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Monitored this issue:

Nuclear power as a source of environmental injustice

Laura Tanguay and M. V. Ramana

Decades of experience with nuclear power shows that putative climate benefits of nuclear energy do not justify the significant social, cultural, and environmental costs it imposes.[2] Nevertheless, the nuclear industry has utilized the acceleration of climate change to promote atomic power. More recent studies have demonstrated that the financial costs and long timelines associated with nuclear energy render the technology an infeasible option to deal with climate change,[3] especially in view of the warnings from the Intergovernmental Panel on Climate Change that global greenhouse gas emissions have to be drastically reduced in the next few years and decades.

Over the same period as the multiple facets of the climate crisis have become more apparent, there has been a parallel growth in the recognition of the importance of incorporating considerations of environmental justice in evaluating possible ways to deal with climate change. The term environmental justice dates back to social movements of the 1980's in the United States, in particular to movements opposing the disposal of toxic waste materials in mainly African-American, underprivileged neighbourhoods.[4] Since then, the concept has been applied widely, expanding to encompass similar disproportionate impacts on disempowered communities resulting from land-use propositions and energy infrastructures, resulting in the concepts of energy justice and climate justice becoming more prominent.

Producing nuclear power necessarily imposes environmental injustices, in large part due to the radioactive nature of the waste materials produced at each step of the nuclear fuel chain. Historically, these injustices have disproportionately impacted disempowered communities. Whether it is during routine operation or in the event of an accident, the communities that carry the main burdens of nuclear power are "geographically remote, economically marginal, politically powerless".[5] Despite lip service to avoid such practices, current policy makers continue to target such communities.

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[1] This article draws on Johanna Höffken and M. V. Ramana, "Nuclear Power and Environmental Injustice," *WIREs Energy and Environment* 13, no. 1 (January 2024): 1–7, https://doi.org/10.1002/wene.498.

[2] Brice Smith, *Insurmountable Risks: The Dangers of Using Nuclear Power to Combat Global Climate Change* (Takoma Park, MD: IEER Press, 2006); Natalie Kopytko and John Perkins, "Climate Change, Nuclear Power, and the Adaptation–Mitigation Dilemma," *Energy Policy* 39, no. 1 (January 2011): 318–33, https://doi.org/10.1016/j.enpol.2010.09.046; M. V. Ramana, *Nuclear Is Not the Solution: The Folly of Atomic Power in the Age of Climate Change* (London: Verso Books, 2024).

[3] Amory B. Lovins, "Does Nuclear Power Slow Or Speed Climate Change?," *Forbes*, November 18, 2019, sec. Energy, https://www.forbes.com/sites/amorylovins/2019/11/18/does-nuclear-power-slow-or-speed-climate-change/.

[4] Robert D. Bullard, *Dumping in Dixie: Race, Class, and Environmental Quality* (Boulder: Westview Press, 1990); Robert Doyle Bullard, *Unequal Protection: Environmental Justice and Communities of Color* (Sierra Club Books, 1994).

[5] Jinyoung Park and Benjamin K. Sovacool, "The Contested Politics of the Asian Atom: Peripheralisation and Nuclear Power in South Korea and Japan," *Environmental Politics* 27, no. 4 (July 4, 2018): 686, https://doi.org/10.1080/09644016.2018.1439436.

An example of such targeting exists in Canada, where both authors reside. In the province of Ontario, Canadian Nuclear Laboratories wants to build what it calls a “near-surface disposal facility” to bury low level radioactive waste. The chosen site is located on the unceded lands of the Algonquin peoples, close to the Ottawa River. Despite substantial opposition from the majority of the Algonquin nations, the Canadian Nuclear Safety Commission approved the proposal in January 2024.[6]

Although the Canadian government talks about reconciliation, and is a signatory to the United Nations Declaration on the Rights of Indigenous People (UNDRIP), the opposition of the site from the vast majority of Algonquin communities was not deemed important enough to relocate the project. Nor is it in line with UNDRIP: Article 29(2) of the declaration states that no storage or disposal of hazardous materials shall take place in the lands or territories of indigenous peoples without their free, prior and informed consent.[7] Ten out of eleven Algonquin communities whose unceded territory the proposed site is located on did not provide their consent for the “near-surface disposal facility” to be built there. This is just one example of how the costs and risks of nuclear power disproportionately affect economically and politically marginalized communities. In addition to such distributive iniquities, the nuclear industry has historically not even recognized some of these impacts, and disenfranchised and excluded communities from speaking up about their experiences. A unique feature of nuclear power is the long-lived nature of the hazard from radioactive wastes, including some substances that have not been present on the Earth prior to the dawn of the nuclear age in 1945. This contributes to intergenerational injustice, as future generations of human beings will be exposed to risks from nuclear power plants that will offer no benefits to them. Considering the environmental injustices associated with nuclear power—historically, currently, and those projected for the future—it cannot be seen as part of a responsible or sustainable clean energy system.

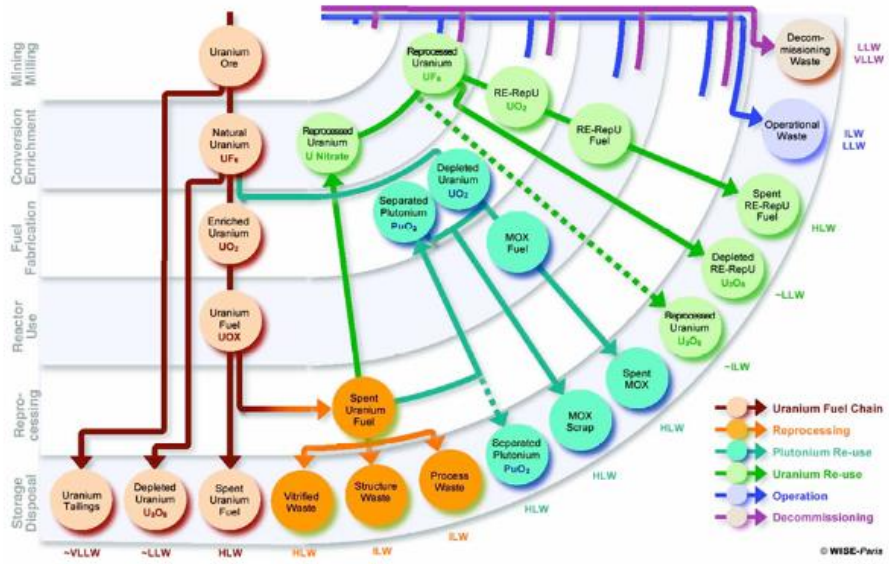

Figure 1: Generation of different radioactive-waste streams by nuclear power in France. Source: WISE-Paris[7]

[6] Laura Tanguay, “Contentious Nuclear Waste Site Approved despite First Nations’ Opposition,” *The Hill Times*, February 12, 2024, https://www.hilltimes.com/story/2024/02/12/contentious-nuclear-waste-site-approved-despite-first-nations-opposition/410758/.

[7] United Nations, “UN Declaration on the Rights of Indigenous Peoples,” OHCHR, 2008, https://www.ohchr.org/en/indigenous-peoples/un-declaration-rights-indigenous-peoples.

Nuclear power FUEL Chain

Producing nuclear energy requires a long chain of processes, both before a nuclear reactor actually generates electricity and well after the reactor has stopped operating. This chain of processes produces multiple streams of radioactive waste materials, which is illustrated in Figure 1 for the case of France. These waste streams range in the concentrations of radioactive materials contained in them, from very low values in Very Low Level Waste (VLLW) all the way to extremely large values in High Level Waste (HLW).

The chain starts with mining uranium. Uranium, being radioactive, is never found in isolation but alongside many other radioactive elements that are produced when uranium decays. Examples include radium-226, polonium-210, and, especially, radon-222 (a gas) and its decay products ("daughters").

In the next step of the chain, the mined ore is chemically processed to separate the uranium from other parts of the ore. This process creates large quantities of wastes, usually called mill tailings, because the typical amount of uranium in the ore is quite low. These mail tailings are often contaminated with toxic heavy metals, such as molybdenum, arsenic and vanadium, and with radioactive materials, principally thorium-230 and radium-226.

An example of such a toxic legacy is described in Leanne Leddy's *Serpent River Resurgence: Confronting Uranium Mining at Elliot Lake*. During the Cold War uranium boom, the nuclear industry established twelve uranium mines in Anishinaabe territory and the settler town of Elliot Lake in Northern Ontario. Although the last uranium mines closed in the 1990s, Serpent River First Nation continues to have to deal with the mill tailings that require perpetual monitoring, and the legacy of a sulphuric acid plant that processed uranium from these mines.

Much of the uranium that has been mined around the world has come from areas occupied by Indigenous peoples, including in Australia, in Canada, in India, and in the United States.[8] Indigenous peoples have suffered incalculable health consequences as a result of these activities, for example, the Navajo nation in the United States.[9]

The process has also been related to what scholars have termed "radioactive colonialism",[10] or "nuclear colonialism",[11] which Daniel Endres has described as "a system of domination through which governments and corporations target indigenous peoples and their lands to maintain the nuclear production process".[12]

All of this uranium eventually goes into nuclear power plants in the form of fuel rods

[8] Valerie Kuletz, *The Tainted Desert: Environmental Ruin in the American West* (New York: Routledge, 1998); Peter H. Eichstaedt, *If You Poison Us: Uranium and Native Americans* (Santa Fe, N.M.: Red Crane Books, 1994); Peter van Wyck, *The Highway of the Atom* (Montreal: McGill-Queen's University Press, 2010); Jim Green, "Radioactive Waste and the Nuclear War on Australia's Aboriginal People," *The Ecologist*, July 1, 2016, http://www.theecologist.org/News/news_analysis/2987853/radioactive_waste_and_the_nuclear_war_on_australias_aboriginal_people.html; Prerna Gupta, "Reason and Risk: Challenging the Expert and Public Divide in the Risk Debates on Uranium Mining in India," in *Making the Unseen Visible: Science and the Contested Histories of Radiation Exposure*, ed. Jacob Darwin Hamblin and Linda M. Richards (Corvallis, USA: Oregon State University Press, 2023).

[9] Doug Brugge, Timothy Benally, and Esther Yazzie-Lewis, eds., *The Navajo People and Uranium Mining* (Albuquerque: University of New Mexico Press, 2007).

[10] Winona LaDuke and Ward Churchill, "Native America: The Political Economy of Radioactive Colonialism," *The Journal of Ethnic Studies* 13, no. 3 (Fall 1985): 107–32.

[11] Kuletz, *The Tainted Desert*.

[12] Danielle Endres, "The Rhetoric of Nuclear Colonialism: Rhetorical Exclusion of American Indian Arguments in the Yucca Mountain Nuclear Waste Siting Decision," *Communication and Critical/Cultural Studies* 6, no. 1 (March 1, 2009): 40, https://doi.org/10.1080/14791420802632103.

loaded into the core of the reactors. Once the fuel has produced the amount of energy that can be economically extracted, the radioactive spent fuel is stored in pools of water for cooling. If all goes according to plans, this would be followed by these materials being buried in a storage facility of some kind.

Even if these wastes are stored in geological repositories, the proposed management method that is currently most widely accepted, there is no way of knowing whether they will prevent radioactive materials leaking out into the water and earth over the epochal time periods for which they will remain hazardous.[13]

But not all of the radioactive materials produced in a nuclear reactor goes into a repository. The nuclear fission process also produces gaseous and liquid elements that are released into the environment. Such liquid and gaseous wastes include radioactive materials such as tritium,[14] a radioactive isotope of hydrogen, and noble gases like Argon-41.

Some countries like France do not store the irradiated spent fuel from reactors as such. Instead, they chemically process this spent fuel and extract plutonium.[15] This plutonium is to be used to fuel other reactors, but there is also the danger that it can be used to make nuclear weapons.

Reprocessing also has a major impact on the problem of dealing with radioactive waste. The chemical process used results in multiple radionuclides being extracted from the solid spent fuel and added to liquid and gaseous waste streams. Because of the huge volumes of these waste streams, they are often released into the atmosphere or water bodies like oceans and rivers.[16]

Dealing with all of these wastes is problematic because they are radioactive. Exposure to radiation is hazardous to health, even at low levels.[17] Therefore, when people come into contact with these wastes, they are at higher risk of developing cancers and a range of other health effects. A particular complication is that some of these radioactive substances have extremely long half-lives, and remain hazardous for hundreds of thousands of years.

All of these environmental impacts are made worse by the inherent risk of severe accidents associated with nuclear facilities. Such accidents could result in releases of radioactive materials into the biosphere, as exemplified by Chernobyl and Fukushima, as well as a host of others that came close to such an outcome.[18] Because of the inherent technical characteristics of nuclear power

[13] M. V. Ramana, "Technical and Social Problems of Nuclear Waste," *Wiley Interdisciplinary Reviews: Energy and Environment* 7, no. 4 (August 2018): e289, https://doi.org/10.1002/wene.289.
[14] Arjun Makhijani, *Exploring Tritium Dangers* (Washington, D. C.: Politics & Prose, 2023).
[15] "Plutonium Separation in Nuclear Power Programs: Status, Problems, and Prospects of Civilian Reprocessing Around the World" (Princeton: International Panel on Fissile Materials, 2015), http://fissilematerials.org/library/rr14.pdf.
[16] NRPA, "Discharges of Radioactive Waste from the British Reprocessing Plant near Sellafield" (Nowegian Radiation Protection Authority, 2002); "Plutonium Separation in Nuclear Power Programs: Status, Problems, and Prospects of Civilian Reprocessing Around the World."
[17] Jan Beyea, "The Scientific Jigsaw Puzzle: Fitting the Pieces of the Low-Level Radiation Debate," *Bulletin of the Atomic Scientists* 68, no. 3 (2012): 13–28; National Research Council, *Health Risks from Exposure to Low Levels of Ionizing Radiation : BEIR VII, Phase 2* (Washington, D.C.: National Academies Press, 2006), http://www.loc.gov/catdir/toc/ecip066/2006000279.html.
[18] Kate Brown, *Manual for Survival: A Chernobyl Guide to the Future* (New York: W.W. Norton & Company, 2019); David Lochbaum et al., *Fukushima: The Story of a Nuclear Disaster* (New York: New Press, 2014); Georgui Kastchiev et al., "Residual Risk: An Account of Events in Nuclear Power Plants Since the Chernobyl Accident in 1986" (Brussels: The Greens/European Free Alliance, 2007).

plants first clarified by sociologist Charles Perrow,[19] it is impossible to predict in advance what kind of accident sequences could occur. All nuclear plants, small and large, can undergo accidents, which could result in widespread radioactive contamination.

Conclusion

From its inception, nuclear power has been critiqued extensively, not only on techno-economic grounds but also regarding the manifold social and environmental injustices this technology is prone to bring about. None of the injustices sketched above should be surprising. The nuclear enterprise is firmly anchored within a growth-oriented, techno-economic paradigm, in which profits are privatized and costs and risks are socialized. Those who promote nuclear power as the answer to the pressing challenges of climate change are often those who disproportionately benefit from such a system.[20] For the rest of us, this history of injustices and the inevitability of more of the same if nuclear power were to expand globally should be a strong reason to reject this option as a way to deal with climate change.

Australia's next election will be a referendum on nuclear power

Jim Green

Australia's conservative Liberal/National Coalition parties, currently in opposition, are promising to build one or more nuclear power reactors at seven sites around Australia if they win the next federal election, expected to be held in May 2025.

Nuclear power has been illegal in Australia since 1998. The legal ban has been maintained by several Coalition governments since then, and the ban is supported by the current Labor government.

For the first time in decades, nuclear power will be a prominent election issue: both Labor and the Coalition are framing the election as a referendum on nuclear power. A parliamentary inquiry is currently investigating the Coalition's nuclear plans.

According to the Coalition, Australia cannot meet the goal of net-zero carbon emissions by 2050 without nuclear power. That claim is disputed, as is the Coalition's claim to be serious about climate change abatement.

The Coalition has long been infested with far-right, anti-renewables, pro-fossil fuels, science-denying ideologues and that infestation was reflected in government policy when the Coalition was in office from 1996–2007 and 2013–2022.

Former Coalition Prime Minister Malcolm Turnbull — a moderate conservative who led the Coalition from 2015-2018 due to the ineptitude of his far-right predecessor Tony Abbott — says the "science denying" element in the Coalition is "crazy, and to some extent getting crazier". Turnbull says the Coalition's nuclear policy is "bonkers", that current Coalition leader Peter Dutton is a "thug" who says "stupid things" about nuclear power, and that nuclear power's only utility is "as another culture war issue for the right-wing angertainment ecosystem".

[19] *Normal Accidents: Living with High Risk Technologies* (New York: Basic Books, 1984).

[20] M. V. Ramana and Cassandra Jeffery, "Bill Gates and Techno-Fix Delusions," *Against the Current*, October 2022, https://againstthecurrent.org/atc220/bill-gates-and-techno-fix-delusions/.

Culture-war conservatives in the Coalition promote nuclear power in the hope of fostering division within the Labor Party, the trade unions and the environment movement. But the only divisions now apparent are within the Coalition. One current Coalition MP says the nuclear policy is "madness on steroids", another says the Liberal and National Party rooms are "in a panic" about the nuclear policy and "they don't know what to do", and another echoes Malcolm Turnbull's view that the nuclear policy is "bonkers".

Fossil fuels

John Hewson, a federal Liberal Party leader in the 1990s, says the Dutton opposition has become "ridiculous" with its pro-nuclear, anti-renewables stance which is economic "nonsense", and that Dutton may be promoting nuclear "on behalf of large fossil-fuel donors knowing nuclear power will end up being too expensive and take too long to implement, thereby extending Australia's reliance on coal and natural gas".

The Coalition claims to be serious about reducing greenhouse emissions but it opposes the Labor government's target of 82% renewable electricity supply by 2030 (a doubling of current renewable supply) and wants to greatly expand gas and prolong the use of coal. The Nationals are calling for a moratorium on the rollout of large-scale renewables.

At the UN COP28 climate conference in December 2023, the Labor government joined 120 countries in backing a pledge to triple renewable energy and double the rate of energy efficiency by 2030 — a pledge opposed by the Coalition. The Coalition promises to sign Australia up to the COP28 pledge to triple nuclear energy generation by 2050.

Expanding and prolonging the use of fossil fuels isn't a bug in the Coalition's energy policy. It's a feature.

The seven sites targeted for nuclear reactors are the sites of operating or shuttered coal power plants. Ironically, the owners of the sites have no interest in a coal-to-nuclear transition. They are planning the retirement of their ageing and increasingly uneconomic coal plants and they are building or planning renewable energy and storage projects:

* AGL is developing coal and gas power station sites into low-emissions industrial energy hubs. AGL chief executive Damien Nicks warns the nuclear debate risks derailing critical investment in the energy transition and says: "There is no viable schedule for the regulation or development of nuclear energy in Australia, and the cost, build time and public opinion are all prohibitive."
* The renewable energy transition is in full swing in the Darling Downs region of Queensland.
* The last South Australian coal power plant, near Port Augusta, was shut down in 2016 and the region has since become a renewables hub.
* Yancoal Australia has published a scoping report for the Stratford Renewable Energy Hub, which proposes to transition the coal mine to a 330 MW solar farm and 3.6 GWh of pumped hydro energy storage at the end of its working life.
* In the Collie region of Western Australia, a large battery is under construction and contracts have been signed to add a second stage battery to help flatten the growing solar duck curve and replace coal.

The Coalition is more pro-coal than the coal industry. Its energy policy makes absolutely no sense in terms of economics or emissions reductions. The policy has little public support: nuclear power is the most unpopular energy source in Australia. It is strongly opposed by scientists. Coalition leader Peter Dutton, a former policeman in the former police state of Queensland, combines the stupidity of Boris Johnson with the thuggery and racism of Donald Trump.

Despite the unpopularity of its nuclear power plans, there is a reasonable chance that the Coalition will be retuned to government at the

next election. The nuclear power plans could be blocked by an obstructive Senate, or by state governments, or by public opposition. But even if the nuclear plan is blocked, a Coalition government could and would savage the transition to renewables, gas would be significantly expanded, and coal companies would be bullied or bribed to prolong the operation of their power plants.

Timing

Introducing nuclear power to Australia would necessitate at least 10 years for licensing approvals and project planning, and around 10 years for reactor construction. Thus, nuclear reactors could only begin operating around the mid-2040s at the earliest. But almost all of Australia's nine coal power plants will be closed by the mid-2030s (and 11 coal plants have been closed since 2012).

Former Australian Chief Scientist Alan Finkel states: "Any call to go directly from coal to nuclear is effectively a call to delay decarbonisation of our electricity system by 20 years."

A 2020 report by NSW Chief Scientist Hugh Durrant-Whyte, prepared for the NSW Cabinet, said introducing nuclear power would be expensive and difficult and that it would be naïve to think a nuclear plant could be built in less than two decades.

A former Chief Scientific Adviser at the UK Ministry of Defence, Dr. Durrant-Whyte said: "The hard reality is Australia has no skills or experience in nuclear power plant building, operation or maintenance – let alone in managing the fuel cycle. Realistically, Australia will be starting from scratch in developing skills in the whole nuclear power supply chain."

Coal-to-nuclear

The Coalition's energy spokesperson Ted O'Brien cites a US Department of Energy report estimating that leveraging existing infrastructure at coal sites could reduce reactor costs by 30%. In fact the report estimates cost reductions of 15-35% compared to construction on a greenfield site. Would a 30% reduction make nuclear power economically viable in Australia? Not even close. Nuclear would still be far more expensive than firmed renewables (i.e. renewables plus energy storage). Nuclear costs would need to be reduced by two thirds to compete with firmed renewables. There is no reasonable expectation that this could or would ever occur.

O'Brien claims that "evidence keeps mounting that a coal-to-nuclear strategy is good for host communities, and especially workers as zero-emissions nuclear plants offer more jobs and higher paying ones."

No evidence from the US supports O'Brien's views. Several hundred coal power plants have closed in the US since 2010 but not one has been replaced with nuclear reactors. The same points apply in the UK: 20 coal or oil power plants have closed since 2012, none were replaced with nuclear power, and the only nuclear construction project is on an existing nuclear site.

O'Brien has promoted Terrapower's plan to replace coal with a nuclear in Wyoming but the company is at the early stages of a licensing process and it is unclear whether finance can be secured or whether the reactor will ever be built.

The Wyoming coal-to-nuclear project could easily fall over, as others have. David Schlissel from the Institute for Energy Economics and Financial Analysis authored a 2022 analysis of the NuScale reactor project in Idaho and accurately predicted its demise. He says: "There's every reason in the world to believe that [the Natrium project in Wyoming] is going to be a bigger financial disaster."

Economics

Nuclear power would be uneconomic in Australia and far more expensive than continuing to build an energy system based on renewables. Nuclear power would result in increased taxes and increased power bills.

The Australian government's leading science agency, the CSIRO, gave these cost estimates in a recent report:

* Large-scale nuclear: $155-252 per megawatt-hour (MWh)
* Small modular reactors: $387-641 / MWh
* 90% wind and solar PV including storage and transmission costs: $100-143 / MWh

A recent report by the Institute for Energy Economics and Financial Analysis found that nuclear power would increase power bills for a four-person household by $972 per year, and that the cost of electricity generated from nuclear reactors would be 1.5 to 3.8 times higher than the current cost of electricity generation in eastern Australia.
The Australian Energy Market Operator's integrated system plan, a roadmap for the optimal future grid, envisages 83% renewable generation by 2030, 96% by 2040 and 98% by 2050. Nuclear power reactors could not begin operating until the mid-2040s. Nuclear power as an option to meet the tiny fraction of electricity demand not met by renewables would be an extraordinarily expensive and unnecessarily risky option.
Reflecting that reality, there is no chance that overseas companies or utilities would invest billions developing nuclear power in Australia so the Coalition proposes government-funded reactors, an odd contradiction in light of its ideological obsession with free-market economics.

Dr Jim Green is the national nuclear campaigner with Friends of the Earth Australia and co-author of the recent report, 'Power Games: Assessing coal to nuclear proposals in Australia: Cost, timing, consent and other constraints'.

Canceled referendum on a second nuclear reactor in Slovenia: politicians and nuclear lobby too scared of losing it

Martin Mittendorfer, campaigner at Greenpeace Slovenia

On 24 October, the Slovenian parliament canceled a consultative referendum on the support of a second nuclear power plant in Krško (shorter JEK2), just a day before the official campaign was set to begin. This marks a temporary win for a coalition of local NGOs, which includes Greenpeace Slovenia, Umanotera, PIC, Focus and others, who have argued since the spring that the goal of such a referendum is to manipulate the people into supporting an enormous and dubious investment, which would serve the interests of the Slovenian political elite and nuclear lobby, not the majority of the citizens. As a result of the opponents continuous campaign and to an even larger extent thanks to the machinations of the politicians, which have come to light in past weeks, public support for JEK2 has sharply dropped. Support for the project, which would be the largest single investment since Slovenian independence, fell by almost 20 percent points in the span of only half a year – and the public's opposition to the project doubled.
The opponents of the referendum and JEK2 have clearly shown through public interventions that a second nuclear plant is far from being the only option for the future of Slovenian energetics, contrary to what the politicians and the state-owned investor, *GEN energy*, propagated. The ruling liberal coalition (excluding the smallest party, the *Left*) in this instance banded together with the conservative parliamentary opposition with the exclusive aim to win a referendum, but this did not help them. The reason is that

there is nothing known for certain about the subject people were supposed to vote on. All the information about the project is coming from the investor, which has a vital interest in building the plant and has earmarked 1,5 million euros only for referendum propaganda.

It is not known who would supply the reactor – there is talk about Westinghouse (US), EDF (France) and KHNP (South Korea) – and how much it would cost: estimates range around 15 billion euros, but this is excluding financing costs and excluding any delays, which are almost certain with such projects. The problem of the disposal of nuclear waste is also not solved and is severed by the fact that the Croatian side is obliged to take care of half of the waste, but it does not cooperate with Slovenian authorities and the whole accumulation of four decades of waste is still on the Slovenian side of the border.

Given the rapid development of sun and wind energy it is an even bigger question if the new nuclear plant, estimated to have from 1100 to 1600 MW of capacity, could compete at the market and not make losses since the first day of operation. More than a decade ago, Slovenian politicians banded together in support of building a new lignite power plant, with the process becoming a national symbol of corruption. Just as NGOs and experts warned before it was built, the thermal power plant, besides being harmful to the environment, has hardly ever made any profit, with the exception of the energy crises a few years ago when prices of electricity on the market were high. The JEK2 investment would be 10 or 15 times bigger than the investment in the coal power plant and is posing a similar problem, as the investor has admitted itself: for the economic viability of the new nuclear reactor the prices of electricity on the market must not drop by more than a third from the current levels – and that only under the most optimistic scenarios for financing of the project. In other words, for the investment to be successful in economic terms, it needs high electricity prices.

Looking beyond mere economics, opponents of JEK2 and the manipulative referendum demanded independent and scientific studies regarding different energy transition scenarios to be presented, with much more focus on renewable energy. They expressed concerns that one single large-scale investment into a second nuclear reactor would derrail much needed development of renewable energy sources and the electric grid. They demanded that climate action must be taken now – 20 or 30 years, when a reactor could be built, is much too long of a wait.

These calls were met by deaf decision-makers. The whole political process of investment planning and referendum preparation is far from transparent and democratic. The Minister of the Environment, Climate and Energy Bojan Kumer, who should by his function lead the state's energy policy, publicly expressed doubts about rushing into a final decision on JEK2. His ministry was cut off from the process and the power regarding all decisions related to JEK2 was concentrated in the hands of Danijel Levičar, who holds a political function of state secretary for the national nuclear programme in the prime minister's cabinet since the summer of 2023. Levičar came to the prime minister's office directly from the post of a business director of *GEN energy*, owner of the Slovenian part of the Krško nuclear power plant and the foreseen investor in JEK2, while the prime minister Robert Golob himself in 2022 climbed to the top of political hierarchy from the ranks of *GEN-I*, which is part of the state-owned energy conglomerate, led by *GEN energy*. Levičar acts in the sole interests of the nuclear lobby and has already met with representatives of Westinghouse, EDF and KHNP. He presents JEK2 as the only option and is not shy of using statements, such as: "33 states have nuclear energy production – and these are 33 developed states. 160 states,

mostly non-developed, do not have nuclear energy. Do we want to be Ghana, is this the question?"

Just how manipulative and non-democratic the whole referendum idea was, became clear on 17 October. Journalists of the main political show in the country on public television, *Target*, revealed audio proofs that the representatives of parliamentary groups conspired behind closed doors on how to outwit the people. Although the MPs knew that by including JEK2 in the *resolution on the long-term peaceful use of nuclear energy* before the consultative referendum they violated the *Law on Referendum and People's Initiative* they did it anyway. The politicians decided to push the project through in any case, inscribing it in a parliamentary resolution, but afterwards they wanted to roll the responsibility for their own decision on the citizens with the referendum.

It was this political scandal that finally popped the cherry. It was a scandal that contributed to the failure of the referendum to a much larger extent than all the rational arguments of the opponents. The scandal caused the main opposition party to call off its support for the referendum and soon the other three parties followed, as they got too scared of losing the referendum and so endangering their project. When *Mediana*, the most credible polling agency in Slovenia, did a poll on the public support for the JEK2 investment in march this year, more than 63 percent were in favor of JEK2 and only 18 against. But after half a year of civil society actions and arguments against the project and after the political scandal of parliamentary machinations behind people's backs broke out, at the end of October the same agency got a drastically different result. Now only 45 percent are in favor of JEK2 and already 37 percent against.

The temporary success of referendum and JEK2 opponents lies in the fact that by canceling the referendum the political elite admitted its own wrongdoings and admitted it is not the right time to have a vote on a subject that is so shrouded in secrecy. But the success is only temporary as the politicians and the investor are determined to push the project through, which would cost well beyond a whole yearly budget of Slovenia. This time they only got too scared of the consequences of their own mistakes. This is why the civil society organizations are continuing to demand comprehensive data and analyses of energy scenarios that would show alternatives to the solely nuclear direction. They are also demanding the termination of the post of the secretary for nuclear program, as this could be the first step of opening an impartial public debate. Last but not least, they demand an end to all the activities regarding the JEK2 project.

World Nuclear Power Status

Number of Reactors
(as of October 2024)

Compared to the last edition of the Nuclear Monitor (919);

- ✓ The status of 1 nuclear power plant in Canada ((Pickering Unit 1) has been changed from operational to permanent shutdown.
- ✓ Construction of the Zhangzhou-4 nuclear power plant has started in China.

Scotland: 'new nuclear power a catastrophically poor bargain'

Jan van Evert

An impressive number of professors, nuclear regulators and other experts have written an open letter to Ed Miliband, the UK Secretary of State for Energy Security and Net Zero saying new nuclear power is 'a catastrophically poor bargain'. They protest against the decision to use the Regulated Asset Base (RAB) finance mechanism in the construction of proposed new nuclear power plants in the UK.

What is RAB? Following the abandonment of three large new nuclear developments at Moorside in 2018, and Wylfa Newydd and Oldbury B in 2020, primarily because the developers were unable to attract finance for the developments, the Nuclear Energy (Financing) Bill was introduced in the House of Commons in October 2021. It enabled the Regulated Asset Base financing model to be used for new nuclear, whereby consumers finance a portion of the capital costs during the construction period rather than the developers.

Source:
https://bylines.scot/environment/open-letter-to-the-department-for-energy-security-and-net-zero/

Dismantling of Brokdorf nuclear power plant approved

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The first licence has been granted to dismantle the decommissioned Brokdorf nuclear power plant in the German state Schleswig-Holstein. Environment Minister Tobias Goldschmidt speaks of a "big step". Brokdorf, a power plant with a capacity of 1410 MW, was decommissioned in December 2021 and is the last of in total three nuclear power plants in Schleswig-Holstein that will be dismantled. The entire process will take at least fifteen years. There are still fuel elements and control rods in the storage pool of the nuclear power plant, which are to be transferred to the interim storage facility at the site. The problem however is that Germany still hasn’t chosen a site for the permanent storage of highly radioactive materials. This might take another fifty years, according to a recent report. (See Nuclear Monitor 918). The licensing process has taken seven years which has lead to protests in the past few years.

Remarkably, the German company PreussenElektra together with E.ON is planning to build the largest battery facility for the storage of renewable energy in the EU on this site. According to the company's plans, the storage facility is to be expanded in two stages to an output of up to 800 MW and a storage capacity of up to 1600 MWh. Commissioning could take place as early as 2026.