. roughly double the Morrison offering] was necessary, and coal fired power would have to be shut down as a matter of urgency.<sup>7</sup>

Not only did the Japanese Strategic Plan call for retention of a substantial fossil fuel energy sector but it tied carbon and nuclear goals inextricably.<sup>8</sup> Tellingly, the goal of doubling of renewables (mostly solar and wind), meant a more than five-times increase in nuclear generation, from the current (2021) 4.9 per cent figure to 20 to 22 per cent by 2030, predicated principally on reopening of plants closed after the Fukushima 3.11 disaster.

Few if any of the countries at Glasgow came prepared for a debate on the pros and cons of nuclear power generation or understood that the projected 2030 target of 46 per cent carbon emission cut and 36-38 per cent “natural energy” (renewables) Japan brought to the Glasgow table depended on “20 to 22 per cent” of the energy grid being nuclear. In the name of climate change policy, in other words, Japan at Glasgow was submitting to the United Nations its plan for the large-scale revival of its nuclear industry.

Despite the Fukushima catastrophe (quake, tsunami, nuclear meltdown) of 2011, the vision of Japan as “plutonium superpower” that I wrote about in 2007 (enriching uranium, extracting, re-processing, and re-using plutonium from spent fuel, potentially for ever,

feeding its reactors MOX, mixed uranium and plutonium fuel) remains strong in governing circles in Tokyo.<sup>9</sup> The opposition, however, is also formidable and much more deep-rooted than it was in 2007 or 2011. Included in its ranks now are no less than three former Prime Ministers (Kan Naoto, Koizumi Junichiro, Hatoyama Yukio). For all three, needless to say, the Fukushima catastrophe of 2011 was pivotal in their changed stance.

### 3. Shutting and Opening

In the decade since Fukushima, a government and bureaucracy whose commitment to the nuclear is unshaken confronted a public terrified and traumatised by what happened then and the fear that it might happen again. By 2012, all 54 functioning nuclear reactors were shut down, reducing the sector from 30 per cent of national energy supply to zero. From 2015 governments set about gradual revival of the sector. Nine of the reactors were subsequently switched back on but as of 2021 they were supplying just 4.9 per cent of the nation's energy.

To attain the Strategic Plan's 2030 goal of 20 to 22 per cent nuclear, roughly 30 more reactors will have to resume (or commence) operation, including at least three currently under construction. To accomplish that, government will have to persuade a deeply sceptical public, carry out complex and expensive safety protocols, fight multiple judicial challenges, and extend the life of very old reactors shut down after Fukushima well beyond their planned 40 years of life. All in all, the "Strategic Plan" was absurdly optimistic, unrealistic.<sup>10</sup>

Adoption of the Plan would also call for a solution to three chronic nuclear industry problems: what to do with the nuclear-contaminated wastes from the country's reactors, including about 50-plus tonnes of

separated plutonium (albeit much of it is presently in British or French hands), what to do with the stockpile (said to be 19,000 tonnes) of reactor wastes piled up already to the brink of capacity at the existing reactor sites with no prospective long-term repository site, and what to do with the roughly one and a quarter million tonnes of polluted water (water used to cool the collapsed reactor cores) that has accumulated over the past decade in vast tanks along the Fukushima coast. More than one hundred tons of additional groundwater seeps daily through the reactor ruins, complicating and deepening the contamination problem.<sup>11</sup> The irradiated water contains highly toxic substances such as strontium-90, cobalt-60, ruthenium-106, and plutonium-239, plus a high volume of slightly less toxic tritium, whose radioactivity will nevertheless not degenerate for 123 years (ten half-lives).<sup>12</sup> The Government has announced plans to dilute this ever-growing pool and then pour it into the Pacific Ocean, gradually, over the coming 30 or so years. It remains to be seen, however, whether the global community, especially Korea and Pacific-fronting states, will tolerate this.

### 4. Global Context

The global debate on carbon that continued beyond the Glasgow tent throughout the meet was notable for the indications that the global nuclear industry viewed it as offering a possible way beyond prolonged nuclear industry stagnation. The case it put was expressed in simplest terms by an article in the *New York Times* which in August referred to nuclear as "a technology that has existed since the 1950s, produces no carbon dioxide and has killed fewer people than fossil fuels."<sup>13</sup>

What the *New York Times* or other nuclear advocates did not mention, however, was that world-wide the economics of nuclear power generation had shifted, perhaps decisively, over

the past decade as solar and wind costs plummet. The average cost (per megawatt hour) for nuclear power generation (including construction and maintenance) falls to the point where it is now about four times greater than that for solar or wind.<sup>14</sup> While the nuclear industry declined by 4 per cent in 2020, renewables (notably solar and wind), grew by 13 per cent. In 2002 there were 438 nuclear reactors functioning around the world, but by 2021 just 415.

With the nuclear proportion of global gross electricity generation declining from 17.5 per cent in 1996 to 10.1 per cent in 2020, the trend was clear: shrinkage of the nuclear energy sector and expansion of renewables. Solar and wind generation in Japan in 2020 accounted for around 8 per cent of the national energy grid, nearly double the nuclear component.<sup>15</sup>

Japan's ruling Liberal-Democratic Party government, in office since December 2012, insists on a path to energy self-sufficiency that ignores or belittles market considerations,<sup>16</sup> and includes a central role for the most dangerous substance known to humanity. Its climate change policy is also a market-defying, plutonium-based, nuclear energy-promotion policy.

It is not only Japan that sets aside economic factors in deciding its nuclear policy. In 2021, China, Great Britain and France (among others) all announced substantial renewed commitment to nuclear generation. The United States, though still No 1 civil (and also military) nuclear power, shows little enthusiasm for the kind of nuclear surge recently announced by other countries. Though much of its plant is relatively old (average over 40 years) it still produced twice as much electricity in gigawatt hours (789,919 GWhr) as the second country, China, (344,748 GWhr) or third, France (338,671 GWhr).<sup>17</sup>

China, the world's most aggressive nuclear

builder, currently has 52 reactors operational and 19 under construction, compared to the United States with 93 functioning and two under construction or Russia with 38 reactors supplying 20.6 per cent of its energy.<sup>18</sup> However, China recently announced intent to construct 150 new reactors in the next 15 years, more than the rest of the world has built in the past 35.<sup>19</sup> China General Nuclear Power Corporation has set a long-term goal of generating 200 gigawatts by 2035, "enough to power more than a dozen cities the size of Beijing."<sup>20</sup> Those are indeed dramatic figures, but they must be put in context. According to the country's National Energy Administration, in 2020 just 2 gigawatts (GW) of new nuclear energy capacity was connected to the grid, compared to 72 GW of wind power, 48 GW of photovoltaics and 13 GW of hydropower.<sup>21</sup> Although 37 of the 63 reactors built world-wide during the 2010-2020 decade were Chinese, in 2020 just two new reactors were added to China's grid. It appears to have abandoned hope of developing a significant nuclear export sector and it still draws just 4.9 per cent of its energy from nuclear as compared to 15.1 per cent from wind and 16.6 per cent from solar.<sup>22</sup>

Furthermore, the rapid expansion in the sector raises other problems. The Taishan reactor complex just 140 kilometres from Hong Kong, in operation from December 2018 and supplying electricity to four million households, had to be temporarily shut down in mid-2021 following a leakage of radioactive gases, with American experts being called in from Westinghouse to advise and assist in its resolution.<sup>23</sup>

While one group of EU countries, led by France and Finland, wants nuclear energy to be formally defined as low carbon and therefore eligible for easy term, "sustainable" finance,<sup>24</sup> another, (Austria, Denmark, Germany, Luxemburg, Portugal), opposes such a move and indicates readiness to resist it through the courts.<sup>25</sup> Germany, on the other hand, is



committed to switching off three of its remaining six reactors in December 2021 and the remaining three during 2022, thus becoming a post-nuclear state. Belgium is to follow suit in 2025. Italy voted 95 per cent against nuclear energy in a June 2011 referendum and has no plan to revisit that choice.

Even for France, with currently 56 reactors producing just under 70 per cent of its energy needs, enthusiasm for the nuclear has long been in decline. When Emmanuel Macron was candidate for the presidency in 2017 he campaigned on (among other things) the pledge to cut the nuclear from around 70 per cent of the national grid as it then was to 50 per cent. That became national policy under his administration but, opening his campaign for re-election four years later, he took a very different stance, declaring

"Everything that makes France an independent, listened to and respected power is based on the nuclear industry."<sup>26</sup>

As the world gathered in Glasgow to debate the climate crisis, he declared in no uncertain terms that France "would rededicate itself to atomic power"<sup>27</sup> (presumably reversing his 2017 call for cut-back). For the first time in decades (there has been no new reactor construction in France since 1999) France would construct a series of large nuclear power plants. The grid operator RTE is said to have 14 "next generation" plants awaiting go-ahead.<sup>28</sup> However, whether any of this would actually happen is problematic and, in 2021-2, unlike 2017, Macron's governing coalition includes the Green Party and, the economic case for renewables over nuclear is much stronger than before. Much will hang on the outcome of the April 2022 presidential election.

More-or-less simultaneously the British government commissioned the first of three conventional new nuclear plants and Rolls-Royce raised nearly 500 million pounds in public and private sector funds to start building a "small modular reactor,"<sup>29</sup> even intervening to press the nuclear cause upon Australia, declaring that "the AUKUS security agreement between Australia, Britain and the US [announced in September 2021] paves the way for Australia to embrace small, modular nuclear reactors."<sup>30</sup> Chiming with this blatant nuclear campaigning, Australian national radio posted a nuclear briefing also heavily tilted towards promotion of the so-far non-existent "small modular," "advanced" nuclear technology.<sup>31</sup>

Despite the sharp division on nuclear energy between the French and German-led coalitions, independent civil and scientific organizations incline towards the view that nuclear energy generation is "too slow, too expensive, too dangerous, hasn't resolved the lethal waste problem and presents a potentially disastrous security and proliferation risk."<sup>32</sup> The Lazard banking group notes the cost of solar fell 89 per cent over the past decade, at an average rate of 13 per cent annually and expects that trend to continue, even if slowing, while the reverse is the case with nuclear energy.<sup>33</sup> The World Nuclear Status Report concludes that

"nuclear power appears increasingly as an outdated, incompatible and expensive technology that cannot compete in a decarbonized energy sector with the range of cheaper renewable energy sources."<sup>34</sup>

Dr Gregory Jaczko, former chairman of the U.S. Nuclear Regulatory Commission (2009-2012) says nuclear projects should only be supported

"if they can compete with renewables and

storage on deployment cost and speed, none [can do that] today”.<sup>35</sup>

The case for nuclear is often presented in terms of its reliability – unaffected by times when the sun does not shine and the wind does not blow – but the advances in battery technology (the giga battery) have shrunk, perhaps to the point of negating, that advantage. The Joe Biden administration’s Department of Energy projects a US electricity grid that by 2035 would be 40 per cent solar powered in a sector employing 1.5 million people,<sup>36</sup> and the Australian state of South Australia, having adopted renewable natural (basically solar) energy to power a remarkable 62 per cent of its grid, now boasts the most reliable system of energy generation and storage and exports surplus energy to other states within the Australian commonwealth.<sup>37</sup>

History in coming years will resolve the difference between the “French” view, as articulated at the European Parliament in Strasbourg by the EU’s Environment Commissioner, Kadri Simson, that

“right now nuclear power is the most prevalent low-carbon source providing the baseload for the stability of the electricity grid ... [and] also helps reduce reliance on imported fossil fuels, central to energy stability and security, now boasts the most reliable system for energy generation and battery storage and exports”<sup>38</sup>

and the “German” view, as articulated on the occasion of the 10<sup>th</sup> anniversary of Japan’s Fukushima disaster by the German Environment Minister, Svenja Schulze, that

“No climate activist should rely on nuclear power as a solution ... Whoever bets on nuclear power is making an expensive mistake and detracts from what’s now really necessary in the climate crisis, namely the massive expansion of wind and solar power.”<sup>39</sup>

## 5. State Policy/Civic Challenge

Setting aside economic factors, it is clear that nuclear power is high-risk, particularly vulnerable in quake-prone Japan to a Fukushima-type disaster, and that it produces highly toxic wastes that must be kept cool (requiring the provision of electric power) and guarded for thousands of years against possible terror attack or environmental catastrophe, so the obvious question is why governments continue to promote it. Why do they insist on presenting the nuclear, especially the unproven “advanced nuclear” or “small module” reactor as the very “zero carbon” solution the climate-anxious world is seeking? British analysts Andy Stirling and Philip Johnstone argue that “great” power states must build or maintain a civilian nuclear industry despite its economic irrationality because it is essential to the nuclear weapon industry. It is a connection on which French president Macron has been quite explicit, declaring in a December 2020 speech

“without civil nuclear power, no military nuclear power, and without military nuclear power, no civil nuclear power.”<sup>40</sup>

Despite “spiralling civil nuclear construction delays, technological failures, bankruptcies, and fraud,” states intent upon “greatness” strive to underpin military capability with maximum investment in civil nuclear industry.<sup>41</sup> Closely related to this is the “prestige” (*La*

*Grandeur*) factor, as articulated by President Macron's insistence that France be "listened to and respected." Japan and Australia may both also be susceptible to such delusions.

In the Japanese case the attraction of possible uranium/plutonium autonomy is evident. Japan is one of the very few non-Security Council countries (along with Israel and presumably India and Pakistan) that is committed to the full nuclear cycle. Prime Minister Kishida stated when campaigning for office in 2021 that he saw the reprocessing of spent fuel as imperative because the existing reactor sites have reached or are on the brink of reaching their storage capacity.<sup>42</sup> The plutonium extracted in that process, mixed with uranium, yields MOX reactor fuel, thus feeding a virtuous cycle.

As the Glasgow confab was winding down, the UN calculated that the world was "still on track for 2.7 centigrade warming above pre-industrial temperatures by 2100 despite dozens of new emissions reduction pledges already made."<sup>43</sup> To have a realistic chance of keeping climate change within the 1.5C limit, carbon emissions will have to be cut by 7 per cent each year to the end of this decade. Yet both Japan and Australia resisted Glasgow pressure to significantly increase their 2030 emissions target. Their shared commitment to continued coal-fired generation and (in Kishida's case) to a hugely expanded nuclear generation program escaped serious scrutiny at Glasgow and Prime Minister Morrison had scarcely set foot in his country on return from Scotland than he denied having made any fresh commitments at all. His deputy Prime Minister, Barnaby Joyce, pointedly declared that his governing coalition party, the Nationals, had not signed the Glasgow Pact.<sup>44</sup> It was clear that, in defiance of global opinion, Australia intended to continue exporting coal for decades to come.<sup>45</sup> Both countries would remain climate dunces.



**Coal for export, Newcastle, Australia, October 2021**

For both, national policy priorities lay elsewhere. For the October 2021 general election in Japan, Kishida's ruling Liberal Democratic Party adopted a campaign pledge to double, or "more than double," military expenditure. A doubling of the 2021 \$49 billion (to \$98 billion) defense budget would mean Japan becoming world number three military power, below only the US and China.<sup>46</sup> At roughly the same time, Morrison committed Australia to one of the largest military projects of recent world history - the construction at astronomical cost (and with the cooperation of both the United States and Great Britain over the coming several decades) of eight nuclear-powered submarines.

Only when both countries move beyond such military paramount (carbon intensive) goals and transcend their coal and uranium dependence can they address climate policy with the necessary seriousness. It remains to be seen whether Japanese and Australian social movements will be able to impress upon their governments the urgency of doing so as the world heads towards COP-27 at Sharm el Shaikh in Egypt in November 2022.

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## Notes

<sup>1</sup> "Fossil of the Day," 03 December 2019.

<sup>2</sup> Oliver Millman, "Climate Action Network give unwanted prize of worst country at the talks to Australia for its 'breathtaking ineptitude'," *The Guardian*, 13 November 2021

<sup>3</sup> METI, "[Dairokuji enerugi kihon keikaku](#)," October 2021.

<sup>4</sup> Australian Department of Industry, Science, Energy, and Resources, "[Australia's Emissions Projections, 2021](#)."

<sup>5</sup> Australian Department of Industry, Science, Energy and Resources, "[Affirming Australia's net zero emissions by 2050](#)."

<sup>6</sup> Mari Yamaguchi, "Japan raises emissions reduction target to 46% by 2030," Associated Press, 22 April 2021.

<sup>7</sup> "1.5C consistent benchmarks for enhancing Japan's 2030 climate target," Climate Action Tracker, 4 March 2021, [2021\\_03\\_CAT\\_1.5C-consistent-benchmarks\\_japan\\_NDC.pdf](#)

<sup>8</sup> Sato Kazuo, "Sosenkyo enerugi seisaku no kiro," *Shukan kinyobi*, 15 October 2021, p. 23.

<sup>9</sup> Gavan McCormack, "Japan as a plutonium superpower," *Asia-Pacific Journal: Japan Focus*, December 2007.

<sup>10</sup> California Institute of Technology's Nathan Lewis has estimated that to accomplish a nuclear-driven carbon-free global energy grid by 2050 a reactor would have to be built every two days for the next four decades (quoted in Antonio Regalado, "Re-inventing the leaf," *Scientific American*, October 2010).

<sup>11</sup> Osamu Tsukimori and Satoshi Sugiyama, "Gov't OK's discharge of Fukushima plant water into sea," *Japan Times*, 13 April 2021.

<sup>12</sup> Ian Fairlie, "[Should TEPCO/Japanese government dump tritium contaminated water from Fukushima into the sea?](#)" 18 September 2019.

<sup>13</sup> Spencer Bokart-Lindell, "Is there a nuclear option for stopping climate change," *New York Times*, 26 August 2021. For a response - not published by the *Times* - see Amory B. Lovins,



“‘Low carbon’ misses the point,” Beyond Nuclear International, 3 October 2021.

<sup>14</sup> Asuka Jusen, “Genpatsu wa ondanka taisaku ni narienai – senshingata genshi ro o kosuto ga awazu, beikoku e mo tonyu ga nai,” *Ronza*, 25 May 2021.

<sup>15</sup> The gap can only widen through the remainder of this decade to 2030 as costs are expected to fall by over 30% and \$100 billion investment flows to wind and solar. (Lydia Woellwarth, “Japan invests in wind and solar power plants,” *Energy Global*, 19 August 2020).

<sup>16</sup> “Taiyoko hatsuden, 30 nen jiten de genpatsu yori yasuku, keisansho shisan,” *Nihon keizai shimbun*, 12 July 2021.

<sup>17</sup> World Nuclear Organization, “[Nuclear share figures, 2010-2020.](#)”

<sup>18</sup> Ibid. And compare Russia with 38 reactors supplying 20.6 per cent of its energy needs.

<sup>19</sup> Dan Murtaugh and Krystal Chia, “China’s climate goals hinge on a \$440 billion nuclear buildout,” Bloomberg, 3 November 2021.

<sup>20</sup> Ibid.

<sup>21</sup> Stuart Braun, “Nuclear power: downward trend ahead of climate summit,” *Deutsche Welle*, 4 October 2021.

<sup>22</sup> “China overtook France in nuclear power generation,” World Nuclear Industry Status Report, 2 June 2021.

<sup>23</sup> Isabelle Feng, “EDF a sous-estime la culture du secret du regime chinois,” *Le Monde*, 19 November 2021.

<sup>24</sup> “Ten EU nations call for nuclear’s inclusion in taxonomy,” World Nuclear News, 11 October 2021. (The countries: Bulgaria, Croatia, Czech Republic, Finland, France, Hungary, Poland, Romania, Slovakia, Slovenia)

<sup>25</sup> Nikolaus J. Kurmayer, “Austria ready to sue EU over nuclear’s inclusion in green finance taxonomy,” Euractiv.com, 17 November 2021.

<sup>26</sup> “Macron stresses importance of nuclear energy for France,” *World Nuclear News*, 9 December 2020.

<sup>27</sup> Bevan Shields, “Macron goes nuclear to cut emissions,” *Sydney Morning Herald*, 10 November 2021.

<sup>28</sup> Shields, cit.

<sup>29</sup> Latika Bourke, “Industry says reactors are nearly ready,” *Sydney Morning Herald*, 12 November 2021.

<sup>30</sup> Bourke, ibid.

<sup>31</sup> Antony Funnell, “Future tense – an update on nuclear energy,” ABC, Radio National, Podcast, 3 October 2021.

<sup>32</sup> Linda Pentz Gunter, “Hidden agenda – the unspoken argument for more nuclear power,” Beyond Nuclear International, Online, 31 October 2021.

<sup>33</sup> “‘Wind and solar kill coal and nuclear on costs,’ says latest Lazard report,” *Reneweconomy.com.au*, 8 November 2019.

<sup>34</sup> [World Nuclear Industry – Status Report 2020](#), p. 283 See also David Vetter, “More nuclear power isn’t needed, so why do governments keep hyping it?” *Forbes*, 6 August 2021.

<sup>35</sup> Quoted in Pete Roche and Dr Ian Fairlie, “[Can Small Modular Reactors and/or Advanced Nuclear Reactors Help Tackle Climate Change?](#)” 26 September 2021.

<sup>36</sup> Ella Nilsen, “Biden administration says solar energy has the potential to power 40% of US electricity by 2035,” CNN, 8 September 2021.

<sup>37</sup> Peter Hartcher, "Morrison is out of excuses, and time, to act on emissions," *Sydney Morning Herald*, 2 October 2021.

<sup>38</sup> Frederic Simon and Nelly Moussu, "EU's Simson calls for 'gearshift' in nuclear power investments," 2 December 2021.

<sup>39</sup> America Hernandez, "Europe's sputtering nuclear renaissance," Politico (Europe), 1 April 2021.

<sup>40</sup> Lisa Louis, "Do France's plans for small nuclear reactors have hidden agenda?" *Deutsche Velle*, 22 October 2021.

<sup>41</sup> Andy Stirling and Phil Johnstone, "Australian-UK-US nuclear submarine deal exposes civilian-military links," *Bulletin of Atomic Scientists*, 9 November 2021.

<sup>42</sup> "Jimin, Kishida-shi kaku nenryo saikuru 'iji shinakereba ikenai'," *Asahi Shimbun*, 13 September 2021

<sup>43</sup> Quoted in Nick O'Malley and Miki Perkins, "Australia urged to lift 2030 targets," *Sydney Morning Herald*, 10 November 2021.

<sup>44</sup> Sarah Martin, "Barnaby Joyce says Nationals did not sign COP26 pact and Australia is 'happy with targets'." *The Guardian*, 15 November 2021.

<sup>45</sup> National news, ABC TV, 16 November 2021.

<sup>46</sup> LDP election pledge, 2021, "2 pasento ijo mo nento ni boei kankei hi no zogaku." See also "Boeihi GDP 2-pasento cho no jimin seisakushu, kanbo fukuchokan 'hitsuyo yosan kakuho wa kiwamete juyo'," *Sankei Shimbun*, 13 October 2021.