Low Carbon Technology Innovation and Diffusion Centres

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Synopsis

- Enormous energy-related challenges facing developing countries: expand energy sector; increase energy access; face the climate problem
- ~$200bn pa for 30 years is required to alleviate energy poverty in developing countries without greatly increasing carbon emissions
- Need technology innovation that is shaped by local needs and rooted in local context to meet these challenges but sparse support in global initiatives for innovation
- A network of Innovation Centres based on public-private partnerships can help advance developing-country-relevant technology innovation and capacity-building

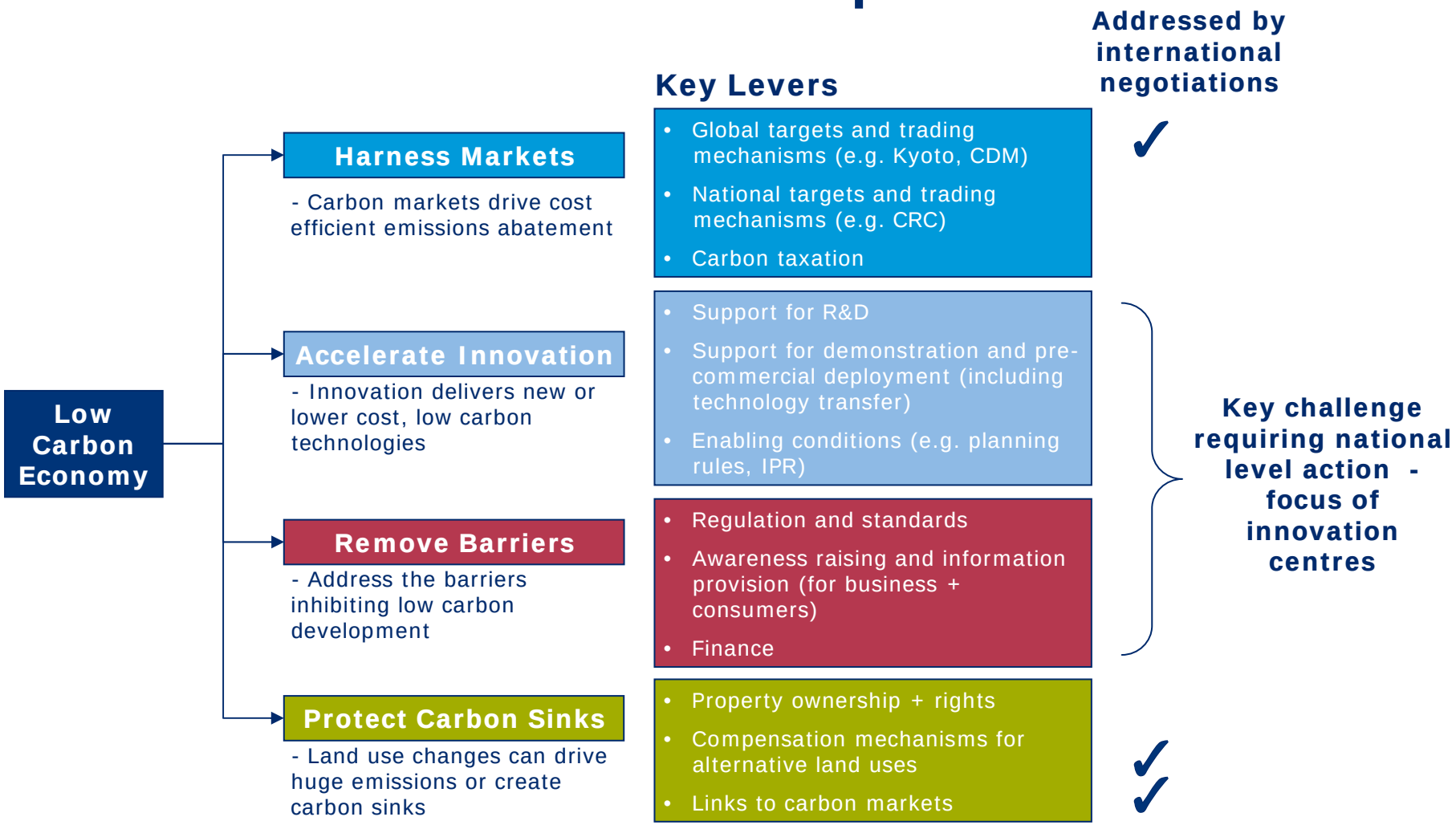
The work behind the innovation centre concept

- Challenge: How could Donor Country funding and know-how be effectively used to catalyse low carbon innovation and deployment in the developing world?

- Key inputs:
  - Carbon Trusts' knowledge and experience of accelerating low carbon innovation in the UK
  - Understanding of the landscape:
    - Developing world emissions and future emissions growth challenges
    - Existing multi-lateral funding and support mechanisms
  - 30 in depth interviews with experts in multi-lateral agencies, NGOs, research institutions and businesses in the developing and developed world
  - Case study analysis of 3 countries and 6 technologies illustrating the diverse range of developing world situations – based on an initial country and technology screening process

- **The Result: The concept of using Donor Country funding to set up self-sustaining national innovation centres across the developing world as a means of catalysing low carbon innovation and deployment**

Innovation centres focused on accelerating innovation and removing barriers to low carbon development



* Stern review identifies 3 key tasks – harness markets, accelerate innovation and remove barriers. However, chapter 25 acknowledges the importance of forests land use change and sinks represented here as a 4th element.

A resource gap prevents low carbon technology deployment, at scale

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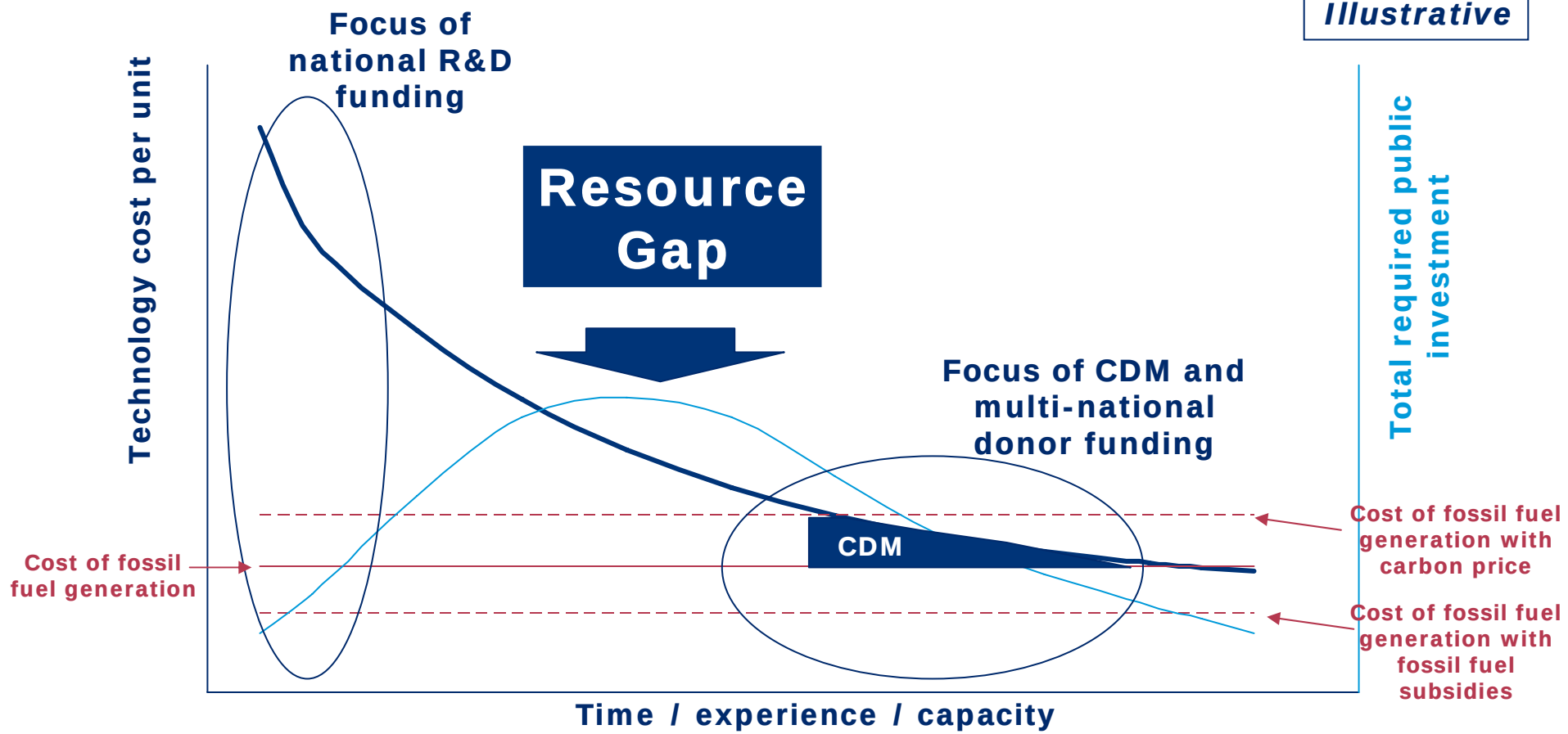
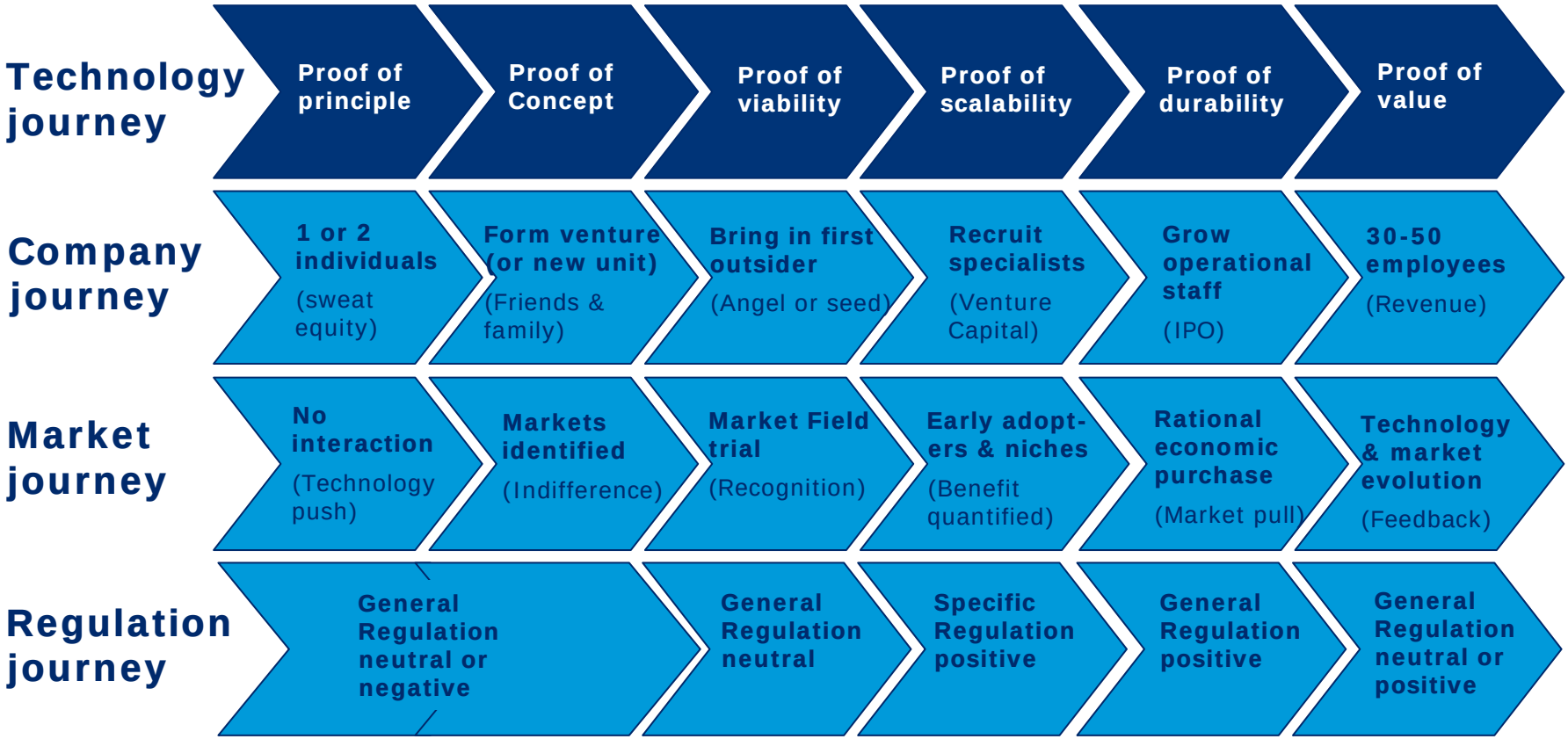
Illustrative



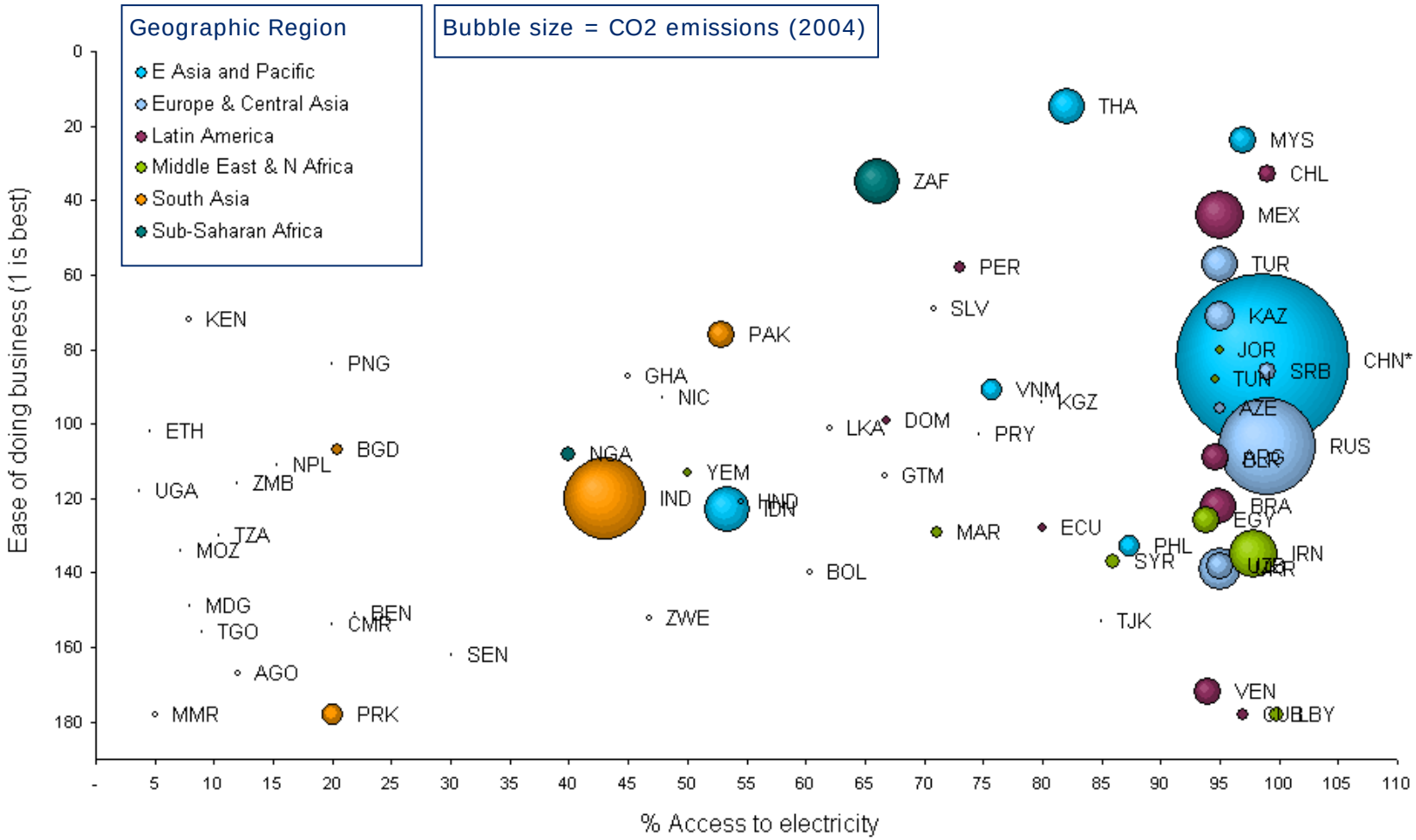
Increasingly attractive to private investors

Support is required to overcome barriers along the innovation journey

- Innovation: Moving from concept to commercial product availability by overcoming the diverse range of technology, business, market and regulatory barriers



The nature of the challenge will vary from country to country



Sources: World Bank 'Doing business' ranking 2007; IEA CO2 emissions data 2004; Electrification statistics – WRI Earthtrends (from International Energy Agency (IEA). 2002. World Energy Outlook: Energy and Poverty) – where this was not available (in around 20% of countries, mainly ex USSR or sub-saharan africa), an estimate was made based on per capita electricity consumption/% urbanisation/similar country comparison;

NOTE: Initial filtering of countries based on: Population < 5million, OECD countries, EU countries, High income economies, Significant political unrest

On the ground approaches must be tailored to the level of country or regional development

Country / Region Characteristics	High per capita energy use / electrification	Medium per capita energy use / electrification	Low per capita energy use / electrification
Key Challenges	• De-carbonisation (retrofit and replacement) of existing energy infrastructure • Building and industrial energy efficiency • Avoiding lock-in to high carbon development paths	• Characteristics of high and low archetypes	• Build new low carbon electricity and energy infrastructure • Secure low-carbon economic development
Examples	Brazil, China, Mexico, Russia, Thailand, Poland, Turkey	India, Indonesia, South Africa, Peru, Pakistan	Bangladesh, Kenya, Ethiopia, Zimbabwe, Nepal

A network of low carbon innovation centres can help meet multiple climate and development goals

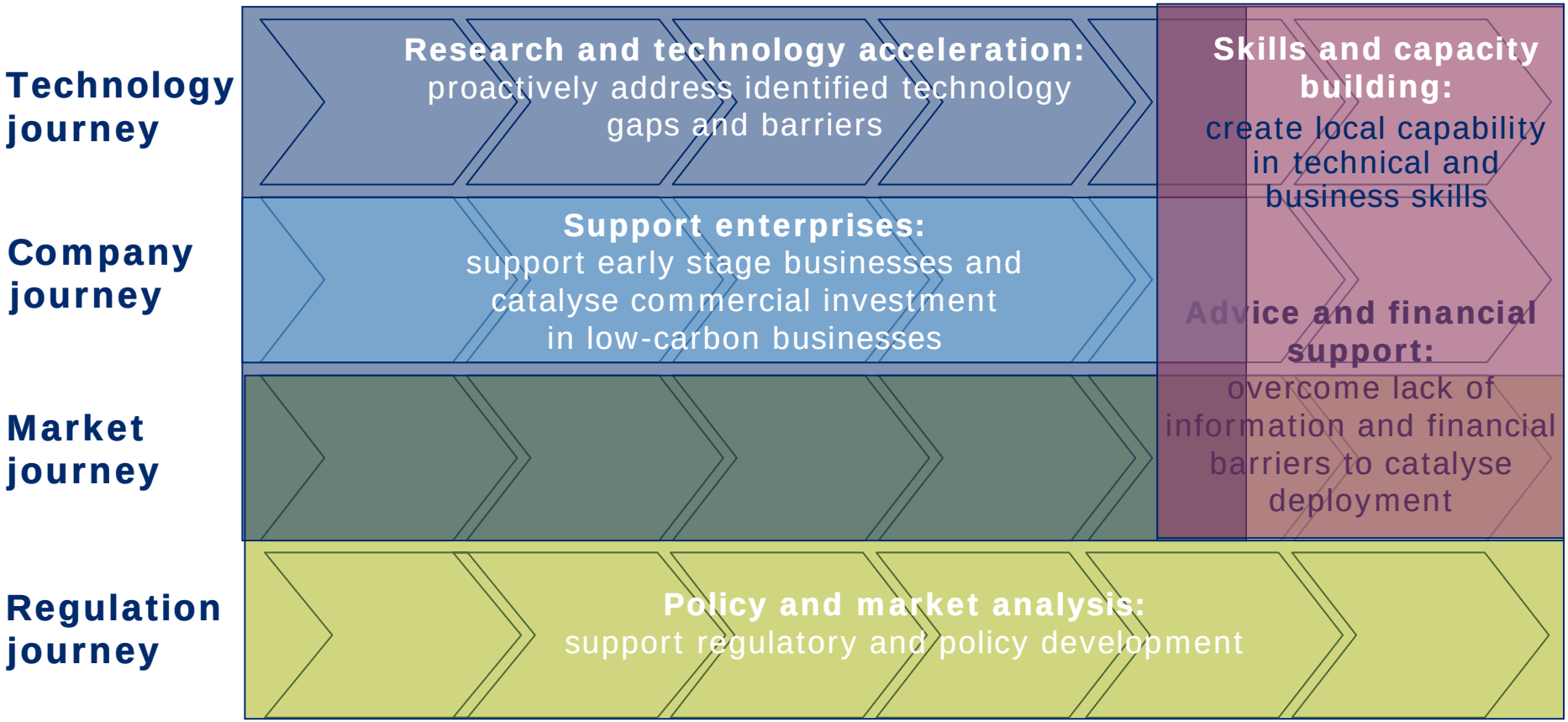
- Accelerate the transition to low-carbon development;
- Advance sustainable development while making a positive contribution to climate mitigation in developing countries by enabling the development of technologies that serve the unmet energy needs of developing countries, especially for the energy poor; and
- Support climate adaptation programs by developing technologies that are suitable for specific countries.

A network of low carbon innovation centres can accelerate the transition to low-carbon development

- Use public-private, North-South, and South-South partnerships to
  - advance the development and adoption of suitable energy and climate technologies (i.e., support “technology-push”)
  - underpin the creation and development of markets (i.e., support “demand-pull”) move technologies up the adoption curve
  - carry out other enabling activities such as helping create a favourable national political and regulatory framework
  - build local capacity (technical, financial and institutional) in the low carbon / clean energy markets

All this to take place at scale – and faster and better than would otherwise occur

Activities focussed on addressing barriers and de-risking private sector investment along the innovation chain



Activity examples - Research and technology acceleration

- Research and technology acceleration
- Business incubation services, seed funding and/or venture capital investment
- Advice and financial support
- Capacity and skills building
- Policy and market analysis

We need not just 'technology transfer' or R&D, but a well-functioning innovation chain

Must put in place a sustainable model with local finance and expertise to address local energy needs and in the long-run create a technologically-dynamic system.

The end