

STIPRO Research Agenda: Natural Resources & Structural Transformation, and Energy & Development

By

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Introduction

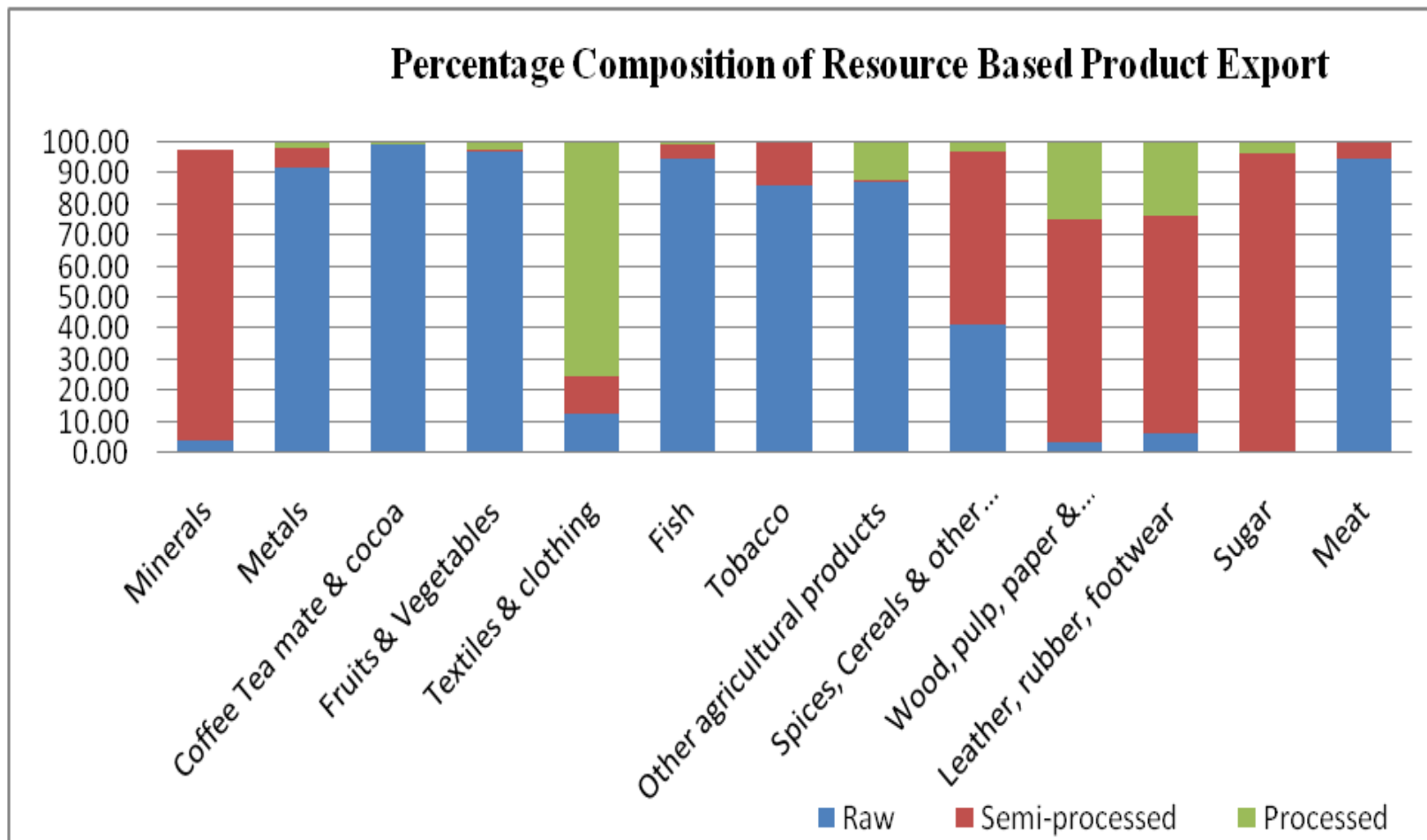
- Natural resources & Structural transformation
 - Situation of Tanzania extractive industries: Mining, Gas & Oil
 - What are the broad research questions for the extractive industries?
- Energy & Development
 - Energy situation in Tanzania & Importance of alternative sources of energy for rural industries
 - What are the broad research questions for energy & development?

Natural Resources - Mining , Gas and Oil

Tanzania position on natural resources

- Tanzania has potential natural resources providing with comparative advantage: minerals, land, livestock and forestry, marine resources
- Of the 20 most dynamic products in the global markets between 2000 and 2010, 11 have been resource-based manufactures (URT and UNIDO, 2012)
- The share of resource based manufactures in total exports increased rapidly between 2000 & 2010:
 - The annual growth rate of 31% where Exports increased from US\$ 90 million to US\$ 1.3 billion
 - Metals dominate: 73% of resource based exports
- Tanzania needs to capitalise on the performance trend where processing is important in order to benefit from these resources.
- Currently resources based products are mostly exported in raw or semi-processed form (URT & UNIDO, 2012)

Mining sector ...



Mining sector ...

- Tanzania has a conducive and prospective geological environment with abundant mineral potential that occur in different areas
- The mining sector comprises large, medium and small scale miners; & FDI has been instrumental
- However, the mining sector is still an untapped potential: the share to the GDP is below target (about 1.5% while FYDP targets 3.7%)
- Several explanations:
- (1) Limited linkages with other sectors of the economy that could impact on input demand, output processing and employment generation (URT & UNIDO, 2012).

Mining sector...

- (2) No significant value addition in the country :
- E.g. Manufacturing is important in the process of VA (cutting, polishing, jewellery & metal smelting & refinery).
- However, challenged by lack of necessary skills, capital access & adequate infrastructure
- Establishing Value addition locally brings about employment generation, local skills improvement, income increase (The Mineral Policy 2009)

Mining sector...

- (3) The contribution of FDI towards building local technological capabilities is lacking. There is poor linkage between foreign & local firms (small scale miners) as a result of too large technological distance & limited value addition conducted in the country (Diyamett et al., 2011)
- Poor performance tells that Tanzania will miss most valuable contributions from the sector in the long-run growth & sustainable development
- Recently, Tanzania has lost its 3rd position to 4th largest (gold) producer in Africa, after Ghana, South Africa & Mali (DailyNews 18 June 2014
<http://www.dailynews.co.tz/index.php/biz/32685-mining-firms-for-reconciliatory-talks>)

Gas and Oil

- Like the mining, the natural gas industry has attracted involvement of both local and foreign investments (URT, 2003) as a result of continuing discoveries of official gas reserves in the country after the commercial production on Songo Songo island & in Mnazi Bay
- Recent discoveries of natural gas amount at about 46 trillion cubic feet (TCF) made from both on- and off-shore basins being the opportunity with promising prospects for the sector to contribute immensely to the growth of the national economy
- Use of Gas: power generation, feedstock of several downstream industries such as petro-chemical, fertilizers plants (Racha, 1998)

Gas and Oil...

- The level of investment in the gas industry involves adequate capacities for effective exploration, production, processing, transportation & marketing.
- Currently, however, local capacities present deficiencies in a number of factors that include knowledge, skills & technology availability & application.
- FDI contribute hugely in employment, foreign exchange & technology thus being significant catalyst for economic development.
- Technology from FDI is mostly valuable contribution toward building local technological capabilities suitable in the long-run for economic growth & sustainable development (Diyamett et al. 2011)

Broad research questions

- In order to benefit from the natural resources, the following broad research questions need to be raised:
 - What are the knowledge and physical infrastructure required for the efficient exploitation and value addition of the natural resources?
 - What are the knowledge gaps and conditions for building absorptive capacities for Tanzania to take advantage of its abundant natural resources in social and economic development?
 - What role should be played by the FDI to deepen local technological capabilities in the areas?

Energy and Development

Situation of Energy in Tanzania

- Energy is crucial for social and economic development
- Therefore energy sources should be available, reliable and accessible, either for domestic or commercial use
- Tanzania accounts for various energy sources: biomass, solar radiation, wind, flowing rivers, geothermal and coal.
- Consumption for domestic use: Rural areas: ~85% of energy, of which firewood constitute 90% ; & Urban areas: ~15% of energy, of which Charcoal is mostly used
 - The proportion of household using charcoal is increasing and has greatly contributed to fast dwindling of biomass reserves (forest) (Magesa, 2008), generally following unsustainable wood harvest

Situation of Energy ...

- Limited share of sources of energy for commercial services:
- 10% of energy & largely in towns with extremely small share for the rural firms (URT, 2011)
- What is the impact of such a situation?
 - To a large extent this has been found to be responsible for the **low productivity of rural enterprises or total absence of such ventures all together.**
 - An evidence from a study by STIPRO on the diffusion of modern edible oil processing technologies in rural areas reveals that the diffusion of such technologies has largely been hampered by inadequate supply of electricity for the villages that have not been connected to the national grid (Mutambala and Nkaka, 2012).

Situation of Energy ...

- While large distribution of energy sources, especially from the national grid, to rural areas is unforeseeable in the near future, there exist opportunities for alternative sources of energy such as: mini-hydro, wind, coal, solar & geothermal
- The key concern is on their availability & production quantity and quality with reference to need

Situation of Energy ...

- Importance of alternative sources of energy, particularly in rural areas lies on:
 - increasing supply & also stimulating sustainability of biodiversity conservation
 - reversing the loss of environmental resources (MDG 7 on ensuring environmental sustainability)
 - prosperity of species in their natural habitats
 - prevention of polluting smoke that affects health
 - contribution to industrialization

Situation of Energy ...

- In the Five Year Development Plan, Tanzania targets to increase energy supply for domestic (both for household and commercial) use and for export (Vision 2025)
- In order to meet demand of energy for household & commercial use, there is need to increase capacity for production, adaptation and supply of energy - both from grid and non-grid sources.

Broad research questions

- STIPRO research agenda will focus on the non-grid, especially providing evidences on the following broad questions:
 - What are the knowledge and skill gaps in the production and supply of modern energy sources in the rural areas for both domestic & commercial use?
 - Are there proven energy technologies that are both environmentally sustainable and conducive for commercial exploitation? What are the requirements for their transfer and absorption?
 - How can the process of making energy available to the needy best be governed? What is the role of the government, development partners, private sector & knowledge institution?

Thank you for your attention