China-Ghana South-South Cooperation on Renewable Energy Technology Transfer (RETT)

Identification of barriers to renewable energy technology transfer to Ghana

Stakeholder consultation workshop
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Outline

Part I:

- Constituents and elements of RETT
- Review of Ghana's technology transfer regulations (LI 1547)

What is Technology Transfer?

- TT has been defined and measured in different ways across different disciplines
- Generally it is the process of movement of technology from one entity to another
- The technology may include any of the following:
  - Knowledge and skills (Technological know-how)
  - Goods and services
  - Physical assets (hardware/equipment)
  - Values (organisational and managerial procedures)

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Types of technology transfer

- **Vertical (internal)**
- **Horizontal (external)**

- Vertical technology transfer occurs when information is transmitted from basic research to applied research, from applied research to development, and from development to production.

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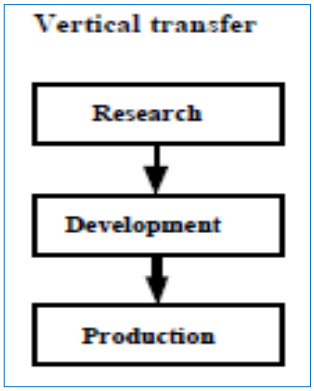
Vertical technology transfer

It follows the progressive stages of:

- Invention (basic research)
- Innovation (applied research)
- Development
- Commercialisation



Vertical transfer is usually as a result of Academia-industry relations or research within an organisation

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Horizontal Technology Transfer ?

- Horizontal transfer involves a matured technology being moved from one operational environment to another.
- The technology is already commercialised and the purpose is to disseminate the technology and extend its application into other contexts.
- Horizontal transfer is more common when technology is being transferred from industrialised to developing countries.
- There is usually no further improvement or change to the technology unless it needs to be modified to suit local circumstances.

Stages of Horizontal Transfer

1. Stage 1 involves import of capital goods and equipment - increases the production capacity of the recipient but on its own does not enable the recipient to use the imported facilities efficiently or to generate technological change in country
2. The second flow includes skills and know-how for operating and maintaining equipment. It places the human resources of the recipient at the technological level required to operate the imported technology efficiently, but without indigenous efforts beyond learning how to use the technology it would not enable technological change;

3. The third flow encompasses knowledge and expertise for generating and managing technological change. It creates new technological capacity through technology transfer and active independent learning, creation and innovation of the recipient.

Renewable Energy Technology Transfer

- In the context of renewable energy technologies, technology transfer refers to the diffusion of mature (advanced and appropriate) renewable energy technologies from one country to another.
- This must enable the receiving country to adapt, deploy and diffuse renewable energy technologies.

- RETT process starts with needs identification
- The recipient must be able to identify and select appropriate technologies according to their circumstances and capacities
- This avoids the transfer of inadequate, unsustainable or unsafe technologies
- **One size does not fit all .....**

Elements of RETT in Ghana

- RETT could take several forms depending on our needs and capabilities.

- The RE Law of Ghana (Act 832) defines renewable energy as energy obtained from non-depleting sources including;
  - wind;
  - solar;
  - hydro;
  - biomass;
  - bio-fuel;
  - landfill gas;
  - sewerage gas;
  - geothermal energy; and
  - ocean energy.
- Grid or off-grid applications
- Lighting or heating

- RETs that are appropriate to our immediate needs, circumstances and with potential capacities must be selected (AHP process).

- Also, the process should not be limited to only the transfer of hi-tech equipment but should include skills and capacity development, organizational and managerial procedures for technological change as well as supportive regulatory framework to acquire, use and adopt the technology.

- In conclusion, a successful RETT must result in the recipient's ability to;
  - **Use,**
  - **Replicate,**
  - **Improve and,**
  - **Possibly, re-sell the technology**

Review of Ghana's Technology Transfer Regulations (LI1547)

Julius Ahiekpor

Background

- TTAs provide the framework under which an owner (transferor) of a technology can transfer certain legal rights to a partner (transferee) in foreign country.
- These agreements are regulated by laws in the receiving countries and can take different forms.
- Based on a countries domestic, economics and political conditions at the time the law is enacted.

- These regulations are reviewed from time to time to meet modern international and national requirements and their potential effect on the development of the national economy.
- Areas of concern in recent years for reviews include:
  - Royalty rates,
  - Scope and content of control that the transferor seeks to impose on the transferee,
  - Warranties regarding the quality and performance,
  - Terms of agreement and
  - Dispute resolution procedures.

Ghana Technology Transfer Regulations (LI1547)

- LI 1547 was enacted in 1992
- It requires that all technologies transferred to Ghana for the purposes of doing business must be entered into an agreement between the transferor and local partner and duly registered with GIPC
- It has provisions to protect both the transferor and transferee

Key Provisions in the LI

- Restrictions on agreement
  - Ghana has a more liberal regulation compared to other jurisdictions – use of local components, raw materials, labor, etc.
  - The transferor and transferee can agree on the source of these components
- Training of personnel
  - Transferor is required to provide requisite training for personnel to effectively use the technology
- Improvement and adaptation of transferred technology
  - The LI encourages agreements that allow the transferee to **improve**, **modify** and **adapt** the transferred technology
  - In fact, the transferee does not require the consent of the transferor to modify the technology

Unenforceable provisions in the LI

- Transfer of technologies that are freely and easily available in Ghana;
- Restriction on the volume of production or the sale transferee's products in Ghana;
- Clauses that bound the Ghanaian party with respect to the procurement of capital goods, components, or raw materials had to be avoided;
- Obligatory transfer of improvements or innovations introduced or developed by the transferee to transferor;
- Payment for patents and intellectual property rights after their expiration;
- Clauses which prohibit the use of licensed technical know-how acquired from the technology transferred after expiry of the agreement;

Gaps identified in the Regulation

Research and Development

- The regulation does allow for transferee to modify or adapt licensed technology, however, it does not make provision for including research and development as part of the activities of the agreement.
- This is necessary to encourage the parties to commit resources to research and development of their operations locally.
- In China for instance, it is a requirement for the transferor to permit the transferee to exploit even patents and must make available all technological materials relevant to the exploitation of the patent.

Sharing of IPRs

- The regulation does not specify how innovations from the use and modification of the transferred technology should be shared
- Though the patent law (Law 305A) makes provision for ownership and sharing of IPRs the procedure to acquire patent can be cumbersome and may discourages applicants.
- If a sharing regime is allowed to be included in the TT agreements, it could enhance the sharing of information, easy learning and use of licensed technology.

Ownership of Technology

- The regulation does not require the transferor to prove ownership of the technology or permission to use the technology.

- The transferor must guarantee that it is the lawful owner of the licensed technology

Duration of agreement

- The regulation does not specify the duration of agreements involving the use of patents.

- For agreements that involve the exploitation of patents, the duration of such an agreement must not exceed the duration of the validity of the patent. Royalties must stop when the patent becomes invalid.

Thank you for your attention

Questions/comments/suggestions