



Increasing Access to Electricity in Africa

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About NARUC International

Our Vision

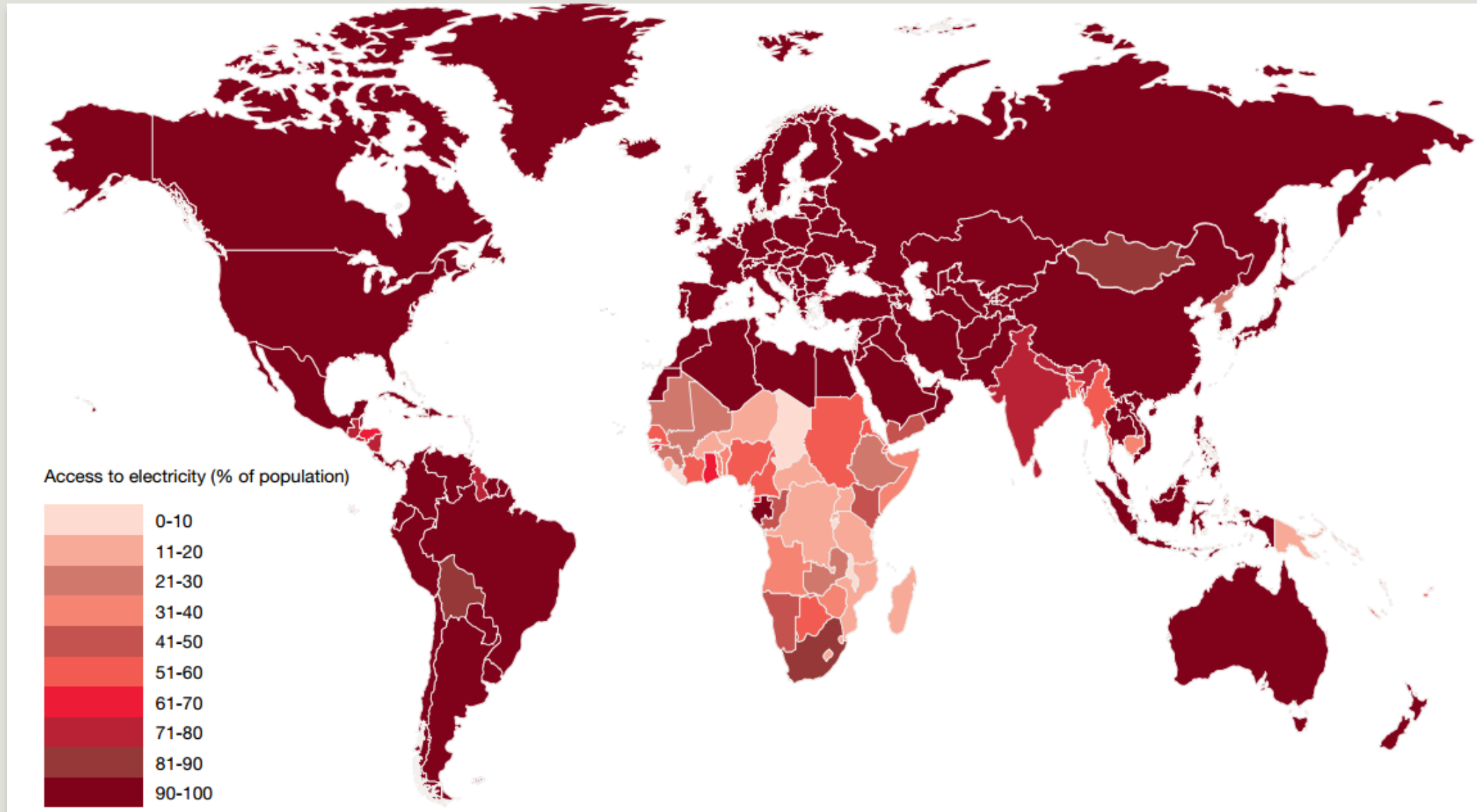
A world where effective regulation enriches livelihoods, grows economies, ensures sustainable and secure energy and provides universal access to high quality public services.

Our Mission

Empower the global community of regulatory decision makers to drive meaningful change through dialogue, collaboration and engagement with U.S. and international partners.



Access to Electricity Around the World





Expanding Electricity Access

- Electrification is a major political priority of African leaders, US/European governments, and NGOs.
- Strategies for Expanding Electricity Access
 - Centralized Electrification (i.e., expanding existing systems around cities to include rural areas by utilities and REAs)
 - Decentralized Electrification (i.e., minigrids, standalone systems)



Constraints to Centralized Electrification

- Limited Coverage of National Grid
- Lack of Commitment to Cost Recovery for Grid Assets
- Lack of Available Public Funds
- Insolvent National Utilities
- Politically Mandated Uniform Retail Rates
- High Costs and Few Incentives for National Utilities to Connect Rural Households



The Promise of Decentralized Electrification

According to the International Energy Agency Energy for All report, 70% of the world's rural population that is without access to electricity would be best served by either **mini-grids (52.5%)** or stand-alone systems (17.5%), with the remaining 30% well suited for national grid extension.“

IEA, 2011.



Source: Sustainable Energy For All, 2014.



Mini-Grids

- Most mini-grids owned and operated by national utilities.
- Governments are looking for ways to attract private companies to build and operate mini-grids.
- The majority of mini-grids are still run on diesel, but solar, biomass, some small hydro and wind are emerging.
- The costs and end-user are very high when compared with national rates accessible to grid-connected customers.



Powerhive, a California-based energy solutions provider for emerging markets is developing mini-grids in Sub-Saharan Africa. In 2016 its subsidiary Powerhive East Africa Ltd., was the first private company in Kenya's history to receive a utility concession to generate, distribute, and sell electricity to the Kenyan public.

Source: Powerhive



Regulatory Considerations

Regulators are tasked with building a framework that would encourage private investment to build and operate mini-grids.

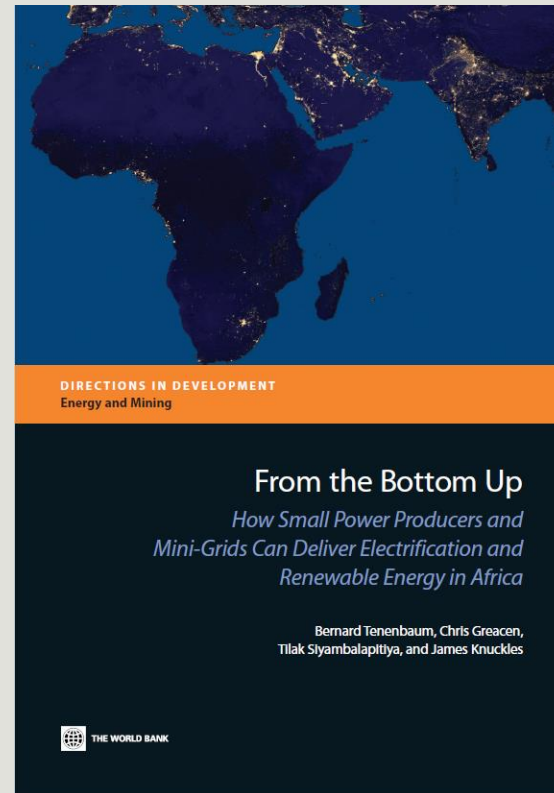
- Price regulation (maximum rates)
- Minimum quality of service standards



Future Connection to Main Grid

Ownership Issues

- How can mini-grid investors have certainty that they see returns once the mini-grid is interconnected?
- Four Potential Scenarios from 2014 World Bank Report

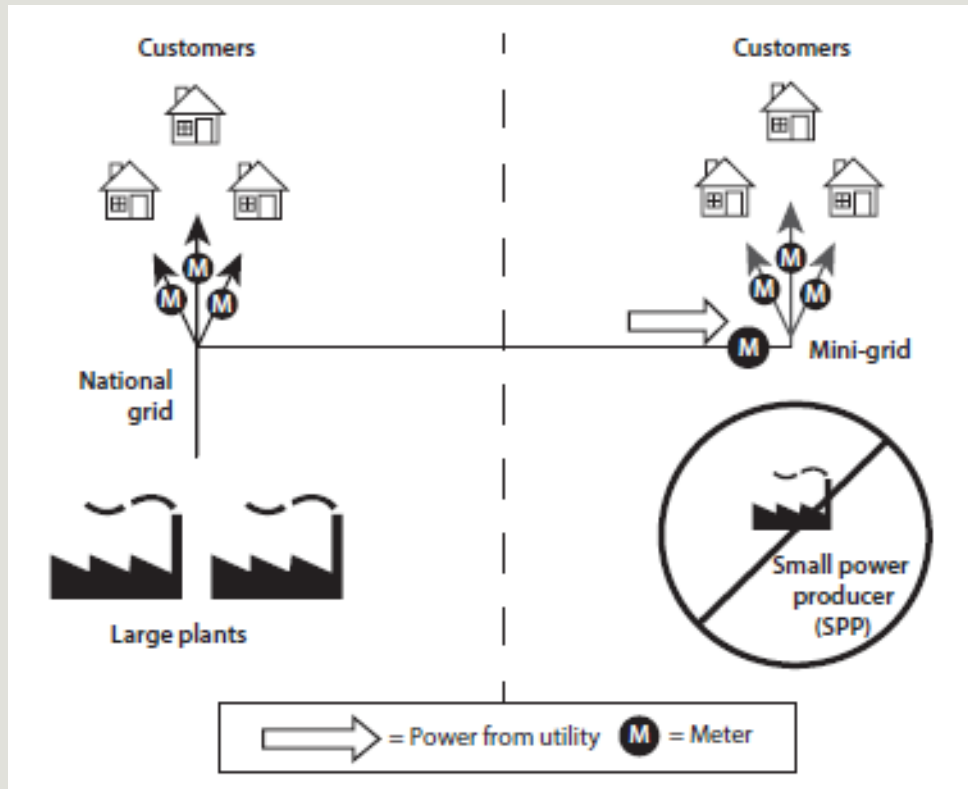


How Small Power Producers and Mini-Grids Can Deliver Electrification and Renewable Energy in Africa, The World Bank, 2014. (Authors: Bernard Tenenbaum, Chris Greacen, Tilak Siyambalapatiya, and James Knuckles). <https://openknowledge.worldbank.org/handle/10986/16571>

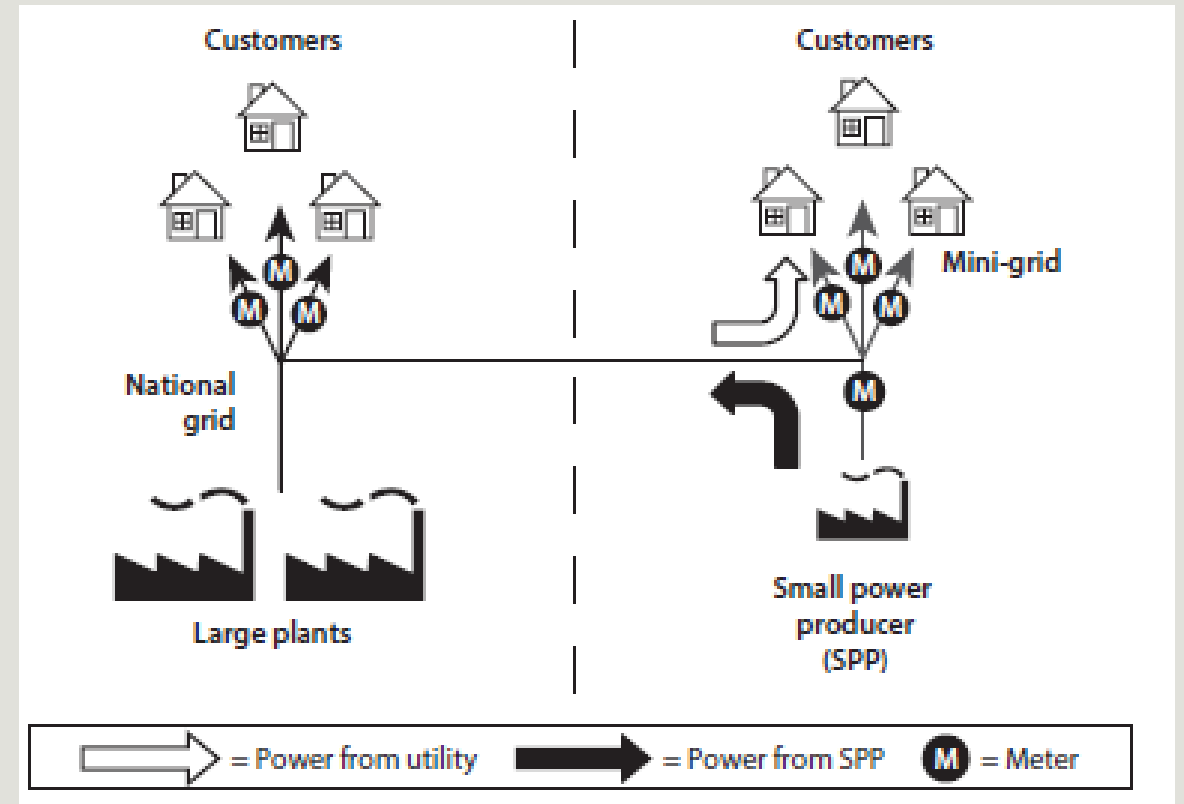


Future Connection to Main Grid

SPD Option



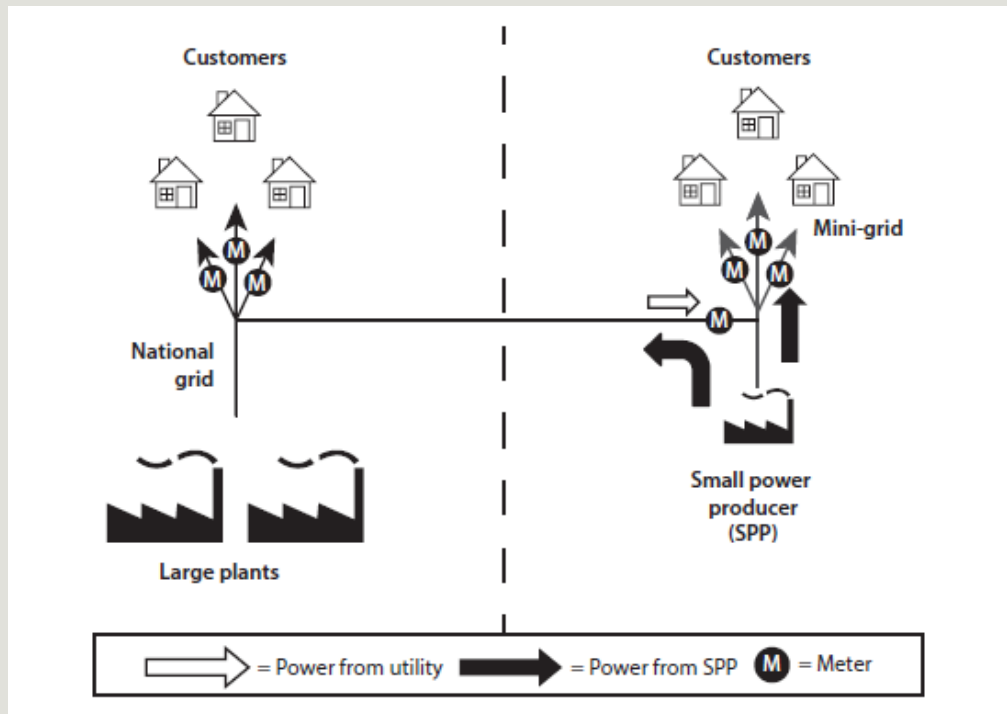
SPP Option



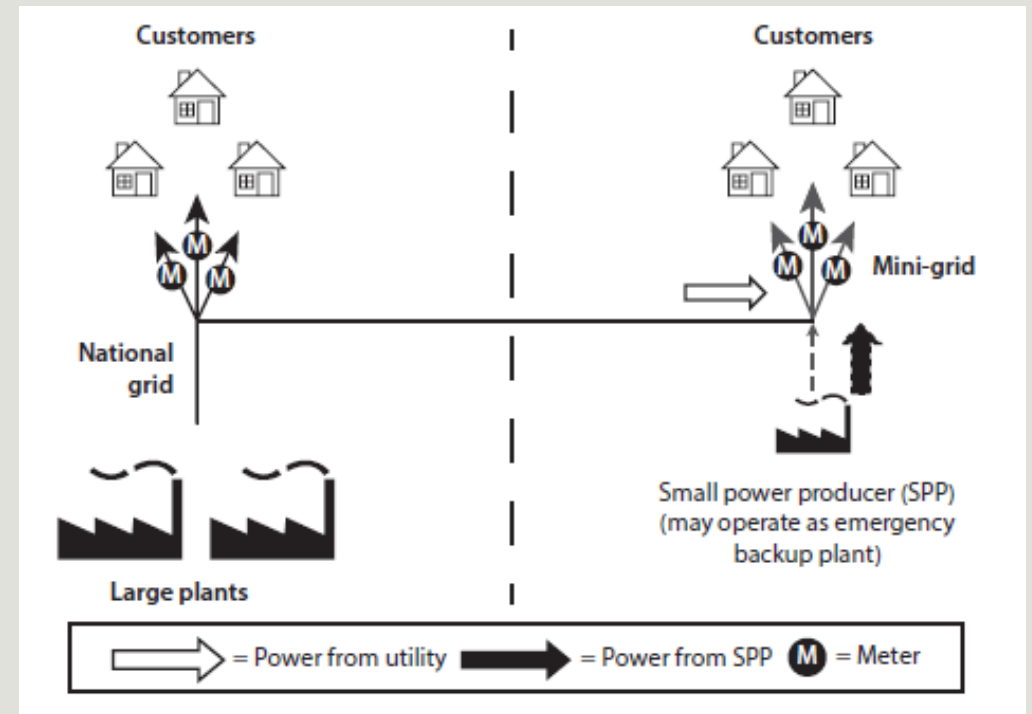


Future Connection to Main Grid

Combination SPP and Distributor Model

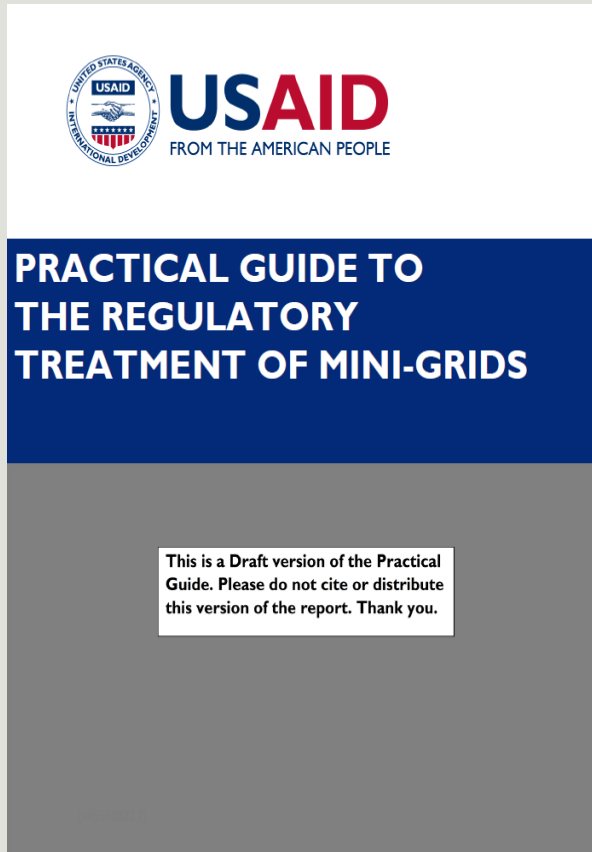


Buyout Option





NARUC's Work on Mini-Grids



- Concrete guidance and practical tools for developing a clear enabling regulatory framework for mini-grid development.
- A series of regulatory options and associated benefits and drawbacks of each option, including the tradeoffs between a more light-handed and comprehensive approach.
- Exchanges and workshops

For information on how to get involved email Bobby McMahon at bcmcmahon@naruc.org