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Policy Summary

Moving Climate Innovation into the 21st Century:
Emerging Lessons from other Sectors and Options for a
New Climate Innovation Initiative

**Prepared for UK Department for International Development and
UK Department of Energy and Climate Change**

by **Clean Energy Group**
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The overall purpose of this report is to provide a series of options to structure and implement an international climate technology innovation initiative based on best practices from the agriculture, health, and ICT sectors. The research aims to inform ongoing international discussions on climate technology mechanisms as well as international and bilateral agency programs.

Based on lessons learned from nine case studies of existing international public- and private-sector technology and market development collaborations, the paper presents core principles and three options for a climate innovation initiative.

Key Points

- Climate recovery will require new, much cheaper technologies that serve the needs of the poor—this will require innovation at all points on the technology value chain from technological improvements, to business models and financing schemes;

- Developing countries must be considered partners in any technology innovation initiative rather than passive recipients of transferred technology and capacity building—both because developing countries have called for national ownership and priority setting, and because—

- Innovation theory and practical experience show that many of the breakthroughs for low carbon technologies are likely to come from the developing world to be transferred to the West.

A Comprehensive Look at Successful Global Technology Innovation

This report analyses technology innovation models from the agriculture, health and information and telecommunications sectors. Its case studies range from projects like Human Genome Project, to the rise of the mobile phone industry, to why the Global Fund has been so successful and what can be learned from the Consultative Group on International Agricultural Research for climate technology. The authors interviewed more than 40 experts from around the globe who created, partnered with or benefited from these initiatives. It explores how these strategies have evolved, especially in developing countries.

This research aims to identify the lessons and best practices from the agriculture, health and ICT sectors that can be applied to the climate technology sector to create a global climate innovation initiative.

The full report can be found at:
www.cleanegroup.org/publications/

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Core Principles. A number of common principles for success emerged from the theory and case studies that any climate innovation initiative should follow, namely:

- **Start by clearly defining the technology barriers and needs with end users**.

  Example: World Economic Forum's Global Access in Action initiative found: "Too often in the past, technology transfer for development has failed because it was supply-driven—without real attention to the technological needs of the poor. Companies, research institutes, and universities need to know specifically what the problems, how technologies will be used, and what the adoption issues are if they are going to successfully apply their knowledge and technology."

- **Tap the global brain and bank to link knowledge and finance with local expertise and experience.**

  Example: The successful CGIAR Generation Challenge Program linked experts from over 230 research labs, private companies, national agricultural extension programs and CG centers, while the key to the successful mobile phones uptake across the developing world was the linking of native entrepreneurs (in almost all cases trained in the West) with international finance. Evolving open and distribution innovation tools (virtual networks, prize competitions, data sharing systems) and practices (multi-disciplinary teams, cross-sectoral learning) can create international networks and tap global expertise.
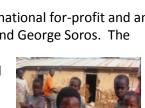

- **Look to developing countries as innovators in their own right through "reverse innovation" where developing countries are not just recipients or imitators of developed country technology activities.**

  Example: The mobile phone innovations like mobile banking demonstrate that future technological innovation is likely to come from developing countries; similarly, the Global Fund relies on program innovations to evolve from the country organizations it supports.

- **Focus on market or product development—beyond information sharing and policy—to have huge impacts on poverty reduction and economic development.**

  Example: GrameenPhone was created out of a joint venture of a multinational for-profit and an indigenous nonprofit, supported with development aid from Norway and George Soros. The model looks like this: market specific public interventions and partnerships spur private investment that generates profits for businesses and income for end users, which are reinvested to generate further profits→ spin-off businesses are created and competition drives the market and forces government reform→ capital markets deepen→ new liberalized policies and regulations support further investment and the country begins to operate from its own technology, entrepreneurs, and capital.

- **Systems or value chain approaches are critical to steward new technologies to market where they address all barriers along the technology value chain.**

  Example: The African agricultural value chains case study notes a number of technology projects were unsuccessful because they were introduced to solve a particular problem at one step in the value chain without considering the full product life-cycle process (i.e., the mechanized cassava peeler).

- **Involve the private sector because the public sector will never have enough money to fund capital-intensive climate technology development**.

  Example: All of the case studies have shown that the most effective innovation programs work closely with the private sector to leverage expertise, skills, and funding.

- **Treat IPR as a solvable problem**.

  Example: In most case studies, IPR is increasingly seen as a series of specific legal problems, all solvable within "normal" business practice, rather than intractable political and policy problems that stymie new technology innovation.

- **Independent organizations are critical for incubating innovation**.

  Example: The Global Fund was specifically established as an independent entity outside of existing organizations such as the World Bank and the UN. Similarly, the CGIAR's Challenge Programs and new Research Programs are expressly established independent of existing CG center hierarchies.

- **Operationally lean innovation organizations most often operate with small staff with core expertise—tapping outside topic specific expertise as needed.**

  Example: The CGIAR's new Climate Change Agriculture and Food Security program is dedicated to staying small with a core staff of seven people working with researchers in existing institutions around the world—managing its $70 million annual budget.

- **A heavily networked entity is one way for an organization to stay lean, by relying on the capacity of existing organizations to the greatest extent possible.**

  Example: The Human Genome Project, the GSMA mobile phones industry association, and the CGIAR's Challenge Programs are all examples of successful organizations whose success depended on being highly networked and leveraging expertise in diverse existing organizations.

- **Multiple funding sources are critical—public funding should be "seed funding" that leverages additional private sector and other funding.**

  Example: Public funding should be sought from a wide range of governments as well as private foundations and public donations. This has been a key to the success of the Global Fund, which receives funding from almost fifty countries. The Global Fund also receives significant funding from the Gates Foundation, individuals, and creative public-private fundraising programs.

Illustrative Options for a Climate Technology Initiative

At the outset, it is important to acknowledge that this paper is only designed to provide the intellectual foundation for a much more rigorous, second-phase scoping and business plan development process. Thus the three options below are notional without the necessary detail to fully support them at this time.

Option 1: Country Specific—Projects Only, No Coordination

This option would consist of a few country-based project initiatives that would not be supported or managed by any global coordinating organization or function; these, in effect, would be one-off projects that would initiate this effort, with determinations made later about the need for any other supporting entity.

Key design elements:
- Importantly, this option would consist only of implementing projects, without any backup coordinating entity or organization.
- Projects would focus like Lighting Africa on climate product development in developing countries in the areas of mitigation and adaptation.
- The projects would use an "innovation systems" or "value chain" approach to identify local institutional barriers to change, and propose solutions to overcome them.

Pros: This process would likely be easiest to establish, with simpler institutional problems and smaller amounts of funding.

Cons: This approach may not achieve global scale and scope, and limits learning across projects and technologies.

Option 2: Country Specific Projects with Global Network

This second option would consist of a light, virtual global organization—independent but perhaps linked to some other global body—that would initiate and support a few different technology/market "nodes" in select countries. The theory behind this option is that of a bottom-up, in-country strategy linked to a global, open-innovation architecture of experts. A combination of in-country capacity building and a dedicated, international, technology-innovation-support network are the essential elements of this structure. A few early projects would be started in different countries with specific technologies. The other key distinguishing feature would be a virtual team working in a global network—using various open and distributed innovation tools to tap into the "global brain" to solve implementation problems.

Key design elements:
- A Core Team would provide leadership, identify and vet specific technology concepts, strengthen networks, aggregate and share knowledge.
- Project Teams would implement projects in countries where the technologies will be deployed.
- Virtual Resources would efficiently link project teams with various experts, as needed, in the areas of technology design, finance, market analysis, policy, and IP issues.

Pros: A global organization, managing multiple projects in different locations and technologies, can allow for faster learning and for greater replication and scale.

Cons: This would be more complicated and expensive to execute than Option 1 (though perhaps less expensive than Option 3). In addition, the creation of a virtual network would be a new endeavor that would take some time to structure and put in place.

Option 3: Central Global Organization with Multiple Projects

This third potential option would be a new centralized division or entity within an existing global organization such as the World Bank/IFC—or under the UNFCCC technology "centre"— that would rely on in-house staff to initiate and manage many technology projects in multiple countries.

Key design elements:
- It would rely on an existing organization to support the project development and implementation.
- It would likely rely on existing expertise to vet projects.
- It would possibly be able to raise funds more quickly given likely relationships with donors.

Pros: This option could likely be established most quickly and avoid the challenges of new organizational set up. It would be recognized by existing partners based on past performance. It would also be able to rely on past performance to argue for taking on a new responsibility and new funding.

Cons: This option may be less country-led and may not be able to adequately account for individual country priorities. Moreover it is inconsistent with the emerging consensus that independent organizations tend to be more capable of managing innovation.

Next Steps—A Design Process to Establish the Initiative

Given the many variables and trade-offs involved in consideration of options, we recommend that the next step should be a design process. This could take the form of a "design charette"—a strategic planning exercise where major potential partners, funders, and other organizations are brought together in person for a several-day session to develop a framework for the global technology innovation initiative.

This effort would require new funding. It is important to address this funding question head on in the design process. An in-depth business plan should be developed that could be adopted to "stand up" a pilot as early as the end of 2011. Toward that end, this design process should start no later than early May 2011. Starting any later would likely jeopardize the serious strategic planning needed to develop a collaborative and consensus plan by the end of the year, in time for the 2011 COP in Durban, South Africa.