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Small Scale Wind Energy Production: toward the sustainable Development of island nations

Executive Summary

The electrification of small island developing states remains one of the most difficult tasks of international development. Electrification is difficult even outside of insular settings. Over 1.6 billion people around the world live without access to electricity. This reality, in turn, limits social and economic development, as electricity has positive impacts on everything from income generation to education. Electricity not only provides new opportunities for communities, it also allows individuals to carry out previous activities with greater effectiveness. With the hope of contributing to global electrification efforts, my research set out to assess how newly developed wind energy technologies might be used to electrify small island communities around the globe.

Small island developing states face several unique barriers to electrification. Unlike other developing countries, small island developing states, or SIDS, are both small in size and internally fragmented. Small size makes it difficult to achieve economies of scale when designing energy generation facilities. Fragmentation, in turn, makes it difficult to effectively distribute electricity between communities separated by the ocean. A third barrier to electrification in SIDS is cost. In the Cook Islands, for example, fuel for electricity generation comes from Singapore. After leaving Singapore, fuel travels to Australia, New Zealand, and Fiji before finally arriving in the Cook Islands. At each step, the cost of fuel can increase anywhere from 35 to 80 percent. Such high costs result in some SIDS dedicating a large proportion of government spending to purchasing fuel, money that might otherwise be used to support social initiatives.

Over the course of three months, I traveled to four small island developing states to investigate how wind energy might be used to electrify and help develop these countries. Setting out from Los Angeles, I visited the Cook Islands, the Philippines, the Maldives and the Canary Islands as part of my study. At each location, I conducted interviews with local government

officials, in addition to collecting primary sources on local regulations that might influence the development of wind energy in the country. Along the way I also stopped off in New Zealand, Taiwan, Singapore, and the United Kingdom to round off my travels. The results of my research were used as the basis for an honors thesis, which went toward completing my degree in Science, Technology and International Affairs from Georgetown University.

My research suggests that while SIDS have been successful in overcoming the technical barriers to implementing wind energy, the governments of SIDS have yet to take steps to address the social and political problems associated with wind energy technologies. The main thrust of the study was to analyze how models of wind development might be used to address political and social obstacles that arise from wind energy. In particular, the evidence suggests that models of community wind development—models that emphasize community economic development and well-being—are particularly useful for integrating wind energy systems into island communities. A detailed analysis of the successes of wind energy in the Philippines against the failures of wind energy in the Maldives provides the greatest support for this claim. The model of wind energy development in the Philippines, for example, focuses on forging economic links between wind energy projects and local communities. In the case of the Maldives, however, wind energy companies often fail to even consult with island officials before installing wind turbines. This lack of consultation and cooperation in the Maldives has resulted in community-utility tensions and caused the derailment of technically sound wind energy projects because of political and social differences. It is hoped that this study of community integration through models of wind energy development will promote wind energy in other small island and remote developing nations.