POLICY BRIEF

BUILDING INNOVATION SYSTEMS FOR CLIMATE CHANGE TECHNOLOGY TRANSFER: PERSPECTIVES FROM EAST AFRICA

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KEY MESSAGES

1. Innovation systems are critical to technology transfer and implementation of Nationally Determined Contributions (NDCs).
2. Innovation systems provide an important platform for conceiving and incubating climate technologies.
3. In East Africa, various stakeholders have different views of what constitute a good innovation system. These views are informed by country experiences and context in relation to social, technological and institutional innovation systems.
4. The diverse experiences, lessons and contexts from the East African countries can potentially inform a rich and evidence-driven platform for a regionally integrated innovation system for the EAC which could in turn be informative to national systems.
5. However, such opportunities could be enhanced through strengthening institutional structures that allow for cross-sectoral, cross-country and multi-level knowledge and experience interchanges.

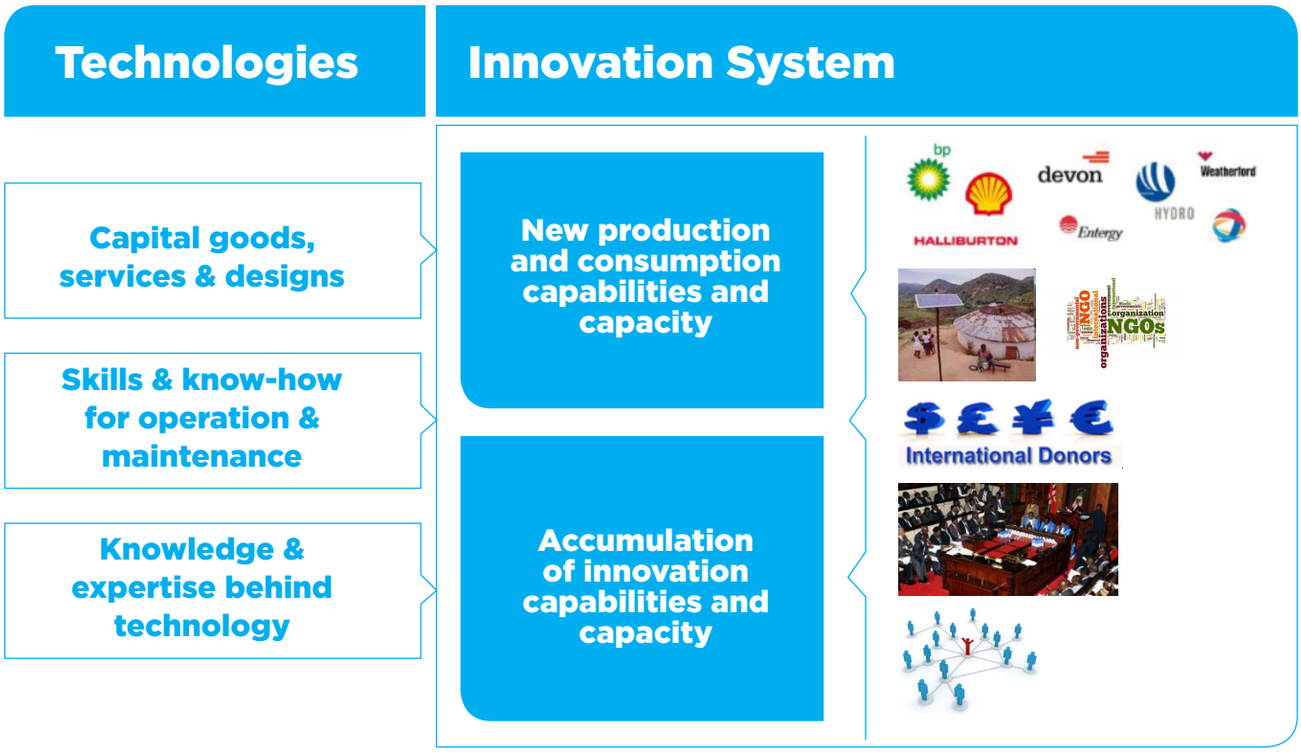

Figure 1: *Policy makers and development partners panel discussions on what constitutes an innovation systems and opportunities for East Africa*

What is an Innovation System?

An innovation system refers to a set of actors, institutions and skills that function and interact to create conditions and learning for innovative social, environmental or economic solutions (technologies, ideas etc.) to emerge and successfully thrive in a particular context. An innovation system is guided by three main pillars: actor ideas and their interactions, institutions and policies. Actor ideas and interactions establishes the unique roles, skills and experiences of different stakeholders ranging from governmental to non-government, universities and industry into a strategic arrangement linking their innovative actions as part of innovation processes. In this, the interactions or collaborative engagement of ideas and actions of a diverse set of actors also provide strategic learning and feedback that develop into solutions and priorities that are more inclusive, dynamic and adaptive. On the other hand, institutions form the rules of the game including formal and informal rules, norms and established practices that regulate the relations and interactions between various actors and their ideas. Institutions provide the legal framework that enables specific innovative actions in particular contexts and impose restrictions and/or barriers and trade-offs that ought to be made between various practices/technologies/actions. Policies provide the roadmap for actualising various innovative actions. The policies provide guidelines on how, where and when to implement solutions/technologies. In brief, an innovation system accelerates the emergence of holistic, inclusive and feasible solutions in a particular situation.

Why is understanding innovation systems key for Africa?

The role of innovation systems in negotiating and implementing climate change decisions in Africa is increasingly receiving attention among researchers and policy makers. For the first time in climate change negotiation history, the Technology Executive Committee (TEC) to the UNFCCC recently launched a work stream on "strengthening innovation systems (IS) for climate technology transfer (TT) and development". This represents a significant opportunity for African countries to leverage support via the UNFCCC and other development agencies to strengthen their capabilities around climate technologies in ways that will underpin effective design, lobby for and implement technological decisions that resonate with Africa's circumstances, long term economic growth and overall resilience of the African people.

In March 2016, the Africa Sustainability Hub (ASH) convened a training workshop, on building innovation systems for climate change response. The workshop brought together key government policy makers on climate change drawn from the East African region - Kenya, Uganda, Tanzania, Ethiopia and Rwanda - to learn and discuss about prospects, opportunities and challenges for establishing effective innovation systems. Participants also included researchers, development partners, civil society, private sector and the media. Drawn from different backgrounds and understanding, participants provided insights on the importance of building innovation systems to enhance climate change technology transfer. In the context of these debates, a critical perspective on the ways different people, especially policy makers and development partners, view and think about innovation systems emerged.

Innovation systems as a fertile ground for generating and implementing climate change technologies

The concept of Innovation Systems (ISs) is a nuanced one, with varying interpretations, especially with practitioners and policy makers, as was demonstrated in the ASH workshop deliberations detailed above. Despite this, there was an overall agreement among stakeholders that a strong innovation system is needed to absorb climate technologies. In line with this, there was general agreement that the different aspects of climate action needed to be improved. For a successful climate action, it was argued that there should be strong technological innovations, institutional innovations and policy innovations. With regard to the nature and scale of innovations, it was noted that innovations often fall within the spectrum of incremental to radical. It was argued however that the most economically important innovation is incremental.

What is the understanding of innovation systems in East Africa?

Figure 2: *Dr. Tesfaye Bekele: Ethiopian Ministry of Environment Forestry & Climate Change shares Ethiopia's experience*

Participants offered varied deliberations on their understanding of national innovation systems, and how they related to climate change responses. From policy makers to development partners, there emerged varying opinions on what innovation systems mean, and what incentives are required for them to succeed. The diversity of opinions was more pronounced as regards the key priorities for developing and incentivising innovation systems.

Policy makers mainly felt that there has been enormous research on innovation systems. They strongly felt that there is need to package existing research into simplified forms that can be easily taken up into their policy work. Furthermore, policy makers emphasised that innovation systems can be context-specific and sometimes sector specific. However, there were varied perspectives among policy makers drawn from the different countries. Some policy makers specifically from Kenya and Uganda were more inclined towards sector based innovation systems, while others from Ethiopia, Rwanda and Tanzania emphasised national integrated systems. This was observed to be as a result of strong national political regimes in these countries compared to others such as Kenya where devolution and decentralisation is strongly championed through NGOs, civil society and the present devolved governments, and sectoral approaches to resource governance and financing becoming a common practice in most East African countries. This means then that the political context in a particular country is key in defining the nature views about innovations systems but nonetheless, the politically shaped views appeared to weaken the understanding of policy makers' linkage between sectoral innovation systems and national systems as understood by most policy makers

Development partners on the other hand focused on de-risking (reducing risks on investments) and sustainability as the key incentives to scaling up their support for innovation systems. This included ensuring that project/programme proposals first and foremost have a sound business model that is sustainable in the long run. This could then be stress-tested through a one-year pilot phase where learning is central. At this point the project could then be terminated or scaled up. The development partners were also grappling with the issue of de-risking projects, since it was argued that the most promising projects might also be the most risky. There was no clear-cut solution to this issue, but its importance was nonetheless much appreciated. This perspective of reducing risks was different from that of policy makers, who did not focus much on reducing risks of investments in innovation systems, but mostly focused on creating an enabling policy environment. This in essence highlights the need for policy makers and development partners to work in a complementary manner since an enabling policy framework and environment would undoubtedly incentivise investments that spur innovations.

The private sector views their interventions as 'catalysts' for scaling up innovation systems, such as incubation centres and coherent policy frameworks. In most ways, these issues were strongly reflected by policy makers, who provided a broad definition of their understanding of

innovation systems – albeit broad in nature without much detail.

While policy makers and development partners appear to associate IS mainly with economic progress, civil society groups are keen on social prospects. This group emphasised the role of indigenous knowledge, people's rights and equity as key components of innovation systems. This type of knowledge is an integral part of local communities in East Africa.

Overall, different actors have varying emphasis on the key components of an innovation system. These perspectives are largely shaped by unique roles or key business of the different actors. The diversity in roles, activities and institutional framing of IS within the EAC provides a rich ground for anchoring regional platform that can create learning opportunities for countries to build their own national systems.

Challenges facing innovation systems in East Africa

- Institutional and policy weakness and fragmentation: It was noted that there is poor coordination between actors. Furthermore, the policy frameworks currently in place do not adequately spur innovation.
- Limited resources and infrastructure: There is a dearth of adequate resources, such as finance and capability. The limited resources were also linked to high risk-aversion especially by private sector investors.
- Lack of adequate platforms to foster sharing of knowledge and experiences: It was noted that platforms for knowledge sharing systems and communities of practise were either inadequate or missing altogether.
- Marginalisation: Mainstreaming of women, youth and other vulnerable groups is currently inadequate. This lack of inclusivity is both on the development of technologies, policy and decision-making and use of the technologies.

How can these challenges be tackled?

In order to bolster the diffusion and scaling up of innovations, a number of suggestions were made. These, among others, include:

- Fostering indigenous innovation: There was an agreement that African countries have to foster endogenous technological innovations and not just focus exclusively on 'exotic' technologies.
- Enhancing policy innovation: It was suggested that policies should be framed in a manner that makes them dynamic and responsive to emerging challenges and opportunities.
- Creating platforms to foster knowledge exchange and collaboration among players: Participants noted that there was a dearth of platforms to foster innovations. There is need to increase collaboration between different government agencies through regional clearinghouse (website), communities of practice, and exchange visits between countries to share best practices.
- De-risking innovation: It was argued that grace periods for piloting innovations and monitoring and evaluation are crucial to addressing risks inherent in innovation systems.
- Building consortia and increasing project longevity: Development partners were in particular keen on supporting projects put forth by inter and multi-disciplinary consortia, and spanning more than four years. Such projects are likely to foster innovation while also providing ample time to address any emerging risks.

Figure 3: *Dr Dennis Rugege, Rwanda's Green Economy Advisor to the Minister shares Rwanda's experience while Kenya's Climate Change Authority Director Dr Pacifica Ogola (left) looks on*

Conclusion

In sum, innovation systems were identified as key to foster climate technologies. Supporting the functioning of ISs will be an integral part of climate strategies in the Paris Agreement. For the East African Community, there would be need for the different stakeholders to work together in developing innovation systems, since the workshop deliberations clearly indicate that there were indeed good perspectives and interventions to spur climate innovation systems, but there is poor linkage between the different stakeholders in advancing these perspectives. Platforms that advance information sharing and learning on experiences and best practices on building innovation systems across the EAC is required.

Acknowledgements

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For more details refer to innovation workshop report available at http://ash.acts-net.org/images/Reports/Training_Innovat_Systems.pdf