



## Regional workshop: Sustainable energy sources for rural development and climatic resilience of off-grid communities in Central America, the Caribbean and Mexico

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The Smart Villages Initiative together with the National Academy of Sciences of the Dominican Republic held a workshop on 16-18 November 2016 in Punta Cana, Dominican Republic, to discuss the challenges to, and opportunities for, the provision of clean energy services to rural communities in Central America, the Caribbean and Mexico. The workshop explored the role of renewable energy and energy efficiency measures in boosting rural communities' development, improving social services such as health and education, and mitigating the risks of natural disasters.

In Central America, the Caribbean, and Mexico, there are around 16 million people that have limited or no access to electricity services. Countries in the region are vulnerable to natural disasters and the impacts of climate change. Energy demand is growing fast and most countries in the region are net oil and fossil fuel importers. They are consequently exposed to the price volatility of fossil fuels. To improve future energy security and mitigate the impacts of increases in fossil fuel prices, many national governments in the region are considering the integration of a broader range of energy technologies in their generation mix.

Exposure to the impacts of climate change and natural shocks places these countries in a vulnerable posi-

tion in respect of combatting poverty and planning for development. A wide range of natural disasters including earthquakes, droughts, floods, landslides, and hurricanes regularly devastate cities and villages across the region. Pursuing new strategies for disaster risk mitigation and resilience has become a priority across the countries.

Central to these problems is the challenge of implementing energy policies in a manner that aligns with energy security and climate change adaptation. Renewable energy, improved demand-side management, and energy efficiency together can greatly contribute to tackling this challenge. The following paragraphs summarise the key findings and recommendations from the workshop for policymakers, development organisations and other stakeholders.

1. Policies on renewable energy investments should be reformed to support decentralised energy access. Policymakers should develop financial instruments to support the scale up of the deployment of off-grid energy systems. Well-designed grants and subsidy mechanisms could greatly contribute to overcoming financial barriers. Too large a proportion of energy funding schemes is currently taken up by bureaucracy.

2. The volatility of fossil fuel prices is exerting some pressure for the development of energy security strategies in Central America, Mexico and the Caribbean nations. The region needs to reduce dependence on imported fuel by diversifying the energy sources used to generate electricity and by improving the efficiency of energy systems. To achieve this transformation, policymakers should pursue cross-country frameworks for energy development and energy security. Such agreements could help to expedite the increased use of renewable energy and the definition of climate-compatible development paths.

3. Governments should be clear about who is responsible for providing energy access to rural communities. Creating a strategy to deliver power to everyone is the government's responsibility. Carefully targeted government incentives and subsidies from development banks can make an important contribution to promoting off-grid renewable energy systems for rural communities where electricity provision is inherently more expensive than in cities and incomes are lower.

4. It is fundamental to encourage a bottom-up approach while defin-

- ing national energy plans based on studies of locally available renewable energy resources. An inclusive approach is key for the success of rural energy projects. Participation of local communities in the design and delivery of energy services is essential. A family-centred approach should be adopted, involving them at every stage, from planning through to implementation.
5. Clean cooking technologies should take an important place on the development and energy access agenda as well. Some Central American countries (for example, Nicaragua, Guatemala, and Honduras) and Haiti are still strongly dependent on firewood for cooking. Therefore, it is vital to understand the role of cooking enhancements in rural development, and include it in the national energy framework at the same level of importance as the electricity access strategies. There is substantial potential for the generation of biogas for clean cooking, but cultural concerns about the use of human waste need first to be addressed.
  6. To increase resilience in rural communities, attention should be given to traditional and old technologies: resilience may lie in simplicity of design. Important characteristics of resilient systems are that they are passive, flexible, and durable. An integrated approach should be taken looking at the whole system. As well as designing infrastructure to be resilient, communities should be trained so that they can better prepare for, and recover from, natural disasters.
  7. Local culture can be an important hurdle for the implementation of innovative projects. When communities are not familiar with the technology intended to be implemented, project developers should explain, in simple language and with examples, that the technology or system is healthy, safe, and does not cause diseases.
  8. An integrated vision is needed for designing for resilience. Building regulations should include clear methodologies for evaluating natural hazards and undertaking risk assessments within the land use planning framework. Corruption in infrastructure development should be identified and eliminated.
  9. In the rural health sector, telemedicine is recommended as a route to providing high quality, safe, and affordable health services in rural communities. The experience of the Dominican Republic demonstrates the feasibility of x-rays, mammography, etc. in rural clinics with relatively low levels of local skills, and connection to medical experts in central hospitals for diagnosis.
  10. Stimulation of productive enterprise in villages is key to their development and the financial sustainability of off-grid electricity systems. Livelihoods should therefore be the focus of rural development initiatives alongside the provision of key services.

## 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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The Smart Villages initiative is being funded by the Cambridge Malaysian Education and Development Trust (CMEDT) and through a grant from the Templeton World Charity Foundation (TWCF). The opinions expressed in this publication are those of the authors and do not necessarily reflect the views of the Cambridge Malaysian Education and Development Trust or the Templeton World Charity Foundation.

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