Regional Workshop on Planning and Managing Technology Transfer for Inclusive Development
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Harnessing Science, Technology and Innovation for Inclusive and Sustainable Development

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Structure of the Presentation

1. **Importance of Cottage and Small Industry (CSI) in Bhutan**

2. **Technology & Innovation and Sustainable Development Goals**

3. **Policies to facilitate technology transfers and innovation for CSIs in Bhutan**

Bhutan Cottage and Small Industry

95% of total Industry in Bhutan

Service

Production & manufacturing (P&M)

Contract sectors

Fast growth of P&M sectors

Typical challenges faced by CSIs

- **Outdated technology**
- **Limited public infrastructure (e.g. ICT)**
- **Limited access to adequate finances**
- **Shortages of skilled labour**
- **Competition from imported goods**
- **High costs to access external markets**

Technology adoption/adaptation is key

Technology and Sustainable Development

Channels of Technology & Knowledge Transfer

- **Trade**
- **Licensing**
- **Foreign Direct Investment**
- **Movement of People**

Importance of existing technologies

- Adopt and adapt existing catch-up technologies and innovations – new to the CSI's knowledge

- To acquire, adapt and use existing knowledge and technologies -- less costly and less risky for CSI than creating new.

- Successful SMEs in emerging economies imported technologies, improve them, and exported products in a form that the rest of the world wanted

- Their strong <u>absorptive capacity</u> made this possible.

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Inclusive & Grassroots Innovations

Wind power based water pump

Solar dryer

Bean separator

Examples from India, China, Brazil and South Africa

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Absorptive capacity

The CSI's ability to recognize the value of new information & technology, assimilate them, and apply them commercially

- **Access to knowledge**
- **Cross-border connectivity**
- **Favourable legal framework for technology transfer**
- **Good business environment**
- **Education, vocational training**
- **Skills for management and entrepreneurship.**

How to increase absorptive capacity?

- Empowerment of CSI's human resources

- Power up education system and ensure life-long learning opportunities

- Enterprise-based worker training, management and entrepreneurship training

- Technical and vocational training

- Strategies to attract and retain talented workers.

How to promote technology transfers and innovations in CSIs

Government as a gardener

- Discovering and importing technology (seeds)
  - **Access to information, diaspora, open trade**
- Planting seed and growing plants
  - **Joint ventures, FDI, business advocacy, support** to **start-ups**
- Watering
  - **Financing**
- Preparing ground = good absorption capacity
  - **Good education, entrepreneurship, basic technological literacy, soft skill development**
- Removing weeds
  - **Keep improving business environment (i.e. relaxing movement of skilled labour)**
- Improvement of the seed
  - **Supporting R & D.**

Promoting technology transfers and innovations among CSIs

Access:
Open trade (imports)
Good ICT infrastructure
Participation of technology matchmaking **fairs**
Technology request database
Diaspora

Business facilitation:
Ease of business
Promotion of foreign direct investment
Facilitation of labour mobility.

Others:
Protection and enforcement of Intellectual Property rights
Public procurement
Support for finance to early adopters/demonstrators.

Conclusions

- **Facilitate acquisition and use of existing technology -- less costly and less risky than creating new.**

- **Provide adequate access to finance to CSIs for adoption and adaptation of technologies.**

- **Build stronger absorptive capacity among CSIs. Invest in education, vocational and life-long training & develop national R & D capacity.**

- **Protect and enforce Intellectual Property Rights (IPRs).**

- **Continue to improve technical access and basic infrastructure (i.e. broadband access to the Internet)**

- **Provide an enabling environment for FDI and business.**

- **Facilitate the cross-border movement of technology workers.**

Thank you