



## DFC / TIRDO REPORT

### COMMERCIALIZATION OF RESEARCH OUTPUT IN TANZANIA

With the purpose of evaluating the potential commercialization of research output in Tanzania, Danida Fellowship Centre (DFC) in collaboration with Tanzania Industrial Research and Development Organization (TIRDO) initiated a survey, which main objective was to assess Danida (Danish Ministry of Foreign Affairs) funded research projects' contribution of research to technology and innovation development in Tanzania. Also, a roadmap for the development of strategies for the commercialization of research results/outputs in Tanzania is included. The roadmap may assist the individual groups of researchers in exploiting the potential for commercial use of the results and knowledge created through their projects.

The present survey also identified the gap between higher learning institutions and industry. Only 15% of the 19 reviewed projects had linkage to industry and geared towards addressing specific industrial problems. In the discussion during the annual review meeting in Dar es Salaam in May 2016, it was also revealed that some academics were of the opinion that taking research to industry is not the role of academics. This notion needs to be changed, as currently the universities are changing from second to third and fourth generation universities geared towards solving industrial and developmental problems. This was among the reasons that hindered commercialization of the innovations/technologies. It was observed in one of the involved projects that, in order to draw interest of the private sector to a particular entity say product, the private sector needs to be involved from the beginning of the project. This is also true with the industry. The industry would only have interest in research if the research responds to their existing problems.

Below is listed the key observations and the main recommendations from the survey, as well as the roadmap for commercializing research findings, technologies, and innovations.

#### **Key Observations from the report**

- a. Danida's support to development research has made immense contribution to research skills development and capacity building in Tanzania and other developing countries.
- b. Danida has greatly facilitated interaction and networking between researchers from the North and South.
- c. Although Danida has mostly supported research capacity building, some innovations have been developed from the projects with the potential of being commercialized.
- d. Some research projects have the potential to come up with innovations/technologies but lack resources to develop those technologies or innovations.
- e. Plan of technology transfer not embedded in the project design.
- f. Lack of continuation plan for the projects.

- g. There is existing gap between industries and higher learning institutions. There is a need of an industrial intermediary like TIRDO to bridge this gap.
- h. Lack of plan for use and maintenance of facilities and equipment after completion of the projects.
- i. Institutions hosting research projects lack plans for reviewing of research outputs after completion of the projects.
- j. Research focus has been mainly on capacity building through training and knowledge generation.
- k. Research projects were more inclined into training and knowledge generation without plan for earmarking, scaling up and transfer of technologies/innovations to market. Plans for follow up of the results generated during PhDs studies to identify potential innovations/technologies which could be further developed and commercialized were missing in most of the reviewed projects.
- l. There is lack of institutional ownership of research outputs.
- m. There are some research projects with similar activities necessitating sharing of resources.

### **Recommendations**

- i. Further research is required for validation of the innovations/technologies/products developed through the Danida supported projects in order to be commercialized.
- ii. There is a need to examine further how findings/results with technology/innovation potential from the Danida supported research projects can contribute to the economy of the country.
- iii. The identification of products/technologies developed through research in a sample of just 19 projects calls for wider search of unearthed treasure of potential technologies or innovations developed in the past Danida supported research projects.
- iv. The Government of Tanzania should take a lead and develop further the research findings that are potential for developing technologies or contributing towards alleviating development problems.
- v. The private sector and other development partners to join forces with the Research Institutions and Universities in converting the research results into commercial products/technologies.
- vi. Involvement of stakeholders (communities, industries, policy makers) from the early stages of the project to facilitate ownership and support.
- vii. Research projects themes to focus on alleviating industrial/societal challenges in the country which would make commercialization/adoption easy. The Government should use her intellectual resources to set the research agenda for the country. Furthermore, the Government should allocate adequate resources for R&D and reduce the donor dependence syndrome.
- viii. There should be a mechanism to compile and translate research recommendations into decision making and problem solving. Academia and research institutions are urged to establish well equipped innovation/technology transfer offices or departments.
- ix. For research projects that have a public interest, the project should take into consideration the use of media (TV, Radio, Newspapers, and Social media) as a platform for dissemination.

- x. Universities and research institutions to set strategic plans for commercialization of research results for wider coverage.
- xi. Universities and other research institutions to develop a succession plan for implementations of research projects.

### **Roadmap for commercializing research findings, technologies, and innovations**

The main objective of developing the roadmap towards commercializing the research findings is to establish a strategy of identifying, validating, and utilizing innovations and technologies developed through research projects to pave way to commercialization

Specifically the roadmap is also intended to:

- i. Benchmark and archive past and ongoing Danida supported research projects with potential innovations for commercialization,
- ii. Establish a system of Technology Transfer and Commercialization (TTC),
- iii. Increase R&D institutes' capacities,
- iv. Establish government and institutional policies for innovation, technology transfer, and patenting,
- v. Create market for research outputs,
- vi. Establish resources for innovation and technology transfer.

Basically the roadmap has three pillars which are near term, medium, and long terms, respectively;

- i. Benchmarking and Archiving,
- ii. Commercialize High Impact Quick Win Innovations,
- iii. Build a Sustainable System of Innovation.

### **Benchmarking and Archiving of research output from the previous research projects**

It is proposed in this Roadmap that, during the period from one to two years, benchmarking and archiving of research output be performed. TIRDO has the mandate of registering/documenting findings of applied research done in Tanzania and to promote its practical application (TIRDO Act 1979). This survey on Danida supported research projects revealed that there are indeed high chances of identifying and utilizing the innovations and technologies developed from those research activities, it is proposed that TIRDO, to build capacity (through Government and other stakeholders support), performs its mandate to identify potential innovations and technologies emanated from the research conducted by or in various institutions in Tanzania and formulate innovation, technology and commercialization mechanism.

It is also proposed that the academia and other research institution establish and operationalizes policies and innovation/technology transfer and commercialization policy. This should include a follow-up mechanism to review PhD and MSc theses to bring up potential innovation/technologies created in the course of students' programs.

The Government is urged to provide sufficient financial support to R&D institutions to build sound capacity for both conducting research as well as capacity for technology transfer and commercialization. The Government is further urged to establish a unified thinking tank for setting research agenda.

Research stakeholders, including R&Ds, academic institutions, Government, development partners (such as Danida and others), are urged to consider technology transfer and commercialization as important component in research. Furthermore, academia and R&Ds are to take deliberate effort whenever appropriate to link with industry or prospective end user of their research findings. That means more multidisciplinary, participation and involvement of stakeholders in research design and execution.

### **Sustainable System of Innovation**

The last stage in this roadmap will be building a sustainable system of innovation for the Country. In this stage the Tanzania Government is recommended to assist in building the capacity for creating a sustainable system of innovation in Tanzania. During this period, the R&D institutions and universities will be developing skills of their researchers, upgrading the R&D infrastructures while developing innovations and technologies for commercialization. In this process the responsibility of the stakeholders and the Government should be to create market for these innovations and also utilize the innovations within the Country for social and economic development.

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Danida Fellowship Centre  
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Tanzania Industrial Research and Development Organization (TIRDO)  
P. O. BOX 23235, Dar es Salaam, Tanzania.  
<http://www.tirido.org>

Danida Fellowship Centre  
Hostrupsvej 22, DK - 1950 Frederiksberg C, Denmark.  
<http://dfcentre.com/>