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Leapfrogging Dirty Energy in Developing Nations

By **Ned Helme**

As more than 150 world leaders gather this week in New York at the United Nations, the issues of sustainable growth, energy, and climate change will be at the forefront. The world's population is expected to grow 1.2 billion over the next 15 years, reaching 8.5 billion people by 2030, putting a serious strain on power grids. Almost all of this growth will take place in developing countries, which are expected to account for two-thirds of the growth in electricity demand over the period.

Whenever there's additional demand for electricity, environmental concerns arise. As global leaders wrestle with devising a new international agreement to address climate change, the question is: Will developing nations build large, polluting power plants as the U.S. and other developed countries have? The answer nowadays: not necessarily. Thanks to advancements in clean energy technologies, developing countries can leapfrog a fossil-fuel based model and opt instead for cleaner, renewable and widely distributed energy resources.

Distributed energy resources or DER include smaller, renewable-energy sources such as roof-top solar panels and wind turbines that can be aggregated to provide the electricity needed to meet demand. They can be combined with other technologies such as batteries, advanced sensors and smart meters to create "smart grids" that can increase efficiency and reduce or delay the need for large investments in expensive transmission infrastructure.

New technologies that allow remote control of energy systems have been springing up and can increase energy efficiency and reduce power demand during peak times when the electric grid is stressed. People can manage the energy use of their homes from their smart phones and use temperature sensors to optimize their homes' energy use. But are these innovations affordable and practical on a large scale? In short, the answer is yes.

Thanks largely to falling prices for clean technologies, renewable energy is now competing effectively in many places with old, polluting mainstays such as coal. The cost of solar energy has declined by nearly 80 percent in the last five years while the cost of wind power has been cut in half. Major economies are transforming their power sector to cleaner energy. California now gets 25 percent of its electricity from renewables, Germany 28 percent and Denmark 39 percent. The use of clean energy will continue to grow as costs continue to decline.

Harnessing a thousand solar panels or wind turbines is a lot more complicated than wiring up a single coal-burning generator. Nevertheless, energy experts and climate financiers familiar with these systems are leading the way in promoting this energy paradigm shift.

President Obama recently announced initiatives advocating clean-energy growth in U.S. homes. He also said he wants to expand access to a loan program that allows homeowners to get up-front financing for clean-energy or energy-efficient home upgrades.

The President also recently worked with the Environmental Protection Agency to finalize the Clean Power Plan, which will help accelerate the movement toward clean, renewable and distributed energy.

There is no silver bullet to achieving this transformation. Rather, accomplishing a wholesale change must include a variety of policy reforms, economic mechanisms and technological advancements. Developing countries are starting to take note. One sign: The Center for Clean Air Policy hosted a recent meeting that included policy makers from developing countries including Argentina, Chile, Colombia, Costa Rica, Indonesia, Mexico, Pakistan, Panama, Peru, Philippines and Uruguay. Delegates learned from experts from California and Germany how to make the jump to low-carbon, distributed energy systems in ways that also make economic sense.

Public financing can help spark this transformation: a new international fund dedicated to climate change called the Green Climate Fund has collected pledges of more than \$10 billion for its first round mostly from developed countries. This fund will be used to assist developing countries in their transitions to clean-energy economies.

The U.S. must set the example for the world if this global movement toward worldwide production of clean energy is to blossom. As populations boom, so does the need to sustain them at a manageable cost to both the economy and the environment. With the need to battle climate change proving to be a prominent issue in the twenty-first century, we would be wise to ensure that clean energy markets exist and thrive both domestically and internationally, especially in fast-growing developing countries.

Investments in widely distributed, clean energy can lead the way.

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