Reforming Public Technology Intermediaries in Tanzania: A Policy Learning Study

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BACKGROUND

- Renewed enthusiasm for state support of STEM-based innovation and industrialization:
  - National Five Year Development Plan II (FYDP-II)
  - Integrated Industrial Development Strategy (IIDS 2025)
- Public Technology Intermediaries (PTIs) were established in 1970s and 80s, aka Industrial Support Orgs (ISOs) and R&D parastatals.
- For countries that emerged from low-income to middle-income through industrialization, in the last half-century, PTIs and parastatals played an important role (e.g., Taiwan, Malaysia, Vietnam)

- Semi-independent orgs, distinct structures and procedures. State is owner or main shareholder.
- Purpose: to play critical intermediary role applied research, industries and markets according to national priorities.

RESEARCH

- Question: What are the challenges and opportunities of enabling PTIs to improve their support for Tanzanian industrialization?
- Lens of Inquiry: regulatory and financial barriers are an historical legacy. When the national policy shifted towards a mixed-economy in the 90s, PTIs were not updated.
- Intended use of Research: policy learning, synthesis and recommendations for revitalizing PTIs. They possess valuable knowhow, facilities and networks, worthy of revamping and more consistent with FYDP-II.

METHODOLOGY

1. Key informant interviews (using guide):
   - Informed opinions about overcoming institutional barriers.
   - Reviews of policies, historical records, activities, plans, etc.

2. Comparative analysis: Situating Tanzania's experience in international perspective:
   - Literature review of performance evaluation and situation analysis.
   - Comparative cases: Kenya (as neighbour) and Malaysia (as benchmark).

3. Participant organizations:

Cases:

- TIRDO: Tanzania Industrial Research & Development Organization
- SIDO: Small Industries Development Organization
- CAMARTEC: Centre for Agricultural Mechanization and Rural Technology
- TEMDO: Tanzania Engineering & Manufacturing Design Organization
- COSTECH: Commission for Science & Technology

Stakeholder orgs (Tanzania): UDSM, STIPRO, UNIDO, and ministries of Industry and Education.
Comparator orgs (Kenya): KIRDI and NACOSTI.
Comparator orgs (Malaysia): SIRIM and HICOM.

RESULTS

- Variations and Similarities:
  - Success in reaching directors. Senior personnel from most orgs approachable.
  - Different sizes, same problems.

- Question Samples (and Answers):
  - What are the main challenges/barriers that your organization currently faces?
  - What important changes, internal and external, that your organization saw in the last 20 years?
  - The major 2-3 possible changes that could help you achieve more success.
  - Highlight partnerships, projects, patents.

- Some Case Study Highlights:
  - TIRDO
    - Established 1979. One location, big estate. Aspiring main national PTI.
    - Most comprehensive R&D mandate. Previous recipient of IDRC support.
    - 8 PhDs, 14 Masters'.
  - CAMARTEC
    - Established 1981. Two locations, used to have big estate (now NMAIST).
    - Limited mandate (agriculture and rural)
    - 1 PhD, 4 Masters'. Productive but struggling.

Both have similar perceptions of main challenges, but different aspirations. One sees itself as the future of Tanzania's R&D. The other is hands-on and seeks survival.

a feature of the qualitative data analysis software (Nvivo 11), cloud of the most frequent 90 words within the data analyzed.

BROAD FINDINGS

Lens of inquiry proved very relevant:

- All PTIs emphasized the need to change their Acts of parliament. Some already took steps.
- While financing was the main barrier, it was tightly related to regulations about revenue generation.

Catch-22: PTIs now should compete for project funding, while resources are needed to build capacity to be competitive.

Hiatus: enthusiasm about new national policies (FYDP-II), yet no own plans and strategies.

With few exceptions, PTIs view themselves largely as independent/isolated entities.

Nonetheless, creative policy solutions are thought about and proposed by some senior staff.

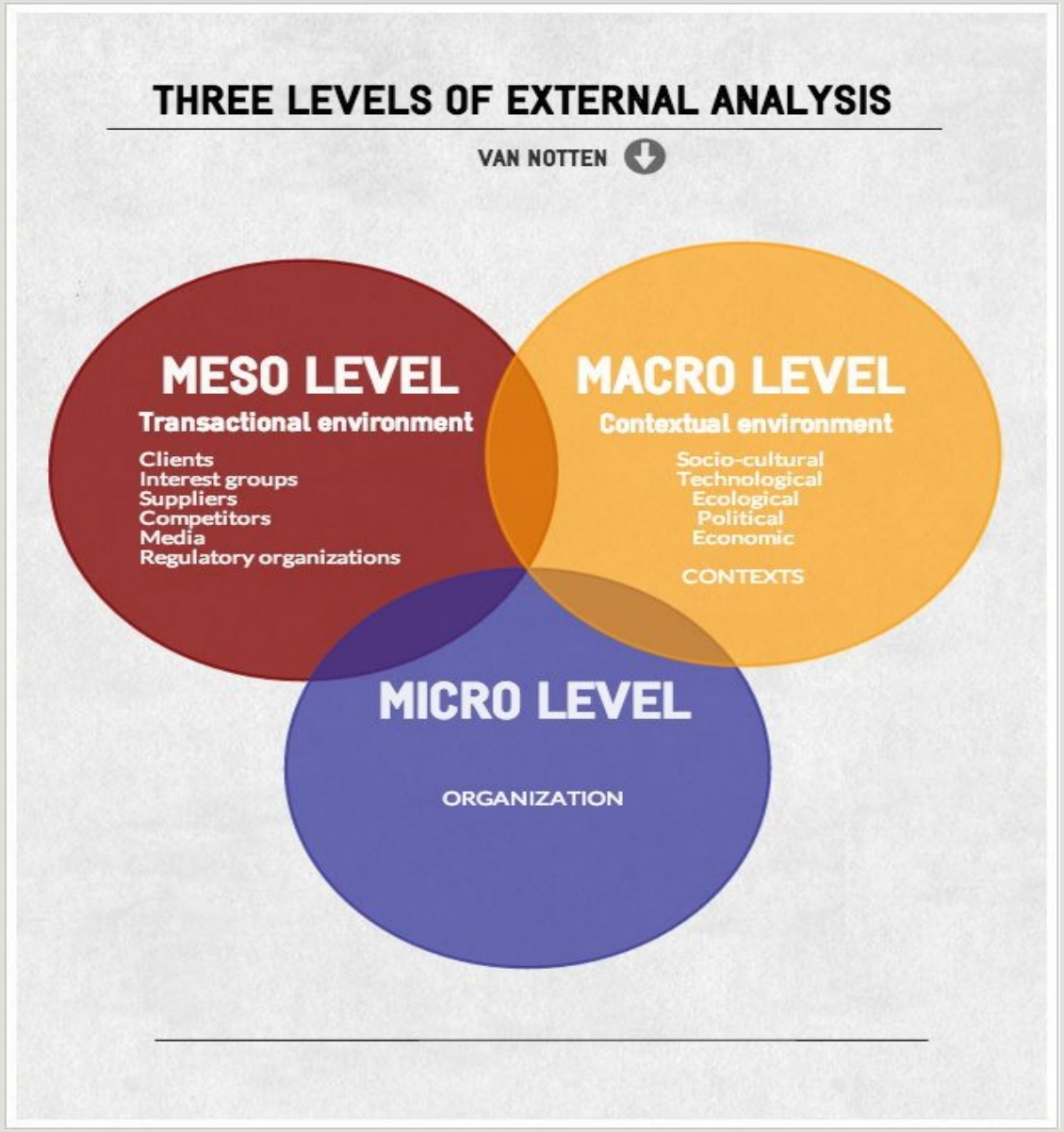
LEARNING & SYNTHESIS:

STEP ONE: Orientate policy agenda

- Recommendations need to be compatible with the national strategy. Align agenda with directives of FYDP-II and IIDS 2025.

STEP TWO: A multi-level policy map

- To look at conclusions in terms of three levels: macro, meso, and micro.
- Allows for seeing recommendations in compartments; i.e. possible to ‘pick and choose’.



RECOMMENDATIONS (highlights):

MACRO (national policy):

- Amend acts (of parliament), esp. for ability to mobilize own resources.
- A framework for TIRDO, TEMDO and CAMARTEC to ‘act as one’
- Create a two-way road between researchers at PTIs and higher education &training institutes (universities, colleges, etc.)
- Differentiate between basic research and applied research.

MESO (conventions and MOUs):

- Orientate towards local industries (institutional shifts + network building)
- Clear mandate to create spin-offs, graduate incubated SMEs, register IPRs, complete technical consultancies, and publicise R&D findings.

MICRO (organizational modus operandi):

- Introduce RBM and compatible HRM schemes.
- Emphasis on reverse engineering as default activity