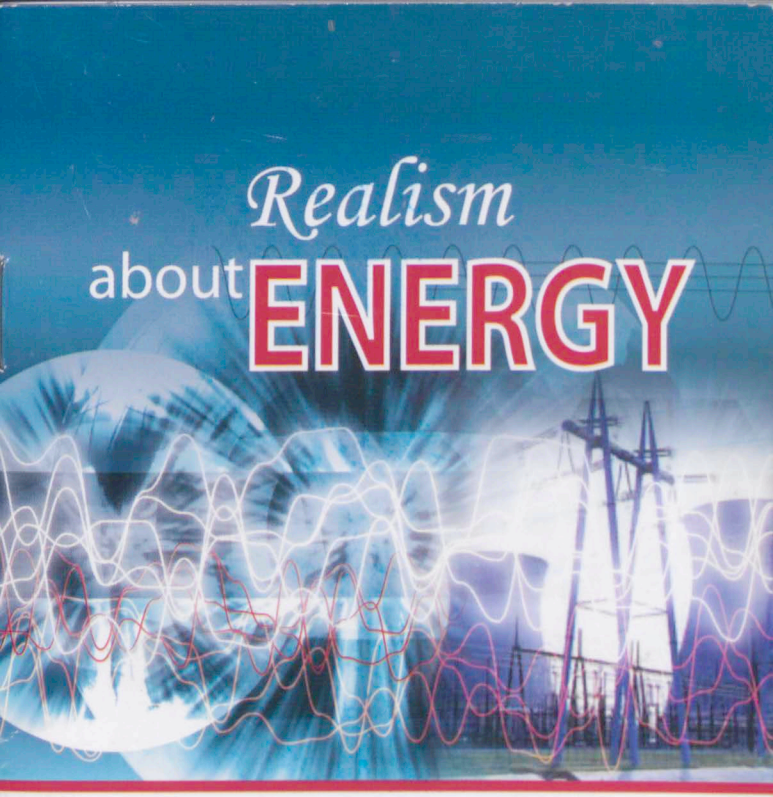


MOSTI NUKLEAR MALAYSIA

REALISM ABOUT ENERGY

Clean electricity from 'new renewable' – solar, wind, biomass and geothermal power – deserves strong support. But the collective capacity of these technologies to produce electricity in the decades ahead is limited. The International Energy Agency projects that, even with continue subsidy and research support, these new renewable can only provide around 6% of world electricity by 2030.

Environmentalists have played a valuable role in warning that catastrophic climate change is a real and imminent danger. It is crucially important that they be equally realistic about solutions. Even with maximum conservation – and a landscape covered by solar panels and windmills- we would still need large-scale source of around-the-clock electricity to meet much of our energy needs.

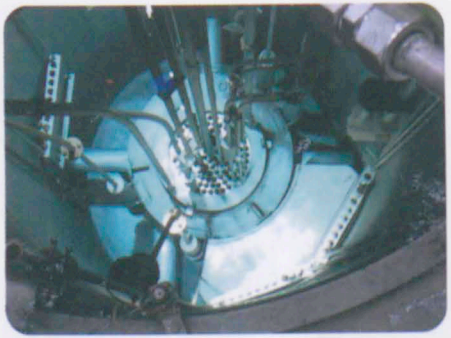
Nuclear power – like wind, hydro and solar energy – can generate electricity with no carbon dioxide or other greenhouse gas emissions. The critical difference is that nuclear energy is the only proven option with the capacity to produce vastly expanded supplies of clean electricity on a global scale.

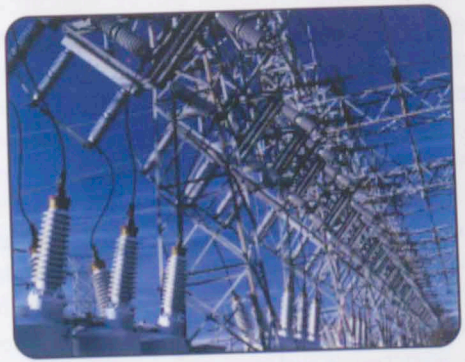
Far from being competitors, nuclear power and 'new renewable' are urgently needed as partners if the world's immense clean energy needs are to be met.

The International Energy Agency of the OECD is the intergovernmental body that analyses global energy demand. In the private sector, the World Energy Council performs similar assessments. The projections by both organizations points inexorably to the same conclusion: Our world cannot meets its expanding energy needs – cleanly – without a sharp expansion of nuclear energy

Nuclear Power and Sustainable Development

Nuclear power is a 'sustainable development' technology because its fuel will be available for multiple centuries, its safety record is superior among major energy sources, its consumption causes virtually no pollution, its use preserves valuable fossil resources for future generations, its costs are competitive and still declining and its waste can be securely managed over the long-term.





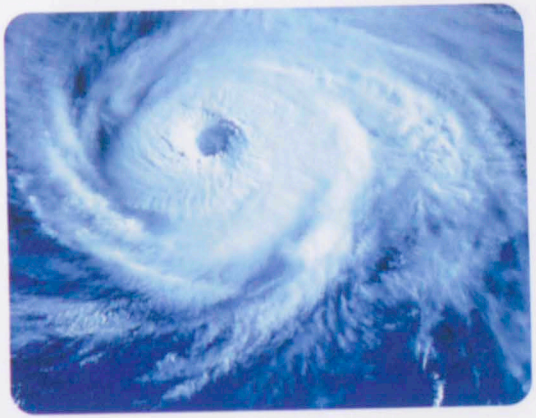
India and China, which alone constitute 40% of humanity, are fast advancing economically. Each nation has vast quantities of coal and a small but technologically sophisticated nuclear power industry that has begun to grow. No question belongs higher on the world agenda than how these and other developing countries will meet their rapidly intensifying energy needs. At stake is the future of the biosphere.

Preventing Catastrophic Climate Change

Humanity cannot go backwards. A burgeoning world population will require vast amount of energy to provide fresh water, energy factories, homes and transportation and support infrastructures for nutrition, education and health care.

Meeting these needs will require energy from all sources. But the world's energy "mix" must quickly evolve – away from indiscriminate use of fossil fuel. Reducing consumption of fossil fuel will preserve the environment – and irreplaceable resources – for future generations.

Stabilizing the accumulation of atmospheric greenhouse gases requires that worldwide emissions be cut by 50%. This challenge is made even greater by the need to raise living standards in poorer countries. Even if developing countries embrace conservation and clean-energy technologies, their enormous populations will soon emit more greenhouse gases than the existing industrial world.



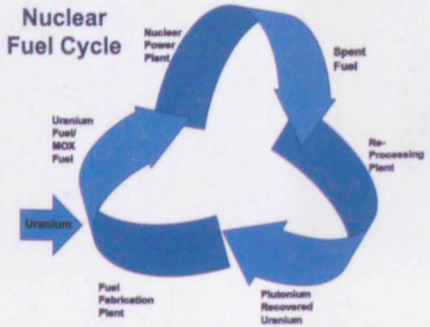
In order to 'make way' for these increased emissions – while reducing the global total –today's industrialized countries must cut emissions by 75%. To curb emissions while expanding energy supplies the world urgently needs a massive introduction of low-emissions energy technologies. Conceivably, tomorrow's mega - cities could function with few direct emission – by using electricity, electricity charged batteries and fuel cells using electrically produced hydrogen. But electricity is only a way of distributing energy. The key is to generate vastly expanded supplies of electricity cleanly

Waste: Safe Containment vs. Disastrous Dispersal

The great advantage of nuclear power lies in the vast amount of energy that can be extracted from a mere handful of the element uranium, which is found in great concentrations underground. The waste from nuclear power retains the same tiny volume and can be safety returned to the Earth for underground storage.

Because so much energy leaves only a small amount of manageable waste, uranium has been called nature's gift to clean economic development. In contrast, fossil fuel waste is too large and unmanageable to be contained and must be dispersed into the environment.

Under present policies, fossil fuels and nuclear energy operate under different rules. For fossil fuel waste, government - under public pressure for 'cheap energy' – have allowed the environment to be used as a free dumpsite. Meanwhile, in most countries the price charged for nuclear power includes an allocation set aside for the cost of storing and disposing of its waste permanently and safely.



The Manageability of Nuclear Waste

Modern civilization produces huge quantities of industrial waste requiring careful treatment and disposal. Among these, nuclear waste is comparatively tiny in amount and highly manageable. In contrast, chemical wastes are thousands of times greater in volume, can remain permanently toxic and represent a disposal problem far more difficult.

Due to effective shielding and containment, waste from civil nuclear power has never caused harm to any person or to the environment. For nuclear waste that is highly radioactive, well-designed long-term storage is needed while its radioactivity decays to natural levels.

Far form being an 'unsolvable' problem, waste disposal is a comparative asset of nuclear energy – because there is so little. The spent fuel produced yearly from all the world's reactors would fit inside a two-storey structure built on a basketball court.

Geological Storage – A Natural Solution Backed By Science

Are there stable geological locations that could safely isolate nuclear waste from the biosphere? If you doubt this, remember that trillions and trillions of litres of natural gas have remained underground – in the same place – for many millions of years. In comparison, the quantity of nuclear waste requiring permanent storage is minuscule. And far from being a volatile gas or liquid, it is a solid and stable ceramic.

Nature had provided a good example of nuclear waste 'storage'. About two billion years ago, in what is now Gabon in Africa, a rich natural uranium deposit produced a spontaneous series of large nuclear reactions. Since then, despite thousands of centuries of tropical rain and subsurface water, the long-lived 'waste' from those 'reactors' has migrated less than 10 metres.

Radiation scientists, geologists and engineers have produced detailed plans for safe underground storage of nuclear waste. A stable geological formation constitutes a highly reliable barrier. Extra layers of protection come from 'multiple' engineered barries', including the ceramic fuel itself and robust containers built for high-longevity. Geological repositories are designed to ensure that harmful radiation would not reach the surface even with severe earthquakes or the passage of time. Waste can be retrieved if new technologies offer ways to reuse the material or hasten radioactive decay.

Nuclear Competitiveness for the Future

Nuclear power plants currently cost more to build than power plants using coal or gas. This difference is narrowing, as long experience with nuclear power helps to shrink construction periods and extend plant lifetime. Already, due to low-cost fuel and improved efficiency, nuclear plants – once built – can be less expensive to operate. Thus, even in a marketplace that does not fully credit its virtues, nuclear power is in increasingly competitive.

Putting a price tag on harmful emissions would quickly make nuclear power the cheapest option - as well as the cleanest – for generating increased energy on a global scale.

An Expansive Nuclear Future

Today nuclear energy provides 16% of world electricity. With sound public policy, this percentage could grow economic prosperity without greenhouse gases and pollution.

Fortunately, the uranium that fuels nuclear power is found in great quantity in both earth and seawater. Uranium's worldwide availability at economically viable cost is a sharp expansion in nuclear power.

The nuclear power industry is preparing a new generation of reactors. Simpler, standardized design will expedite licensing and reduce the time and cost of construction – even while maintaining the highest standards of protection against accident, earthquake or terrorist attack. Advanced reactors will also cost even less to operate, and produce less waste. A key innovation will be the incorporation of 'inherent' or 'passive' safety features – the use of natural physical principles as a substitute for active controls.

Beyond producing clean electricity, the clean energy from nuclear power could be used to distil salt water on a massive scale. 'Desalination' plants would help

to meet the desperate shortage of fresh water that could afflict more than half the world's people by 2025.

Today, in addition to providing clear energy, a dazzling array of nuclear technologies helps to improve medical diagnosis, protect livestock health, develop water resources, preserve food, promote agricultural productivity, cure human illness, enhance human nutrition, advance environmental science, eradicate virulent pests and strengthen industrial quality control.

Some of these figures suggest near-maximum utilization, given that most reactors have to shut down every 18-24 months for fuel change and routine maintenance. Another measure is unplanned capability loss, which in the USA has for the last few years been below 2%.

Source : World Nuclear Association
http://www.world-nuclear.org

Source : www
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