

Energy concepts for amphibious and floating buildings as nanogrids – Direct current technology as a support for disaster resilience?

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Abstract

The increasing volatility of extreme weather events increases the risks of flood-prone areas and also reaches areas that have not been included in flood-protection zones, if any. The climate change adaptation aims to increase the resilience of urban physical, organizational and social structures towards disasters as consequences of human-induced development. Settlements prone to flood are mostly inhabited by urban poor or the poorest people and often enough not connected to the formal electricity and waste/wastewater/solid waste-infrastructure. In other cases, settlements that are living with the water are far off of the infrastructure grids and need an island-grid to provide electricity. DC (direct current) - technology can play an important part in the efficiency of island grids, considering the essential loads can be run with DC (LED-lighting, Air-conditioning, IT) and especially solar PV produces direct current and can be stored nearly lossless in batteries. Using the location of the settlements close to lakeshores, seashores or rivers, different energy storage concepts can be applied. The presentation will show different ways of reaching a certain energy-autarky and disaster resilience if amphibious or floating settlements are combined with DC-technology..

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