Remote areas around the world are at the forefront of the transition towards a more sustainable energy future. Faced with rising fuel prices, decreasing energy security, and widespread concern over global climate change, many remote communities are beginning to look to locally available renewable energy (RE) sources to provide solutions. Fortunately, renewable energy technologies (RET) have never been better positioned to help address those challenges. As renewable energy costs come down worldwide, the economic, financial and ecological case for the transition away from fossil fuels, and toward a greater reliance on more local and sustainable forms of energy is increasingly compelling.

IEA-RETD has commissioned a study with the overall objective to provide policy perspectives for making remote areas and islands largely independent from fossil fuel imports or costly transmission infrastructures. The project gives national, regional and local policy makers and initiatives a better grasp of the technical, economic and energy issues facing remote areas, and provides a menu of policy options and case studies available to accelerate renewable energy development in these regions. The intention is to inspire and to trigger action to deploy renewables and thus contribute to more sustainable energy systems in remote areas.

PROJECT DELIVERABLES

PRESENTED AT:
Renewables and Islands Global Summit, IRENA, Malta, 6-7 September 2012.
Report Findings and Conclusions

While residents in remote communities are often sheltered from the full impact of escalating prices by subsidies of various forms, the evidence suggests that the true cost of providing fossil fuel-based energy services in remote areas is growing. The result is that in many remote areas, RET can undercut, on a levelized basis, the cost of traditional sources such as diesel, providing valuable savings for governments, utilities and for ratepayers. From a technological perspective, remote communities also provide a compelling testing ground for the implementation of state-of-the-art technologies, including storage, grid integration, and the management of high-penetration renewable energy systems. Moreover, deploying renewable energy technologies at scale in remote areas can provide many valuable lessons for central electric grids, as well as for mainland transportation and heating systems. Remote areas also provide promising locations to evaluate the economics of high-penetration scenarios, potentially shedding insights for larger countries with ambitious RE targets.

One of the key lessons of this project is that the targeted deployment of renewable energy systems, combined with improved energy efficiency, can significantly reduce the long-term costs of energy service in these communities. In addition, it can provide a set of non-monetary benefits such as improved environmental conditions, enhanced quality of service, greater energy security, and a host of other direct and indirect gains. Apart from general issues of remote areas (demographic trends, logistics, economic and technical considerations), the report includes a detailed set of specific considerations, which deal more narrowly with the climate and other factors that characterize different remote areas. This section established six broad categories of remote area, which include: 1) Small Areas with Long winters, 2) Areas with temperate climates, 3) Small Areas with warm climates, 4) Large areas with warm climates, 5) Remote research stations, and 6) Remote areas in developing countries. Each specific category includes a detailed discussion of the environmental conditions unique to that category, an examination of the specific renewable energy sources available, and a high-level discussion of pathways to 100% renewable energy for each category of remote area.

The financing section of the report indicates that most renewable energy projects to date have been either developed as pilot projects, for research and development (R&D) purposes, or have been financed with significant assistance from the central government. However, there is the possibility, with the rising cost of diesel and the declining costs of many renewable energy technologies, that some remote area projects could be financed on a stand-alone basis. Where governments are seeking to encourage private sources of financing to enter the market, it may be necessary to gradually ramp down subsidies to conventional energy sources in order to attract both alternative sources of financing, as well as alternative energy technologies. Innovative business models such as pay-for-service, performance contracts or ‘energy service company’ (ESCO) models, as well as different ownership structures may be able to open new avenues for funding, and provide a greater degree of flexibility to adapt to local contexts, and better manage risk. Twelve case studies provide a number of lessons learned that could be applied at the community, provincial and even national levels:

1. Scaling back fossil fuel subsidies
2. Assisting with training and the lack of technical expertise
3. Assisting with project planning and implementation;
4. Designing appropriate incentives
5. Overcoming the issue of scale
6. Increasing research and development (R&D) funding
7. Prioritizing energy efficiency
8. Determining the appropriate level of RE penetration
9. Mitigating risks

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ABOUT IEA-RETD

IEA-RETD is an Implementing Agreement under the International Energy Agency. RETD stands for “Renewable Energy Technology Deployment”. IEA-RETD is a policy-focused, technology cross-cutting platform that brings together the experience and best practices of some of the world’s leading countries in renewable energy with the expertise of renowned consulting firms and academia. Its mission is to accelerate the large scale deployment of renewable energies. Currently nine countries cooperate under this cooperation framework: Canada, Denmark, France, Germany, Ireland, Japan, the Netherlands, Norway and the United Kingdom. The Operating Agent task is executed by Ecofys.