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Perspectives and hidden lessons from a geoscientist on energy provision: Namibia as case study.

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The Namibian Constitution of 1990 states in Article 95: “The State shall actively promote and maintain the welfare of the people by adopting, inter alia, polices aimed at maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilisation of natural resources on a sustainable basis for the benefit of all Namibians both present and future.”. Namibia, a big country with a small population, national statistics indicate that 38%, 50% and 30% of the population use electricity for cooking, lightning and heating, respectively. For the people not using electricity firewood, candles and batteries provide the bulk energy needs for cooking, lighting and heating. For Namibia, to remove the burden of the poorest of the poor on firewood for cooking and heating will instantly require an additional 1TWh of electrical energy per year. The requirement becomes more challenging should the need for clean water be included. The electrical need of marginalised communities is often overlooked and grossly underestimated. Due to its geographical location and climate, renewable energy is being promoted as the answer and unsurprisingly largely being adopted. Electricity production using solar technology has taken root and the country has an unwavering national belief that solar energy will solve Namibia’s electricity dependence, cheaply. Numerous 5 MW solar power plants are spawning throughout the country. The technology is here to stay; however, little stock is being taken on the availability and quality of electricity supply versus the natural resources requirements, environmental consequences of desertification, human encroachment and physical waste generated. Namibia is rich in uranium and has limited fuel sources for electricity generation with almost no oil and gas discoveries, poor coal resources and perennial rivers at its borders. Domestically, Namibia generates about 1TWh of renewable electrical energy per year, imports about 3TWh of electricity from its neighbours and exports more than 3,000 tons (>100TWh electricity equivalent) of raw uranium per year. Nuclear energy is poorly understood in Namibia, but because of its uranium exports, people in Namibia are divided in their opinions clearly gripped by the fear of contamination and radiological accidents and others wondering why nuclear energy is not being pursued aggressively. With small electrical load centres and large distances between load centres, small modular reactors hold promise for Namibia. Small modular reactors of 20-50 MW will provide small and remote communities with the required baseload electricity for cooking, heating, lighting and sufficient energy to pump and desalinate predominantly saline ground water. This author will use data and information on Namibia as an example and show that now more than ever, geoscientists are required to be technology neutral and provide professional, unbiased facts and advise to policy makers. Solar power and nuclear power, their integration, their management for the benefit and improvement in the quality of life of the people, the environment and future resources will require geoscientists to be open and honest about their knowledge of the Earth, its characteristics, its processes and resources.