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IDRC project Number: 107911-001

SCIENCE TECHNOLOGY AND INNOVATION POLICY RESEARCH
ORGANISATION (STIPRO)

Tanzania

Final Technical Report

April 2019

1. Executive summary

Provide an informative summary of the key results, and significant or important outcomes arising from support from the Think Tank Initiative (TTI), with a focus on the enhancement of organizational capacities.

Before TTI, the Science Technology and Innovation Policy Research Organisation (STIPRO), by then ATPS-Tanzania, did not have full time researchers and was operating on ad-hoc basis, relying on one-off projects that were rare and not systematically linked to policy, and therefore achieved very little. However, through involvement with TTI, especially its core grant modalities, STIPRO was able to employ full time researchers, largely focusing on young people who just graduated from Masters, and continued building their research capacity while working for STIPRO. The capacity development started at the thesis level – in collaboration with their University supervisors. With in-house researchers, STIPRO was also able to draw a comprehensive and proactive research agenda that was systematically derived from the national development plans. Program for research policy linkage was also put in place. As a result over the past nine years or so, STIPRO was able to carry out over 20 research projects, and linked these to policy. In the process STIPRO research capacity and research policy linkage has been further strengthened and a number of science, technology and innovation (STI) policies influenced. Consequently STIPRO is now well known, not only in Tanzania, but regionally and globally.

This report provides details of STIPRO achievements in a nutshell under the three pillars of the TTI programme objectives – research quality, organisational performance and policy engagement.

2. Objectives and Progress towards Milestones

Briefly describe achievement and progress towards the overall organizational objectives related to the three pillars of research quality, organizational performance, and policy engagement for the reporting period (TTI Phase 2). Provide any evidence that milestones were achieved, and refer to evidence in previous reports and/or attached annexes (as needed). If applicable, explain why any milestones were not achieved.

(A)   Research Quality

Through the TTI Phase II support, STIPRO was able to implement activities that aimed at further improving quality and quantity of human resource in STI policy research. These include: organisation of research methodology workshops, supported researchers' participation in short courses, supported STIPRO Fellows to mentor STIPRO researchers in proposal writing, and supported one researcher to pursue a PhD programme. Other capacity building activities undertaken during this period include: hosting of internal seminars where researchers were assigned readings on relevant topics on STI for presentation and discussions; the major objective was to expose young researchers to the methodological issues in the field of innovation and development. These seminars – to a large extent – became sources of research projects where several potential research areas were identified. As the capacity of researchers got strengthened,

STIPRO embarked on the organization of internal research competition (proposal writing) where one best research proposal was awarded a small prize and funds to carry out the project. STIPRO was able to do this once in a year for 3 years during the implementation of TTI Phase II. These competitions stimulated researchers towards quality work to the extent that and some of them were able to win competitive research projects outside the TTI finances. Such projects include "Diffusion of Innovation in Low Income Countries (DILIC)", conducted in collaboration with STEPRI of Ghana and Oxford University, in the UK and Integrated aquaculture based on sustainable water recirculation system for the Lake Victoria basin (VicInAqua), which is a partnership research project between 10 institutions, with 7 in Europe and 3 in East Africa. The project was funded by the European Union's Horizon 2020 research and innovation programme under the Grant agreement No. 689427. Another project – latest is a project titled: "Global Value Chain, Innovation and Youth Employment in Horticulture sector of Tanzania", by the International Institute for tropical agriculture (IITA).

In addition to winning research projects, researchers were able to submit competitive papers to innovation related conferences such AfricaLICS and GLOBELICS, where they were selected as paper presenters. These papers include "A Comparative Analysis of the Metal Entrepreneurs attending Vocational Training against those attending Apprenticeship" and "Technological learning and competence building in the micro, small and medium enterprises: A case of the wood furniture industry". The two papers were selected for presentation at the 2nd Africalics International Conference, hosted by the University of Rwanda, in Kigali, Rwanda, in 2015. Additional three papers were selected for presentation at the 2018 GLOBELICS Conference that took place in Accra, Ghana. The three papers are; "Finance and Innovation: The mismatch in the micro and small manufacturing sector", "Strengthening Agriculture Innovation System Using Global Value Chain: Does it stimulate learning and upgrading among producers? Evidence from Tanzania" and the third is "Localizing technologies for communities: Social enterprises in East Africa"

One more paper on "Foreign Direct Investment in Africa: Opportunities and Challenges" was accepted for presentation at the 2nd Turkish - African NGOs and Thinking Forum under the Global Civil Diplomatic Summit in Istanbul, Turkey.

(B)   Organisational Performance

For the reporting period, STIPRO managed to conduct a number of activities relevant in increasing the performance of the organisation. These activities are as follows:

- STIPRO managed to secure a new and cheaper office as well as maintain facilities, which include purchase of a server, office and board tables, and desktop computers.
- STIPRO paid salaries and incentives to administrative cadre to strengthen the administrative and financial management. – STIPRO was able to retain its staff as well as employ an Accountant with a CPA (T) qualification;
- It strengthened institutional management through improved governance systems and Board responsibilities. Board meetings were held and board members played an active role in following up on the performance of the organization, which

happened after Board's self evaluation. The board also played an important part in linking the organization with other stakeholders for potential future collaborations. Moreover, STIPRO facilitated both the organization's Board and staff management to pursue a more proactive fundraising drive, an approach that aimed at supporting resource diversification efforts for long-term sustainability. Based on this target, all Staff members attended a Resource Mobilization Workshop; and later, a fundraising committee was formed and tasked with the responsibility of identifying more potential donors as well as additional sources of revenue in order to raise enough financial resources. It was stressed that to ensure sustainability of the organization, a good part of the resources must be mobilized from the local sources, especially from the government and the private sector. Board member from the private sector promised to help in mobilizing resources from the private sector, especially looking at the consultancies by the Confederation of the Tanzania Industries (CTI)

- In an effort to strengthen the organizational performance, STIPRO participated in the Business Models for Think Tanks Sustainability in Africa

(C)   Policy Engagement

Policy engagement activities were basically focused at linking the research undertaken with the policy process. Such activities included: organization of annual planning and dissemination research workshops, roundtable discussions and seminars as part of policy dialogue on the role of innovation in development. Each year, the roundtables and dissemination workshops had different themes and were attended by participants from academia, policy making institutions, private sector, think tanks and the media.

Other activities included writing of the policy briefs which were widely disseminated to important stakeholders. Some of the more recent policy briefs written and disseminated include "Simplifying the Implementation of the Sustainable Development Goals (SDGs) in Poor Countries: The Centrality of Goal 8 and 9"; "Local content development and technological capability building in the oil and gas sector: evidence from Latin America and lessons for Tanzania"; "Enhancing evidence based policies for social and economic development through research"; and "Education budget analysis 2018/19"

To be able to achieve wider dissemination of its activities, STIPRO has maintained a good working relationship with the Tanzania Science and Technology Journalist Association (TASJA). TASJA has been helpful by assisting STIPRO organize members of the press during its meetings and in securing TV appearance and publishing of feature articles in newspapers. STIPRO occasionally made TV appearances in an effort to disseminate STIPRO research outputs and engage with the public and policy makers on the importance of STI in development. In addition to all the above achievements, STIPRO website was from time to time updated and kept relevant for the audience.

Some of the above policy linkage outcomes are as follows:

a) Review of the national systems of innovation that led to the crafting of the new STI policy. STIPRO prompted the review of the national innovation systems through its research policy linkage activities, and also became part of the task force that carried out the review.

- Participation in the task force in turn accorded STIPRO the opportunity to use knowledge generated through research in the review process.

- STIPRO also participated in drafting of the new STI policy arising from the review of the national innovation system.

b) Together with UNIDO and Ministry of Industry, STIPRO participated in the production of the Tanzania Industrial Competitiveness Reports, where some of the STIPRO research outputs were used.

c) Some examples of the specific research projects and outcomes are as follows:

➢ **Closing the loop project** that studied the whole research circle from design, implementation and disseminations in major research institutions in Tanzania, including universities found a lot of things that could be put right to have more research put into use, but one very important is the fact that, of all the expenditures on the research circle, very little resources are normally put on the dissemination aspect. Consequently, as a result of this project the National Commission for Science and Technology (COSTECH) prioritized problems around dissemination as one of the criteria in their calls for research projects.

➢ **Institutional Technology Transfer Policies and Strategies**

This project analyzed the impact of institutional technology transfer policies and strategies on innovation in Tanzania and revealed that challenges around research commercialization are traced to the weak or non existence institutions level technology transfer policies. The project had a direct impact as it prompted some of the R&D organizations to rethink their technology transfer strategies, e.g. Tanzania Automotive Technology Center (TATC).

➢ **Working of the agricultural systems of innovation,** which, by using selected case studies, mapped the agricultural innovation system. The project realized that, as against the traditional research dissemination which is focused on putting farmers in contact with research organizations through agricultural extension, the farmers actually learn more about new technologies from their buyers (processors, traders and supermarkets), rather than from the extension service. Many buyers of farmers' produce know exactly the quality of the products they want, but some are not aware of the technologies and knowledge behind the required quality, which imply that the connection between the users of agricultural produce and the R&D would help them better advice the farmers.

STIPRO is currently promoting this evidence to inform the structure of the extension service in Tanzania.

> **Foreign Direct Investment (FDI) and Local Technological Capabilities in least developed countries: the case of Tanzania.**

This is one of the very first research projects that were carried out through core grant from TTI. FDI was major issue on debate then, and still is. Although we cannot mention any specific policy change as a result of these projects, but statistics generated by the project were very useful in other policy initiatives, e.g. during the review of the national systems of science, technology and innovation, to which STIPRO was one of the participants. The project also tremendously increased our visibility internationally: working papers and publications in journals. Currently STIPRO is using the statistics generated to argue for the strategy on local content development in sectors with substantial participation of foreign investment.

> **"Opportunities for learning and upgrading within Agricultural Global Value Chain (GVC): Case from Avocado Industry in Tanzania".**

This project aimed at finding out whether there is any learning and upgrading of products and processes that has taken place as a result of farmers participating in a global agricultural value chain. The findings of the project were presented at STIPRO's annual research dissemination workshop where different stakeholders were invited including a representative from the Ministry of Agriculture, Livestock and Fisheries. The Ministry learned a lot on skills transfer that were quite relevant and useful in engaging in the GVC, and called upon the representative of the avocado farmers to go to the Ministry Headquarters for further discussions on how to maximize the skills that they have acquired through participating in GVC. The Ministry insisted that such interventions were very much useful for replication for similar agricultural produce such as mangoes. STIPRO was acknowledged by the Ministry for carrying out such a useful research project.

> **"Diffusion of innovation in low income countries (DILIC)"**

This project carried out in collaboration with Oxford University and STEPRI of Ghana focused at studying diffusion of innovation in poor countries. The findings from the project led to the organization of the round table on "Innovation for sustainable industrial development in Tanzania: do we have adequate human capital?" The theme was coined as results of the major complain of most firms: it appeared that there is a mismatch between the graduates that are being produced by our universities and colleges on the one hand, and requirement of the private sector, on the other hand.

During the roundtable discussions, a representative from the Ministry of Education reported that, the outcome from the discussions will feed into the skills development program that is expected to be implemented for the next five years development plan.

3. Synthesis of results

- ♣ Changes in behaviour, capacities, actions, or relationships within your think tank, its researchers or organizational staff, relation to networks or other research institutions?
- ♣ Changes in behaviour, capacities, actions, or relationships of research users or those affected by the research process or findings?
- ♣ Policy influence (e.g., expanded policy engagement capacities of researchers; strengthened communications function; broadening policy horizons of policymakers; and specific policy influence stories, including any development outcome of the influence)?"
- ♣ Lessons learned about approaches to elements for organizational strengthening, building capacity, or influencing policy or practice? What problems arose, and what changes in orientation occurred? Were certain aspects of project design particularly important to the degree of success of the project?
- ♣ What contributed to these results and what lessons did you draw from the experience?
- ♣ What was the role of other organizations or donors in this project? How was this relationship managed?

Over the TTI Phase 2 support, STIPRO's outcomes have influenced a number of changes that have taken place within the organisation itself, relation with other research organizations, and the Tanzania policy environment, more generally. The changes are briefly discussed below:

i)   Changes within the organization

First of all, as already explained in the section on research quality, STIPRO researchers have been very much strengthened in terms of research expertise. It should be remembered that most joined the organization after their Masters graduation, with very little experience in research on innovation and development. However, to-date they have gained expertise to the extent that they have won research projects and attended competitive Conferences and published in refereed journals. Additionally, they have gained experience in research policy linkages such as writing of policy briefs, writing of news paper articles and TV appearances. In the early days these activities were largely only being done by the Executive Director, but right now, almost all the researchers have contributed to these.

Additionally, through learning by doing and learning from other organizations, research projects development have now become a team work, rather than individuals struggling on their own. Our financial manager has also become part of the research team, playing a very important role of correct budgeting. This is because, over time we realised that, researchers, when preparing budget for their projects, normally overlook the core costs of the organization, though are not directly research expenditure, but very important in smooth running of the projects. The financial manager is there to correct such oversight. Fortunately, our financial manager is also an individual very much interested in research.

ii) **Changes in our relationships with other research institutions and research networks.**

In the course of its research activities, STIPRO has very much strengthened its relationships with other research institutions – universities, public research institutions and think tanks. Relationships with the universities – both inside and outside the country are instructive here. For instance, before the TTI support, STIPRO had very little relationship with the universities, if any. However, under the TTI support STIPRO has strengthened its relationship with the universities, to the extent of signing the Memorandum of Understanding (MoU) of working together, e.g. with the University of Dar es Salaam. STIPRO also has now Fellows from Universities including those outside the country. These relationships were started already during the Phase I of TTI but got strengthened during Phase II. For instance, STIPRO is organizing the AfricaLICS Conference 2019 in collaboration with COSTECH and the University of Dar es Salaam.

STIPRO is increasingly becoming an organisation of choice for hosting international STI PhD students carrying out their research work in Tanzania: so far, we have hosted two students and one of them has joined STIPRO as one of her full time researchers.

STIPRO has been invited by the Secretary General of the Association of African Universities (AAU) to join memberships of the Higher Education Cluster of Continental Education Strategy for Africa 2016-2025 (CESA 16-25).

iii) **Relationships between STIPRO and research users and those affected by our research outcomes.**

This is explained in the following paragraphs:

a) *STIPRO credibility has radically improved*

- STIPRO's position has strengthened to the point of being more recognised nationally and internationally. The organisation keeps gaining recognition from the government of Tanzania as an important stakeholder in the national system of innovation. The government has always called upon STIPRO in case of discussion of pertinent STI issues; and STIPRO is currently working closely with the National Commission for Science and Technology (COSTECH) on various STI issues.

- STIPRO influenced the Tanzania Private Sector Foundation (TPSF) to put in place a committee on innovation and competitiveness. This was the result of the credibility STIPRO gained in the country including from the private sector.

- STIPRO gained recognition from the United Nations: The Executive Director of STIPRO has been appointed by the UN Secretary General as one of the 12 members of the governing council of the newly created UN Organ called "The Technology Bank for the Least Developed Countries (LDCs)". The creation of the technology bank marks one of

the achievements of the targets of the Sustainable Development Goals (SDGs), goal 17. The appointment has further increased the recognition of the organisation by the Tanzanian Ministry of Foreign Affairs. We entered into discussions with the ministry for possible delivery of seminars on the role, opportunities and activities related to the "UN Technology Bank".

b) STIPRO has helped in building capacity of various actors in STI – both at the national and regional levels.

- STIPRO has contributed in the popularisation of the importance of teaching courses on innovation and development, not only at the Tanzanian, universities, but also – through AfricaLICS, which is the creation of STIPRO – to a number of universities in Africa. The University of Dar es Salaam for instance is towards the final stages of initiating such courses at all levels of academic degrees.

- In an attempt to fast track correct design and implementation of STI policies, STIPRO organizes seminars for the Tanzania Members of the Parliament (MPs) in charge of STI issues. The MPs make use of the knowledge gained during parliamentary sessions to deliberate on various STI issues brought in by the government. The knowledge has been found relevant, especially at this time of the implementation of national industrialization agenda.

- STIPRO contributed the importance of bringing STI issues into the Sustainable Development Goals (SDGs). As a member of the Southern Voice initiative (SV), STIPRO's contribution was made through debates, paper presentation and publication, and seminars. We are glad to see the SDGs having goals 8,9, and 17 that contain elements of STI

b) *Lessons learnt in the process of organizational strengthening*

In the process of strengthening organizational performance, STIPRO learnt various lessons, but two are most important:

- We did not know how difficult it is to find money as a think tank – not just any money, but money that can help the organization achieve its vision and mission. It is still a major challenge that we are addressing in different ways. For instance, STIPRO had an expectation of expanding of its in-house researchers to a critical mass identified as 15 full time researchers, but we have stopped at only 6 researchers, because of financial challenges. The gap is being filled by the use of part time researchers from the universities. Now that universities have started teaching courses on innovation and development, finding part time researchers is going to be much easier in the future.

- Influencing policy is not an easy thing – there is no well known formula; it is the area that we are still learning, but there is preliminary evidence that, one way would be to complement action research with policy research.

4. Problems and Challenges

STIPRO faced different challenges during the TTI Phase 2 reporting period as follows

i. Over the years toward the end of TTI support STIPRO gradually faced financial inadequacy. Financial commitment from TTI remained the same or decreasing while the organisation expanded. To deal with this challenge, STIPRO decided to mobilize financial resources in order to address such a challenge: response to the call for proposals became one of the organisation priorities. This approach, however, faced also challenges. First the fact that STIPRO is a young organisation while calls required senior and experienced researchers, became a major challenge in mobilizing resources this way; and second, calls targeting STI policy are very few. However, the situation is now changing because of the internal expertise the organisation was able to build. In addition, potential for STI policy research is expanding given the fact that STI is now part of the Sustainable Development Goals (SDGs): Goals 8, 9 and 17 are predominantly on STI. STIPRO can strategically use some of the SDGs resources to achieve its vision and mission.

ii. Another challenge lies on the understanding of the concept STI policy research. STI is still a new discipline or area of policy research, especially in Africa. Many people, including those from the University, lack a deep understanding of it. When one puts together concepts such as "science, technology and innovation", what quickly comes in mind of many, is engineering, and natural science disciplines. So, when one talks of scarcity of expertise for research in the area, people do not understand. However, through interactions during seminars, research workshops, policy roundtables, important stakeholders in Tanzania are increasingly differentiating research in the area of STI policy from research in natural and engineering sciences. That explains why STIPRO will keep organising such events in order to help stakeholders including policy makers slowly understand the crucial role of this kind of research in the STI policy making process.

iii. While in rhetoric demand for STI in development has increased, in action very little is happening, resulting in low demand for knowledge in this area from the government. STIPRO is continuously addressing this challenge through advocacy.

iv. STIPRO has managed to retain most of its employees. However, during the reporting period, some researchers have left the organisation for greener pastures: our success also became our challenge - as STIPRO gained credibility, especially on issues related to innovation, some organization also working on similar areas,

and with competitive salaries, have attracted some of our employees. STIPRO response to this is to strengthen non financial incentives, such as flexible working hours and provision of opportunities to travel outside the country for networking, which is very rare for most of the organizations.

5. Administrative Reflections and Recommendations

This section is about administrative recommendations for IDRC. What would you do differently as a result of this experience, and what general and useful lessons can be derived for improving future projects?

What recommendations would you make to IDRC with respect to the administration of the project, related to the scope, duration, or budget? Candid observations about the overall experience with the project are encouraged. However, any sensitive or confidential information should be addressed through a direct exchange with the program officer and documented and filed separately.

Let us begin this section by very sincerely thanking IDRC and the whole of the TTI team for according STIPRO an opportunity to do all what we did and achieved as explained above, because – unlike most of the TTI grantees – STIPRO would not have gained the popularity that we have today without the TTI. All of us at STIPRO would not have been what we are today, if it were not for the TTI. But we also want to say, through STIPRO, TTI have achieved something that can never be reversed – capacity in innovation and development research in Africa: given that the universities have started offering courses in this area, we believe that the expertise on innovation and development research can only increase, leading to ever increasing evidence for making decisions in science, technology and innovation in Africa.

The above notwithstanding however, if IDRC had slightly different administrative approach to the project, especially budget and duration, STIPRO and similar TTI think tanks, could have benefited even more. Keeping the amount of resources available to the TTI, I believe differentiated amount of funding and duration to different organizations – depending on desperate need - would have very much helped TTI to continue supporting nascent organizations such as STIPRO to put a strong foundation before they are left alone. Unlike STIPRO, and similar few organizations, most of the TTI grantee had prior support of donors for years before TTI.