INNOVATION POLICY FOR INCLUSIVE DEVELOPMENT

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**Broad Definition of Innovation**

- **Innovation** is a concrete application of knowledge as opposed to invention which is the first conception of something new. Innovation can be a new product, a new process, a new service, or new way of organizing production and distribution of goods and services.

- For purposes of this framework, four main types of innovation can be distinguished.
  - **Frontier innovation** is the first application of the innovation in the world. *Radical innovation* refers to a major change in the technology. *Incremental innovation* refers to small changes that improve the innovation. Often incremental changes can be cumulative and can greatly improve the performance of the product or service over time. Most innovation is incremental.

  - **Catch-up innovation** is the first application in a specific country of an innovation that already exists elsewhere in the world. This is particularly relevant for developing countries because by definition they are behind the world frontier. In addition much knowledge already exists beyond their frontiers and it is generally easier, less risky, and less costly to acquire it from elsewhere than to develop it independently again.

- **Inclusive innovation** is defined below
Definition of Inclusive Innovation

- Innovation that addresses the needs of persons with low incomes. It can be:
  - high technology or
  - low technology;
- based on the efforts of
  - firms, governments, non-government organizations, or individuals,
  - even grassroots innovators with little formal education.
- Key characteristic: accessible to low income populations
Rationales for Focusing On Inclusive Innovation

• **First:** Market failure. People with low income cannot access many of the innovations that improve quality of life---from basic goods and services such as food and shelter; to consumer goods and services, including health, education, and leisure activities.

• **Second:** Some governments have begun to focus explicitly at fostering innovations by the public and private sector to address the needs of this population.

• **Third:** Domestic companies are beginning to develop goods and services for these low income markets.
Rationales (continued)

• **Fourth:** There is also growing awareness among transnational companies (TNCs) that these markets are growing and provide opportunities for making money.
  - TNCs are also concerned that if they do not develop innovations for these markets, the domestic firms that do will pre-empt them, and may also begin to sell some of these products and services in their own home markets

Thus understanding the dynamics of inclusive innovation is of interest to governments, firms, non-government organizations (NGOs), and individuals.
## Main Agents and Stages of Innovation Cycle

<table>
<thead>
<tr>
<th>Innovation cycle/ Main Agents</th>
<th>Research</th>
<th>Development</th>
<th>Engineering &amp; Scale-Up</th>
<th>Production and Commercialization</th>
<th>Dissemination and Use</th>
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<tbody>
<tr>
<td>Government</td>
<td>Government Research Institutes Government funding of university and private sector research (mostly basic)</td>
<td>Government Research Institutes Government funding of private sector development</td>
<td>Government Research Institutes Some government funding of scale up by private sector</td>
<td>Some support of private firms mostly in military area, but mostly through SOEs</td>
<td>Work of own ministries through use of new technologies plus explicit dissemination efforts by ministries</td>
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<td>SOEs</td>
<td>Important performers of own research, and some funding by universities and others</td>
<td>Development work for own technologies</td>
<td>Scale up of own technologies</td>
<td>May be important producers of goods and services, especially in developing countries</td>
<td>Through own growth, licensing and strategic alliances</td>
</tr>
<tr>
<td>Private Firms</td>
<td>Main performers and funders of all research in world</td>
<td>Main agents in development</td>
<td>Main agents in scaling up</td>
<td>Main agents in production</td>
<td>Through own growth, licensing or other strategic alliances</td>
</tr>
<tr>
<td>Individuals</td>
<td>Inventors</td>
<td>Very little development work by individual inventors</td>
<td>Very little scale-up by individual inventors</td>
<td>Through licensing of technology to productive enterprises or own start-ups</td>
<td>Ultimate users of innovations</td>
</tr>
<tr>
<td>Grassroots innovators</td>
<td>Non-formal if any</td>
<td>Non-formal if any</td>
<td>Very rarely</td>
<td>Usually limited to own use</td>
<td>Very little dissemination</td>
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<td>Universities</td>
<td>Important performers of R&amp;D, particularly basic research</td>
<td>Some development work</td>
<td>Little scale up</td>
<td>University Spin – offs Licensing of technologies to productive sectors</td>
<td>Key agents in dissemination of knowledge: teaching, papers, conferences, consulting</td>
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<td>NGOs</td>
<td>Funding Research (mostly by Foundations)</td>
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<td></td>
<td>Not very common, though some do produce</td>
<td>Dissemination of appropriate technologies, through advocacy, demonstrating projects, finance</td>
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Some Pitfalls to Watch Out For

• There tends to be too much focus
  • on supporting R&D for inclusive innovation and
  • creating the initial prototypes
• While the initial prototype is important, it is not going to have any economic impact if the prototype is not carried forward into production and mass dissemination
• Therefore should not lose sight of the innovation value chain and develop policies to support stages of innovation that go beyond the prototype stage to scale-up, production, and dissemination
• Critical elements for these are
  • access to finance for producers as well as consumers,
  • networks of suppliers and distributors
• This often requires
  • leveraging existing networks of partners, as well as
  • developing information technology platforms to reduce transactions costs and facilitate massive scale-up
# Market Failures Related to Inclusive Innovation and Corrective Actions

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<tr>
<th>Type of problems</th>
<th>Corrective action</th>
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<tr>
<td>Consumers may be too poor to pay for goods and services</td>
<td>Government should</td>
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<tr>
<td></td>
<td>• actively encourage greater provision of lower costs goods and services more accessible to poor consumers</td>
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<td></td>
<td>• subsidize purchases by poor consumers</td>
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<td>Lack of information on needs of the poor</td>
<td>Provide information on product and service needs of the poor and potential market size</td>
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<td>Launch</td>
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<td>• grand challenges competitions</td>
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<td>• prize competitions</td>
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<td></td>
<td>• procurement for innovative products and services specifying necessary parameters and guaranteeing bulk purchases</td>
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<tr>
<td>Knowledge required to provide goods and services that address needs of poor at</td>
<td>Make research for inclusive innovation more attractive by:</td>
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<tr>
<td>reasonable cost does not exists and requires R&amp;D which is considered too risky</td>
<td>• Subsidizing research through</td>
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<td>with poor market prospects</td>
<td>• Grants</td>
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<td></td>
<td>• Fiscal incentives</td>
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<td></td>
<td>• Guarantee minimum market through public procurement</td>
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<td></td>
<td>• Strengthen Intellectual property protection or develop alternative means of compensating effort such as prizes</td>
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<tr>
<td>Difficulty of obtaining finance for scale up and commercialization of inclusive</td>
<td>• Early stage finance by government for development and scale up</td>
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<td>innovations</td>
<td>• Venture capital for scale up and commercialization</td>
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<td>Insufficient education or skills or grassroots innovators or low income</td>
<td>• Provide entrepreneurship and technical training</td>
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<td>producers to take products to market</td>
<td>• Support indigenous innovators with expertise from public R&amp;D labs and universities</td>
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Policy Instruments for Inclusive Innovation

- Broader Economic Environment
  - Openness to global knowledge
  - IPR

- Innovation Infrastructure
  - Research Institutes
  - Metrology, standards, testing and quality control
  - Information
  - Education, training and life long learning institutions

- Supply Side Policies
  - R&D investments, grants and subsidies
  - Early stage finance for technology venture
  - Bridge Institutions: S&T parks, business incubators,
  - Business support services for start-ups

- Demand Side Policies
  - Public procurement
  - Prizes
  - Standards

- Coordination
Examples of Four Different Types of Cases

- Multinationals/private entrepreneurs
  - MNCs: Haier, GE
  - Private entrepreneurs: Aravind; Heart transplant

- Government Labs
  - Psoriasis
  - Chinese Diagnostic test bed
  - Solar water heaters

- Universities
  - D-lab, Global Cycle, Embrace incubator
  - Tsinghua Solar Water heater

- International Organizations
  - Green revolution
  - River Blindness
  - Malaria Vaccine

- NGOS
  - Path and the Meningitis Vaccine
  - Gates Foundation
Conclusions

• Different agents in innovation cycle have different strengths and weaknesses that need to be taken into account in designing inclusive innovation policies

• Government has many roles in promoting inclusive innovation from direct actor to facilitator and coordinator, but main likely to be the broader enabling environment

• Private sector likely to be main agent of inclusive innovation

• Biggest failure for inclusive innovation is in going beyond initial prototype to commercialization and dissemination

• Inclusive innovation requires collaboration among agents so government should see how it can improve that
THANK YOU!

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