

IRENA Webinar:

Innovation Policy Frameworks for Renewable Energy Deployment

7 December 2012

Summary

Introduction

Innovation is essential for the accelerated deployment of renewable energy technologies (RET), which will play a key role in addressing issues of energy security, energy access and climate change. Various modes of innovation are operative in different contexts and at different stages of technology development, while networks of innovation encompass a range of processes which accelerate RET development, ranging from breakthroughs in basic science and technology, improved RD&D systems to enhanced commercialisation and market development. The mechanisms available to policy-makers are correspondingly broad, ranging from funding basic research, support for demonstration of emerging technologies, to improvements in governance and market conditions. Regardless of setting, all policy-makers face challenges in the development of innovation strategies due to the complexity of innovation processes, technology and market uncertainty, and competition with other public policy priorities.

As part of efforts to strengthen its Members' technology and innovation strategies, IRENA has initiated an assessment of enabling technology frameworks, including RD&D trend and status information from patents, and reduction of technology risk through streamlined standardisation and quality management, as well as assessments of criteria for renewable energy innovation policy frameworks. A preliminary study was carried out in collaboration with the National Renewable Energy Laboratory (NREL) to assess the key criteria for developing successful innovation policies. In the study, key criteria for innovation policy success were proposed, focusing on alignment between RET innovation and existing macro-level energy development policy goals, and a step-wise approach for the development of innovation policy development was proposed.

In this context, IRENA organised a webinar on Innovation Policy Frameworks for Renewable Energy Deployment on 7 December 2012 to convene a discussion of key criteria for successful innovation policy development and pathways to make innovation policy framework practical at a country level. A group of international stakeholders and experts on innovation policy, including representatives of multilateral development banks, non-governmental organisations and private sector firms, participated and provided valuable inputs to the discussion. The paper developed by NREL and IRENA on success criteria and strategies for innovation policy served as a basis of the discussion. The meeting also provided an opportunity to discuss IRENA's role in supporting Member Countries with their innovation policy development.

Discussion during the webinar highlighted that while innovation is essential for the accelerated deployment of RET, at the same time it is a multifaceted issue with strong linkages to specific technologies, as well as to country capabilities, contexts and strategies. The discussion also highlighted the ongoing evolution of the definitions of RET innovation, as well as the critical issues of innovation policy instruments and governance.

Broad stakeholder coordination within and among countries was emphasised as one of the key factors of successful renewable energy innovation policy. There was a general consensus that further

assessment is necessary to make innovation policies and strategies for renewable energy more practical for implementation at country level. More case studies on how countries have benefited from innovation would also be useful. The proceedings of the workshop are available on the IRENA website (www.irena.org).

Key points from the discussions during the webinar include the following:

1. Renewable energy innovation policy: Success criteria and strategies

- Dedicated study on innovation policy specific to renewable energy is a fairly new area (about 15 years old) compared to the mature study of innovation in other domains. The NREL/IRENA framework proposes three hypotheses with regard to the real-world development of renewable energy innovation policy. The first is that countries face substantial constraints on policy formation and evaluation (including cost, complexity, uncertainty) creating situations in which optimal policy strategies are often out of reach. Secondly, positioning a country to benefit from specific and foreseeable RET flows is a key success criterion, which requires aligning RET activities to macro-policy goals which can provide durable drivers of RET development. Thirdly, multi-stakeholder engagement around these technology flows and innovation activities is a key success criterion for innovation policy.
- The study identified a categorisation of common country-level energy development goals for RET innovation. They include accelerating energy access, reducing or stabilising energy cost, promoting energy security, enhancing international competitiveness and reducing GHG emissions.
- Following this categorisation and identification of the success criterion, the study proposes a step-wise approach for RET innovation policy development, which includes the following:
 1. Identify the energy development goal or mix of goals within the region of interest;
 2. Characterise the likely technology flows associated with these goals;
 3. Identify the types of innovation activities that are appropriate for accelerating these technology flows;
 4. Assess the innovation capacity needs necessary to achieve these innovation activities; and
 5. Identify and convene the likely set of stakeholders involved in promoting policies to meet these innovation capacity needs.

2. Discussion of the proposed success criteria and strategies

- The multilateral development bank CAF shared an example of promoting innovation in the Latin America and Caribbean (LAC) region in which countries followed similar steps towards innovation, with the addition of rigorous renewable energy resource assessments. One participant remarked that Chile and Brazil currently seem to be the regional innovation leaders. CAF is interested in innovation at the front end of technology development and has developed a programme to promote patenting activities for RET, not only to protect technologies, but also to

strategically license out those technologies in other countries. CAF co-finances technology funds covering seven countries in the Amazon region aimed at promoting patenting activities to create innovation.

- It was noted that the LAC region faces challenges in maintaining innovation momentum as renewable energy policy frameworks change every five years or so when governments change, and also because some domestic markets are not large enough to support innovation. Therefore, instead of looking into large and long-term policy issues, it may be more suitable and attractive for the LAC region to consider showcase examples of successful innovation.
- One webinar participant noted that innovation can be national, subnational, as well as regional in scope. Identifying and coordinating technology markets at the regional level can create broader markets for goods and services, particularly in the LAC region.
- It was also observed that in the course of IRENA's assessment of technology transfer to Africa, radically different types of technology transfer were seen in different cases. Technology transfer from Brazil to Africa has been shown to focus on downstream stage of the technology development (commercialisation of technologies), whereas transfer from China to Africa took place in the upper stream stage of technology transfers (applied technologies and selling hardware).
- It was pointed out that what is needed, based on IRENA's work so far, is a gap analysis identifying what is lacking in the RET innovation system, along with proposals to support filling these gaps, particularly in developing countries.

3. OECD Case Study

- A case study on German innovation for RET was provided by the Organisation for Economic Co-operation and Development (OECD). In this case, three factors were considered as success criteria. They include Germany's ambitious objectives and strong will to achieve its goals, good innovation policy as an enabling environment, and good cross-sector coordination. In addition, the use of feed-in tariffs as a policy instrument supported the diffusion of innovation incentives, complemented with public R&D support. As a result, the transition to renewable energy has become so successful in Germany that approximately 20% of electricity consumption is now from renewable energy resources. The study emphasised that the underlying characteristics of specific policy instruments are important for a successful innovation.

4. Discussion of practical strategies for policy development and implementation at the country level

- Based on the assessment of theoretical policy frameworks for success RET innovation, IRENA has signalled that its next step will be to investigate how to make such frameworks practical for policy-makers.
- There was general consensus on the proposed innovation process which a country may consider in order to achieve the goal of accelerated RET deployment. This process starts with setting a macro objective, identifying a priority sector, selecting a strategy, establishing a governance

structure, and applying the actual policy instruments. It was also pointed out that this innovation process can be applied at a regional level.

- Since innovation involves diverse players from government, the private sector and academia, establishing an appropriate governance structure at the country level is important. It was therefore highlighted that multi-scope stakeholder frameworks through partnership and coordination are important. In particular, the involvement of the private sector is crucial in making the policy implementable. In Korea, for example, it was noted that more than 80% of RET investment comes from the private sector, which was one of the success factors for innovation.

5. Discussion of IRENA's role in supporting innovation policy development

- IRENA is mandated to support its Member Countries to strengthen their technology and innovation strategies. It is therefore important for the Agency to have a better understanding of what the priorities and gaps are in the development of innovation policy frameworks for RET.
- There was a general consensus that IRENA could support Member Countries in the process of innovation in particular in the following areas of the process.
 - 1) Formulating RET strategies;
 - 2) Providing advice on organising innovation governance for RET and providing effective tools to put this governance into practice; and
 - 3) Providing tailor-made information and advice regarding the selection of policy instruments in line with country strategies.
- A unique feature of RET innovation is that it involves different actors from different institutional frameworks. It was pointed out that, in addition to the governance structure, institutional aspects need to be taken into consideration.
- It was highlighted that IRENA can play a key role as a platform as well as convener of knowledge and information for promoting RET innovation. In this role IRENA can fill the gaps of limited access to various data relevant to RET, including technology options, list of technology providers, case studies around the world, resource potentials, and Intellectual Property Rights (IPR).
- IRENA can also act as a platform by bringing together various stakeholders in meetings to enhance the network for innovation.

Conclusions:

- RET innovation is a multifaceted issue within different contexts in a region or a country. It involves various investments by many players over different timescales, and involves engaging these stakeholders through appropriate governance and institutional structures. Therefore, innovation needs to be defined clearly in the context of RET.
- Further assessment is needed to identify gaps in the innovation process and make theoretical innovation policy frameworks practical to a country or region that is seeking innovation. More successful case studies on how countries have benefited from innovation would provide useful information.

- There was general support for IRENA's role in assisting countries' innovation process for accelerating RET deployment, in particular its role as a platform and convener of knowledge and information on various data relative to RET innovation.
- The outcome and suggestions obtained from the webinar will be further elaborated with IRENA Members and will be taken into consideration in IRENA's Work Programme 2013 in the area of innovation.

Participants:

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