POLICY BRIEF

Climate Innovation Centres: a global instrument with local benefits

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Abstract

A climate innovation centre is an institution aimed at enabling development through catalyzing climate technology research, development and market creation. What do technologies need to flourish and to contribute to sustainable economic development? Current research suggests that functioning markets, innovative capacities and the availability of appropriate technology in countries such as Ghana are key. In the climate negotiations, climate technology innovation centres, as well as an international network of them is in the process of agreement, providing opportunities for Ghana. This Policy Brief explains the considerations for a climate innovation centre in Ghana. It goes into the climate negotiations context, the practical choices for Ghana, gives examples of other countries, and outlines the next steps in the ECN Technical Assistance project.

CONSIDERATIONS FOR A CLIMATE INNOVATION CENTRE IN GHANA

Ghana is a low-income country in a good position to host a climate innovation centre. Ghana's economy and population are growing fast. To continue this positive development in a sustainable way and enable the continued economic transformation in the country, secure and affordable energy as well as preparedness for future climate changes are key. A climate innovation centre could involve the private sector, lead to employment benefits, can educate professionals and collect the data and knowledge that can lay the basis for sustainable development in Ghana. Ghana has a relatively strong academic research base. A climate innovation centre can also provide much-needed career opportunities for bright young scientists, engineers and entrepreneurs and is in line with national science and technology policies. International developments suggest that a source of funding might become available under the climate negotiations. Ghana could be a lighthouse country for the instrument of innovation centres.

Case in point: How a PV entrepreneur could benefit

John Boachi, an energy entrepreneur in Tamale, in the north of Ghana, wants to set up a distribution system for PV-based solar home systems in the rural areas surrounding the town. He knows the area well as he has grown up there. He feels he has a good business model but has not been able to convince investors that his idea should be financed, and is unsure how he should select the right systems. He turns to the Ghana Climate Innovation Centre. There, he is offered a training and assistance with improving his business plan such that investors consider it bankable. He receives access to documentation on reliable and appropriate suppliers of systems and receives assistance on asking for quotes and specific technical information. Moreover, he receives recommendations on market research and is invited to a matchmaking event in Kumasi with several domestic and international investors looking for projects to finance. He arrives well-prepared and eventually interests an investor for his business.

THE RATIONALE FOR CLIMATE INNOVATION CENTRES

The need for technology

The importance of technological innovation for climate change mitigation and adaptation can hardly be underestimated. Adaptation to changing climatic conditions is a localised issue. It therefore

requires in-country knowledge of adaptation solutions and functioning local institutions. For mitigation and low-emission development, technology deployment and transfer, as well as capacity to use the technology, are needed in developing countries and developed countries alike. Moreover, new technologies need to become available and existing ones need to be improved. Without such improvements, the applicability of the technology is limited. The 1992 UN Framework Convention on Climate Change (UNFCCC) therefore has technology development and transfer as well as capacity building as key objectives. However, so far the objectives have not been fulfilled: many gaps remain.

Climate technology innovation

Currently, the vast majority of research and development (R&D) funding is spent in developed countries. Increasingly however, it is clear that innovation capabilities are key in developing countries as well, in order to be able to adopt, adapt and improve existing and new technologies. As low-carbon and adaptation actions will need to be implemented in both developed and developing countries, and R&D capabilities are low (in particularly least-developed countries), there is a clear prerogative to support climate technology R&D in developing countries. As the R&D infrastructure may be limited, new climate technology innovation centres, where possible hosted by existing institutions, are a means for realising that aim.

In addition to R&D innovation capabilities, after the technology is demonstrated at scale and needs to be deployed routinely, other barriers occur. Oftentimes, the investment climate for a new technology is unfavourable, there may be legal and regulatory barriers, the costs may not be competitive yet, requiring support, human capacity for operation and maintenance as well as low public awareness levels may inhibit the deployment of an otherwise beneficial technology. This challenge requires a different form of innovation, and different skills than technology R&D. A climate innovation centre could also enable technology market development.

Case in point: The Botswana Innovation Hub

Botswana is a middle-income country. Its economy is highly dependent on minerals export (in particular diamonds). The energy system depends almost fully on foreign electricity and fuels. The Government of Botswana is keen to diversify the economy and address its looming energy gap. Supported with funding from various donors and in collaboration with innovation centres from the donor countries, it is setting up an independent, non-governmental, not-for profit innovation centre by the name of the Botswana Innovation Hub. The BIH mostly follows the market development variant of an innovation centre: it catalyses and enables entrepreneurial activities in, among other fields, clean and efficient energy technology. For instance, it organises trainings for energy entrepreneurs bringing new products to the market in Botswana; provides assistance to entrepreneurs with business plan writing and finance and organises matchmaking events between investors and local businesses. However, it also has an R&D component: it hosts a Centre for Energy Efficiency and Renewable Energy from the University of Botswana. More information: www.bih.co.bw.

THE COPENHAGEN ACCORD AND ITS TECHNOLOGY MECHANISM

Research suggests that human-induced climate change can be harmful, in particular to developing countries. The current treaty for addressing climate change, the Kyoto Protocol, is based on emission reductions targets by *developed* countries, and voluntary participation in emission reductions by

developing countries through the Clean Development Mechanism (CDM). In December 2009, the Copenhagen Accord was agreed in addition to the Kyoto Protocol. The Copenhagen Accord proposes softer instruments for emission reductions in developed countries, and low-emission development in the developing world. The Copenhagen Accord instruments can make a difference to developing countries. They take into account development concerns. A "Technology Mechanism" addresses issues related to technology R&D and transfer.

The developing countries that support the Copenhagen Accord, including Ghana, have submitted Nationally Appropriate Mitigation Actions (NAMAs) and indicated actions for adaptation. Copenhagen provides for such actions: In line with G77+China proposals, developed countries have promised USD 30 billion over the years 2010-2012 to "fast-track" climate action in developing countries, allowing for quick testing of new ideas under the Copenhagen framework.

The current negotiation texts indicate that under the Technology Mechanism, which was originally a proposal by the G77 under the lead of Ghana, climate technologies will be developed and transferred globally. Also, the Technology Mechanism should develop and enable endogenous capabilities and technologies specific developing countries. If negotiations go well, a decision on a "Climate Technology Centre and Network" is expected in December 2011. If this is indeed decided, it could open possibilities for Ghana.

CLIMATE INNOVATION CENTRES: PRACTICAL ASPECTS FOR GHANA

If Ghana is interested in pursuing hosting a climate innovation centre, several practical choices need to be made. Examples include: Should an innovation centre be focussed on R&D or more at market development? What should be its relationship with the government, private sector and research community? Should it be newly established or hosted by an existing institution (and which one)? Where should the funding come from?

R&D or market development? Some climate technologies are still in the early phases of development, while others are much more advanced and are implemented in many countries around the world. A technology that is in the R&D phase or that still needs to be demonstrated in real life requires different support than a technology that is technical ready but is not successful because nobody has heard about it or it is still more expensive than other technologies. At the same time, however, technology development is a continuous process that does not distinguish between a research and a diffusion phase. A climate innovation centre is not necessarily focussed on a single phase of technology development: it can play a role in both R&D and demonstration and in the entry and rollout of a technology in the market.

Technology adaption? A centre in Ghana could encompass R&D on endogenous or foreign-developed technologies, but can also make sure that a technology developed in, say, Japan is improved such that it is suitable for the Ghana context. It could enable the deployment of technology through creation and linkage of markets, making sure that technology can be scaled up and the right incentives are in place.

Case in point: A foreign investor in Ghana

An American manufacturer of waste processing is interested in investing in Ghana, but does not know where to start. How to get information on waste produced, current practices, room for improvement and environmental legislation? During a fact-finding mission in Ghana, the business development officer talks to a representative of the CIC in Ghana. She provides him with data, contacts and ideas on his plans.

Funding? In the initial stage of a climate innovation centre, public support is needed for a climate innovation centre. This can be government support, but developed countries have, in the earlier mentioned Copenhagen Accord, committed funding for mitigation and adaptation activities in developing countries. Development agencies are likely to manage those funds. In addition, the Global Environment Facility is funding technology-related climate change activities.

Role of government and private sector? Innovation centres in other countries have widely different institutional arrangements, but private sector engagement is generally seen as essential. If the government gives a high priority to climate change and needs easy access to data and policy advice, there are arguments for close relations with government. Most new climate innovation centres, however, chose to establish an independent innovation centre with government endorsement but non-governmental funding (see the Box above). In this way, the centre can operate independent from fast-changing political priorities, be more attractive to business and respond swiftly to new market circumstances.

Existing institution? Another choice is whether to base the innovation centre at an existing institution or not. This depends on the availability of suitable candidates in the country. For an R&D-aimed climate innovation centre, it might make sense to have a strong relationship with a university, both for mutual learning and benefits, and to be able to motivate and recruit talented students. For a market development-oriented centre, it would depend whether there is already a similar centre active in another field.

NEXT STEPS

An exploration into a climate innovation centre for Ghana is part of ECN's Technical Assistance to the Ghanaian National Policy Framework on Climate Change. After a series of discussions with stakeholders, a Discussion Paper which will outline choices and recommendations on a climate innovation centre specifically in the Ghanaian context will be released in October. This paper will discuss the situation of a climate innovation centre at existing institutions, including the newly-established Institute of Environment and Sanitation at University of Ghana, Legon.

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