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Economic and Social Commission for Western Asia

UN-ESCWA

ICT as an Enabler for Technology Transfer

Yousef Nusseir, Director, ICTD

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Technology Transfer Growing

UN-ESCWA

- As this meeting illustrates, South-South cooperation has seen significant growth
- Triangular cooperation, the assistance of South-South technology transfer with participation of additional countries also growing.

Modalities for Technology Transfer

Vertical integration

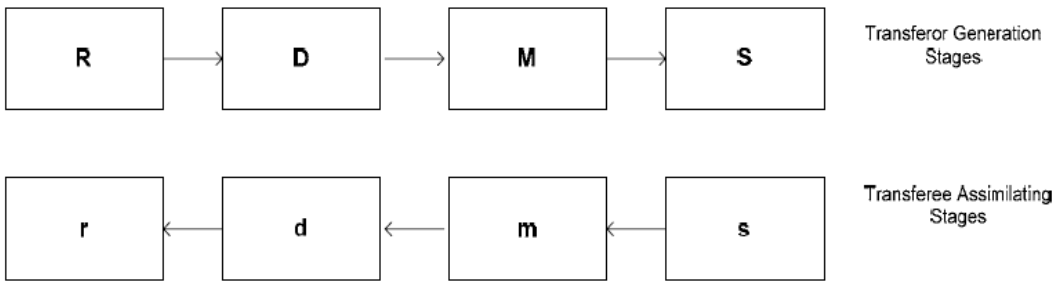
Development pursued in partnership, with shared basic and applied research. R&D centers are a good example of this.

Horizontal Integration

Installation of turn-key facilities, such as electronics manufacturing plans. Typically, very little knowledge transfer will occur.

Modalities for Technology Transfer

Research – Development – Manufacture - Sales



1. Reverse-engineering of turn-key solutions is difficult and expensive
2. The earlier the involvement in the research and design phases the better

Identification of Candidates

- Technology transfer must be customized to the circumstances of the donor and recipient countries.
- The selecting process for opportunities also gives insight into needs

Income Deviation

Variation in GDP Per Capita Across Countries

	GDP Per Capita (constant 2000 US$$)		
Country Name	1980	2006	% Change
Asia			
Mean	636.71	1379.42	54%
Std. Dev.	590.4	1182.22	197.26
Latin America & Caribbean			
Mean	2529.42	3396.14	26%
Std. Dev.	1732.61	2165.24	49.04
Middle East & North Africa			
Mean	1847.52	2578.27	28%
Std. Dev.	1318.48	2003.27	29.92

Income Deviation

- When partners have similar challenges, but dissimilar development levels it suggests an opportunity for technology transfer
- Pros: Measurable, but not overwhelming income disparities, highlight possible partnerships
- Cons: Transfer between similar countries is more likely to succeed, but less likely to deliver dramatic benefits

Income Deviation Analysis

- Low income deviations within a region imply that the countries are developing at similar rates
- In these cases, there will be fewer barriers to successful, although likely lower-yield technology transfers

Foreign Direct Investment

- FDI does not cause technology transfer
- Many types of FDI can be detrimental to local development
- Foreign investments in markets and local commodities does not enable technology transfer

Alternative Indicators to FDI

Acquisition of Foreign Knowledge, Brazil, China, India

	Brazil	China	India
Trade (percent of GDP)			
1980	22	21	15
2007	27	76	46
Merchandise imports (percent of GDP)			
1980	9.8	—	7.5
2007	9.6	29.8	18.4
Manufactured imports (percent of merchandise imports)			
1980	41	—	39
2007	64	68	46
Average Gross FDI/GDP			
2000–2005	3.4	3.2	0.9
Royalty and license fee payments (US$ million)			
1990	54	0	72
2007	2,259	8,192	949
Percent of GDP	1.72	2.56	0.80
Tertiary Students Studying Abroad 2007	21,556	421,128	153,312
As percentage of students studying abroad	0.77	15.03	5.47
As percentage of tertiary students in the country	0.4	1.9	1.1

Source: Dahlman (2010)

Successful Technology Transfer

- While there are many factors involved in technology transfer, absorptive capacity is particularly important.
- ICT capabilities are necessary both indirectly as an enabler for S2S cooperation and directly as transferred technology.

ICT Narrows the Gaps

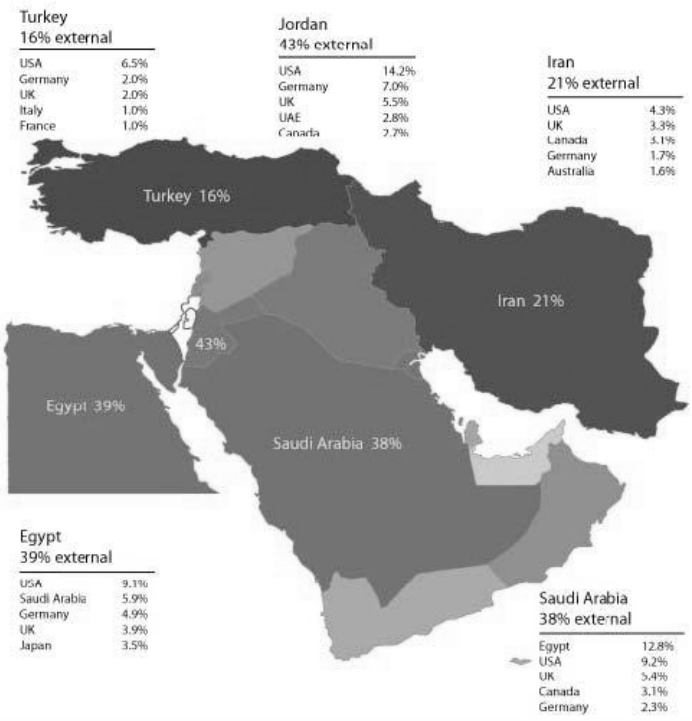
- The larger the development gap between the partners, the more difficult the transfer and the higher the potential benefit.

ICT as an Enabler

- ICT promotes communication to enable absorptive capacity.
- The connectedness of a society, and history of collaboration are key assets in promoting successful technology transfer
- Levels of connectedness can vary significantly even in the same region.

Connectedness and Collaboration

International Co-Authorship of Scholarly Publications



Direct ICT Transfer

- ICT is often the subject of technology transfer activities.
- Number of regional and bilateral S2S IT cooperation agreements increasing
- National governments and regional organizations promoting centers for cooperation and integration.

Direct ICT Transfer

- Examples in the Latin American and Caribbean region include:
  - Bolivar Programme for Regional Technology Integration
  - eLac Plan of Action
  - e-Government Strategy (CAPCOM)
- Western Asia Region:
  - ESCWA Technology Center
    - Opportunities for improvement

Processes as a Transferable Asset

- Technology transfer often focuses exclusively on products
- Increasing understanding of the importance of business processes as a transferable asset themselves
- Understanding how to successfully deploy transferred technology in this region is critical asset

ICT and Data as a Transferable Asset

- Information generation, including meta-data is a valuable asset.
- Markets and processes are placing increasing value on information.
- ICT is a vital tool in the both the generation and transfer of data.

Licensing, IPR protection

- Typical N2S cooperation, and often triangular cooperation are complicated by intellectual property barriers.
- A legal structure which can promote the marketability of locally appropriate solutions is vital to capacity building.

Brain Drain/Gain

- Expatriate knowledge workers are a form of technology transfer
- Foreign-educated workers returning to their home region can be very helpful
- Benefits of internationalization in education must be bidirectional

Conclusion

- ICT is a vital part of technology transfer
- The wider the gap between the countries, the more difficult the transfer, the better the yield
- Collaboration and openness are strong assets
- Successful S2S cooperation should make ICT a dedicated component of their approach
- Appropriate legal structures are needed for both partners