

Sub-Saharan Africa: Existing energy infrastructure upgrade can bring electricity to 15.4 m people

19 September 2016



Satellite imagery of Africa. Credit: Public Domain

A transformation of existing, poorly used or unexploited energy infrastructure in sub-Saharan Africa could represent lower-cost and lower-risk opportunities for investors and ensure access to sustainably generated electricity for 15.4 million people, according to a JRC paper published today in *Nature Energy*. This effort requires a €1-1.5 billion of investment for ensuring additional 1.1GW of power capacity.

The findings are based on an approach that identifies already existing [infrastructure](#). This means that part of the investment has already been done and it builds on already available

human capacities as technicians and managers keep on operating and maintaining the infrastructure. The authors developed a tailor-made multi-layer spatial analysis and processed satellite night images to identify rural mini-grids.

The work resulted in a map of three categories of infrastructure: non-powered dams that can be converted to hydroelectric power facilities; rural mini-grids that can integrate solar PV systems; and coal power plants that could burn biomass (bagasse, a sugarcane residue), either together with coal or separately. Mauritius represents an interesting example of bagasse co-firing. Sugar refineries provide close to half of the island nation's electricity supply, with roughly half of this derived from bagasse used during the cropping season. The balance is derived from coal, which is burnt during the off-season.

The non-powered dams were originally constructed for one or more non-energy purposes, such as irrigation or flood control. A subset of these dams, which meet certain conditions, are attractive option because they can easily be retrofitted to produce electricity. Of the hundreds of African non-powered dams analysed, 52 have a potential to generate >1MW and 39 have a mini-hydro (

APA citation: Sub-Saharan Africa: Existing energy infrastructure upgrade can bring electricity to 15.4 m people (2016, September 19) retrieved 28 November 2020 from <https://techxplore.com/news/2016-09-sub-saharan-africa-energy-infrastructure-electricity.html>

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