THE ALARMING RISE OF FALSE CLIMATE SOLUTIONS IN AFRICA:

THE NUCLEAR ENERGY MISADVENTURE

June 2025

PURPOSE

This comprehensive report seeks to lay out details of the extent of plans and announcements to roll out nuclear power plants across the African continent and explore the many reasons why this is absolutely not the answer to the continent's effort to reduce emissions.

It calls for an end to plans and announcements to spend billions on building new nuclear power plants. Instead, the way forward should be to fund clean, safe renewable energy sources, of which the continent has an abundance, in consultation with civil society.

Given the urgency of the climate crisis, nuclear energy is too slow to deliver, it is harmful to human health and the environment, and unlike renewables, nuclear energy is not suited to solving the present problems of energy poverty.

The report is intended for civil society organisations, governments and media. It is designed specifically to challenge the prevalent and misleading pro-nuclear energy narrative being played out across the African continent. It pays special attention to those climate change meetings where this narrative is highly co-ordinated (Bonn Climate Change Conferences, COPs).

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FOREWORD

For many years, global civil society has advocated the importance of an integrated approach that accounts for the environmental, economic, social, cultural and psychological dimensions of the transition to a post-carbon economy. The demand for a Just Transition to a post-carbon economy means it must be green, sustainable and socially inclusive. This report lays out the case for why the nuclear energy option is not compatible with these demands. It shows how the nuclear energy lobby undermines and obstructs the need for net zero to be achieved by 100% clean sustainable renewable energy.

This is of great and growing concern across the African continent.

In 2014, my government in South Africa reached a confidential agreement with Russia to construct eight to ten nuclear power stations across the country, generating 9.6 gigawatts of nuclear energy. The secret deal came to the attention of Earthlife Africa in the same year. Upon discovering the agreement's financial and environmental implications, with no transparency in informing SA public, Earthlife Africa and the South African Faith Communities Environmental Institute (SAFCEI) mobilised citizens and were forced to go to the courts.

On April 26, 2017, the Western Cape High Court declared the nuclear deal unconstitutional, nullifying the agreement and terminating the $76 billion nuclear power project. This legal triumph was a landmark victory that would go on to protect South Africa from the widespread development of nuclear infrastructure, which would have had long-lasting environmental, health, and financial consequences for future generations.

In January 2024 the government published plans to procure 2.5 GWe of new nuclear capacity. However, in August 2024 the government paused the procurement process to allow for further public consultation after a court challenge by SAFCEI and Earthlife.

All the same nuclear energy concerns we had more than a decade ago are now being played out across the continent. This report details those same and multiple reasons why nuclear energy is still not the solution to Africa's energy needs, nor indeed any country's needs.

Why is this nuclear energy push being allowed to happen when we have abundant clean, natural, sustainable renewable in solar, wind and water? The answer lies in no small part on the success of the nuclear energy lobby to pitch itself as a way to help governments reach net zero. In truth, the climate emergency has thrown them lifeline. And this was compounded at COP28, where the Declaration to Triple Nuclear Energy Capacity by 2050 was launched.

And what will tripling global nuclear energy capacity by 2050 cost? An estimated $5 trillion.

This report shows the extent to which pro-nuclear energy propaganda has spread across the continent of Africa. It not only details the nature and scale of the nuclear energy problem, but those seeking to benefit from it, and those who will pay the price.

Africa is becoming both a potential testing ground and, in particular, a battleground for conflicting geopolitical influences that are also playing out in the field of nuclear technology exports, or rather the prospect of such exports. The companies involved and other supporters of nuclear energy, however, present the projects as a continental shift towards embracing nuclear energy as a means to achieve energy security, support industrialization, and meet environmental goals. While challenges such as financing regulatory frameworks, and indeed concern amongst the public remain, the trajectory indicates a significant commitment among African nations to incorporate nuclear power into their energy portfolios.

And in this one important sense, nuclear energy is a huge distraction from directing our energies – and our public money – where they should be going: into clean sustainable renewables.

Three quarters of Africa's climate finance needs are not met and more than half of existing climate finance is in debt instruments. The focus on nuclear energy will severely crowd out already precious and inadequate climate finance for climate mitigation, adaption and renewable energy generation projects.

The report cites the work of Professor Mark Z Jacobson. He has long argued that clean renewables can power all economies – advanced and developing alike. The world can rapidly get 100% of its energy from renewable sources with, with "no miracles needed".[1] He argues that wind, water and solar can provide plentiful and cheap power whereas carbon capture and storage, biofuels, new nuclear and other technologies are expensive wastes of time. "Bill Gates said we have to put a lot of money into miracle technologies. But we don't – we have the technologies that we need…. New nuclear plants are too slow to build and too expensive compared with wind and solar. You end up waiting 15 to 20 years longer, for a seven to eight times higher electricity price – it just makes no sense. Even if they improve [build times], say to 12 years, that's still way too long. We have cheaper, faster, safer technologies. Why waste time?"[2]

Just as we found the courage and the strength to push back the nuclear energy plans for South Africa so my dear colleagues in countries across the continent are taking these same issues to their own communities, raising awareness, informing, educating, presenting the clean energy alternatives, challenging relevant authorities, reaching the media with their messaging.

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[1] *No Miracles Needed. How Today's Technology Can Save Our Climate and Clean Our Air*, Mark Z. Jacobson, 2023, https://doi.org/10.1017/9781009249553

[2] https://www.theguardian.com/environment/2023/jan/23/no-miracles-needed-prof-mark-jacobson-on-how-wind-sun-and-water-can-power-the-world

I believe they can win these arguments, just as we did.

I commend this report as an important call to action for all those inside the UNFCCC processes who, like us, challenge the rationale that nuclear energy deserves its place as a legitimate part of the global energy mix.

Finally, and vitally, it is a valuable resource for fellow campaigners across the continent, compiled as it is, by many African anti-nuclear civil society groups.

Onwards in the struggle.

Makoma Lekalakala
Johannesburg, June 10th 2025

EXECUTIVE SUMMARY

"For many years, global civil society has advocated the importance of an integrated approach that accounts for the environmental, economic, social, cultural and psychological dimensions of the transition to a post-carbon economy. The demand for a Just Transition to a post-carbon economy means it must be green, sustainable and socially inclusive. This report lays out the case for why the nuclear energy option is not compatible with these demands. It shows how the nuclear energy lobby undermines and obstructs the need for net zero to be achieved by 100% clean sustainable renewable energy. This is of great and growing concern across the African continent."

Makoma Lekalakala, Goldman Environmental Prize for Africa in 2018 and the Nick Steel Environmentalist of the Year 2018

THE EXTENT OF PLANS TO ROLL OUT 'FALSE SOLUTION' NUCLEAR POWER ACROSS THE AFRICAN CONTINENT

Many regions in Africa face the urgent challenge of meeting the energy needs of a growing population, steadily increasing urbanisation and the demand for economic growth. While meeting this demand quickly and affordably is indeed a difficult task, more and more governments are presenting nuclear energy as a key part of the solution.

But this report presents a different story: nuclear energy is a technology that has proven to be *too slow*, *too harmful*, *too expensive* and *too difficult* to combine with renewables.

Nevertheless, there is an ever-growing number of announcements across the African continent concerning new nuclear power plants — Angola, Burkina Faso, Egypt, Ethiopia, Ghana, Kenya, Morocco, Namibia, Nigeria, Senegal, Tanzania, Rwanda and Uganda. Meantime, South Africa has the continent's only operating nuclear power plant, commissioned in 1984 under the apartheid government.

It is unfortunate but the climate emergency has thrown a lifeline to the nuclear power industry. As a result, the energy debate is being steered in the wrong direction and nuclear energy plans are becoming tied up with diplomatic and geopolitical interests. Moreover, the sheer number of these plans across the continent is giving the wider public the mistaken impression that the nuclear power is a sensible, rational and environmentally friendly option.

It is not.

Instead, Africa is becoming both a potential testing ground and, in particular, a battleground for conflicting geopolitical influences that are also playing out in the field of nuclear technology exports, or rather the prospect of such exports.

NUCLEAR ENERGY WILL DO MORE HARM THAN GOOD

> *"The solutions to the climate crisis are clear: A rapid, just transition to a nuclear-free, carbon-free energy system. The only sure way to stop the global warming impacts of energy use is to transition as quickly as possible from antiquated energy models of the 20th Century and their polluting nuclear power and fossil fuel technologies … to the safe, clean, affordable and sustainable renewable, efficient, and smart technologies of the 21st Century. Nuclear power, in particular, cannot solve the climate crisis. Indeed, its continued use exacerbates global warming by preventing the deployment of clean energy systems."*
>
> *Don't Nuke the Climate*

The case against nuclear power is overwhelming.

Nuclear reactors and the nuclear fuel chain produce vast amounts of lethal radioactive waste, which grow whenever nuclear power is used. All reactors routinely emit radiation. Scientific bodies agree that there is no 'safe' level of radiation exposure.[3] **The nuclear fuel chain is responsible for more carbon emissions (per generated kilowatt hour) than renewable energy generation**.[4] The climate footprint of nuclear energy will continue to worsen in the foreseeable future while renewable energy sources are becoming ever more efficient.

Nuclear power is ultimately beyond human control. To date, there have been several major reactor disasters and Russia's war in Ukraine has drastically brought the question of the safety of nuclear facilities in war zones to the agenda, with the example of the Zaporizhzhia nuclear power plant being occupied and used as a weapon in war.[5]

Academics and activists alike make the case that **nuclear power is an extravagant waste of money** for both developed and developing nations. **Nuclear power is "an opportunity cost that damages efforts to address climate change and air pollution"**.[6] Nuclear power is the costliest means possible of reducing carbon and methane emissions and worse, **it detracts from investment in clean energy sources.**

Nuclear energy is a textbook example of a **"negative learning curve"** in the energy sector, whereby costs increase rather than decline over time. The cost of solar power declined by 36% at each

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[3] *Why nuclear energy is not an answer to global warming*, Alex Rosen, IPPNW Germany, 2016 https://www.ippnw.eu/commonFiles/pdfs/Atomenergie/Why_nuclear_energy_is_not_an_answer_to_global_warming.pdf

[4] https://www.reachingcriticalwill.org/resources/fact-sheets/critical-issues/5445-nuclear-power-and-the-nuclear-fuel-chain

[5] *The World Nuclear Industry Status Report 2022* https://www.worldnuclearreport.org/IMG/pdf/wnisr2022-v3-lr.pdf, pp. 244

[6] *Seven Reasons Why New Nuclear Energy is an Opportunity Cost That Damages Efforts to Address Climate Change and Air Pollution*, Mark Z. Jacobson, 2024 https://web.stanford.edu/group/efmh/jacobson/Articles/I/24-01-MZJ-HRTestimony.pdf

doubling of capacity in the years 2010-19, falling from $378 to $68 per megawatt hour (MWh). In contrast, the cost of nuclear energy rose from $96 to $155 per MWh in the same time period.[7]

It is ill advised for African nations to collectively take on a proposed US$105 billion more debt[8] in order to realise ill-suited nuclear generation ambitions while crowding out already precious and inadequate climate finance for climate mitigation, adaption and renewable energy generation projects.

NUCLEAR POWER HAS HAD ITS DAY AND IS A 'FALSE SOLUTION' ON EVERY COUNT.

> *"… there is a strong lobby that hopes to rival the success of renewables: the nuclear industry…. While nuclear champions claim that nuclear energy can work hand-in-hand with renewables, it is becoming increasingly clear that nuclear power acts as a significant hurdle to the roll-out of renewables and fossil fuel phase-out."*
>
> *Climate Action Network Europe*

In the midst of the nuclear energy lobby's extensive, well-funded and global PR effort – seen most clearly at climate meetings such as UNFCCC COPs – those nations currently considering nuclear energy need to be reminded of this: nuclear power is a false solution to the climate emergency and is *not* the global norm, but rather the exception.

CONCLUSION

In light of the multiple risks, wasted funds and implementation urgency detailed above, the report authors call for:

- **An end to countries across the African continent becoming** both a potential testing ground for business and technology as well as battleground for conflicting geopolitical influences in the field of nuclear technology exports.
- **An end to plans and announcements that commit wasted billions to new nuclear power plants.** African countries with international debts that are already burdening governments and citizens must reject yet more foreign debt accrued as a result of any potential nuclear energy project.
- **Continent-wide nuclear energy plans to be replaced with** a wholehearted commitment to fund clean, safe renewable energy sources, of which the African continent has an abundance.

[7] *Why did renewables become so cheap so fast?*, Max Roser, updated 2025 https://ourworldindata.org/cheap-renewables-growth; *Levelized Cost of Energy+*, Lazard, 2024, https://www.lazard.com/media/xemfey0k/lazards-lcoeplus-june-2024-_vf.pdf

[8] https://www.nuclearbusiness-platform.com/media/insights/africas-nuclear-energy-market-a-105-billion-opportunity-for-global-investors

Annual investments of over US$200bn will be required through the end of this decade to meet the climate-related goals and the growing energy needs of the whole continent.[9]

- **Rejection of nuclear power plants (NPPs) on the grounds of their catastrophic vulnerability in conflict scenarios** noting the Russia-Ukraine war where a NPP sits inside a war-zone becoming a strategic target for attack.
- **The IAEA to respect the many concerns expressed by civil society and implement a moratorium – a temporary halt – to all current plans for nuclear power plant** developments across the continent, in order for a full debate and consultation to take place.
- **States, civil society, the concerned international organizations and intergovernmental bodies should undertake a fundamental and independent reassessment** of the role of nuclear energy in averting the climate crisis. This should take into account
    - the incompatibility of nuclear power plants with renewable energy sources;
    - the increased risk of nuclear accidents due to the effects of global warming;
    - the increased risk of nuclear proliferation;
    - the documented environmental and health effects of the entire nuclear chain.
- **The World Bank should not implement a new policy of funding for nuclear power plants as part of the World Bank's "Mission 300" initiative**, which aims to provide reliable electricity to 300 million Africans by the end of the decade. Nuclear energy projects do not comply with the bank's environmental and social safeguards and are wholly unsuitable to meet Africa's urgent energy demands.

[9] *World Energy Investment 2024*, IEA, https://www.iea.org/reports/world-energy-investment-2024/africa

PART ONE: CONTINENT-WIDE NUCLEAR POWER

THE EXTENT OF PLANS TO ROLL OUT NUCLEAR POWER PLANTS ACROSS THE AFRICAN CONTINENT

Clearly, many regions in Africa face the challenge of meeting the needs of a growing population, steadily increasing urbanisation rates and the demand for economic growth with the most affordable and widely available energy supply in the shortest possible time. While meeting this demand is a difficult task more and more governments are presenting nuclear energy as a key part of the solution when in fact it is a technology that has proven to be *too slow*, *too harmful*, *too expensive* and *too difficult* to combine with renewables.

This report shows that the ever-growing number of announcements across the African continent concerning new nuclear power plants are − in the vast majority of cases − simply inaccurate and nothing more than wish lists from industry and governments.

Nevertheless, these announcements are steering both the public and political energy debate in the wrong direction. Instead, nuclear energy plans are becoming tied up with diplomatic and geopolitical interests. Moreover, the sheer number of these plans across the continent is giving the wider public the mistaken impression that the nuclear power is a sensible, rational and environmentally friendly option.

Nuclear is none of these things.

Though the individual initiatives to build nuclear power plants are at various stages, most are little more than political declarations or references to MoUs between governments seeking to strengthen diplomatic ties with potential suppliers of nuclear technology and African recipients[10]. Some are in the process of planning and site selection. Egypt has the continent's only project under active construction.

Across the continent, almost no project is purely national; all are built and depend on close international cooperation, especially between Russia or China and the African state concerned. The exception is South Africa, which has the continent's only operating nuclear power plant, whose first reactor at Koeberg was commissioned in 1984 under the apartheid government, when the racist regime ruled what was then a nuclear weapons state. The Koeberg nuclear power station was due to reach the end of its life in 2024, but one unit was granted an extension of almost 20 years last year and the second unit is up for extension in 2025.

[10] *The World Nuclear Industry Status Report 2024*, https://www.worldnuclearreport.org/IMG/pdf/wnisr2024-fr-online.pdf , p.299

Today, however, plans to add more nuclear capacity in South Africa are also based on cooperation with either Western bidders or their Russian, Chinese and South Korean competitors.[11] Russia has been, and continues to be, the most aggressive lobbying force for its potential nuclear energy facility exports to the country.[12] In general, the trend in the construction of new nuclear power plants worldwide can be summarized as follows: China is mainly building domestically and Russia is mainly building abroad. Apart from that, against the backdrop of an ageing reactor fleet worldwide (except China), the number of operating nuclear power plants (NPPs) is declining, at best stagnating thanks to risky extensions of the operating life of old plants.

The supposedly "new plant design on the block" is summarized under the term "Small Modular Reactors". As the recent World Nuclear Industry Status Report (WNISR) summarizes: "The gap between hype about Small Modular Reactors (SMRs) and industrial reality continues to grow. The nuclear industry and multiple governments are doubling down on their investments into SMRs, both in monetary and political terms. So far, reality on the ground does not reflect those efforts. SMR projects continue to be delayed or canceled."[13]

These developments and rhetoric, both around SMRs and the geopolitical influence associated with nuclear technology exports, are also reflected on the African continent.

Egypt is one example for the Russian export of nuclear power plant technologies. The country is leading the continent's nuclear energy expansion with the construction of the El Dabaa Nuclear Power Plant. This $25 billion project, developed in partnership with Russia's Rosatom and funded by a Russian government loan, will feature four reactors totaling 4.8 gigawatts (GW) upon completion. The loan has a 22-year term with a 3% annual interest rate. Egypt will commence repayments after the first reactor becomes operational.

In 2024 **Ghana** signed an agreement with U.S.-based NuScale Power to deploy a VOYGR-12 small modular reactor (SMR), marking the nation's first foray into nuclear energy. This initiative is said to aim to diversify Ghana's energy mix and is part of a broader strategy to integrate advanced nuclear technologies. Ghana has been exploring nuclear energy for some time and has therefore put in place the necessary governance, institutions and processes. Ghana's formal decision to include nuclear power in the national electricity mix was announced in August 2022. Also in 2022, the United States announced a grant of $1.75 million to support nuclear energy training, presumably to counter Russian influence in

[11] *Nuclear power in Africa: state of play*, Heinrich Böll Stiftung Cape Town, 2025
[12] *The World Nuclear Industry Status Report 2024*, https://www.worldnuclearreport.org/IMG/pdf/wnisr2024-fr-online.pdf , p.403
[13] *The World Nuclear Industry Status Report 2024*, https://www.worldnuclearreport.org/IMG/pdf/wnisr2024-fr-online.pdf , p.33

the form of nuclear development in what the US views as a key ally in the region.[14] It should be noted here that to date, NuScale has not built a single commercial SMR, let alone fed electricity into a grid.

Already operating the continent's only nuclear facility at Koeberg, South Africa plans to expand its nuclear capacity by 5200MW, according to the recently released Draft Integrated Resource Plan.[15] This would be commissioned between 2036 to 2039, a highly optimistic timeframe. While not yet approved, the minister of energy and electricity, along with other officials, has consistently made positive statements about nuclear power and the possibility of procuring such.

The focus is currently on extending the operating life of the two existing reactor units. Koeberg-1 received approval to operate for another 20 years in July 2024. A decision on extending the operating life of Unit 2 is still pending.

Kenya has identified one of the country's top coastal tourist hubs – which also houses a forest on the tentative list of the UNESCO World Heritage site – to build its inaugural nuclear power plant. The nuclear plant, proposed last year, is set to be built in the town of Kilifi. The construction of the 1,000MW nuclear plant is set to begin in 2027 and be operational by 2034, at a cost of 500 billion Kenyan shillings ($3.8 billion).[16] However, the schedule is extremely unrealistic. The authorities have not yet finalised the necessary regulations, selected a nuclear power plant builder or begun the selection process. The only indication in this direction is a memorandum of understanding signed with Rosatom in 2016 regarding general collaboration in nuclear technology, which includes the 'practical implementation of the key Kenyan project – the first ever nuclear power generating plant'.[17]

Uganda is considering sites along the Kyoga, Kagera, and Aswa rivers for two 1,000 MW reactors, aiming for completion by 2031.[18] If either completed, this would amount to about half of Uganda's latest installed electricity generation capacity of about 2,000 MW and would therefore be far from the recommendation made by the IAEA.[19] In recent years, different government officials have announced nuclear power plant construction plans with differing projected capacities, ranging from 1 to the staggering amount of 24 GW. The government has engaged with potential nuclear builders from Russia, Korea and China to advance these plans, however, no details regarding the choices of reactor

[14] *The World Nuclear Industry Status Report 2024*, https://www.worldnuclearreport.org/IMG/pdf/wnisr2024-fr-online.pdf , pp. 306
[15] Integrated Resource Plan, Department of Mineral Resources and Energy South Africa, 2024, https://www.scribd.com/document/858938701/Integrated-Resource-Plan-2024
[16] https://www.voanews.com/a/planned-nuclear-plant-in-kenyan-tourist-hub-endangered-species-home-sparks-protest-/7820332.html
[17] *The World Nuclear Industry Status Report 2024*, https://www.worldnuclearreport.org/IMG/pdf/wnisr2024-fr-online.pdf , p.300
[18] Daniel, N.; Kim, J. A Study on Integrating SMRs into Uganda's Future Energy System. *Sustainability* **2022**, 14, 10033. https://doi.org/10.3390/su141610033
[19] https://www.era.go.ug/index.php/stats/generation-statistics/installed-capacity

designs or project financing have been made public thus far. Giving the projected output of the projects, the extremely ambitious, or rather unrealistic timeframe, the Ugandan "statements frankly sound vastly overblown" as the WNISR concludes.[20]

In **Tanzania**, moderate prospects for the possible use of nuclear power are occasionally expressed, but these are still a long way from being realised. In fact, however, in 2003 the East African state established the Tanzania Atomic Energy Commission, which, as the successor to the National Radiation Commission, now goes beyond the regulation and supervision of radioactive materials to also regulate 'the safe and peaceful uses of atomic energy and promote and expand the contribution of atomic energy and nuclear technology to health and prosperity throughout the United Republic of Tanzania.'[21]

The fact that Tanzania has entered into an agreement with Rosatom in October 2016 to build a research reactor with the aim to introduce larger scale nuclear power plants later[22] is certainly due more to the fact that Rosatom's mining subsidiary Uranium One is operating the most advanced uranium exploration and potential mining project in the country. No specific construction projects are known at present, while mining projects are likely to be held back only by low demand and low uranium prices.

In fact, periodic announcements, such as the completely unrealistic pledge made at COP28 in the United Arab Emirates in 2023, constantly fuel speculation about possible new uranium mining projects. Despite not being part of the conference, the pro-nuclear coalition misused the stage to claim that nuclear power capacity should be tripled by 2050 for the sake of the climate.[23] Such announcements create unrealistic expectations regarding new reactor-related uranium demand, the effects of which are felt at the extractive frontiers of the nuclear industry.[24]

Nigeria's nuclear experimentation began on May 31, 2016 on the sidelines of the ATOM EXPO which was held in the Russian capital Moscow where the Nigerian government and Rosatom signed a co-operation agreement to build four nuclear power plants in Nigeria.[25] The cost of four of the plants were estimated at $80 billion[26], with the first scheduled for completion in 2025. The other three to

[20] *The World Nuclear Industry Status Report 2024*, https://www.worldnuclearreport.org/IMG/pdf/wnisr2024-fr-online.pdf , p.303
[21] https://www.taec.go.tz/pages/history
[22] https://www.neimagazine.com/news/russia-signs-deal-with-tanzania-and-uganda-5663831/; *The World Nuclear Industry Status Report 2024*, https://www.worldnuclearreport.org/IMG/pdf/wnisr2024-fr-online.pdf, p.300.
[23] https://www.energy.gov/articles/cop28-countries-launch-declaration-triple-nuclear-energy-capacity-2050-recognizing-key
[24] For more on this, see: Holterman, Devin; Schukalla, Patrick (2021): Countering the 'Nuclear for Climate Narrative: Testimonies from the frontlines of the Nuclear Frontier: https://www.beyondextraction.ca/ & https://www.rosalux.de/en/news/id/45338/nuclear-power-is-founded-on-massive-global-injustices
[25] https://www.vanguardngr.com/2016/05/nigeria-signs-pact-russia-nuclear-technology/
[26] https://sweetcrudereports.com/nigeria-enters-80bn-nuclear-power-deal-with-russia/

be ready in 2035. Combined, the four are projected to add about 4,800 megawatts to power generation in Nigeria. Under the agreement with the Nigeria Atomic Energy Commission (NAEC), Rosatom is to hold a majority stake in Nigeria's nuclear facilities while the rest will be owned by the Nigerian state, with roles to be defined in contractual agreements.

However, following resistance from the supposed host communities[27] the project has not started and there is a strange silence from the NAEC and the Rosatom. The plans were leaked to the public and drew widespread criticism from local activists across Nigeria and in Itu community in Akwa Ibom State where the project is to be sited.

Despite opposition to the project,[28] the NAEC continued marketing it as solution to Nigeria's woeful power sector[29]. This drama continued until February 2020 when the 6th Akwa Ibom State House of Assembly passed a motion rejecting the construction of the plant in the state[30], urging the Federal Government to explore other available and harmless sources of power in the state.

Though there is scarce information on how the project would proceed, Nigeria has also signed deals with China on nuclear energy[31] projects. There is also very little information in the public domain on that project. In March 2022 the Nigerian Nuclear Regulatory Authority (NNRA) initiated bidding for the construction of a 4 GW nuclear plant. This project is envisioned to address persistent power outages and significantly boost the nation's energy capacity. In fact, "Nigeria signed agreements on nuclear power development with South Korea, France, Russia, and India, and the NNRA signed cooperation agreements with nuclear regulators in the U.S., Pakistan, South Korea, and Russia."[32] As usual, specific financial terms were not disclosed, but the project is portrayed as a means to enhance infrastructure and energy sectors in Nigeria.

However, the government itself does not seem to have much faith in these projects, as Nigeria's 2023 Energy Transition Plan, which outlines a path to carbon neutrality by 2060, does not include nuclear energy at all, but very ambitious increases in renewable generation capacity. In July 2022, the former chairman of the Nigerian Electricity Regulatory Commission pointed to the lack of adequate transmission infrastructure to manage even existing electricity capacity, and asked "whether the government should be more concerned with expanding capacity or increasing investments to ensure that the current generated capacity gets reliably distributed".[33] As is so often the case, Nigeria's nuclear plans must be considered exaggerated and unrealistic, distracting attention in the energy

[27] https://thenationonlineng.net/akwa-ibom-stakeholders-reject-nuclear-power-plant/
[28] Ibid.
[29] https://www.vanguardngr.com/2020/12/nuclear-powerll-guarantee-energy-security-in-nigeria-naec-chairman/
[30] https://www.vanguardngr.com/2020/02/lawmakers-reject-proposed-nuclear-power-plant-in-akwa-ibom/
[31] https://oilprice.com/Latest-Energy-News/World-News/Nigeria-China-Sign-Nuclear-Energy-Pact.html
[32] *The World Nuclear Industry Status Report 2024*, https://www.worldnuclearreport.org/IMG/pdf/wnisr2024-fr-online.pdf , p.305
[33] Quoted in: ibid.

sector from pressing issues such as how to expand renewable energy sources and ensure stable supply.

Morocco is exploring nuclear energy options. The government is considering nuclear power to diversify its energy sources and meet future electricity demands. Back in October 2017, Morocco signed a memorandum of understanding with Rosatom on 'cooperation in the peaceful use of nuclear energy', making the Russian state nuclear corporation the most likely partner so far. The MoU was expanded during the Russia-Africa summit in St Petersburg in 2023.[34] Previous assessments and studies of a nuclear power plant in Morocco date back to the 1980s.[35] For Morocco, nuclear power is generally seen as a way to provide energy for seawater desalination, and the country's advantages as a potential uranium producer from local phosphate deposits are also highlighted. The latter is misleading in that it ignores the need for enrichment, which will not take place in the country, and therefore uranium extraction would rather add to the resource base of the external technology supplier. Unlike most countries on the continent, Morocco has enough installed generation capacity, with more than 10GW in the grid,[36] to host a nuclear power plant, and yet, in summary, the country's nuclear ambitions are in the planning and groundwork phase and still several years away from a potential start of construction.

Rwanda has signed agreements to establish a nuclear training center and is working towards developing nuclear infrastructure, reflecting its commitment to integrating nuclear energy into its national grid. It is working with Russian, American and German/Canadian partners on different nuclear projects.[37] The announcement by the Canadian-German company Dual Fluid to build and operate a demonstration plant by 2026 has recently been in the news. Its innovative design remains untested and has not been licensed anywhere.[38] It is therefore unlikely that the plans will go ahead as planned. The country has signed another MoU with Nano Nuclear, a US-based company that also has no licensed reactor design in its portfolio and is a therefore a highly speculative deal.[39]

More technical details about these developments can be found in this report '*Nuclear power in Africa: state of play*'.[40] **These developments underscore the highly speculative nature of current nuclear power plant construction projects while becoming both a potential testing ground for business and**

[34] https://mei.edu/publications/moroccos-nuclear-option-russian-vs-us-technological-cooperation-power-its-water
[35] *The Moroccan NPP Project and Partnerships Perspectives*, 2021, https://nucleus.iaea.org/sites/INPRO/df18/3.4-R.Sekkouri-Morocco.pdf; https://www.osti.gov/etdeweb/biblio/20905572
[36] *The World Nuclear Industry Status Report 2024*, https://www.worldnuclearreport.org/IMG/pdf/wnisr2024-fr-online.pdf , p.29
[37] https://energynews.pro/en/rwanda-relies-on-russia-to-train-its-nuclear-energy-specialists/
[38] *The World Nuclear Industry Status Report 2024*, https://www.worldnuclearreport.org/IMG/pdf/wnisr2024-fr-online.pdf , p.30
[39] https://www.world-nuclear-news.org/articles/rwanda-signs-agreement-with-nano-nuclear
[40] *Nuclear power in Africa: state of play*, Heinrich Böll Stiftung Cape Town, 2025

technology and battleground for conflicting geopolitical influences that are playing out in the field of nuclear technology exports, or rather *the prospect* of such exports. The companies involved and other supporters of nuclear energy, however, present the projects as a continental shift towards embracing nuclear energy as a means to achieve energy security, support industrialization, and meet environmental goals. While challenges such as financing regulatory frameworks, and indeed concern amongst the public remain, the trajectory indicates a significant commitment among African nations to incorporate nuclear power into their energy portfolios.

Not only do the substantial loans and long-term financial commitments raise concerns about debt sustainability for recipient countries. Reliance on foreign financing and technology can also lead to geopolitical dependencies and influence.

While international partnerships are suggesting nuclear energy development in Africa, it is crucial for nations to carefully assess the financial terms, long-term obligations, and broader implications of these agreements to ensure sustainable and autonomous energy growth that meets the needs of the population and is consistent with realistic assessments of infrastructure capacity and expansion.

THE FLAWED RATIONALE

Nuclear power is being sold as a cornerstone of Africa's clean energy future but it's not a one-size-fits-all solution.

Nuclear power is increasingly being marketed and positioned as Africa's solution for clean energy and climate mitigation. Several African governments and their international partners (particularly Russia and China) are promoting nuclear power as a vital tool in achieving both energy security and low-carbon development goals. At COP28, several African countries signed a pledge backing nuclear energy as a key part of the clean energy transition.

Africa's electricity demand is expected to triple by 2040 due to population growth and industrialization. Nuclear is being pitched as the only scalable, low-carbon option that can power heavy industries, cities, and rural expansion simultaneously.

Russia's Rosatom, China's CNNC, and U.S. companies like NuScale are promoting nuclear as a modern, safe, and clean alternative, aligning with Africa's net-zero aspirations. These countries often bundle technology transfer, training, and funding, making nuclear attractive to nations lacking domestic capabilities.

But nuclear plants are extremely capital-intensive. Tying up billions in long-term loans may not be financially sustainable for many African nations. Long-term storage of radioactive waste remains unresolved in all cases around the globe, raising environmental and safety concerns.

And nuclear projects have long lead times — 10 to 15 years from planning to operation when everything goes as planned. To give an example from a long-time nuclear power producer, France, the first new reactor in 25 years went online at Flamanville just before the end of 2024. It took 17 years to build, was delayed by 12 years and cost €23.7 billion — over €20 billion more than originally estimated. This was too much for the French Court of Auditors and so plans to build six more nuclear power stations have been put on hold until the Flamanville figures are available.[41]

We argue that the **urgency of climate action** may be better addressed with renewables in the near term, in Africa and globally. Moreover, there are questions over whether nuclear energy will, in any case, truly benefit the **millions without basic electricity**.

NPPs are baseload power plants and cannot be flexibly started up and shut down as needed, and even for industries that require baseload power, nuclear is not ideal.[42] A climate-friendly energy transition, however, relies on flexibility and needs electricity grids that are designed for the changing output of renewable energy sources. Nuclear power cannot complement this, it can only disrupt it. Nor are NPPs a viable option in regions affected by energy poverty. It would take a very long time to upgrade inadequate grids, which would be very costly, and this in turn would slow down the expansion of rapidly deployable and more cost-effective renewable generation capacity.[43]

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[41] *La filière EPR: une dynamique nouvelle, des risques persistants*, Chambres régionales & territoriales des comptes, 2025 https://www.ccomptes.fr/sites/default/files/2025-01/20250114-La-filiere-EPR%20-une-dynamique-nouvelle-des-risques-persistants_0.pdf

[42] https://theecologist.org/2016/mar/10/dispelling-nuclear-baseload-myth-nothing-renewables-cant-do-better

[43] *Nuclear is not the solution: The Folly of Atomic Power in the Age of Climate Change*, Ramana M.V., Verso, 2024; Sovacool, B.K., Schmid, P., Stirling, A. et al. Differences in carbon emissions reduction between countries pursuing renewable electricity versus nuclear power. *Nature Energy* **5**, 928–935 (2020). https://www.nature.com/articles/s41560-020-00696-3; For an overview see: *Risks and side effects of nuclear energy*, IPPNW Germany, https://www.ippnw.eu/fileadmin/user_upload/information_nuclearenergy_climate_EN.pdf

PART TWO: WHY NUCLEAR POWER IS NOT THE ANSWER TO THE CONTINENT'S EFFORT TO REDUCE EMISSIONS AND WILL DO MORE HARM THAN GOOD

1. ENDLESS CONCERNS

> *The solutions to the climate crisis are clear: A rapid, just transition to a nuclear-free, carbon-free energy system. The only sure way to stop the global warming impacts of energy use is to transition as quickly as possible from antiquated energy models of the 20th Century and their polluting nuclear power and fossil fuel technologies … to the safe, clean, affordable and sustainable renewable, efficient, and smart technologies of the 21st Century. Nuclear power, in particular, cannot solve the climate crisis. Indeed, its continued use exacerbates global warming by preventing the deployment of clean energy systems.*
>
> *Don't Nuke the Climate*[44]

As the Don't Nuke the Climate network of anti-nuclear and environmental organisations say, 'we cannot afford to waste more time and money on this dirty dangerous distraction'. The future is renewable, not radioactive.

The threats that nuclear power poses are well documented and as numerous African nations consider embarking on this road, they need to come clean with their citizens and honestly address the numerous concerns associated with nuclear power.

TOXICITY

The production of nuclear energy is associated with the emission of radioactivity throughout the nuclear chain. This is not only true of the well-known major reactor accidents. Radioactivity is also released during the production of uranium, the transport of radioactive materials and the day-to-day operation of nuclear facilities.

Moreover, nuclear reactors and the nuclear fuel chain produce vast amounts of lethal radioactive waste, which grow whenever nuclear power is used. All reactors routinely emit radiation. Scientific bodies agree that there is no 'safe' level of radiation exposure[45]. The assumption that there is a threshold below which radioactive radiation is harmless

[44] https://www.dont-nuke-the-climate.org/mission-statement
[45] *Why nuclear energy is not an answer to global warming*, Alex Rosen, IPPNW Germany, 2016 https://www.ippnw.eu/commonFiles/pdfs/Atomenergie/Why_nuclear_energy_is_not_an_answer_to_global_warming.pdf

to health has long been out of step with current scientific knowledge and is a popular protective claim of the nuclear industry and its lobby. The theoretical basis for radiation protection standards around the world today is a model in which there is a linear dose-response relationship between the probability of disease and radiation dose, but no safe lower threshold (Linear-Non-Threshold-Model)[46]. Even doses in the order of a few millisieverts have been shown to increase the risk of disease. Epidemiological studies have shown that workers exposed to radiation in the workplace are significantly more likely to become ill than others, even when official dose limits are respected. In short, ionising radiation produced by the use of nuclear energy increases the risk of cancer and other radiation induces diseases:[47] "The study on childhood cancer in the vicinity of nuclear power plants by the German Children's Cancer Registry examined data over a period of 23 years on more than 6,000 children under the age of five, who were living in the vicinity of German nuclear power plants.[48] The study showed a significant increase in the risk of cancer in the proximity of all nuclear power plants. An increase in health effects due to radioactive exposure was also found among staff at nuclear power plants. The INWORKS study showed increased leukaemia rates in a cohort of 600,000 nuclear workers in 2015.[49] Increased cancer rates were also found among workers in uranium mines, their families and the population living in uranium mining areas."

GHG POLLUTING

The nuclear fuel chain is responsible for more carbon emissions (per generated kilowatt hour) than renewable energy generation.[50] When the greenhouse gas assessment of the entire nuclear energy production chain is considered, from uranium mining to the construction and operation of the power plant to the dismantling and disposal of the radioactive materials, the difference becomes even clearer and shows how unsustainable nuclear power plants are. The climate footprint of nuclear energy will continue to worsen in the foreseeable future — not only because energy will be needed for a long period of time for the interim storage and the search for and construction of permanent storage sites for the dangerous highly radioactive waste. In addition, renewable energy sources are becoming more efficient, and further increases in efficiency are expected in combination with storage systems, while nuclear energy is based on the finite resource of uranium, the ore content of which is

[46] Wojcik, A., Zölzer, F. The scientific nature of the linear no-threshold (LNT) model used in the system of radiological protection. *Radiat Environ Biophys* **63**, 483–489 (2024). https://doi.org/10.1007/s00411-024-01092-1

[47] *Risks and side effects of nuclear energy*, IPPNW Germany, https://www.ippnw.eu/fileadmin/user_upload/information_nuclearenergy_climate_EN.pdf

[48] http://www.alfred-koerblein.de/cancer/english/kikk.htm

[49] Leuraud K et al., Ionising radiation and risk of death from leukaemia and lymphoma in radiation-monitored workers (INWORKS): an international cohort study. *The Lancet Haematology*, Volume 2, Issue 7, e276 - e281. https://doi.org/10.1016/S2352-3026(15)00094-0

[50] https://www.reachingcriticalwill.org/resources/fact-sheets/critical-issues/5445-nuclear-power-and-the-nuclear-fuel-chain

decreasing and the extraction of which is associated with a corresponding increase in energy consumption.[51]

VULNERABILITY

Nuclear power is ultimately beyond human control.[52]

To date, there have been several major reactor disasters: the most widely known are those of Three Mile Island (USA 1979), Chernobyl (Soviet Union 1986) and Fukushima (Japan 2011). In addition to the major reactor disasters, there have been a large number of lesser-known serious nuclear accidents. Russia's war in Ukraine has drastically brought the question of the safety of nuclear facilities in war zones to the agenda, with the example of the Zaporizhzhia nuclear power plant.[53] But even the normal conditions of nuclear power generation are becoming more dangerous by the day, as the world's reactor fleet is massively ageing and outdated. The climate crisis is also affecting the safety and performance of nuclear power plants.[54] Rivers carry less water affecting cooling. Floods and extreme weather events are also becoming more frequent.[55]

Fire at Zaporizhzhia nuclear plant.[56]

In summary, only one thing is certain about the use of nuclear energy: the permanent risk.

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[51] *Risks and side effects of nuclear energy*, IPPNW Germany, https://www.ippnw.eu/fileadmin/user_upload/information_nuclearenergy_climate_EN.pdf
[52] Charles Perrow, Basic Books, 1984, *Normal accidents: living with high-risk technologies*
[53] *The World Nuclear Industry Status Report 2022* https://www.worldnuclearreport.org/IMG/pdf/wnisr2022-v3-lr.pdf, pp. 244
[54] Portugal Pereira, et al., (2024). Exposure of future nuclear energy infrastructure to climate change hazards: A review assessment. *Energy Strategy Reviews*. **53**. 101365. https://doi.org/10.1016/j.esr.2024.101365
[55] *Risks and side effects of nuclear energy*, IPPNW Germany, https://www.ippnw.eu/fileadmin/user_upload/information_nuclearenergy_climate_EN.pdf
[56] https://www.bbc.co.uk/news/articles/c984l87l2w6o

SECURITY CONCERNS[57]

One of the African countries seeking to join South Africa and Egypt in the nuclear club is Nigeria. In 2017 the country signed a deal with Rosatom to build up to four nuclear power stations, although little progress appeared to have been made in turning this vision into a reality.

Nigerian environmental activist Philip Jakpor commented that the nuclear plans are a "misadventure". "I don't think we are ready as a nation to host nuclear plants. I don't think we have the capacity to manage it."

Jakpor points out that Nigeria has had long-standing difficulties with its oil and gas infrastructure. Pipelines are frequently the target of sabotage, theft or terrorism, causing enormous environmental damage in the Niger Delta. He warns that a nuclear power station would also inevitably become a "target of terrorists". Security at a nuclear power station would need to be akin to a "military base" and end up being protected by Russian personnel, he predicts.

WASTE OF MONEY ...

For both developed and developing nations alike, civil society and many academics alike, make the case that nuclear power is a waste of money. Nuclear power is "an opportunity cost that damages efforts to address climate change and air pollution".[58]

At a time when we urgently need all efforts directed to safe clean renewable climate finance, nuclear power is the costliest means possible of reducing carbon and methane emissions and worse, it detracts from investment in clean energy sources.

AND A CASH COW FOR FOREIGN BANKS AND COMPANIES

Since no African country currently has the domestic ability to finance and build nuclear plants, Africa's potential nuclear energy market is currently estimated to worth more than US$100 billion for foreign investors.[59] Nuclear plant construction has a long history of cost overruns around the world, including almost all (rich) countries with established nuclear industry.[60] The African nuclear power generation, as and when it comes to fruition, may mean being beholden to foreign nuclear powerhouses and investors for decades to come.

[57] https://african.business/2023/10/energy-resources/is-it-time-for-africa-to-press-the-nuclear-button
[58] *Seven Reasons Why New Nuclear Energy is an Opportunity Cost That Damages Efforts to Address Climate Change and Air Pollution*, Mark Z. Jacobson, 2024, https://web.stanford.edu/group/efmh/jacobson/Articles/I/24-01-MZJ-HRTestimony.pdf
[59] https://www.nuclearbusiness-platform.com/media/insights/africas-nuclear-energy-market-a-105-billion-opportunity-for-global-investors
[60] Eash-Gates, Philip et al., Sources of Cost Overrun in Nuclear Power Plant Construction Call for a New Approach to Engineering Design, *Joule*, Volume 4, Issue 11, 2348 – 2373. https://doi.org/10.1016/j.joule.2020.10.001

EVERY POWER WANTS TO TAKE A BITE[61]

France, South Korea and China are building a small number of nuclear plants outside their borders. China is now part of the Ugandan nuclear project.

But the country that has been by far most aggressive in promoting itself as an international nuclear plant developer is Russia. In 2019 it had already secured nuclear cooperation agreements with 18 African countries, with several more concluded more recently.

Russia's ability to gain traction with its exports of nuclear technology to Africa rests on the fact that it is able to offer a package that includes financing as well as technology. As part of the package, Russia requires recipient countries to sign long-term agreements for the supply of nuclear fuel – effectively locking those countries into a dependent relationship.

African leaders should be "extremely wary" of long-term fuel agreements Russia, given the country's history of using energy for political leverage, warned Todd Moss, executive director at the non-profit Energy for Growth Hub. Russia is "far ahead" in the race for nuclear contracts in Africa, the playing field is still heavily contested.

In Uganda, for example, the government appears to be encouraging competition between foreign players. While Uganda's President Yoweri Museveni claimed to have reached a deal with Russian and South Korean firms in August, he has also announced various schemes with the China National Nuclear Corporation since 2018.

Washington is another player in the game. "The US is taking nuclear exports seriously", says Moss. The US International Development Finance Corporation changed its policies in 2020 to allow it to invest in nuclear energy projects overseas. The US announced in October 2022 that it would work with Japan to support nuclear projects in Ghana, and then in 2023 it unveiled funding for a nuclear training programme in the country.

WE DON'T HAVE TIME

The billions applied to nuclear power development are locked into long term contracts at the very moment we need speed and urgency in the roll out of renewable energy sources that are abundant on the African continent.

There is not the time, nor the infrastructure: "[T]he typical capacity of a nuclear plant in most cases would vastly exceed current installed capacities and usage. The IAEA, for example, stipulates as rule of thumb: "A single power plant should represent no more than 10 per cent of the total installed grid capacity." Considering that a typical large nuclear reactor has a capacity of around 1,000 MW (1 GW),

[61] https://african.business/2023/10/energy-resources/is-it-time-for-africa-to-press-the-nuclear-button

only four African countries analyzed by the WNISR would meet the criteria: Algeria, Libya, Morocco and Nigeria. All the others are, according to the report, far from it.[62]

NUCLEAR WEAPONS

Globally, the main drivers of nuclear energy are and will remain the nuclear weapon states. Without the civil use of nuclear energy, nuclear weapons programmes would be extremely difficult to finance and implement. In short: nuclear power, powers the bomb.[63]

The civil and military dimensions of nuclear energy are closely intertwined. Not only do the interests in research and development and the trained personnel overlap. The militaries of the nuclear weapon states also use the 'civilian' sector for financing and for access to material specifically suitable for nuclear weapons. The British government's insistence on the construction of the new Hinkley Point C nuclear power plant, despite enormous cost increases, is to be understood in the context of the Trident nuclear weapons project. The French state-owned company EDF plans to carry out the first tritium production tests in the reactors of the Civaux nuclear power plant in 2025, in order to renew France's nuclear warheads. In the past, civilian nuclear programmes have been used to disguise nuclear weapons programmes. Consequently, any nuclear facility could potentially be the next step on the path to the atomic bomb.[64]

Nuclear reactors and nuclear weapons derive power through the fission (splitting) of uranium nuclei by neutrons, a process that releases large amounts of energy. Uranium must be mined, processed and enriched before it can be used in reactors or to make nuclear weapons. The uranium in reactor fuel is typically enriched by 3 to 5%, which means that the concentration of U-235 is increased from its natural level of about 0.7%. Uranium enriched above 20% U-235 is considered highly enriched uranium (HEU) and is technically weapons-grade, but most nuclear weapon designs require enrichment levels of 90% or higher. Plutonium is a by-product of the nuclear fuel chain and is produced by irradiating uranium in a nuclear reactor and reprocessing the spent fuel rods. Countries producing plutonium for weapons can operate reactors in a way that maximizes the production of plutonium-239 — the isotope most useful for nuclear weapons.[65]

People and planet cannot risk the further expansion of nuclear weapons programmes, yet the technology and materials needed to generate nuclear energy could be diverted and reprocessed to develop African nuclear weapons programs. This is not the time for more nuclear armed states.[66]

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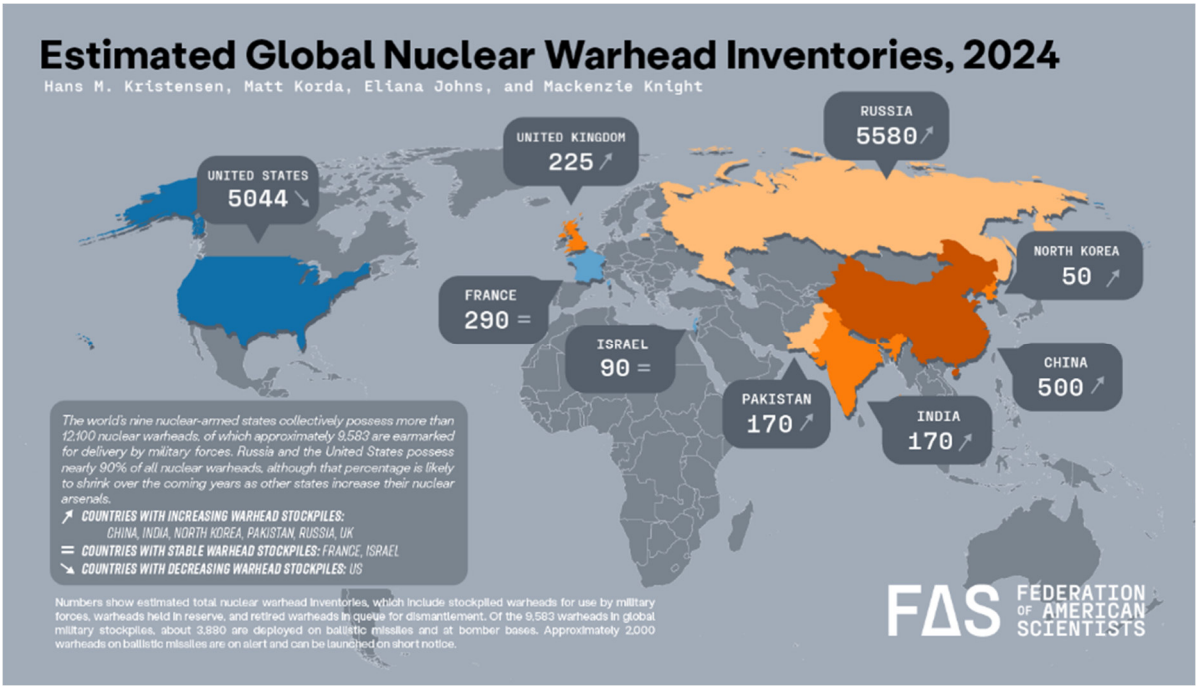
[62] *The World Nuclear Industry Status Report 2024* https://www.worldnuclearreport.org/IMG/pdf/wnisr2024-fr-online.pdf , p.301
[63] *How Nuclear Power powers the Bomb. The interdependence of military and civilian nuclear industries*, IPPNW Germany, 2019, https://www.ippnw.de/commonFiles/pdfs/Atomenergie/IPPNW-Information_How_nuclear_power_powers_the_bomb_2019_EN.pdf
[64] See: *Risks and side effects of nuclear energy*, IPPNW Germany, https://www.ippnw.eu/fileadmin/user_upload/information_nuclearenergy_climate_EN.pdf
[65] https://www.ucs.org/resources/fissile-materials-basics
[66] https://thebulletin.org/2021/03/for-the-npt-to-work-plutonium-has-to-go/



WE NEED TO BE HONEST -- Olamide Samuel[67]

For nuclear energy advocates, lobbyists and supportive governments, I think the time has come for more honest messaging and analyses about the true costs (financial, environmental and human) of nuclear energy.

Africa is home to vast and untapped natural resources, with significant renewable energy potential. At a first glance, given the required speed of deployment of solutions to mitigate Africa's energy poverty, I think it is prudent to propose that African nations prioritise and utilise its readily available renewable energy potential. Nuclear energy should be seen as a solution of last resort.

Existing nuclear reactor designs are particularly vulnerable to project and cost overruns, in addition to proliferation concerns which are amplified given Africa's current security landscape. Pending the development and deployment of viable and cost-effective small modular reactors (SMRs), I fear that existing nuclear reactor designs might perhaps be much more attractive to leaders and politicians who value "white elephant projects", and see nuclear energy as a particularly attractive option and cash cow in this light.

There also has to be clarity about the potential for radioactive contamination, at the uranium extraction and processing phases of operation, but also with regards to nuclear waste management. For the former, the protection of humans and environments around extraction sites, presents a governance problem that cannot be wished away.

While Africa should not be expected to sacrifice its prospects for future economic development because of climate change, the continent should also not be hastily turned into a dumping ground for experimental or problematic nuclear technologies and techniques.

[67] https://www.aljazeera.com/opinions/2021/11/21/nuclear-energy-should-be-part-of-africas-climate-strategy

LAND DISPLACEMENT

The development of nuclear power plants in many parts of the world is often linked to the forced displacement of communities, leading to human rights violations and environmental racism. It is invariably linked to environmental damage and degradation. Land displacement has been a counterpart to the development of nuclear power over decades in numerous parts of the world.

This will remain a clear and present threat for those communities who find themselves caught up in the business of site location for proposed new nuclear power plants – plans that are currently underway in a number of African countries and which are facing civil society oppositions.

POOR WASTE MANAGEMENT

The scale of negligence on the part of oil and gas companies in countries such as Nigeria[68] is well documented and many activists are concerned that the same nightmares could return with nuclear power plant operation and nuclear waste management.

There is currently not a single operational final repository for highly radioactive waste anywhere in the world, but there is a long list of failed attempts to create one and another list of blatant misconduct in the handling of radioactive waste.[69]

In countries such as France and Germany, no final decisions on locations have been made to date, the timetables have been pushed back significantly and the cost estimates have risen considerably. The challenges are enormous. Depending on their assessment and the legal requirements derived from it, **countries that use nuclear energy are looking for a safe final repository that will ensure safe containment for at least 10,000, 100,000 or, as stipulated in German law, 1,000,000 years**. Those in favour of an energy supply path that relies on nuclear energy rarely consider the burden this entails, nor do they recognise its profound significance in terms of intergenerational justice.

[68] https://www.theguardian.com/environment/ng-interactive/2022/jun/01/oil-pollution-spill-nigeria-shell-lawsuit

[69] *Uranium Atlas: Data & Facts about the Raw Material of the Nuclear Age*, 2020, https://www.nuclear-free.com/uranium-atlas.html pp. 42

Rosatom's built-own-operate (BOO) models, whereby the nuclear waste would be returned to Russia, are not as problem-free as they may seem either. It would involve the unnecessary and risky transportation of radioactive cargo over vast distances. In light of the scarcity of resources and the almost guaranteed increase in costs throughout the entire nuclear energy production chain, it is difficult to imagine that the issue of nuclear waste disposal, which is already overlooked and marginalised in wealthy countries, will be handled more effectively in countries and societies facing much greater economic challenges.

As with reactor operation, the same applies to nuclear waste. The only certainty is the risk.

2. THE ENERGY MIX: PEOPLE AND PLANET DO NOT NEED 'FALSE SOLUTION' NUCLEAR POWER

According to the International Renewable Energy Agency, **Africa's potential to generate renewable energy from existing technologies, accounting for current costs, is 1,000 times greater than the projected demand for electricity in 2040**.[70]

The idea that the peoples of the African continent need nuclear power as route to *mitigation* does not sit well with the reality that 'despite having nearly one-fifth of the world's population today, Africa accounts for less than 3% of the world's energy-related carbon dioxide (CO_2) emissions to date and has the lowest emissions per capita of any region.'[71]

And the argument that it is a necessary part of the energy mix is also flawed for, as the IEA's '*Africa Energy Outlook 2022*' points out, electricity will underpin Africa's economic future, **with solar leading the way.**[72]

> *Electricity is the backbone of Africa's new energy systems, powered increasingly by renewables. Africa is home to 60% of the best solar resources globally, yet only 1% of installed solar PV capacity. Solar PV – already the cheapest source of power in many parts of Africa – outcompetes all sources continent-wide by 2030. Renewables, including solar, wind, hydropower and geothermal account for over 80% of new power generation capacity to 2030 in the SAS. Once coal-fired power plants currently under construction are completed, Africa builds no new ones, underpinned mainly by China's announcement to end support for coal plants abroad. If the investment initially intended for these discontinued coal plants were redirected to solar PV, it could cover half of the cost of all Africa's solar PV capacity additions to 2025 in the SAS.*

[70] *The Renewable Energy Transition in Africa*, 2021, https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2021/March/Renewable_Energy_Transition_Africa_2021.pdf
[71] *Africa Energy Outlook 2022*, IEA, https://www.iea.org/reports/africa-energy-outlook-2022/key-findings
[72] https://www.iea.org/reports/africa-energy-outlook-2022

EAST AFRICA[73]

New medium-scale solar, wind and geothermal power-generating facilities would likely dominate the expansion of east African electricity generation capacity in the coming decade as they are cheap in comparison. Typical construction timescales are also much lower than nuclear or hydro megaprojects.

Take **hydropower** generation, which uses the natural flow of moving water to produce electricity. This source of power has been the most significant in east Africa for decades. Building more dams is both time consuming and often controversial for significant and long-lasting environmental and human impacts. However, major projects using this technology are currently still being built; for example, the 2,115MW Julius Nyerere hydropower station in Tanzania. **Solar power** – the conversion of energy from sunlight into electricity – has an extremely low footprint in the region at the moment. Yet it is now one of the cheapest forms of electricity generation. Most countries in the region have extensive areas suitable for harnessing this source.

While not enjoying the **wind** resources of the Earth's oceans and mid-latitudes, wind farms can be considered in places, and are already in operation, such as in Kenya's Lake Turkana region. East Africa furthermore has the Rift Valley and its volcanic activity in places. This offers the opportunity for **geothermal power**, a technology that converts the intense underground heat associated with cracks in the Earth's crust to electricity. This is already the leading electricity generation mode in Kenya and could be developed elsewhere.[74]

At a first glance, given the required speed of deployment of solutions to mitigate Africa's energy poverty, it is prudent to propose that African nations prioritise and utilise its readily available renewable energy potential.

KENYA'S CIVIL SOCIETY PUSH-BACK

The idyllic coastline in Kilifi has been chosen to be the site of Kenya's first nuclear plant, as the country, like its east African neighbour Uganda, pushes forward with nuclear energy plans. The proposals have sparked fierce opposition in Kilifi. In a building by Mida Creek, a swampy bayou known for its birdlife and mangrove forests, more than a dozen conservation and rights groups meet regularly to discuss the proposed plant.[75]

"Kana nuclear!" Phyllis Omido, an award-winning environmentalist who is leading the protests, tells one such meeting. The Kenya Alliance against Nuclear say the plant will deepen Kenya's debt and are

[73] https://theconversation.com/4-east-african-countries-are-going-for-nuclear-power-why-this-is-a-bad-idea-218046
[74] https://www.theguardian.com/environment/2024/jan/25/our-contribution-to-a-cleaner-world-how-kenya-found-an-extraordinary-power-source-beneath-its-feet
[75] https://www.theguardian.com/global-development/article/2024/jun/17/kenya-plans-first-nuclear-power-plant-kilifi-opposition-activists

calling for broader public awareness of the cost. Construction on the power station is expected to start in 2027, with it due to be operational in 2034.

"It is the worst economic decision we could make for our country," says Omido, who began her campaign last year. A lawsuit filed in the environmental court by lawyers Collins Sang and Cecilia Ndeti in July 2023 on behalf of Kilifi residents, seeks to stop the plant, arguing that the process has been "rushed" and was "illegal", and that public participation meetings were "clandestine". They argue the Nuclear Power and Energy Agency (Nupea) should not proceed with fixing any site for the plant before laws and adequate safeguards are in place. Nupea said construction would not begin for years, that laws were under discussion and that adequate public participation was being carried out. Hearings are continuing to take place.

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In recent years, Kenya has experienced a series of catastrophic weather events, from the heavy flooding in the coastal and North Eastern regions in 2023 to the unprecedented rainfall witnessed in 2024, that have left a trail of destruction and devastation in their wake. In the face of such extreme weather conditions, it is clear that nuclear power is not a viable solution for Kenya. The construction and operation of nuclear power plants require stable and predictable environmental conditions, which are increasingly becoming a thing of the past in our rapidly changing climate. The risks associated with nuclear power, including the potential for catastrophic accidents and the long-term storage and disposal of radioactive waste, are simply too great to ignore.[76]

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The plan? A 1,000 MW nuclear plant near Kilifi, ready to break ground by 2027, with promises of operation by 2034—all part of the Kenya National Electrification Strategy aiming for universal power access by 2030. But here's the kicker: Kenya already sources over 90% of its electricity from renewables. Geothermal steam, hydro dams, wind, and solar energy have powered us sustainably and cleanly, right from our own natural bounty. So, why abandon what works?[77]

Amos Wemanya, Greenpeace Africa's Responsive Campaigns Lead, states: "Nuclear power centralizes power production, expertise, and money. It takes power away from communities. Kenya should fully invest in renewables like wind and solar, putting every resource toward these rather than outdated energy sources. The government must marshal resources to build resilience for front-line communities, using decentralized energy systems."

[76] https://kenyantinuclearalliance.org/index.php/2024/05/12/climate-chaos-why-nuclear-power-is-not-the-solution-for-kenya/
[77] https://www.greenpeace.org/africa/en/blog/56663/kenyas-nuclear-gamble-risking-billions-and-biodiversity-for-power-we-dont-need/

WEST AFRICA AND THE SAHEL REGION

The Singaporean pro-nuclear energy company Nuclear Business Platform is one of the many commercial entities promoting nuclear energy worldwide. Since 2012, NBP has been working with governments and utilities looking to start or expand on a nuclear power program. It also serves as a business development arm to international companies which are expanding into a new nuclear market.

> *"Having engaged with officials from all the key African countries over the years, we have categorised the African nuclear prospects into 3 tiers based on government support for nuclear energy, timelines and infrastructure activities. 7 sub-Saharan African countries are committed to having nuclear as part of their energy mix between 2030 to 2037. These include Ghana, Uganda, Nigeria, Rwanda, Kenya, Zambia. Ghana, Nigeria, Uganda have all developed a Nuclear National Position and are considering both large and small reactors. What opportunities are there in the African nuclear market? Reach out to our team to learn more about the African nuclear market."*[78]

According to NBP, five ECOWAS members–Ghana, Nigeria, Niger, Senegal, and Burkina Faso–are championing nuclear energy. Ghana aims for 1,000 MW nuclear capacity by 2030. Moreover, the recently formed Alliance of Sahel States (AES) defense pact between Mali, Niger, and Burkina Faso advocates for a regional civil nuclear power facility by 2034, proving the powerful role of strategic alliances.[79]

But civil society is resisting this.

GHANA[80]

A Non-Governmental Organisation, Human Rights 360, has vehemently kicked against Ghana's determination to switching to nuclear energy as an alternative to the country's perennial power crisis. The NGO, as part of its advocacy against ongoing negotiations and implementation of the various phases of the agreement signed by past and successive governments, has called on Ghanaians to resolutely mount pressure on the government to abandon the idea. This came to light during a stakeholders' forum organised by Human Right 360 at Elmina to sensitise the people about the dangers involved in the use of nuclear to generate electricity.

In her welcome address, the Executive Director of Three-Sixty Human Rights, Alberta Kpeleku, noted that throughout various discussions about possible Nuclear Power in Ghana, very little has been said about its deadly side effects. This, she said, informed the decision of 360 to educate the masses to become abreast of the real dangers associated with the nuclear power generation and the need to

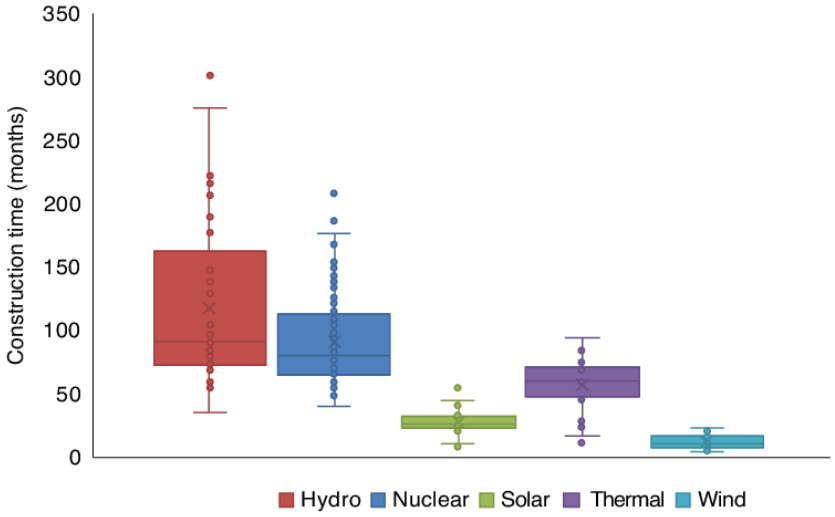
[78] https://www.nuclearbusiness-platform.com/africa/market-overview
[79] https://www.nuclearbusiness-platform.com/media/insights/the-rise-of-nuclear-power-in-africa-a-look-at-regional-initiatives
[80] https://thechronicle.com.gh/human-rights-360-kicks-against-nuclear-energy-in-ghana/

have “Nuclear Free Ghana”. She further called on government to consider the vulnerabilities of the populace in case of any disaster associated with nuclear plants and rather prioritise other forms of renewable energy such as solar which she said was comparatively cheaper.

Delivering a keynote address, under the theme: “Nuclear-Free Ghana, The Role of Stakeholders”, a legal practitioner, Lawyer Solomon Appiah, stated that the impact of energy crises on the economy could not be underestimated. According to Lawyer Appiah, the overreliance on the Akosombo Hydro Dam as the country’s primary energy source was mainly responsible for the recurrent power crises that kept bedevilling the country. In view of this, he said, there has been a long standing consideration of nuclear energy as the long term solution to the country’s energy crises, which would ensure efficient and stable power supply in the future. However, he queried the country’s preparedness to handle nuclear waste and how best the waste would be disposed safely to avert any concomitant effects on human lives and the environment in general. “It is true that nuclear waste, particularly in the form of radioactive waste, presents a lot of health risks among infants, children and the elderly. “Are we ready as a country to go nuclear when we cannot solve our basic economic and health needs,” he asked. In his estimation, though nuclear energy, undeniably played a significant role in the global energy landscape, Ghana must carefully assess the risks and benefits of adopting atomic energy as an alternative source to hydroelectric power.

CROWDING OUT: NUCLEAR AND RENEWABLES DON'T MIX

A study of 123 countries by the Sussex University Business School has gathered historical data that bolsters a conclusion often articulated by environmentalists.[81]



Construction lead times and opportunity costs for nuclear and renewable power plants.

[81] Sovacool, B.K., Schmid, P., Stirling, A. et al. Differences in carbon emissions reduction between countries pursuing renewable electricity versus nuclear power. *Nature Energy* **5**, 928–935 (2020). https://www.nature.com/articles/s41560-020-00696-3

New nuclear plants are too slow and too costly to make a rapid or affordable contribution to the reduction of greenhouse gas emissions. By contrast, energy efficiency measures and renewable energy sources can be deployed quickly, substantially reducing greenhouse gas emissions from the very first building season. What's more, these "green alternatives" cost less money to install and maintain, and create far more jobs per dollar invested than is the case with nuclear power.

The study goes further, confirming that even existing nuclear plants have not succeeded in reducing greenhouse gas emissions as much as renewable energy systems. Contrary to the claims made by nuclear proponents, the study also shows that nuclear power and renewables cannot easily co-exist. The study points out that, as baseload power plants, NPPs cannot be flexibly started up and shut down as needed, but that a climate-friendly energy transition relies on flexibility and needs electricity grids that are designed for the changing output of renewable energy sources. It also highlights the impact of path dependencies when regulatory frameworks, financing, etc. are tailored to large power plants. Meanwhile, the fossil fuel industry can rejoice at new NPP plans, because until they are completed, gas and coal can continue to be burned.

3. VERY POOR VALUE FOR MONEY – WHO BENEFITS?

The billions that will be committed to those corporations building nuclear plants in African should be committed financing real renewable sources of energy (and which the continent has in unmatched abundance) in consultation with civil society.

TOO EXPENSIVE

It doesn't make financial sense for low-income African countries to invest in nuclear power plants. The costs of constructing, maintaining and later decommissioning a nuclear plant make this one of the most expensive forms of electricity generation.[82] The actual cost is invariably a lot higher than originally announced; nuclear megaprojects around the world have suffered severe cost overruns historically, no matter where it was built.[83] And the construction period is usually many years (even decades) longer than declared at the start.[84]

The construction cost of a new nuclear plant typically stands at about US$5 billion per 1,000MW. The cost of a 2,000MW build in Uganda would be of the order of that country's annual total tax revenue. As such, the project would rely on massive loans, which also come with considerable interest.[85]

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[82] https://cleantechnica.com/2023/04/15/wind-solar-power-now-the-clear-champions-on-cost/
[83] Haas, R., Thomas, S., Ajanovic, A. (2019). The Historical Development of the Costs of Nuclear Power. In: Haas, R., Mez, L., Ajanovic, A. (eds) The Technological and Economic Future of Nuclear Power. Energiepolitik und Klimaschutz. Energy Policy and Climate Protection. Springer VS, Wiesbaden. https://link.springer.com/chapter/10.1007/978-3-658-25987-7_5
[84] *World Nuclear Industry Status Report 2022*, https://www.worldnuclearreport.org/-World-Nuclear-Industry-Status-Report-2022-.html
[85] https://theconversation.com/4-east-african-countries-are-going-for-nuclear-power-why-this-is-a-bad-idea-218046

Cost is one key reason why only one nuclear power station has ever been completed in Africa. The Koeberg facility near Cape Town opened in 1984 and usually generates around 5% of South Africa's electricity.[86]

Indeed, nuclear energy is a textbook example of a "negative learning curve" in the energy sector, whereby costs increase rather than decline over time. The cost of solar power declined by 36% at each doubling of capacity in the years 2010-19, falling from $378 to $68 per megawatt hour (MWh). In contrast, the cost of nuclear energy rose from $96 to $155 per MWh in the same time period.[87]

NO MIRACLES NEEDED: WIND, WATER, SOLAR FOR ALL NATIONS

Scientists and engineers have long argued that clean renewables can power all economies — advanced and developing alike; among them is Professor Mark Z Jacobson, who argues that wind, water and solar can provide plentiful and cheap power whereas carbon capture and storage, biofuels, new nuclear and other technologies are expensive wastes of time, and furthermore, the world can rapidly get 100% of its energy from renewable sources, with 'no miracles needed'.[88] "Bill Gates said we have to put a lot of money into miracle technologies. But we don't — we have the technologies that we need…. New nuclear plants are too slow to build and too expensive compared with wind and solar. You end up waiting 15 to 20 years longer, for a seven to eight times higher electricity price — it just makes no sense. Even if they improve [build times], say to 12 years, that's still way too long. We have cheaper, faster, safer technologies. Why waste time?"[89]

Most scientists and engineers focus primarily on the global north countries. This in turn immediately and inevitably leads to the question of 'green colonialism' and the rich world reliance on critical minerals to drive the global green transition.

At COP29 in Baku critical minerals, transition minerals, strategic minerals were all terms raised during negotiations. Africa boasts the largest deposits of critical minerals with the DRC estimated to hold 70 per cent of the world's cobalt reserves and has substantial deposits of lithium, copper, tin, tantalum and untapped gold. "…wealthy nations must facilitate the transfer of technology, including machinery and techniques, for processing their minerals,'' says critical minerals expert Kudakwashe Manjonjo, a renewable energy associate at Power Shift Africa. "Transferring this technology is also essential in enhancing the efficiency of solar panels, for instance."

But at the heart of the demands were calls to promote people-centred participation and ownership of critical minerals production through local legislation and policy. "Like China has done over the

[86] https://african.business/2023/10/energy-resources/is-it-time-for-africa-to-press-the-nuclear-button
[87] *Why did renewables become so cheap so fast?*, Max Roser, updated 2025 https://ourworldindata.org/cheap-renewables-growth; *Levelized Cost of Energy+*, Lazard, 2024, https://www.lazard.com/media/xemfey0k/lazards-lcoeplus-june-2024-_vf.pdf
[88] *No Miracles Needed. How Today's Technology Can Save Our Climate and Clean Our Air*, Mark Z. Jacobson, 2023, https://doi.org/10.1017/9781009249553
[89] https://www.theguardian.com/environment/2023/jan/23/no-miracles-needed-prof-mark-jacobson-on-how-wind-sun-and-water-can-power-the-world

decades, Africa should pursue an industrialisation strategy by starting with critical mineral processing and gradually scaling up to high-value industries. They can then move to areas such as electrical vehicles and green technologies," says Fadhel Kaboub, an economist and Just Transition expert.[90]

Jacobson studied how 149 countries can transition 100% of their "business as usual" (BAU) all-sector energy to electricity and heat obtained from 100% wind-water-solar sources and what the impacts will be. The BAU scenario assumes current energy consumption levels and patterns continue without significant changes.

EXAMPLES: KENYA & UGANDA

For example, if **Kenya** starts the transition now, by 2050 wind will provide 29% of its energy needs, solar 66%, geothermal 3% and water 2%. At least 104,800 more long-term jobs will be created than lost. Because the renewable energy generation and grid will be much more efficient than the fossil-fuel based and the need for energy use for the upstream mining, transporting and/or refining of fossil fuels, biofuels and uranium is eliminated, the overall energy demand will reduce by 73%. Greenhouse gas emissions of 48 million metric tonnes of CO_2e per year will be avoided. And the associated reduction in air pollution will save 17,800 lives per year and an annual health cost of US$47bn will be avoided. It takes only 1 year for the 100% WWS transition to pay for itself due to annual energy, health and climate cost savings.

Similarly, **Uganda** could have wind providing 16% of its energy needs, solar 83% and water 1% by 2050. At least 77,700 more long-term jobs will be created than lost. The overall energy demand will reduce by 60%. Greenhouse gas emissions of 15 million metric tonnes of CO_2e per year will be avoided. And the associated reduction in air pollution will save 64,500 lives per year and an annual health cost of US$113bn will be avoided. The payback time for WWS due to annual energy, health and climate cost savings is 0.9 years.

The analysis for all 149 countries can be found at his research website.[91]

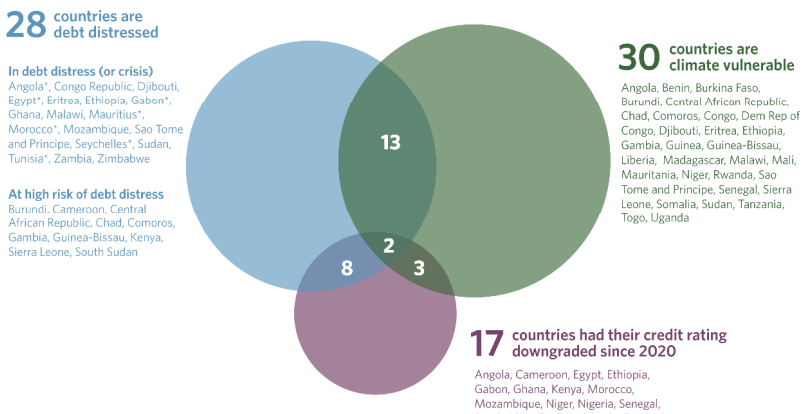
[90] https://nation.africa/kenya/health/why-africa-s-critical-minerals-were-a-hot-debate-at-cop29-4854468
[91] https://web.stanford.edu/group/efmh/jacobson/Articles/I/WWS-149-Countries.html

4. CLIMATE FINANCE (DOMESTIC/INTERNATIONAL)

According to the Climate Policy Initiative's '*Landscape of Climate Finance in Africa 2024*' report, Africa collectively received mere US$44 billion annual climate finance, 87% of which are from international sources. [92] The research exposes the grave financing gap which threatens Africa's long-term sustainable development trajectory, with only 23% of the estimated annual needs for Africa to implement its Nationally Determined Contributions (NDCs) and meet its 2030 climate goals are currently funded.

Finance from domestic sources made up only 10% of Africa's total climate finance, 75% of which came from private finance. There remain huge regional imbalances in the flow of climate finance in Africa with the top ten countries alone receiving 50% of the total, while the bottom 30 countries receive just 10%. While climate investment in Africa reached an all-time high, public finance is still the primary funder. Private finance comprises only 18% of Africa's total climate flows, a far lower share than any other region globally. Half of all private climate finance goes to South Africa, Egypt, and Nigeria.

Despite high debt vulnerability, as much as 51% of climate finance to Africa comes in the form of debt. This proportion of loans in Africa's climate finance mix is more than double that of other regions, such as East Asia and the Pacific (18%) or Latin America and the Caribbean (20%).



When three quarters of Africa's climate finance needs are not met and more than half of existing climate finance is in debt instruments, it is ill advised for African nations to collectively take on a proposed US$105 billion more debt in order to realise ill-suited nuclear generation ambitions. Additionally, the focus on nuclear energy will severely crowd out already precious and inadequate climate finance for climate mitigation, adaption and renewable energy generation projects.

[92] https://www.climatepolicyinitiative.org/publication/landscape-of-climate-finance-in-africa-2024/

PART THREE: PUSHING BACK ON THE WIDER GLOBAL NUCLEAR ENERGY EXPANSION PLAN

Every country must develop its own plans to reduce greenhouse gas (GHG) emissions. In the rich north, some interested parties promote nuclear power as part of the solution but it is costly and slow; China has the challenge of both meeting net zero and raising the living standards of more and more of its billion plus population.

Of the 195 countries in the world, 32 currently operate nuclear power plants. More than half (about 58%) of the electricity generated by these nuclear power plants comes from just three countries: the United States, the world's largest nuclear power producer, followed by China and France. With Russia in fourth place and South Korea in fifth, these five countries alone have accounted for just over 70 per cent of the world's nuclear power generation in recent years. The majority of nuclear power generation is therefore concentrated in a small number of countries. On a global scale, nuclear power is also losing ground. Its share of global electricity generation recently stood at 9.15 per cent. This is the lowest level in forty years and more than 45% below the global peak of 17.5% in 1996.[93] The global peak of nuclear power generation was therefore in the last century. Since then, renewable energies in particular have been competing with nuclear power.

Contrary to what is often claimed, nuclear power is not the global norm, but rather the exception. Its main and dominant drivers are and will remain the nuclear-armed states.

As a result, we see new nuclear plants being planned across the globe but China alone takes up nearly 50% of the planned new plants and the rest are mainly made up by India, Poland, Russia and USA.[94] Despite the push by foreign interests on Africa to embrace nuclear energy, this statistic tells a different story. The enthusiasm for nuclear energy amongst many countries in the global north is weak. This is not surprising since nuclear energy is seen by much of civil society around the world as one of many 'false solutions' to the climate emergency.

1. INDIGENOUS RESISTANCE

Civil society resistance to nuclear power around the world is longstanding, born from human rights violations and environmental racism. Indigenous people, people of colour and low-income communities are often at the centre of land displacement and the impact uranium mining and radioactive waste. Communities struggling to protect their land from plans to build nuclear power plants and rejecting the toxic legacy of nuclear power seems to be an all too common experience across the globe. And never-ending.

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[93] *The World Nuclear Industry Status Report 2024*, https://www.worldnuclearreport.org/IMG/pdf/wnisr2024-fr-online.pdf , pp. 45

[94] https://world-nuclear.org/information-library/current-and-future-generation/plans-for-new-reactors-worldwide

Karina Lester, a Yankunytjatjara-Anangu woman, second-generation nuclear test survivor,[95] and ICAN Ambassador attended the Third Meeting of States Parties to the Treaty on the Prohibition of Nuclear Weapons at the UN in 2025. In her statement, Karina shared the impacts and ongoing legacy of British nuclear testing on her family, community and traditional lands and outlined the expectations from affected community members worldwide for support under Articles 6&7 of the TPNW, which require states parties of the TPNW work collaboratively to provide support to communities impacted by the use and testing of nuclear weapons. Karina called out the Australian Government's lack of action on the TPNW to date, and made clear that it is time for Australia to sign and ratify the TPNW, without delay.[96]

Since the development of nuclear energy in the mid-20th century, Native American reservations in the United States have been subjected to thousands of tons of toxic nuclear waste, with dangerous consequences for health, the environment, and tribal sovereignty. For example, over 500 abandoned uranium mines on the Navajo Nation have poisoned residents' drinking water and caused elevated rates of kidney failure and lung disease for generations. The disproportionate concentration of nuclear waste on Native lands is not a coincidence. Instead, it reflects what activists and scholars have aptly described as "radioactive colonialism" to saddle Indigenous communities with "the most hazardous material ever created by humanity or nature" as a result of uranium mining and other nuclear developments. Nuclear dumping on Native land has been met with intense resistance for as long as it has been occurring.[97]

The Canadian government has exempted small modular reactors from full federal environmental assessment under the Impact Assessment Act. Many civil society groups have condemned this decision because it allows SMRs to escape the public scrutiny of environmental, health and social impacts. Kebaowek First Nation has been vocal in its objection to the continuation of the nuclear industry on its lands without its free prior and informed consent, as is its right under the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP):[98]

> *The narrative of nuclear energy is one of selective storytelling and one that hides the reality of the Indigenous communities that remain deeply affected, first by land being taken away for nuclear reactor construction, and later by the radioactive pollution at the site.* ***Nuclear is a colonial energy form. In country after country, the uranium that fuels nuclear plants has predominantly been mined from the traditional lands of Indigenous Peoples at the expense of the health of Indigenous Peoples and their self-determination.***

[95] See also: *The Devastating Consequences of Nuclear Testing. Effects of Nuclear Weapons Testing on Health and the Environment*, IPPNW, 2023, https://survivors.ippnw.de/index.php?eID=dumpFile&t=f&f=13013&token=3661e8f57aa3c3b7d8a2f8c4823bd7a806b23e0b

[96] https://icanw.org.au/karinalester_statement_msp3/

[97] https://inkstickmedia.com/how-native-land-became-a-target-for-nuclear-waste/

[98] https://policyoptions.irpp.org/magazines/february-2022/decolonizing-energy-and-the-nuclear-narrative-of-small-modular-reactors/

2. EUROPE – CALLING OUT THE NUCLEAR POWER LOBBY

Climate Action Network (CAN) Europe spells out the problem.[99] New nuclear energy in Europe is too slow, and too expensive to meaningfully contribute to the decarbonisation of the energy system by 2040. This pathway is a distraction which only delays fossil fuel phase-out and renewables uptake.

> *"... there is a strong lobby that hopes to rival the success of renewables: the nuclear industry, fighting for influence and watering down EU climate legislation when it suits their own interests. This development is creating significant tension with proponents of a fully renewable energy system and marks a regressive step in efforts towards a sustainable and just energy transition. While nuclear champions claim that nuclear energy can work hand-in-hand with renewables, it is becoming increasingly clear that nuclear power acts as a significant hurdle to the roll-out of renewables and fossil fuel phase-out."*

CAN Europe calls for a 100% renewable energy system by 2040, and therefore a managed phase-out and decommissioning of Europe's existing nuclear fleet is required by 2040 at the latest to ensure a safe and sustainable future.

3. BUYERS REMORSE?

The push for technology to fix the climate emergency is a last chance saloon offering by rich nations to solve their failure to address cuts to their GHG emissions. It is not even a 'Value for Money' case in the rich world, let alone for African nations.

UK'S NEW NUCLEAR POWER PLANT

French nuclear developer EDF Energy first proposed the Hinkley Point C nuclear plant in 2006 and envisioning it to be operational by Christmas 2017. When the construction of this nuclear plant was

[99] https://caneurope.org/myth-buster-nuclear-energy/

finally given the green light in 2016 by the British government, its completion date was set at 2027 with an estimated cost of £18bn.[100]

Nearly 10 years later, the plant is as far away from being completed as before, despite being built in the 6th richest country in the world jointly by two of the world-leading industrial and nuclear powerhouses, namely France and China. The planned completion has been delayed to as late as 2031, with costs ballooning to £46bn.[101] To put salt on the wound of the British taxpayers, they are expected (guaranteed by the government for 35 years) to pay at least twice as much for the electricity generated from the Hinkley Point C nuclear plant as they will for offshore wind.[102]

TAIWAN'S ILL-FATED FOURTH NUCLEAR POWER PLANT

Taiwan first started constructed its fourth nuclear power plant, the Lungmen Nuclear Power Plant, in 1999. Due to environmental concerns and political opposition, the construction was slow and torturous and completely stopped in 2014, despite nearing completion and US$9 billion already spent. There have been many attempts to restart and finish construction. A referendum in 2021 rejected the latest proposal and it is extremely unlikely construction will ever restart again.[103] Taiwan relies on maritime imported fossil fuels for 97.7% of its energy supply and its economy is energy intensive. However, environmental concerns took precedent, thus proving its latest nuclear energy megaproject to be a wasteful distraction (from the inevitable renewable future).

4. THE EVER-EXPANDING NUCLEAR ENERGY LOBBY AT COP

The climate crisis has afforded the nuclear lobby a new lease of life as it proclaims itself to beat the heart of the energy solution. Its presence at COP meetings is growing year on year. This is of deep concern for all the reasons outlined above.

> *"What about nuclear energy in COP29 agreement? There was further progress from the so-called coalition of the willing, with further agreements on the sidelines of COP29 which saw six more countries - El Salvador, Kazakhstan, Kenya, Kosovo, Nigeria and Turkey - signing up to the Net Zero Nuclear goal to triple nuclear energy capacity."*[104]

[100] https://www.theguardian.com/business/2025/jan/30/hinkley-point-c-owner-warns-fish-row-may-further-delay-nuclear-plant
[101] https://www.thechemicalengineer.com/news/hinkley-point-c-could-go-28bn-over-budget-as-edf-predicts-further-delays/
[102] https://jonathonporritt.com/uks-nuclear-obsessions-kill-off-its-net-zero-strategy/
[103] https://world-nuclear.org/information-library/country-profiles/others/nuclear-power-in-taiwan
[104] https://www.world-nuclear-news.org/articles/what-happened-with-nuclear-energy-at-cop29

"Nuclear can now count on the world's biggest banks to back the growth of the nuclear industry. Nuclear has attracted the interest and investment of the world's largest and most advanced technology companies. And nuclear has ever-increasing support from the public, who recognize that in nuclear they have an answer to their demands for energy security, reliable supply and prices, and a response to climate change. This is truly a global coalition of the ambitious. And thank you all for being part of it."[105]

NUCLEAR GREENWASHING AT COP29

World Nuclear Association Director General Sama Bilbao y León (Image: World Nuclear Association)

The push for nuclear expansion is a global effort led by the International Atomic Energy Agency (IAEA), one of the most powerful agencies at the United Nations whose mission is to promote nuclear power around the globe. At the UN COP29 climate summit in Baku, Azerbaijan a Declaration to Triple Nuclear Energy by 2050 led by the US and UK was also endorsed by 31 countries.

The declaration falsely claims that nuclear power has net-zero carbon emissions while ignoring ongoing problems of radioactive waste and environmental impacts. Most climate experts agree nuclear power is not a solution to climate change due to high cost and delays. The acting Australian prime minister, Richard Marles, declined to join the pact, stating, "pursuing a path of nuclear energy would represent pursuing the single-most expensive electricity option on the planet." Several international indigenous groups and activists protested at COP29 against the pact and nuclear greenwashing in general. According to Leona Morgan, Diné organizer with Don't Nuke the Climate, "Nuclear is not carbon-neutral. It's fueled by fossil fuels… they just simply don't count the carbon footprint before the nuclear power plant or after the nuclear power plant."[106]

[105] https://world-nuclear.org/news-and-media/press-statements/six-more-countries-endorse-the-declaration-to-triple-nuclear-energy-by-2050-at-cop29
[106] https://www.counterpunch.org/2024/11/20/nuclear-propaganda-exposed/

This declaration was called out by Jacobson, director of the Atmosphere/Energy Program at Stanford University, as the "stupidest policy proposal I've ever seen", who went on to say: "The world needs to switch away from using fossil fuels to using clean, renewable sources of energy as soon as possible." As to nuclear power, it is "not needed" to deal with climate change.[107]

This plan has a current price tag of US$5 trillion. Tim Judson of the Don't Nuke the Climate coalition – a coalition that has attended every COP since COP6 – spoke to their statement signed by 630 NGOs opposing the global treaty to triple nuclear energy by 2050 and calling out the need not to be funnelling $5trillion into nuclear energy instead of climate finance.[108]

The anti-nuclear power movement pushback of the nuclear power 'false solution', through side events, actions and press conference and media interviews is critical.[109] This push-back will become ever more vital as the nuclear power lobby sees the take-up of more and more nuclear plants around the world, notably as this paper shows, across the African continent.

CONTINENT-WIDE ACTION IS PUSHING BACK NUCLEAR GREENWASH

Civil society solidarity, information sharing and collective action is deepening and at pace.

January 2025 saw organisations from South Africa, Zambia, Russia, and Kenya, as well as others joining remotely, for a Nuclear Free Africa Solidarity Visit week-long solidarity engagement on the threats of nuclear energy proliferation in Africa.[110]

The call was clear: Africa does not need nuclear energy — it is neither safe, affordable, nor climate-smart. Communities and NGOs are taking a stand, equipping themselves with knowledge to debunk the myths surrounding nuclear power and to highlight its true risks and consequences.

During the last decade Ghana's authorities were intensively discussing the construction of nuclear reactors with Russian Rosatom. In 2015 the memorandum of understanding was signed between Ghana and Russian state nuclear corporation. In 2023 Russia proposed to build a fleet of small nuclear reactors in Ghana. Sessions focused on familiarisation and knowledge-sharing. Experiences from Ghana were exchanged with other parts of the world, including Germany, Russia, South Africa, Kenya, and Zambia — emphasising access to information, the role of traditional and local authorities, and the strength of networks.

[107] https://sanonofresyndrome.com/nuclear-news/nuclear-power-pushing-at-the-uns-cop28-climate-change-conference
[108] https://dont-nuke-the-climate.org/blog/towards-cop-29
[109] ibid
[110] https://safcei.org/nuclear-free-africa-solidarity-visit-to-ghana/

Alberta Kpeleku, Solomon Appiah, Bethel Okyere Baffour - 360 Human Rights

"We are here to shed light on the often-overlooked consequences of nuclear energy, especially with reference to nuclear waste. From environmental disasters to health risks and economic concerns, it's time to reevaluate our reliance on nuclear power. The impacts on the environment include nuclear accidents, radioactive waste, and contamination. Health risks include cancer, genetic damage, kidney disease, and other related conditions caused by radiation exposure. Additionally, there are security threats, such as nuclear proliferation, terrorism, and cybersecurity risks. The gravamen of our case is that the devastating effects of nuclear accidents do not affect the present generation alone but also generations yet unborn. Alternatives and solutions for nuclear energy include renewable energy sources—solar, wind, hydro, and geothermal—which should be prioritised. Energy efficiency and conservation measures should be implemented, along with nuclear phase-out and decommissioning plans. There should be a call to action involving demands for policy changes, support for renewable energy investment and research, and finally, the intensification of public awareness and education campaigns."

Phyllis Omido, Kenya, Laureate of the Alternative Nobel Prize, Goldman Prize recipient for Africa 2015, Centre for Justice, Governance and Environmental Action

"As part of Kenya's anti-nuclear movement, we stand in solidarity with the newly born Ghana Anti-Nuclear Movement led by 360 and SYND. We believe in African solutions to African problems. Nuclear energy translates to energy slavery for African people for generations to come. Renewable energy is freedom for our people and freedom for our planet."

Chibeze Ezekiel, Goldman Prize recipient for Africa 2020, SYND

"SYND Ghana stands in solidarity with the position against the exploitation of nuclear energy in Ghana. We strongly advocate for prioritising the exploration and use of the vast renewable energy (RE) resources available to the country. We believe nuclear energy comes with significant challenges, particularly in waste management, an area where Ghana is already struggling. The potential environmental and health risks associated with nuclear waste demand a level of preparedness that Ghana currently lacks. Additionally, the value chain required to fully harness nuclear energy is not adequately developed in Ghana. This raises further concerns about the country's capacity to manage and benefit from such a complex technology. We align with SAFCEI's perspective that nuclear energy is a technology of the past. Ghana's focus should be on tapping into the abundant and safer potential of renewable energy, which offers a sustainable path for addressing the country's energy needs while safeguarding our environment and future."

Makoma Lekalakala, Goldman Prize recipient for Africa 2018, Earthlife Africa

> *"Africa is endowed with renewable energy resources that, when harnessed, will contribute towards mitigating climate change. A transition to low-carbon economic development anywhere in the world cannot be accomplished with nuclear energy, as it is carbon-intensive. To protect Africa's biodiversity, we must build an Africa whose future is renewable, not radioactive."*

Francesca de Gasparis, SAFCEI

> *"Our meeting in Accra has reinforced the lessons from activists across Africa and Europe that nuclear energy is not needed or wanted as an energy source in Africa. When we compare nuclear to other energy choices on the table in the 21st century, in terms of all meaningful factors — cost, safety, construction time, and waste — there is no rationale for nuclear."*

Vladimir Slivyak, Co-Chair, Russian Environmental Group Ecodefense, and Laureate of the Alternative Nobel Prize

> *"Nuclear power is expensive, slow, and dangerous. It is vulnerable to both climate change and war. The growing effects of climate change, such as floods, hurricanes, droughts, heatwaves, or storms, pose great risks to nuclear safety. Wars increase the risk of military attacks, as seen at the Zaporozhye nuclear power plant in Ukraine. Nuclear power in today's unstable world creates additional risks of radiation disasters. It also creates the risk of nuclear proliferation, as every civilian nuclear plant produces materials that can be used to make a nuclear explosive device or dirty bomb. Renewable energy is safe and cheap and must be the first choice in Africa, where its potential is enormous."*

Chansa Memory Kaluba, The Young African Activist Network[111]

> *"As a person of faith and a young person from Zambia, we continue to uphold the works of those who are pillars of our society and the work they are doing. An example is our Chieftainess, who stood her ground against the advancement of the initial phases of nuclear exploration, or our church representatives, who continue to speak out. The choices of energy and innovation for a just transition to low-carbon economic development must be environmentally friendly and life-conscious. Therefore, solidarity with Ghana is a responsibility for our stewardship."*

[111] https://safcei.org/nuclear-free-africa-solidarity-visit-to-ghana/

Anthony Lyamunda, recipient of the Nuclear Free Future Award and founder of CESOPE (Civil Education is the Solution to Poverty and Environmental Management), Dodoma, Tanzania

"Our organisation has long supported the people of Bahi, an administrative district close to Dodoma where I grew up. Since the mid-2000s, we have been confronted with an unknown threat. In areas where the people of Bahi and neighbouring districts live, work, farm and fish, uranium exploration and mining have been proposed. In 2009, CESOPE began an advocacy campaign against these plans. We oppose uranium mining due to its negative environmental and social impact. The central Tanzanian Bahi Depression and its wetlands are of great importance to our livelihoods and to food security in the wider region. As long as various countries desire nuclear energy, uranium mining will remain a potential threat in Tanzania and worldwide. To us, uranium mining means human rights violations, land grabbing and all the associated environmental problems. Nuclear energy is not the solution; it is part of the problem. Unfortunately, some of our leaders have publicly endorsed nuclear energy for Tanzania and continue to do so. This distracts from ways that could genuinely elevate people out of poverty — nuclear energy cannot and will not help us. That is why we are campaigning for ecological and socially just improvements to living conditions in Bahi and Tanzania as a whole, free from uranium mining and nuclear energy."

CONCLUSION

Nuclear power is wrongly being sold to the citizens of the continent as a cornerstone of Africa's clean energy future. It is increasingly marketed and positioned as Africa's solution for clean energy and climate mitigation. With Africa's electricity demand expected to triple by 2040 due to population growth and industrialization, nuclear is being pitched as the only scalable, low-carbon option that can power heavy industries, cities, and rural expansion simultaneously.

This report challenges these claims.

Nuclear plants are extremely capital-intensive. Long-term storage of radioactive waste remains unresolved in all cases around the globe raising environmental and safety concerns.

Nuclear projects have long lead times and the urgency of climate action for the continent will be far better addressed with renewables in the near (and long) term and not just for Africa, but globally.

Nuclear energy belongs to the past. Renewables are the future. They are the only truly clean, safe and sustainable option on the table in this climate emergency — and nowhere is that a more appropriate course of action to take than across the African continent.

RECOMMENDATIONS

In light of the multiple risks, wasted funds and implementation urgency detailed above, the report authors call for:

- **An end to countries across the African continent becoming** both a potential testing ground for business and technology as well as battleground for conflicting geopolitical influences in the field of nuclear technology exports.
- **An end to plans and announcements that commit wasted billions to new nuclear power plants.** African countries with international debts that are already burdening governments and citizens must reject yet more foreign debt accrued as a result of any potential nuclear energy project.
- **Continent-wide nuclear energy plans to be replaced with** a wholehearted commitment to fund clean, safe renewable energy sources, of which the African continent has an abundance. Annual investments of over US$200bn will be required through the end of this decade to meet the climate-related goals and the growing energy needs of the whole continent.[112]
- **Rejection of NPPs on the grounds of their catastrophic vulnerability in conflict scenarios** noting the Russia-Ukraine war where a nuclear power plant sits inside a war-zone becoming a strategic target for attack.
- **The IAEA to respect the many concerns expressed by civil society and implement a moratorium – a temporary halt – to all current plans for nuclear power plant** developments across the continent, in order for a full debate and consultation to take place.
- **States, civil society, the concerned international organizations and intergovernmental bodies should undertake a fundamental and independent reassessment** of the role of nuclear energy in averting the climate crisis. This should take into account
    - the incompatibility of nuclear power plants with renewable energy sources;
    - the increased risk of nuclear accidents due to the effects of global warming;
    - the increased risk of nuclear proliferation;
    - the documented environmental and health effects of the entire nuclear chain.
- **The World Bank should not implement a new policy of funding for nuclear power plants as part of the World Bank's "Mission 300" initiative**, which aims to provide reliable electricity to 300 million Africans by the end of the decade. Nuclear energy projects do not comply with the bank's environmental and social safeguards and are wholly unsuitable to meet Africa's urgent energy demands.

[112] *World Energy Investment 2024*, IEA, https://www.iea.org/reports/world-energy-investment-2024/africa

APPENDIX

MORE COUNTRIES CONSIDERING NUCLEAR ENERGY AND NOT DETAILED IN THIS REPORT

Burkino Faso

https://www.bbc.co.uk/news/world-africa-67098444

Ethiopia

https://www.thereporterethiopia.com/37427/#:~:text=Ethiopia%20is%20carrying%20out%20preparatory,in%20the%20next%20ten%20years

Namibia

https://www.namibian.com.na/nuclear-power-for-namibiaopportunities-and-challenges/

Senegal

https://www.nuclearbusiness-platform.com/media/insights/africa-nuclear-future-strong-commitments-from-the-68th-iaea-general-conference

Angola

https://tass.com/politics/1566901