

Full Proposal Submission

Section 1: General Project Information

Project Title: Developing Policy Guidelines To Harmonize Open Science And Commercialization In Research Partnerships In Kenya

Duration of Project: 12 months

Countries included in this project: Kenya

Regions included in this project: Sub-Saharan Africa

Research Themes: Theme 1, 3 and 4

Justification of Research Themes: The project responds foremost to theme 1 of the call but will also address issues identified under theme 3 and theme 4. It addresses theme 1 in its overall goal which is focused on contributing towards the development of research policy guidelines that will harmonize commercialization interests with the values espoused under open and collaborative models. By conducting case studies on contemporary research partnerships, the project will also address theme 3 by analyzing the role of organizational and institutional contexts represented by these partnerships while theme 4 will be addressed by focusing on the experiences, behaviour, choices, power relations and governance patterns within the selected case studies.

Total Budget Cost (CAD): 79, 955

Section 3: Proposed Study Information

Research Project Abstract

WORD LIMIT: 250.

The main objective of this project is to investigate how the cultural, institutional and policy tensions pitting open science versus research commercialization in universities/public research institutes (PRIs) has affected the ability of researchers to publish, innovate and participate in external collaborations. Through case studies of contemporary research partnerships derived from (i) joint patent applications submitted to the Kenya Industrial Property Institute (KIPI) (ii) Consortia funded by the National Commission for Science, Technology and Innovation (NACOSTI) (iii) the Centres of Research Excellence funded by the Consortium for National Health Research (CNHR) and (iv) partnerships brokered by the Linking Industry with Academia (LIWA) TRUST, the project shall determine the extent to which policy tensions has affected the choices, behavior and practices of researchers

involved in collaborative research in Kenya. The ultimate goal will be to elucidate whether and under what contexts, circumstances or conditions can open science and the drive towards commercialization work together and highlight cases where these seemingly contradictory policy positions have been creatively blended successfully. The project will result in draft policy guidelines for harmonizing open science ideals with commercialization thereby enhancing the role of universities/PRIs in national development, providing clear guidance for researchers while safeguarding their interests for publications, follow-on innovation and external collaborations; and strengthening linkages between the universities/PRIs and the private sector. The project responds to three OCSDNet themes: Theme 1 on policies and institutions (rules-in-use); Theme 3 on action arenas (research partnerships) and Theme 4 on outcomes (influence on researchers' behavior)

Research Problem, Significant and Justification

WORD LIMIT: 1,000. Please provide a brief overview of relevant literature and highlight the knowledge gaps that this project will address. Indicate the size and scope of the problem, as well as how the problem relates to the purpose and goals of OCSDNet; broader national development priorities, and the research and capacity needs of the countries involved.

The demand on universities and public research institutes to become more entrepreneurial and build linkages with private sector has been on the increase since the early 1990s (Caulfield et al., 2012). This demand is fuelled by the decreasing support for universities from government as well as the transition to knowledge-based economies (Downie, 2006). This third mission, requires universities and public research institutes to produce research with commercial potential and interact more closely with the intended beneficiaries of their research (Goransson and Brundenius, 2011; Goransson et al., 2009). Opinion is divided on whether this emphasis on the third mission of universities is good, with protagonists arguing that it will allow universities to have more direct impact on the lives of its beneficiaries; will increase the researchers' income and prestige and allow exchange of knowledge with industrial actors. The antagonists have pointed out that close associations with industry will erode the universities' focus on broader social goals. Instead, they argue, this entrepreneurial culture may dictate the exact nature of research done in universities with a potential over-emphasis on research that lends itself to commercially viable innovations in the short to medium term. This situation that may disadvantage basic research (Kumar, 2010).

Beyond the debate on the potential influence on the role of the university as a whole, this emphasis on entrepreneurship and private sector linkages has immediate influence on the conduct on scientific research and how the findings of such research are made available to stakeholders, particularly the private sector. The debate dates back to the post second world war period with the publication of the Vannevar Bush report "*Science: the endless frontier*" (Bush, 1945), in which he argued for steady federal funding for basic research "so that university researchers could engage in research free from the adverse pressure of convention, prejudice or *commercial necessity*[1]". The Bush report echoes closely the

Mertonian ethos of science captured under the acronym CUDOS i.e. that science should be: communal, universal, disinterested and rests on organized scepticism. (Merton, 1942). The publication of the Bayh-Dole Act in 1980 in the USA is considered a turning point in the way appropriation of academic research, produced through government funding is concerned. It permitted universities to obtain patents on research done with federal funding and exploit such patents for commercial use. This, it is argued, has resulted in two seemingly contradictory cultures within the universities: *An academic scientific culture* that follows the Mertonian CUDOS norms and views science as a public good, and a *commercial culture* emphasizing activities such as contract research, consultancies, industry collaborations and patenting and views science as a private good (Pattyn, 2006). These two cultures are in constant tension and conflicts within universities (Kumar, 2010).

These ideological and cultural tensions have immediate effects on the behaviour of researchers, their freedoms, rights, choices and motivations. These effects are manifested in a number of ways including:

Publication delays and knowledge sharing: the academic culture thrives on the *publish or perish* dictum and the speed of publication as a means sharing data, disseminating knowledge, fostering scientific progress is key to the researchers' prestige and career growth. On the other hand, the commercial culture thrives on what has been described as *patent and prosper* paradigm, in which it may be justified to delay release of data and information (hold in secrecy for longer) as the mechanisms for appropriation are being exploited. In many jurisdictions, a delay in patenting results in a delay in publication as well.

Rights to publish research findings: when researchers have signed non-disclosure agreements (NDAs) with industry, such NDAs could be used to veto the rights of the authors/researchers to publish the outcome of their research without manipulation (Drazen, 2002). Particularly in cases where research has been sponsored by commercial sponsors (as often is the case with pharmaceutical companies and clinical drug trials), researchers are often required to maintain secrecy about their research and allow the companies to manipulate the findings to their advantage (Kumar, 2010). When results are negative, then the release of information to the public is even more closely monitored and researchers have little room to disseminate/publish their findings.

Impaired communication between researchers: In cases where potential commercial application exists, self-interest and the profit motive may drive unhealthy competition between researchers and it is not uncommon that some laboratories (where highly sensitive or high-stakes research are occurring) within universities are out-of-bounds even for fellow faculty. Denials of research data and refusal to share data, information and knowledge and increased secrecy have been reported (Bok, 2003). These have direct effects on the principles of open science and collaborative research.

Free-riding: Clark (2007) has argued that in terms of scientific output, the problem (free-riding) can be seen in the free publication of research findings in the public domain. He

notes, “if all research findings were so published, there would be no economic incentive for private sponsorship of research , since the benefit of the output would be freely available to anyone...having borne none of the costs of production”. In collaborative projects, free-riding is of immediate concern especially when researchers involved emanate from opposing sides of the academic versus commercial cultural divides.

This project shall explore how these ideological, cultural, institutional and practical challenges manifest in research partnerships in Kenya. In particular, the project shall focus on the effects on three main areas: (i) publications, (ii) innovation and (iii) collaborations (see more under design and methods). In particular, this project seeks to fill in a number of gaps: First, there’s currently no policy guidelines on how to harmonize the ideals of open science and the push towards commercialization in Kenya. The project shall result in draft proposals for such guidelines which will be shared with policymaking organs for potential adoption. Secondly, we are responding to a methodological gap. As noted by Powers and Campbell (2011); most research to date have been of a case study or surveys involving researchers and technology transfer professionals without analysis of the actual contract documents. Our project seeks to triangulate method including documentary analysis, interviews, focus groups and workshops to arrive at a more holistic picture.

Research Questions and Objectives

WORD LIMIT: 500. Outline your project’s central research question(s), sub-questions, and objectives. There must be congruency between the questions, objectives, research design and methods. You should highlight how the study’s questions and objectives will contribute to the research themes of the OCSDNet.

The emphasis towards commercialization of research has resulted in a number of institutional and organizational realignments in universities/PRIs. New structures in the form of technology transfer offices (TTOs) have been created and new offices/titles have been introduced into the university management structures e.g. the office of DVC (Research and Innovation). At the national level, there’s renewed emphasis on innovation both in national policies [2] as well as in government funding instruments[3]. Outside government, the emergence of new intermediary organizations dedicated to enhancing academia – industry linkages such as the LIWA (Linking Industry with Academia) TRUST are brokering partnerships between universities and the private sector especially in engineering, energy and ICT. Non-government funding agencies such as the Consortium for National Health Research (CNHR) programme on Centres of Research Excellence (CoRES) which has brought together consortia of institutions in the health sector to develop centres of excellence with state of the art equipment, technologies and laboratories that can be accessed openly by all working on national health problems. This shift and renewed emphasis on commercialization at the national (policy); organizational

¹ This would apply to several other African/developing countries as well.

² See section under research methods..

(institutional) and partnership (operational) levels have led to cultural tensions between academic traditions (with its emphasis on open science as a public good) and a commercial culture that emphasizes on privatization of knowledge. These contradicting positions and the lack of a guiding policy/principles on how to harmonize the two has had effects on the behavior, choices and rights of individual researchers in universities/PRIs. Such effects are manifested in the researchers' ability to disseminate research (publications); opportunities for follow-on innovation and participation in new collaborations with partners not party to existing contracts as well as free-riding and unhealthy competition and secrecy.

In order to address these issues, this project focuses on the following questions:

- To what extent do policies/practices that enhance open science and those promoting commercialization actually conflict?
- Under what conditions, contexts and circumstances can the two opposing policy positions be blended to work together?
- How has the policy contradiction affected the choices, practices and behaviour of researchers involved in collaborative research projects?

The project will address the following objectives:

- (i) Determine the extent to which the cultural tensions of open science versus commercialization has affected the researchers' ability to publish, follow-on innovation and collaborate with others not party to existing contracts.
- (ii) Document the experiences, behaviour patterns and practical challenges faced by researchers in collaborative research
- (ii) Determine the extent to which potential conflicts over IP constitute a barrier to collaborative research
- (iv) Investigate how the various research partnerships are governed (formal versus informal) and the influence of each type of governance in resolving potential conflicts
- (v) Identify the strategies and training needs required to support researchers engaged in collaborative research

Stakeholders

WORD LIMIT: 250. Identify and briefly describe your project's stakeholders. How will your project respond to their needs and interests?

This project will address a range of stakeholders including: policymakers, individual researchers, research managers/administrators, funding agencies, universities and public research institutes, intellectual property managers/technology transfer officers and the private sector.

For policymakers, the role of universities in national development and the transition to knowledge economies tops the agenda yet the contradictions (and potential negative

effects of the policy conflict) between open science and commercialization is likely to undermine this role for universities/PRI. Besides, in attempts to achieve its long-term development blue-print – the Vision 2030 – the government is keen on promoting innovation, multi-disciplinary and multi-institutional research collaborations and ensuring that knowledge percolates into the wider economic system. The findings of this project will provide evidence of this problem and offer suggestions on how to harmonize these policy positions.

Researchers are likely the key beneficiaries since the anticipated policy guidelines arising out of this project will clarify expectations of the various partners/actors and ensure that the effects on their ability to publish, follow-on innovations and participate in other collaborations is safeguarded. The universities/PRI will use the evidence produced to revise/update their internal policies and practices as regards commercialization from their research while holding principles of open science and innovation. The intellectual property management officers will be better appraised on the tensions of open science versus the commercialization interests and forge a better working relationship with the researchers. The private sector will benefit from a more structured working relationship with the universities/PRI if the guidelines clarify expectations and responsibilities of each party.

Research Design & Methods

WORD LIMIT: 1,000. In this section, applicants should clearly indicate and justify the proposed study design. You should discuss how you intend to collect the data that you will need to achieve the study's objectives and answer the project's research questions. You should clearly outline how each data collection activity will contribute to the study objectives.

To interrogate these issues, this study will follow a case study approach (Yin, 1994; Thomas, 1998) and will use contemporary case studies derived from (i) joint patent applications submitted to the Kenya Industrial Property Institute (KIPI) (1990 – 2013). There has been up-to 278 joint applications and 40 have been granted[4]. (ii) consortia/networks supported by NACOSTI (2008 – 2013). NACOSTI has supported over 50 multi-disciplinary, multi-institutional research collaborations involving both public and private sector actors. Courtesy of an existing MoU with NACOSTI, we have gained access to this database of research consortia[5]. (iii) the Consortium for National Health Research (CNHR) has established 4 centres of research excellence in health systems, with multiple organizations drawn from both public and private sectors. The Centres focus on (a) neglected vector borne diseases (b) health systems (two projects) and (c) pharmacology and therapeutics). A key mandate of these centres is to provide a national platform for increased collaboration and knowledge sharing. We secured cooperation from CNHR to use these Centres of Excellence as case studies in this project (iv) Linking Industry with Academia (LIWA TRUST) has been brokering partnerships between universities and the private sector and to date they have reported having brokered up-to 29 such partnerships. We shall pick cases from amongst the 20 partnerships for this project[6].

The cases to be studied will be selected to reflect: a) type of research partnerships (i.e.

public – public; public – private; private – private and networks/consortia) b) type of funding sources (government, private sector or development partners) c) economic sectors/thematic focus of the research (to highlight any specifics due to research traditions and practices/disciplinary orientations). We shall emphasize (i) agriculture and food security – drawn mainly from the NACOSTI database (ii) Health, drawn mainly from CNHR centres of excellence (iii) energy/engineering/ICT, drawn mainly from the KIPI database and the LIWA TRUST database d) organizational cultures and institutional framework (ordered by the institutions leading the partnership e.g. public and private universities, companies/firms, NGOs etc).

Consistent with the case study approach, this study will follow a largely qualitative design involving a systematic collection, organization and interpretation of material derived from document reviews, interviews, observations, focus groups and workshops. A review by Powers and Campbell (2011) concluded that *“most research to date have been of a case study nature or driven by survey research of faculty or technology transfer professionals...this approach is subject to memory recall and subject to bias. To date, no research has investigated what is actually occurring as evidenced by contractual documents...”* Our study design responds to this methodological gap by triangulating a number of methods involving (i) document reviews in which a number of key policy and strategy documents will be consulted. Besides the policy documents, we shall review actual contracts between funding agencies and the researchers (especially on clauses relating to data sharing, dissemination and publication issues). We shall also review consortia/partnership agreements between/among research institutions (with a focus on how access to and sharing of data; publication rights and intellectual property rights are handled. We shall also be interested to know how issues of free-riding are handled either overtly or covertly within the partnership clauses). Besides reviewing the actual clauses, we shall interview researchers involved in the partnerships to determine how widespread the free-riding problem is. (ii) Issues emanating from initial documentary review (mainly of policies and strategies) shall be put to selected practitioners and policymakers through short, exploratory key informant interviews: The key informants will be chosen for their knowledge and distinctive viewpoints about the issues under investigation. They will be identified based on their previous work on this issue, their official positions in government or private sector as well as through referrals and recommendations from peers. The key informant interviews will be a precursor to more in-depth focused interviews with researchers, research managers and funding agencies. We shall aim to interview about 10 - 15 key informants distributed amongst policymakers, academics, private sector. The results of this key informant interviews; together with the documentary review of the policies shall provide a sound basis for designing in-depth interviews with specific case studies.

The use of in-depth interviews will allow the research team to obtain tacit knowledge including how decisions were made in the partnerships and the influence/details of the application of the rules and policy guidelines; it will also help to elicit the perception of individuals/groups on the institutional context, power dynamics, organizational culture and support networks and how these (perceptions) manifest in particular patterns of decision-making and application. The in-depth interviews will focus primarily on the researchers

involved in these partnerships. However, their accounts will be counter-checked with the research managers (at universities and public research institutes), programme officers (of the funding agencies) who shall form secondary respondents to the in-depth interviews. Any discrepancies will be counter-checked through further interviews to arrive at a most probable explanation.

To interrogate power relations, raise awareness and initiate a process of dialogue amongst the different actors, the study will employ (iii) focus group discussions (FGDs) to cater for respondents who find it easier to participate in a group discussion rather than be interviewed separately or fill in a questionnaire (Johnson, H and Mayoux, L, 1998). The FGDs will be organized based on specific collaborative projects, and where possible across different projects. Finally, we shall hold (iv) stakeholder workshops to encourage interactions and dialogue between researchers, research managers, policymakers and funding agencies with a view to forging consensus on policy guidelines and disseminate the findings.

Analysis & Synthesis

WORD LIMIT: 1,000. Describe how you intend to organize, examine and model data to arrive at conclusions and insights.

Our analysis will be guided by the IAD framework (Ostrom, 2005) and the OCSDNet sub-themes. While the IAD will be our umbrella framework, we shall draw on other relevant theories and frameworks to further inform and strengthen the analysis including: the innovation systems framework; diffusion of innovations and mode 2 knowledge production as explained below.

Innovation systems.

Conceived as a 'a network of firms and other economic agents that, together with the institutions and policies that influence their innovative behavior and performance, bring new products, new processes and new forms of organization into economic use' (Lundvall, 1992; Nelson, 1993), the innovation systems approach is particularly useful in this project because of its focus on the interactions among actors/agents in the system and their embeddedness in organizational and institutional contexts that influences their behavior and performance. Consistent with Ostrom's IAD framework, institutions are understood as the "sets of common habits, routines, norms, rules and established practices that regulate the relations and interactions between individuals and groups" (Edquist, 1997), prescribe behavioral roles, constrain activity and shape expectations. These habits and practices are learned behavior patterns marked by the historical specificities of a particular place and moment in time (Mytelka, 2000).

Besides, innovation systems approach also acknowledges the importance of policies and policy making processes in learning and innovation. Whether tacit or explicit, policies play

a role in setting the parameters within which actors make decisions about learning, innovation, investment and collaboration. From a policy perspective, innovation systems approaches draw attention to policy dynamics and the way these emerge from the interaction between policies and the habits and practices of the actors whose behavior is targeted by policy. The impact of policies will thus vary across different organizational and institutional contexts. This focus on policies is equally important for this project and will allow our analysis on the interactions between observed habits, practices and behavior patterns and the existing policies and help in designing new policy guidelines.

Diffusion of innovation

Diffusion of innovation refers to the process by which an innovation is communicated through channels over time among the members of a social system (Powers and Campbell, 2011). Of immediate interest to this project is “the concern that certain mechanisms may be better than others and that patenting and exclusive licensing of technologies may actually thwart rather than enhance innovation” (Angell and Relman, 2002 and Barton, 2002, both quoted in Powers and Campbell, 2011). As Powers and Campbell observe, “...exclusivity may have a dampening effect on the ability of persons not party to the license to utilize the technology for follow-on innovation. Exclusive licensing may discourage or prevent inventors from engaging as robustly in on-going research and outsider collaboration due to licensing contract restrictions on what the inventor can write and publish. The personal profit incentive is also strong since a researcher who makes it difficult for others to have access increases the chances that others will not build upon it or be able to circumvent their technology.”

In cases where researchers have acquired patents or universities/PRI have exclusively licensed technologies, we would be interested in the effect of these on the abilities of other researchers to follow on the work and how the restrictions arising of such patents or exclusive licenses influence possibilities for follow on innovation and collaborations

Mode 2 Knowledge production

The Mode 2 Knowledge production framework emerged from the works of Gibbons *et al.* (1994) and later Nowotny *et al.* (2001). Their work distinguishes between what they have termed Mode 1 which is characterized by linear thinking to the production and application of knowledge and driven purely by academic instincts of researchers. In the shift from Mode 1 to Mode 2, there is more emphasis on trans-disciplinarity; production of knowledge in the context of its application; need based and problem oriented research that is socially accountable, reflexive, heterogeneous and involves diverse organizations.

In Mode 1, the researchers set the research agenda and validation is done through the cognitive authority of the peer review process. In Mode 2, beneficiaries of research are involved not just in defining the research agenda but are actively involved in the execution of the research and innovation processes. Validation in Mode 2 goes beyond scientific excellence (as determined through peer review) to include social relevance and the applicability of knowledge therefrom. The mode 2 approaches are relevant for this project mainly because of its focus on knowledge in the context of its application (innovation), its

emphasis on multi-disciplinarity and diversity of actors working together (collaboration) and the fact that these two aspects (innovation and collaboration) will have an effect on how the knowledge is shared and disseminated (publications).

The analysis will draw on these theories and frameworks and use data from the various methods to inform the eventual synthesis. Data emanating from interviews (key informant and in-depth interviews) will be audio recorded (with interviewees consent), transcribed and translated to English (where applicable), and exported to Nvivo software for coding into emerging themes and subthemes. Some minimal quantitative data will be collected. Such quantitative data will be double entered into a computer database designed using MS-Access application. Regular file back-up will be done to avoid any loss or tampering. Back up files will be stored in flask discs and external hard discs. Data cleaning and validation will be performed in order to achieve a clean dataset that will be exported into a Statistical Package format (using SPSS version 20.0) ready for analysis.

Besides, to track the effects on researchers' publications, we shall use scientometric analysis to establish the extent, diversity, distribution of co-publications involving researchers (within the partnerships) and other researchers not party to the partnerships. Beginning with research published in Elsevier's SCOPUS database, we shall track these joint publications 5 years before the partnerships and 5 years after the partnerships have been established. In the event that the SCOPUS database doesn't yield much, we shall apply the same criterion to African Journals Online (AJOL) and track these publications in the database of African-specific journals. For analysis on the effects on innovation, we shall examine partners involved in joint applications for patents at KIPI. Partners involved in these applications will be interviewed and their views on follow-on innovation captured. To capture effect on collaborations, a number of analytical approaches will be used: First, the joint applications from KIPI; the co-publications could also be used as a proxy for collaborations and finally, researchers will be interviewed on their other collaborations. These will be analysed using the social network analysis softwares UCINET and NETDRAW and produce the relative strengths of the collaborations/linkages.

Outcomes & Outputs

WORD LIMIT: 700. Describe the major project outputs and intended outcomes. Your project outputs should creatively reflect the principles of open and collaborative science.

This project will aim to combine policy influencing with original academic contributions. For academic contribution, we shall produce a range of publications including (i) *working papers* to disseminate preliminary findings and allow stakeholders to engage with the research outputs and obtain feedback to strengthen analysis before final analytical papers and (ii) *policy briefs* written in consultation with policymakers and senior level practitioners in the relevant ministries to address specific policy issues raised by the study. Further, the study shall have (iii) a dedicated *project webpage* on the Scinnovent Centre website to disseminate results and encourage stakeholder inputs into the research. We shall use (iv) *blogging* and (v) institutional *newsletters* and *brochures* to disseminate findings and provide updates on the research progress. Other academic outputs shall include at least a *journal article* or a *book chapter* contribution and *conference paper(s)*. Policy papers shall be written to feed into on-going policy debates within Kenya as well as broadly in Africa. The final technical report will synthesize issues raised in the study and contribute to knowledge base in this topical area.

In order to contribute to policy, this study will employ a deliberate strategy of incorporating government officials (particularly from KIPi and NACOSTI) from the outset either as co-researchers and/or research advisors. These government officials will provide insights into the policy processes/dynamics, timings of policy events as well as policy intelligence further enhancing chances/opportunities for policy influencing. Besides, we shall tap into their insights in designing the policy briefs to ensure key issues/concerns are captured. Beyond their immediate contributions to the project, we hope that engaging them will lead to agency buy-in, lead to joint learning and enhance their capacity to carry forward the agenda when the project concludes thereby enhancing sustainability/continuity. We aim to have two policy/stakeholder workshops in the life of this study. The first workshop will be conducted at the inception stage to appraise the stakeholders of the objectives of the study, and fine-tune the research questions to ensure that the findings will be useful to policymaking. The final stakeholder workshop will be conducted at the end of the project where findings and recommendations shall be presented and debated at length to address any outstanding concerns before the final reports are published. The workshops will also provide opportunities for dialogue, cross-learning and consensus-building amongst the various actors and will be facilitated by experts in open and collaborative science to ensure salient points are thrashed out and debated. All the outputs from this project will be openly available to all stakeholders and will be freely disseminated.

The following specific *outputs* are anticipated from the project:

- i. Draft policy guidelines for harmonizing open science with commercialization
- ii. One policy brief
- iii. Two working papers to present preliminary findings; share widely the results and seek additional stakeholder inputs before final publications
- iv. A dedicated project webpage hosted at the Scinnovent Centre's website
- v. One popular article in a local newspaper

- vi. One journal article (submitted)
- vii. One paper presented at a regional/international conference
- viii. Two national workshops with key stakeholders

In the medium to long-term, the following *outcomes* are expected:

- i. Government policy organs will be using the findings in shaping their research policies and guidelines
- ii. Funding agencies e.g. science granting councils, will use the results to design funding instruments that foster collaborative research while also promoting commercialization
- iii. Researchers will use the experiences and lessons from these case studies to address the practical and conceptual challenges of participating in collaborative research.
- iv. Universities and public research institutes will use findings to negotiate funding/commercialization agreements that foster collaborative research and open science without jeopardizing their third mission
- v. The resultant guidelines will clarify IP and data ownership issues and thereby foster greater private sector involvement in collaborative research with universities and public research institutes.
- vi. Resultant guidelines will be used to negotiate with university/PRI partners that doesn't undermine researchers' ability for publication, follow-on innovation and participation in further collaborations.

Knowledge Translation & Dissemination

WORD LIMIT: 700. Describe how you will disseminate your outputs. To ensure that the results of your study are applied to address development challenges, explain how you intend to package, disseminate and promote the application of your findings amongst relevant stakeholder groups.

Our knowledge translation and dissemination will be guided largely by the different information/knowledge needs of our diverse stakeholders (see fig. 1 below). We shall prepare mid-term technical and financial reports covering all the activities and achievements in the first half of the project and projections for the next half. This mid-term report will be used to evaluate the project's progress and any necessary adjustments made. The final technical report will be directed to the funding agencies, university researchers/administrators, government officials (technocrats), private sector actors, project staff and other interested organizations. In addition to the technical reports, we shall prepare executive summaries suited for the different audience categories. Preliminary findings/analyses will be published as working papers and widely distributed to key stakeholders and experts to solicit their feedback. Their inputs, comments and questions will be addressed before final findings and recommendations are released. Policy briefs addressing specific policy questions will be prepared in consultation with government

technocrats. These will target mainly policymakers, private sector and other advocacy groups. We plan to hold policy dialogues/stakeholder workshops with relevant government agencies, research institutions, funding agencies and private sector actors to deliberate on the recommendations for policy guidelines for harmonizing open science and the need to commercialize research outputs. Such consultative forums will be used allow for further stakeholder input and refinement of the projects outputs. At least attendance of one international conference is planned to communicate the findings at the international stage and raise the profile of the project. Further we shall organize for radio/TV talk shows, press releases/interviews to engage with both print and electronic media. Social media platforms such as twitter, facebook and blogs are powerful tools that will be harnessed to widely communicate the results of the project and engage with a wider community of experts and other interested parties. Where appropriate, personal briefings/face-to-face discussions will be held with specific stakeholders such as policymakers/administrators to provide further detailed information about the project's findings. To ensure high quality outputs, the project advisors will be reknown experts in innovation, open science and policy studies and regular consultations will be held with them to ensure that the study design and activities delivers the intended outcomes. These approaches and strategies have been summarized in figure 1 below.

Communication channels by audience		Technical report	Executive summary	Popular article	Workshops/seminars	Blogs	Personal discussion	Brochures	facebook, twitter
Funding agencies		✓	✓				✓	✓	✓
Program administrators		✓	✓	✓	✓	✓	✓	✓	✓
Universities/Research organizations		✓	✓	✓	✓		✓	✓	✓
Policymakers		✓	✓		✓		✓	✓	
Private sector actors		✓	✓	✓	✓	✓		✓	

Fig. 1: Scinnovent Communication Plan_Open science

Network Connections & Interactions

WORD LIMIT: 500. Illustrate how you will contribute to the overall OCSDNet framework and themes. Draw on other initiatives and approaches discussed at the OCSDNet workshop, if applicable.

The overall OCSDNet framework focusing on promoting the role of open and collaborative science in development and its themes 1 on policies, theme 3 on action arenas and the various actors, and theme 4 on outcomes relating to behavior changes and interactions amongst actors are consistent with the vision, mission and objectives of the Scinnovent Centre which include: understanding barriers to the adoption and use of science, technology and innovation knowledge for decision-making and wealth creation. As such, there's a strategic fit between OCSDnet and our Centre thus making our contribution relevant beyond the current project. We view our participation in the Network as having mutual benefits. Specifically, our project will contribute to this framework by actively participating in the generation and sharing of data, information and knowledge with other colleagues in the network as well as with relevant stakeholders outside this network. We shall continuously engage the public/citizenry in discussion of our project, its objectives, findings and recommendations through public fora and social media. We shall contribute to the general knowledge/skills pool of the Network through sharing information, literature and other resources, participating in peer review/critique sessions and taking on roles assigned at individual and institutional levels to meet the objectives of the Network. The evidence generated through this project will feed into policy processes thus supporting policy and practice on research partnerships and contributing to the development goal of the Network. The policy guidelines which will be a key output of the project will guide stakeholders and empower and enhance their capacity negotiating funding and commercialization contracts. We shall leverage on our institutional strengths especially on influencing policy change (through our training course on [“the art of influencing policy change”](#) which targets researchers, policymakers and communication experts) to advance some of the policy relevant findings from the Network while also drawing on the diverse expertise/experience in the Network to enrich our programmes. Relevant findings from other OCSDNet projects will be summarized and used as case examples in future training courses.

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