An Inception Note for assessing the relationship between Government-affiliated fisheries research institutes and relevant departments and Ministries on the use of research results

Current Practices and Capacity Building Needs at TAFIRI

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1 Introduction

Human societies currently face major environmental crises and human-accelerated environmental change worldwide. Arguably, there is a critical need for evidence-based information to guide resources policy. Amid rapid scientific and technological change and increasing complexity, there is growing concern about the ability of governments to absorb the findings of scientific research and technological advancements. Knowledge exchange and transfer are the foundation for good science and science-policy interactions (Pregernig 2014).The complex field of fisheries conservation, like many other areas of environmental policy and management, is considered to be in urgent need of sound scientific expertise. However, incorporate scientific knowledge findings to political and societal decision-making in the development of legislation, policy and regulation is a persistent challenge.

In light of recent debates on the concepts of *evidence-based* public policy versus *evidence-informed* public policy, has called a need for integrate scientific-based information in formulation of legislation, policy and regulations. The low level of knowledge transfer between all actors— government institutions, the private sector, civil society and science calls for better transfer mechanisms, collaboration and communication. These synergy ensures the sustainable management of aquatic resources that support livelihood of millions of people in the region.

Sustainable conservation and proper use of aquatic environment requires policy that are clear, practicable and knowledge-based on scientific information. At a basic level, the role of science is to provide an evidence base for decisions. However, research outputs and scientific expertise are hardly integrated into policy formulation. Sharing data and scientific knowledge among scientists and between science and management organizations is limited. Similarly, decision-makers often neglect to articulate their specific data and information needs to scientists, which preclude knowledge in national and international research agendas. Understanding how information flows between scientific and decision-makers is essential for the creation of effective strategies to link scientific advice to management decisions. Recognizing that aspect, the Nairobi Convention established the *Science-to-Policy* Platform.

Increasingly, governments of the WIO region are demanding researchers to demonstrate how their research results will be used in supporting decision-making/management processes. This has led to increasing interest among scientists to conduct management-/policy-relevant research. However, the knowledge of how management authorities have used, or are using research findings in the decision-making processes, is still limited. Therefore, this research aim to investigate how scientific information generated by Tanzania Fisheries Research Institute (TAFIRI) and and other organizations is integrated in decision-making processes and legal framework formulation. Through this work, opportunities and barriers to scientific evidenced findings in coastal and marine environment is integrated for sustainable fisheries management.

1.1 The scope

This study aim to assess on how TAFIRI interact with other departments and Ministries responsible for fisheries–related matters. The task focuses to explore research results generated in coastal and marine environment have contributed to decision-making processes and legal framework formulation. The assessment explore the integration of research findings and policy making or decision making looking on the success and failure of the integration. To address this integration, the the following task will be undertaken;

i. Collate marine related research outputs from TAFIRI (published scientific papers, books and book chapters, technical scientific reports, conference/meeting reports and unpublished work, policy briefs, fact sheets and posters).
ii. Identify policies (policies, laws, regulations, and government decrees on fisheries) that have been declared since the establishment of TAFIRI research activities
iii. Identify innovations developed by TAFIRI scientists and describe their functions, its users and support provided by TAFIRI in transferring the innovation to users
iv. Identify policy briefs/advice that have been produced by TAFIRI and describe their focus, to whom they were targeted and their outcomes (e.g. were they transformed into policies, law, etc)
v. Review the collate technical scientific reports, books and book chapters, scientific papers to identify
    - Policy issues in them
    - How the policy issue was communicated to policy makers
    - Any use, if at all, of the information that was generated from the technical reports, books and book chapters and scientific papers
vi. Review TAFIRI's Act/Regulation and staff promotion guideline/criteria to identify similarities, differences and whether the two documents are aligned to each other.
vii. To analyze and preparation illustrations to be used in the report

1.2 Work Plan

A work plan illustrated in figure 1 itemized the task to be performed and specify the time when each task should begin and end. The activity are grouped into three parts—collate, data tools and analysis and reporting.

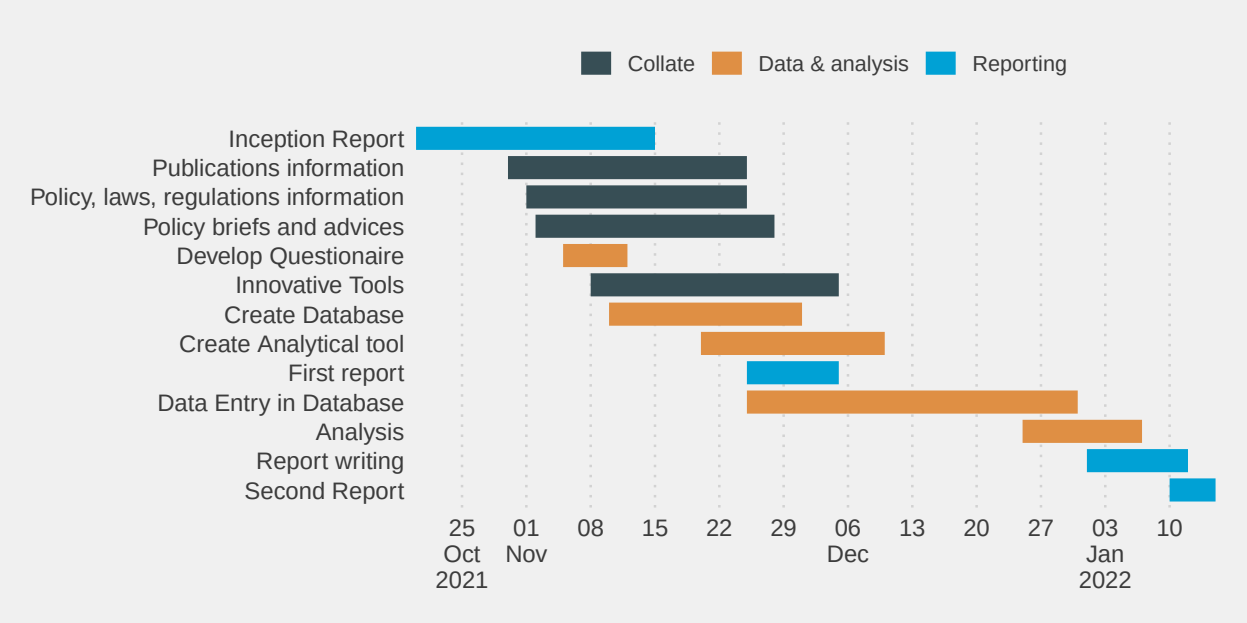

Figure 1: Workplan for the task specify the begining and ending date of each activity

1.2.1 Assignment Design

The approach that this assignment will use is presented in conceptual diagram presented in figure 2. The diagram is a bit complex, however, it provide a glimpse of key tasks that will be undertaken. Basically, the diagram represent key working areas. The first is to identify researchers and non-researchers at Tanzania Fisheries Research Institute (TAFIRI) from its five strategic research centers that have worked on engaged in researches in marine ecosystems. Once the researchers are identified, their publication and citation information will be retrieved from publication indexes, which will be supplemented with questionnaire. The information will later stored in the database, what will be created using Microsoft Access.

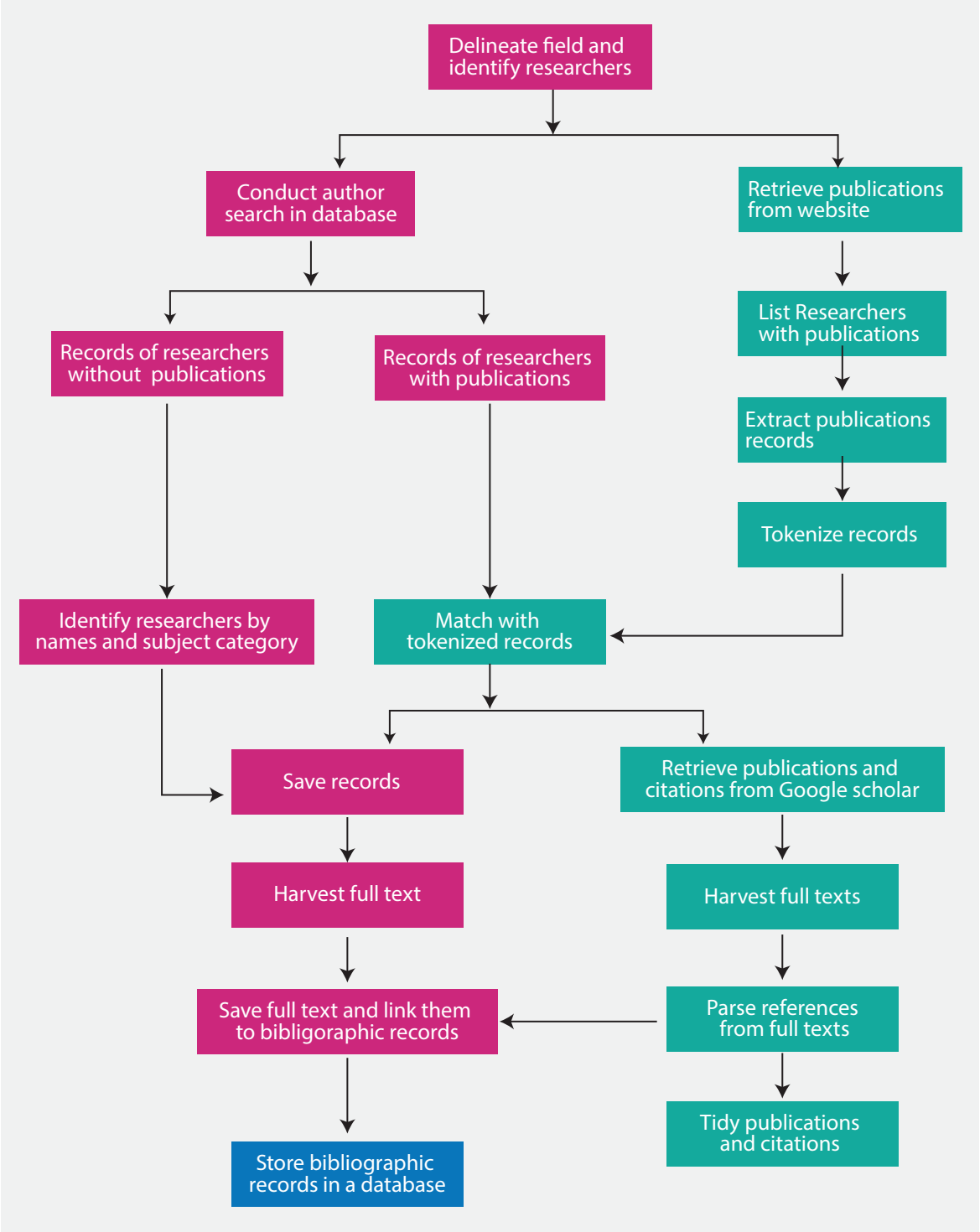

Figure 2: Detailed workflow for creating publication and citation database from TAFIRI

1.2.2 Google Forms

Authors whose publications and reports were conducted in the coastal and marine waters will be considered extracted for collecting information of their perception on scienfific findings in support of decision making and legal formulation. Researchers that will be identified based on their researches conducted in the Indian Ocean will be selected for interview. To facilitate easy

collection of opinions, Google Form will be used as a tool for online data collection (Wikipedia contributors 2021).

The tool has capability to store collected information in a tidy format, which conform to the universal standard of wildely used database and popular statistical software. The form will be designed and the questions that seek to address the questions will be specified. The form that will be used can be found onlne at THIS link. A copy of the questionnaire is attached as an appendix at the end of this document.

1.3 Publication types

Different different types of scholarly literature exist. First publications will be identified on whether are original research (categorized as primary literature) or review research that based on other published work (secondary literature). We will seek information from the following publications

1. **Original research**: These are detailed studies reporting original research and are classified as primary literature. They include hypothesis, background study, methods, results, interpretation of findings, and a discussion of possible implications. Original research articles are long, with the word limit ranging from 3000 to 6000,2,3 and can even go up to 12,000 words for some journals.
2. **Review articles** provide a critical and constructive analysis of existing published literature in a field, through summary, analysis, and comparison, often identifying specific gaps or problems and providing recommendations for future research. These are considered as secondary literature since they generally do not present new data from the author's experimental work.
3. **A scientific report** describes the process, progress, and or results of technical or scientific research or the state of a technical or scientific research problem.

Original articles and scientific report will be further categorized into either applied or basic research. An *applied research* are those that had created practical solutions for specific problems in fisheries while *basic* one are those publications that that sought to expand or advance knowledge in fisheries and related fields.

1.3.1 Harvest Publications from Citation Indexes

Several citation indexes exist that provide unprecedented access to the content found in research databases. This service benefits students, researchers, practitioners, educators, historians, policymakers, publishers, and more by enabling users to identify trends and patterns in research, chart a researcher's career, find the history of a particular intervention or methodology, aid in literature review, or answer other detailed research questions.

Many indexes allow this by way of an application programming interface (API) that allows uses to query the database and retrieve data programmatically (APA 2021). Through this service, people can request custom sets of bibliographic/citation metadata and abstracts. While not all indexes

support this use case, Google Scholar offers the service free of charge to anyone with an Internet connection. Other citation indexes like the Web of Science is only available to those academics whose institutions are able and willing to bear the (quite substantial) subscription costs of the Web of Science and other databases (Harzing and Van der Wal 2008).

As Keirstead (2016) indicates free access to data provided by Google Scholar provides an avenue for more transparency in tenure reviews, funding and other science policy issues, as it allows citation counts, and analyses based thereon, to be performed and duplicated by anyone. We will use Google scholar web search engine to retrieve text or metadata of scholarly literature across an array of publishing formats and disciplines (Keirstead 2016). We will focus on two key aspects to obtain the text content of publication and citation, which are;

- **Pull publications**—Gets the publications for a specified author. Google uses two id codes to uniquely reference a publication. The results of this method includes `cid` which can be used to link to a publication's full citation history (i.e. if you click on the number of citations in the main scholar profile page), and `pubid` which links to the details of the publication (i.e. if you click on the title of the publication in the main scholar profile page.)
- **Pull citation**—Gets the number of citations to a scholar's articles over the past nine years.

Figure 3 represent an except of publications and citation information that Prof. POJ Bwathondi published in various journal and books.

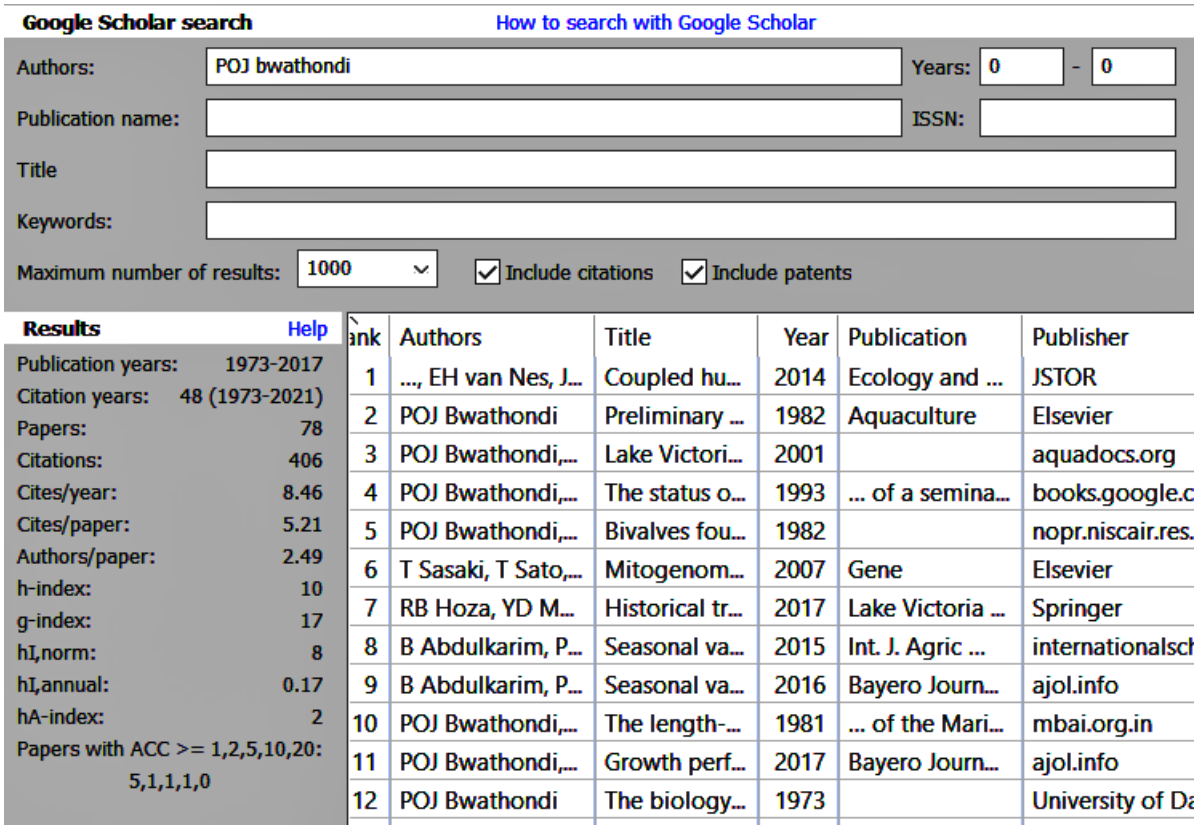

Figure 3: Examplelry of Retrieved Publication information of POJ Bwathondi

1.3.2 Extract Publication Metadata

In each publication, key metadata information will be extracted. These information will include the *author(s)*, *title of publication*, *year of publication*, *type of publication*, *publisher*, *keywords*, and an *abstract*. Since the common approach to extracting publication metadata by selecting publications does not work because TAFIRI lack publication database with sufficient coverage, criteria will be established for the extraction of information of the key publication metadata. This will be achieved by accessing peer reviewed and scientific reports, and by reading abstract section of the publications.

1.3.3 Publications database

Once we have retrieved the citation and publication information of all the publication from TAFIRI, we will then store them in Microsoft Access Database. We will create a dedicated database to store these information because because commercial databases such as the Web of Science (WoS) or Scopus do not sufficiently cover the literature of the topic in question. In this regard, building such a database, which ideally should contain all TAFIRI publications since it was established. The information in the database will later used to analyze link of TAFIRI research findings in support for decision making and policy formulation. Therefore, our dedicated database must include the publications' references and full texts.

1.3.4 Software and Tools

We will visit TAFIRI website and personal blogs of all identified researchers to text mine publications into tidy format data frame. We will also conduct a search in Google Scholar (Keirstead 2016) and Scopus (Bensman 2011) to supplement publications and citations. For researchers whose publications are not included in the Google Scholar or Scopus or their wepbages like blogs, we will collate their information through questionnaire survey. We will use a combination of software and tools during this work. The first software is open-source programming language R (R Core Team 2020) because has gained a central place in the text mining over the last decade, driven by the availability of diverse data scraping packages that allows to extract citation and publications from webpages (Keirstead 2016). The second tool is Google Forms (Herlina et al. 2019), which will be used to create online questionnaire and collect information. The third software is Microsoft Access and Excel spreadsheet for organizing and store data. Data preparations, analysis and plotting results and writing of detailed methodology will be carried out in R language (R Core Team 2020).

2 Period and Performance of Deliverables

Table 1 highlight a period of each task and the specified deadline to deliver the products.

Table 1: Date for Exptected Deliverables

Date and Expected deliverable
October 30, 2021
Inception report outlining work plan for delivery of outputs
November 30, 2021
List of all research outputs from TAFIRI since its establishment to 2020 List of Policies, laws and regulations and decrees that have been declared from TAFIRI research activities Innovations developed by TAFIRI scientists and how these were transferred to users List of all Policy Briefs or advices that have been produced by TAFIRI. Their focus, to whom they were targeted and their outcomes (e.g. were they transformed into policies, law, etc) A report on whether TAFIRI staff promotion guideline or criteria aligns to the Act and Regulation that established the institution
January 15, 2022
A report containing review of the collated technical scientific reports, books and book chapters, scientific papers outlining policy issues in them, how the policy issue was communicated to policy makers, any use, if at all, of the information that was generated from the technical reports, books and book chapters and scientific papers (e.g. submitted to the Ministry, communicated to stakeholders, published in journal, book and or book chapter, promotion etc),

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