



# Findings from the Indonesian Smart Villages Workshop on Energy for Islands

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## Abstract

The Smart Villages Initiative together with its local partner, Kopernik, held a workshop on Bunaken Island, Sulawesi in Indonesia, in November 2015 to discuss off-grid energy systems in remote island communities in Southeast Asia.

The workshop focused on the barriers and circumstances of rural energy access that are unique to small island communities, drawing inspiration from its setting. This briefing note for policymakers and other stakeholders summarises eight key points emerging from the workshop.

1

### Community engagement

Community engagement was consistently identified as vital to the success of any project. Projects are more likely to fail when communities do not buy in to them or value the energy or electricity services. Community ownership models, such as those used by IBEKA and Kopernik, were shown to be successful in off-grid island contexts. **Efforts should always be made to understand and reflect indigenous knowledge and existing social structures, to harness local skills, and to unlock local potential.** “Change should be 70% social and 30% technological”.

2

### The cost of electricity

The cost of providing electricity to islands is higher than conventional power generation on the mainland, particularly for remote islands where transport of the diesel used in generator sets (gensets) substantially increases costs. If mainland generation costs determine the tariffs that are charged on islands, then schemes will not be possible unless heavily subsidised (which may be an unsustainable drain on government funds) and may deter independent power producers. **An appropriate balance needs to be struck between affordability to island communities and financial sustainability.**

3

### Photovoltaics

Photovoltaic (PV) solar panels can provide a cost effective alternative to diesel gensets, particularly for remote islands, though import taxes can reduce their attractiveness. Hybridisation of existing gensets with solar PV is also proving to be an appropriate way forward on many islands, saving on operating costs whilst ensuring 24-7 supplies. The relative contribution of diesel and PV needs to be chosen according to local circumstances. **Electrification initiatives for island communities should consider diesel-PV hybrid solutions, optimising the relative contributions of the diesel and PV components.**

## 4 Productive uses of energy

For island communities in Southeast Asia and the Pacific, there are distinctive energy demands for the types of productive energy uses required, such as providing ice for fishing, or power for copra drying facilities. Electricity for water pumping and, in some cases, desalination can be major considerations. **Treatment of effluents and biomass wastes can provide the opportunity to produce biogas and should be evaluated as a route to reducing the negative health and environmental impacts of cooking via other means.**

## 5 Long term viability

A key consideration for the long term viability of island electricity systems is their operation and maintenance. **Charges to islanders need to cover the associated costs, including replacement parts (which need to be readily available), and charging schemes should be enforced. Responsibilities for operation and maintenance should be clear and incentivised. The necessary skills should be established through training schemes.**

## 6 Female empowerment

Women tend to prioritise energy needs differently to men, so a **gendered approach to energy access is required.** They have also been proven to be effective entrepreneurs, disseminating renewable energy technologies to island communities. The 'Wonder Women' initiative run by Kopernik is a concrete example of women's entrepreneurship. Women are trained as renewable energy micro-entrepreneurs and bring clean energy and economic progress to their communities. Women's groups were highlighted for their capacity to bring change and success, for example by managing energy payments and community facilities such as freezers for fish.

## 7 Tourism

The tourism industry can act as a bringer of energy and education to island communities. **More should be done to include island resorts in community energy and environmental projects.** Dialogue can be strengthened between local government, NGOs and tourist operators to achieve better outcomes.

## 8 Demonstration projects

Positive demonstration projects are useful, not only for the communities in which they exist, but as examples to others: 'seeing is believing'. The Sumba Iconic Island initiative is one such positive example, showing how a combination of technologies, government and non-government agencies, donors, and local communities can combine to achieve better development and economic outcomes by using renewable energy to increase energy access.

## Notes

We aim to provide policymakers, donors, and development agencies concerned with rural energy access with new insights on the real barriers to energy access in villages in developing countries—technological, financial and political—and how they can be overcome. We have chosen to focus on remote off-grid villages, where local solutions (home- or institution-based systems and mini-grids) are both more realistic and cheaper than national grid extension. Our concern is to ensure that energy access results in development and the creation of 'smart villages' in which many of the benefits of life in modern societies are available to rural communities.

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