

## Theme 4: Win-win strategies in directing low-carbon resilient development path

This section explores big win-win strategies in directing low carbon resilient development path. There are lots of “leapfrog” development possibilities in developing countries, which go directly from a status of under-development through to efficient and environmentally benign lifestyle. To achieve low carbon resilient paths, not only technology development but also institutional and behavioral changes are required. Science-policy nexus is also discussed.

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### Background

Greenhouse gases (GHGs) are expected to grow without adequate policies, which could cause significant impacts on social and eco-systems. However the required policy actions could have severe economic losses if not properly designed. This section explores big win-win strategies in directing low carbon resilient development path. There are lots of “leapfrog” development possibilities in developing countries, which go directly from a status of under-development to efficient and environmentally benign lifestyle. Such kind of lifestyle is supported by low-carbon technologies. Technology RD&D and technology transfer are required to meet the target of GHG emissions.

### Key findings

- Technology RD&D are a key to achieve a low carbon transformation. However it is not enough; significant institutional and behavioural changes will also be needed.
- While there is a popular view that technology transfer can happen between developed and developing countries if enabling conditions are in place, adequate

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financial flows should be in place. Creative solutions will be needed, as collaborative agreements should be beneficial for all involved parties.

- Research community can be a catalyst in supporting developing countries gear towards low carbon development pathway. This can be done by serving as a provider of tools and guidance, helping countries to make informed decisions.
- Both “top-down” approaches, such as the allocation of global carbon budget based on equity indicators, and “bottom-up” approaches, such as the technology-based energy system modeling, can serve as an important source of information to attain a good understanding of Intended Nationally Determined Conditions (INDCs). Early planning and action is essential to achieve long-term deep decarbonization toward 2050.

To achieve low carbon resilient paths, not only technology development but also institutional and behavioral changes are required. The discussion is focused on: “How can the scientific community help align climate policies with economic development in order to realize a low carbon resilient development path?”, and the importance of science-policy nexus is stressed. Also the direction of RD&D for mitigation of GHG emissions is debated by introducing UNFCCC Technology Mechanism (TM) and it is pointed out that for TM to be effective, links with financial institutions should be in place. With regard to developing countries, the main questions are: what are practical challenges and opportunities in gearing developing countries towards low carbon resilient development pathway, and what are potential niches and means for research communities to respond to the stated challenges, filling in the research-implementation gap. Challenges such as national capacity constraints for implementation, policy gaps including limited mainstreaming of the climate change agenda into the existing policy framework are pointed out.

An additional discussion item is how modeling emission pathways can contribute to raise ambition levels of INDCs. Many modeling teams have already developed pathways towards low carbon societies at the global, regional, national, and city levels. The pathway to peak out GHG emissions by 2040 in Thailand is illustrated. Low carbon pathways from the Deep Decarbonization Pathways Project (DDPP), consisting of 15 countries teams, is also presented and discussed.

## Way forward

Having identified a wide spectrum of practical challenges, lessons and good practices throughout this section, the following concrete steps have been extrapolated for the research community to meet their needs and address the observed challenges:

- **Design and develop tools** to guide developing countries in undertaking robust policy making processes and support the design of its implementation framework. Such guidance and tools can be provided in the form of manuals, checklists, training curricula, platform for knowledge exchanges and projection models, but they need to be simple enough to be harnessed widely. Accumulating success stories is also required to demonstrate the effectiveness of the tools and guidance, and to build confidence.
- **Strengthen scientific basis for national low carbon planning** by supporting

robust dataset and scientific analysis to establish emission projection, policies and measures (PAMs), thus allowing to make informed decisions on the low carbon pathway.

- **Strengthen science-policy nexus** by providing end-to-end solutions to policy relevant issues raised by the scientific community and receiving feedbacks from policy makers. In addition to policymakers, engagement with the general public is crucial. It is the role of the scientific community to empower and educate the public about available development pathways, so that they can make informed decisions.
- **Provide the necessary information to better understand Parties' INDCs**, which are expected to be submitted over the first quarter of 2015. Modeling research community can help stakeholders to better understand Parties' INDCs by providing a "narrative" scenario, i.e., a storyline on underlying macroeconomic drivers, mitigation potentials and other national circumstances.
- **Develop the capacity to provide support to developing countries** at all levels (from individual to institutional) through transfer of knowledge, skills, and experiences, and facilitation and provision of fora for knowledge exchange and peer-to-peer learning.

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