



Institutional
Commercialization
Support
Phase II

Strengthening and Streamlining
Commercialization Process in
Universities and Research
Institutions in Kenya

Final Report

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Acronyms

ACTS	African Centre for Technology Studies
ATIP	Africa Technology and Innovation Partnership
EOI	Expression of Interest
FCDO	Foreign Commonwealth and Development Office
IP	Intellectual Property
IPR	Intellectual Property Rights
IS	Institutional Support
IWG	Institutional working group
JOOUST	Jaramogi Oginga Odinga University of Science and Technology
KALRO	Kenya Agricultural Livestock Research Organization
KeNIA	Kenya National Innovation Agency
KIRDI	Kenya Industrial Research Development Institute
KIW	Kenya Innovation Week
ME	Monitoring & Evaluation
MEL	Monitoring Evaluation and Learning
NIS	National Innovation System
R&D	Research and Development
RMDEA	Development Enterprise Advancement on commercialization
TTO	Technology Transfer Office

Executive Summary

This report focuses on strengthening and streamlining research-to-commercialization efforts in Kenyan research institutions and universities. It emphasizes the importance of linking knowledge and innovations to markets for the country's growth and socio-economic development. Kenyan research institutions and universities play a crucial role in driving innovation, generating inventions, launching startups, and producing research outputs with the aim of making a tangible impact on society. To support research commercialization, the Kenya National Innovation Agency with the support from the UKAid's Africa Technology and Innovation Partnership Program, the African Center for Technology Studies, launched the institutional support phase II program to strengthen and streamline systems within selected institutions to facilitate technology translation and successful research commercialization. Five institutions participated in Institutional Support Phase II project and developed customized work plans, reviewing their Technology Transfer Offices including the development of their respective institutions' commercialization master plans. The journey for the commercialization master plans development begun with a situational analysis, revealing how the institutions were equipped with a capable human resource of PhD and Master's graduates, but have struggled to effectively commercialize their research results. Numerous publications and dissertations have been produced, yet the translation of these efforts into tangible outcomes has been limited. The situational analysis further revealed low rate of knowledge into patentable intellectual assets conversion and a concerning prevalence of knowledge leakage. This therefore emphasized the need for a comprehensive shift in the institutional approach to commercialization. Recognizing the potential that lies within the institutions, the five participating institutions acknowledged the need to reframe existing policies and frameworks to prioritize research to commercialization. Including the development of a supportive institutional framework. All the institutions successfully developed an institutional commercialization master plan that facilitated the establishment of key structures, including dedicated offices for technology transfer and innovation management. Multiple avenues for commercialization were proposed in the institution's commercialization master plans, such as establishment of start-ups, publishing, joint ventures, licensing, and development of spin-off companies, tailored to each institution's unique gaps and realities. A number of lessons and recommendations emerged during the implementation of IS Phase II project which we highlight as follows;

A dedicated cohort of commercialization specialists, the Institutional Working Group members was crucial in driving change at the institutional level. Additionally, the integration of various aspects of the commercialization master plans into the institution's performance contracts, workplans, and strategic plans will potentially ensure that they are implemented. A robust monitoring and evaluation process was also deemed crucial for tracking progress towards research to commercialization.

Looking ahead, this report underscores the significance of strengthening research-to-commercialization efforts in Kenyan institutions. To achieve this, a number of mechanisms are proposed. **Firstly**, the **creation of an innovation database to record research institutions and universities' innovations** is needed. This will enable the tracking of commercialized products as well as identify those that could be technologically ready for commercialization. **Secondly**, there is a **need for the government of Kenya to play a vital role in mainstreaming institutional support**, leveraging positive outcomes observed during the roll-out of interventions in individual institutions in IS phase II. **Thirdly** based on the lessons learned, there is a need to **develop a network of IS to commercialization cohorts** for commitment to the conversation of making an important step towards sustained growth and coordination of commercialization efforts and other mechanisms such as **establishment of Kenya's technology transfer association to professionalize the sector**, network and share lessons. **Lastly, mobilization of resources through approaches such as the establishment of an innovation endowment fund where 30% of research fund may be dedicated to commercialization needs**. By adopting these proposals, Kenya can strengthen research commercialization endeavors, fostering socio-economic growth, and cultivating a thriving innovation landscape.

1.0 Introduction

1.1 Background

It is increasingly recognized that linking knowledge and innovations to markets is essential for a country's growth and socio-economic development. Commercialization of products or services serves as a compelling indicator that research has made a meaningful difference. In the 2023 Global Innovation Index, Kenya ranked highest in Knowledge and technology outputs (81st), and 91st in innovation outputs¹, a position lower than 2022 (See Table 1) suggesting things haven't shifted in innovation outputs since then.

Table 1: Ranking of Kenya in the Global Innovation Index 2020-2023

Year	GII	Innovation inputs	Innovation outputs
2020	86	92	78
2021	85	89	76
2022	88	103	79
2023	100	104	91

Research institutions together with the universities play a decisive role in research and innovation, closely supporting the development of innovation outputs. They generate a number of research outputs in terms of publications which maybe in form of academic papers published in refereed journals or academic textbooks, in intellectual property (IP) such as utility models, copyright, and patents². For example, the period between 2011 and 2019, Kenya witnessed a remarkable increase in its scientific production, almost doubling the number of research outputs. The overall count of scientific papers reached an impressive 19,462, positioning Kenya as the third-highest producer in Sub-Saharan Africa, trailing behind South Africa (13,808) and Nigeria (49,866). Although the outputs and research innovations are increasing, they do not align with the industry's needs, which include new machinery, equipment, products, and technological advancements that can be assessed for their features and the effectiveness of research results³. Further evidence suggests that few are protected or commercialized⁴. There is growing awareness on the need to shift institutional approaches and reframe existing policies and frameworks to prioritize the commercialization of research. Universities and research institutions are acknowledging the pivotal role they can play in nurturing an entrepreneurial environment, driven by the contemporary emphasis on entrepreneurship. This shift is compelling institutions worldwide to reassess their contributions to the startup economy. Recognizing the unique advantage of universities, it is crucial for them to rethink their research outputs towards commercialization efforts.

¹ WIPO (2023). Global Innovation Index 2023 Report. Accessed from: <https://www.wipo.int/gii-ranking/en/kenya>

² Siringi, E. (2022). Commercialization Models of University Research Output and Patenting Policy Practices in Kenya. Available at SSRN: <https://ssrn.com/abstract=4269939> or <http://dx.doi.org/10.2139/ssrn.4269939>

³ Minh, N. D., & Van, T. T. H. (2022). Spin-Off and Commercialization of University Researches. Open Journal of Social Sciences, 10, 256-266. <https://doi.org/10.4236/jss.2022.101021>

⁴ Siringi, E. (2022). Commercialization Models of University Research Output and Patenting Policy Practices in Kenya. Available at SSRN: <https://ssrn.com/abstract=4269939> or <http://dx.doi.org/10.2139/ssrn.4269939>

1.2 How do we then turn the tide and enable greater research to commercialization?

Defined as the “process by which any intellectual property assets may be adapted or used for any purpose that may provide any benefit to society or commercial use on reasonable terms”, commercialization accelerates the speed at which Research & Development could be translated into market-ready products and solutions. It not only increases the value of the research results, meeting real market needs from both a social and economic perspective, but also provides a competitive advantage over existing solutions. While successful commercialization benefits individual researchers, it also bestows advantages upon universities and research institutions. Commercialization may manifest in a number of ways such as; as revenue through licensing agreements, heightened visibility, talent attraction, spin-offs that offer IP as a product or service.

There have been a number of proposals to support the spinoff and commercialization of university research⁵. Minh et al proposes a number of action items at both the university level and the government level. At the university level, they propose development of a “growth strategy” that includes the establishment of spin-offs and Technology Transfer Office (TTOs) in line with a country’s national innovation system.

To this end, the Kenya National Innovation Agency (KeNIA) in collaboration with UKAid’s Africa Technology and Innovation Partnership (ATIP) Program and the African Centre for Technology Studies, launched the Institutional Commercialization Support (IS) Project. This project aimed to overcome the barriers impeding the commercialization of research in Kenyan institutions. Through an initial rapid assessment in Phase I, eight institutions were identified as having TTOs, lacking innovation strategies, inadequate structures for research translation, and underutilized IP policies. Early 2022, IS phase II project was launched with the core objective of strengthening and streamlining systems and processes within selected institutions, to facilitate technology translation and successful commercialization of their research outputs with the ultimate goal of promoting innovation, driving job creation, enhancing employability, and stimulating socio-economic growth throughout Kenya.

⁵ Minh, N. D., & Van, T. T. H. (2022). Spin-Off and Commercialization of University Researches. *Open Journal of Social Sciences*, 10, 256-266. <https://doi.org/10.4236/jss.2022.101021>

Five institutions participating in IS Phase II developed customized work plans, serving as guiding frameworks for implementing interventions that enabled research to commercialization. The plans were tailored to the specific contexts of each institution and encompassed the creation of institutional roadmaps for commercialization. Multiple avenues for commercialization, including establishment of start-ups, publishing, joint ventures, licensing, and developing spinoffs were proposed as the pathways to the commercialization of research, considering the unique gaps and realities of each institution.

The commercialization master plans for the participating institution were validated by each of the institution. To support the implementation of the commercialization master plans developed, each institution developed an implementation plan with clear programs and projects to achieve stated objectives. A Monitoring and Evaluation (M&E) framework developed by each of the participating institution will assist the TTOs in tracking their milestones towards research commercialization.

During the implementation of IS phase II, several key learnings emerged. These include; (i) a need for continuous engagement with stakeholders at the institutional level for ownership and commitment to the commercialization efforts, (ii) the importance of conducting situational analyses to generate evidence for developing the commercialization master plan, (iii) a careful management of institutional politics during master plan development and the creation of an enabling environment at the institutional level and beyond, (iv) the establishment of a dedicated cohort of commercialization specialists to drive the commercialization agenda at the institutional level and, (v) need for a robust M&E processes as crucial in the monitoring of the institutional master plans. These lessons are important to cultivate a vibrant ecosystem for research commercialization in Kenya.

The rest of the report proceeds as follows, the next section presents the methodological approach, we then present the various interventions that were conducted in IS phase II of this project, we provide the various outputs, the lessons learned and reflections and further recommendations to supporting research to commercialization efforts.

Project goal and objectives

The project focused on strengthening and optimizing systems and processes within the five participating institutions to facilitate the successful commercialization of their research outputs. The specific objectives included;

- i) Development and identification of relevant criteria to select the institutions for implementing the interventions from Phase I and those proposed for Phase II.
- ii) Co-development of implementation plans, collaboratively creating practical implementation plans for each institution to guide the recommended interventions.
- iii) Assisting the institutions in implementing the necessary interventions to enhance their commercialization efforts.
- iv) Development of an M&E framework to be used by KeNIA and the respective institutions to ensure effective supervision and accountability of the institution's commercialisation master plans.

2.0 Project methodology

The methodological approach involved a number of processes outlined in Figure 1. It involved a competitive process where 5 participating institutions were selected among 18 institutions that submitted an Expression of Interest (EOI).



Figure 1: Methodological approach for the project

Three (3) universities and two (2 public) research organizations were selected by meeting a list of criteria highlighted in Figure 2. The institutions needed to have had the presence of a TTO, a functioning IP management, policies in place to manage their IP as well as gender and social inclusion consideration in their approach. The selection criteria allowed selected institutions to demonstrate their commitment while providing an opportunity for internal ownership.

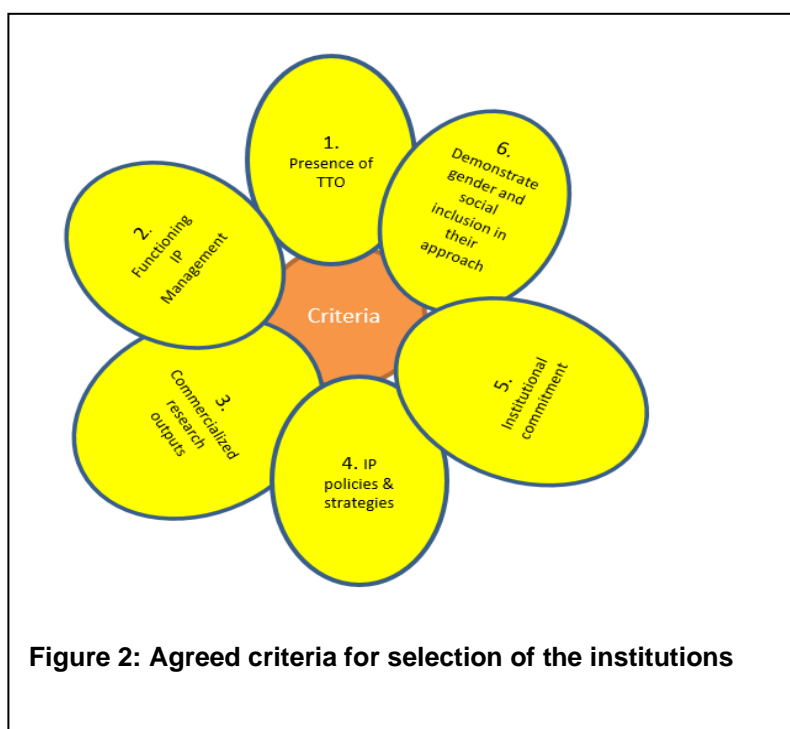


Figure 2: Agreed criteria for selection of the institutions

3.0 Project interventions

The project comprised four key interventions and their respective outputs (see Figure 3 below). They included; i) the development of individual institutional implementation workplans, ii) an assessment of their technology transfer office, iii) development of commercialization master plans and iv) a monitoring, evaluation and learning system to monitor progress for the implementation of the master plans. We provide a summary and reflection of the interventions across the five institutions.

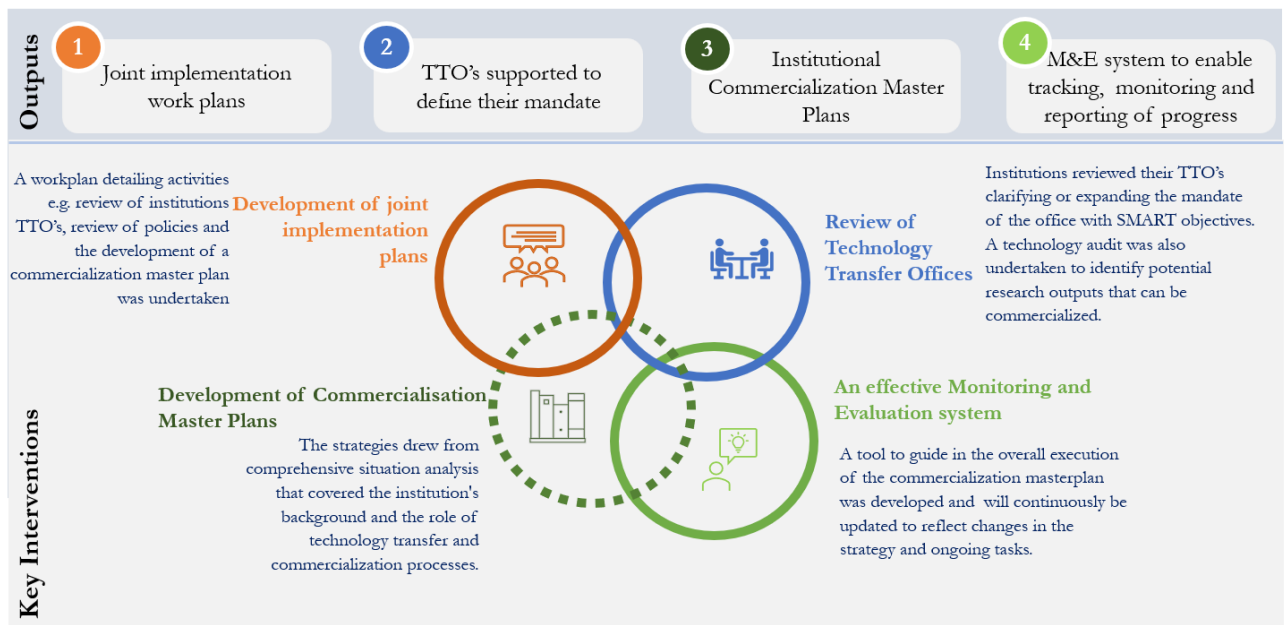


Figure 3: Key Interventions and outputs for IS Phase II project

3.1 What did we learn in the roll out of the interventions?

Novelty of the framework (workplans) led to delays in comprehending the overall process. Initially, the five participating institutions devised work plans (see Figure 3) to outline the implementation of these interventions, setting clear milestones for achievement throughout the project's duration. These work plans served as the framework for developing the commercializing master plans. While this was the case, the institution working group members expressed challenges in developing the work plans due to the novelty of the framework, leading to delays in comprehending the overall process.

A need to clarify or expand the mandate of the technology transfer office with SMART objectives led to establishment of TTO office in two institutions: A review of the TTO's such as TTO supporting policies, TTO infrastructure which entailed clarifying the mandate, staffing and performance metrics) implied that the institutions needed to conduct a technology audit through various methodologies such as literature scan, review of institutions policy documents, surveys and interviews. While the technology audits were conducted, most of the institutions recognized the need to create a database of various innovation currently lacking. Again, this would imply clarifying or expanding existing mandates of the TTO's with SMART objectives. To this end, two (2) TTO's were established (set up) and a more recognition to the existing TTO's (visibility) across the institutions.

Five (5) Commercialization Institutional Master Plans developed and included in the performance contracts, workplans and institutions strategic plans: The master plans aimed to strengthen technology transfer and commercialization of research outputs across participating universities and research organizations. They were designed with measurable indicators of progress and drew from comprehensive situation analysis covering progress and drew from comprehensive situation analysis covering the institution's background and the role of technology transfer and commercialization processes. This process also facilitated the harmonization of existing commercialization policies, including IP and business incubation policies. Undertaking a situational analysis to generate evidence for the development of the commercialization master plan is crucial.

3.2 General overview on the implementation of intervention across the 5 institutions

3.2.1 Workplans development

The five selected institutions varied in their approaches in research to commercialization demonstrated by the workplans that each developed. In terms of the policy processes in place to support research

Jaramogi Oginga University of Science and Technology	Moi University	University of Kabianga	Kenya Agricultural Livestock Research Organization	Kenya Industrial Research Institute
<p>The university focused on reviewing all its policies, including the IP policy and research policy. At that time, they were also in the process of developing a draft policy on consultancy while considering the creation of a university marketing function. Among the university's top priorities were fostering closer collaboration with farmers to boost production and industry involvement. They also proposed the development of data rooms to store comprehensive information about all university products.</p>	<p>While the institutions shared in the proposed interventions, they indicated their long-term objectives towards building a state-of-the-art science park with a target of supporting over 1000 startups within the facility. They alluded to resource mobilize as priority to attract funding which will go into developing an incubator to greatly support</p>	<p>Proposed interventions in the workplan included; i) development of a TTO office to provide mechanisms and frameworks to support commercialization efforts, ii) a review of policies and structures in place to support commercialization and, iii) the development of a commercialization master plan.</p>	<p>KALRO as an organization comprises a number of research institutes and centers across the country. To this end; they prioritized the following interventions; i) establishing a network of officers involved in technology transfer within institutional centers, this they mentioned will ensure coordination of research to commercialization across the 52 centers ii) surveys to staff on their perception with regards to the TTO's; iii) forums aimed at building knowledge; and the iv) sensitization of the board of management for the research organizations on commercialization.</p>	<p>In addition to the project interventions and the development of commercialization master plan, proposed areas of strengthening included; monitoring and evaluation of technology transfer in the institution, conducting market-driven research, increasing awareness of research-to-product pathways, publicizing and raising awareness about KIRDI's products, services, and roles, and the development following up on MSMEs and their product development.</p>

3.2.2 A Review of Technology Transfer Office

A review of technology transfer office was conducted across the 5 to refine and broaden the office's mandate, aligning it with SMART objectives. The review was pivoted around three pillars:

a) TTO supporting policies:

This facet involved an extensive examination of the institutional framework and procedures governing the TTO's activities. A majority of the institutions had established/ expanded their TTO. For instance, JOOUST had incorporated its TTO office within the Directorate of Research, Innovation, and Partnership (DRIP) by an amendment of its university statutes.

b) TTO infrastructure:

A thorough assessment was conducted to ascertain the presence of a fully functional office with a conducive environment to fostering cutting-edge innovation.

c) TTO structures:

The assessment hinged on three areas, defining and clarifying the mandate of the TTO, defining goals, and objectives, as well as the efficacy of its reporting lines. This clarified the differences between a TTO and an IP office as outlined in Box 1 below outlines example of Moi University's clarification of roles.

Box 1: Example functions of a TTO office and an IP office at a university

Functions of a TTO office

- Sensitize its staff regarding intellectual property management,
- Evaluate invention disclosures in a timely manner,
- Assess the potential of Intellectual Property Rights,
- Evaluating the commercial potential of the invention,
- Obtaining appropriate Intellectual Property protection,
- Locating suitable commercial development partners
- Develop mechanisms within the University for negotiating, licensing and Management of Intellectual Property Rights.
- Identify industrial problems to be solved through contract research,
- Assist Heads of Departments to ensure proper understanding of the Participation Agreement, Material Transfer Agreement, and Confidentiality Disclosure Agreement,
- Proposes variation, amendment, reviews to the Intellectual Property Policy.
- Building up and enhancing the capacity and documentation needed to perform technology searches, formulate IPR applications and providing such services to the public at a fee
- Refining intellectual properties generated in the University, Jua-kali technology and indigenous knowledge through standardization of process and products ready for marketing.

Function of an IP office

- To promote creativity and innovation
- To create an enabling environment that encourages generation and expedites the dissemination and application of the new knowledge by Moi University researchers for the greatest benefit to Moi University and the public through efficient and timely processing of technology transfer.
- To protect the traditional rights of scholars to benefit from the products of their scholarly work.
- To ensure that the commercial results, financial, or otherwise, are distributed in a fair and equitable manner that recognizes both the contributions of the inventors and the University as well as any other stakeholders.
- To promote, preserve, encourage and aid scientific investigation and research.
- To establish standards for determining the rights and obligations of Moi University, Inventor(s) and other stakeholders with respect to inventions, discoveries and works created at the University.
- To encourage and reward Moi University staff who innovate, invent and create Intellectual Properties,
- To ensure compliance with applicable national laws and regulations,
- To put in place standards for technology.
- To sensitize students on IP and tap creativity among the youth.

Staffing/capacity:

This involved an in-depth analysis of the adequacy of the office's personnel, considering their qualifications, expertise, and workload. Additionally, a close inspection of collaboration and communication levels within the office and with other departments or commercialization units was carried out to optimize interdepartmental synergies.

Performance metrics:

The review delved into a range of performance indicators elucidated by the institutions, encompassing vital aspects such as the number of patents filed, licenses executed, revenue generated, startup creations, industry collaborations, technology disclosures received, time to license, return on investment/economic impact, and intellectual property portfolio management. These served as the requisite metrics in evaluating a TTO's in bringing about commercialized products. Table 2 highlights a review of the TTO's frameworks and structures across the five institutions

Institution	TTO supporting framework and infrastructure	TTO structures
JOOUST	<p>The university statutes were amended to include the TTO within the Directorate of Research, Innovation, and Partnership (DRIP).</p> <p>TTO office has been allocated. furniture's and fitting for the office set-up is ongoing.</p>	<p>The mandate and roles of the TTO have been defined. The TTO serves as a secretariat to a committee that reports to the Vice-Chancellor on commercialization efforts in the university.</p> <p>TTO staff have been identified and are receiving additional training to support their roles.</p> <p>Key performance indicators and deliverables are indicated in the commercialization masterplan.</p>
MOI UNIVERSITY	<p>The TTO has been in existence and anchored in the IP policy, the consultancy policy, and Research policy.</p>	<p>The TTO will work under Resource Mobilization Development Enterprise Advancement (RMDEA) on commercialization.</p> <p>The RMDEA reports to the Vice Chancellor.</p>
KALRO	<p>There is a proposal to establish a framework for reporting on technology transfer activities from the research centers to the research institute, and the secretariat levels.</p> <p>TTO will be governed by the commercialization secretariat level, working in collaboration with various centers and institutes.</p> <p>A proposal has been put forth to establish a commercialization seed fund.</p>	<p>There is a plan to build a skilled TTO team with expertise in licensing, IP management, marketing, negotiation, management, and communication.</p> <p>A network of staff with a clear mandate for technology transfer is being developed.</p> <p>Capacity building for technology transfer officers through short trainings on technology transfer and commercialization is planned.</p>

<p>UNIVERSITY OF KABIANGA</p>	<p>The TTO was officially established in March 2023.</p> <p>The TTO's envisioned responsibilities include scouting, identifying, processing, and initiating commercialization of intellectual property rights. It also involves IP protection, identifying partnerships for commercial ventures, managing agreements, identifying industrial problems solvable through contract research, and raising awareness among staff about IP.</p> <p>The Intellectual Property Rights (IPR) policy places commercialization projects under the purview of the TTO, led by the Deputy Vice-Chancellor.</p>	<p>Strategic plans are in place to secure resources, including finances and personnel, to support the TTO office and the commercialization of research products.</p>
<p>KIRDI</p>	<p>An existing TTO already supports IP protection efforts.</p>	<p>The TTO has staff allocated to its operations, however there is a need to structure a career progression for the staff members.</p>

3.2.3 Institutional Commercialization Master Plans

The need to strengthen technology transfer and commercialization of research outputs at Kenyan universities and research organizations required a plan and coordinated approach which could only be achieved through a commercialization master plan. The 5 commercialization master plans outlined strategies to bring about commercialization in the respective institutions with measurable indicators of progress. The strategies drew from comprehensive situation analysis that covered the institution's background and the role of technology transfer and commercialization processes. A number of pathways were proposed by the institutions to support their research to commercialization efforts. We present a detail analysis of the various pathways proposed across the 5 institutions (see Figure 5). While this was the case, most of the institutions did not clearly identify the commercialization pathways except for Moi University that identified four out of the 5 pathways.

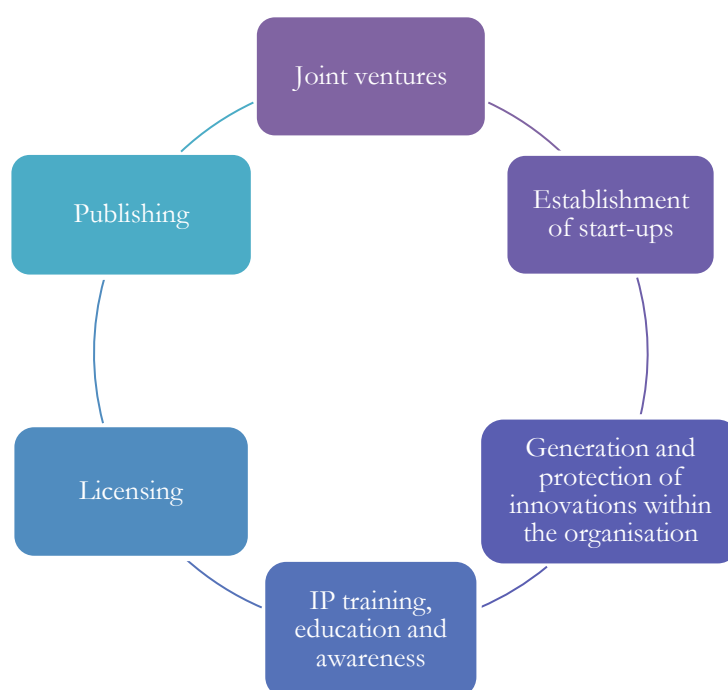


Figure 5: Commercialization pathways identified in the master plans

University of Kabianga: Their research to commercialization emphasizes various goals such as revenue generation from commercialization and knowledge transfer activities, the protection and incubation of potential innovative ideas, and the establishment of collaborations with industry and donors. To achieve these objectives, the university plans to allocate financial and human resources to its TTO, enhance the generation of innovations within the institution, protect intellectual property, establish a framework for commercialization, and strengthen its governance structure for promoting commercialization efforts.

Kenya Industrial Research Development Institute: KIRDI proposes, research to commercialization pathway particularly enhancing the generation and protection of innovations, promoting IP and its awareness, strengthening the commercialization policy framework, and improving institutional support structures for technology transfer and commercialization. Proposed strategies include; promoting incentive-based research programs, fostering industry-driven and bankable research outputs, protecting and commercializing knowledge, conducting IP training and education, mainstreaming commercialization, ensuring efficiency and coordination of commercialization structures, and implementing monitoring, evaluation, and learning mechanisms.

Kenya Agricultural Livestock Research Organization: KALRO proposes four commercialization result areas that include the following; enhanced protection and commercialization of technologies and innovations, enhanced awareness of commercialization among its research community, strengthening the policy framework for commercialization, and strengthening organizational support structures for promotion of commercialization. The strategies include mapping and prioritizing technologies and innovations for protection and commercialization, conducting IP audits, adapting research to commercialization training, establishing technology transfer office, coordinating commercialization at various levels, and implementing incentive structures to support commercialization, among others.

Moi University: The university aims to strengthen IP generation and protection, increase creativity and innovations for commercialization, reduce the loss of potential IP assets, increase the conversion rate of IP applications to grants, and improve the quality of IP applications. Additionally, Moi University focuses on enhancing the policy framework, institutional framework, and support structures for commercialization, including business incubation services, common manufacturing facilities, innovation hubs, and overall commercialization activities. The key result areas for the Commercialization Strategy encompass generation and protection of innovations, IP awareness and capacity development, policy framework for commercialization, institutional framework for commercialization, and the overall intensity of commercialization efforts.

In Table 3 below, we outline these pathways and a detailed analysis how each institution is pursuing them.

Parameters in the Master Plans	Similarities	Differences
Commercialization pathways prioritized	Three institutions identified licensing and spinoffs as key commercialization pathways they will explore.	Moi University had additional pathways like; Joint ventures, commercialization of services offered by the university – lab services
Governance framework	There is a close similarity in the governance structure amongst the institutions as three institutions have a proposed the set-up of a commercialization steering, implementation and an advisory committee.	KALRO was noted to only have a commercialization steering committee and steering committees at the institute and unit level. This is due to the nature of the organization and its huge network across the country.
Incentive structure	KALRO and KIRDI explicitly highlighted the deliberate steps towards developing and implementing the incentive structure for their institutions.	

Parameters in the Master Plans	Similarities	Differences
Key result areas	Institutional framework, policy framework and IP awareness feature across all institutions as Key result areas to be implemented through the masterplan.	University of Kabianga identified provision of adequate financial resources and human resources in the TTO as key result areas in their masterplan. Moi University has one unique Key result area focusing on commercialization intensity.

3.2.4 Monitoring Evaluation and Learning

The Monitoring, Evaluation, and Learning (MEL) Plan serves as a tool to guide in the overall execution of the commercialization masterplan. It is expected that the teams at the universities and research institutions will continuously update the master plans it as necessary to reflect changes in the strategy and ongoing tasks. The updates may potentially need to incorporate feedback from stakeholders as well as other implementing units.

Tools for Monitoring

The following tools should be prepared for monitoring the strategy implementation:

- a. **Annual work plan:** A comprehensive annual work plan should be prepared to guide the continuous monitoring of the implementation of the strategy during the year. Review of monthly performance will inform the preparation of quarterly reports.
- b. **Quarterly reports and meetings:** Quarterly progress meetings should be held by the implementation team which are followed by preparation of quarterly progress reports.
- c. **Annual reports and meetings:** A comprehensive annual report has to be prepared by the implementation team and should consist of consolidated quarterly progress reports.

Evaluations

There are four evaluations proposed during the implementation of the strategy:

- a. **Early-stage evaluation and learning:** The implementation of the strategy will be unique and complex since it is a first-time strategy in the organization. This will necessitate very keen evaluation and learning. Therefore, an early-stage internal evaluation has to be undertaken at the end of the first 12 months to get some early feedback on what are working and what are likely to pose challenges and initiate early adjustment in the implementation.
- b. **Mid-term evaluation:** This has to be done immediately after 24 months. The focus of the mid-term's evaluation is to document progress of implementation of the strategy work plan and the intervention measures undertaken and will equally inform mid-term review of the work plan. This will be done through support of external evaluators (e.g., KENIA).
- c. **Final year evaluation:** This should be done either internally or by an external consultant towards the end of fourth (starting from month 44) specifically to obtain information on lessons learnt, which can inform the management after the completion of the strategy period and inform the development of the subsequent one. This could be done internally.
- d. **Terminal evaluation:** This should be done by an external consultant at the end of the strategy period. It will focus on the extent of the realization of the strategic objectives/ outcomes, efficiency and effectiveness, relevance, sustainability, impact and lessons learned from the implementation of the strategic plan.

Key Pillars, Indicators, Outputs, expected Outcomes and Impact.

Several key cross-cutting pillars in the strategy were identified. These key pillars will guide the monitoring and evaluation both internally and by the external evaluators (i.e., KENIA). The pillars include:

1. Increasing Commercialization Outputs
2. Generation and protection of innovations
3. Policy Framework for commercialization
4. IP Awareness and Training
5. Institutional Framework for commercialization

The indicators outlined below for the different pillars will be monitored internally by the institutions and other external evaluators:

1. Increasing Commercialization Outputs

Indicators

- a. Number of spin-offs
- b. Number of start-ups
- c. Number of joint ventures
- d. Number of licensing agreements
- e. Amount of revenue generated.
- f. Number of laboratory services
- g. Number of consultancy services provided.
- h. Student innovations commercialized.
- i. Number of entrepreneurs incubated.
- j. Number of industry-collaboration projects/Public-Private Partnership projects [PPPs]
- k. Number of entrepreneurs accessing common manufacturing facilities
- l. Number of technology upgrades
- m. Number of products developed [Market Ready Products {MVPs}].
- n. Number of SMEs supported to develop prototypes.
- o. Number of KEBS certifications
- p. Compliance Reports
- q. Number of jobs created.
- r. Number of MSMEs upgraded.

Given the different indicators identified above, the different institutions have specific outputs as targets linked to this pillar. As a result, the outcome will be commercialization output of the selected institutions will be increased. This will contribute to the strengthening and streamlining of the commercialization processes in the universities and research institutions.

2. Generation and protection of innovations

Indicators

- a. Number of IP disclosures in the TTOs
- b. IP applications
- c. IP grants
- d. Mapping of the existing innovations [Reports]
- e. Technology mining from publications [Reports]

Different universities and research institutions have set specific targets as the outputs under this pillar that have to be achieved. For this pillar, as an outcome the generation and protection of innovations will be increased and enhanced. This will result in strengthening the commercialization processes at the universities and research institutions.

3. IP Awareness and Training

Indicators

- a. A report on the current level of awareness of commercialization [disintegrated percentages; increase in the level of awareness]
- b. A report on the current level of training of commercialization

Given the different targets set as the outputs under this pillar in the institutional strategies, as an outcome, IP awareness and training will be enhanced and improved. This will contribute to strengthened commercialization processes at the universities and research institutions.

4. Policy Framework for commercialization

Indicators

- a. Reviewed commercialization related policies [i.e., IP policy, R&D policy, research consultancy]
- b. Consolidate the commercialization related policies.
- c. Develop commercialization related policies [i.e., IP policy, STI policy]
- d. Develop a policy/framework on spin-offs.
- e. Develop a framework/policy in enhancing public-private partnerships.
- f. Enhanced incentive structure for researchers involved in commercialization.

Given the different targets set as the outputs under this pillar in the institutional strategies, as an outcome, IP awareness and training will be enhanced and improved. This will contribute to strengthened commercialization processes at the universities and research institutions.

5. Institutional Framework for commercialization

Indicators

- a. Establish a committee to implement the commercialization masterplans.
- b. Investment in the human and revenue generation in the TTOs, increase facilities in the TTOs.
- c. Establish an innovation hub.
- d. Establish common manufacturing hubs.
- e. A framework to support commercialization among the students.
- f. Minimum staffing level of TTOs
- g. 30% of the internal research fund should be allocated to support commercialization.
- h. 5% of the consultancy projects should be allocated to support commercialization.

The pillar on institutional framework has several outputs that must be achieved by the institutions. Through the specific outputs the institutional framework for commercialization will be enhanced. This will contribute to strengthening the commercialization processes and efforts at the universities and research institutions.

4.0 Taking forward research to commercialization in institutions

We provide recommendations based on lessons learned from the implementation of IS phase II. Based on the recommendations, we share the next steps as they emerged from the IWG aimed to create a robust and coordinated approach to strengthen research commercialization efforts across the institutions involved, foster collaboration among stakeholders, and drive the successful transformation of research outputs into tangible socio-economic benefits.

Recommendations strengthening research to commercialization in institutions

- Successful implementation of the developed master plans in the five institutions will not only stimulate commercialization in Kenya but serve as model for other institutions to drive positive impact in the innovation ecosystem.
- The success of the commercialization efforts in Kenya will be achieved through the mainstreaming of institutional support by the government of Kenya building on the positive outcomes observed in the individual institutions during the roll out of interventions.
- A situational analysis and institution's technology audit in the five institutions indicate a clear need for the creation of an innovation database of research institutions and universities innovations to track progress, identify trends, and foster collaboration in the innovation ecosystem.

Summary of next steps for strengthening research to commercialization in institutions

- Establish a network of institutions dedicated to commercializing research and innovation outputs
- A quarterly newsletter documenting commercialization efforts in universities and research institutions coordinated by the TTOs in the respective institutions.
- A caucus of TTO managers known as an association of TTO managers, from all institutions need to be established to promote collaboration and knowledge sharing.



Institutional
Commercialization
Support
Phase II

