Stockholm Environment Institute

SEI Initiative on Gridless Solutions

SEI fact sheet
December 2020

Olle Olsson

Karina Barquet

How can we pick up the pace in expanding access to electricity, clean water and safe sanitation globally? How do we leverage the opportunities from innovations that can function off the grid? When should we deploy stand-alone solar power kits, decentralized desalination plants, or onsite sanitation solutions instead of building more pipes and stringing more wires? These are questions that the SEI Initiative on Gridless Solutions is addressing.

Decentralized, modular, "gridless" options are increasingly seen as valuable complements to grid-based systems for providing basic services such as water, sanitation and electricity. Development has accelerated in recent years thanks to the rapid pace of innovations in electricity, and water, sanitation and hygiene (WASH) sectors. New technologies and services can be deployed onsite, and they can operate in stand-alone ways.

Despite the promise of these innovations, gridless technologies face significant barriers. Hindering further development and expansion are a host of issues – among them, regulatory mismatches, inadequate understanding about end-user expectations, and a lack of both financing solutions and sustainable business models.

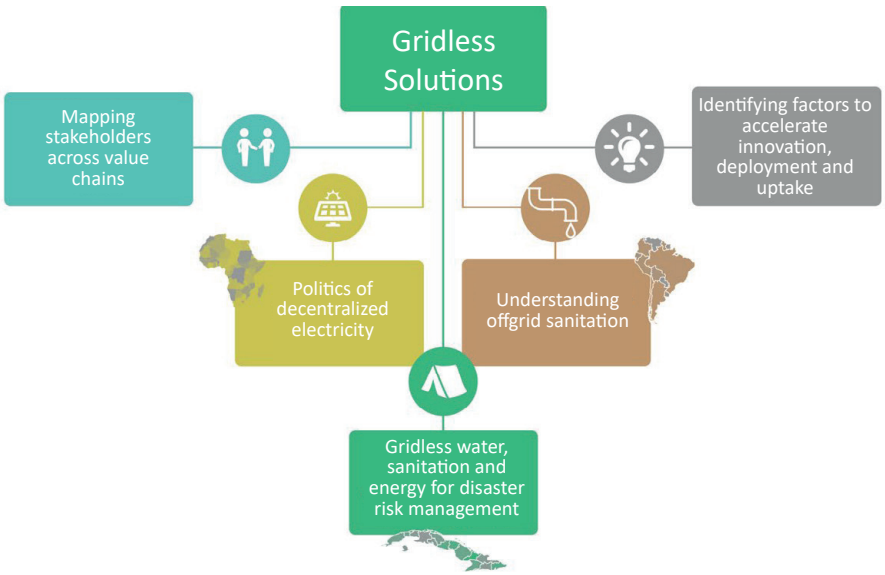

IMAGE (ABOVE): PV mini-grid in Mpanta, Zambia © OLIVER JOHNSON / SEI

The SEI Initiative on Gridless Solutions aims to help address these barriers. The Initiative is exploring cross-sectoral analyses of gridless technologies as a socio-technical phenomenon. It will conduct case studies that analyse on-the-ground deployment experiences.

Mapping stakeholders across value chains: Gridless value chains can look quite different from those of traditional utilities. Mass manufacturing instead of onsite construction; standardization instead of bespoke design; economies of numbers instead of economies of unit scale. We are mapping stakeholders across these new value chains to see who the key actors are, what roles they play, and what kind of knowledge gaps they experience.

Identifying factors to accelerate innovation, deployment and uptake: What explains the higher pace of innovation in technologies that can be mass-produced and modularly deployed? How can we build on this rapid pace of innovation to accelerate deployment and uptake among those who lack access to basic services? We are using a novel conceptual framework to seek answers to these questions.

Politics of decentralized electricity: Why don't solar PV mini-grids get more political support? Does "path dependency" explain the limited uptake, or are other political factors at play? What electricity reform measures are needed for mini-grids to gain policy traction? We are exploring answers to these questions by drawing from on-the-ground experiences of mini-grid deployment. Our geographic focus: **East Africa.**

Understanding off-grid sanitation: Though gridless sanitation solutions are increasingly cost competitive, they are often seen as merely transitory solutions – not as serious, long-term alternatives. We are comparing centralized and decentralized options, looking at relevant social, political and financial factors. Our geographic focus: **Latin America.**

Gridless water, sanitation and energy for disaster risk management: Though gridless technologies have many benefits, their potential to help manage disaster risk remains largely unrealized. The gap is particularly evident in contexts with limited finance and implementation capacity. We are studying how to maximize the opportunities for gridless technologies to reduce disaster risk. Our geographic focus: **Small Island Development States.**

Scaling off-grid WASH innovations

A related, collaborative project, **sWASH & grow**, is evaluating innovative off-grid WASH solutions from a wide range of perspectives. The first externally funded project connected to the Gridless Solutions Initiative, sWASH & grow is a collaboration between SEI, RISE Research Institutes of Sweden, several large humanitarian aid organizations, and a group of Swedish start-up companies. It is funded by the Swedish government's innovation agency Vinnova, with co-funding from a number of different sources, including the Gridless Initiative. SEI's work with sWASH & grow focuses on mapping success factors for off-grid deployment.

SEI Stockholm Environment Institute

Published by
Stockholm Environment Institute
Linnégatan 87D, Box 24218
104 51 Stockholm, Sweden
Tel: +46 8 30 80 44

Project contacts
olle.olsson@sei.org
karina.barquet@sei.org

Media contact
brenda.ochola@sei.org

Visit us: sei.org
Twitter: @SEIresearch
@SEIclimate