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Renewable energy sustainability with micro hydro systems in Fujairah (UAE)**Amir J Majid**

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Due to water scarce in Fujairah, several small dams and sand barriers were built to store water, prevent occasional flooding damage as well powering underground water beds. These water reservoirs are oversized 90% of the time. In this paper, a smart grid of multi micro hydro system is proposed to satisfy water and electricity demand for scattered mountainous villages in an optimal manner, by channeling water into needed reservoirs. Sustainability is to be achieved with micro hydro and wind/solar hybrid systems which have been analyzed on aspects, such as environment, solar and wind regimes, existing mountainous reservoirs and dams, seawater desalination, as well as economic feasibility. This would in effect, reduce the dependency on federal electricity supply for Fujairah and surroundings, where notably a large number of residential and industrial installations are still in shortage of electricity. This work can be implemented as a future project. Firstly, in order to analyse the wind regime in Fujairah area, a pilot hybrid solar-wind turbine, is used to calculate the daily, monthly and annually average generated electrical power. This set-up maybe reused in the field again in same region or other regions. Similarly, it is used to analyse the solar insolation in Fujairah area around mountainous areas. Thus, a feasibility study is to be conducted for the possibility of installing the proposed micro-hydro systems with accessory installations, such as solar-wind, magnetic generator, charging batteries, etc. as well as setting up a grid connection with this hybrid system.

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