

Difficulties developing countries face in accessing markets for eco-innovation

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Overview

1. Why should developing countries care?
2. Key concerns:
 - a) Developing indigenous innovation capabilities
 - b) Hardware vs. knowledge flows
 - c) Context specificity
3. Key policy concerns

Why should developing countries care?

1. Developing countries will be suffer the worst impacts of many global environmental problems e.g. climate change
2. Technology & innovation underpins development
 - North-South gap in technology ownership
 - Reflected in relative levels of industrial development

Eco-innovation in developing countries

Two key aspects:

1. Access to & **diffusion** of existing eco-innovation
 - a. As consumers
 - b. As producers

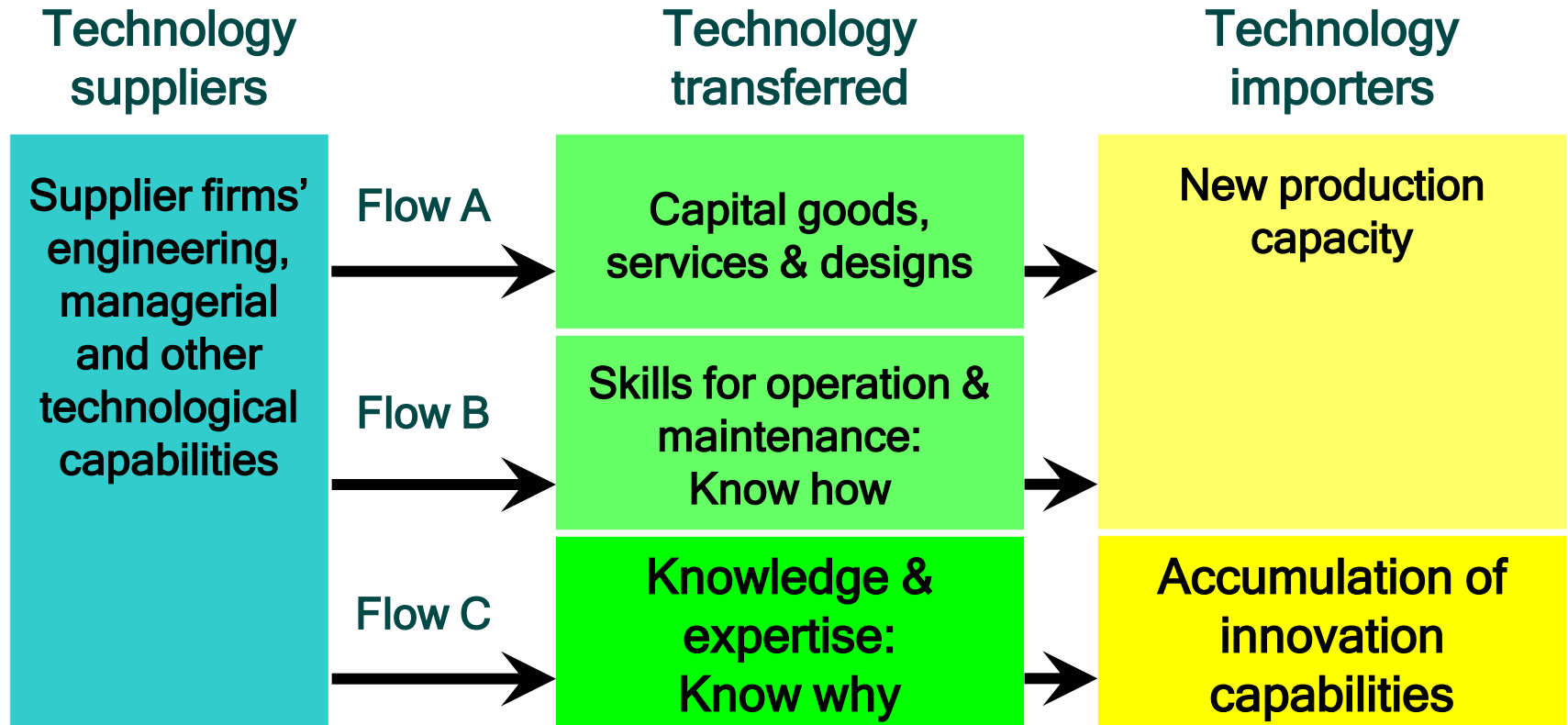
2. New innovation -> **development** of new technologies

Key insight: Empirical evidence suggests both diffusion and development of eco-innovation relies on **indigenous innovation capabilities**

Hardware vs. knowledge

- Technology is not about hardware
- Technology is about knowledge - both underlying and tacit (skills, experience, engineering, design, systems management)
- Technology leading firms' advantage is their knowledge, skills and experience, **not** the hardware they own
- i.e. international firms often have greater **innovation capabilities**

Building innovation capabilities



Key message: Indigenous innovation capabilities

- Knowledge, skills, experience (underlying *and* tacit knowledge)
 - Innovation capabilities
- Innovation capabilities
 - Ability to work with existing technologies
 - Ability to develop new applications of existing technologies
 - Ability to develop new eco-innovations

Different levels of innovation

1. **Innovations ‘new to the world’**: Firm first to introduce innovation for all markets & industries, domestic and international.
2. **Innovations ‘new to the market’**: Firm first to introduce innovation in its particular market.
3. **Innovations ‘new to the firm’**: Firm introduces product, process or method new to that firm, or significantly improved by it, even if it has already been implemented by other firms.
4. **Non-Innovations**: Include purchase of identical models of equipment, or minor extensions and updates to existing equipment or software.

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Different levels of innovation

- Radical innovation
- Incremental innovation
- Adaptive innovation

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- Policy must respond to differing social, economic, ecological and technological needs and considerations in different regions and countries, and areas within countries:
 - Emerging vs. least developed economies
 - Existing technological capabilities
 - Rural poor vs. urban industry
 - Level of technological development on research, development, demonstration & deployment (RDD&D) spectrum
 - Hardware / software balance e.g. CCS vs. distributed solar

A note on intellectual property (IP)

- Distinguish between technology producers & consumers
- Incremental cost of new technologies more important for consumption, with often marginal IP related cost
- IP potentially more important for technology producers
- Parallels with other sectors (e.g. pharmaceuticals) difficult as many technologies (e.g. hybrid vehicles, IGCC) protected by an array of patents & different balance of IP related costs

A note on intellectual property (IP)

- Evidence on IPRs is mixed. Tends to support position of IPR access being **necessary** in some cases, **but not sufficient** on their own to enable access to environmentally sound technologies
- Access to other knowledge, particularly **tacit knowledge**, often a more important barrier e.g. Indian white LED manufacturers
- However, instances observed where IPRs slow the rate at which developing country firms can produce low carbon technologies & also prevent firms producing at the cutting edge e.g. hybrid vehicles & thin film solar in India
- Policy should therefore include provision for international arbitration in cases where necessary

Key policy concerns

Maximise leverage on:

1. Indigenous innovation capabilities
 2. Private sector involvement and funding
- Requires shift towards internationally collaborative public-private partnerships
 - Specific emphasis on capacity building via underlying and tacit knowledge transfer
 - Flexibility to assess and respond to context specificity

Key policy concerns for developed countries / international firms

- International technology-leading firms and industrialised countries might have concerns regarding intellectual property protection and maintaining competitive advantages
- Demands articulation of significant economic benefits of accessing new market opportunities via carefully negotiated collaborative initiatives with firms and other institutions within developing countries

Key messages

- Developing **indigenous eco-innovation capabilities** in developing country firms should be the central aim of international policy
- **Knowledge (underlying & tacit)**, not hardware, is the most important element of technology
- This will underpin sustained development via *both*:
 - **Diffusion** of existing eco-innovations
 - Sustainable economic **development** based on the adoption, adaption and development of environmentally sound technologies that fit bespoke conditions in developing countries
- **International public-private collaborations** at appropriate points along the RDD&D have strong potential to deliver on this

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