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RETHINKING GLOBAL CLEAN ENERGY INNOVATION: WHAT DEVELOPED COUNTRIES CAN LEARN FROM DEVELOPING COUNTRIES

Montpelier, VT—A new report issued by Clean Energy Group (CEG) shows that successful climate technology innovation may come from where we least expect it – not from the private sector alone or from developed countries - but from emerging markets in developing economies. The paper describes how new innovations models coming from some of the least developed countries are achieving success. These new public-private "innovation system" approaches to accelerate climate technologies in developing countries could be used by the developed world to overcome similar market barriers for clean energy.

The paper, "Accelerating Climate Technologies: Innovative Market Strategies to Overcome Barriers to Scale-Up," identifies the specific barriers to rapid diffusion of three climate mitigation/adaption technologies – off-grid solar lighting, post-harvest cassava processing, and marine energy – which are too great for the private sector alone to overcome. The paper then evaluates two projects – *Lighting Africa* and *Innovations for Agricultural Value Chains in Africa* – that involve successful, international public-private partnerships to target these barriers along the entire technology development chain. The lessons learned from these bottom-up programs can be applied to clean energy technology challenges in the West in an approach that some call "reverse innovation," where innovations from developing countries in products, business processes, or policies are transferred to more developed countries. These new strategies, which go far beyond pricing and information sharing, could be adopted worldwide to accelerate the development and commercialization of low-carbon technologies.

"To have long-lasting impact at scale, we need to systematically address barriers to market development and establish collaborative platforms with the international industry," says Patrick Avato, the IFC's Global Program Manager of the *Lighting Africa* project. "*Lighting Africa* is achieving real market impact through this approach in the off-grid lighting sector. There are huge, untapped opportunities to apply this approach to market development of clean technologies at scale, not just in developing countries."

"In contrast to the conventional wisdom – that the private sector alone or that information sharing and carbon pricing alone – will solve the climate problem, the projects in these developing countries teach us a very different lesson," according to Jessica Morey, project director for CEG and a principal author of the report. "These projects demonstrate that more integrated innovation strategies are needed to overcome the multiple barriers and get new climate products to scale in developing countries – whether it's solar LED lighting or agricultural adaptation products. Similar market barriers exist in the developed world, but we too

often rely on easy solutions, even though more comprehensive, systems approaches, which are already at use in developing countries, are needed."

The two examples from Africa show how public agencies, foundations, and NGOs can act as neutral brokers with the private sector to overcome market barriers, unleash innovation, and push products to full-scale commercialization.

- For example, in the *Lighting Africa* project, the International Finance Corporation (IFC) and the World Bank teamed up to deliver low-cost, solar-powered, high-quality off-grid lighting to millions of people without access to electricity. The team identified market gaps not addressed by the private sector – such as lack of information, financing, and quality products – and targeted each gap with direct support. It provided consumer education, built local capacity for product testing, and helped businesses access financing. It connected producer to consumer, and entrepreneurs to local and international stakeholders. The result is impressive success for the *Lighting Africa* project: from fewer than 8 off-grid products available in 2008, there are now at least 71 product types manufactured by 49 companies available to African consumers, at lower costs with each passing year.

- The second case study, an innovative Gates Foundation-funded project called *Innovations for Agricultural Value Chains in Africa*, demonstrates a new, collaborative product development approach for agricultural climate adaptation technologies. Led by the Meridian Institute, a U.S.-based NGO, this project brings together international expertise from non-agricultural disciplines – a form of "open and distributed innovation" – to analyze the problems from fresh perspectives. This interdisciplinary group recommended unexpected and creative technology solutions to overcome value chain gaps and increase the efficiency of agricultural markets for smallholder farmers. A key feature of this collaborative approach is its focus on joint research and joint product and market development. The project has begun to refine concepts for actual product development and commercialization. One is a modified plastic tank for maize storage, now prototyped and deployed in Kenya; the project plans to link potential financiers with other product ideas for commercial development.

- The report also describes how this approach could accelerate development and deployment of advanced marine hydrokinetic energy technologies (wave, tidal, and current devices), which have the potential to supply a significant amount of global electricity demand. Major hurdles – including high cost, challenging transmission infrastructure, regulatory thickets, and the absence of a "winning" technology among the vast field of mostly small, independently operating competitors – prevent these technologies from c*apitalizing on their international market potential.* The Africa "innovation system" approaches suggest that a coordinated, market acceleration strategy that taps distributed knowledge and experience could catalyze rapid learning and radical cost reductions in marine technology. This form of international innovation collaboration could coordinate the creation of models and testing facilities, aggregate device performance and cost data, and develop new business models, financing schemes, and regulatory frameworks.

A copy of the report can be downloaded from the CEG website, at:
http://www.cleanegroup.org/Reports/CEG_Accelerating_Climate_Technologies_071410.pdf

ABOUT CLEAN ENERGY GROUP

Clean Energy Group (CEG), a national U.S. nonprofit organization, promotes effective clean energy policies, develops low-carbon technology innovation strategies, and works to develop new financial tools to stabilize greenhouse gas emissions. Clean Energy Group concentrates on climate and clean energy issues at the state, national, and international levels, as it works with diverse stakeholders from governments as well as the private and nonprofit sectors. For more information on Clean Energy Group: http://www.cleanegroup.org.