

Electrical Energy Generation from Malaysia's Annual Flood Event by using Pumped Water Storage - From Crisis to Opportunity

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ABSTRACT

The purpose of this paper is to investigate the feasibility of flood water catchment for energy production by using pumped water storage towards smart water grids and new flood mitigation in Malaysia. Developing effective and efficient flood control mitigations in Malaysia is necessary in today's situation, since the annual flood event has caused many residents to be evacuated and also causing damage to government and private attributes which lead to huge impact on the country's economy. Pumped water storage not only can mitigate the flood event, but also can generate electricity from renewable energy if it is planned and managed properly. The pumped water storage is widely adopted with total capacity 127GW worldwide. The reservoir that acts as a storm water catchment area can be utilized in pumped water storage for electricity generation. The study on this paper comprises review on current flood mitigation, the potential harvesting energy from the annual flood event, the principle of pumped water storage and estimation of energy generated from the annual flood event. The proposed pumped water storage was estimated to supply on average 33.4MWh, which equal to energy produce by medium hydro power. From the output of results, it is expected that a new concept on management program can be adopted as an alternative for flood mitigation and generation of electricity from green source of energy.

Keywords: Pumped water storage, flood, renewable energy.