
Seeking the contribution of cross-disciplinary researchers to address the energy crisis

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The quality of living and the national security of a country is highly dependent upon energy. It is therefore becoming increasingly common for countries to include energy-related matters under the purview of the Ministry of Defence or Department of Defence of the country. As fossil fuels started fast diminishing in the last few decades and with firm predictions of a global energy crisis within the next few decades, many R&D and industrial sectors have shifted their focus to developing non-conventional energy sources and energy-storing devices to meet future demands. The scientific & technological communities have learned over the last five to ten years that single-field experts are unable to accomplish energy goals. Non-conventional energy sources are so diverse that even extracting energy from one source requires expertise in multiple disciplines; electrical, mechanical, physics, chemistry, microbiology, meteorology, environmental sciences, sociology, law, IT & AI, etc. A country's S&T frontiers need to realize this reality as soon as possible in order for its society to survive in the future. It is imperative that Sri Lanka, a low-income and oceanic-tropical country with limited land availability, develops its vision, mission, and roadmap concerning energy (national energy policy) in a way that optimizes resources and minimizes environmental impacts. With respect to energy sources, the country may give priority to solar PV (both on-land and floating), solar thermal (especially at the rural domestic level), biofuel (algae, purposely grown vegetables, non-edible plants, vegetable refuses such as potato peels, and food wastes), biomass (dendro power), mini/micro-hydro, mega/mini/micro-wind, ocean wave and ocean thermal. In the case of energy storage systems, the country may pay attention to batteries and hydrogen for the time being as many other technologies such as mechanical and thermal storage, flywheel, back-pump hydro etc. are not proven economically viable for a developing country. We propose the government appoint national task forces to investigate the risks and potentials of each identified energy source and to assess the availability of cross-disciplinary expertise in the country for capacity building. The human resources lacking in the country could be filled up with the knowledge and skills of expatriates who may be willing to volunteer in giving their services and support.