NUCLEAR MONITOR

December 19, 2024| Issue #922

A PUBLICATION OF WORLD INFORMATION SERVICE ON ENERGY (WISE) AND THE NUCLEAR INFORMATION & RESOURCE SERVICE (NIRS)

WISE/NIRS Nuclear Monitor

The World Information Service on Energy (WISE) was founded in 1978 and is based in the Netherlands.

The Nuclear Information & Resource Service (NIRS) was founded in the same year and is based in the U.S. WISE and NIRS joined forces in the year 2000 to produce Nuclear Monitor.

Nuclear Monitor is published in English, 10 times a year, in electronic (PDF) format only. Back issues are published on the WISE website two months after being sent to subscribers (www.wiseinternational.org/nuclear-monitor).

SUBSCRIPTIONS
10 issues
NGOs / individuals 67,50 Euros
Institutions / Industry 235 Euros
US and Canada: Contact NIRS for details (nirs@nirs.org)
All other countries: Subscribe via the WISE website
www.wiseinternational.org
ISSN: 2542-5439

CONTACTS
WISE
info@wiseinternational.org
www.wiseinternational.org

NIRS
nirs@nirs.org
www.nirs.org

Nuclear Monitor
monitor@wiseinternational.org
www.wiseinternational.org/nuclear-monitor

Monitored this issue:

Climate ambition slammed by nuclear populism: the case of Sweden

Rolf Lindahl, Greenpeace

For many years Sweden was on a clear path to embrace the future and transition away from nuclear energy dependence. The oldest reactors were phased out and 100% renewables were set as a political goal. Then in 2022 a new far-right government came into power after using the energy crisis to insert a pro-nuclear debate in which renewables were seen as a problem. The consequences are already visible: offshore wind installations are plunging, and climate targets are moving further away.

"Let us be clear: New reactors in Sweden are a non-issue, outplayed by both technological developments and economic realities." This was declared in 2016 in an op-ed in the largest daily in Sweden by the Swedish state-owned energy giant Vattenfall and EON Sweden, a large nuclear operator in the country at the time.

Almost ten years ago now, this was a completely logical statement, one that the whole business sector agreed with. The red-green government that came into power in 2014 paved the way for a transition towards renewables. Low electricity prices and increasing safety costs of nuclear power resulted in a decision by operators in 2015 to phase out four of the ten oldest nuclear reactors in the country. And in a cross-party energy agreement in 2016, 100% renewables was set as a historic goal for the electricity system of Sweden. In the spirit of compromise, the agreement did not rule out new nuclear construction, but it could not expect to receive any state subsidies.

For the first time in decades, the intensive and polarised debate over nuclear power seemed to have been resolved. The direction was clear, the future belonged to renewables.

Energy populism

Few could imagine the complete rollback that would happen only six years later. The pandemic, followed by Russia's full-scale invasion of Ukraine, coupled with a European energy market hit by skyrocketing prices paved the way for this reversal. In the national general election 2022, the right-wing parties deliberately used the European energy crisis to gain power. They succeeded in shaping a false media narrative that the renewable agenda of the red-green government led to the closure of reactors, which in turn was the reason for high electricity prices. The real reasons such as high gas prices and failures of French nuclear reactors could not outmatch the heavy bombardment of negativisms towards renewables and the constant repetition that nuclear power is the only solution.

This strategy had been carefully selected to undermine the credibility of the former government parties, the Social Democrats and the Greens, in order to secure a right-wing win in the election. They managed to insert the issue of nuclear power into the center of not only energy politics but also environmental and climate debate.

This energy populism paved the way for the victory of a right-wing conservative government in Sweden that, for the first time, was actively collaborating with and dependent on the ultranationalist party Sweden Democrats, a party with neo-Nazi roots.

Nuclear crusade

In the European context, the Swedish electricity system is very stable and competitive. Sweden has for many years had some of the cheapest electricity prices in the EU and in 2022, Sweden was the country that

exported the most electricity in the entire Union and came in second only to France in 2023. Sweden is among the countries in the EU that use the least fossil fuels and has one of the highest proportion of renewables in the electricity mix. And it has been growing steadily.

Over the years, many studies have demonstrated that it is technically feasible and economically realistic to phase out nuclear power and switch to a 100% renewable electricity system in Sweden. Greenpeace showed this already back in 2011, while the Swedish Energy Agency and the national grid authority, Svenska kraftnät, did the same the other year. And recently, Chalmers University of Technology showed that even with a sharp increase in electricity use, renewables are not only entirely possible but also most cost-optimal. The development of battery and other energy storage solutions combined with user flexibility will help secure a robust energy system.

New nuclear power is getting more and more expensive and taking longer and longer to build, while renewables are getting cheaper and cheaper and becoming more and more dominant around the world. But despite all this, the government in Sweden chooses to turn a blind eye to the development and is trying to consign the country to a nuclear dead end.

What we have seen since the current government came into power in September 2022 is a crusade led by the Christian Democratic energy minister Ebba Busch to bring nuclear power back from the dead. The goal of 100% renewables has been scrapped and replaced by the goal of a “fossil-free” electricity system. The limitation of no more than ten reactors on the current locations have been removed, and new support mechanisms for faster and smoother licensing processes for new reactors are being introduced. The government has also presented a roadmap for new nuclear power in which they want to see have a “massive expansion of new nuclear power by 2045”. The government's ambition is to have two large nuclear reactors in place by 2035 and the equivalent of ten large reactors by 2045. How this is going to be realised is not entirely clear. The plans are criticised for being unrealistic even by the most prominent right-wing think-tank in the country. Yet the government, locked in by their election promises and firm conviction, is pressing ahead.

However, despite the government's best efforts and promises of new nuclear power, investors have yet to show any interest. Therefore, the conservative, and supposedly market-oriented government has – ironically – been forced to open up massive subsidies to try to attract speculators to the Swedish energy market. Besides credit guarantees of SEK 400 billion (~€35 billion) a government inquiry recently proposed government-issued loans up to SEK 600 billion with low interest rates as well as an agreement in which a fixed price is guaranteed for 40 years. Even though the proposal has been widely criticised because, inter alia, unilateral nuclear subsidies obviously would distort the market and undermine the expansion of renewable energy, the government intends to move on next spring with a massive subsidy proposal.

A smokescreen

According to the current government, new nuclear power is portrayed as the main, or even only, solution to safeguard green transition. A massive amount of new electricity is to be needed both in the transport sector and in the industry. As such, new nuclear is said to be the very prerequisite to achieving our long-term climate goals.

But this is of course a complete falsification. On the contrary, the nuclear agenda of the right-wing government is nothing more than a smokescreen for lack of climate action. Their

hope for new reactors in the very distant future will obviously not reduce emissions here and now.

According to the IPCC's 2023 AR6 synthesis report, renewable energy, especially solar and wind energy, is by far the cheapest and fastest way to reduce emissions by 2030. Nuclear power, on the other hand, is significantly more expensive and has a comparatively small ability to contribute to the needed emission reductions.

In a recent assessment by the Swedish Nature Conservation Society, the government's ambition to build 10 new reactors by 2045 would significantly delay climate transition and will lead to an increase of 220 million tons of CO2 emissions when compared to a renewables scenario where low carbon energy would be installed much faster than any nuclear ever could be.

But the government's reactor fanaticism does not end there. They are also actively opposing the development of renewable energy. In the first half of 2024, almost all wind power projects in Sweden were cancelled due to local opposition and parties in the governing coalition have ramped up their rejection of new projects during the latest years. And on November 4, a major blow to the development of offshore wind power in the Swedish Baltic Sea came when the government rejected a whopping 13 applications for offshore wind power. These projects would have been in place far sooner than any new nuclear power project and together would have had a capacity equivalent to Sweden's entire current electricity production. The alleged security policy arguments are just pretexts when other countries obviously can combine military interests with offshore wind power, and even the defense industry itself says that the security aspects can be solved.

"No to wind power on our coast". This manipulated image published in the run-up to the general election in 2022 by a local section of the conservative party is an illustration of the right-wing mobilization against renewable energy and pro-nuclear power.

While the government is busy trying to give artificial respiration to a dying nuclear power industry, Sweden's climate work has completely collapsed. The government climate measures are simply inadequate to reach national or international climate targets. This is noted by scores of national expert agencies such as the Climate Policy Council, Swedish Environmental Protection Agency, Swedish Energy Agency and Swedish Fiscal Policy Council. Sweden, that used to be at top of international climate policy in comparisons, is now quickly falling behind. According to the Climate Change Performance Index, Sweden is now in place 41 in the category of climate policy. In 2021 Sweden was ranked number two, after Finland. Also, Sweden has fallen in the aggregated category. For a number of years, Sweden was ranked highest but has now dropped to place 11.

Repercussions beyond Sweden

What happens in Sweden is not only a concern for the Swedes. It also has repercussions far beyond national borders. The Swedish government is an engaged member of the European Nuclear Alliance and is actively pushing the nuclear agenda within the EU, which also has gained traction among other countries lately. The pro-nuclear member states are advocating for a "low carbon directive" instead of a "renewable energy directive", are opposing a new renewable energy target and want to open up for state aid for nuclear power. Sweden – once an international frontrunner in climate politics – has now become a climate laggard and a nuclear lobbyist.

To redirect public money towards nuclear energy undermines and grabs resources from the renewable energy transition which is one of the key elements of achieving our climate objectives. Therefore, the lesson of Sweden is that the nuclear agenda is not only a dangerous distraction from urgent climate action, it is also an imminent threat to a sustainable future for all.

Uranium Mining in Africa – Part 2

Gunter Wippel, uranium-network.org with information from WISE Uranium Project

The situation in other African countries (in alphabetic order)

Central African Republic (CAR / RCA)

In 2008, Areva's CEO Anne Lauvergeon signed a uranium mining deal with the CAR government in regard to mining uranium near Bakouma in the east of the Republic. The project was 'temporarily suspended' in the wake of the Fukushima-Daiichi disaster. In 2012, gunmen attacked the site of the future mine. The operation has since been closed.

Democratic Republic of Congo (DRC)

In 2009, Areva's CEO Anne Lauvergeon, traveling with then President Sarkozy, signed an agreement with Congolese Minister of Mines on uranium prospecting and mining. Given bad experiences with uranium mining in Niger, the Association Africanize de Défense des Droits de l'Homme (ASADHO), a human rights organization, opposed the deal; they published a booklet "MINE URANIFERE DE SHINKOLOBWE: D'une exploitation artisanale illicite à l'accord entre la RD Congo et le groupe nucléaire français AREVA". ASADHO's outspoken leader in Katanga region, Golden Misabiko, was arrested and later set free following interventions from human rights organization. He was honored with the

Nuclear Free Future Award in 2014[1]. The Ecumenical Network on Central Africa (Germany: ÖNZ) released a study critical of uranium mining in 2011.
Illicit mining at the Shinkolobwe mine continued for many years; it is not clear whether uranium was also extracted and exported.
In 2011, two years after the signing of the agreement, AREVA stated that they are unlikely to develop activities in DR Congo due to the persisting instability[2].

Mali

In 2007/8, Canadian company **Rockgate Capital** planned a mine for uranium, including also silver and copper, in **Falea**, a 21 village municipality in the far southwest of Mali. The plans were met with decisive resistance from local people who got international support from Members of the European Parliament as well as through a conference by IPPNW and others (www.falea.info/) and ongoing support from European NGOs. The project stalled, also due to the falling price of uranium.
In 2016, the deposit was sold to Denison Mines. Later on, GoviEx acquired the project.
In 2023, GoviEx intended to sell the Falea project to African Energy Minerals, but the sale was not implemented.
In face of the difficult political situation in Mali since 2023, the project is on hold.

Botswana

In 2013, A-Cap Resources Ltd, an Australian company, announced "favourable economics" for **Letlhakane uranium project**. The company expected the uranium price to rise significantly in view of an anticipated supply shortage. In 2016, the company obtained a mining license. Villagers of the area should be resettled. By 2017, A-Cap deferred the project for two years. In 2020, a Chinese tycoon offered US$ 5 Mio to obtain a majority share in A-Cap, the offer was not accepted.
In October 2023, Australian Lotus Resources (which had bought Kayelekera in adjacent Malawi in 2020) acquired A-cap Resources Ltd.[3]
In September 2024, Lotus released a scoping study on Letlhakane.
On 24 October 2024, in a rare step, Lotus " … *retracts all production targets and forecast financial information included in the Scoping Study Announcement*." No details were given but, most probably, the statement has serious mistakes.

Malawi

Besides Kayelekera mine (see Part 1), a deposit containing uranium, niobium and tantalum was discovered in Malawi, **Kanyika project**. The project is owned by Globe Metals & Mining, Perth, Australia and a Chinese state-owned survey company of which Chinese Globe and East China Mineral Exploration and Development Bureau holds a controlling share.
The project ran into difficulties with plans to resettle local people, due to delays of the start of the mining operation; people are kept waiting for compensations, and engaged lawyers (2014 / 2017).
In a 2024 presentation, the presence of uranium is still mentioned, but uranium is not mentioned anymore as an element to be exploited.
Should the mine go ahead, there is a risk that uranium – if not extracted – will end up in the tailings and thus pose a risk for the environment.

[1] https://nuclearfreefutureaward.org/golden-misabiko-dr-congo/
[2] for more details: www.wise-uranium.org/udafr.html#SHINKOLOBWE
[3] www.minenportal.de/minen/740--A-Cap-Energy-Ltd, www.solactive.com/acquisition-a-cap-energy-ltd-30th-october-2023/

In September 2024, the company was allowed to delay the start of the project until 2025[4].

Mauretania

In 2013, AURA Energy Ltd., an Australian company, identified a uranium deposit in the north of Mauretania, close to the border to West Sahara, in Sahara desert. It was named Regubiat, later renamed **Tiris Project**. The uraniferous layers are close to the surface and can, according to company reports, be mined by excavators and caterpillars.
In 2018, the company reported that the deposit also holds vanadium which shall be extracted, thus improving the economics of the project. The company located a major water body, part of the transboundary Taoudeni basin, which is needed to process the ore / sand.
Using water for mining is questionable since water is the most important means of life in Sahara desert. The area is used periodically by Sahaouri people from adjacent Western Sahara for grazing animals.
In 2019, AURA announced that the company has secured an offtake agreement with Curzon Uranium Trading Limited, UK (and Cyprus).
In December 2018, the company obtained a mining license, and on July 15, 2024, Aura Energy Ltd. received the last outstanding permit to allow the construction and operation of the Tiris Uranium Project.

Senegal

Haranga Resources Ltd., Perth, Australia, is exploring a uranium deposit at **Saraya**, in the south-east corner of the country, close to the border of Mali and Guinea; formerly, French COGEMA had explored for uranium in the area, but had not started mining, Haranga also explores for gold.

Zambia

A 2008 article[5] reported 'high-grade uranium' (without giving numbers) and of major quantities of uranium ore stored at **Lumwana copper mine** site, for later processing. Apparently, processing did not happen so far, probably due to the slumping price of uranium after the 2007 spike of the price of uranium. Plans to exploit uranium were encountered with opposition from the public and church organisations. A booklet '[Prosperity unto death: Is Zambia ready for uranium mining? - Review of the uranium mining policy in Zambia']'[6] (2010) by the Council of Churches in Zambia (CCZ) pointed out the dangers of uranium mining and the lack of adequate regulations.
In January 2011, the company said that it had 4.6 million tons of uranium ore stockpiled containing 0.09% uranium[7].

GoviEx holds a mining license for the **Muntanga** uranium project; the license had been suspended in 2020, but was reinstalled in May 2021[8]. As of now, there is no indication of actual mining going at Muntanga.
GoviEx' only other project in Niger had the license withdrawn in 2024 (see Part 1).

LATEST NEWS: On 9 Dec. 2024, GoviEx announced that they " … commenced arbitration proceedings against the Republic of the Niger under the Convention on the Settlement of Investment Disputes Between States and Nationals of Other States." [9]

[4] www.argusmedia.com/en/news-and-insights/latest-market-news/2610300-malawi-kanyika-nb-mine-development-granted-extension
[5] www.reuters.com/article/markets/oil/zambias-lumwana-plans-10-mln-tonnes-uranium-output-idUSLE304663/
[6] https://de.scribd.com/document/38650866/Prosperity-Unto-Death-Is-Zambia-Ready-for-Uranium-Mining
[7] WNA, https://world-nuclear.org/information-library/country-profiles/others/uranium-in-africa
[8] www.wise-uranium.org/upzm.html#KARIBA
[9] https://goviex.com/news/2024/

Geo-political impact

Within the past decade, France (with state-owned AREVA / ORANO) and England (with Rio Tinto) lost control over uranium mines in Africa. In Namibia, Chinese state-owned companies took over, in Niger, a Chinese company is reviving an idle mine, and Russia's ROSATOM eyes a major uranium deposit. The geo-strategic aspect of this development can hardly be ignored.
In addition, Russia's ROSATOM is eager to sell nuclear power plants to African countries[10] and invests into attracting young people to nuclear power[11].

The Impacts of Uranium Exploration and Mining

For detailed information on the impacts of uranium exploitation, please consult the booklet 'Uranium Mining – What are we talking about?' [12] and informational film, same title, at www.uranium-network.org, frontpage.

Here only a short summary of the impacts of uranium exploration and mining is given.

In regard to **laws and regulations**, in many countries in the Global South, uranium exploration and mining are either not very well regulated or – if regulations exist – they are not very well monitored, if at all. Sometimes it is left to the companies to monitor themselves, as the state authorities do not have the equipment and/or knowledge to monitor the companies' environmental performance.

> **Exploration** activities may disturb agriculture, wildlife, contaminate watersheds and / or surface waters (*Booklet: Chapter 7, page 41ff*).

In several cases, uranium projects are located in **protected areas** (e.g. in Namibia in the Namib-Naukluft Park, protection is subordinate to mining), or in areas removed from their protected status to allow mining (e.g. Mkuju River Project in UNESCO World Heritage Site Selous Game Reserve, Tanzania[13]).

> **Mining** has more implications:

Mining methods

There are three main **mining methods**: open-pit mining (for ex. Rössing and Husab in Namibia, SOMAIR mine in Niger), underground mining (Akouta mine, Dasa project, both Niger) and in-situ leaching (ISL) also referred to as in-situ recovery (ISR) (Booklet, Chapter 8, page 49ff).
Whereas by 2022 56% of the uranium mined worldwide is extracted via ISL[14], ISL is not applied in Africa so far. However, ROSATOM considers ISL for the Mkuju River[15] deposit in Tanzania and for Namibia's Omaheke region[16].
Whereas companies advertise the method as "environmentally friendly", it is in fact the lower capital expenses (CAPEX) and operational expenses (OPEX) that motivate them to use this method.
Moreover, projects are referred to as ISL, but the companies intend to use methods much more perilous than what is normally referred to as ISL (e.g. Wings Project, Namibia).

Uranium deposits in Africa typically hold very low percentages of uranium in the ore: In Niger around 0.07% (Arlit, Imouraren), in

[10] www.intellinews.com/russia-s-rosatom-to-support-nuclear-projects-across-africa-at-aew2024-348542/
[11] https://theenergyintelligence.com/tag/african-young-generation-in-nuclear/
[12] https://uranium-network.org/wp-content/uploads/2019/12/UraniumMining_whatarewetalkingabout-with-internal-links.pdf
[13] for details see: World Heritage Watch Reports 2017 - 2021, Articles on Selous Game Reserve by Gunter Wippel
[14] https://world-nuclear.org/information-library/nuclear-fuel-cycle/mining-of-uranium/world-uranium-mining-production
[15] https://interfax.com/newsroom/top-stories/85232/
[16] https://northafricapost.com/64030-namibia-orders-russian-uranium-exploration-to-stop-due-to-environmental-concerns.html

Namibia 0.033% (Rössing) down to 0.029% (Langer-Heinrich).
Thus, in **Niger** 1428 t of ore have to be mined and processed to get 1 t of U on average; 1427 t will become tailings. In **Namibia**, at Rössing, around 3030 t ore must be dug out to get 1 t of uranium (and 3448 t at Langer-Heinrich). (These figures do not include the 'overburden', i.e. the layers of rock and soil covering a deposit which also need to be removed for open-pit mines.)

The tailings still contain some uranium (it's impossible to extract 100% of the uranium) plus its decay products; the remaining uranium will continue to produce decay products, in addition to the already existing ones. Tailings will remain radioactive for hundreds of thousands of years, in human terms forever (*Booklet page 12f*).
Thus, tailings should be safely isolated from the environment, protected against seepage, wind, and other disturbances (including human activities) for very long time. Given the enormous quantity of tailings[17] and the long period to store them safely, makes it extremely difficult to achieve this goal – and very expensive (*Booklet, Chapter 10, p. 67*).

Environmental impacts

WATER

Extraction of uranium from the ore requires lots of water; thus, mines are concurring with other water uses, especially in arid areas, for example in Niger or Namibia[18].
In **Namibia**, the existing water shortage made it necessary to build a seawater desalination plant (at Wlotzkasbaken) to provide enough water for the mines; currently, construction of a second desalination plant is considered; Husab mine alone consumes 1000 cubic meters per hour[19].

In **Niger**, uranium mines in Arlit area deplete a so–called 'fossil aquifer' whose last recharge – in this case – happened 3000 years ago, and which will not renew itself within a human timescale[20].
" … COMINAK and SOMAÏR in the towns of Akokan and Arlit respectively have already depleted 70% of the fossil aquifer further north of Tarat, at a rate of 22,000 cubic meters per day for 38 years." [11]
Unlike Namibia, Niger has no nearby ocean from which drinking water could be produced via desalination. An exhaustion of the aquifers will be a major danger for people in the area and also for the pastoralists' way of life (*Booklet Chapter 9.2, p. 61*).
To make things worse, parts of the aquifers are radioactively contaminated by tailings.

ENERGY

The extraction of uranium from the ore requires lots of energy (*Booklet Chapter 6.2, p. 65*). African countries often already lack electricity.
In **Niger**, the lack of electricity supply urged Cogema, predecessor of ORANO, to build a coal-fired power plant near Tchirozerine, using local high sulphur coal, leading to serious pollution as well as to health problems for people in the area.

In **Namibia**, due to the already stressed electricity supply, construction of a coal powered plant had been considered, but was dropped since the mining projects did not go ahead as previously thought.
In some cases, mines use diesel generators to secure electricity supply. At Dasa project,

[17] www.wise-uranium.org/umaps.html, chose: "Uranium Mill Tailings Inventory", world: 2352 Million tons
[18] www.wise-uranium.org/umopna.html
[19] www.observer24.com.na/second-desalination-plant-to-combat-water-scarcity/
[20] Tchinaghen news file (not available on internet), www.aquaportail.com/dictionnaire/definition/7591/nappe-fossile

Niger, the company plans to use solar energy to provide some of the electricity needed.

RESETTLEMENTS … and Human Rights

Often, people living and making their living from agriculture and / or cattle raising in the area of future mining projects, are relocated, more or less forcible; human rights standards are often not complied with. In several cases (Tanzania, Mkuju River area, Botswana, Letlhakane project etc.), people were told they would be resettled, and compensations were promised – but projects were delayed, and people were kept in limbo over extended periods of time.

WORKERS' SAFETY

… is not always the highest interest at mining operations: Kayelekera mine in Malawi has a bad safety record, with workers being killed in accidents even before the mine started operating (see Part 1, and WISE Uranium Project's "Hall of Infamy"[21]).

At **Husab** mine (Namibia) workers went on strike repeatedly due to safety issues and unfair employment conditions; several fatal accidents occurred[22].

At **Langer-Heinrich mine**, workers went on strike complaining about unfair treatment at work and unsafe working conditions (2013, 2015), there were also fatal accidents[23].

TAILINGS and their IMPACTS

Tailings, solid as well as liquid, often contaminate the vicinity of mines, including watersheds or surface waters radioactive, toxic or sulphuric seepage; they impact the health of people in the area; radioactive dust from mine tailings and radioactive seepage from tailings ponds; radioactive elements can get into humans via a variety of pathways (*Booklet Chapter 10, p. 67ff*).

In **Niger**, millions of tons of tailings were generated during the 40 years of uranium extraction – with no precautions taken. GREENPEACE and CRIIRAD found radiation levels exceeding WHO standard in water, dust, scrap metal, etc. NGO Aghirin Man and the Societe Civile d'Arlit advocated strongly for clean-up measures by ORANO.

In **Namibia**, research identified a radioactive plume emanating downstream from Rössing mine[24].

HEALTH of MINERS

In addition to the typical health risks of miners, miners in underground uranium mines are also exposed to radioactive – and sometimes toxic – dust as well as to radon gas, the main cause for lung cancer. In open-pit mines, the main problem is dust, radioactive or not.

Whereas dust may lead to silicosis, inhalation of radioactive elements can lead to lung cancer and other forms of cancer as well as diseases (Booklet Chapter 11, p. 81ff).

In **Niger**, miners realized in the early 2000s that some of their colleagues got sick and passed away prematurely from 'unexplained' diseases; this led to the founding of NGO Aghirin man which reached out to French independent radiation laboratory CRIIRAD. CRIIRAD started research in Arlit, finding levels of radioactive exposure of miners and town people over WHO limits[25].

In 2010, GREENPEACE, in cooperation with CRIIRAD, researched more details, published in the booklet 'Left in the Dust - AREVA's radioactive legacy in the desert towns of

[21] www.wise-uranium.org/ucpalhi.html
[22] www.wise-uranium.org/umopna.html#HUSAB
[23] www.wise-uranium.org/umopna.html#LANGERH
[24] www.criirad.org/mines-uranium/namibie/radiological-impactofriotintorossing-CRIIRAD-EJOLT.pdf; "Radioactive Seepage through Groundwater Flow from the Uranium Mines", Namibia, by Tamiru Abiye and Ignatius Shaduka
[25] www.criirad.org/wp-content/uploads/2017/08/notecriiradarlit.pdf

Niger'[26].

In 2009, AREVA started an 'Observatoire de la Sante' ('Health Observatory') together with CRIIRAD and a lawyers' association, Sherpa[27].
In 2012, Sherpa left the 'Observatoire'; Sherpa found it inacceptable that compensation was paid only to the families of just two miners of French nationality, while local miners did not receive any compensation at all. CRIIRAD, also disappointed, left shortly after.
A summary on the "Observatoire de la Sante" is on the Business-and-Human-Rights-website[28].

In **Namibia**, miners had similar complaints in regard to their health situation; in the early years, miners would take their dirty clothes home, thus bringing radioactive dust to their families (the women were washing their clothes); this was later abandoned.

On January 1st, 1992, PARTIZANS' network and Roger Moody published "The Gulliver file: Mines, People, and Land – a Global Battleground"- dedicating a chapter to Rössing uranium Mine in Namibia, highlighting working conditions and health situation of miners[29].
One miner and another miner's widow took cases of health damage to court at Rio Tinto's seat, London[30], unfortunately to no avail.
In 1992, Greg Dropkin and David Clark published their findings in 'Past Exposure: Revealing Health and Environmental Risks of Rössing Uranium'[31], describing the negative health impacts on miners.

In 2009, Labour Resource and Research Institute (LaRRI) undertook a study in regard to the health and social situation of miners 'URANIUM MINING IN NAMIBIA – The mystery behind 'low level radiation'', addressing Rössing's narrative that radiation exposure for mine workers was too low to cause negative health effects[32].
Rössing then issued a health study (2010) with the University of Manchester; results were not published until 2020; it concludes that " …that total radiation exposure in the Rössing mine was not associated with a higher risk of any of the cancers that we studied."
The study has multiple issues, especially the fact that it is based on a data set provided by Rössing, not collected by independent scientists, hampers its validity seriously.
Rio Tinto finally got rid of the problem of miners suing the company by selling Rössing mine to Chinese CNNC; while it was difficult, but possible to sue Rio Tinto in London, UK, it will be next to impossible to sue CNNC in Beijing, China.

COMPENSATIONS for health damages

In the **US**, uranium miners fought a long struggle for compensation of health impacts.
In 1990, the Radiation Exposure Compensation Act (RECA)[33] was established.
Until November 2023, approx. 9300 miners and mill workers received compensation for health damages, US$ 100,000 per person, altogether approx. 9,300,000 US$. Although RECA procedure is seen as 'not satisfying' by many of the persons affected (only about 50% of the applications are accepted), there is at

[26] www.sortirdunucleaire.org/IMG/pdf/greenpeace-2010-left_in_the_dust-areva_s_radioactive_legacy_in_the_desert_towns_of_niger.pdf
[27] www.asso-sherpa.org/lancement-de-lobservatoire-de-la-sante-pour-les-activites-dareva-au-niger-sherpa-entend-veiller-au-respect-des-objectifs-fixes
[28] www.business-humanrights.org/fr/derni%C3%A8res-actualit%C3%A9s/niger-la-coordination-de-la-soci%C3%A9t%C3%A9-civile-darlit-critique-la-mani%C3%A8re-dont-fonctionne-lobservatoire-de-la-sant%C3%A9-cr%C3%A9%C3%A9-par-areva/
[29] https://web.archive.org/web/20160304103904/http://www.sea-us.org.au/gulliver/rossing.html
[30] www.ejolt.org/2015/07/rio-tinto-namibia-connelly-case/ and www.ejolt.org/wordpress/wp-content/uploads/2015/07/FS-39.pdf
[31] www.amazon.ca/Past-Exposure-Revealing-Environmental-R%C3%B6ssing/dp/0947905650
[32] https://uranium-network.org/wp-content/uploads/2019/01/2009.pdf
[33] https://sgp.fas.org/crs/misc/R43956.pdf

least SOME compensation (by June 2024, RECA is ending; currently, there is a struggle to extend it for two years).
When **East Germany**'s closed down uranium mines (Wismut) became a part of (reunified) Germany, a similar amount of compensations (1.1 billion € by 2021[34]) has been paid to former miners for health damages.

In **Africa**, no compensations for health damages have been paid by mining companies or the state.
It may be argued that radiation exposure of miners in Niger or Namibia in the 1970s and later on was – on average – lower than exposure of US or East German miners shortly after WWII; however – as the above-mentioned GREENPEACE Report shows – it is highly improbable that there are no health impacts at all in Niger, Namibia or Gabon. A 2010 article suggests that 'Lack of Data on Causes of Death Buffers French Company'[35]. (*Booklet Chapter 12.3, p. 96*)

MINE CLOSURE and tailings management
Uranium mine and mill tailings pose a serious hazard to the environment, human health and future generations. (*Booklet, Chapter 10, p. 67ff and Chapter 14, p. 107*)
Reclamation of mines, tailings and tailings ponds is very costly. In many cases, mining companies go bankrupt once a deposit is mined out – and no funds are left for reclamation; reclamation thus is either (a) not happening, or (b) is done by the state authorities with taxpayers' money. Only in rare cases, reclamation was paid for by the respective mining company. For estimates of reclamation costs see: 'Uranium Mining – Impact on Health and Environment' [36].
Governments realized the problem to some extent – and sometimes urge companies to set aside funds in trust accounts (which cannot be touched by the company) to pay for rehabilitation of mines and tailings.

In **Niger**, COMINAK, the subsidiary of AREVA / ORANO which operated (now closed) Akouta mine, started reclamation activities: 20 million tons of tailings, covering some 120 hectares, and in places 35m high, must be dealt with; the operation will cost an estimated 150 Million €, and will last for 10 years[37].
Under the current circumstances with the Niger government wanting to get rid of ORANO, it is not clear whether and how this reclamation process will go forward.

In **Namibia**, in 2004 information surfaced that **Rössing** used money from the decommissioning fund to keep the struggling mine operating. By 2019, it turned out that the decommissioning fund held only 54% of the amount required (estimated at US$ 108 million in 2018). Rössing promised to " … make additional payments to the fund each year to provide for the eventual total cost of closure by 2025" (Namibia Economist May 7, 2019).

In **Malawi**, Paladin had to put money into a trust account (it couldn't touch) for reclamation of its mine, equivalent of 5 Mio US$ in two banks. When the mine was sold in 2020, these funds were returned to Paladin[38];

34 www.mdr.de/geschichte/ddr/wirtschaft/wismut/lungenkrebs-silikose-berufskrankheit-strahlung-entschaedigung-100.html; more up-to-date figures are not available

35 www.ipsnews.net/2010/04/niger-lack-of-data-on-causes-of-death-buffers-french-company/

36 www.rosalux.de/fileadmin/rls_uploads/pdfs/sonst_publikationen/Uranium_Mining_Impact.pdf, page 41-47

37 www.lepoint.fr/monde/au-niger-les-millions-de-tonnes-de-dechets-d-une-mine-d-uranium-font-peur-15-03-2023-2512151_24.php#11

38 https://links.sgx.com/FileOpen/2020.03.02%20Paladin%20secures%20Government%20consent%20for%20sale%20of%20KM%20FINAL%20lodgement%20version.ashx?App=Announcement&FileID=598830

Paladin used the 10 Mio US$ to keep its Langer-Heinrich mine in Namibia. Lotus, the new owner, will have to start establishing a new fund for reclamation from scratch.

Yvonne Margarula, an Aboriginal woman from Australia, remarked:
"*The promises never last – but the problems always do*."

Switzerland slowly phasing out nuclear power

Philippe de Rougemont and Ilias Panchard, Sortir du Nucléaire association

Following the Fukushima disaster, the Federal Council and Parliament took the historic decision to phase out nuclear power. This decision marked a turning point in the country's energy policy and was supported by several referenda.
As a result, the Mühleberg nuclear power plant was shut down in 2020. Its output was offset by the development of renewable energies. By 2023, installed solar capacity in Switzerland had risen to reach 11% of the countries' needs. The nuclear power plants still in operation are likely to be shut down in stages.
The next closure will be of the Beznau nuclear power plant in 2033, the oldest still in operation in the world. The 2033 deadline is tantamount to continuing nuclear Russian roulette for another decade. Axpo is continuing to sink hundreds of millions of Swiss francs into making this obsolete power plant last a few more years. These colossal sums should be used to develop renewable energies, improve energy efficiency, reduce waste and adapt our grid.
The solar initiative, by equipping every suitable roof with photovoltaic panels, will boost our renewable electricity production capacity. Excess solar-generated electricity in summer will be stored to meet winter needs by raising several hydroelectric dams.
However, despite these advances to replace nuclear power and comply with the Paris climate agreement, the Federal Council is still not planning to close the two remaining nuclear power plants still in operation.

Materials are deteriorating, maintenance shutdowns are lengthening and the risk of failure is increasing, leading to the ever-present possibility of an accident. This lack of foresight could prove very costly. Without a fixed and announced closure date, the country will have to shut down its power plants because of advanced wear and tear, at an unknown date, at a time when the economy needs to be able to anticipate.
In Switzerland, a nuclear disaster would bring the country to its knees. The human consequences would be far more dramatic than at Chernobyl or Fukushima. The Swiss power stations are all located in the heart of the densely built-up plateau where 70% of the country's population lives. Depending on the wind direction, major cities could be affected in a matter of hours. According to the federal report Katanos, up to 600,000 people would be irradiated in the event of a nuclear disaster in Switzerland[1]. The loss of agricultural land and insolvent mortgages on buildings would amount to 4,200 billion francs, or 52 times the annual budget of the Swiss Confederation.
These facts explain why Alpiq decided to leave the umbrella organisation économiesuisse and its pro-nuclear stance.
Today, Switzerland is capable of making a success of its energy transition without nuclear power, as the population has voted and as the Federal Office of Energy has planned. The new conservatism in which Federal Councillor Albert Rösti is involved reflects a lack of confidence in the country's ability to develop and innovate. We need the

pioneering spirit of our ancestors. It enabled them to build the most complex and dense railway network in the world and to build the largest hydroelectric dams.
Today's energy policy is based on decentralised renewable energies, alpine storage and the control of consumption.
Maintaining nuclear power without a closure timetable is a major obstacle to this programme. Nuclear power has become a pillow of laziness.
By getting rid of an obsolete technology, the country is preparing for a more sustainable and prosperous future, in line with its commitments and the decisions taken in the referendum. Switzerland has all the cards in its hand to make a successful transition away from fossil fuels and nuclear power.

Philippe de Rougemont and Ilias Panchard
Secretary General and President of the Sortir du Nucléaire association

Op-ed published in the Swiss French-speaking business daily Le Temps December 5 2024
https://www.letemps.ch/opinions/debats/la-suisse-sort-lentement-du-nucleaire

[1] KATANOS, Catastrophes et situations d'urgence en Suisse : une analyse comparée, Office fédéral de la protection civile, Berne, 1995.

Indigenous views on nuclear energy and radioactive waste

Susan O'Donnell

New research report and video highlight opposition by Indigenous nations to nuclear projects.
The report is based on analysis of 30 public statements about nuclear energy and radioactive waste by Indigenous nations and communities in New Brunswick, Quebec and Ontario. The study also gathered more than 125 documents submitted to the Canadian Nuclear Safety Commission (CNSC) by Indigenous organizations in these three provinces.
Overall, these documents highlight that Indigenous nations do not support more nuclear development or the transport and storage of nuclear waste on Indigenous homelands. A common theme is the CNSC is not listening to Indigenous voices, and their right to be meaningfully consulted on nuclear projects has not been met.
Indigenous communities understand that producing and storing nuclear waste on their territories without their free, prior and informed consent is a violation of their Indigenous rights. They seek justice for their communities now and for the generations to come.
The report and video are co-published by the Passamaquoddy Recognition Group Inc., an Indigenous organization representing the rights and interests of the Peskotomuhkati Nation in Canada, and the CEDAR project at St. Thomas University.
Point Lepreau on the Bay of Fundy, the location of New Brunswick's current nuclear reactor and planned future nuclear experiments, is within the homeland of the Peskotomuhkati whose duty is to protect their lands, waters, and environment for all present and future generations.
The CEDAR project's Indigenous partners – Chief Hugh Akagi of the Peskotomuhkati Nation at Skutik and Chief Ron Tremblay of the Wolastoq Grand Council – each wrote a foreword to the report.

Both Indigenous leaders are opposed to the production of radioactive waste at the Point Lepreau nuclear site on the Bay of Fundy and have not consented to plans by NB Power to develop at least two experimental nuclear reactors at the site that, if built, would produce more and different forms of radioactive waste.

Susan O'Donnell for the teams at the Passamaquoddy Recognition Group Inc. (PRGI) and the CEDAR project at St. Thomas University.
Susan is also a Board member of Canadian Coalition for Nuclear Responsibility.

Website: https://cedar-project.org/Indigenous/
https://cedar-project.org/wp-content/uploads/2024/11/2024-Indigenous-views-on-nuclear-energy-and-waste.pdf
https://youtu.be/9i7XtIGFqyY

Approval for final nuclear fuel repository Finland delayed again

Jan van Evert

Finland's Radiation and Nuclear Safety Authority (Stuk) has delayed granting a licence for a final nuclear fuel repository for another year. The Ministry of Economic Affairs and Employment has agreed to extend the deadline for the assessment to December 31th 2025. Posiva Oy, the company that is building the repository, has not completed the materials needed for a full assessment. Posiva is jointly owned by Teollisuuden Voima Oyj (TVO) and Fortum, Finland's two nuclear power plant operators. It submitted the operating licence application to the ministry on December 30th 2021. The licence is for a used fuel encapsulation plant and a deep geologic final disposal facility under construction at Olkiluoto, near the Olkiluoto nuclear power station. The repository, known as Onkalo, is likely to become the first operational deep geological disposal facility in the world and is expected to begin operations in about five years. The licence would run from March 2024 to the end of 2070. Stuk asked for the deadline to be extended again last January until the end of 2024.
Last September, Posiva completed the first stage of a trial run at Onkalo. The full-system trial run began on August 30th to test all equipment and related systems working together for the first time. Posiva has been working for several decades at the Onkalo site to develop a final disposal facility for nuclear waste. In May 2021, it began excavation of final disposal tunnels. The operation of the storage site will last for about 100 years before the repository is closed. That is a remarkable timetable since the world's uranium supply will run out by the year 2100.Finland has five nuclear power plants in operation: two at Fortum's Loviisa site and three at TVO's Olkiluoto. Both sites are located in the south of the country.

World Nuclear Power Status

Number of Reactors
(11 December 2024)

Compared to the last edition of the Nuclear Monitor (921);

- ✓ The status of 1 nuclear power reactor (Zhangzhou-1) in China has been changed from under construction to operating.