



A geospatial assessment of mini/small hydropower potential in Sub-Saharan Africa

Alexandros Korkovelos (1), Dimitrios Mentis (1), Shahid Hussain Siyal (1), Christopher Arderne (1), Hylke Beck (2), Ad de Roo (3), and Mark Howells (1)

(1) KTH Royal Institute of Technology, Division of Energy Systems Analysis, Stockholm, Sweden (alekor@kth.se), (2) Princeton University, Civil and Environmental Engineering, Princeton, NJ, United States, (3) European Union Joint Research Centre (EU-JRC), Ispra, Italy

Sub-Saharan Africa has been the epicenter of ongoing global dialogues around energy poverty and justifiably so. More than half of the world's unserved population lives there. At the same time, a big part of the continent is privileged with plentiful renewable energy resources. Hydropower is one of them and to a large extent it remains untapped. This study focuses on the technical assessment of small-scale hydropower (0.01-10 MW) in Sub-Saharan Africa. The underlying methodology was based on open source geospatial datasets, whose combination allowed a consistent evaluation of 712,615 km of river network spanning over 44 countries. Environmental, topological and social constraints were included in the form of geospatial restrictions to help preserve the natural wealth and promote sustainable development. The results revealed that small-scale hydropower could cover 8.5-12.5% of the estimated electricity demand in 2030, thus making it a viable option to support electrification efforts in the region.