



PRESS RELEASE

iNuSTEC2023: Advancing the Nuclear Energy in Malaysia

PUTRAJAYA, 10 October 2023 – The National Energy University (UNITEN) proudly hosted the International Nuclear Science, Technology, and Engineering Conference 2023 (iNuSTEC2023). The event was officiated by Vice Chancellor of UNITEN Professor Ir. Dr. Noor Azuan Abu Osman.

The conference aimed to raise awareness about nuclear activities in Malaysia and highlight the benefits of nuclear energy to the public.

With respect to the joint public statements released by Sahabat Alam Malaysia and Greenpeace Malaysia last Saturday, the iNUSTEC2023 Organizing Committee would confirm that we had indeed genuinely invited the two organizations as panel members to our nuclear dialogue. Our intention was to sincerely initiate an honest conversation as it was clear that we share the same aspiration: to save the planet Earth from the worst consequences of climate change. It is truly a mark of civilization to be able to hold a discourse on serious matters that affect our future despite our differing positions. The iNUSTEC2023 Organizing Committee remains open to any potential engagement and collaboration with Sahabat Alam Malaysia and Greenpeace Malaysia in the future.

We also wish to respond to the arguments raised in the joint public statements.

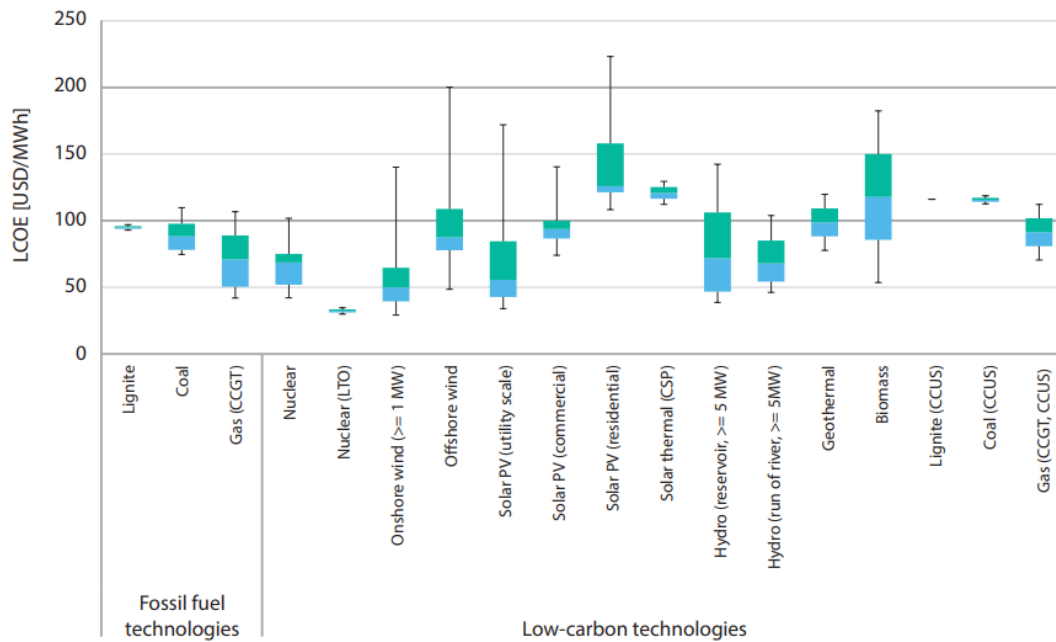
The claim that nuclear power plants significantly increase cancer rates in nearby communities warrants closer scrutiny. Some studies have even indicated that there is no clear evidence of harm to public health or an increased risk of cancer from these facilities. To investigate this issue, experts typically rely on two kinds of research:

ecological studies and epidemiological studies. Ecological studies focus on data from entire communities or groups of people. While these studies can offer quick insights, they have limitations, such as not being able to prove cause and effect. In contrast, epidemiological studies examine data at the individual level. These studies are more rigorous but usually require a longer time to produce results. However, most studies point to the need for better, more detailed future research. This is not just to double-check what we already know, but to obtain clear answers about how, if at all, living near a nuclear power plant affects people's health.

Nevertheless, it is encouraging to highlight the substantial progress that has been made in mitigating the risks associated with nuclear power plants. Modern reactors now incorporate advanced, multi-layered safety systems designed to substantially minimize risks, whether they are caused by human error or natural events such as earthquakes or floods. On the matter of nuclear waste management, significant advancements are also noteworthy. Long-term storage solutions, such as deep geological repositories, such as in Finland, have been developed and constructed that can safely isolate nuclear waste for thousands of years. Additionally, technologies for recycling spent nuclear fuel are not just theoretical but are already in operational use, especially in France, Japan, and Russia. The recycling process allows us to reduce waste volume by extracting and reusing valuable materials. According to the U.S. Department of Energy, the volume of nuclear waste is impressively small: all the spent fuel generated by the US commercial reactors since the 1950s could fit on a single football field and be less than 9 meters deep.

Building a nuclear power plant costs a lot upfront, mainly because they offer advanced and complex technology and higher safety standards. But once the plant is operating, the costs go down. Plus, these nuclear power plants last a long time, usually 40 to 60 years, making them a good long-term investment. A reliable way to evaluate the cost-effectiveness of nuclear energy is by using the Levelized Cost of Electricity (LCOE). This calculation method provides an overview of the total cost to build and operate a power plant in relation to the electricity it produces throughout its lifetime. According to the 2020 report by the International Energy Agency, nuclear energy has one of the most competitive LCOEs, around (USD50/MWh to USD75/MWh), even when compared to other fossil fuel and low-carbon technologies.

Figure ES1: LCOE by technology



Note: Values at 7% discount rate. Box plots indicate maximum, median and minimum values. The boxes indicate the central 50% of values, i.e. the second and the third quartile.

Uranium mining, a key component of nuclear energy, has environmental impacts, yet these are generally less significant compared to those from fossil fuel extraction, such as coal. Nuclear power also excels in terms of low greenhouse gas emissions. According to 2014 data from the Intergovernmental Panel on Climate Change (IPCC), the nuclear power median lifecycle emissions stand at 12 gCO₂eq/kWh, significantly lower than other sources like hydropower at 24 gCO₂eq/kWh, solar photovoltaic at 41-48 gCO₂eq/kWh, and fossil fuels such as coal at 820 gCO₂eq/kWh and gas at 490 gCO₂eq/kWh. Furthermore, nuclear reactors operate without emitting air pollution or carbon dioxide.

Nuclear power will not make Malaysia energy insecure due to dependence on foreign technology and supply of nuclear materials. In fact, the adoption of nuclear technology could lead to the opposite impact by fostering the development of local talent and providing opportunities for local companies to benefit from advanced technologies, as local production and suppliers could be prioritized. Moreover, the dependency on

foreign technology and materials is a challenge that extends beyond nuclear to other energy sources. Many countries today still rely on imports for coal, oil, gas, or specific materials such as solar panels used in renewable technologies.

Although Malaysia decided against nuclear energy in 2018, ongoing advancements could prompt a policy re-evaluation, especially for our country that is aiming for net-zero emissions by 2050. The technology landscape for nuclear energy is continuously evolving, prompting nations to revisit their energy policies. Policies should be flexible enough to adapt to new scientific and technological insights.

While concerns about the weaponization of nuclear energy persist, it is important to differentiate between civil and military nuclear programs. They differ significantly in terms of technology, scale, and regulation. Strict safeguards are enforced by international bodies like the International Atomic Energy Agency (IAEA) to ensure that civil nuclear materials are not diverted to military uses.

Lastly, the idea that we must choose between nuclear energy and renewable sources like wind or solar is mistaken. Both can be part of a well-diversified energy portfolio. Renewable sources like wind and solar are intermittent, requiring stable power sources or massive energy storage solutions. Hence, nuclear energy can provide a constant, reliable output, making it an ideal complement to renewables in a diversified energy grid. Ultimately, today's challenge is the escalating threat of climate change. Thus, a balanced, scientifically guided approach that integrates energy efficiency, renewable resources, and nuclear power is important to address this global crisis.

UNITEN is at the forefront of nuclear research, playing a significant role in supporting the nation's Low Carbon Nation Aspiration and Responsible Transition. The recently established Institute of Nuclear Energy (INE) at UNITEN, in May 2023, is set to bolster ongoing research and educational endeavors in the nuclear field.

About UNITEN

UNITEN is a private university with a Government Link University (GLU) status; wholly owned by Tenaga Nasional Berhad (TNB). UNITEN operates on two campuses; the main campus is in Putrajaya and the branch campus is in Bandar Muadzam Shah, Pahang. Programmes offered by UNITEN are accredited by the Malaysian Qualification Agency (MQA). UNITEN has also obtained a “Tier 5: Excellent” rating in the Rating System for Malaysian Higher Education (SETARA), and all the engineering bachelor programmes are recognised by the Board of Engineers Malaysia (BEM). For further information, please visit www.uniten.edu.my.

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Prof. Ir. Dr. Noor Azuan Bin Abu Osman, Vice Chancellor UNITEN has delivered the welcoming speech at the International Nuclear Science, Technology & Engineering Conference (iNuSTEC2023).



From left: Prof. Dato' Ts Dr. Mohd Zamri Yusoff, Deputy Vice Chancellor (Research & Innovation) UNITEN, Prof. Ir. Dr. Noor Azuan Bin Abu Osman, Vice Chancellor UNITEN, Dr. Rosli Bin Darmawan, Director General, Malaysia Nuclear Agency and Dr. Abdul Aziz Bin Mohamed, President, Malaysia Nuclear Association.