SOUTHERN AFRICAN FAITH COMMUNITIES' ENVIRONMENT INSTITUTE

No Faith in False Solutions!

Nuclear Energy in South Africa's energy mix

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Main issues from a Public Interest perspective

- Public Participation
- Financial Feasibility and High Capital Costs
- Implication on Electricity pricing
- Myths debunked: SMRs and baseload requirements
- Koeberg Lifetime Extension- safety and transparency issues in its operations
- Radioactive Waste Management

Public Perception and Participation

- Public scepticism toward nuclear energy persists, influenced by past controversial deals and concerns over safety and environmental impacts. The government's 2024 decision to delay the procurement process for a new nuclear power station to allow for more consultation underscores the importance of public participation in energy planning.

  reuters.com

The public will bear the high costs and risks of nuclear energy

Financial Feasibility and High Capital Costs

- Nuclear power projects demand substantial upfront investments and have long development timelines. These factors raise concerns about the economic feasibility of expanding nuclear capacity, particularly given South Africa's fiscal constraints and the need for cost-effective energy solutions.
- Critics argue that the IRP does not commit to a least-cost pathway, opting instead for expensive technologies that could perpetuate energy poverty.

cer.org.za

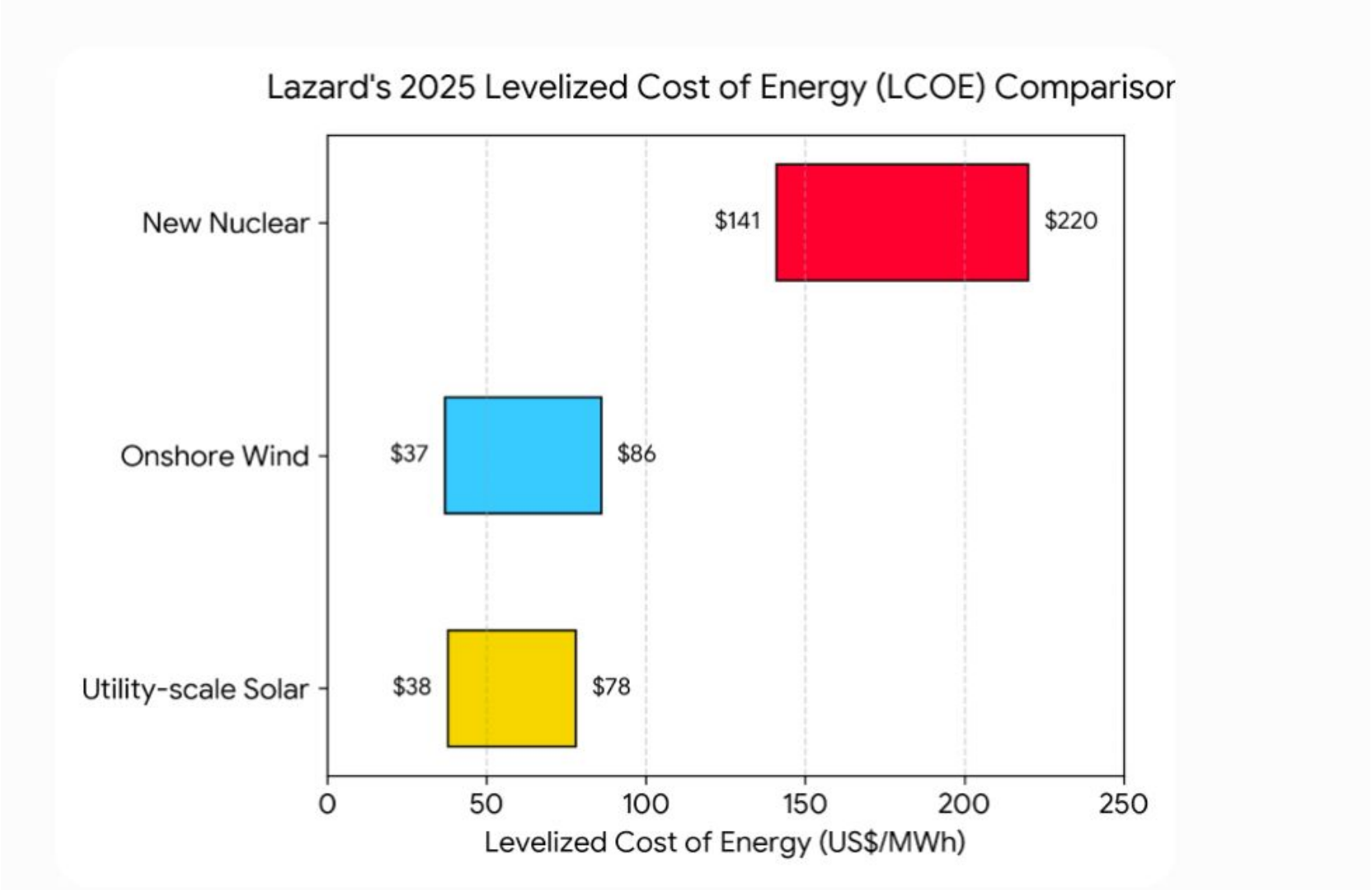
Implication on Electricity Pricing

- Nuclear energy projects require significant capital investment, which can lead to higher electricity tariffs for consumers. The high costs of financing, construction, and long project timelines mean that nuclear energy may not provide immediate relief to South Africa's electricity crisis.

- Given Eskom's existing financial struggles and the past threat of load shedding, concerns have been raised that nuclear expansion could further burden consumers with rising electricity costs. In contrast, renewable energy sources such as wind and solar have seen significant cost reductions and shorter deployment times, making them a more affordable option in the short to medium term.

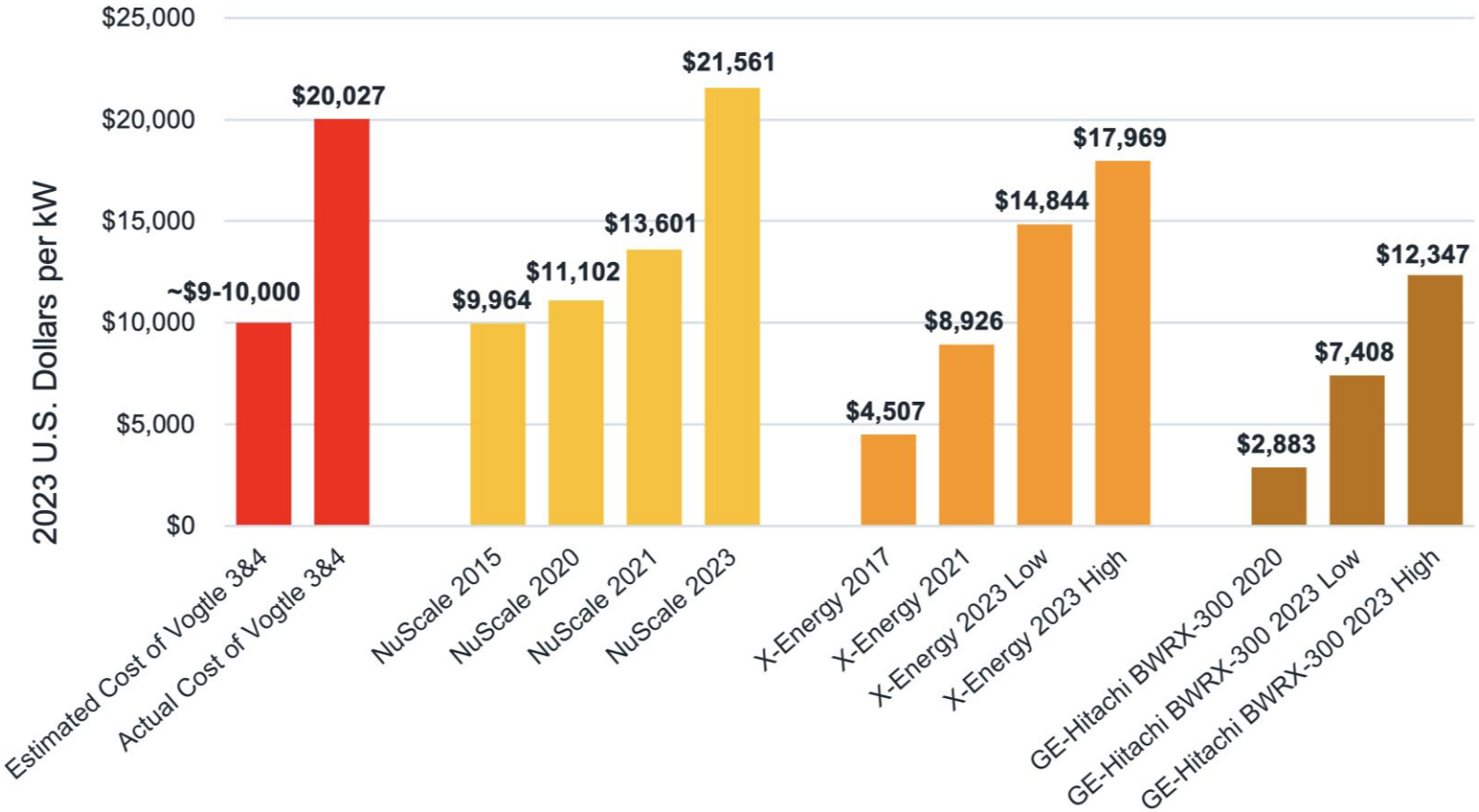
  www.greenpeace.org

Implication on Electricity Pricing



The Myth of Affordability of Small Modular Reactors (SMR)

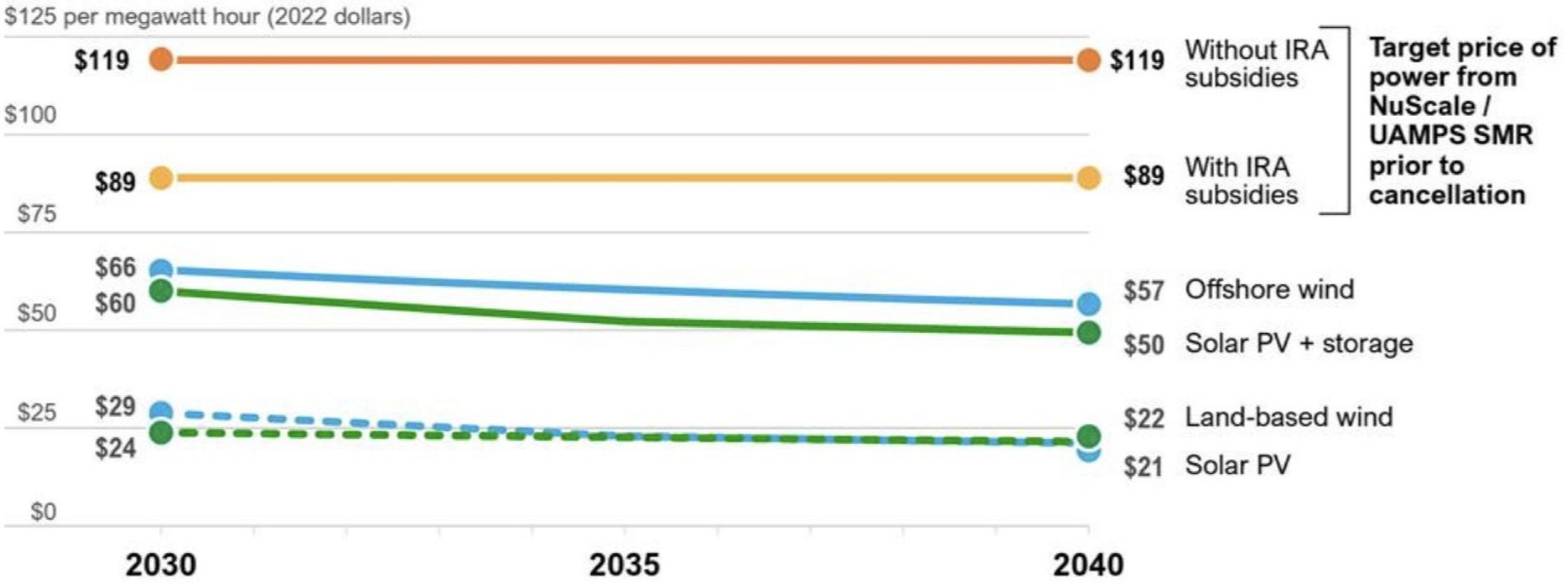
Figure 2: Projected Cost Increases for Proposed U.S. SMRs



Source: IEEFA calculations based on public data for each of the projects converted to 2023-year U.S. dollars. For example, see the GE Hitachi website, Four reactors could cost Saskatchewan $12 to $20 billion,, X-Energy and ARES Acquisition Corporation Announce Strategic Update, Georgia Power Company's monthly and Quarterly Reports to the Georgia Public Service Commission on construction of the Vogtle Nuclear Project and IEEFA reports on NuScale.

Myth of Affordability of Small Modular Reactors (SMR)

Figure 5: SMR Power Costs Will Be Much Higher Than Renewables, Storage



Source: IEEFA analysis based on data from NuScale, UAMPS and NREL.

Job Creation and Skills Development

- Immediate job creation potential is limited compared to renewable energy projects and will be a much more expensive way to create jobs. This disparity poses challenges for supporting workers transitioning from carbon-intensive industries, such as coal, and may not align with the objectives of a Just Energy Transition (JET). iol.co.za and other sources

- Investing in nuclear will take money away from other important social needs due to the time (minimum 10 years, expect overruns) it takes to bring it on board and high costs of construction (expect over runs).

SAFCEI's appeal against Koeberg Nuclear Power Plant's life time extension

Issues with Koeberg's Long Term Operations license extension include governance, secrecy and defence in depth.

- There is a critical **safety** component, the containment monitoring system, that Eskom, The National Nuclear Regulator the (NNR) and the IAEA all admit needs to be repaired but hasn't been. And this system could have been repaired years ago.

- Appeal is based upon the **International Atomic Energy Agency's (IAEA) safety inspections of Koeberg**. Since 2022, the IAEA has strongly recommended that Koeberg's containment monitoring system be restored to full functionality.

  Eskom wrote to SAFCEI that "**full restoration of the containment monitoring instruments (is) ideal**."

  Appeal letter to the DMRE

SAFCEI's appeal against Koeberg lifetime extension

- The National Nuclear Regulator (NNR) has exacerbated the situation by stating that the containment monitoring system, which monitors the health of the containment structure, **Koeberg's last line of defence in the case of nuclear meltdown**, should be fixed in the future- during Koeberg outages 129 and 229. While no firm date has been set for these outages, they are likely only to be in 2029 and 2030.

- On **6 September 2024**, the IAEA stated that Eskom needs to ensure that "the containment monitoring system is fully refurbished and remains fully functional during the LTO period."

The major issues remain: Lack of transparency by Koeberg, Eskom, and National Nuclear Regulator. Not a meaningful public participation process. People are not aware or have not been able to engage- lack of accessible information.

Appeal letter to the DMRE

Court Action against the Duynefontein EIA approval

- **The Action:** A High Court "judicial review" application brought by three civil society organizations: SAFCEI, Earthlife Africa, and Greenpeace Africa.

- **The Target of the Lawsuit:** The applicants are asking the court to overturn the government's 2017 environmental authorisation and the Minister's 2025 appeal decision, which together approved Eskom's proposed Nuclear-1 power station at Duynefontein.

Court Action against the Duynefontein EIA approval

The Core Legal Arguments (Grounds of Review): The applicants argue the government's approval was unlawful, irrational, and procedurally defective because decision-makers failed to consider mandatory information. Specifically, they failed to:

- Assess the catastrophic risks and consequences of a severe nuclear accident.
- Evaluate cheaper, faster, and safer renewable energy alternatives (like solar and wind).
- Properly justify the "need and desirability" of the project, relying instead on outdated assumptions about baseload power.
- Consider the severe financial burden the project will place on the public, including massive capital costs and electricity tariff increases

Court Action against the Duynefontein EIA approval

- **The Desired Outcome (Relief Sought):** The applicants are asking the court to "set aside" or invalidate the approvals and "remit" or send back the matter to the government. This would legally force the authorities to reconsider the project from scratch, properly assessing the missing safety, financial, and alternative energy data before any new decision can be made.

Radioactive Waste Management

Nuclear **power generates long-lived highly toxic radioactive waste**, which South Africa currently stores at Koeberg and Vaalputs in the Northern Cape.

Expanding nuclear capacity would require enhanced waste management infrastructure, increasing long-term environmental and financial responsibilities. True costs of nuclear energy include the ongoing future waste containment costs, which have been excluded to date.

Ethically, the answer should be no.

Economically, the same.

The benefits of nuclear power are too few, and the consequences of serious mishap too great, to make it a reliable component of the energy supply the world needs in the decades to come.

National Catholic Reporter, March 2011

Conclusion

In conclusion, addressing the urgent safety concerns present right now at Koeberg, as well as socio-economic challenges that expensive electricity generation presents is crucial.

South Africa needs to rapidly transition its energy systems and do this at the most cost effective, least risky way to decarbonise which is renewable energy.

Careful consideration of costs, economic viability, job creation, public engagement, and alignment with climate goals is essential in energy planning and development that supports a sustainable and just energy transition.

Thank you

For more information please visit our website: www.safcei.org.za and to join the campaign, email on Lydia@safcei.org.za