Facilitating a low-carbon transition in the developing world

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Time for action towards an ambitious decarbonised world:
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The energy, climate, and S&T context in developing countries
Energy and climate imperatives for developing countries

- Very ambitious NDC plans for most developing countries – both mitigation and adaptation
  - Energy key area of focus (low-carbon generation; energy efficiency)

- Major energy challenges (expansion, access, affordability)

- Requires deployment of suitable energy technologies - effective, fast and at scale

- Major deviation from business-as-usual: new/improved technologies and the need to simultaneously address climate and energy (and other developmental) imperatives
Complexities of the energy/climate technology transition

- Successful innovation and diffusion requires addressing not just technology (availability and operation) but also suitable economics, finance, markets/demand, and policy (i.e., supply, demand, and facilitation) – taking into account local context

- Local human, organizational, and institutional capabilities are critical (especially given long-term nature of challenges)
Low-carbon transition in the developing world

Source: World Development Indicators
Electric power consumption (kWh per capita)

- India
- World
- Middle income
- China
- OECD members
- Sub-Saharan Africa

Source: World Development Indicators
Low-carbon transition in the developing world

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R&D expenditure per capita (Constant 2010 US$)

Source: World Development Indicators
Low-carbon transition in the developing world

Researchers in R&D (per million people)

Source: World Development Indicators
Low-carbon transition in the developing world

Selected climate-mitigation related patent applications (PCT)

- Japan
- S. Korea
- USA
- Brazil
- China
- India
- S. Africa

Source: OECD Stat
Facilitating a low-carbon transition
In developing economies
The interconnected 4 Cs of emerging and developing economies

- [nature of developmental and climate] Challenges
  - Overall developmental objectives – and weights assigned to them – vary across countries
  - Nature and scale of climate challenges varies across countries

- [National] Context and Capabilities
  - Size and nature of economy, population, resources
  - Technical, financial, business, policy capabilities and actors

- Choices
  - Balance among climate and developmental objectives; prioritization among options; technology and implementation pathways
Key elements of effective energy/climate transition

- **Framing the problem**: clarifying objectives and strategies
- **Designing implementation pathways**: developing and choosing amongst options (technologies, business models, early market creation, scale up, transition pathways), designing across technology cycle
- **Effective implementation** of climate technologies: marshaling actors, networks, and resources relevant to specific technologies – and coordinating actions across stages of technology cycle
- **Learning from experience**: systematic assessment and analysis of experiences

Suitable domestic policies and international cooperation needed to support these activities and build relevant capabilities
International Cooperation – What and How?
Key functions of international cooperation:

• Facilitating (availability of) and **access to suitable technologies** (new and existing) to address climate and energy challenges
  – Flows of technology; strengthening domestic R&D in developing countries; **collaborative R&D** where needed

• Supporting effective deployment through provision of suitable finance, technical, and other support (best practices, lessons, etc.) – appropriate to specific technologies, stages of technology cycle and local context
  – flows of finance, knowledge, and services
Key functions of climate technology cooperation (contd):

- Strengthening national capacity on multiple dimensions (actors, linkages, and institutions)
  - Technical, business model development, design of policy and financial support instruments, human resources – multiple actors on both sides
  - Coordination between various activities and actors for various stages of tech cycle, e.g., CIC approach
  - Strategic approach to climate technology (prioritization and implementation pathways)
Examples of international cooperation

- **Planning and Strategy**
  - Technology Needs Assessment (UNEP) and INDC preparation (GIZ)

- **Research and Product Development**
  - US-India and US-China Clean Energy R&D Centers
  - Moser Baer technology partnership with Applied Materials for solar PV; assistance from TI for LED heat sink design and integration (India)
  - Mission Innovation (22 major economies)

- **Market creation/development**
  - CLASP and SEAD assistance for designing energy-efficient appliance labeling and standards program (India)
  - Performance risk guarantee for commercial energy-efficient equipment loans (India, with GEF)
Examples of international cooperation (contd.)

• Cross-cutting:
  – IEA Technology Collaboration Programs (inventions, pilot plants, demonstration projects, databases, and development of standards)
  – World Bank Climate Innovation Centers, supported by DFID, DANIDA, AusAID, Norway, Netherlands, World Bank (seed financing, policy interventions, and network linkages, as well as technical and business training)
  – UNFCCC Climate Technology Center and Network (technical assistance, access to information and knowledge, fostering collaboration among stakeholders)
Particular role of S-S cooperation:

- Developing, implementing, and assessing pathways – mutual learning
- Knowledge/experience sharing – effective practices/models in similar contexts
- (Strategic, implementation, and assessment) capacity building
- Exploring implementation synergies (e.g., cooperative R&D, coordination of implementation, pooled markets/risks, joint resource raising, shared organizational resources, common research and analysis programs) – globally and regionally
- Coordinating inputs for, and shaping/strengthening, intl technology cooperation within and outside UNFCCC

Broad commonality of background and interests very helpful
Thanks!!

Comments/Suggestions/Questions:
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