

Technology Development and Transfer Experience from the Technology Development and Transfer Centre, UDSM

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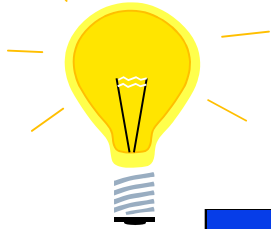
What is Technology Transfer?

- Technology transfer is the transfer of research results to the design, development, production, and commercialization of products, services or processes.
- The transfer process emphasizes the value and protection of the intellectual product of the researchers.

Gary Matkin, *Technology Transfer and the University*, 1991

The Technology Transfer Process

Disclosure

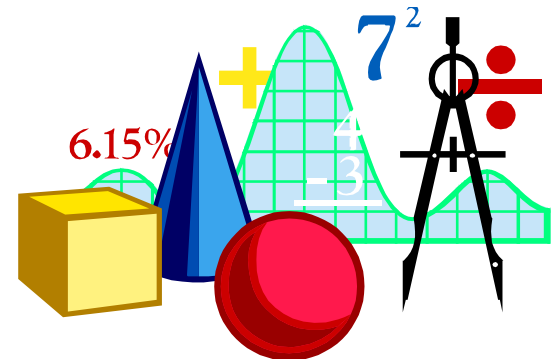


Patenting

Agreement Administration

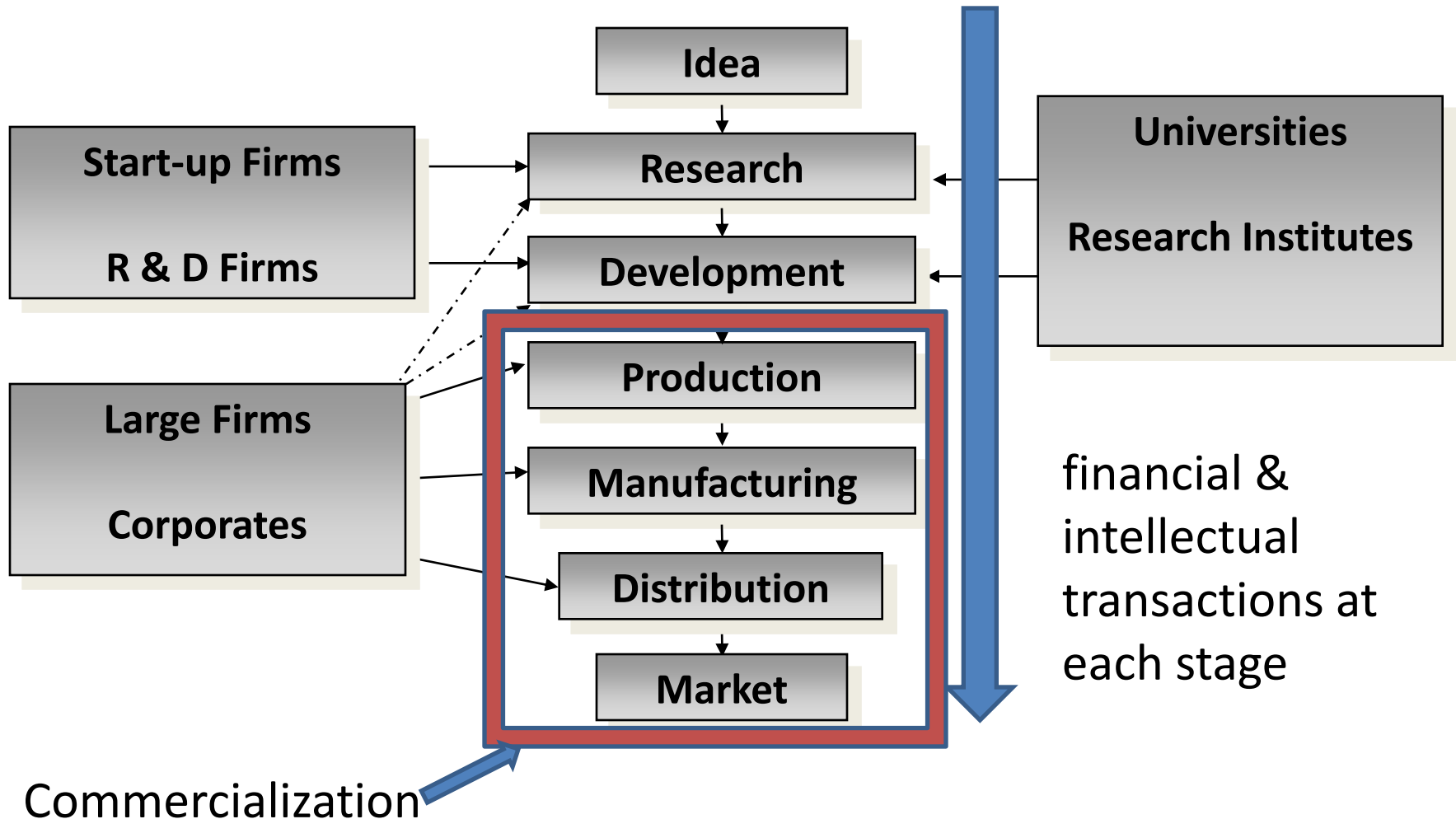
Licensing

Commercialization



Products/Processes
(Royalties)

Stakeholder roles in Technology Development & Transfer

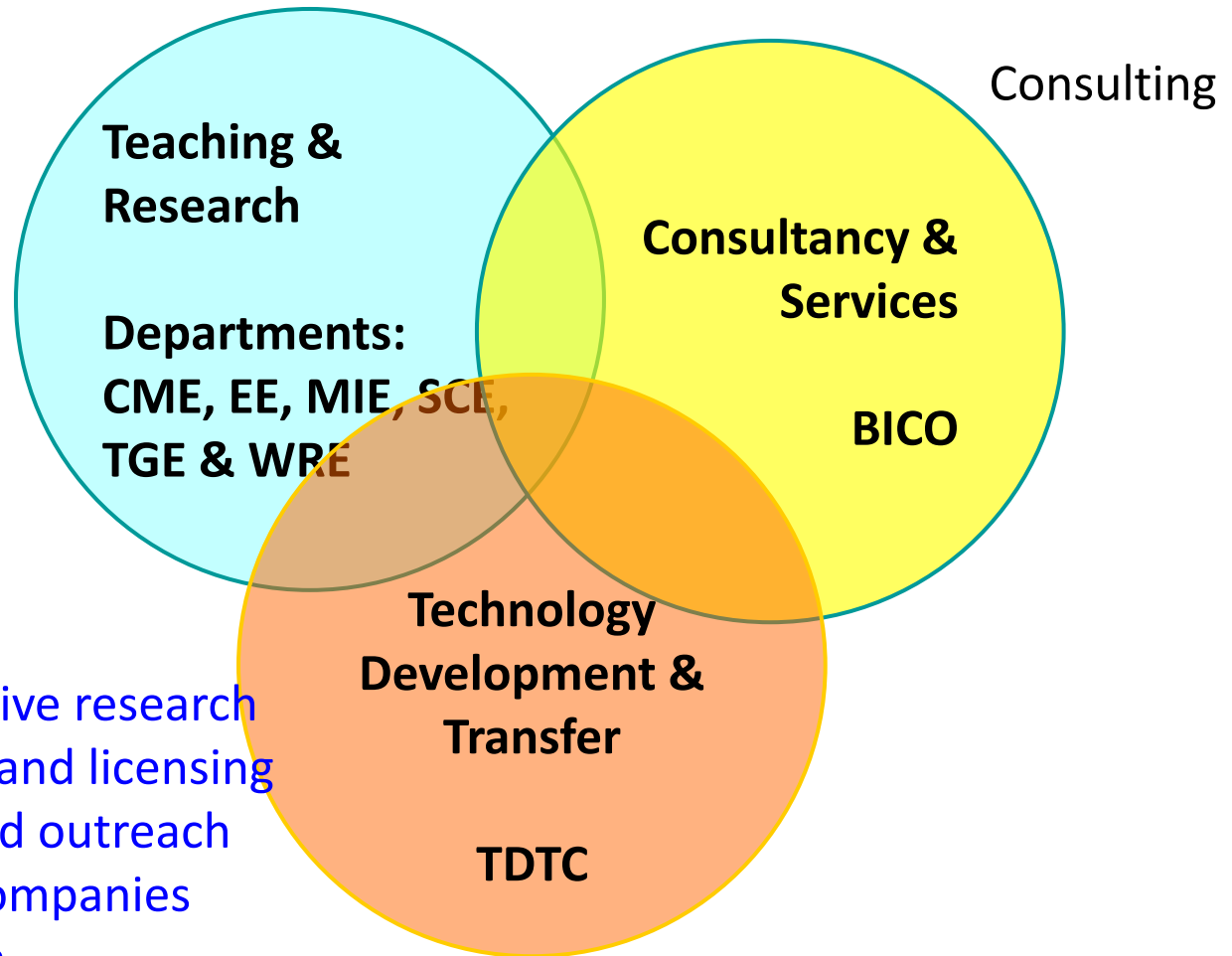


CoET Technology Transfer Objectives

- To enhance industrial linkage and open up interesting new lines of inquiry.
- To expand opportunities for research.
- To open up new sources of research support.
- To commercialize technology.
- To protect intellectual property and commercialize it.
- To build national and regional competitiveness and create jobs for graduates.

College Structure – Three Pillars for Realization of the Basic Objectives

“moving heads”:
Graduating students &
Academic staff



Examples of Technologies Developed at CoET



Palm Fruit Sheller



Community
Briquette Oven



Denver Jig



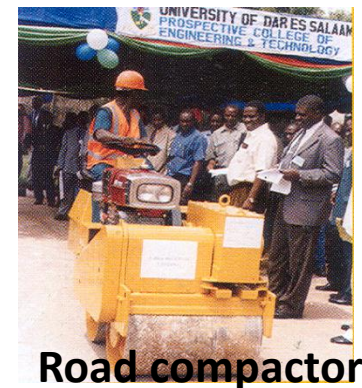
Vibrating Block
Machine



Palm fruit digester



Shaking table



Road compactor



Maize mill



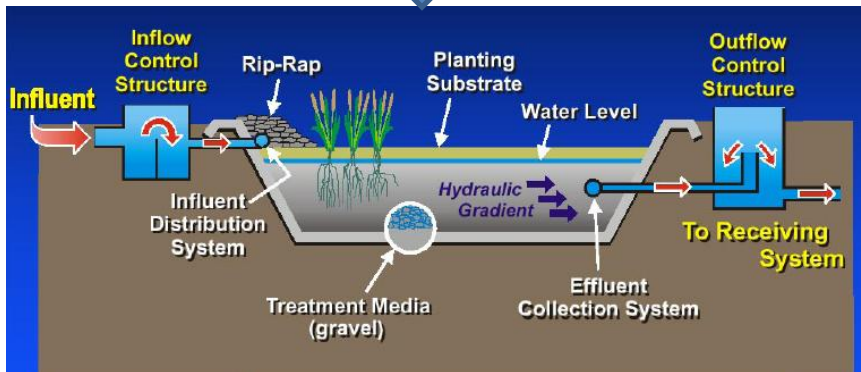
Peanut butter machine

Spin-off Companies: Nutraceuticals



- Aimed at promoting appropriate technologies for utilization of **Soya** as an alternative source of protein.
- Incorporation of ***Moringa oleifera*** leaves as source of micro-nutrients in the Soya food formulation made the product even better.
- Produced by **StayFit company**

Spin-off Companies: Constructed Wetlands

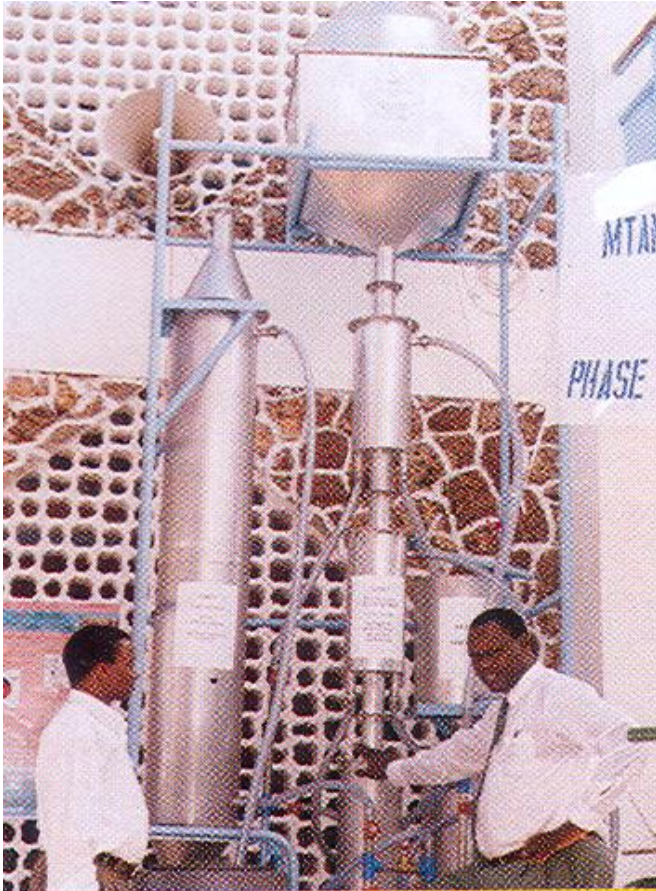


- Aimed at designing low-cost constructed wetlands for treating industrial, municipal and domestic wastewater
- Horizontal sub-surface flow constructed wetlands have been installed at 9 institutions in Tanzania including schools, colleges, prisons, municipals, industries and 3 outside Tanzania

Spin-off Companies

Stone Crusher to assist:

- small-scale stone crushers involved in the production of construction stone aggregates
- small scale miners who would like to break mineral ore
- Produced by Intex



Medical Waste Incinerator



Spin-off Companies

- **Financial and Accounting software (Vote Book)**
 - Vote Book system facilitates Control, maintenance and preparation of true and accurate projects/institutional accounts
 - It facilitates preparation of all financial statements including vote book summary, final accounts and balance sheet of payment

Outreach Activities: Incubation

Fruit and Vegetables

Process Development, Equipment Design & Fabrication done as part of TGT supported student projects

Training of Entrepreneurs



After Intervention

Before Intervention



Poor quality products

23 Different Good quality, Marketable products (some already with TBS mark)



Outreach Activities: Cluster Initiative



Food Additives



Challenges

1. Corporate (University) setting:

- Emphasis is on publication in reputable journals not technology development and commercialization
- Decision making too long – under review.
- Lack of cross-disciplinary (to capture social, legal and economic aspects) approach in technology development and transfer – under review.
- Poor supporting infrastructure – under review.
- TDTC not sailed well as brand name - under review.

Challenges

2. Nature of the Market

- The market is underdeveloped → Technology push
- The market is not specialized
- Technology absorption is low (Capacity /intelligence of the end-users is low)
- Low participation of SMEs in network of organizations and institutions involved in diffusing information on technologies
- SMEs lack ready access to capital
- Large firms rely on R&D services from abroad (parent firms)
- NO intermediary institutions (SMEs) for mass production of developed technologies (prototypes)

Challenges

3. Nature of the Technology

- Cost of getting to market (final development, manufacturing & testing/demonstrating costs).
- Complete process units or some units (compatibility issues!).
- National technology priorities are not known/clear

4. Technology Competitiveness

- Availability of “cheap” imports vs TDTC prototypes
- State-of-the-art fabrication and testing facilities are not currently available
- Lack of collaborative research
- Poor university-Industry linkage especially after privatization (big industries use R&D services from parent firms)
- No business plans as road maps for success of developed technologies (before/after prototyping) –under review
- Weak Market Research and marketing – under review

Challenges

5. Funding

- Insufficient funding for R&D
- Lack of funding to support technology commercialization
- Lack of funds to support outreach programmes

6. Policy issues

- Need for national policy supporting technology commercialization??
- Incentives for SME growth and technology innovation
- Increased capacity for Universities and R&D Organizations to support SME take technology
- Increased R&D and commercialization funding
- Improve innovation in industries by increasing networking with Universities and R&D Organizations

Opportunities for Technology Transfer Collaboration in EAC

- Sharing of technology/knowledge assets from existing Technology Transfer agencies in our partner states
- Harnessing complementarities in technology transfer aspects
- Establishment of regional Centres of Excellence for targeted technology transfer
- Pooling of resources for capacity to engage in high-technology manufacturing
- Identification of priority technologies for regional industrial application

Challenges to EAC TT Collaboration

- Disparities in the following may negatively impact regional TT collaboration efforts:
 - Supporting infrastructure & technological capability
 - Educational systems and skills capacity
 - Access to and cost of primary utility services
 - Raw material endowments
 - Industry baseline data & shifting “National” priorities
 - Market concentration/purchasing power
 - Funding and IP regimes

Conclusions

- Technology transfer enhances the mission and roles of UDSM
- Technology transfer requires a dedicated effort (including funding) to be successful
- The skills necessary for successful technology transfer are more than those for scientific research.
- Patenting and patent licensing should be encouraged
- Through outreach programmes SMEs have become more knowledgeable and competitive.
- Outreach activities should be strengthened as a promising Technology Transfer route
- There are opportunities for EAC collaboration in TT

Thank you for Listening