Information note

Summary report of the thematic dialogue on research, development and demonstration of environmentally sound technologies

Summary

- The Technology Executive Committee (TEC) held a thematic dialogue on research, development and demonstration (RD&D) of environmentally sound technologies on 27 June 2013 in Bonn, Germany, as a part of its 6th meeting.
- The objectives of the thematic dialogue were to: highlight issues surrounding the topic of RD&D of environmentally sound technologies; identify challenges and opportunities, good practises and lessons learned from effective RD&D models; and identify possible follow-up actions.
- The thematic dialogue achieved the stated objectives and identified possible roles for the TEC in enhancing collaborative RD&D as a means for promoting the development and transfer of technologies for adaptation and mitigation to climate change.
- This information note provides a summary of the thematic dialogue. The TEC may wish to take into account this note when considering possible follow-up activities on RD&D of technologies at its 7th meeting.

I. Introduction

A. Background

1. As per decision 1/CP.16, one of the functions of the Technology Executive Committee (TEC) is to seek cooperation with relevant international technology initiatives, stakeholders and organizations, and promote coherence and cooperation across technology activities, including activities under and outside of the Convention.[1] For performing its functions, an element of the modalities of the TEC includes the collation, collection and synthesis of a range of information on technology research and development and other technology-related activities from various sources.[2]

2. Pursuant to its function and modalities, the TEC included in its rolling workplan for 2012–2013 the organization in 2013 of a thematic dialogue on research, development and demonstration (RD&D) of environmentally sound technologies.

3. The thematic dialogue was held as a part of the 6th meeting of the TEC, where the TEC requested the secretariat to prepare a summary report of the thematic dialogue for its consideration at its 7th meeting.

B. Scope of the information note

4. This information note provides a summary report of the thematic dialogue on RD&D of environmentally sound technologies. It contains a summary of the two presentations made, the discussions conducted during the panel discussion and the general discussion with participants and observers. The report also includes a section on possible follow-up activities on RD&D for consideration by the TEC.

5. While this information note provides a summary of the thematic dialogue, full presentations and discussions are available on the UNFCCC website.[3]

C. Possible action by the Technology Executive Committee

6. The TEC may wish to take into account this information note when considering possible follow-up activities on RD&D of technologies for adaptation and mitigation.

II. Proceedings

7. The thematic dialogue on RD&D of environmentally sound technologies was held on 27 June 2013 at the Wissenschaftzentrum, Bonn, Germany.

8. The objectives of the thematic dialogue were to:

(a) Highlight issues surrounding the topic of RD&D of environmentally sound technologies;

(b) Identify challenges and opportunities, good practises and lessons learned from effective RD&D models;

(c) Identify possible follow up actions.

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[1] Decision 1/CP.16, paragraph 121.

[2] Decision 4/CP.17, annex I, paragraph 2.(a).

[3] Available at: <http://unfccc4.meta-fusion.com/kongresse/tec06/templ/ovw_small.php?id_kongressmain=249>

9. The agenda of the thematic dialogue consisted of three sessions: Session I: presentations on the topic of RD&D of environmentally sound technologies; Session II: panel discussion with representatives from relevant organizations; Session III: general discussion with observers present at the meeting.

10. The thematic dialogue was attended by 37 experts, comprising 17 members of the TEC, eight experts directly involved in the thematic dialogue (six in person and two via webex), four Party observers, one representative from an United Nations organization, and seven representatives from intergovernmental or non-governmental organizations.

11. The thematic dialogue utilized two innovative features:

(a) Two experts in the panel discussion participated via webex;

(b) Online observers were able to participate in the meeting via social media (Facebook and Twitter).

III. Summary of the dialogue

A. Welcome and opening

12. The thematic dialogue was chaired and opened by Mr. Gabriel Blanco, Vice-Chair of the TEC, who recalled the importance of RD&D as a means for contributing to promoting the development and transfer of technologies for adaptation and mitigation. Mr. Blanco also presented the objectives and format of the thematic dialogue, and encouraged all participants to engage in the discussion, either those present in the room and external people through use of social media.

B. Session I: Presentations on research, development and demonstration of environmentally sound technologies

13. Mr. Blanco introduced both speakers who made presentations on issues surrounding RD&D of mitigation and adaptation technologies.

14. The first presentation was given by Dr. Robert Byrne, Research Fellow, SPRU (Science & Technology Policy Research), Management and Economics, School of Business, University of Sussex, on issues surrounding RD&D of mitigation technologies.

15. Dr. Byrne first stated that RD&D of environmentally sound technologies is more than about technologies, as it is also about understanding people needs and how technologies can meet those needs. He highlighted some opportunities in RD&D, such as to contribute to building capabilities (knowledge and skills), improving energy-service access, and promoting low-carbon pathways for the long term. He also highlighted some challenges, such as the development of strong innovation systems, especially in developing countries.

16. Dr. Byrne mentioned that there are important gaps in RD&D, especially in least developed countries (LDCs), and there is a need to better understand the contexts of these countries so that more effective technologies can be developed and deployed in those regions. Dr. Byrne presented some rationale for collaborative RD&D, such as the potential to create new markets and grow existing ones, noting that for some markets, policy and funding can be, and may need to be, a driver to initiate collaborative RD&D.

17. Dr. Byrne presented two success cases of RD&D: deployment of solar photovoltaic (PV) in China, and solar home systems in Kenya. In conclusion, Dr. Byrne drew on some lessons learnt from his experience, noting that patience is needed to build innovation

systems and multi-stakeholder engagement is required in addition to public and private funding/finance.

18. The second presentation was given by Mr. Emile Frison, Director General, Bioversity International, Representative of the Consultative Group on International Agricultural Research (CGIAR), on issues surrounding RD&D of adaptation technologies, titled: "Reaching food and nutrition security while adapting to climate change: a research agenda".

19. Mr. Frison noted that the climate change debate has paid too little attention to agriculture, and with 70% of the population in Africa engaged in agriculture activities, adaptation to climate change in agriculture is a critical challenge. Mr. Frison mentioned that changing climates significantly impact growth areas and conditions (e.g. for soya and peanuts in China), and malnutrition makes the debate even more complex. The main challenge is to adapt agricultural systems to produce greater quantities and more nutritional food under harsher conditions, while at the same time protecting the environment. He stressed that addressing the needs of poor and marginalized peoples will require a different paradigm for agriculture.

20. Mr. Frison explained that contrary to the usual objective of adaptation research to increase productivity only, we also need this research for better productivity, diet diversity, resilience, income generation, equitable participation and ecosystem services provision (multi-sectoral approach), which is a complex challenge. He also mentioned that another challenge is the conservation and availability of genetic resources for adaptation. He said that CGIAR holds important collections of seeds and crops, which is a major source of diversity for breeding adapted varieties, and those are provided to countries to allow adaptation research to take place. He also described the Seeds for Needs project to illustrate the need to empower farmers to adapt through crowdsourcing. Conserving diversity in nature is also very important as it ensures continued evolution and adaptation to changing conditions.

21. Finally, Mr. Frison mentioned that another essential element is to improve the availability of diversity (plant genetic resources), which requires to know what is where (need a good information system) and to have a supportive policy environment to allow access to (at international level) and use of (at national level) diversity, concluding that all countries are interdependent with regards to crop diversity.

22. After both presentations, a short question-and-answer session took place.In response to questions from the audience, several additional elements were provided by the speakers, as presented below.

23. While innovation systems are usually built around groups of technologies, there are some cross-cutting aspects of such systems that any innovation system in general can benefit from, such as innovation knowledge and skills. The challenge is to develop those innovation knowledge and skills, including the facilities to support them, such as research centres, which requires public sector involvement and good communication network.

24. It does take a lot of time to create and develop innovation skills, and not having those is a major limitative factor in the development and transfer of technologies. A possible way forward is to go in sequence by first developing skills to use technologies, then skills to innovate and develop technologies.

25. Collaborative RD&D is key to the development and transfer of technologies. Some of the barriers to involve the private sector, especially in dispersed or rural markets, are the lack of information about the market potential and high risks. A possible way forward is to provide information to the private sector to demonstrate that there is a market to be developed.

26. In agriculture, empowering people on the ground to make decisions and involving them in designing solutions will speed up the development and transfer of technologies process, and better address real needs of people. One element that is lackingis information about local climate conditions.

27. Criteria for successful RD&D in technologies are difficult to define, but collaboration across government, private sector, civil society and other groups is very important.

28. In terms of investment and funding/finance, spending is important, however, of more importance is understanding what people need and face. This is critical for effective RD&D.

29. An example of a good model of RD&D collaboration with a United Nations body was the United Nations Development Programme (UNDP) in Tanzania working with the Global Environment Facility (GEF) and the Ministry of Energy and Minerals in Tanzania to implement a project of solar home systems (PV) and small business use of PV, funded by the Swedish government. The project involved various stakeholders, many dimensions (feasibility studies, finance, policy, building capabilities and business-model) and effectively transformed the market.

C. Session II: Panel discussion on research, development and demonstration of environmentally sound technologies

30. The second session of the thematic dialogue consisted of a panel discussion where each panellist was asked to respond to three guiding questions. The six panellists were:

(a) Mr. James Wilde, Managing Director, Innovation and Policy, Carbon Trust;

(b) Mr. Arturo Martinez, Head of Global Programs, National Council for Scientific and Technological Research of Argentina (CONICET);

(c) Mr. Linus Mofor, Analyst, Innovation and Technology Centre, International Renewable Energy Agency (IRENA);

(d) Ms. Allison W. Mages, Senior Counsel, General Electric (GE);

(e) Mr. Jonathan Coony, Coordinator, Climate Technology Program infoDev – The World Bank Group (via webex);

(f) Ms. Carrie Pottinger, Programme Manager, Technology R&D Networks, International Partnerships and Initiatives, Global Energy Policy, International Energy Agency (IEA) (via webex).

1. Question I: Which cooperative RD&D structures (bilateral, multilateral) do currently exist, in which areas and what good practices and lessons can be learned from them?

31. Mr. Wilde mentioned that one key barrier to technology deployment is that while companies may have innovative technologies, they may not have the right team, a business plan, or they are not “investable”, a gap that intermediaries like Carbon Trust may fill by providing access to capital.

32. Mr. Martinez described a concrete example of good bilateral cooperation in Argentina where a group of farmers were provided with special short-term varieties of soya beans by a private company and where a governmental agency provided support to farmers to handle seed licence issues so that in the end it was a win-win deal for both the farmers and the private company.

33. Mr. Mofor stated that before setting up a cooperative RD&D structure it is very important to define clearly the reasons why the cooperation is sought. He also cited IRENA as an example of multilateral cooperation, and he mentioned some case studies that seek to promote south-south and trilateral cooperation to improve the flow of resources and promote renewable energy.

34. Ms. Mages explained that research centres in GE are moving from multi-disciplinary toward more sectoral research centres, and the research carried out is going to be more customer-focused in order to address specific needs. She also mentioned that a collaborative process is emerging more and more, by involving various organizations and connecting the relevant stakeholders, which accelerates innovation and development of technologies (e.g. Ecomagination Challenge).

35. Mr. Coony mentioned that cooperative RD&D is difficult to do due to some ownership issues, such as defining who would control the resulting intellectual property right (IPR), and that some cases become political.

36. Ms. Pottinger explained that bilateral partnerships need to set a common goal for all parties involved in the collaboration and define mutual interest, regardless it be economic or strategic, citing an example of a Danish-Chinese Renewable Energy Centre on wind based in China. She also mentioned that developing countries don't want workshops or mechanisms, but need best practices and support to accompany and help them in implementation.

2. Question II: What role do the public and private sectors play in cooperative RD&D and what is the impact? How can the effectiveness be improved? How can cooperation be enhanced?

37. Mr. Wilde described an example of public and private cooperative RD&D in the United Kingdomto support the development of offshore wind energy. Having two components (1- research and development; 2- demonstration at full scale in situ), the programme aims to improve and deploy the technology and reduce its cost, by bringing together leading developers of technologies and setting up a fund with public and private money. The programme is seen as a powerful way to drive innovation though public-private partnership and drive and develop the market.

38. Mr. Martinez explained the need to have governance regulations for RD&D, inter alia to handle issues such as IPR. He also mentioned the need to create institutions or institutional dialogue (at the top) as well as to develop an interdisciplinary approach encompassing three dimensions (social, technical, economic) to have people work together (at the bottom). He also mentioned that capacity-building takes time, but is essential, and exchange of information through south-south, north-south, north-north should be enhanced.

39. Mr. Mofor highlighted the importance of bringing together all players to share data and information, which will help improve deployment and transfer of technologies.

40. Ms. Mages described the conditions needed for the private sector to engage in collaborative RD&D (in addition to define common objectives and work together): Identify potential markets and quantify risks; Attract talents and capacity; Identify sources of funding, noting that if markets are not well-defined, public finding is more needed, and that public funding tends to drive private funding; Have a stable policy environment and facilitative factors (e.g. tax incentives and robust intellectual property). Ms. Mages noted that without these conditions it is difficult for the private sector to invest.

41. Mr. Coony described an initiative of the World Bank which established Climate Innovation Centres in half-a-dozen countries around the world, including the one in Kenya, as aforementioned. Locally owned and bottom-up oriented, such centres help small companies develop new technologies for climate change. He also explained that to address

a major impediment from RD&D to deployment of technologies at commercial level – access to financing – the World Bank is setting up a venture capital fund, comprising public money from the World Bank and private money. He emphasized that, generally, both public and private money is required, as public money alone would not instil private investment discipline, while private investors alone may not want to take all the associated risks.

42. Ms. Pottinger underlined the importance for RD&D to be bottom-up driven rather than driven by large corporations, and that the role of individuals and civil society is increasingly important, noting that the internet has changed the RD&D paradigm. She said that people need to see the issue from a developing country point of view, have a more tailored approach in RD&D and take into account local circumstances. She also mentioned that for technologies to be deployed in a short period of time, there needs to be immediate benefits for users/consumers.

3. Question III: What could be the role of the Technology Mechanism in enhancing and improving cooperative RD&D activities under north-south, south-south and other schemes?

43. Mr. Martinez highlighted the importance of governance and regulation to facilitate RD&D as well as of capacity-building and exchange of information, areas where the Technology Mechanism could play a role.

44. Mr. Mofor also said that the Technology Mechanism can facilitate the flow of information, adding that for long-term capacity development, the mechanism could look into possibilities of bringing together universities, research centres and industries in order to do industry-based research, in a north-south approach.

45. Ms. Mages mentioned that Technology Mechanism is poised to add a lot of value in RD&D because of its oversight position and access to a lot of information. She said that the Climate Technology Centre (CTC) will be able to see trends in needs, gaps and successes/leap-frogs, and then can encourage RD&D to address these gaps or further promote and replicate successes.

46. Mr. Coony mentioned that the World Bank is in discussion with the CTC to see how the Climate Innovation Centres could be linked with the Climate Technology Network and Centre, as there are possibly good opportunities for collaboration.

47. Ms. Pottinger reiterated the need to have the right RD&D landscape, with universities and research centres, as this is essential to build capacities. She also said that highlighting best practices and sharing them between countries would be very beneficial, underlining that what is missing worldwide is the idea of accompaniment, for example having online forums where people are able to answer questions and provide support on various issues.

D. Session III: General discussion and wrap up

48. The third session of the thematic dialogue consisted of a general discussion where all participants and observers were invited to ask questions or make comments, and several additional inputs were provided by the panellists, speakers and TEC members, as presented below.

49. One participant stated that with the private sector not wanting to take risks, governments end up taking all risks with little return. The following inputs were provided:

(a) While it is critical for the private sector to have certainty over investment, there are also benefits for governments, e.g. to reduce the cost of energy, secure access to energy, and generate incomes for the economy;

(b) It is important to define how to measure the risk;

(c) Even if a RD&D project does not deliver final specific outcomes, there can still be some benefits, as mistakes are an important part of a learning process, in addition to developing capacity.

50. It was asked whether the failure to reach an international agreement to address climate change could discourage the business community to invest in RD&D, and with responses noting that it could affect private sector engagement and that the conclusion of such agreement would help stimulate investment and secure markets.

51. The importance of having alliance structures and more south-south collaboration was also reiterated. In agriculture research in adaptation, a lot of research has been undertaken on private-public partnerships , but there should be more involvement of local community, civil society, farmer organisations, and investigation of new models of innovation by combining traditional knowledge and modern science. An example was given that in a study on the potential of bio-ethanol in Africa, lessons could be learnt from other developing countries with expertise, like Brazil.

52. Following the conclusion of the session, Mr. Antonio Pflüger, Chair of the TEC, shared some findings and key messages of the thematic dialogue. He noted that numerous collaborative arrangements in RD&D already exist and that RD&D needs skilled expertise, which requires time to develop, and lack of such capacity can significantly limit the development and transfer of technologies. He noted that innovation systems are built on specific technologies, and innovation might be needed to adapt mature technologies to other countries or new environments. He also mentioned that certainty in policy framework and long-term stable conditions are needed for attracting private investment. He outlined some possible roles for the TEC, such as bringing to the attention of high-level policy makers key issues related to RD&D; providing guidance on areas of research; facilitating greater exchange of information regarding RD&D; and promoting best practices.

53. In conclusion, Mr. Blanco thanked all participants of the thematic dialogue, and mentioned that as a follow-up, the secretariat would prepare a summary report of the discussions for further consideration by the TEC.

IV. Possible follow-up activities for consideration

54. In considering possible follow-up activities on RD&D of technologies for adaptation and mitigation, and in the context of the priority areas of the Technology Mechanism, the TEC may wish to take into account the following questions:

(a) How could the endogenous capacities and technologies of developing countries, including cooperative RD&D programmes be further developed and enhanced?

(b) How could national systems of innovation and technology innovations centres be strengthened?

(c) What could be possible follow up activities by the TEC in the area of collaborative RD&D?