



## STRENGTHENING RESEARCH AND INNOVATION (R&I) IN NATURAL RESOURCES MANAGEMENT (NRM) AND WASTE MANAGEMENT (WM) IN MALAWI, MOZAMBIQUE, TANZANIA AND ZAMBIA

### BASELINE SURVEY REPORT

Prepared by the College of African Wildlife Management (CAWM), United Republic of Tanzania for The  
Southern African Development Community (SADC) Secretariat

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## EXECUTIVE SUMMARY

This survey was meant to generate critical baseline data for informing the SADC coordinated project 'Strengthening Research and Innovation (R&I) in Natural Resources Management (NRM) and Waste Management (WM) Project that is being implemented for the period 1<sup>st</sup> May 2022 to 30<sup>th</sup> April 2025 in the countries of Malawi, Mozambique, Tanzania and Zambia. It is funded by the European Union (EU) through the Organization of African, Caribbean Pacific States (OACPS) under the African, Caribbean and Pacific (ACP) Innovative Fund, part of the OACPS R&I Programme.

The project responds to the SADC Regional Development Agenda and the SADC Regional Indicative Strategic Development Plan (RISDP 2020 - 2030). With research and innovation at the heart, this project, promotes best practice scientific applications to solving the critical challenges related to Waste Management (WM) and Natural Resources Management (NRM) within the region. For the purpose of this project, the NRM focus is on Community Based Natural Resources Management (CBNRM) and WM mainly on solid waste management. The target entities are the research and tertiary education institutions, government entities, local and national groupings, value chain actors and the public-private sector as players and/or beneficiaries for promoting sustainable WM and NRM practices.

This Baseline Survey was undertaken by the College of African Wildlife Management-Mweka (United Republic of Tanzania), one of the members of the project consortium. Its results are expected to objectively inform the project log frame hence guide its monitoring and evaluation throughout the project's lifecycle. The survey employed a 'mixed-methods' approach to social-developmental investigations, which innovatively combines both qualitative and quantitative tools for data collection. Therefore, a semi-structured questionnaire, focus group discussions, key informant interviews and a desk review were combined to collectively gather data on WM and NRM in the four target countries.

A total of 152 or 76% of the 200 targeted respondents fully filled-in the questionnaires administered to them either online or physically. These data were supplemented by those from Focus Group Discussion (FGD) that involved two (2) groups of seven (7) respondents each (total 14 respondents) and Key Informant Interviews (KII) involving 17 persons. The two methods specifically targeted seasoned respondents with in-depth professional knowledge and experience on WM and NRM issues within their respective countries. All these methods were further supplemented by information gathered from a large body of literature.

Regardless of the methodology employed, inquiries focused on establishing the baseline conditions with regard to WM and NRM performance within the targeted countries. Formulation of questions were guided by the project performance indicators as provided for in the project's log-frame. Against this background, and especially given the multiple methodologies used in data collection, descriptive analyses are also presented in this report to triangulate and briefly interpret the findings thus obtained.

The first draft report of this survey was verified through an online workshop by 79 representatives of stakeholders from all the target countries at the end August 2023. The current report has as much as possible incorporated the key recommendations of the validation workshop. It clearly defines the WM and NRM both in terms of numerical baseline indicators, in line with the project log-frame or contextually where fixed numbers proved difficult to obtain. The report necessarily dissects the entire complexity of variables thus considered within the framework of the project: Two (2) sectors (WM and NRM), five (5) institutional groupings (Research and Tertiary education, Government entities, Local and National Groupings, Value Chain Actors and Public-Private Linkages and four (4) target countries: Malawi, Mozambique, Tanzania and Zambia. Points of disparities and / or convergences in terms of application of innovative solutions to solving WM and NRM issues are elaborated. As much as possible, with respect to WM and NRM, numerical data is

provided to inform on baseline conditions with regard to scientifically-led policy formulations, academic performance in Research and Innovation, best practice Public Private Partnerships and participation of groupings (such as Community Based Organizations) and Value Chain Actors in WM and NRM interventions. It should be made clear that the study was meant to simply elucidate baseline WM and NRM situation to guide project implementation as opposed to lengthy explanations of the same. Thus, based on preliminary comparisons of the examined complexity of variables, the survey has surfaced the most apparent baseline issues in the WM and NRM performances by target countries or institutional groupings. On the whole, this baseline survey report represents the first of the expected main outputs of the project. The report should now feed into the project implementation cycle as it rolls out into its full implementation phase.

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## LIST OF ABBREVIATION

ACP	African, Caribbean and Pacific
CSOs	Civil Society Organizations
CAWM	College of African Wildlife Management
CBOs	Community-Based Organizations
CLN	Community Leaders Network
CBNRM	Community-Based Natural Resources Management
DR	Desk Review
FGD	Focus Group Discussion
IPLCs	Indigenous Peoples and Local Communities
KII	Key Informant Interview
LEAP	Law Enforcement and Anti-Poaching
NRM	Natural Resources Management
OACP-RI	Organization of African, Caribbean and Pacific States, Research and Innovation
PPP	Public Private Partnership
QS	Questionnaire Survey
RISDP	Regional Indicative Strategic Development Plan
R&I	Research and Innovation
SADC	South African Development Community
SAWC	Southern African Wildlife College
SOs	Strategic Objectives
TFCA	Trans-frontier Conservation Areas
UNDP	United Nations Development Programme
WWF	World Wide Fund for Nature
VCAs	Value Chain Actors
WM	Waste Management

## SECTION 1: BACKGROUND

This report is part of scheduled reporting by the College of African Wildlife Management (CAWM), Mweka, Tanzania, as part of the project 'Strengthening Research and Innovation (R&I) in Natural Resources Management (NRM) and Waste Management (WM). This project is being implemented in four countries: Malawi, Mozambique, Tanzania and Zambia - funded by the Organization of African, Caribbean and Pacific States Research and Innovation (OACP-RI) programme through its African, Caribbean and Pacific (ACP) Innovative Fund. It responds to the Southern African Development Community (SADC's) Regional Development Agenda and the 2020-2030 SADC Regional Indicative Strategic Development Plan (RISDP). The project, thus, seeks to address challenges confronting SADC as it strives to support the region in attaining sustainable NRM and WM frameworks.

The R&I outputs will in particular facilitate effective implementation of the RISDP actions on NRM and WM. It is therefore not only relevant to both the government needs and constraints of the target countries, but also to the citizens of the SADC region at large including the local communities who are the primary beneficiaries. The project targets the research and tertiary education institutions, government entities, local and national groupings, value chain actors and the public-private sector linkage.

The use of R&I in NRM and WM involves development and application of new knowledge, technologies and approaches to address challenges in these areas. It encompasses identifying innovative solutions, testing them in real-world scenarios, and refining them into practical applications. In the NRM context, R&I involves studying sustainable practices, conservation methods and ecosystem management strategies. This also includes investigating efficient use of natural resources and biodiversity conservation techniques. In the WM context, R&I focus on novel waste reduction, recycling and disposal techniques. Further, this involves investigating innovative waste-to-energy technologies, exploring ways to minimize plastic pollution and improving waste collection and processing methods. The overall objectives for applying R&I approaches in NRM and WM is to contribute to more sustainable and efficient locally-adapted practices, enhancing environmental protection and resource utilization. Through the application of R&I approaches, the expected outputs are new and adapted technologies, best practices, data and insights, policy recommendations, educational materials, collaborative networks, pilot projects, publications and capacity building programmes.

The main objective of the project is strengthened sustainable WM and NRM in the targeted countries of the SADC region. Its specific Strategic Objectives (SOs) or outcomes are:

- i. SO1: Research and tertiary education institutes applying up-to date research and training in waste management WM and NRM;
- ii. SO2: Government entities drafting, implementing and monitoring WM and NRM policies based on scientifically developed evidence;
- iii. SO3: Strengthened and effective participation of local and national groupings from society (IPLCs, CBOs, CSOs) in evidence-based decision making in WM and NRM;

- iv. SO4: Effective WM and NRM practices applied by value chain actors from the formal and informal sectors; and
- v. SO5: Improved collaboration between experts from the public and private sectors on WM and NRM R&I issues (science-policy-practice interface).

In order to realize these twin NRM-WM specific objectives, the project adopts a wider ecosystem-based approach that seeks to innovatively strengthen capacity through Science, Action, Policy and Engagement. The specific activities of the project are as follows:

- i. Capacity strengthening of research and tertiary education institutes in delivering research and training in WM and NRM;
- ii. Capacity strengthening of government entities in drafting, implementing and monitoring WM and NRM policies;
- iii. Capacity enhancement of local and national groupings from society in effective participation and decision making in sustainable WM and NRM based on scientifically driven evidences;
- iv. Demonstration of innovative operational and management solutions to value chain actors in the WM+NRM sectors; and
- v. Effective collaboration of actors from the science-policy-practice on WM and NRM issues.

The project is coordinated by the SADC Secretariat, implemented jointly by The College of African Wildlife Management (CAWM)-Mweka, Tanzania and The World-Wide Fund for Nature (WWF) – Mozambique. It is supported on the ground by four local multipliers operating within the target countries. These are Sky berry Botswana Proprietary Limited (Botswana), Southern African Wildlife College (SAWC) (South Africa), Community Wildlife Management Areas Consortium (CWMAC) (Tanzania) and Repensar (Mozambique).



**Photo 1: Members of SADC Secretariat during physical verification visit of project implementation at CAWM, Tanzania, July 2023. Photo credit: Yusuph Mbwana**

To provide for informed guidance on the specific interventions needed for the project to realize its SOs, the existing WM and NRM situation on the ground needs to be benchmarked. This is critical for both incremental tracking of progress in project implementation and the realization of the project SOs objectives at the end. Thus, the baseline survey serves to gather essential data and information about the project's initial conditions, thus setting benchmarking performance variable indices that can be measured and evaluated as well as the existing resources that are relevant to the project. These data provided thus become the reference point to track changes, identify deviations and assess the project's success in achieving its goals. The results of this survey, presented here, are expected to serve as pilot for later domestication and upscaling into the entire SADC region.



## SECTION 2: ORGANIZATION OF THE REPORT

This report is organized into five sections as follows:

**Section 1** gives the background information of the project - including in terms of its regional genesis, importance and prioritization. It also describes the objectives and the broader implementation fabric including the specific activities earmarked for implementation. The section also underscores the importance of carrying out this baseline survey as a critical entry step of the project cycle.

**Section 2** (this section) described how the content of the report are organized and structured

**Section 3** provides a synthesis of the methodology used in carrying out this Baseline Survey. It describes the scope, survey procedures and data collection and analysis tools thus employed in the survey.

**Section 4** presents the main findings of the survey focusing on **both** collective **and** country-specific portrayal of the four target countries in addressing WM and NRM issues. The findings are presented with specific reference to the diagnosis of key science and innovation-driven WM and NRM interventions (as perceived by the respondents) **and** organized to reflect the five SOs of the WM+NRM divide of the project philosophy (see section 1).

**Section 5** summarizes the perspectives from KII and FGDs findings in order to qualify those obtained from the questionnaire survey.

**Section 6** provides the main conclusions of the survey in view of the findings obtained.

## SECTION 3: METHODOLOGY

### 3.1 Scope

In December 2022, a total of 77 institutions from the four target countries were consultatively shortlisted<sup>1</sup> for subsequent detailed consultations. This list was later customized (more subjects added and some replaced) and adopted during this baseline survey phase (**Appendix I**). This baseline survey, conducted between March-August 2023, was both widely participatory and consultative seeking to benchmark the WM and NRM situation in the four target countries. It was structured as to capture the on-the-ground WM and NRM status and interventions in line with the five SOs of the Project (details in **Section 2**) targeting individuals and institutions with deeper NRM and WM knowledge and experiences while focusing on the project's genesis and expectations.

### 3.2 Data collection approaches

To sufficiently cover the complex dimensions of this rather broad and intricate survey, a 'mixed-methods approach'<sup>2</sup> was adopted. This is a method of choice in social development studies that combines qualitative and quantitative methods while integrating data thus gathered (see e.g., Schoonenboom J & Johnson RB (2017)).<sup>3</sup> This method was considered ideal for this survey given the nature of the inquiry and the breadth and depth of WM and NRM information needed in particular. However, as much as possible, data thus gathered were verified for consistence based on preset criteria to ensure validity. For instance, only questionnaires responded to by appropriate respondents were further processed while those partially filled-in were excluded from subsequent analysis.

#### 3.2.1 Desk review

Desk review simply embodies what has previously gone into the subject<sup>4</sup> and is critical for integrating information collected by others that is considered pertinent to the project. Desk review was conducted to gather information on:- i) number of jobs created in WM and NRM) sectors (by country, sector, sex and age); ii) number of government initiatives to boost the engagement of value chain actors in WM and NRM; iii) Size of wildlife populations (by country and type of wildlife species); iv) Volume (in kg) of pollutants in water bodies (by country and type of pollutant); v) NRM initiatives (by country and sector); vi) land and water surface (in km<sup>2</sup>) under protection and conservation (by country and type of surface); and vii) policy and legal framework of WM and CBNRM in the four target countries. The review process commenced early March 2023 starting with the key SADC key documents related to the project in order to better orient the study team with the project context within the workings of SADC. These documents include the project [award] proposal document: 'Direct Award-Grant Application Form ACP Innovation Fund of April 2021'<sup>5</sup> and

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<sup>1</sup> The meeting was held in Mozambique in December 2022 involving 5 participants from the 3 consortia (SADC Secretariat, CAWM and WWF Mozambique listed 72 WM+NRM institutions from 4 target countries. Separate Report Submitted available for Submission.

<sup>2</sup> Morgan, D (2017). Mixed Methods Research. In K. Korgen (Ed.). The Cambridge Handbook of Sociology: Core Areas of Sociology and Development of Discipline (pp.143-152). Cambridge: Cambridge University Press. doi:10.1017/9781316418376.015

<sup>3</sup> Schoonenboom J & Johnson RB (2017). How to Construct a Mixed Methods Research Design. *Kohner Z Soz Sozpsychol* 69 (Suppl 2): 107-131. doi: 10.1007/s11577-017-0454-1.

<sup>4</sup> Moore N. (2006). Desk research. In *How to Do Research: The Practical Guide to Designing and Managing Research Projects* (pp. 106-111). Facet. doi:10.29085/9781856049825.011

<sup>5</sup> Annex 1 of the project document: Grant Application form Direct Award Mechanism - April 2021.

the Regional Indicative Strategic Development Plan (RISDP 2020-2030)<sup>6</sup> in particular, which prioritizes WM and NRM interventions. In addition, the OACPS R&I Programme<sup>7</sup>, SADC protocol on Wildlife Conservation and Law Enforcement (1999)<sup>8</sup> and Forestry (2002)<sup>9</sup> respectively; Shared Water Course (2000)<sup>10</sup> and Environmental Management for Sustainable Development (2014)<sup>11</sup>, SADC Biodiversity Strategy<sup>12</sup>, Law Enforcement and Anti-Poaching (LEAP) Strategy,<sup>13</sup> Trans frontier Conservation Area (TFCA) Program<sup>14</sup> and SADC Framework Strategy on wildlife-based Economy<sup>15</sup> were also reviewed. Overall, apart from surfacing valuable WM and NRM information allowing for their integration into data analysis and interpretation of findings, the desk review also helped to better integrate the various components of the project - including the stakeholder WM and NRM roles and linkages.

### 3.2.2 Questionnaire survey

Questionnaire survey was the main approach to accumulate WM and NRM ground data on knowledge, practices and experiences, respectively. Prior to this survey, a detailed stakeholder analysis was carried out following the procedure of WWF (2005)<sup>16</sup> (see also Section 3.1). This is a cross-cutting Stakeholder analysis Tool that capitalizes on identification their specific interests, influences and importance hence the potential project (positive or negative) impacts upon them. This then allows for informed decisions on how to best engage them. A separate Stakeholder Analysis report was submitted to SADC in March 2023).

Following an identification of respondents, a set of four brief semi-structured questionnaires duplicated by WM and NRM main themes and topics each comprising of up to 14 questions (see **Appendix II**) were designed using an online Google survey tool. Each respondent was administered with only one type of these questionnaires considered relevant with his/her WM or NRM institutional related functions in order to reinforce the validity of responses. Questions were carefully formulated so as to elicit responses reflective of the project philosophy as a whole, but aligned to the specific SOs and targeting the relevant institutions: (i) Research and Tertiary Education Institutes (ii) Government entities (iii) Local and National Groupings (CBOs, CSOs, NGOs, Private) (iv) Value Chain Actors (v) Experts from the Public and Private

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<sup>6</sup> Southern African Development Community (SADC) Regional Indicative Strategic Development Plan (RISDP) 2020–2030, Gaborone, Botswana, 2020.

<sup>7</sup> Organisation of African, Caribbean and Pacific States (OACPS) Research and Innovation Programme Brussels – Belgium. <https://oacps-ri.eu/en/>

<sup>8</sup> Southern African Development Community (SADC) (1999) Protocol on Wildlife Conservation and Law Enforcement. [https://www.sadc.int/sites/default/files/2021-08/Wildlife\\_Conservation.pdf](https://www.sadc.int/sites/default/files/2021-08/Wildlife_Conservation.pdf)

<sup>9</sup> Southern African Development Community (SADC) (2002); Protocol on Forestry [https://www.sadc.int/sites/default/files/2021-08/Protocol\\_on\\_Forestry\\_2002](https://www.sadc.int/sites/default/files/2021-08/Protocol_on_Forestry_2002)

<sup>10</sup> Southern African Development Community (SADC) (2000) Protocol on Shared Water Course 2000 [https://www.sadc.int/sites/default/files/2021-08/Revised\\_Protocol\\_on\\_Shared\\_Watercourses\\_-\\_2000\\_-\\_English.pdf](https://www.sadc.int/sites/default/files/2021-08/Revised_Protocol_on_Shared_Watercourses_-_2000_-_English.pdf)

<sup>11</sup> Southern African Development Community (SADC) Protocol on Environmental Management for Sustainable Development 2014. [https://static.pmg.org.za/190305Annexure\\_1Protocol\\_on\\_Environment\\_Management\\_for\\_Sustainable\\_D.pdf](https://static.pmg.org.za/190305Annexure_1Protocol_on_Environment_Management_for_Sustainable_D.pdf)

<sup>12</sup> Southern African Development Community (SADC) Biodiversity Strategy [https://www.sadc.int/sites/default/files/2021-08/SADC\\_Regional\\_Biodiversity\\_Strategy](https://www.sadc.int/sites/default/files/2021-08/SADC_Regional_Biodiversity_Strategy)

<sup>13</sup> Southern African Development Community (SADC 2015) Law Enforcement and Anti-Poaching Strategy 2016-2021 <https://www.sadc.int/document/sadc-law-enforcement-and-anti-poaching-strategy-english>

<sup>14</sup> Southern African Development Community (SADC) Trans frontier Conservation Areas (<https://tfcaportal.org/>)

<sup>15</sup> SADC Framework Strategy on Wildlife-based Economy (in preparation). <https://www.sadc.int/procurement-opportunities/development-framework-strategy-sadc-wildlife-based-economy>

<sup>16</sup> Bronwen G, WWF-US and Gawler M (2005) Cross-cutting Tool Stakeholder Analysis: Resources for Implementing the WWF standards (Foundation of Success ed.) WWF-US.

Sectors. They were also carefully structured to allow for ease of understanding and filling. To further improve on the online sample size, field visits were scheduled in respective countries in which additional pre-identified respondents were administered with questionnaires for physical filling. This survey was supplemented by a second round of online questionnaires to respondents who could not be met physically for logistical reasons. The returned questionnaires were checked for the pre-set criteria of analysis<sup>17</sup>(see also section 3.2).



**Photo 2: Questionnaire filling session during physical Baseline data collection in Lusaka, Zambia. July 2023.**  
Photo credit: Mutende Simwanza

### 3.2.3 Focus Group Discussion

A Focus Group Discussions (FGD) was convened by grouping individuals with shared portfolios, expertise and experiences within the NRM and WM divide, guided by a checklist of structured questions (**Appendix III**). Conversations were led by an experienced facilitator from the Study Team, audio-recorded with consent from the respondents previously sought and obtained. The aim was to elicit both individual and shared views of respondents, observing consensus and disagreements. Two (2) FGDs of seven participants each (Total = 14 participants) representing the four (4) target countries (**Appendix IV**) were conducted in Tanzania, in April 2023 to reflect on each of the WM and NRM topics (**Appendix IV**). The results of FGDs (**Appendix V**) were integrated with those of questionnaire surveys (**Section 3.2.2**) for interpreting the findings.

### 3.2.4 Key Informant Interviews

Questionnaire surveys and FGD were supplemented by Key Informant Interviews (KIIs) also guided by a standardized set of questions (**Appendix VI**). This approach was meant to obtain broader and in-depth perspectives from seasoned respondents with relevant expertise and professional backgrounds in specific areas of inquiry. The KII interview involved 17 respondents from 17 institutions altogether (**Appendix VII**). The results of these interviews were also integrated with those of the Questionnaire survey.



**Photo 3: Key Informant Interview with Director of Local Government, Ministry of Local Government, Malawi. Photo credit: Gift Nhalane**

<sup>17</sup> Some questionnaires were found to be only partially or inappropriately filled, or grossly filled with contents that could distort the interpretation of the results. These were sorted and dropped from further analysis. Initially, Tanzania was also found to exceed other countries in number of questionnaires by far but on closer examination, it was found that some respondents who were initially administered with questionnaires were not directly relevant to especially the CBNRM area of the NRM divide, which could have precluded an objective comparison with other countries. These were also eliminated from further analysis.

### 3.3 Data Analysis

A SharePoint database was created where KII notes, FGD transcripts, Desk Review summaries and Questionnaire Survey information from Google surveys (details in **sections 3.2.2-3.2.3**) were deposited. Data analysis ensured that institutional responses were effectively assessed against the objectives of the project and with close reference with its log frame. Quantitative data from online surveys were downloaded from Google forms into Microsoft Excel® worksheets and analysed descriptively to depict relevant differences or convergences and trends thereof.

Open-ended responses were sorted, categorized thematically and subjected to a 'multi-criteria decision-making matrix' for analysis - a method of choice in making decisions in presence of multiple objectives.<sup>18</sup> Responses were then as much as feasible triangulated in order uncover the most obvious disparities or agreements in WM and NRM knowledge, experiences and practice amongst and within the target countries.



**Photo 4: CAWM baseline survey team during report writing session, Tanzania. Photo credit: Emmanuel Lyimo**

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<sup>18</sup> Poheker SD & Ranachandran M (2003). Application of multi-criteria decision making to sustainable energy planning-A review, Renewable and sustainable energy review, 8(4) 365-381.

## SECTION 4: FINDINGS & DISCUSSION

### 4.1 Sample size and characteristics of respondents

#### 4.1.1 Questionnaire response rate

A total of 152 were validated to have been fully filled-in out of the 200 total initially administered, representing a response rate of about 76%. **Table 4.1.1** shows that a slightly higher number (56.6%) of these respondents came from NRM sector but overall, their distribution across the NRM sector, target countries and institutional groupings was reasonably balanced. Table 4.1.1 further shows that the country-specific questionnaire response rates were also fairly comparable for WM [ranging 19.7-24.3% - albeit with a slight elevation (34.8%) for Tanzania], but particularly so for NRM (22.1-29.1%). Overall, these data are considered relatively well balanced to allow for analysis.

**Table 4.1.1 Number of questionnaire respondents by target country, institutional grouping and WM/NRM sector**

(a) WM					
	WM				
	MAL	MOZ	TAN	ZAM	Total
Research & Tertiary Institutions	1	3	4	2	10
Government Entities	8	6	3	1	19
Local and National Groupings	2	2	5	1	10
Value Chain Actors/Private sector	3	5	11	9	28
<b>Total</b>	<b>14</b>	<b>16</b>	<b>23</b>	<b>13</b>	<b>66</b>
<b>(%)</b>	<b>21.2</b>	<b>24.3</b>	<b>34.8</b>	<b>19.7</b>	<b>100</b>

(b) NRM					
	NRM				
	MAL	MOZ	TAN	ZAM	Total
Research & Tertiary Institutions	7	3	8	3	21
Government Entities	4	3	3	4	14
Local and National Groupings	4	6	6	10	26
Value Chain Actors/Private sector	6	9	8	2	25
<b>Total</b>	<b>21</b>	<b>21</b>	<b>25</b>	<b>19</b>	<b>86</b>
<b>(%)</b>	<b>24.4</b>	<b>24.4</b>	<b>29.1</b>	<b>22.1</b>	<b>100.0</b>

MAL=Malawi    MOZ=Mozambique    TAN=Tanzania    ZAM=Zambia

### 4.2 Characteristics of Respondents

The questionnaire respondents were dominated by males (75%) although both sexes responded to WM and NRM questionnaires with comparable proportions (**Figure 4.2.1**), there were slightly more males almost 60%) in the NRM compared to females. That the overall bulk of responses came from males is indicative of gender imbalance in the WM and NRM job market, although the within-gender preferences for WM or NRM related jobs are not apparent. In any case, these gender-based disparities related to WM and NRM jobs need to be addressed as this project proceeds.

No. respondents

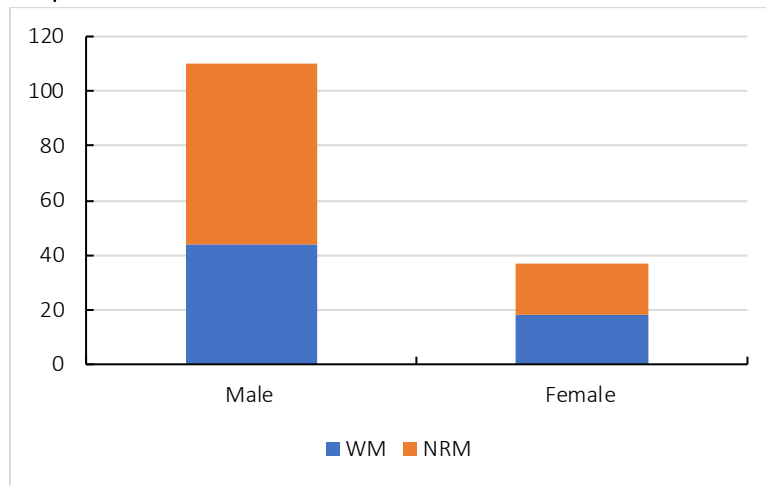


Figure 4.2.1: Response rate by gender and WM/NRM grouping

Figure 4.2.2 shows that most respondents were aged 18-60 years regardless of country, which is expected given the retirement conditions. The working experiences of respondents also fall within a broad range of <5 to >10 years (Figure 4.2.3). Similarly, they came from WM and NRM institutions ageing <5 to >10 years in all the target countries (Figure 4.2.4). Overall, this scenario of data distribution indicates a fairly balanced mix of respondents with regard to WM and NRM respondents of a broad range of institutional memories and experiences.

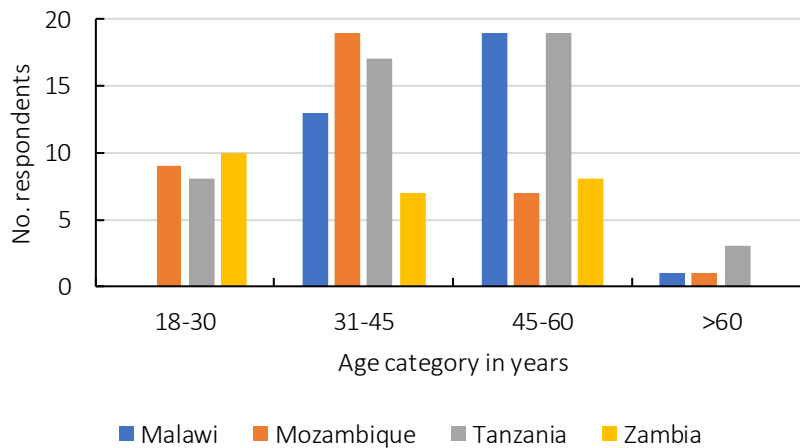


Figure 4.2.2: Age characteristics of respondents by country (n=152)

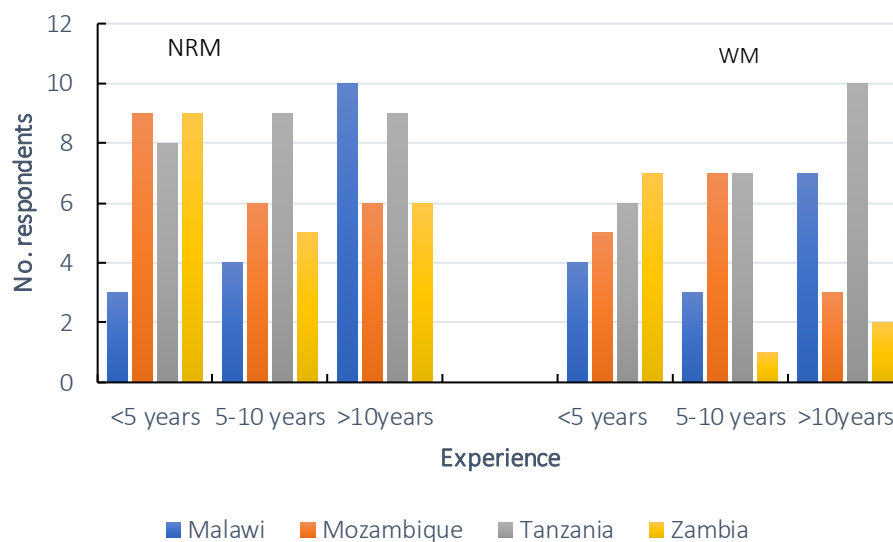


Figure 4.2.3: Work experiences of respondents by country (WM: n=66 and NRM: n=86)

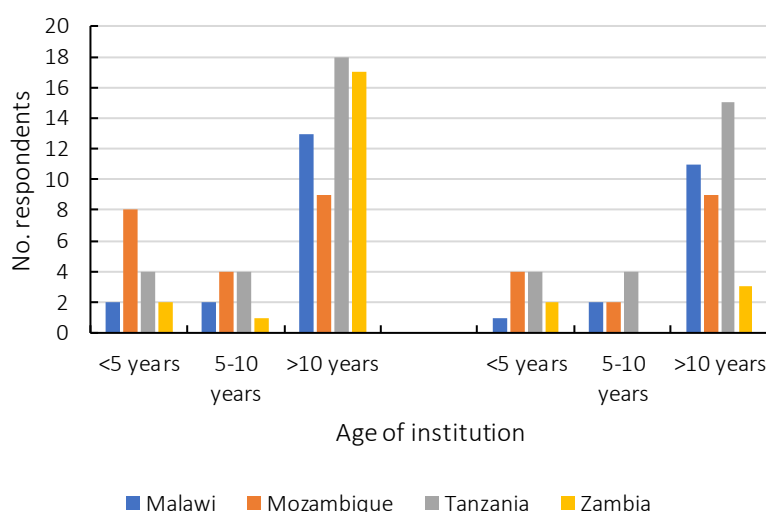


Figure 4.2.4: Origin of respondents by institutional WM (n=66) and NRM (n=86)

### 4.3 Baseline indicators of WM and NRM performance

#### 4.3.1 Number of jobs created by country, gender and age

Information on number of jobs created by the WM and NRM sectors was also sourced from literature (sources cited in specific footnotes). Obviously, such data vary greatly by time, source and methodology of collection per target country, but they are nevertheless informative for the purposes of this study. It can be seen that WM and NRM sectors combined have so far generated a total of about six (6) million jobs between the years 2017-2021 (Table 4.3.1) within the target countries. However, it is striking that the NRM sector commands, by far, a much larger share (98.6%; n=6,031,089) of these jobs. These figures also indicate that the great majority of WM jobs have been taken by males (70.8%; n=84,625), while the M:F ratio for the NRM sector is roughly comparable (males = 49.1%; n=5,946,464). On the whole, irrespective



of the target country, the gender disparity in employment appears more pronounced in the WM compared to the NRM sector. That these figures from literature do not fully agree with the questionnaire response rates (section 4.2) is probably justifiable, given they represent much larger samples gathered mainly through centralized nationwide statistical systems. These disparities apart, the male-female disparities in WM and NRM job employability are clearly apparent, which warrant targeted efforts to address them. Country-specific youth-related data on WM and NRM employment rates are also fragmented in literature (for example, no data from Mozambique and Malawi were accessed in this respect) or reported in formats that precludes direct comparisons. In addition, direct youth to adult employment ratios are particularly scarce (Table 4.3.1) This, therefore, remains a fundamental gap in data that should be addressed.

**Table 4.3.1 Number of jobs created in WM and NRM sectors (by country, sector, sex and age)**

(a) WM

Country	Age (15-64)		Total	Year
	Male (%)	Female (%)		
Malawi	4,693 (79.9)	1,176 (20.1)	5,869	2021 <sup>19</sup>
Mozambique* <sup>20</sup>	-	-	-	-
Tanzania	36,170 (66.7)	18,084 (33.3)	54,254	2017 <sup>21</sup>
Zambia	19,087 (77.9)	5,415 (22.1)	24,502	2021 <sup>22</sup>
Total (%)	59,950 (70.8)	24,675 (29.2)	84,625	

(b) NRM

Country	Age (15-64)		Total	Year
	Male (%)	Female (%)		
Malawi	1,731,431(44.1)	2,190,456 (55.9)	3,921,887	2021 <sup>23</sup>
Mozambique* <sup>24</sup>	-	-	-	-
Tanzania	557,609 (53.3)	488,285 (46.7)	1,045,894	2017 <sup>25</sup>
Zambia	635,161 (64.9)	343,522 (35.1)	978,683	2021 <sup>26</sup>
<b>Total</b>	<b>2,924,201 (49.2)</b>	<b>3,022,263 (50.8)</b>	<b>5,946,464</b>	

<sup>19</sup> [http://www.nsomalawi.mw/images/stories/data\\_on\\_line/general/yearbook/Statistical\\_Year\\_Book\\_2021.pdf](http://www.nsomalawi.mw/images/stories/data_on_line/general/yearbook/Statistical_Year_Book_2021.pdf)

<sup>20</sup> <https://data.worldbank.org/indicator/SL.TLF.TOTL.IN?locations=MZ> and <https://www.ine.gov.mz/en/>

Accessed data were in the form of % gender-based labour force with no specified numerical data. They are therefore not comparable with the rest of the target countries.

<sup>21</sup> URT (2022). *Population and housing censuses*. Retrieved from Dar es Salaam, Tanzania:

<http://www.tanzania.go.tz/census/index.html>

<sup>22</sup> Ministry of Labour and Social Security (2021) Labour force survey report Zambia statistics Agency

<https://www.zamstats.gov.zm/wp-content/uploads/2023/05/2021-Labour-Force-Survey-NHPP.pdf>

<sup>23</sup> *Ibid*

<sup>24</sup> *Ibid*

<sup>25</sup> *Ibid*

<sup>26</sup> Ministry of Labour and Social Security (2021) Labour force survey report Zambia statistics Agency

<https://www.zamstats.gov.zm/wp-content/uploads/2023/05/2021-Labour-Force-Survey-NHPP.pdf>

(c) Number of youths employed in the WM and NRM sectors

Country	WM		NRM	
	M (15-35 years)	F (15-35 years)	M (15-35 years)	F (15-35 years)
Malawi*	-	-	-	-
Mozambique*	-	-	-	-
Tanzania <sup>27</sup>	6,565	6,211	405,7443	3906,997
Zambia <sup>28</sup>	3,358	2,202	201,005	140,259

\*No data available

#### 4.3.2 Number of government initiatives in strengthening engagement of CBNRM

The responsibility of governments in enhancing engagement of CBNRM is crucial if we have to work towards sustainable WM and NRM. Unfortunately, WM-specific information related to this subject is rare in literature. In fact, even the stakeholders contacted to comment on this issue reported to have no evidence on WM revenue retention schemes.

However, literature search showed that there are various government initiatives in enhancing the work of CBNRM interventions that continue to be implemented in the target countries, mainly through revenue retention schemes backed by appropriate legal provisions as exemplified in **Table 4.3.2**. The current situation is therefore that governments in the target countries are commonly sensitive to and functionally linked with the work of CBNRMs through sharing of revenues in particular. According to the collected information, the CBNRM groups retain 5-80% of revenues generated depending on the income stream and target country. This is a step in the right direction and presents a perfect baseline avenue for strengthening government-CBNRM linkages related to sustainable WM and NRM.

**Table 4.3.2: Existing government initiatives at enhancing the work of CBNRM**

Country (Number of Initiatives)	Government initiative (& legal provisions)	Revenue retention scheme
Malawi (2) <sup>29</sup>	Revenue sharing for (co-managed) state forest resources. National Parks and Wildlife Act 1992 (2017) amended; Forestry (Amendment) Act, 2019.	Government 70% Community 30%.
	Revenue sharing of income from use of forest resources on communal land.	Government 20% Community 80%

<sup>27</sup> URT (2022). *Population and housing censuses*. Retrieved from Dar es Salaam, Tanzania: <http://www.tanzania.go.tz/census/index.html>

<sup>28</sup> Ministry of Labour and Social Security (2021) Labour force survey report Zambia statistics Agency <https://www.zamstats.gov.zm/wp-content/uploads/2023/05/2021-Labour-Force-Survey-NHPP.pdf>

<sup>29</sup> Jones, B. T. (2007). *Synthesis of the CBNRM policy and legislation in Botswana, Malawi, Mozambique, Namibia, Zambia, and Zimbabwe* (No. 16). Harare, Zimbabwe: WWF-SARPO.

Mozambique (1) <sup>30</sup>	Local resource management councils and village committees (Forestry and Wildlife legislation)	Communities 33%; Tax Treaty Programme functioning 32% Government 35%
	Village natural resources committees (Tchuma Tchato). Tchuma Tchato Community program Wildlife Revenue Sharing	
Tanzania (2) <sup>31,32</sup>	The Wildlife Conservation (Wildlife Management Areas) Regulations, 2018. Tourist Hunting activities in a Wildlife Management Area [Made under regulation 55(9)]	<b>Block fees</b> (TAWA 25%; WMA 75%)  <b>Game fees</b> (TAWA 25%; WMA 55%; District council 10% and Treasury 10%) <b>Conservation fees</b> (TAWA 25%; WMA 45%; District council 5% and Treasury 25%) <b>Observer fee</b> (TAWA 20%; WMA 60%; District council 5% and Treasury 10%) <b>Permit fees</b> (TAWA 25%; WMA 30%; District council 5% and Treasury 30%) Section 52(8) Income generated from resident hunting in a wildlife management area shall be shared as follows: (a) authorized association 40%; (b) responsible District Council 60%.
	The Wildlife Conservation (Non-Consumptive Wildlife Utilization) Regulations, 2016	
Zambia (1) <sup>33</sup>	Zambia Wildlife Act (1998) Provision for the establishment of Community Resources Boards (CRBs)	<b>Community Resource Boards</b> (CRBs) 45 % Patrons (Chiefs) 5 % Zambia Wildlife Authority 40 % Government 10 % <b>Game Management Trophy fees:</b> Communities 50%; Government 50% <b>Concession fees:</b> Communities 20%; Government 80%

<sup>30</sup> *Ibid*

<sup>31</sup> URT. (2018). *The Wildlife Conservation (Wildlife Management Areas) Regulations, 2018* Dar es Salaam, Tanzania: Government Printers.

<sup>32</sup> URT. (2016). *The Wildlife Conservation (Non-Consumptive Wildlife Utilization) Regulations, 2016*. Dar es Salaam, Tanzania: Government Printers.

<sup>33</sup> *Ibid*

#### 4.3.3 Number of wildlife populations

Healthy wildlife populations are indicative of ecosystem health. It is therefore expected that if natural resources are managed well, then there will be robust baseline wildlife populations and positive or stable growth trends. **Table 4.3.3** indicates that there is a particularly impressive wildlife status in terms of number of species - although Tanzania stands out prominently as the richest of all followed by Malawi, Mozambique and Zambia<sup>34,35</sup> in that order. Most importantly, however, is that no country can be taken as poor in terms of biological diversity based on these data.

**Table 4.3.3: Wildlife population status within the target countries**

(a) Number of taxa

Country	Mammals	Birds	Plants	Reptiles	Amphibians	Insects	Fish	Threated species	Total
Malawi <sup>36</sup>	192	630	6,000	145	83	11,000	800	248	19,098
Mozambique <sup>37,38</sup>	271	816	5,500	170	84	3,075	2,019	120	12,055
Tanzania <sup>39</sup>	350	1,100	11,000	360	178	39,644	1,871	1,255	55,758
Zambia <sup>40</sup>	224	700	5,500	59	189	2,032	453	200	9,357

However, data on wildlife population trends by country is extremely fragmented in literature hence difficult to directly compare for many species, with the exception of elephants (**Table 4.3.3.2**), which again depicts a healthy trend across all the target countries. While this analysis provides an impressive baseline biodiversity status, these data do not seem to serve as the best baseline indicators in the context of this project, given its scope both in scale and timeline. A much simpler and more relevant indicator given these circumstances would need to be identified.

(b) Population trends

Country	Malawi			Mozambique			Tanzania			Zambia		
	2003	2013	2020-2023	2003	2013	2020-2023	2003	2013	2020-2023	2003	2013	2020-2023
Buffalo	-	-	-	-	-	-	452000	326000	262584	-	-	-
Elephant	2216	1441	1300	14433	19633	10884	114000	46000	60000	26275	19418	21967
Leopard	-	-	-	-	-	-	-	-	19673	-	-	-
Lion	-	-	-	-	1229	1295	15900	16800	15000	-	-	-

(-) No data was accessed

<sup>34</sup> <https://a-z-animals.com/animals/location/africa/malawi>

<sup>35</sup> Schneider, M., Buramuge, V., Aliasse, L., & Serfontein, F. (2005). Checklist and centres of vertebrate diversity in Mozambique. *Forestry Department (DEF), Eduardo Mondlane University, Maputo, Mozambique*.

<sup>36</sup> *Ibid*

<sup>37</sup> *Ibid*

<sup>38</sup> <https://www.cbd.int/countries/profile/?country=mz>

<sup>39</sup> <https://www.cbd.int/countries/profile/?country=zm>

<sup>40</sup> <https://www.cbd.int/countries/profile/?country=tz>

#### 4.3.4 Amount of waste generated and managed

The global solid waste disposal rate is on a steady increase, hastened by both rapid urbanization and the ever-burgeoning human population.<sup>41</sup> It is predicted to reach 3.4 billion tons in 2030 up from 2.02 billion tons up by 41% since 2016. High-income countries<sup>42</sup> generate the largest share (34%) of this waste thus contributing disproportionately to the higher levels of negative environmental destruction. In addition, about half (3.5 Bn people) of the global human population are without access to sustainable waste management services. Open dumping predominates as a waste disposal method especially in the lower and middle-income countries<sup>43</sup> - in which the four targeted countries in this survey fall.

The average rate of waste collection is also unusually low globally, estimated at 44% in sub-Saharan Africa<sup>44</sup>. By comparison, such a rate is reportedly 32.7% for Tanzania while in the rest of the target countries it is lower, ranging between 24.8-30% (**Table 4.3.4**). It is also apparent that the bulk of waste in these countries is generated in major cities. Extrapolation of existing data (**Table 4.3.4**) shows that any two major cities combined may on average contribute up to one third or more of the total solid waste generated in any target country. The emerging picture is that waste generation, collection and the overall management scenario continues to be on the dire side in the target countries. Therefore, urgent and effective solutions are needed in order to reverse these unsustainable approaches to waste generation and management.

**Table 4.3.4: Solid waste status generation in the target countries**

(a) Rate of waste generation and collection

Country	Waste generation		Collection rate	
	Mil tons/year	Kg/capita/day	(%)	Year
Malawi <sup>45</sup>	3.7	0.5	30.0	2019
Mozambique <sup>46,47</sup>	2.0	0.6-1.0	25.0	2012
Tanzania <sup>48,49</sup>	7.0	0.5-1.0	32.7	2019
Zambia <sup>50</sup>	2.0	0.49	24.8	2017
<b>Sub-Saharan Africa</b>	<b>3.62</b>	<b>0.46</b>	<b>44.0</b>	2018

<sup>41</sup> Kaza, Silpa, Lisa Yao, Perinaz Bhada-Tata, and Frank Van Woerden. 2018. "What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050." Overview booklet. World Bank, Washington, DC. License: Creative Commons Attribution CC BY 3.0 IGO.

<sup>42</sup> Defined by the World Bank as a country with a gross national income per capita of US\$13,845 or more in 2022

<sup>43</sup> Ibid

<sup>44</sup> Ibid

<sup>45</sup> Government of Malawi (2019) The National Waste Management Strategy 2019-2023

<sup>46</sup> GIZ (2012) Economic Instruments in Solid Waste Management: Case Study Maputo, Mozambique. Economic Instruments in Solid Waste Management - Case Study Maputo, Mozambique (sprep.org)

<sup>47</sup> Adriaan Tas, Antoine Belon (2014) A Comprehensive Review of the Municipal Solid Waste Sector in Mozambique. Carbon Africa Limited, Nairobi, Kenya

<sup>48</sup> United Republic of Tanzania (2019) State of the Environment Report 3

<sup>49</sup> United Republic of Tanzania (2022) National Environmental Master Plan for Strategic Interventions (2022 – 2032)

<sup>50</sup> Environmental Council of Zambia (2017) Zambia Environment Outlook Report 4

(b) Amount of waste generated in major cities

Country	City	Generation (tons/year)	(% country generation)
Malawi <sup>51</sup>	Lilongwe + Blantyre	360,620	9.75
Mozambique <sup>52,53</sup>	Maputo + Nampula	1,326,625	66.3
Tanzania <sup>54</sup>	Dar es Salaam + Arusha	1,752,730	25.0
Zambia <sup>55</sup>	Lusaka + Livingstone	620,489	31.0
<b>Total</b>		<b>4,060,464</b>	<b>27.6</b>

#### 4.3.5 Surface area of land and water under protection and conservation

The Protected Area Planet Report of 2021<sup>56</sup> estimates that 22.5 million Sq. km equivalent to 24.4% of the global surface area is in some form of natural resources protection. Despite this impressive coverage of the protected area system world-wide, the major eco-regions remain disproportionately represented. The Aichi Biodiversity Targets has benchmarked 17% and 10% as country-specific commitments for protection of terrestrial and inland water, and coastal and marine areas, respectively. By comparison, protected area coverage in the target countries indicates that a robust protected area system already exists for terrestrial and inland waters but not for coastal waters and oceans (**Table 4.3.5**). Additional protection of marine and fresh water systems in the target countries is therefore warranted to improve the representativity of the protected area systems. However, similar to data on biodiversity in Section 4.3.3 this indicator is also out of proportion given the context of this project. A consideration of simpler indicators in this respect may be necessary.

**Table 4.3.5: Protected area coverage by target country<sup>57</sup> (\*) = landlocked**

Area (% country size)				
	Country size (km <sup>2</sup> )	Terrestrial / Inland waters <sup>a</sup>	Coastal waters / Ocean <sup>b</sup>	Total <sup>a+b</sup>
Malawi*	118,480	22.9	-	22.9
Mozambique	799,380	21.6	2.2	23.7
Tanzania	945,087	38.2	3.0	41.2
Zambia*	752,614	37.9	-	37.9
Average		30.1	2.6	32.7

<sup>51</sup> *Ibid*

<sup>52</sup> *Ibid*

<sup>53</sup> Ministry of Land and Environment (2023) <https://www.mta.gov.mz/en/ambiente/gestao-de-residuos-solidos/>

<sup>54</sup> *Ibid*

<sup>55</sup> *Ibid*

<sup>56</sup> IUCN ESARO (2020). The state of protected and conserved areas in Eastern and Southern Africa. State of Protected and Conserved Areas Report Series No. 1. Nairobi, Kenya: IUCN ESARO. <https://doi.org/10.2305/IUCN.CH.2020.15.en>

<sup>57</sup> *Ibid*

#### 4.3.6 Application of up-to-date research and training in WM and NRM by research and tertiary education institutes

Information on how the research and tertiary education institutions in the target countries are featuring in WM and NRM research, training and related practical interventions for sustaining WM and NRM was obtained through questionnaire surveys. Focus was on the existing research outputs and how these are transferred and shared or incorporated into the research agenda and teaching curricular of the academia. Emphasis was also put on the level of resource mobilization and collaborative networks that these academic institutions have created.



Photo 5: Converting plastic waste into prosthetics, Mozambique. Photo credit: Junior Belemi

With respect to WM, **Table 4.3.6** shows at least nine existing research outputs or findings are documented in five institutions altogether within the four countries. While the largest number of these is reportedly in Tanzania (7), no such research outputs were mentioned by both Mozambique or Zambia. By comparison, the situation for NRM appears much robust with a total of 38 research outputs existing in 14 separate institutions - again, with Tanzania leading in terms of both outputs and institutions. Taken together, these results confirm the existence of research outputs in the target countries, particularly so in NRM. What is needed is to strengthen research outputs particularly within the WM sector, which appears to be relatively weak.

Table 4.3.6: Existing research outputs (e.g., innovative solutions - see examples in Appendix IX (a) and Appendix X (a)) in WM+NRM developed / revised by research and tertiary education institutes (by country, stakeholder and category: new/existing)

(a) WM

Country	No. existing	Identified Institutions (No. of outputs)
Malawi	2	- Malawi University of Science and Technology (2)
Mozambique	2	- Polytechnic University - The Polytechnic (2)
Tanzania	7	- Ardhi University (1) - Sustainable Agriculture Tanzania (3) - Sokoine University (2) - Institute of rural Development (1)
Zambia	-	-

## (b) NRM

Country	No. existing	Identified Institutions (No. of outputs)
Malawi	13	<ul style="list-style-type: none"> <li>- Lilongwe University of Agriculture and Natural Resources - 3</li> <li>- Malawi College of Fisheries - 5</li> <li>- Malawi college of forestry and wildlife - 1</li> <li>- Department of National Parks and Wildlife - 1</li> <li>- Malawi University of Business and Applied Sciences (MUBAS) - 5</li> </ul>
Mozambique	0	<ul style="list-style-type: none"> <li>- Polytechnic Institute of Earth Science and Environment</li> <li>- Eduardo Mondlane University</li> <li>- Center for Studies on the Environment and Local Development (CEMEDEL)</li> </ul>
Tanzania	20	<ul style="list-style-type: none"> <li>- Community Based Conservation Training Centre (CBCTC) Likuyu Sekamaganga - 3</li> <li>- Nelson Mandela Institution of Science and Technology - 1</li> <li>- Tanzania Forestry Research Institute (TAFORI) - 2</li> <li>- St. Augustine University of Tanzania - 2</li> <li>- Governance Links Tanzania - 4</li> <li>- Institute of Resource Assessment, University of Dar es Salaam</li> <li>- Tanzania Wildlife Research Institute (TAWIRI) - 3</li> <li>- Sokoine University of Agriculture - 5</li> </ul>
Zambia	5	<ul style="list-style-type: none"> <li>- The University of Zambia, Center for International Forestry Research (CIFOR) - 4</li> <li>- Integrated Land and Resource Governance Program (USAID) - 1</li> </ul>

*4.3.7 Number of research outputs in WM and NRM transferred by the research and tertiary education institutes (by category: new/existing, country and stakeholder).*

Regarding transfer of research outputs thus generated within the WM institutions (**see Table 4.3.7**), there were fewer (13) such transferred outputs mainly to government authorities and other stakeholders through publications reported by five institutions -excluding Zambia and Mozambique that did not mention any. In contrast, the volume of such disseminations related to NRM looks more impressive, with 60 disseminations reported from a total of 18 institutions, this time including from Zambia and Mozambique. Based on these data, it is apparent that transfer of research outputs is much better in the NRM compared to WM sector, respectively.

**Table 4.3.7: Number of research outputs transferred by research and tertiary education institutions**

## (a) WM

Country	No. outputs transferred	Identified institutions
Malawi	2	- Malawi University of Science and Technology
Mozambique	1	<ul style="list-style-type: none"> <li>- Instituto Oceanografico de Mocambique</li> <li>- Rovuma University</li> <li>- Polytechnic University - The Polytechnic</li> </ul>



Tanzania	11	- Ardhi University - Sokoine University of Agriculture
Zambia	1	- Mulungushi University

(b) NRM)

Country	No. Research outputs	Identified institutions
Malawi	13	- Lilongwe University of Agriculture and Natural Resources - Malawi College of Fisheries - Malawi college of forestry and wildlife - Department of National Parks and Wildlife - Malawi University of Business and Applied Sciences (MUBAS)
Mozambique	21	- Polytechnic Institute of Earth Science and Environment - Eduardo Mondlane University - Center for Studies on the Environment and Local Development (CEMEDEL)
Tanzania	16	- Nelson Mandela Institution of Science and Technology Tanzania - Forestry Research Institute (TAFORI) - St. Augustine University of Tanzania - Governance Links Tanzania - Institute of Resource Assessment, University of Dar es Salaam - Tanzania Wildlife Research Institute (TAWIRI) - Sokoine University of Agriculture
Zambia	10	- The University of Zambia - Center for International Forestry Research (CIFOR) - Integrated Land and Resource Governance Program (USAID)

*4.3.8 Number of priority topics incorporated in the research agenda of the research and tertiary education institutions (by country and stakeholder).*

The number of priority topics reportedly incorporated in the research agenda of the academia for WM and NRM is given in **Table 4.3.8** [see examples in Appendix IX (b) and Appendix X (b)]. For WM, 11 such topics reportedly exist within 6 institutions in all the countries (with the exception of Zambia). The corresponding figures for NRM are 44 topics within 16 institutions altogether. The emerging picture, again is that the NRM sector is much better placed in integrating NRM topics into the academic research agenda compared to WM.

**Table 4.3.8: Number of priority topics integrated into the institutional research agenda (by country)**

(a) WM

Country	Priority Topics	Identified institutions (number of topics)	Examples of priority topics
Malawi	3	- Malawi University of Science and Technology – 3	- Waste to energy, - Biofertilizer production
Mozambique	2	- Instituto Oceanografico de Mocambique - 1 - Rovuma University- 1	- Marine litter Monitoring programme - Occurrence of Microplastic on water column and biotic

Tanzania	6	<ul style="list-style-type: none"> <li>- Ardhi University-2</li> <li>- Sustainable Agriculture Tanzania – 1</li> <li>- Sokoine University of Agriculture-2</li> <li>- Institute of Rural Development Planning - 1</li> </ul>	<ul style="list-style-type: none"> <li>- Resource recovery and reuse</li> <li>- Biotechnology</li> </ul>
Zambia	-	-	-

(b) NRM

Country	Priority Topics	Remarks	Examples of priority topics
Malawi	15	<ul style="list-style-type: none"> <li>- Lilongwe University of Agriculture and Natural Resources- 3</li> <li>- Malawi College of Fisheries - 4</li> <li>- Malawi College of Forestry and wildlife - 3</li> <li>- Department of National Parks and Wildlife- 3</li> <li>- Malawi University of Business and Applied Sciences (MUBAS) - 2</li> </ul>	<ul style="list-style-type: none"> <li>- CBNR and Protected Area Management</li> <li>- Wildlife and Ecotourism</li> </ul>
Mozambique	6	<ul style="list-style-type: none"> <li>- Polytechnic Institute of Earth Science and Environment - 3</li> <li>- Eduardo Mondlane University – 1</li> <li>- Center for Studies on the Environment and Local Development (CEMEDEL) - 2</li> </ul>	<ul style="list-style-type: none"> <li>- Biodiversity Management</li> <li>- Community development through natural resources management</li> </ul>
Tanzania	20	<ul style="list-style-type: none"> <li>- Nelson Mandela Institution of Science and Technology - 2</li> <li>- Tanzania Forestry Research Institute (TAFORI) - 2</li> <li>- St. Augustine University of Tanzania - 3</li> <li>- Global Links Tanzania - 3</li> <li>- Institute of Resource Assessment, University of Dar es Salaam - 2</li> <li>- Tanzania Wildlife Research Institute (TAWIRI)-5</li> <li>- Sokoine University of Agriculture - 3</li> </ul>	<ul style="list-style-type: none"> <li>- Management of Natural Forests and Biodiversity Conservation</li> <li>- Wetlands Conservation and Management</li> </ul>
Zambia	3	<ul style="list-style-type: none"> <li>- The University of Zambia - 3</li> </ul>	<ul style="list-style-type: none"> <li>- Climate change, Governance</li> </ul>

*4.3.9 Mobilization of financial resources for priority R&I projects (by country, sector and stakeholder)*

With regard to mobilizing financial resources for supporting WM R&I Projects, a total of seven (7) institutions were reported to do so in three (3) countries (except Zambia) (**Table 4.3.9**). In sharp contrast, the corresponding figure for the NRM sector was 18 institutions, more than twice as much as that of WM. It can thus be evidenced that these academic institutions are variably striving to mobilize funds to support NRM and WM research initiatives. Further support is clearly needed to strengthen these efforts, especially in the area of WM.

**Table 4.3.9: Number of research and tertiary education institutions mobilising financial resources for priority R&I projects (by country, sector and stakeholder)**

(a) WM

Country	No. Institutions	Identified Institutions
Malawi	1	- Malawi University of Science and Technology
Mozambique	3	- Instituto Oceanografico de Mocambique - Rovuma University - Polytechnic University - The Polytechnic
Tanzania	4	- Ardhi University - Sustainable Agriculture Tanzania - Sokoine University of Agriculture - Institute of Rural Development Planning -Internal budget
Zambia	-	-

(b) NRM

Country	No. of Institutions	Identified Institutions
Malawi	5	- Lilongwe University of Agriculture and Natural Resources - Malawi College of Fisheries - Malawi college of forestry and wildlife - Department of National Parks and Wildlife - Malawi University of Business and Applied Sciences (MUBAS)
Mozambique	3	- Polytechnic Institute of Earth Science and Environment - Eduardo Mondlane University - Center for Studies on the Environment and Local Development (CEMEDEL)
Tanzania	7	- Community-Based Conservation Training Centre (CBCTC) Likuyu Sekamaganga - Nelson Mandela Institution of Science and Technology - Tanzania Forestry Research Institute (TAFORI) - St. Augustine University of Tanzania Governance Links Tanzania - Institute of Resource Assessment, University of Dar es Salaam - Tanzania Wildlife Research Institute (TAWIRI) - Sokoine University of Agriculture
Zambia	3	- The University of Zambia - Center for International Forestry Research (CIFOR) - Integrated Land and Resource Governance Program (USAID)

#### *4.3.10 Number of collaborative research and innovation projects in WM and NRM implemented between research and tertiary education institutes (by country)*

Collaboration in research and innovation projects is critical if research and innovation on WM and NRM is to be effectively adopted and upscaled within the target countries. **Table 4.3.10 [see Appendix IX (c) and AppendixX (c)]** provides a summary of the baseline status in the target countries, indicating that at least 7 such collaborative projects are implemented by five (5) institutions in all four countries within the WM area, and a further 27 implemented by 12 separate institutions in the NRM sector.

**Table 4.3.10: Number of collaborative research and innovation projects in WM and NRM implemented between research and tertiary education institutes (by country)**

(a) WM

Country	No. of Projects	Implementing Institutions
Malawi	2	- Malawi University of Science and Technology-2
Mozambique	2	- Polytechnic University - The Polytechnic – 2
Tanzania	4	- Ardhi University – 1 - Sustainable Agriculture Tanzania - 2 - Sokoine University of Agriculture – 1
Zambia	1	- Mulungushi University – 1

(b) NRM

Country	No. of Projects	Implementing Institutions
Malawi	6	- Lilongwe University of Agriculture and Natural Resources - 1 - Malawi College of Fisheries - 4 - Department of National Parks and Wildlife – 1
Mozambique	4	- Eduardo Mondlane University – 4
Tanzania	16	- Nelson Mandela Institution of Science and Technology - 1 - Tanzania Forestry Research Institute (TAFORI) - 5 - St. Augustine University of Tanzania - 2 - Governance Links Tanzania - 2 - Institute of Resource Assessment, University of Dar es Salaam - 2 - Tanzania Wildlife Research Institute (TAWIRI) - 1 - Sokoine University of Agriculture – 3
Zambia	1	- Integrated Land and Resource Governance Program (USAID) - 1

*4.3.11 Number of WM and NRM research-based modules introduced into the curriculums of the tertiary education institutes (by country and stage)*

**Table 4.3.11** summarizes the current status with regard to the number of WM and NRM research-based modules reportedly introduced into the curricula of the tertiary education institutions. It shows that there are at least eight (8) such modules from four (4) institutions in WM and 26 others from five institutions in NRM. Examples of specific modules are given in Appendix IX (d) and Appendix X (d). While Malawi seems to be especially aggressive in this respect, no similar data was given by Zambia through questionnaires. However, literature survey confirmed existence of such academic programs as depicted in **Table 4.3.11**.

**Table 4.3.11: Number of WM and NRM research-based modules introduced into the curriculums of the tertiary education institutes (by country and stage)**

(a) WM

Country	No. of Modules	Offering institutions	Examples of modules
Malawi	1	- Malawi University of Science and Technology -1	- Waste to energy
Mozambique <sup>58,59</sup>	2	- Eduardo Mondlane University - 2	- Coastal Geology and Environment - Meteorology
Tanzania	7	- Ardhi University - 3 - Sokoine University of Agriculture - 2 - Institute of Rural Development Planning - 2	- Waste Management - Environmental Chemistry
Zambia <sup>60</sup>	2	- University of Zambia - 2	-Waste water management -Solid waste management

(b) NRM

Country	No. of Modules	Offering institutions	Examples of modules
Malawi	17	- Lilongwe University of Agriculture and Natural Resources - 16 - Malawi University of Business and Applied Sciences (MUBAS) -1	- Indigenous Knowledge in NRM - Geographical Information System (GIS) and Remote Sensing
Mozambique	3	- Polytechnic Institute of Earth Science and Environment -3	- Territorial Planning, - Biodiversity Management
Tanzania	6	- Community-Based Conservation Training Centre (CBCTC) Likuyu Sekamaganga - 4 - N/Mandela Institution of Science and Technology - 2	- Biological resources interpretation - Participatory wildlife management
Zambia <sup>61</sup>	5	- University of Zambia - 5	-Wildlife Conservation and Natural Resource Management - Entomology

#### *4.3.12 Number of public WM+NRM policies / policy-related instruments developed / revised by utilising science-based information (by country/sub-region, category, sector)*

Regarding the existence of WM and NRM policies for supporting science-based WM and NRM, the results from the questionnaire survey (**Table 4.3.12**) (see Appendix IX (e) and Appendix X (e)) confirm the existence of a rich set of these policies and related documents both for WM (31) and NRM-29). This extensive list is

<sup>58</sup> <https://www.uem.mz/index.php>

<sup>59</sup> <https://www.unilurio.ac.mz/unilurio/pt/>

<sup>60</sup> <https://unza.zm/index.php/schools/natural-sciences/programmes-undergrads>

<sup>61</sup> <https://unza.zm/index.php/schools/natural-sciences/programmes-undergrads>

by no means exhaustive as such information is also readily available in literature. Therefore, scarcity of policies and other related strategic documents does not seem to be an issue. During the KII sessions implementation difficulties related to lack of resources was frequently mentioned.

**Table 4.3.12: Number of public WM+NRM policies / policy-related instruments developed / revised by utilising science-based information (by country/sub-region, category, sector)**

(a) WM

Country	Number	Specific Policies & Related Instruments
Malawi	10	<ul style="list-style-type: none"> <li>- Chikwawa District Council - National waste management strategy</li> <li>- Lilongwe District Health Office - Health care waste management policy, Personal protective equipment</li> <li>- Infection prevention and control policy</li> <li>- Lilongwe City Council - National Environmental Policy</li> <li>- Environmental Management Act</li> <li>- Environmental Management Regulations</li> <li>- Lilongwe City Waste Management by laws</li> <li>- Lilongwe City Waste Management Policy and Lilongwe City Private Waste Operators guidelines</li> <li>- Environmental affairs department - National Waste management strategy and Malawi National Environmental policy (2006)</li> </ul>
Mozambique	11	<ul style="list-style-type: none"> <li>- Conscious generation - Regulation on Solid waste management</li> <li>- Maputo city council - Environmental Law No. 20/97</li> <li>- Integrated Urban Solid Waste Management Strategy in Mozambique (2013-2015)</li> <li>- Regulations on the Management of Urban Solid Waste (Decree n.94/2014)</li> <li>- Regulations on the Management of Hazardous Waste (Decree n.83/2014).</li> <li>- Provincial Directorate of Territorial Development and Environment (Niassa) - solid waste law, number 13/2006 of 15 June, regulation of solid waste,</li> <li>- integrated management strategy for urban solid waste</li> <li>- Ministry of Land and Environment: Environmental Law 20/97</li> <li>- National Strategy for Solid Waste Management Integrated Urban Solid Waste Management Plan</li> <li>- Regulation on Urban Solid Waste Management</li> <li>- Regulation on the Management of Dangerous Solid Waste, Responsibilities extended to packaging producers and importers</li> <li>- Regulation on the Environmental Impact Assessment process</li> </ul>
Tanzania	9	<ul style="list-style-type: none"> <li>- Morogoro Municipality: Public Health Act No.1 of 2009</li> <li>- Environmental Management Act 2004, By-laws 2010, Public health act 2016</li> <li>- Ilmela Municipal Council - National Policy for Solid Waste Management</li> <li>- EMA 2004, National Environmental Policy</li> <li>- National Guideline for Healthcare Waste Management</li> <li>- Water supply and Sanitation act 2019</li> <li>- Public Health Act 2009</li> <li>- Vice President's Office: National Environmental Policy 2021</li> </ul>
Zambia	4	<ul style="list-style-type: none"> <li>- Lusaka City Council - The local government Act No.12</li> </ul>

- 
- Environmental Protection and Pollution Control Act
  - National Policy on Environment- 2009
  - Environmental Management Act
- 

(b) NRM

Country	Number	Policies and related instruments
Malawi	8	<ul style="list-style-type: none"> <li>- Department of National Parks and Wildlife - National Wildlife policy 2018</li> <li>- Department of Forestry - National Forestry policy 2016</li> <li>- National forestry landscape restoration strategy</li> <li>- National charcoal strategy, REDD+ strategy</li> <li>- Fisheries Department: Fisheries and Aquaculture policy</li> <li>- Fisheries conservation and management Act</li> <li>- Fisheries conservation and management regulations</li> </ul>
Mozambique	10	<ul style="list-style-type: none"> <li>- Ministry of Earth and Environment: Environmental Policy and Law</li> <li>- Land Policy and Law</li> <li>- Fisheries Policy and Law</li> <li>- Biodiversity Conservation Law</li> <li>- Forest and Wildlife Law</li> <li>- Traditional Medicine Policy, Strategy and Action Plan for the Conservation of Biological Diversity</li> <li>- Mangrove Strategy</li> <li>- Environmental Law</li> <li>- Solid waste management law</li> </ul>
Tanzania	8	<ul style="list-style-type: none"> <li>- Morogoro Municipal Council - Environment policy</li> <li>- Tanzania Wildlife Management Authority (TAWA) - Biodiversity conservation</li> <li>- Sustainable Forest management/ participatory forest management</li> <li>- Marine protected areas (MPAs), Waste management strategies</li> <li>- Pollution control measures, Climate change and adaptation</li> <li>- Ministry of Natural Resource and Tourism</li> <li>- Wildlife Policy 2007</li> </ul>
Zambia	7	<ul style="list-style-type: none"> <li>- Forestry department – National Forestry policy of 2014</li> <li>- Fisheries department – National Aquaculture regulation, National Fisheries Policy</li> <li>- National Parks Wildlife Policy</li> <li>- Community Based Natural Resource Management Policy</li> <li>- National Resource Management Act</li> <li>- Land and Natural Resource Management Policy</li> </ul>

#### *4.3.13 Number of evidence-based public WM and NRM policies/policy related instruments endorsed by country/sub-region, category, sector, stage of endorsement)*

Apart from the specific policies listed in section 4.3.12 by questionnaire respondents, an additional 25 policies and related WM instruments (Appendix VIII) were reviewed from literature in view of examining their status with regard to enabling of sustainable WM interventions. These policies and related instruments are summarized in **Table 4.3.13**, suggesting their almost uniform distribution across the target countries.

**Table 4.3.13: Number of WM policies and related instruments reviewed by target country**

(a) WM

Country	Policy	Legislations	Total
Malawi <sup>62,63</sup>	2	1	3
Mozambique <sup>64</sup>	1	1	2
Tanzania <sup>65,66</sup>	1	1	2
Zambia <sup>67</sup>	2	2	4
<b>Total</b>	<b>6</b>	<b>5</b>	<b>11</b>

For the NRM grouping, a total of 81 strategic documents were also rapidly reviewed (see Appendix VII) and are hereunder summarized in **Table 4.3.12.2**. They also appear to be well distributed across the target countries. Overall, therefore, the formulation of NRM strategic direction by governments in these countries appear to be fairly adequate in content and number such that any strengthening could perhaps focus on implementation issues.

(b) NRM

Country	Policy	Act	Total
Malawi <sup>68</sup>	4	4	8
Mozambique <sup>69</sup>	3	3	6
Tanzania <sup>70</sup>	4	4	8
Zambia <sup>71</sup>	4	4	8
<b>Total</b>	<b>15</b>	<b>15</b>	<b>30</b>

It can be quickly deduced that these target countries have relevant policies in place to guide implementation of WM and NRM activities on the ground.

<sup>62</sup> Government of Malawi (2019) Sixth National Report to the Convention on Biological Diversity

<sup>63</sup> Government of Malawi (2019). National Waste Management Strategy 2019-2023

<sup>64</sup> Ministry of Land, Environment and Rural Development. (2019). Sixth National Report on the Implementation of Convention on Biological Diversity in Mozambique. MITADER. 152 pp.

<sup>65</sup> World Bank. 2019. Tanzania: Country Environmental Analysis – Environmental Trends and Threats, and Pathways to Improved Sustainability. 2019. Washington, DC: World Bank

<sup>66</sup> United Republic of Tanzania (2019). The 6<sup>th</sup> National Report for the Convention on Biological Diversity

<sup>67</sup> Zambia Environmental Management Agency (2017). Zambia Environment Outlook Report 4

<sup>68</sup> Government of Malawi (2019) Sixth National Report to the Convention on Biological Diversity

<sup>69</sup> Ministry of Land, Environment and Rural Development. (2019). Sixth National Report on the Implementation of Convention on Biological Diversity in Mozambique. MITADER. 152 pp.

<sup>70</sup> United Republic of Tanzania (2019). The 6<sup>th</sup> National Report for the Convention on Biological Diversity

<sup>71</sup> Zambia Environmental Management Agency (2017). Zambia Environment Outlook Report 4



*4.3.14 Number of national WM+NRM strategies and action plans developed and implemented (by country/sub-region, sector, stage of implementation)*

**Table 4.3.14** shows that there is an equally rich policy supporting documents (strategies and plans) across all target countries meaning that the policies described in section 4.3.12 are actually supported by subsidiary strategic documentation as well as also depicted in Appendix VII.

**Table 4.3.14: Number of national WM+NRM strategies and action plans developed and implemented (by country/sub-region, sector, stage of implementation)**

Country	WM		NRM	
	Strategy	Plan	Strategy	Plan
Malawi	1	3	6	1
Mozambique	1	1	5	3
Tanzania	6	1	5	1
Zambia	1	0	3	3
Total	9	5	19	8

*4.3.15 Number of local and national groupings participating in national and regional public and private decision-making fora (by country/region, type of grouping and forum)*

Involvement of local and national groupings in WM and NRM is critical for cultivating a sense of ownership thus promoting sustainability in interventions. **Table 4.3.15** summarizes the participation status of involvement of these groupings in WM and NRM decision making in which at least nine (9) of such groupings were identified for the WM and 20 others from the NRM sector. These numbers are fairly well spread across the countries except that there were no responses from Zambia on the WM question.

**Table 4.3.15: Number of local and national groupings participating in national and regional public and private decision-making fora (by country/region, type of grouping and forum)**

(a) WM

Country	No. of groupings	Reference Institution
Malawi	2	- Water Aid - Catholic Commission for Justice and Peace
Mozambique	2	- Repensar Environmental Education Cooperative - Provincial Directorate of Territorial Development and Environment of Niassa (DPDTAN)
Tanzania	5	- KIUM CLEANERS - Zaidi Recyclers - Umoja wa Watunza Mazingira Morogoro (UWAMAMO) - KINDIBWA group - Wakusanya Taka Bonyokwa Cooperative society (WTB)
Zambia	1	- Waste Management Association of Zambia

## (b) NRM

Country	No. of groupings	Reference institution
Malawi	2	- National CBNRM Forum - Civil Society Network in Climate Change
Mozambique	4	- Amanhecer Association for Land and Resource Protection Naturals designed by Kubecera - ReGeCom - WWF-Mozambique - AMDER-Mozambican Association for Sustainable Rural Development
Tanzania	6	- Hifadhi Misit, Samaki na Nyuki Tanzania (HIMISANTA) - Tanzania Association of Cultural Tour Operator - Burunge Wildlife Management area - Mtandao wa Jamii wa Usimamizi wa Misit Tanzania (MJUMITA) - German Development Cooperation (GIZ) - Nalika Authorized Association, Tunduru WMA
Zambia	8	- Community resources board (CRB) - The Nature Conservancy - Nsefu Community Resources Board - Zambia Community Resources Board Association - Passion For Wildlife - Zambia CBRNM (Zambia CBNRM Forum) - Frankfurt Zoological Society - North Luangwa Conservation Programme - WeForest

*4.3.16 Percentage of women and youth from local and national groupings participating in national and regional decision-making fora (by country, type of grouping, sex and age)*

**Table 4.3.16** presents the reported percentage of women and youth involved in science evidence-based WM and NRM decision-making processes by country for WM and NRM activities. For Tanzania and Mozambique, the levels for WM revolve around 30% for both youth and women with Malawi presenting the largest (43%) level of women participation of all countries, excluding Zambia that did not respond to this question. For the NRM, the relative percentages for both women and youth are in the range 29.5-49.9%. These data from respondents are fairly impressive given that the general participation of women in the global labour is considered low.

**Table 4.3.16: Percentage of women and youth from local and national groupings participating in national and regional decision-making**

## (a) WM

Country	Women (%)	Youth (%)	Reference Institution
Malawi	43.0	15.0	- Water Aid - Catholic Commission for Justice and Peace
Mozambique	32.5	-	- Repensar Environmental Education Cooperative - Provincial Directorate of Territorial Development and Environment of Niassa (DPDTAN)
Tanzania	36.1	33.3	- KIUM CLEANERS - Zaidi Recyclers - Umoja wa Watunza Mazingira Morogoro (UWAMAMO)

			- KINDIBWA group
			- Wakusanya Taka Bonyokwa Cooperative society (WTB)
Zambia	45.0	50.0	- Waste Management Association of Zambia

(a) NRM

Country	Women (%)	Youth (%)	Reference Institution
Malawi	37.5	30.6	<ul style="list-style-type: none"> <li>- National CBNRM Forum</li> <li>- Lilongwe Wildlife Trust</li> <li>- Civil Society Network in Climate Change</li> </ul>
Mozambique	49.9	0.3	<ul style="list-style-type: none"> <li>- Amanhecer Association for Land and Resource Protection</li> <li>- Naturals designed by Kubecera-PTRN</li> <li>- Network for Community Management of Natural Resources (ReGeCom)</li> <li>- WWF-Mozambique</li> <li>- Union of Agricultural Cooperation of Lichinga (UCA)</li> <li>- Mozambican Association for Sustainable Rural Development (AMDER)</li> </ul>
Tanzania	33.1	23.2	<ul style="list-style-type: none"> <li>- Hifadhi Misit, Samaki na Nyuki Tanzania (HIMISANTA)</li> <li>- Tanzania Association of Cultural Tour Operators</li> <li>- Burunge Wildlife Management area</li> <li>- Mtandao wa Jamii wa Usimamizi wa Misitu Tanzania (MJUMITA)</li> <li>- German Development Cooperation (GIZ)</li> <li>- Nalika Authorized Association, Tunduru WMA</li> </ul>
Zambia	29.5	46.9	<ul style="list-style-type: none"> <li>- Eastern Region CRBs Association</li> <li>- Community Resources Board (CRB)</li> <li>- Wildlife and environmental conservation society of Zambia (WECSZ)</li> <li>- The Nature Conservancy</li> <li>- Nsefu Community Resources Board</li> <li>- Know your Wildlife and the Environment Zambia (KWEZ) initiative</li> <li>- Zambia Community Resources Board Association</li> <li>- Passion For Wildlife</li> <li>- Zambia CBRNM (Zambia CBNRM Forum)</li> <li>- Frankfurt Zoological Society - North Luangwa Conservation Programme</li> <li>- WeForest</li> </ul>

*4.3.17 Percentage of local and national groupings applying evidence-based decision-making techniques in WM+NRM (by country, type of grouping and sector)*

**Table 4.3.17** further summarizes the baseline status with regard to various groupings applying evidence-based decision making in the WM and NRM sectors and shows that this is also a common practice within the target countries with specific groupings reportedly making 66.7% to 100% of their respective decisions based on scientific evidence. These levels are also on the positive side and need to be just enhanced.

**Table 4.3.17: Percentage of local and national groupings applying evidence-based decision-making techniques in WM+NRM**

(a) WM

Country	(%) groupings with evidence-based decision-making	Reference Institution
Malawi	100	- Water Aid (CSO) - Catholic Commission for Justice and Peace (CSO)
Mozambique	100	- Repensar Environmental Education Cooperative (CBOs) - Provincial Directorate of Territorial Development and Environment of Niassa – DPDTAN (CBO)
Tanzania	80	- KIUM Cleaners (CBO) - Zaidi Recyclers (CSO) - Umoja wa Watunza Mazingira Morogoro (UWAMAMO) (CBO) - KINDIBWA group (CBO) - Wakusanya Taka Bonyokwa Cooperative society (WTB) (CBO)
Zambia	100	- Waste Management Association of Zambia

(b) NRM

Country	% evidence-based application	Remarks
Malawi	100	- National CBNRM Forum - Civil Society Network in Climate Change
Mozambique	66.7	- Amanhecer Association for Land and Resource Protection - Naturals designed by Kubecera (PTRN) - ReGeCom - WWF-Mozambique - Union of Agricultural Cooperation of Lichinga (UCA) - Mozambican Association for Sustainable Rural Development (AMDER)
Tanzania	100	- Hifadhi Misitu, Samaki na Nyuki Tanzania (HIMISANTA) - Tacto - Burunge Wildlife Management area - Mtandao wa Jamii wa Usimamizi wa Misitu Tanzania (MJUMITA) - German Development Cooperation (GIZ) - Nalika Authorized Association, Tunduru WMA
Zambia	72.7	- Eastern Region CRBs Association - Community resources board (CRB) - Wildlife and environmental conservation society of Zambia (WECSZ) - The Nature Conservancy - Nsefu Community Resources Board - Know your Wildlife and the Environment Zambia (KWEZ) initiative - Zambia Community Resources Board Association - Passion For Wildlife - Zambia CBNRM (Zambia CBNRM Forum) - Frankfurt Zoological Society - North Luangwa Conservation Programme - WeForest

*4.3.18 Number of enterprises applying innovative solutions in the WM and NRM sector (by type: formal/informal, and new/existing enterprise, country and sector)*

The reported number of various enterprises from the geographical areas applying innovative solutions in WM and NRM activities are provided in **Table 4.3.18**, which indicates a total of 26 for WM and 15 for NRM such enterprises. Again, their numbers seem to be fairly well distributed across the countries. This finding re-confirms an existence of diverse institutions applying innovative solutions in WM and NRM. However, the performance of how these are delivered need to be ascertained.

**Table 4.3.18: Number of enterprises - applying innovative solutions in the WM and NRM sector (by type: formal/informal, and new/existing enterprise, country and sector)**

(a) WM

Country	No. of enterprises	Reference institutions
Malawi	3	<ul style="list-style-type: none"> <li>- PEM Industries (Formal)</li> <li>- Capital City Cleaners (Formal)</li> <li>- Up-cycling (Informal)</li> </ul>
Mozambique	5	<ul style="list-style-type: none"> <li>- Rethink (Formal)</li> <li>- Repensar Environmental Education Cooperative (Formal)</li> <li>- Universidade Eduardo Mondlane (UEM) Foundation (Formal)</li> <li>- Center for Environmental Law, Biodiversity and Quality of Life (Formal)</li> <li>- Provincial Directorate of Territorial Development of Niassa DPDTAN (Formal)</li> </ul>
Tanzania	11	<ul style="list-style-type: none"> <li>- Chilambo General Trade Company Limited</li> <li>- Nipe Fagio</li> <li>- Kajenjere Trading Company Limited</li> <li>- Cut-Off Recycle</li> <li>- recycle@OZTI</li> <li>- Green Composting Ltd</li> <li>- Wazoa Taka Majumbani (WATAMA)</li> <li>- Usafi Na Mazingira Group</li> <li>- The Recycler Limited</li> <li>- Environment For Communities Livelihood Organisation (Ecolio)</li> <li>- Jamii Endelevu Tanzania</li> </ul>
Zambia	9	<ul style="list-style-type: none"> <li>- Waste mat Zambia Ltd (Formal)</li> <li>- Ebusaka Green Technology Limited (Formal)</li> <li>- Art for Climate Zambia (Formal)</li> <li>- Sustainable Footsteps (Formal)</li> <li>- Plastpave Zambia (Formal)</li> <li>- Burning Youth Climate Action (Formal)</li> <li>- Environment Savers of Zambia (Formal)</li> <li>- Waste Management Association of Zambia (Formal)</li> <li>- Hazardous-Waste (HW) Solid Waste Management (Formal)</li> </ul>

## (b) NRM

Country	No. of enterprises	Remarks
Malawi	1	Kwithu Kitchen (Formal)
Mozambique	3	<ul style="list-style-type: none"> <li>- Environmental Education Cooperative Rethink (Formal)</li> <li>- Associação Juvenil para o Desenvolvimento Comunitário em Moçambique-AJUCOM (Formal)</li> <li>- Repensar (Formal)</li> <li>- Provincial Directorate of Territorial Development and Environment of Niassa- DPDTAN (Formal)</li> </ul>
Tanzania	9	<ul style="list-style-type: none"> <li>- The Nature Conservancy (Formal)</li> <li>- Wildlife Conservation Initiative (Formal)</li> <li>- Frankfurt zoological society (Formal)</li> <li>- Mwanza Environmental Conservation and Agri-Business Group (MWECOA-GROUP) (Formal)</li> <li>- International Union for Conservation of Nature (IUCN) (Formal)</li> <li>- Chabri Energy Company Limited (Formal)</li> <li>- Peace for conservation (Formal)</li> <li>- Imunyi Foundation (Formal)</li> <li>- Mabi banabon Tito (Informal)</li> </ul>
Zambia	2	<ul style="list-style-type: none"> <li>- Hotels and Catering Association of Zambia (HCAZ) (Formal)</li> <li>- Muvi Television (Formal)</li> </ul>

*4.3.19 Number of people from the enterprises applying innovative solutions in the WM+NRM sector (by sex and age)*

An estimated number of people working and thus practicing innovative solutions in WM and NRM in these enterprises is given in **Table 4.3.18.1**. From this sample, there are about 660 such employees identified in 27 institutions for WM and 643 employees in 16 institutions in NRM. This reinforces the fact that there is a fairly good number of people actually working in these enterprises which are distributed throughout the target countries.

**Table 4.3.19: Number of people from the enterprises applying innovative solutions in the WM+NRM sector (by sex and age)**

## (a) WM

Country	No. of people from enterprises	Remarks
Malawi	23	<ul style="list-style-type: none"> <li>- PEM Industries (Formal)</li> <li>- Capital City Cleaners (Formal)</li> <li>- Up-cycling (Informal)</li> </ul>
Mozambique	300	<ul style="list-style-type: none"> <li>- Rethink (Formal)</li> <li>- Repensar Environmental Education Cooperative (Formal)</li> <li>- Universidade Eduardo Mondlane (UEM) Foundation (Formal)</li> <li>- Center for Environmental Law, Biodiversity and Quality of Life UEM (Formal)</li> </ul>

		- Provincial Directorate of Territorial Development of Niassa DPDTAN (Formal)
Tanzania	275	<ul style="list-style-type: none"> <li>- Chilambo General Trade Company Limited</li> <li>- Nipe Fagio</li> <li>- Kajenjere Trading Company Limited</li> <li>- CutOff Recycle</li> <li>- recycle@OZTI</li> <li>- Green Composting Ltd</li> <li>- Wazoa Taka Majumbani (WATAMA)</li> <li>- Usafi Na Mazingira Group</li> <li>- The Recycler Limited</li> <li>- Environment For Communities Livelihood Organisation (Ecolio)</li> <li>- Jamii Endelevu Tanzania</li> </ul>
Zambia	196	<ul style="list-style-type: none"> <li>- Waste mat Zambia Ltd (Formal)</li> <li>- Ebusaka Green Technology Limited (Formal)</li> <li>- Art for Climate Zambia (Formal)</li> <li>- Sustainable Footsteps (Formal)</li> <li>- Plastpave Zambia (Formal)</li> <li>- Burning Youth Climate Action (Formal)</li> <li>- Environment Savers of Zambia (Formal)</li> <li>- Waste Management Association of Zambia (Formal)</li> <li>- Hazardous-Waste (HW) Solid Waste Management (Formal)</li> </ul>

(b) NRM

Country	No. of people from enterprises	Remarks
Malawi	70	- Kwithu Kitchen (Formal)
Mozambique	191	<ul style="list-style-type: none"> <li>- Environmental Education Cooperative Rethink (Formal)</li> <li>- Associação Juvenil para o Desenvolvimento Comunitário em Moçambique-AJUCOM (Formal)</li> <li>- Repensar (Formal)</li> <li>- Provincial Directorate of Territorial Development and Environment of Niassa- DPDTAN (Formal)</li> </ul>
Tanzania	132	<ul style="list-style-type: none"> <li>- The Nature Conservancy (Formal)</li> <li>- Wildlife Conservation Initiative (Formal)</li> <li>- Frankfurt zoological society (Formal)</li> <li>- Mwanza Environmental Conservation and Agri-Business Group (MWECOA-GROUP) (Formal)</li> <li>- International Union for Conservation of Nature (IUCN) (Formal)</li> <li>- Chabri Energy Company Limited (Formal)</li> <li>- Peace for conservation (Formal)</li> <li>- Imunyi Foundation (Formal)</li> <li>- Mabi banabon Tito (Informal)</li> </ul>
Zambia	250	<ul style="list-style-type: none"> <li>- Hotels and Catering Association of Zambia (HCAZ) (Formal)</li> <li>- MUVI Television (Formal)</li> </ul>

4.3.20 Number of pilot R&I projects using Public Private Partnerships (PPP) models in WM+NRM in which the Intervention is operating (by country).

Piloted PPP models in the WM and NRM was another area of focus in this baseline inquiry. According to **Table 4.3.20** there are least 18 such projects spread across some 26 institutions for WM and a further set of 18 similar projects piloted by 16 institutions in the four countries. The take-home message is that there are clear ongoing PPP initiatives on the ground, However, their performance needs to be ascertained.

**Table 4.3.20: Number of pilot R&I projects using Public Private Partnerships (PPP) models in WM+NRM by country.**

(a) WM

Country	No. projects	Involved institutions
Malawi	3	<ul style="list-style-type: none"> <li>- PEM Industries (Formal)</li> <li>- Capital City Cleaners (Formal)</li> <li>- Up-cycling (Informal)</li> </ul>
Mozambique	6	<ul style="list-style-type: none"> <li>- Rethink (Formal)</li> <li>- Repensar Environmental Education Cooperative (Formal)</li> <li>- Universidade Eduardo Mondlane (UEM) Foundation (Formal)</li> <li>- Center for Environmental Law, Biodiversity and Quality of Life (UEM) (Formal)</li> <li>- Provincial Directorate of Territorial Development of Niassa (DPDTAN) (Formal)</li> </ul>
Tanzania	8	<ul style="list-style-type: none"> <li>- Chilambo General Trade Company Limited</li> <li>- Nipe Fagio</li> <li>- Kajenjere Trading Company Limited</li> <li>- CutOff Recycle</li> <li>- recycle@OZTI</li> <li>- Green Composting Ltd</li> <li>- Wazoa Taka Majumbani (WATAMA)</li> <li>- Usafi Na Mazingira Group</li> <li>- The Recycler Limited</li> <li>- Environment For Communities Livelihood Organisation (Ecolio)</li> <li>- Jamii Endelevu Tanzania</li> </ul>
Zambia	6	<ul style="list-style-type: none"> <li>- Waste mat Zambia Ltd (Formal)</li> <li>- Ebusaka Green Technology Limited (Formal)</li> <li>- Art for Climate Zambia (Formal)</li> <li>- Sustainable Footsteps (Formal)</li> <li>- Plastpave Zambia (Formal)</li> <li>- Burning Youth Climate Action (Formal)</li> <li>- Environment Savers of Zambia (Formal)</li> <li>- Waste Management Association of Zambia</li> <li>- Hazardous-Waste (HW) Solid Waste Management</li> </ul>

(b) NRM

Country	No. projects	Remarks
Malawi	1	<ul style="list-style-type: none"> <li>- Kwithu Kitchen</li> </ul>
Mozambique	7	<ul style="list-style-type: none"> <li>- Environmental Education Cooperative Rethink</li> <li>- Associação Juvenil para o Desenvolvimento Comunitário em Moçambique-AJUCOM</li> <li>- Repensar</li> </ul>



		- Provincial Directorate of Territorial Development and Environment of Niassa - (DPDTAN)
Tanzania	9	<ul style="list-style-type: none"> <li>- The Nature Conservancy</li> <li>- Wildlife Conservation Initiative</li> <li>- Frankfurt zoological society</li> <li>- Mwanza Environmental Conservation and Agri-Business Group (MWECOA-GROUP)</li> <li>- International Union for Conservation of Nature (IUCN)</li> <li>- Chabri Energy Company Limited</li> <li>- Peace for conservation</li> <li>- Imunyi Foundation</li> <li>- Mabi banabon Tito</li> </ul>
Zambia	1	<ul style="list-style-type: none"> <li>- Hotels and Catering Association of Zambia (HCAZ)</li> <li>- Muvi Television</li> </ul>

#### 4.3.21 Number and name of R&I WM and NRM projects sourced in literature (by target country)

To expand further on the specific projects being implemented by the institutions mentioned in Section 4.3.20, a thorough literature review was conducted. The results are given in **Table 4.3.21**.

**Table 4.3.21: Number and name of R&I WM and NRM projects sourced in literature (by target country)**

(a) WM

Country	No. projects	Name of Project
Malawi	8	<ul style="list-style-type: none"> <li>- Innovative solution to tackle chemical waste and waste<sup>72</sup></li> <li>- Sustainable Waste Management in Malawi<sup>73</sup></li> <li>- Turning trash into treasure: United Nations Development Programme (UNDP) investing in waste management to create youth opportunities<sup>74</sup></li> <li>- Establishing a model waste management system in an urban township<sup>75</sup></li> <li>- Malawi Olympic Committee Project: Sustainable waste management pilot project<sup>76</sup></li> <li>- E-waste management in Malawi<sup>77</sup></li> <li>- Community Waste Recycling and Upcycling Program: A Pilot Project in Ngwenya Ward (Lilongwe)<sup>78</sup></li> <li>- From Pollutants to Cash: Urban Poor Women Turning Waste into Wealth – Malawi<sup>79</sup></li> </ul>
Mozambique	8	<ul style="list-style-type: none"> <li>- Mozambique – Sustainable Waste Management: Laying the Foundations for a Circular Economy<sup>80</sup></li> </ul>

<sup>72</sup> <https://www.unep.org/technical-highlight/malawi-finds-innovative-solutions-tackle-chemicals-and-waste-management>

<sup>73</sup> <https://www.undp.org/malawi/news/road-sustainable-waste-management>

<sup>74</sup> <https://www.undp.org/malawi/stories/turning-trash-treasure-undp-investing-waste-management-create-youth-opportunities>

<sup>75</sup> <https://cepa.rmportal.net/Library/natural-resources/establishing-a-model-waste-management-system-in-an-urban-township>

<sup>76</sup> <https://www.insidethegames.biz/articles/1125999/malawi-noc-waste-management>

<sup>77</sup> <https://digmap.pppc.mw/download/e-waste-management-in-malawi/>

<sup>78</sup> <https://www.youthlead.org/innovations/community-waste-recycling-and-upcycling-program-pilot-project-ngwenya-ward-lilongwe>

<sup>79</sup> <https://unfccc.int/climate-action/un-global-climate-action-awards/winning-projects/activity-database/from-pollutants-to-cash-urban-poor-women-turning-waste-into-wealth-malawi>

<sup>80</sup> <https://mitigation-action.org/projects/mozambique-sustainable-waste-management-for-a-circular-economy/>

Country	No. projects	Name of Project
		<ul style="list-style-type: none"> <li>- Nationally Appropriate Mitigation Action (NAMA)<sup>81</sup></li> <li>- Urban Sanitation, Drainage and Solid Waste Management in Chimoio and Inhambane<sup>82</sup></li> <li>- Plastic Reduction using Waste Transfer and Recycling Centre<sup>83</sup></li> <li>- Waste management in Greater Maputo<sup>84</sup></li> <li>- Establishment of an integrated Solid Waste Management Model in Great Maputo<sup>85</sup></li> <li>- Digital waste management solution study and pilots for African countries underway<sup>86</sup></li> <li>- Urban solid waste management (USWM)<sup>87</sup></li> </ul>
Tanzania	4	<ul style="list-style-type: none"> <li>- Dar es salaam Waste Activities<sup>88</sup></li> <li>- Turning waste into wealth in Tanzania<sup>89</sup></li> <li>- Polyethylene Terephthalate Recycle Company (PETCO)<sup>90</sup></li> <li>- Solving solid waste management through composting in Tanzania<sup>91</sup></li> </ul>
Zambia	3	<ul style="list-style-type: none"> <li>- Turning Trash into Treasure: The Potential of Waste-to-Energy in Zambia<sup>92</sup></li> <li>- Waste Management Study – Chongwe, Zambia<sup>93</sup></li> <li>- Waste management unit<sup>94</sup></li> </ul>

(b) NRM

Country	No. of R&I pilot project	Project name
Malawi	4	<ul style="list-style-type: none"> <li>- Environment and Natural Resource Management Project<sup>95</sup></li> <li>- Centre for Environmental Policy and Advocacy<sup>96</sup></li> <li>- Community based natural resource management: stocktaking assessment<sup>97</sup></li> <li>- Environmental and Natural Resource Management (ENRM) Project to Reduce Hydroelectricity Losses in Malawi<sup>98</sup></li> </ul>

<sup>81</sup> <https://www.ndf.int/newsroom/mozambique-transforming-its-waste-management-sector-backed-by-catalytic-funding-from-ndf.html>

<sup>82</sup> <https://projectsportal.afdb.org/dataportal/VProject/show/P-MZ-EAZ-003?lang=en>

<sup>83</sup> <https://stopopenburning.unitar.org/guidance-and-examples/mozambique/plastic-reduction-using-waste-transfer-and-recycling-centre/>

<sup>84</sup> <https://www.gopa-infra.de/projects/waste-management-greater-maputo>

<sup>85</sup> <https://philkoei.com.ph/project/the-project-for-the-capacity-development-to-realize-integrated-solid-waste-management-in-great-maputo/>

<sup>86</sup> <https://www.circularactionhub.org/digital-waste-management-solution-study-and-pilots-for-african-countries-underway/>

<sup>87</sup> [https://www.wehubit.be/drupal/files/public/2023-06/LearningSheet\\_ACRA\\_1.pdf](https://www.wehubit.be/drupal/files/public/2023-06/LearningSheet_ACRA_1.pdf)

<sup>88</sup> <https://www.ccacoalition.org/projects/dar-es-salaam-waste-activities>

<sup>89</sup> <https://washmatters.wateraid.org/blog/turning-waste-into-wealth-in-tanzania>

<sup>90</sup> <https://www.copip.eu/news/tanzania-eight-companies-join-forces-to-manage-plastic-waste/>

<sup>91</sup> <https://stopopenburning.unitar.org/guidance-and-examples/tanzania/solving-solid-waste-management-through-composting-in-tanzania/>

<sup>92</sup> <https://www.linkedin.com/pulse/turning-trash-treasure-potential-waste-to-energy-zambia-haigh/>

<sup>93</sup> [https://stopopenburning.unitar.org/site/assets/files/1097/zambi\\_chongwe\\_municipality\\_final\\_report\\_baseline\\_study-march2019.pdf](https://stopopenburning.unitar.org/site/assets/files/1097/zambi_chongwe_municipality_final_report_baseline_study-march2019.pdf)

<sup>94</sup> <https://www.lcc.gov.zm/waste-management/>

<sup>95</sup> <https://www.mcc.gov/resources/story/section-mwi-star-report-enrm-project>

<sup>96</sup> <https://cepa.rmpportal.net/Library/natural-resources/natural-resources-collection>

<sup>97</sup> [https://pdf.usaid.gov/pdf\\_docs/PA00JRSD.pdf](https://pdf.usaid.gov/pdf_docs/PA00JRSD.pdf)

<sup>98</sup> <https://www.mathematica.org/publications/final-report-for-the-evaluation-of-the-enrm-project-in-malawi>

Country	No. of R&I pilot project	Project name
		<ul style="list-style-type: none"> <li>- Malawi—Community Partnerships for Sustainable Resource Management<sup>99</sup></li> <li>- Empowering communities to manage natural resources<sup>100</sup></li> </ul>
Mozambique	4	<ul style="list-style-type: none"> <li>- World Bank-supported Mozambique Integrated Landscape Management<sup>101</sup></li> <li>- Mozambique CBNRM<sup>102</sup></li> <li>- Climate resilience and sustainable use of natural resources<sup>103</sup></li> <li>- Local Communities Win in Mozambique Climate-Smart Natural Resource Management<sup>104</sup></li> </ul>
Tanzania	9	<ul style="list-style-type: none"> <li>- Resilient Natural Resource Management for Tourism and Growth<sup>105</sup></li> <li>- Natural resource management Tanzania<sup>106</sup></li> <li>- Community Based Natural Resource Management (CBNRM) at strengthening citizens voice in the forestry, rangelands, wildlife and fisheries.<sup>107</sup></li> <li>- The Tuungane Project by Nature Conservancy<sup>108</sup></li> <li>- Protecting Tanzania Wilderness, FZS<sup>109</sup></li> <li>- SOS for nature, WWF<sup>110</sup></li> <li>- The Restoration Initiative<sup>111</sup></li> <li>- IUCN TRI Project<sup>112</sup></li> <li>- Anti-Poaching Technology - Grumeti Fund<sup>113</sup></li> </ul>
Zambia	2	<ul style="list-style-type: none"> <li>- Improving Natural Resource Management to Enhance Resilience of Communities in Zambia<sup>114</sup></li> <li>- Enhancing governance of community-based natural resource management in Zambia<sup>115</sup></li> </ul>

#### 4.3.22 Number of R&I-based recommendations made by local and national groupings submitted to governments and local communities (by country/sub-region)

Specific recommendations to governments by NRM local and national groupings, if adopted, ensure a bottom-up consolidation and uptake of a diversity of ideas for consideration during the decision-making

<sup>99</sup> <https://www.dai.com/our-work/projects/malawi-community-partnerships-sustainable-resource-management-compass-ii>

<sup>100</sup> <https://www.cifor.org/knowledge/publication/812>

<sup>101</sup> <https://www.usaid.gov/pdfs/docs/PBAAF669.pdf>

<sup>102</sup> <https://www.usaid.gov/pdfs/docs/PBAAF669.pdf>

<sup>103</sup> <https://www.undp.org/mozambique/climate-resilience-and-sustainable-use-natural-resources>

<sup>104</sup> <https://www.worldbank.org/en/country/mozambique/publication/local-communities-win-in-mozambique-climate-smart-natural-resource-management>

<sup>105</sup> <https://projects.worldbank.org/en/projects-operations/project-detail/P150523>

<sup>106</sup> <https://www.usaid.gov/tanzania/fact-sheet/apr-06-2023-tanzania-natural-resource-management-fact-sheet>

<sup>107</sup> <https://www.tnrf.org/en/content/tnrf-participates-youth-and-land-regional-exchange-program-africa>

<sup>108</sup> [https://www.ecohubmap.com/company/NGO/the-nature-conservancy-\(tnc\)-tanzania/32mcg2qkle35l2jc](https://www.ecohubmap.com/company/NGO/the-nature-conservancy-(tnc)-tanzania/32mcg2qkle35l2jc)

<sup>109</sup> <https://fzs.org/en/projects/tanzania/>

<sup>110</sup> <https://www.wwf.or.tz/>

<sup>111</sup> <https://www.iucn.org/story/202212/restoration-initiative-tanzania-story>

<sup>112</sup> <https://www.iucn.org/our-work/topic/ecosystem-restoration/restoration-initiative/projects/united-republic-tanzania>

<sup>113</sup> <https://grumetifund.org/our-work/special-projects/>

<sup>114</sup> <https://www.worldbank.org/en/news/video/2023/08/10/improving-natural-resource-management-to-enhance-resilience-of-communities-in-afe-zambia>

<sup>115</sup> <https://www.iied.org/enhancing-governance-community-based-natural-resource-management-zambia>

processes. **Table 4.3.22** below summarizes responses from various NRM groupings on any such recommendations previously submitted to the governments.

**Table 4.3.22: Number of R&I-based recommendations made by local and national groupings submitted to governments (by country/sub-region)**

Country	Number of recommendations	Institution	Recommendation provided
Malawi	4	Malawi Community Based Natural Resources Management	<ul style="list-style-type: none"> <li>- Department of National Parks and Wildlife should consider supporting the National CBNRM Forum to become the designated support services provider to the CBNRM</li> <li>- Associations often lack technical, financial, and managerial capacity to effectively deliver on their co-management mandates</li> <li>- Given the serious resource constraints CBNRM Associations face and the uncoordinated manner in which NGOs engage with the NRM conservation sector, the Department of National Parks and Wildlife, working with the National CBNRM Forum, should consider streamlining such NGO support by adopting the Thematic Working Group (TWG) model to deliver coordinated, efficient, and holistic support.</li> <li>- Three TWGs would be recommended: a. Institutional and Governance TWG; b. Natural Resource Conservation TWG, and c. Business Enterprise and Livelihoods TW</li> <li>- Given the serious resource constraints that Department of National Parks and Wildlife faces, and the frequent Human Wildlife Conflict (HWC) incidents and the hostility it generates, the Department of National Parks and Wildlife might wish to consider establishing a Wildlife Conservation Endowment Fund as a sustainable financing mechanism for wildlife conservation, and a HWC Insurance Scheme of which to make HWC offset payments</li> <li>- Department of National Parks and Wildlife should develop and enforce a governance compliance mechanism to ensure that Annual General Meetings (AGMs), financial reports, and auditing of CBNRM Associations as accountability mechanisms to prevent corruption and elite capture</li> </ul>
Mozambique	6	CBNRM Mozambique (Rede para Gestao Comunitaria de Recursos Naturais)	<ul style="list-style-type: none"> <li>- Extension of CBNRM countrywide</li> <li>- Establishment of effective community platform countrywide</li> <li>- Weak community representation in governance systems</li> <li>- Weak capacity of CBNRM in management and planning issues</li> <li>- Establishment of standards for community engagement countrywide</li> <li>- Benefits incurred by CBNRM to be used to support social services</li> </ul>

Tanzania	4	Community Wildlife Management Areas Consortium (CWMAC)	<ul style="list-style-type: none"> <li>- Establishment of guideline on collection and distribution of revenues due to various business conducted in Community Wildlife Management Areas</li> <li>- District Council to be given authority to manage community wildlife management areas election, negotiations and contracts agreements between community wildlife management areas and investors</li> <li>- Responsibility of consoling victims of human wildlife conflict in community wildlife management areas to be taken by Government and not community wildlife management areas</li> <li>- The regulation stipulates the mandate of the president to change the use and ownership of the land which is well stipulated in the village land act and it can confuse communities as they may think that designating WMA is a way of taking away their land for other use. The section should be deleted since it provides confusion to the communities</li> </ul>
Zambia			

#### 4.3.23 Number of expert groups (think tanks) for WM+NRM policy-making established at regional and sub-regional scale (by sector)

It is also informative to be aware of any formally established expert groups that digest WM and NRM policy-related issues and feeding these ideas in the decision-making processes. **Table 4.3.22** offers a sample of these expert groups or think-tanks, together with their focal areas of expertise. Eight (8) such groups were identified in a total for the WM and four others for the NRM. Together, these think-tanks deal with a great diversity of WM and NRM issues in a variety of ways and details.

**Table 4.3.23 List of WM and NRM expert groups (Think-tanks) (by target country)**

a) WM

Country	No. expert groups	Expert Organization	Expertise
Tanzania	3	Tanzania Association of Environmental Engineers (TAEES)	<ul style="list-style-type: none"> <li>- Water supply and sanitation, solid waste management climate change, Environmental Impact Assessment (EIA), and Community empowerment</li> <li>- projects, intervention of climate change resilience and adaptation.</li> </ul>
		Tanzania Environment Practitioners Association (TEPA)	<ul style="list-style-type: none"> <li>- No information found yet</li> </ul>

Country	No. expert groups	Expert Organization	Expertise
Zambia	1	Zambia Institute of Environmental Management (ZIEM) <sup>116</sup>	<ul style="list-style-type: none"> <li>- ZIEM was created as think tank in the environment and natural resources sector.</li> <li>- ZIEM has in-depth experience in offering applied research and technical advisory services, in natural resources such as water, land and forestry resources, environmental governance and pollution as well as climate change adaptation, mitigation and resilience to both public and private institutions.</li> </ul>
Mozambique	1	EOI - Mozambique - Environmental and Social Safeguard Specialist group	<ul style="list-style-type: none"> <li>- A group responsible for executing the work program in the field of environmental and social safeguards in accordance with national regulations</li> </ul>
Malawi	3	<p>Water, Waste and Environment Consultants (WWEC)</p> <p>Centre for Environmental Policy and Advocacy (CEPA)<sup>117</sup></p> <p>Malawi Environmental Health Association (MEHA)</p>	<ul style="list-style-type: none"> <li>- A Malawian based consulting firm that ensures projects are carried out in harmony with the environment. They offer theoretical and technical knowledge in diversified engineering and environmental fields.</li> <li>- CEPA seeks to contribute to the development of environment and natural resources management best practices in Malawi and the Southern Africa Region.</li> <li>- As a think tank organization, CEPA provides advice and conducts research in environment and natural resources management policies and legislation with a view to designing appropriate interventions for promoting sustainable environment and natural resources management.</li> <li>- Deals with issues of sanitation and hygiene, water quality, proper waste (both solid and liquid) disposal, environmental pollution control (air), promotion of food hygiene and safety, control of communicable diseases,</li> </ul>

(a) NRM

Country	No. Expert groups	Name of Expert group NRM	Expertise
Malawi	1	Centre for Environmental Policy and Advocacy (CEPA)	<ul style="list-style-type: none"> <li>- CEPA seeks to contribute to the development of environment and natural resources management best practices in Malawi and the Southern Africa Region.</li> <li>- As a think tank organization, CEPA provides advice and conducts research in environment and natural resources</li> </ul>

<sup>116</sup> <https://zieminstitute.org/page/consultancy-services>

<sup>117</sup> <https://cepa.org.mw/Library/natural-resources/establishing-a-model-waste-management-system-in-an-urban-township/view>

Country	No. Expert groups	Name of Expert group NRM	Expertise
			management policies and legislation with a view to designing appropriate interventions for promoting sustainable environment and natural resources management.
Mozambique	1	Nitidæ -Landscape and value chains Association	<ul style="list-style-type: none"> <li>- A non-profit association with an operational team of 150 people (economists, engineers, agronomists, forestry specialists, geographers, soil carbon scientists, GIS and remote sensing experts. Its mission is to preserve the environment while contributing to the local economy.</li> <li>- Nitidæ provides a technical expertise in mitigating environmental impact (preserving natural resources, energy efficiency in the process of transformation, carbon offsetting) and stimulate local economic development</li> </ul>
Tanzania	1	The Tanzania Association of Foresters	<ul style="list-style-type: none"> <li>- Promote forestry profession and disseminate information related to forestry to the nation and other related forestry institutions</li> </ul>
Zambia	1	The Zambia Community Resources Board Association (ZCRBA)	<ul style="list-style-type: none"> <li>- An umbrella organization of all 76 of Zambia's community resources boards and other community-based natural resource management organizations. It promotes sustainable management of natural resources through supporting local community ownership, protection, and management of natural resources including wildlife and forests to improve local democracy and decision-making.</li> </ul>

#### 4.3.23 Number of working papers produced by expert groups (by sector)

The number of working papers produced and shared by these expert groups (**Table 4.3.24**) offer a fair indicator of the level of involvement of these expert groups in information dissemination effective their workings are. A literature search indicated at least 10 such papers for WM expert groups and seven (7) for NRM related expert groups.

**Table 4.3.24: Sample working papers produced by various WM and NRM expert groups (by target country)**

##### (a) WM

Country	No. Working Papers	Name of Expert WM	Remarks
Tanzania	1	Tanzania Association of Environmental Engineers (TAEs)	Water Sector Status Report (2015 to 2020). It consolidates the progress and issues on the components constituting the water sector. The report addresses the challenges and sustainable solutions of water resources management, water supply and sanitation, institutional strengthening and performance monitoring in comprehensive and integrated manners.

Country	No. Working Papers	Name of Expert WM	Remarks
		Tanzania Environment Practitioners Association (TEPA)	
Zambia	2	Zambia Institute of Environmental Management (ZIEM) <sup>118</sup>	<u>Report on environmental and social benefits and risks assessment of the proposed</u>  <u>National REDD+ Investment Plan in Zambia, with the sole purpose of reducing emissions from deforestation and forest degradation under UNFCCC through the REDD+ Activities (2019)</u> Report of the status of climate change in Zambia (2019) Climate Change and Green growth report (2021)
Mozambique	1	EOI - Mozambique - Environmental and Social Safeguard Specialist group	
Malawi	6	Water, Waste and Environment Consultants (WVEC)  Centre for Environmental Policy and Advocacy (CEPA) <sup>119</sup>  Malawi Environmental Health Association (MEHA)	Wastewater Treatment and Waste Management Systems [Malawi Mangoes (Operations) Ltd.]  National Water Resources Investment Strategy [Ministry of Water Devel. and Irrigation] Environmental and Social Assessment Shire River Basin [World Bank] Design of Waste Management Policy and Bylaws [UNDP] <u>Establishing a Model Waste Management System in an Urban Township- A Report</u>  CEPA's Response to the State of the Nation Address and the 2020/2021 Budget Statement No information yet

b) NRM

Country	No. Working papers	Name of Expert group NRM	Number of Working papers
Malawi	3	Centre for Environmental Policy and Advocacy (CEPA)	Lake Chilwa Basin Climate Change Adaptation Programme Impact Report 2010-2017  Towards Healthy Forests for a Better Malawi Nationally Appropriate Mitigation Actions for Malawi 2015

<sup>118</sup> <https://zieminstitute.org/page/consultancy-services>

<sup>119</sup> <https://cepa.org.mw/Library/natural-resources/establishing-a-model-waste-management-system-in-an-urban-township/view>



Country	No. Working papers	Name of Expert group NRM	Number of Working papers
Tanzania		The Tanzania Association of Foresters	No information yet
Zambia	1	The Zambia Community Resources Board Association (ZCRBA)	Drafting the Community-based Natural Resource Management Policy  Revised regulations on revenue sharing
Mozambique	3	Nitidæ -Landscape and value chains Association	Historical and future deforestation analysis of Ribaue Mountains.  Miombo woodland regeneration dynamics after slash and burn agriculture in Mozambique. Deforestation and Wildlife management. Are Elephants attracted by recently deforested areas?

## SECTION 5: PERSPECTIVES FROM KIIs AND FGDs

Open ended questions as well as discussions from KIIs and FGDs provided an additional avenue for the respondents to freely contribute to the discussion on sustainable WM and NRM. The key findings summarized from their responses, grouped by themes and institutions are as follows:

### 5.1 Waste Management (WM)

#### *5.1.1 Research and tertiary education institutes (Science and innovation)*

Universities and tertiary education institutions in the target countries appear to have been convincingly active in WM practices. Management of both solid waste and waste water is confirmed. Application of research innovations, however, seem to be fairly diversified and attempted but weak both in practical making and dissemination with biogas and compost production as well as briquettes making and waste recycling being the most frequently mentioned. Efforts to integrate some self-generated R&I developments into some sort of long and short-term training syllabuses are visible but scattered. Lack of funds is cross-cutting and frequently cited as a major reason for frustrating sustainability in WM through R&I interventions. The current sources of such funds are grants in aid, loans and governments.

#### *5.1.2 Government Entities (Formulation of evidence-based policies/policy related instruments)*

Formulation of science-based policies and related instruments to guide sustainable WM (sanitation and solid waste management) interventions have existed and are ongoing albeit at variable levels. These strategic documents concern mostly areas of environment, health and water. However, some of these documents are in draft form (as admitted, for instance, by Malawi and Tanzania). Lack of technical capacity was reiterated as one of the prime factors frustrating development, adoption and dissemination of scientifically-led policies. Scarcity of technical experts, low level of professionalism and financial constraints were frequently cited during consultations with KIIs. capacity building, sharing of research findings as well as reinforcement of existing best-practices in implementing sustainable WM interventions were recommended (see **Appendix VI** for details).

#### *5.1.3 Groupings (Participation in evidence-based decision making)*

During FGDs and KIIs, capacity building and the need to formulate appropriate by-laws emerged as one of the priority areas being implemented by various Non-State Actors (including Indigenous Peoples and Local communities (IPLCs), Community Based Organizations (CBOs) and Non-Governmental Organizations (NGOs). There were strong recommendations for targeted capacity building/strengthening and formulation of much better appealing policies coupled with good administrative and governance systems on the part of governments.

#### *5.1.4 Value Chain Actors (Application of Innovative solutions)*

The formal and informal value chain actors mentioned compactors, open vans, biogas production and waste segregation, making of briquettes and georeferencing of waste management activities as innovative approaches they apply in WM. They also report collection of waste under private-public partnership (PPP) to be a promising approach if strengthened. The PPP approach was also indicated to work in formulation

of compost standards, capacitating plastic recyclers and subsidizing waste pickers. The most challenging issues in this area was, again scarcity of funding and knowledge as well as the habitual cultural negligence on WM (mentioned by Malawi) issues on the part of both urban and rural dwellers.

## **5.2 Natural Resources Management (NRM)**

### *5.2.1 Research and tertiary education institutes (Science and innovation)*

Similar to WM, the involvement in NRM by the academia appear strong in all countries. Training is reportedly in progress, offering short and long-term courses based on research, innovation and consultative NRM services. The most prioritised topic is biodiversity management with a focus on CBNRM, Fisheries and forest management, and water resources management was also mentioned often integrated with contemporary aspects such as climate change. Training funds are mobilized from grants in aid as well as from government allocations but also from internal sources (through proposal writing). Despite these sources of funding, most target countries mentioned fund insufficiency as a hurdle.

The discussions revealed that both the NRM research and the consequent findings remain at most rare or occasional and that these findings are mostly disseminated to governments or community groups. Overall, the academia appears to have introduced some form of research-based modules in their curricular, especially in the areas of biodiversity conservation and ecosystem management. Similar to WM, effective application of up-to-date research and training is limited by lack of resources (mentioned by all countries), as well as poor information sharing and lack of training modules. Again, the single collective appeal mentioned by all target countries was to increase funding opportunities.

### *5.2.2 Government Entities*

All the target countries reported having formulated NRM policies related to wildlife, forestry, fisheries and to some extent land, bee-keeping and environment-based on scientifically sound considerations. Nonetheless, their preparations (and review) are considered time consuming, cumbersome and financially costly (mentioned by Malawi) and there is also a lack of scientific instruments to support preparation of good policies. There is a perception the Natural Resources sector is not a fully prioritized government sector. Recommendations were made in favour of capacity building/strengthening and improvement of funding sources.

### *5.2.3 Groupings (Participation in evidence-based decision making)*

Technical support was considered important to stimulate meaningful participation of various formal and informal groupings in decision-making related to sustainable NRM. Lack of funds, inadequate capacity and poorly formulated policies in that order were blamed as affecting meaningful participation in evidence-based decision making. Community engagement, capacity building, strengthened research and improved networking were recommended to address these issues.

### *5.2.4 Value Chain Actors*

Surprisingly, through KIIs and FGDs the Value Chain Actors mentioned bio-briquettes and improved cooking stoves only as innovative solutions to NRM challenges in contrast to the rich list available through questionnaires and literature reviews. These actors pleaded for resources availability, government support

and community engagement as key recommendations for strengthening their active role in and participation in NRM and WM.

## SECTION 6. CONCLUSIONS

The findings of this survey are taken to convey the best approximation of the baseline WM and NRM situation on the ground given the robust approach that was employed to gather data. That the initial draft of this report underwent a rigorous stakeholder validation session adds to the rationality of the findings. For reasons of brevity, it is apparently challenging to fully conclude on each of the many indicators presented in the main text of this report, especially in numerical terms. However, a summary of the key conclusions is as follows:

### **With regard to waste management:**

- i. Management of solid waste in the target countries remains unsustainable, characterized by high levels of generation, especially in urban settings but with poor management practices. Current levels of waste management are far below those of the Sub-Saharan Africa.
- ii. Science-based initiatives by research and tertiary training institutions towards, innovations, adoption, dissemination and incorporation of sustainable Waste Management innovations into their training curricular vary by country. However, they generally remain at best basic, stagnated by inadequate knowledge and skills, and especially scarcity of financial, manpower and physical resources. Thus, the level of the academia in target countries to contribute to the alleviation of the problem of Waste Management problem does not appear to match the problem at hand for lack of adequate capacity.
- iii. Despite the apparent institutional weaknesses of the academia outlined in (ii), the government entities have remained vibrant in drafting policies and other strategic documents based on science and technology to provide guidance on sustainable WM practices. Sizable accumulation of such documentation exists, which also value and recognize the participation of local groupings in WM practices.
- iv. A multiplicity of Value Chain Actors exists in this area, and are striving to partner amongst themselves and with governments in advancing efforts towards sustainable WM practices. They demonstrate and surprisingly higher level of technical innovations dealing with WM. They complain of weaker capacitation and cooperation on the part of governments.
- v. Some Public-Private-Partnership initiatives do exist in the area of WM. Whereas governments recognize and acknowledge, as well as indicate support for the role of private enterprises in WM, implementation of this linkage in real terms appears at best feeble.

### **With regard to Natural Resources Management:**

- i. In contrast to Waste Management, Natural Resources Management - demonstrated by the levels of biodiversity and territorial areas set aside for purposes of conservation appears to fall in the globally advocated ranges. Nevertheless, the relative sizes of protected marine and aquatic systems are below the expected thresholds.
- ii. Research and tertiary training institutions specialized in NRM themes are variably engaged in some sorts of innovations, adoption, dissemination and incorporation science-based sustainable NRM practices

- iii. An appealing volume of policies and supporting strategic documents related to preservation and Management of Natural Resources exists but inconsistencies and to an extent contradictions amongst these policies exists, affecting their effective implementations. Higher, costs associated with their reviews in terms of timing and financial resources adds to the implementing complications. In some cases, lack of good administrative and governance systems on the part of governments also frustrates their implementations.
- iv. The government-Community Based Natural Resources Management link appears fairly strong despite the variable collaborative models and varieties of income generation and sharing schemes.
- v. The Value Chain Actors in the NRM appears not so well engaged in WM activities compared to those in the WM sector despite existence of clear potentials.
- vi. Although both governments and private enterprises acknowledge their complimentary PPP roles in addressing NRM issues, in practice far fewer such ventures exist in the NRM compared to WM sector.

#### **Cross-cutting Issues:**

- i. Job generation is slightly higher in the NRM sector compared to WM. However, a clear gender imbalance exists in employability of both these sectors.
- ii. This report comprised a > 20 indicators for gauging the baseline WM and NRM conditions and expected to be SMART (Specific, Measurable, Attainable, Realistic and Time-bound). Despite best intentions, some of the data gathered remain only indicative with implications on the level of interpretation.
- iii. Some indicators as per the log frame appear out of scope given the size and scope of the project. Simpler ones may need to be re-worked to allow for realistic monitoring and evaluation as implementation of the project proceeds.

Technical support was considered important to stimulate meaningful participation of various formal and informal groupings in decision-making related to sustainable NRM. Lack of funds, inadequate capacity and poorly formulated policies in that order were blamed as affecting meaningful participation in evidence-based decision making. Community engagement, capacity building, strengthened research and improved networking were recommended to address these issues.

Surprisingly, through KIs and FGDs the Value Chain Actors mentioned bio-briquettes and improved cooking stoves only as innovative solutions to NRM challenges in contrast to the rich list available through questionnaires and literature reviews. These actors pleaded for resources availability, government support and community engagement as key recommendations for strengthening their active role in and participation in NRM and WM.

The availability of standardized baseline data should now pave the way to the full implementation of the multiple succeeding project phases. They will also guide for country-specific implementation of project and in a manner that should allow for monitoring and evaluation of the project as whole. Therefore, it can be concluded that the outputs of this survey are objective, timely and useful for implementation of the project in its entire the lifecycle.

## LIST OF APPENDICES

### Appendix I: List of respondents

(a) WM

SN	Theme	Institution	Country	Position in institution	Email	Category of institution
1.	Research and training	Malawi University of Science and Technology	Malawi	Senior Lecturer and Head of Department	jtaulo@must.ac.mw	University/College
2.	Research and training	Instituto Oceanografico de Mocambique	Mozambique	Researcher	carlotaamoda@yahoo.com.br	Research Institution
3.	Research and training	Rovuma University	Mozambique	Dean's Advisor	aafonso@unirovuma.ac.mz	University/College
4.	Research and training	Universidade Polit�cnica A Polit�cnica	Mozambique	Lecturer & Project Officer	clanga@funde.org.mz / chelsea.adelina@gmail.com	University/College
5.	Research and training	Institute of Rural Development Planning	Tanzania	Head of Department- Environmental Planning	gmnyone@irdp.ac.tz	University/College
6.	Research and training	Ardhi University	Tanzania	Environmental Science Department Head	mhinagiven@gmail.com	University/College
7.	Research and training	Sustainable Agriculture Tanzania	Tanzania	Supervisor	Angelina.mbele@kilimo.org	Non-Governmental Organization
8.	Research and training	Sokoine University of Agriculture	Tanzania	Coordinator for Research and Publications	jkashaigili@sua.ac.tz	University/College
9.	Research and training	Mulungushi University	Zambia	Senior Lecturer/Researcher	mitulo.silengo@gmail.com	University/College
10.	Research and training	Zambia Institute for Tourism and Hospitality Studies	Zambia	Head-Hospitality	bernardchibela@gmail.com	University/College
11.	Government entities	Chikwawa District Council	Malawi	Director of Planning and Development	buthokozile@gmail.com	Local Government Authority
12.	Government entities	Lilongwe District Health Office	Malawi	Environmental Health Officer	vellymoyo@gmail.com	Local Government Authority
13.	Government entities	Lilongwe City Council	Malawi	Deputy Director	Lilongwe City Council, P.O. Box 30396, Lilongwe 3.	Local Government Authority



SN	Theme	Institution	Country	Position in institution	Email	Category of institution
14.	Government entities	NA	Malawi	NA	thokomkaka2@gmail.com	Local Government Authority
15.	Government entities	Lilongwe city council	Malawi	Deputy Director of health and social services	jorlex.kamtokoma@gmail.com	Local Government Authority
16.	Government entities	Lilongwe city council	Malawi	Chief Legal Officer	msukwaalickson@yahoo.com	Local Government Authority
17.	Government entities	Lilongwe city council	Malawi	Development control manager	obviousnyivenda11@gmail.com	Local Government Authority
18.	Government entities	Environmental affairs department	Malawi	NA	clement.tikiwa@gmail.com	Central Government Authority
19.	Government entities	Conscious generation	Mozambique	Founder	rccharumar@gmail.com	Civil Society Organization
20.	Government entities	To pack Mozambique, SA	Mozambique	General Manager	jlima@topack.net	Private Institution
21.	Government entities	Maputo city council	Mozambique	Head of monitoring and inspection department	simawagha@hotmail.com	Local Government Authority [council, municipality or city]
22.	Government entities	N,Ãtoko organic Ida	Mozambique	Founder and sales manager	marciapauladima1@gmail.com	Private Institution
23.	Government entities	Provincial Directorate of Territorial Development and Environment - Niassa	Mozambique	Head of Conservation and Wildlife Division	afonsomponda33@gmail.com	Central Government Authority
24.	Government entities	Ministry of Land and Environment	Mozambique	Technician	julycossa39@gmail.com	Central Government Authority
25.	Government entities	Morogoro Municipality	Tanzania	Assistant Environmental Health Officer	mmzuanda@yahoo.com	Local Government Authority
26.	Government entities	Ilemela Municipal Council	Tanzania	Head of Unit of Waste Management and Sanitation	pyohana.yohana5@gmail.com	Local Government Authority
27.	Government entities	Vice President's Office	Tanzania	Senior Environment Officer	lungoabdallah@gmail.com	Central Government Authority
28.	Government entities	Lusaka City Council	Zambia	Senior Public health Inspector	nthandose.katete74@gmail.com	Local Government Authority
29.	Local and national groupings	NA	Malawi	Program coordinator	edgarphiri@wateraid.org	Non-Governmental Organization

SN	Theme	Institution	Country	Position in institution	Email	Category of institution
30.	Local and national groupings	Catholic commission for justice and peace	Malawi	Program manager	mwa.sandram@ccsplilongwe.org	Civil Society Organization
31.	Local and national groupings	Repensar Environmental Education Cooperative	Mozambique	Project Monitoring and Evaluation Officer	joselakapassura@gmail.com	Cooperative
32.	Local and national groupings	Provincial Directorate of Territorial Development and Environment of Niassa - DPDTAN	Mozambique	Head of Conservation and Wildlife Division	afonsomponda33@gmail.com	Central Government Authority
33.	Local and national groupings	KIUM Cleaners	Tanzania	CBO chairman	saidimhina5@gmail.com	Community Based Organization
34.	Local and national groupings	Zaidi Recyclers	Tanzania	Founder	kimambo@gmail.com	Private Institution
35.	Local and national groupings	Umoja wa Watunza Mazingira Morogoro (UWAMAMO)	Tanzania	Chair person	gabriel1.gb20@gmail.com	Community Based Organization
36.	Local and national groupings	KINDIBWA group	Tanzania	Chair person	Nil	Community Based Organization
37.	Local and national groupings	Wakusanya Taka Bonyokwa Cooperative society (WTB)	Tanzania	Chairperson	johnnsyenge@gmail.com	Community Based Organization
38.	Local and national and groupings	Waste management association of Zambia	Zambia	President	hwswmgt@gmail.com	Non-Governmental Organization
39.	Value chain actors	PEM industrial cleaners	Malawi	Director of operations	kafakomapriscica@yahoo.com	Private Institution
40.	Value chain actors	Capital City Cleaners	Malawi	Deputy OPs/Marketing and sales manager	capcitycleaners.mw@gmail.com	Private Institution
41.	Value chain actors	Up-Cycling	Malawi	Artist	rmlambe@gmail.com	Local Government Authority
42.	Value chain actors	Rethink	Mozambique	Technician	hafidoa@gmail.com	Community Based Organization

SN	Theme	Institution	Country	Position in institution	Email	Category of institution
43.	Value chain actors	Repensar Environmental Education Cooperative	Mozambique	Project coordinator	marta1sambo@gmail.com	Parastatal Organization
44.	Value chain actors	UEM University Foundation	Mozambique	Administrative assistant	fernandesnovele56@gmail.com	University/College
45.	Value chain actors	Center for Environmental Law, Biodiversity and Quality of Life UEM	Mozambique	Investigator	floriana11mutambe@gmail.com	University/College
46.	Value chain actors	Provincial Directorate of Territorial Development of Niassa DPDTAN	Mozambique	Head of Conservation and Wildlife Division	afonsomponda33@gmail.com	Central Government Authority
47.	Value chain actors	Chilambo General Trade Company Limited	Tanzania	Deputy Director	chilambo2006@yahoo.com	Private Institution
48.	Value chain actors	Nipe Fagio	Tanzania	Executive Director	ana@nipefagio.co.tz	Non-Governmental Organization
49.	Value chain actors	Kajenjere Trading Company Limited	Tanzania	Revenue supervisor	kassimally1@gmail.com	Local Government Authority
50.	Value chain actors	CutOff Recycle	Tanzania	Co-Founder and Team Lead	hariohay00@gmail.com	Private Institution
51.	Value chain actors	recycle@OZTI	Tanzania	Director	recycle@ozti.co.tz	Non-Governmental Organization
52.	Value chain actors	Green Composting Ltd	Tanzania	Managing Director	cecil.sagawala@gmail.co.tz	Private Institution
53.	Value chain actors	Wazoa Taka Majumbani (WATAMA)	Tanzania	Chairperson	No email	Community Based Organization
54.	Value chain actors	Usafi Na Mazingira Group	Tanzania	Chairperson	Nil	Community Based Organization
55.	Value chain actors	The Recycler Limited	Tanzania	General Manager	philipo@recycler.co.tz	Private Institution
56.	Value chain actors	Environment For Communities Livelihood Organization (ECOLIO)	Tanzania	DIRECTOR	bintomdogo2017@gmail.com	Non-Governmental Organization
57.	Value chain actors	Jamii Endelevu Tanzania	Tanzania	Director	nelvill18@gmail.com	Non-Governmental Organization
58.	Value chain actors	Waste mat Zambia Ltd	Zambia	CEO	wastematzambia@gmail.com/ nakamba.mwinyi300@gmail.com	Non-Governmental Organization

SN	Theme	Institution	Country	Position in institution	Email	Category of institution
59.	Value chain actors	Ebusaka Green Technology Limited	Zambia	Founder and CEO	kaongamuyunda@gmail.com	Private Institution
60.	Value chain actors	Art for Climate Zambia	Zambia	CEO and Founder	chapolokodavidpfg@gmail.com	Private Institution
61.	Value chain actors	Waste management association of Zambia	Zambia	President	witiharooni@yahoo.com	Private Institution
62.	Value chain actors	Hazardous Solid Waste Management	Zambia	Chief Executive Officer	hwswmgt@gmail.com	Private Institution
63.	Value chain actors	Sustainable Footsteps	Zambia	CEO/Founder	kelvinkamwanga@gmail.com	Private Institution
64.	Value chain actors	PLASTPAVE ZAMBIA	Zambia	CEO/Founder	lwengamulela@gmail.com	Private Institution
65.	Value chain actors	Burning Youth Climate Action	Zambia	CEO/Founder	ntongamanelson@gmail.com	Private Institution
66.	Value chain actors	Environment Savers of Zambia	Zambia	Executive director	emwewa29@gmail.com	Non-Governmental Organization

(b) NRM

SN	Theme	Institution	Country	Position	Email	Category of institution
1.	Research and training	Malawi College of Forestry and Wildlife	Malawi	Principal and Lecturer/Trainer	mfgondwe@gmail.com	Central Government Authority
2.	Research and training	Lilongwe University of Agriculture and Natural Resources	Malawi	PhD student	fmbanda@poly.ac.mw	University/College
3.	Research and training	Lilongwe University of Agriculture and Natural Resources	Malawi	Head Of Department of Environment and Natural Resources Management	chriskambani@gmail.com	University/College
4.	Research and training	Malawi College of Fisheries: Department of fisheries, Ministry of	Malawi	Senior deputy director	jkazemb@gmail.com	Central Government Authority

		Natural Resources and Climate change				
5.	Research and training	Malawi college of forestry and wildlife	Malawi	Head of Academics	magwedefale@gmail.com	University/College
6.	Research and training	Department of National Parks and Wildlife	Malawi	Deputy director	mchilimampunga40@gmail.com	Central Government Authority
7.	Research and training	Malawi University of Business and Applied Sciences (MUBAS)	Malawi	Associate Professor	ckaonga@poly.ac.mw	University/College
8.	Research and training	Instituto polit�cnico da Ci�ncia da terra e ambiente	Mozambique	Teacher	manuelmacanda@gmail.com	University/College
9.	Research and training	Universidade Eduardo Mondlane	Mozambique	Assistant Professor	cpntumi@gmail.com	University/College
10.	Research and training	Centro de Estudos do Meio e Desenvolvimento Local (CEMEDEL)	Mozambique	Director	cemedel.mz@gmail.com	Civil Society Organization
11.	Research and training	Community based conservation training centre (CBCTC) Likuyu Sekamaganga	Tanzania	Head of department (Wildlife Management)	kababimanyonyi@gmail.com	Central Government Authority
12.	Research and training	Nelson Mandela Institution of Science and Technology	Tanzania	Lecturer	francis.moyo@nm-aist.ac.tz	University/College
13.	Research and training	Tanzania Forestry Research Institute (TAFORI)	Tanzania	Senior Research Officer	uissoaj@yahoo.com	Research Institution
14.	Research and training	St. Augustine University of Tanzania	Tanzania	Lecturer-	ngogo.mang'enyi@sauti.ac.tz	University/College
15.	Research and training	Governance Links Tanzania	Tanzania	Executive director	kasongidonald@gmail.com	Research Institution
16.	Research and training	Institute of Resource Assessment, University of Dar es Salaam	Tanzania	Director	jknobert@gmail.com	University/College

17.	Research and training	Tanzania Wildlife Research Institute (TAWIRI)	Tanzania	Researcher	bjkbj70@gmail.com	Central Government Authority
18.	Research and training	Sokoine University of Agriculture	Tanzania	Coordinator for Research and Publications	jkashaigili@sua.ac.tz	University/College
19.	Research and training	The University of Zambia	Zambia	Head of Department	pnయా@ yahoo.co.uk	University/College
20.	Research and training	Integrated Land and Resource Governance Program (USAID)	Zambia	Chief of Party (per above, we are actually also active in Moz and Malawi)	matt.sommerville@tetrattech.com	Private Institution
21.	Research and training	Centre For International Forestry Research (CIFOR)	Zambia	Research Officer	katongoesnelly@gmail.com	Research Institution
22.	Government entities	Department of National Parks and Wildlife	Malawi	Deputy Director	wmgoola@yahoo.com	Central Government Authority
23.	Government entities	Department of Forestry	Malawi	Deputy Director	kasizochirambo@yahoo.com	Central Government Authority
24.	Government entities	Department of forestry	Malawi	NA	teddiekamoto@yahoo.co.uk	Central Government Authority
25.	Government entities	Fisheries Department	Malawi	Deputy Director-Capture fisheries management	mgoma64@gmail.com	Central Government Authority
26.	Government entities	Morogoro Municipal Council	Tanzania	Ag MNREL	dauson.rwemihago@morogoromc.go.tz	Local Government Authority
27.	Government entities	Tanzania Wildlife Management Authority (TAWA)	Tanzania	Ag Head of Operation and Problem Animal Control Section	mark.chuwa@tawa.go.tz	Central Government Authority
28.	Government entities	Ministry of Natural Resources and Tourism (MNRT)	Tanzania	Monitoring of Illegal Killing of Elephants and	eligi.kimario@maliasili.go.tz	Central Government Authority

				Species Management		
29.	Government entities	National Assembly of Zambia	Zambia	NA	mmchilumba@yahoo.co.uk	Central Government Authority
30.	Government entities	Department of National Parks and wildlife	Zambia	Director	andrewchoonba@gmail.com	Central Government Authority
31.	Government entities	Forestry department	Zambia	Senior forestry technician	isimasiku@gmail.com	Central Government Authority
32.	Government entities	Fisheries department	Zambia	NIL	lkalumba2g@gmail.com	Central Government Authority
33.	Government entities	Ministry of Earth and Environment	Mozambique	Technique and Focal Point of Convention on Biological Diversity (CBD)	melinhapaula@gmail.com	Central Government Authority
34.	Government entities	Provincial Directorate of Territorial Development and Environment of Niassa DPDTAN	Mozambique	Head of Conservation and Wildlife Division	afonsomponda33@gmail.com	Central Government Authority
35.	Government entities	National Administration of Conservation Areas	Mozambique	Head of the Department of Cooperation and Studies	cornelio.miguel@yahoo.com	Central Government Authority
36.	Local and national groupings	National CBNRM Forum	Malawi	National Coordinator	kajikhomere@gmail.com	Community Based Organization
37.	Local and national groupings	The National CBNRM Forum	Malawi	M & E Coordinator	gifenh lance@gmail.com	Community Based Organization
38.	Local and national groupings	Lilongwe Wildlife Trust	Malawi	Policy and Advocacy	chifuundod@gmail.com	Non-Governmental Organization
39.	Local and national groupings	Civil Society Network in Climate Change	Malawi	NA	tosenyirenda@yahoo.co.uk	Civil Society Organization
40.	Local and national groupings	AssociaÃ§Ã£o Amanhecer para	Mozambique	Executive director	kubecera@gmail.com	Civil Society Organization

		Proteção de Terra e Recursos Naturais designada por Kubecera-PTRN				
41.	Local and national groupings	ReGeCom	Mozambique	Vice President of General Assembly	aafonso@unirovuma.ac.mz	Non-Governmental Organization
42.	Local and national groupings	World Wildlife Fund (WWF)	Mozambique	Wildlife Program Manager	mfoloma@wwf.org.mz	Non-Governmental Organization
43.	Local and national groupings	PLASOC	Mozambique	Project Manager	rangelrachidnairo@gmail.com	Civil Society Organization
44.	Local and national groupings	UCA- Union of Agricultural Cooperation of Lichinga	Mozambique	Project Manager	nunes.amisse79@gmail.com	Civil Society Organization
45.	Local and national groupings	AMDER-Mozambican Association for Sustainable Rural Development	Mozambique	Program Officer	piecassilote@gmail.com	Civil Society Organization
46.	Local and national groupings	Hifadhi Misit, Samaki na Nyuki Tanzania (HIMISANTA)	Tanzania	Environmental Officer	mashaurideogratus@gmail.com	Community Based Organization
47.	Local and national groupings	Tanzania Association of Cultural Tourism Organizers - TACTO	Tanzania	CEO	tacto2000@gmail.com	Private Organization
48.	Local and national groupings	Burunge Wildlife Management area	Tanzania	General secretary	bebu71mwaise@gmail.com	Community Based Organization
49.	Local and national groupings	Mtandao wa Jamii wa Usimamizi wa Misitu Tanzania (MJUMITA)	Tanzania	Executive Director	rnjaidi@gmail.com	Non-Governmental Organization
50.	Local and national groupings	German Development Cooperation (GIZ)	Tanzania	Advisor	anna.kimambo@giz.de	Public Company
51.	Local and national groupings	Nalika Authorized Association, Tunduru WMA	Tanzania	Executive Secretary of Nalika WMA	mohamedjalala13@gmail.com	Community Based Organization
52.	Local and national groupings	Eastern Region CRBs Association	Zambia	coordinator	petrosmuyunda@gmail.com	Community Based Organization
53.	Local and national groupings	Community Resources Board(CRB)	Zambia	Northern region Community	maximosmalama01@gmail.com	Community Based Organization



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				resources board association president		
54.	Local and national groupings	Wildlife and environmental conservation society of Zambia WECSZ	Zambia	Educational officer	Fungai@conservationzambia.org	Non-Governmental Organization
55.	Local and national groupings	The Nature Conservancy	Zambia	Country Director	robert.munro@tnc.org	Non-Governmental Organization
56.	Local and national groupings	Nsefu Community Resources Board	Zambia	Natural Resources Officer	kachij60@gmail.com	Community Based Organization
57.	Local and national groupings	Know your Wildlife and the Environment Zambia (KWEZ) initiative	Zambia	Executive Director	mumbagideon90@gmail.com	Non-Governmental Organization
58.	Local and national groupings	Zambia Community Resources Board Association	Zambia	National coordinator	isaacbanda91@yahoo.com	Civil Society Organization
59.	Local and national groupings	Passion for Wildlife	Zambia	Director Publications	mwilasafe@gamil.com	Non-Governmental Organization
60.	Local and national groupings	Zambia CBRNM (Zambia CBNRM Forum)	Zambia	Acting Executive Director	sakalafrancis2@gmail.com	Civil Society Organization
61.	Local and national groupings	Frankfurt Zoological Society - North Luangwa Conservation Programme	Zambia	Project coordinator	issah.mulilo@fzs.org	Non-Governmental Organization
62.	Local and national groupings	WeForest	Zambia	Country Director	fainess.lumbwe@weforest.org	Non-Governmental Organization
63.	Value chain actors	Kwithu Kitchen	Malawi	Business Advisor	john@maloto.org	Food Processing Cooperative, Off-take for Honey
64.	Value chain actors	NIL	Malawi	CEO	fredricamahess@gmail.com	Private Institution
65.	Value chain actors	Environmental Education Cooperative Rethink	Mozambique	Environmental Educator	sheilapedro19@gmail.com	Parastatal Organization
66.	Value chain actors	Associacao Juvenil para o Desenvolvimento	Mozambique	Project Assistant	nombora23@gmail.com	Community Based Organization

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67.	Value chain actors	Comunitario em Moçambique-AJUCOM Rethink	Mozambique	Environmental Educator	fatimaossufo25@gmail.com	Community Based Organization
68.	Value chain actors	Environmental education cooperative Rethinking	Mozambique	Environmental educator	rubenmachava@gmail.com	Parastatal Organization
69.	Value chain actors	Environmental Education Cooperative Rethink	Mozambique	Environmental educator	sanndrrabambo@gmail.com	Parastatal Organization
70.	Value chain actors	Environmental Education Cooperative Rethink	Mozambique	Environmental Engineer and Administrative and financial assistant	adeliamondlane@gmail.com	Parastatal Organization
71.	Value chain actors	Environmental Education Cooperative Rethink	Mozambique	Project coordinator	marta1sambo@gmail.com	Parastatal Organization
72.	Value chain actors	Repensar	Mozambique	Environmental technician	carlassimba4@gmail.com	Private Institution
73.	Value chain actors	Environmental Education Cooperative Rethink	Mozambique	Environmental Technician	Joselakapassura@gmail.com	Parastatal Organization
74.	Value chain actors	Environmental Education Cooperative Rethink	Mozambique	Environmental Education Cooperative Rethink	Clausencioarao@gmail.com	Cooperative
75.	Value chain actors	Provincial Directorate of Territorial Development and Environment of Niassa-DPDTAN	Mozambique	Head of Conservation and Wildlife Division	alphonsomponda33@gmail.com	Central Government Authority
76.	Value chain actors	The Nature Conservancy	Tanzania	Conservation	amallya@tnc.org	Non-Governmental Organization
77.	Value chain actors	Wildlife Conservation Initiative	Tanzania	Chief Executive Officer	robert.fyumagwa@wci.co.tz	Non-Governmental Organization
78.	Value chain actors	Frankfurt zoological society	Tanzania	Programme manager	masegeri@gmail.com	Non-Governmental Organization

79.	Value chain actors	Mwanza Environmental Conservation and Agri-Business Group (MWECOA-GROUP)	Tanzania	Founder and Chairperson	mahindadeogratus@gmail.com	Community Based Organization
80.	Value chain actors	International Union for Conservation of Nature (IUCN)	Tanzania	Biodiversity Conservation Lead, Tanzania Country Office	Wildnjilima@gmail.com	Non-Governmental Organization
81.	Value chain actors	Chabri Energy Company Limited	Tanzania	Chief Executive Officer	makachiabenard@gmail.com	Private Institution
82.	Value chain actors	Peace for conservation	Tanzania	Chief Executive officer	dkabambo@gmail.com	Non-Governmental Organization
83.	Value chain actors	Imunyi Foundation	Tanzania	Director	james.laizer@gmail.com	Non-Governmental Organization
84.	Value chain actors	Mabi banabon Tito	Tanzania	Owner of the Business	no@yahoo.com	Indigenous Peoples
85.	Value chain actors	Hotels and Catering Association of Zambia (HCAZ)	Zambia	Lusaka Region Chairperson	musondakasani@gamil.com	Community Based Organization
86.	Value chain actors	MUVI Television	Zambia	Journalist	chulueliasohi@gmail.com	Private Institution

## Appendix II: Questionnaire Survey Template

### 1.1 NRM Research and Tertiary Education Institutions

COLLEGE OF AFRICAN WILDLIFE MANAGEMENT, MWEKA

SURVEY TO ESTABLISH BASELINE INFORMATION ON WASTE MANAGEMENT (TO BE FILLED BY  
HIGHER LEARNING AND RESEARCH INSTITUTIONS)

The College of African Wildlife Management, Mweka, United Republic of Tanzania is conducting a Questionnaire Survey to establish the baseline conditions for SADC-led project titled "*Strengthening Research and Innovation in Natural Resource Management (NRM) and Waste Management (WM) in Southern Africa Region*". This questionnaire specifically explores data on research and innovative solutions for the strengthening Natural Resources Management (NRM) and is administered in Malawi, Mozambique, Tanzania and Zambia. Questionnaire takes approximately 15 minutes to fill, and the information will be kept confidential and used only for the purpose of this study. Thanking you in advance for your time.

#### PART I: GENERAL INFORMATION

1 a) Name of your institution

b) Country of your institution [check appropriate box]

<input type="checkbox"/>	Tanzania
<input type="checkbox"/>	Malawi
<input type="checkbox"/>	Mozambique
<input type="checkbox"/>	Zambia

2 a) Position in your institution

b) Personal Details [Check appropriate box]

<input type="checkbox"/>	Male
<input type="checkbox"/>	Female

b) Age (years) [Check appropriate box]

<input type="checkbox"/>	18-30
<input type="checkbox"/>	31-45
<input type="checkbox"/>	45-60
<input type="checkbox"/>	>60

c) Contact details (Email)

d) Phone number

3 a) In which institutional category does your organization belong? [Check the appropriate box]

<input type="checkbox"/>	Central Government Authority
<input type="checkbox"/>	University/College
<input type="checkbox"/>	Local Government Authority [Council, municipality or city]
<input type="checkbox"/>	Private Institution
<input type="checkbox"/>	Non-Government Organization
<input type="checkbox"/>	Parastatal Organization
<input type="checkbox"/>	Research Institution
<input type="checkbox"/>	Civil Society Organization
<input type="checkbox"/>	Community Based Organization
<input type="checkbox"/>	Indigenous Peoples
<input type="checkbox"/>	Others:

b) For how long has your institution been operating? [Check the appropriate box]

<input type="checkbox"/>	Less than 5 years
<input type="checkbox"/>	5 – 10 years
<input type="checkbox"/>	More than 10 years

c) For how long have you been working in this institution? [Check the appropriate box]

<input type="checkbox"/>	Less than 5 years
<input type="checkbox"/>	5 – 10 years
<input type="checkbox"/>	More than 10 years

## PART II: RESEARCH AND TRAINING IN WASTE MANAGEMENT (WM)

4. How is your institution involved in Waste Management - WM? [Please check all boxes that apply]

<input type="checkbox"/>	Long-course training
<input type="checkbox"/>	Short-course training
<input type="checkbox"/>	Research
<input type="checkbox"/>	Innovation
<input type="checkbox"/>	Consultancy
<input type="checkbox"/>	Others: _____

5 a) Does your institution have a research agenda? [Check the appropriate box]

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

b) If yes in 5a, mention three (3) priority topics on WM in order of importance?

6a) Does your institution allocate funds for innovative research on WM? [Check the appropriate box]

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

6b) How does your institution mobilize funds for WM research and innovation? [Check all that apply]

<input type="checkbox"/>	Grants in aid
<input type="checkbox"/>	Internal budget
<input type="checkbox"/>	Loans
<input type="checkbox"/>	Government funds
<input type="checkbox"/>	Others: _____

6c) Kindly rate the level of sufficiency [Check appropriate box]

<input type="checkbox"/>	Fully sufficient
<input type="checkbox"/>	Moderately sufficient
<input type="checkbox"/>	Not sufficient

7. How many WM related research were conducted by your institution in the past five years?

8. List five (5) research-generated Waste Management innovations that exist in your institution in order of priority (Indicate year of innovation)

9. How often do you share WM innovative research findings with users? [Check the appropriate box]

<input type="checkbox"/>	Frequently (twice per year and above)
<input type="checkbox"/>	Occasionally (once per year)
<input type="checkbox"/>	Rarely

10. a) How many WM-related research and innovation outputs were transferred to other sectors/societies by your institution?

b) Mention three (3) sectors/societies to which you transferred research and innovation outputs 10a) above

11. a) Are there any collaborative research and innovation projects related to WM implemented by your institution?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

b) If yes in 11 a, how many collaborative research and WM innovation projects were implemented by your institution? (Indicate year)

c) Mention institutions with whom WM-research and innovation projects were collaboratively implemented

d) Mention specific WM research and innovative projects which were collaboratively implemented

12. If yes in 11a, what is the geographical scope of collaboration in research and innovations related to WM? [Check appropriate box]

<input type="checkbox"/>	Local (within the country)
<input type="checkbox"/>	Regional (with countries in Africa)
<input type="checkbox"/>	International (with countries outside Africa)

13 a) Are there WM research-based modules introduced into your curricula?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

b) If yes in 13a, kindly list them

14. a) Mention the factors limiting effective application of up-to-date research and training in WM

b) What would you recommend in addressing the gaps identified in 14a?

## 1.2 NRM Government Institutions

### COLLEGE OF AFRICAN WILDLIFE MANAGEMENT, MWEKA

SURVEY TO ESTABLISH BASELINE INFORMATION ON NATURAL RESOURCES MANAGEMENT (TO BE FILLED BY GOVERNMENT ENTITIES)

The College of African Wildlife Management, Mweka, United Republic of Tanzania is conducting a Questionnaire Survey to establish the baseline conditions for SADC-led project titled "*Strengthening Research and Innovation in Natural Resource Management (NRM) and Waste Management (WM) in Southern Africa Region*". This questionnaire specifically explores data on research and innovative solutions for the strengthening Natural Resources Management (NRM) and is administered in Malawi, Mozambique, Tanzania and Zambia. Questionnaire takes approximately 15 minutes to fill, and the information will be kept confidential and used only for the purpose of this study. Thanking you in advance for your time.

#### PART I: GENERAL INFORMATION

1 a) Name of your institution

b) Country of your institution [check box that apply]

<input type="checkbox"/>	Tanzania
<input type="checkbox"/>	Malawi
<input type="checkbox"/>	Mozambique
<input type="checkbox"/>	Zambia

2 a) Position in your institution

b) Personal Details [Check appropriate box]

<input type="checkbox"/>	Male
<input type="checkbox"/>	Female

c) Age (years) [Check appropriate box]

<input type="checkbox"/>	18-30
<input type="checkbox"/>	31-45
<input type="checkbox"/>	45-60
<input type="checkbox"/>	>60

d) Contact details (Email)

e) Phone number

3 a) In which institutional category does your organization belong? [Check appropriate box]

<input type="checkbox"/>	Central Government Authority
<input type="checkbox"/>	University/College
<input type="checkbox"/>	Local Government Authority [Council, municipality or city]
<input type="checkbox"/>	Private Institution
<input type="checkbox"/>	Non-Government Organization Parastatal
<input type="checkbox"/>	Organization Research Institution
<input type="checkbox"/>	Civil Society Organization
<input type="checkbox"/>	Community Based Organization
<input type="checkbox"/>	Indigenous Peoples
<input type="checkbox"/>	Others:

b) For how long has your institution been operating? [Check the appropriate box]

<input type="checkbox"/>	Less than 5 years
<input type="checkbox"/>	5 – 10 years
<input type="checkbox"/>	More than 10 years

c) For ☐ how long have you been working in this institution? [Check the appropriate box]

<input type="checkbox"/>	Less than 5 years
<input type="checkbox"/>	5 – 10 years
<input type="checkbox"/>	More than 10 years

## PART II: DRAFTING, IMPLEMENTING, AND MONITORING NRM POLICIES BASED ON SCIENTIFICALLY DEVELOPED EVIDENCE

4. a) Do you have any national policy or related instruments which govern NRM? [Check the appropriate answer]

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

b) If Yes in 4a, kindly mention NRM evidence-based policy related instruments endorsed by your country

---

c) If Yes in 4a, are your policies developed through science-based information? [Check the appropriate answer]

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

d) If Yes in 4c, mention NRM policies in draft developed by utilizing science-based information

---

e) If Yes in 4c, mention policy in draft related implementation instruments developed by utilizing science-based information

---

f) If No in 4c, what are the challenges contributing to failure in adoption of scientifically-based evidence in developing NRM policies?

5. What are your recommendations in improving adoption of scientifically developed evidence into NRM policies?



### 1.3 NRM Local and National Groupings

#### COLLEGE OF AFRICAN WILDLIFE MANAGEMENT, MWEKA

##### SURVEY TO ESTABLISH BASELINE INFORMATION ON NATURAL RESOURCES MANAGEMENT (TO BE FILLED BY LOCAL AND NATIONAL GROUPINGS)

The College of African Wildlife Management, Mweka, United Republic of Tanzania is conducting a Questionnaire Survey to establish the baseline conditions for SADC-led project titled "*Strengthening Research and Innovation in Natural Resource Management (NRM) and Waste Management (WM) in Southern Africa Region*". This questionnaire specifically explores data on research and innovative solutions for the strengthening Natural Resources Management (NRM) and is administered in Malawi, Mozambique, Tanzania and Zambia. Questionnaire takes approximately 15 minutes to fill, and the information will be kept confidential and used only for the purpose of this study. Thanking you in advance for your time.

#### PART I: GENERAL INFORMATION

1 a) Name of your institution

b) Country of your institution [Check appropriate box]

<input type="checkbox"/>	Tanzania
<input type="checkbox"/>	Malawi
<input type="checkbox"/>	Mozambique
<input type="checkbox"/>	Zambia

2 a) Position in your institution

b) Personal Details [Check appropriate box]

<input type="checkbox"/>	Male
<input type="checkbox"/>	Female
<input type="checkbox"/>	Others

c) Age (years) [Check appropriate box]

<input type="checkbox"/>	18-30
<input type="checkbox"/>	31-45
<input type="checkbox"/>	45-60
<input type="checkbox"/>	>60

d) Contact details (Email)

e) Phone number

3 a) In which institutional category does your organization belong? [Choose the appropriate box]

<input type="checkbox"/>	Central Government Authority
<input type="checkbox"/>	University/College
<input type="checkbox"/>	Local Government Authority Council, Municipal or City
<input type="checkbox"/>	Private Institution
<input type="checkbox"/>	Non-Government Organization
<input type="checkbox"/>	Parastatal Organization Research
<input type="checkbox"/>	Institution
<input type="checkbox"/>	Civil Society Organization
<input type="checkbox"/>	Community based Organization
<input type="checkbox"/>	Indigenous people
<input type="checkbox"/>	Others: _____
<input type="checkbox"/>	

b) For how long has your institution been operating? [Check appropriate box]

<input type="checkbox"/>	Less than 5 years
<input type="checkbox"/>	5-10 years
<input type="checkbox"/>	More than 10 years

c) For how long have you been working in this institution? [Check appropriate box]

<input type="checkbox"/>	Less than 5 years
<input type="checkbox"/>	5-10 years
<input type="checkbox"/>	More than 10 years

PART II: PARTICIPATION OF LOCAL AND NATIONAL GROUPINGS FROM SOCIETY (IPLCs, CBOs and CSOs) IN EVIDENCE BASED DECISION MAKING IN NRM

4. a) In which category of groupings do you belong? [Check appropriate box]

<input type="checkbox"/>	National
<input type="checkbox"/>	Local

b) Based on your answer in 4a, please specify [Check appropriate box]

<input type="checkbox"/>	CSOs
<input type="checkbox"/>	CBOs
<input type="checkbox"/>	IPLCs

5. a) Have you're grouping ever participated in national/regional public-private evidence- based decision-making fora in NRM? [Check appropriate box]

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

b) If yes in 5a, in which ways has your grouping participated in evidence-based decision making in NRM?

c) If yes in 5a, how many members on average have participated in these events?

d) How many women?

e) How many youths?

6. a) Do you apply evidence-based decision-making techniques in NRM? [Check box that apply]

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

b) If yes in 6a, mention the adopted evidence-based decision-making NRM techniques

7. Have you ever submitted NRM Research and Innovation based recommendations to governments

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

8. a) What challenges do you face in effective participation in evidence-based decision making in NRM?

b) What would you recommend in improving effective participation of your grouping in evidence-based decision making in NRM?

## 1.4 NRM Value Chain Actors

COLLEGE OF AFRICAN WILDLIFE MANAGEMENT, MWEKA

### SURVEY TO ESTABLISH BASELINE INFORMATION ON NATURAL RESOURCES MANAGEMENT (TO BE FILLED BY VALUE CHAIN ACTORS)

The College of African Wildlife Management, Mweka, United Republic of Tanzania is conducting a Questionnaire Survey to establish the baseline conditions for SADC-led project titled "*Strengthening Research and Innovation in Natural Resource Management (NRM) and Waste Management (WM) in Southern Africa Region*". This questionnaire specifically explores data on research and innovative solutions for the strengthening Natural Resources Management (NRM) and is administered in Malawi, Mozambique, Tanzania and Zambia. Questionnaire takes approximately 15 minutes to fill, and the information will be kept confidential and used only for the purpose of this study. Thanking you in advance for your time.

#### PART I: GENERAL INFORMATION

##### 1 a) Name of your institution

b) Country of your institution [Check approximate box].

<input type="checkbox"/>	Tanzania
<input type="checkbox"/>	Malawi
<input type="checkbox"/>	Mozambique
<input type="checkbox"/>	Zambia

##### 2. a) Position in your institution

b) Personal Details [Check appropriate box]

<input type="checkbox"/>	Male
<input type="checkbox"/>	Female

c) Age (years) [Check appropriate box]

<input type="checkbox"/>	18 - 30
<input type="checkbox"/>	31 - 45
<input type="checkbox"/>	45 - 60
<input type="checkbox"/>	60

d) Contact details (Email)

e) Phone number

3 a) In which institutional category does your organization belong? [Choose appropriate box]

<input type="checkbox"/>	Central Government Authority
<input type="checkbox"/>	University/College
<input type="checkbox"/>	Local Government Authority [council, municipality or city]
<input type="checkbox"/>	Private Institution
<input type="checkbox"/>	Non-Governmental Organization
<input type="checkbox"/>	Parastatal Organization
<input type="checkbox"/>	Research Institution
<input type="checkbox"/>	Civil Society Organization Community
<input type="checkbox"/>	Based Organization
<input type="checkbox"/>	Indigenous Peoples
<input type="checkbox"/>	Others:

b) For how long has your institution been operating? [Check appropriate box]

<input type="checkbox"/>	Less than 5 years
<input type="checkbox"/>	5- 10 years
<input type="checkbox"/>	More than 10 years

d) For how long have you been working in this institution? [Check appropriate box]

<input type="checkbox"/>	Less than 5 years
<input type="checkbox"/>	5-10 years
<input type="checkbox"/>	More than 10 years

## PART II: NRM PRACTICES APPLIED BY VALUE CHAIN ACTORS FROM INFORMAL AND FORMAL SECTORS

4. Which category best describes the registration status of your enterprise? [Check the appropriate box]

<input type="checkbox"/>	Formal (registered)
<input type="checkbox"/>	Informal (unregistered)

5. a) What is your staffing level? (Number)

- b) Number of male employees
- c) Number of female employees
- d) Number of youth employees

6 a) Do you apply innovative solutions in NRM?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

b) If yes in 6a, mention the innovative solutions applied in NRM

7 a) Are there any NRM projects that are implemented under public-private partnership?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

b) If yes in 7a, please mention them

8a) What are the challenges limiting effective application of NRM practices?

b) What effective mechanisms would you recommend in addressing challenges identified in 8a?

## 2.1 WM Research and Tertiary Training Institutions

COLLEGE OF AFRICAN WILDLIFE MANAGEMENT, MWEKA

SURVEY TO ESTABLISH BASELINE INFORMATION ON WASTE MANAGEMENT (TO BE FILLED BY  
HIGHER LEARNING AND RESEARCH INSTITUTIONS)

The College of African Wildlife Management, Mweka, United Republic of Tanzania is conducting a Questionnaire Survey to establish the baseline conditions for SADC-led project titled "*Strengthening Research and Innovation in Natural Resource Management (NRM) and Waste Management (WM) in Southern Africa Region*". This questionnaire specifically explores data on research and innovative solutions for the strengthening Natural Resources Management (NRM) and is administered in Malawi, Mozambique, Tanzania and Zambia. Questionnaire takes approximately 15 minutes to fill, and the information will be kept confidential and used only for the purpose of this study. Thanking you in advance for your time.

### PART I: GENERAL INFORMATION

1 a) Name of your institution

b) Country of your institution [check appropriate box]

<input type="checkbox"/>	Tanzania
<input type="checkbox"/>	Malawi
<input type="checkbox"/>	Mozambique
<input type="checkbox"/>	Zambia

Position in your institution

b) Personal Details [Check appropriate box]

<input type="checkbox"/>	Male
<input type="checkbox"/>	Female
<input type="checkbox"/>	Others

c) Age (years) [Check appropriate box]

<input type="checkbox"/>	18-30
<input type="checkbox"/>	31-45
<input type="checkbox"/>	45-60
<input type="checkbox"/>	>60

d) Contact details (Email)

e) Phone number

3 a) In which institutional category does your organization belong? [Check the appropriate box]

<input type="checkbox"/>	Central Government Authority
<input type="checkbox"/>	University/College
<input type="checkbox"/>	Local Government Authority [Council, municipality or city]
<input type="checkbox"/>	Private Institution
<input type="checkbox"/>	Non-Government Organization
<input type="checkbox"/>	Parastatal Organization
<input type="checkbox"/>	Research Institution
<input type="checkbox"/>	Civil Society Organization
<input type="checkbox"/>	Community Based Organization
<input type="checkbox"/>	Indigenous Peoples
<input type="checkbox"/>	Others: _____

b) For how long has your institution been operating? [Check the appropriate box]

<input type="checkbox"/>	Less than 5 years
<input type="checkbox"/>	5 – 10 years
<input type="checkbox"/>	More than 10 years

c) For how long have you been working in this institution? [Check the appropriate box]

<input type="checkbox"/>	Less than 5 years
<input type="checkbox"/>	5 – 10 years
<input type="checkbox"/>	More than 10 years

## PART II: RESEARCH AND TRAINING IN WASTE MANAGEMENT (WM)

4. How is your institution involved in Waste Management - WM? [Please check all boxes that apply]

<input type="checkbox"/>	Long-course training
<input type="checkbox"/>	Short-course training
<input type="checkbox"/>	Research
<input type="checkbox"/>	Innovation
<input type="checkbox"/>	Consultancy
<input type="checkbox"/>	Others: _____

3 a) Does your institution have a research agenda? [Check the appropriate box]

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

b) If Yes in 5a, mention three (3) priority topics on WM in order of importance?

---

4 (a) Does your institution allocate funds for innovative research on WM? [Check the appropriate box]

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

b) How does your institution mobilize funds for WM research and innovation? [Check all that apply]

<input type="checkbox"/>	Grants in aid
<input type="checkbox"/>	Internal budget
<input type="checkbox"/>	Loans
<input type="checkbox"/>	Government funds
<input type="checkbox"/>	Others: _____

c) Kindly rate the level of sufficiency [Check appropriate box]

<input type="checkbox"/>	Fully sufficient
<input type="checkbox"/>	Moderately sufficient
<input type="checkbox"/>	Not sufficient

7. How many WM related research were conducted by your institution in the past five years?

8. List five (5) research-generated Waste Management innovations that exist in your institution in order of priority (Indicate year of innovation)

9. How often do you share WM innovative research findings with users? [Check the appropriate box]

<input type="checkbox"/>	Frequently (twice per year and above)
<input type="checkbox"/>	Occasionally (once per year)
<input type="checkbox"/>	Rarely

10. a) How many WM-related research and innovation outputs were transferred to other sectors/societies by your institution?

b) Mention three (3) sectors/societies to which you transferred research and innovation outputs 10a) above

11. a) Are there any collaborative research and innovation projects related to WM implemented by your institution?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

b) If Yes in 11 a, how many collaborative research and WM innovation projects were implemented by your institution? (Indicate year)

c) Mention institutions with whom WM-research and innovation projects were collaboratively implemented

d) Mention specific WM research and innovative projects which were collaboratively implemented

12. If Yes in 11a, what is the geographical scope of collaboration in research and innovations related to WM? [Check appropriate box]

<input type="checkbox"/>	Local (within the country)
<input type="checkbox"/>	Regional (with countries in Africa)
<input type="checkbox"/>	International (with countries outside Africa)

13 a) Are there WM research-based modules introduced into your curricula?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

b) If yes in 13a, kindly list them

14. a) Mention the factors limiting effective application of up-to-date research and training in WM

b) What would you recommend in addressing the gaps identified in 14a?

## 2.2 WM Government Institutions

### COLLEGE OF AFRICAN WILDLIFE MANAGEMENT, MWEKA

#### SURVEY TO ESTABLISH BASELINE INFORMATION ON WASTE MANAGEMENT (TO BE FILLED BY GOVERNMENT ENTITIES)

The College of African Wildlife Management, Mweka, United Republic of Tanzania is conducting a Questionnaire Survey to establish the baseline conditions for SADC-led project titled "*Strengthening Research and Innovation in Natural Resource Management (NRM) and Waste Management (WM) in Southern Africa Region*". This questionnaire specifically explores data on research and innovative solutions for the strengthening Natural Resources Management (NRM) and is administered in Malawi, Mozambique, Tanzania and Zambia. Questionnaire takes approximately 15 minutes to fill, and the information will be kept confidential and used only for the purpose of this study. Thanking you in advance for your time.

#### PART I: GENERAL INFORMATION

1 a) Name of your institution

b) Country of your institution [check box that apply]

<input type="checkbox"/>	Tanzania
<input type="checkbox"/>	Malawi
<input type="checkbox"/>	Mozambique
<input type="checkbox"/>	Zambia

2 a) Position in your institution

b) Personal Details [Check box that apply]

<input type="checkbox"/>	Male
<input type="checkbox"/>	Female
<input type="checkbox"/>	Others

c) Age (years) [Check box that apply]

<input type="checkbox"/>	18-30
<input type="checkbox"/>	31-45
<input type="checkbox"/>	45-60
<input type="checkbox"/>	>60

d) Contacts details (Email)

e) Phone number

3 a) In which institutional category does your organization belong? [Check the appropriate box]

<input type="checkbox"/>	Central Government Authority
<input type="checkbox"/>	University/College
<input type="checkbox"/>	Local Government Authority [Council, municipality or city]
<input type="checkbox"/>	Private Institution
<input type="checkbox"/>	Non-Government Organization Parastatal
<input type="checkbox"/>	Organization Research Institution
<input type="checkbox"/>	Civil Society Organization
<input type="checkbox"/>	Community Based Organization
<input type="checkbox"/>	Indigenous Peoples
<input type="checkbox"/>	Others:

b) For how long has your institution been operating? [Check the appropriate box]



<input type="checkbox"/>	Less than 5 years
<input type="checkbox"/>	5– 10 years
<input type="checkbox"/>	More than 10 years

c) For how long have you been working in this institution? [Check the appropriate box]

<input type="checkbox"/>	Less than 5 years
<input type="checkbox"/>	5-10 years
<input type="checkbox"/>	More than 10 years

**PART II: DRAFTING, IMPLEMENTING, AND MONITORING WM POLICIES BASED ON SCIENTIFICALLY DEVELOPED EVIDENCE**

4. a) Do you have any national policy or related instruments which govern WM?  
[Check the appropriate answer]

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

b) If yes in 4a, kindly mention WM evidence-based policies/policy related instruments endorsed by your country

---

If yes in 4a, are your policies developed through science-based information? [Check the appropriate answer]

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

c) If yes in 4c, mention WM policies in draft developed by utilizing science-based information

d) If yes in 4c, mention policy in draft related implementation instruments developed by utilizing science-based information

---

e) If no in 4c, what are the challenges contributing to failure in adoption of scientifically based evidence in developing WM policies?

5. What are your recommendations in improving adoption of scientifically developed evidence into WM policies?

## 2.3 WM Local and National Groupings

COLLEGE OF AFRICAN WILDLIFE MANAGEMENT, MWEKA  
SURVEY TO ESTABLISH BASELINE INFORMATION ON WASTE MANAGEMENT (TO BE  
FILLED BY LOCAL AND NATIONAL GROUPINGS)

The College of African Wildlife Management, Mweka, United Republic of Tanzania is conducting a Questionnaire Survey to establish the baseline conditions for SADC-led project titled "*Strengthening Research and Innovation in Natural Resource Management (NRM) and Waste Management (WM) in Southern Africa Region*". This questionnaire specifically explores data on research and innovative solutions for the strengthening Natural Resources Management (NRM) and is administered in Malawi, Mozambique, Tanzania and Zambia. Questionnaire takes approximately 15 minutes to fill, and the information will be kept confidential and used only for the purpose of this study. Thanking you in advance for your time.

### PART I: GENERAL INFORMATION

1 a) Name of your institution

b) Country of your institution [Check appropriate box]

<input type="checkbox"/>	Tanzania
<input type="checkbox"/>	Malawi
<input type="checkbox"/>	Mozambique
<input type="checkbox"/>	Zambia

2 a) Position in your institution

b) Personal Details [Check appropriate box]

<input type="checkbox"/>	Male
<input type="checkbox"/>	Female
<input type="checkbox"/>	Others

c) Age (years) [Check appropriate box]

<input type="checkbox"/>	18-30
<input type="checkbox"/>	31-45
<input type="checkbox"/>	45-60
<input type="checkbox"/>	>60

d) Contact details (Email)

e) Phone number

3 a) In which institutional category does your organization belong? [Check appropriate box]

<input type="checkbox"/>	Central Government Authority
<input type="checkbox"/>	University/College
<input type="checkbox"/>	Local Government Authority Council, Municipal or City
<input type="checkbox"/>	Private Institution
<input type="checkbox"/>	Non-Government Organization
<input type="checkbox"/>	Parastatal Organization Research
<input type="checkbox"/>	Institution
<input type="checkbox"/>	Civil Society Organization
<input type="checkbox"/>	Community based Organization
<input type="checkbox"/>	Indigenous people
<input type="checkbox"/>	Others: _____
<input type="checkbox"/>	

b) For how long has your institution been operating? [Check appropriate box]

<input type="checkbox"/>	Less than 5 years
<input type="checkbox"/>	5-10 years
<input type="checkbox"/>	More than 10 years

b) For how long have you been working in this institution? [Check appropriate box]

<input type="checkbox"/>	Less than 5 years
<input type="checkbox"/>	5-10 years
<input type="checkbox"/>	More than 10 years

**PART II: PARTICIPATION OF LOCAL AND NATIONAL GROUPINGS FROM SOCIETY (IPLCs, CBOs and CSOs) IN EVIDENCE BASED DECISION MAKING IN WM**

4. a) In which category of groupings do you belong? [Check appropriate box]

<input type="checkbox"/>	National
<input type="checkbox"/>	Local

b) Based on your answer in 4a, please specify [Check appropriate box]

<input type="checkbox"/>	CSOs
<input type="checkbox"/>	CBOs
<input type="checkbox"/>	IPLCs

5. a) Has your grouping ever participated in national/regional public-private evidence- based decision-making fora in WM? [Check appropriate box]

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

b) If Yes in 5a, in which ways has your grouping participated in evidence-based decision making in WM?

c) If Yes in 5a, how many members on average have participated in these events?

d) How many women?

e) How many youths?

6. a) Do you apply evidence-based decision-making techniques in WM? [Check box that apply]

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

b) If yes in 6a, mention the adopted evidence-based decision-making WM techniques

7. Have you ever submitted WM Research and Innovation based recommendations to government(s) or local communities? [Check box that apply]

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

8. a) What are the challenges affecting effective participation in evidence-based decision making in WM?

b) What would you recommend in improving effective participation of your grouping in evidence-based decision making in WM?

## 2.4 WM Value Chain Actors

### COLLEGE OF AFRICAN WILDLIFE MANAGEMENT, MWEKA

#### SURVEY TO ESTABLISH BASELINE INFORMATION ON WASTE MANAGEMENT (TO BE FILLED BY VALUE CHAIN ACTORS)

The College of African Wildlife Management, Mweka, United Republic of Tanzania is conducting a Questionnaire Survey to establish the baseline conditions for SADC-led project titled "*Strengthening Research and Innovation in Natural Resource Management (NRM) and Waste Management (WM) in Southern Africa Region*". This questionnaire specifically explores data on research and innovative solutions for the strengthening Natural Resources Management (NRM) and is administered in Malawi, Mozambique, Tanzania and Zambia. Questionnaire takes approximately 15 minutes to fill, and the information will be kept confidential and used only for the purpose of this study. Thanking you in advance for your time.

#### PART I: GENERAL INFORMATION

1 a) Name of your institution

b) Country of your institution [Check appropriate box] .

<input type="checkbox"/>	Tanzania
<input type="checkbox"/>	Malawi
<input type="checkbox"/>	Mozambique
<input type="checkbox"/>	Zambia

2 a) Position in your institution

b) Personal Details [Check appropriate box]

<input type="checkbox"/>	Male
<input type="checkbox"/>	Female

c) Age (years) [Check box that apply]

<input type="checkbox"/>	18 -30
<input type="checkbox"/>	31 - 45
<input type="checkbox"/>	45 - 60
<input type="checkbox"/>	60

d) Contacts details (Email)

e) Phone number

2 a) In which institutional category does your organization belong? [Choose the appropriate box]

<input type="checkbox"/>	Central Government Authority
<input type="checkbox"/>	University/College
<input type="checkbox"/>	Local Government Authority [council, municipality or city]
<input type="checkbox"/>	Private Institution
<input type="checkbox"/>	Non-Governmental Organization
<input type="checkbox"/>	Parastatal Organization
<input type="checkbox"/>	Research Institution
<input type="checkbox"/>	Civil Society Organization Community
<input type="checkbox"/>	Based Organization
<input type="checkbox"/>	Indigenous Peoples
<input type="checkbox"/>	Others:

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b) For how long has your institution been operating? [Check appropriate box]

<input type="checkbox"/>	Less than 5 years
<input type="checkbox"/>	5- 10 years
<input type="checkbox"/>	More than 10 years

c) For how long have you been working in this institution? [Check appropriate box]

<input type="checkbox"/>	Less than 5 years
<input type="checkbox"/>	5-10 years
<input type="checkbox"/>	More than 10 years

## PART II: WM PRACTICES APPLIED BY VALUE CHAIN ACTORS FROM INFORMAL AND FORMAL SECTORS

4. Which category best describes the registration status of your enterprise? [Check the appropriate box]

<input type="checkbox"/>	Formal (registered)
<input type="checkbox"/>	Informal (unregistered)

5. a) What is your staffing level?

- b) Number of male employees
- c) Number of female employees
- d) Number of youth employees

6 a) Do you apply innovative solutions in WM?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

b) If yes in 6a, mention the innovative solutions applied in WM

7 a) Are there any WM projects that are implemented under public-private partnership?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

b) If yes in 7a, please mention them

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8 a) What are the challenges limiting effective application of WM practices?

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8. b) What effective mechanisms would you recommend in addressing challenges identified in 8a?

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### Annex III: Guiding Questions for Focus Group Discussion (FDG)

Theme	Question
<b>1. Policy and Regulatory Frameworks</b>	<ul style="list-style-type: none"> <li>i. Do you have policies, laws (regulations), strategies, action plans, and guidelines related with waste management or community based natural resources management? When were those policies and related instruments developed?</li> <li>ii. Do those policy related instruments meet the current needs to manage WM/CBNRM?</li> <li>iii. If they do not meet the current needs, what are the gaps that need to be addressed?</li> <li>iv. What are the challenges encountered during implementation of these policies, laws, strategies and guidelines?</li> </ul>
<b>2. Governance, Benefits and Incentives</b>	<ul style="list-style-type: none"> <li>i. What are the various incentives available to encourage WM or CBNRM practices?</li> <li>ii. Do you have any incentives that encourage use of indigenous knowledge (IK) in WM or CBNRM?</li> <li>iii. Does your institution/organization advocate evidence-based decision in WM/NRM?</li> <li>iv. What are the challenges faced in advocating evidence-based decision making in NRM/CBNRM</li> </ul>
<b>3. Fundraising and Resource Mobilization</b>	<ul style="list-style-type: none"> <li>i. Do you have funds set aside for research and innovation(R&amp;I)?</li> <li>ii. How do you mobilize funds for R&amp;I?</li> <li>iii. How much funds do you set aside for NRM/WM R&amp;I projects?</li> </ul>
<b>4. Innovative Solutions</b>	<ul style="list-style-type: none"> <li>i. Have you made any research-based recommendations on WM/NRM to the local and national governments?</li> <li>ii. Is there any enterprise applying innovative solutions in the area?</li> <li>iii. List informal enterprise/actors applying innovative solutions in the area where the intervention is operating</li> <li>iv. For how long has the enterprise been operating?</li> <li>v. How many people have been reached by the WM/NRM innovative solutions that have been applied?</li> <li>vi. How many pilot research and innovative projects are using PPP models in WM/NRM?</li> </ul>
<b>5. Capacity Building</b>	<ul style="list-style-type: none"> <li>i. Do you have WM/NRM related modules?</li> <li>ii. Were the curriculum/modules developed after conducting market needs assessment?</li> <li>iii. Are the curriculum/modules intended for short course or long course?</li> <li>iv. If short course, how frequent do you deliver the training?</li> <li>v. Do the modules have practical component?</li> <li>vi. What is the balance (%) between practical and theory?</li> <li>vii. For how long have the modules being taught?</li> </ul>

#### Annex IV: List of participants for focus group discussion

	Name	Organization	Category	Country	Topic
1	Malidadi Langa <a href="mailto:kajikhomere@gmail.com">kajikhomere@gmail.com</a>	CBNRM -National Forum Malawi	Value chain actors	Malawi	NRM
2	Mutende Simwanza <a href="mailto:mutendemmah.simz@gmail.com">mutendemmah.simz@gmail.com</a>	ZCBNRM, Zambia	Value chain actors	Zambia	NRM
3	Hamza Nkumulwa <a href="mailto:mjumitaorg@mjumita.org">mjumitaorg@mjumita.org</a> , <a href="mailto:rnjaidi@gmail.com">rnjaidi@gmail.com</a>	MJUMITA, Tanzania	Value chain actors	Tanzania	NRM
4	Joseph Mnyari <a href="mailto:cc@tawa.go.tz">cc@tawa.go.tz</a> , <a href="mailto:mlage.kabange@tawa.go.tz">mlage.kabange@tawa.go.tz</a>	TAWA, Tanzania	Government entities	Tanzania	NRM
5	John Bukombe <a href="mailto:bukombe.john@tawiri.or.tz">bukombe.john@tawiri.or.tz</a> , <a href="mailto:bukombe2017@gmail.com">bukombe2017@gmail.com</a>	TAWIRI, Tanzania	Research and academic institution	Tanzania	NRM
6	Mohamed Kamuna <a href="mailto:mkamuna89@gmail.com">mkamuna89@gmail.com</a>	CWMAC, Tanzania	Value chain actors	Tanzania	NRM
7	Thokozani Mkaka <a href="mailto:thokozani.mkaka@lcc.mw">thokozani.mkaka@lcc.mw</a>	ICC-MU, Malawi	Value chain actors	Malawi	WM
8	Artur Afonso <a href="mailto:aafonso@unirovuma.ac.mz">aafonso@unirovuma.ac.mz</a>	ReGeCOM, Mozambique	Value chain actors	Mozambique	WM
9	John Taulo <a href="mailto:jtaulo@must.ac.mw">jtaulo@must.ac.mw</a>	MUST, Malawi	Research and academic institution	Malawi	WM
10	Koziba Chibowa <a href="mailto:koziba@skyberrybotswana.co.bw">koziba@skyberrybotswana.co.bw</a>	Skyberry Botswana	Value chain actors	Botswana	WM
11	Carlota Amoda <a href="mailto:carlotaamoda@yahoo.com.br">carlotaamoda@yahoo.com.br</a>	InOM, Mozambique	Value chain actors	Mozambique	WM
12	Philipo Stephen <a href="mailto:philipo@recycler.co.tz">philipo@recycler.co.tz</a>	The RECYCLER, Tanzania	Value chain actors	Tanzania	WM
13	Justin Madho <a href="mailto:justin@zanrec.co.tz">justin@zanrec.co.tz</a>	ZANREC, Tanzania	Value chain actors	Tanzania	WM
14	Innocent Makomba <a href="mailto:innocent.makombe@nemc.or.tz">innocent.makombe@nemc.or.tz</a>	NEMC, Tanzania	Government entities	Tanzania	WM

## Appendix V: Summary of FGD findings

	Topic of discussion	Key observations	Remarks
<b>SO1: Up-to-date on research and training</b>			
1.1	Research Agenda	Lacking in some Institutions Lacking specific topics	Prioritize specific WM+NRM topics
1.2	Funding Research and innovation	Poor funding mobilization	
1.3	Amount of funds set aside	Scarce funding	
1.4	Modules on WM and NRM	Modules are incorporated into academic curriculum	
1.5	Curriculum development	Market-based curriculum exists Modules integrates practical components Practical/theory ratio differs by country.	Clear differentiation of these ratio will be clarified following a TNA exercise.
1.6	Duration of these modules being taught	7-20 years	
<b>SO2: drafting, implementing, and monitoring policies based on scientifically developed evidence</b>			
2.1	Policies related to WM+NRM	Exists for all target countries	
2.2	Existing Gaps	Lack of coordination Conflicting Acts Limited resources Lack of awareness Outdated policies	
2.4	Do policies meet the current needs?	Do not meet the current needs	
	Challenges	Limited stakeholder participation Inadequate knowledge and skills	
<b>SO3: Strengthened participation of local and national groupings in evidence-based decision making</b>			
3.1	Incentives for participation in WM+NRM	Incentives exists for NRM (Not for WM)	The presences of carbon trading regulation incentivize participation in NRM
3.2	Incentives that encourage use of Indigenous Knowledge & Skills	Existing for NRM (Not for WM)	Zambia 5% of hunting incomes goes to the <b>traditional leadership as incentives</b> while 45% goes to the community for development.
3.3	Evidence-based decision making	Poor participation in evidence-based decision making	
<b>SO4: Effective WM practices applied by value chain actors from informal and formal actors</b>			
4.1	Enterprises innovative solutions	Enterprises applying innovative solutions exist	
4.2	Duration these Enterprises have been operating	Between 2 to 9 years	
4.3	Number of people reached by the innovative solutions	Data not available	
<b>SO5: Improved collaboration between experts from public and private sectors on research and innovation issues</b>			



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5.1	Pilot research and innovative projects using Public-Private Partnership (PPP) models	Data not available
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## Appendix VI: Guiding questions for Key Informant Interviews

Theme	Questions	Targeted group
SO1: Up-to-date research and training in NRM+WM	i. What is the capacity of your institution in research and training based on scientifically developed (innovative research results, dissemination, resources and funds, modules incorporation in training) evidences? ii. What is the relevance of your research and training in NRM+WM in addressing the needs of the society?	Training and Research institutions
SO2: Drafting, implementing, and monitoring WM policies based on scientifically developed evidence	i. What is the capacity of your institution in developing and reviewing NRM+WM policies and strategies? ii. How are these capacities in NRM+WM innovations co-developed and adopted by relevant collaborative partners?	Government entities
SO3: Participation of local and national groupings from society (IPLCs, CBOs and CSOs) in evidence-based decision making in WM+ NRM	i. How do you participate (and adequacy) in decision making processes related to NRM+WM? ii. What is the capacity of your grouping in facilitating effective participation in evidence based-decision making? iii. How does your grouping domesticate and disseminate indigenous knowledge in evidence-based decision making in NRM+WM?	Indigenous communities
SO4: NRM+WM practices applied by value chain actors from informal and formal sectors	i. What are the innovative operation and management solutions implemented by your organization to NRM+WM? ii. What is the capacity of your organization in applying Research & Innovation techniques and solutions in NRM+WM practices? iii. What are the best practices examples, both formal and informal, of application of R&I in your organization?	VCA
SO5: Improved collaboration between experts from public and private sectors on research and innovation issues (science-policy- practices interface)- (expert groups and think tanks)	i. Are there collaborative science-policy-practices R&I networks implemented by your institution? ii. What are the challenges affecting effective collaboration between experts within public-private sector?	Expert groups and think tanks

## Appendix VII: Summary of KII findings

Respondents	Themes and answers
<b>THEME 1: Up-to-date research and training in NRM+WM (Research and Training Institutions)</b>	
Malawi University of Science and Technology (WM), Dr Kadewa - Lecturer, Malawi	<p><b>Research and Training Institution: capacity of your institution in research and training based on scientifically developed R&amp;I and relevance to society</b></p> <p><b>Research Funding</b></p> <ul style="list-style-type: none"> <li>- At Malawi University of Science and Technology the focus is on Energy Program and Water Quality. This includes production of Briquettes from solid waste and energy efficient stoves.</li> </ul> <p><b>Innovative findings</b></p> <ul style="list-style-type: none"> <li>- Production and packaging of methane.</li> </ul> <p><b>Application and Relevance of R&amp;I</b></p> <ul style="list-style-type: none"> <li>- Research has only been superficial and training at most general. WM limitedly covered at post graduate level</li> <li>- constrained by budgetary, capacity shortfalls and societal cultural behaviour</li> </ul> <p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>- Limited capacity to address WM issues in the society</li> <li>- Constrained with market expansion but also scarcity of readily available waste.</li> <li>- On climate change, the current level of specialists, knowledge and skills as well as equipping is generally low.</li> </ul>
Lilongwe Agriculture and Natural resources (NRM), Dr Ponyandira -Lecturer, Malawi	<p><b>Research Funding</b></p> <p><b>Innovative findings</b></p> <ul style="list-style-type: none"> <li>- Innovation on composting and recycling for agricultural nutrients and for generation of energy (biogas).</li> <li>- use of waste biomass in farms to enrich soils Human waste digesters may benefit the soils through enrichment of organic waste</li> <li>- Research on impacts of nitrous oxide on climate change.</li> <li>- Agro-processing i.e., waste as applies to food processing, routine waste management</li> <li>- Biogas production and bio digester (utilizing the sludge as manure). deal with the (routine) liquid waste stabilizing system</li> </ul> <p><b>Application and Relevance of R&amp;I in addressing societal needs</b></p> <ul style="list-style-type: none"> <li>- Constrained with resources especially finances and technological capacity</li> </ul> <p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>- Limited capacity in terms of workforce, professionalism and skills as well as facilities and equipment's</li> </ul>
Mulungushi University (WM&NRM), Dr Mitulo Silengo-Lecturer, Zambia	<p><b>Research Funding</b> is based on grants.</p> <ul style="list-style-type: none"> <li>- Research conducted address specific needs as stipulated in the University Research agenda.</li> </ul> <p><b>Research and Innovative Findings</b> inform training and are disseminated through scientific journals, book chapters, creation of awareness seminars and meetings.</p> <p><b>Relevance of Research and Innovation</b></p> <ul style="list-style-type: none"> <li>- 80% of our training is relevant to the current needs of the society</li> <li>- There are various modules addressing Waste Management and Natural Resources Management</li> </ul> <p><b>Challenges</b></p>

<p>Sokoine University of Agriculture -SUA (NRM&amp;WM), Dr Msafiri Mkonda- Senior Lecturer, Tanzania</p>	<ul style="list-style-type: none"> <li>- limited research fund</li> <li>- modules trained are not based on Competence Based Education Training (CBT)</li> </ul> <p><b>Research Funding</b> University has internal funds (SUARIS) set aside to support research projects to young scientist.</p> <p><b>Research &amp; Innovations</b></p> <ul style="list-style-type: none"> <li>- The use of live owl to control pests (rodents, other birds)</li> <li>- The use of robot machine in agricultural irrigation (Climate smart agriculture),</li> <li>- Designing of septic tanks does not get full,</li> <li>- Recycling of solid wastes (bottles-plastics) and Developing management systems for liquid and solid wastes.</li> </ul> <p><b>Application and Relevance of Research and Innovation</b></p> <ul style="list-style-type: none"> <li>- Findings inform training and are shared to society through awareness programmes (Journals, book chapters, TV, Exhibitions, Newsletters)</li> <li>- 70% of our research and training is relevant in addressing the current needs of the society</li> <li>- modules addressing Waste Management &amp; Natural Resources management issues e.g (Land and air pollution control, Waste water management, Hazardous waste management) as well as modules related to (Sustainable Utilization of Water, Participatory Wildlife Management, Natural resources management, Natural resources Economics, Aquaculture and forest economics.</li> </ul> <p><b>Challenges</b></p>
<p>Ardhi University (WM), Dr Nyangi Chacha - Lecturer, Tanzania</p>	<p>-Inadequate internal fund to support Research and innovation in WM and NRM</p> <p><b>Research Funding</b> is reliant on grants, students’ government loans, scholarships (donors)</p> <p><b>Research &amp; Innovations</b></p> <ul style="list-style-type: none"> <li>- Briquettes made from agriculture, forest waste, charcoal dust and faecal sludge</li> <li>- Bricks and aggregates from solid waste</li> <li>- Compost and maggots from kitchen waste</li> <li>- Biogas production</li> <li>- Bioelectricity from waste water and fecal sludge</li> <li>- Biopesticide using tobacco and other agricultural products</li> <li>- Carbon dioxide capture and utilization</li> <li>- Dewatering fecal sludge treatment and</li> <li>- Waste water irrigation system</li> </ul> <p><b>Application and Relevance of Research and Innovation</b></p> <ul style="list-style-type: none"> <li>- Several trainings long and short courses are extended to students, local communities and companies</li> <li>- Participate in various workshops and present/share the innovative solutions.</li> <li>- The modules are relevant as produce experts capable of dealing with waste</li> <li>- Creating self-employment opportunities through Waste Management practices</li> <li>- Introducing different methods of waste recovery and reuse have been created and introduced so as to minimize waste found in streets and dump sites</li> </ul> <p><b>Challenges:</b></p> <ul style="list-style-type: none"> <li>- There is no proper funding for research and innovation</li> <li>- Making students to be part of innovation may sometimes not be achieved as students lack interest</li> </ul>
<p>Brian Halubanza, Dean - School of Engineering and Technology, Mulungushi University, Zambia.</p>	<p><b>Innovations in NRM</b></p> <ul style="list-style-type: none"> <li>- They are using Artificial Intelligence (AI) in conservation of wildlife (e.g elephants and Hippos), combating poaching and minimizing human wildlife conflicts. Artificial Intelligence (AI) refers to the development of computer systems that can perform tasks that typically require human intelligence. AI holds great promise for</li> </ul>

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conservation efforts by providing innovative approaches to address complex environmental challenges. AI can assist in combating poaching and illegal wildlife trade by analysing satellite imagery and data from

- Camera traps to detect potential poaching activities in real- time AI can identify suspicious movements, detect illegal human presence, and raise alerts for rapid response
- Other innovative solutions include Honey Production project to reduce cutting of trees

#### **Innovations in WM**

- They are applying Smart Waste Management which powered by artificial intelligence. Smart Waste Management is more efficient because it can help to optimize waste collection by identifying areas of high waste generation and predict the peak waste disposal time.
- They are also using Remoting sensing GIS satellite image to know the state of waste in a certain area.

#### **Programs**

- Bachelor of science in Land and water Resource Management
- Bachelor of science in Natural Resource Management

#### **Challenges**

- Funding for research
- Making the policy makers understand what you do and why you are doing it. They are used to a certain way of doing things

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### **THEME 2: Drafting, implementing, and monitoring WM policies based on scientifically developed evidence**

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Ministry of Local Governments (WM), Dr Douglas Mkweta-  
Director Local Governments,  
Malawi

#### **Government Entities**

##### ***What is the capacity of your institution in developing and reviewing NRM+WM policies and strategies?***

- The Ministry has instituted a decentralization policy to transfer some of the central government functions to the local governments (such as in the areas of education, health, agriculture water mining etc.)
- Economic Planning is carried out under the Local Government's Ministry in line with the National Policies e.g., Malawi 2063.
- Policy transformations are adopted across sectors
- incorporate traditional governance and management and administrative systems are provided guidelines from the ministry to facilitate their functions.
- WM and NRM, these are not specifically a responsibility of Ministry of Local Government. The Ministry of Natural Resources and Climate Change based on specific acts and policies of their own - such as the Water and sanitation (National Sanitation Policy & Act -2, Water works Acts & Sewage Act, Sanitation Act).

##### ***How are these capacities in NRM+WM innovations co-developed and adopted by relevant collaborative partners?***

- Generally waste management, even damping capacity remains a problem. At the Ministerial level created decentralization labs (Presidential labs) certain ministries to discuss areas of concern of particular interest - but this has not started functioning. The ministry has also developed 'management guidelines functions' to streamline the standards and service at the local government level.

#### **Challenges**

- Some of the line ministries under the pretext of decentralization have wanted to shade-off those functions and retain some of the most lucrative ones, especially those associated with good revenue streams.
- Generally, supportive functions and financial assistance is low at local level - but the blame is often on local councils

Directorate of Parks and Wildlife (NRM), Brighton Kumchedwa – Director, Malawi

***What is the capacity of your institution in developing and reviewing NRM+WM policies and strategies?***

- Malawi has revised her Wildlife policy in 2018 incorporating aspects of public-private partnerships. Other strategic documents, regulations are also in place this has enhanced sustainable Natural resources Management
- The forest sector is currently being strengthened through formulation regulations, guidelines and implementation plan in place to operationalize the plan

***How are these capacities in NRM+WM innovations co-developed and adopted by relevant collaborative partners?***

**Linkage to PPP and existing Gaps in strategic management of NRM**

- There are three level-linkages. The African-Parks model (the government completely withdraws), leasing protected area to the private sector and private sector-government sharing of management responsibilities.

**Linkage of Policies with other sectors and themes or conflict with other sectors**

- Tourism policy is linked well with wildlife fostering development of a 10 year's comprehensive program focusing tourism product development that was launched in September 2022
- There are conflicting policies such as mining that are embedded in the texts of the strategic documents. For instance, mining exploration has taken place in all the protected areas.
- The fact that forestry sector under the Ministry of Agriculture in somehow affects the implementation performance of NRM.

***Existing constraints in policy making or policy reviews***

- Time and procedural constraints when we want to amend or approve laws and policies; it takes very long and the costs are to be borne by the responsible sector.
- There is inadequate capacity especially of certain specialized but complimentary disciplines such as veterinary and fisheries.

Environmental Affairs Department, Dr Victoria Kachimera- Director Legal Matters, Malawi

***What is the capacity of your institution in developing and reviewing NRM+WM policies and strategies?***

- National Environmental Policies of 2004 (revised and updated) and Environmental Management Act which deals with chemicals and toxic regulations. The Waste Management Regulations (2008) (revised in 2021) addresses toxic waste including in hospitals. The Waste Management strategy 2019-2023 is currently under revision.
- At an international level we comply with the Basal Convention. Malawi has established a regulation on plastic waste (less than 6 microns is banned for public use), enforced since 2015.

***How are these capacities in NRM+WM innovations co-developed and adopted by relevant collaborative partners?***

These existing WM policies and regulations are hierarchical for ease of implementation and are generally evidence and science based.

***Challenges***

- Enforcement is frustrated by poor infrastructural systems and resources such as lack of landfills and financial and technical issues. However, there is an environmental fund established within the climate change account to support initiatives on WM.
- Gaps related to policies include duplicating and/or conflicting mandates of various WM institutions and sectors. An example here relates to the Ministry of water and sanitation and The Environmental Affairs Department (Ministry of Environment and Climate Change). There is a need to institute clarity on these matters.

Regional Natural Resource Office (NRM), Mr. Joseph J. Chuwa- Regional NR Officer, Morogoro- Tanzania

***What is the capacity of your institution in developing and reviewing NRM+WM policies and strategies?***

- Capacity to implement policies at local government level and village level (Wildlife Policy, Forest Policy and Environment Policy) is low.

***How are capacities in Natural Resources Management are co- developed and adopted by relevant collaborative partners?***

- Natural resources institutions (TANAPA, TAWA, NCAA, TFS, Local Government) and not coordinated and often, have conflicting interests over the same resources leading to inefficiency in tackling conservation issues eg Human Elephant Conflict

***Challenges***

- The local government budget priority of conservation is undermined over other development sectors like health, education, agriculture. This means inadequate resources are allocated to management of natural resources in the region
- Natural resources institutions (TANAPA, TAWA, NCAA, TFS, Local Government) and not coordinated and often, have conflicting interests over the same resources leading to inefficiency in tackling conservation issues. Eg Human Elephant Conflict
- There is also lack of uniformity in Administration and tackling conservation issues ie there is one paramilitary conservation army. At local/village level the same wild animals are managed by the same experts who are not part of the paramilitary unit and do not have the same capacity financially and in terms of technology.

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**THEME 3: Participation of local and national groupings from society (IPLCs, CBOs and CSOs) in evidence-based decision making in WM+ NRM**

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Wildlife and Environmental conservation of Zambia, Mr Enock Mwangilwa -Project Manager, Zambia

***How do you participate (and adequacy) in decision making processes related to NRM+WM?***

- Invited to make submission on parliamentary policies e.g a section on environmental sustainability on the National Development Plan.
- The Organization was also involved in reviewing of the National environmental policy

***What is the capacity of your grouping in facilitating effective participation in evidence based-decision making?***

- The organization has branches (schools and community environmental conservation clubs) across the country with 1400 focal at the district level. They offer environmental educations for schools as the extracurricular syllabus to supplement what kids learn in schools. They also produce magazines on different environmental topics.

***How does your grouping domesticate and disseminate indigenous knowledge in evidence-based decision making in NRM+WM?***

- The Indigenous knowledge is highly acknowledged by the organization. The local club leaders are allowed to make use of the indigenous knowledge and come up with the action plan at the activity level.

International Union for Conservation of Nature (IUCN), Isabel Ramos- Programme Manager, Mozambique

***How do you participate (and adequacy) in decision making processes related to NRM+WM***

- IUCN supports the government through the Ministry of Planning and development in a national dialogue platform where NRM aspects are debated including on updating legislation

***What is the capacity of your grouping in facilitating effective participation in evidence based-decision making?***

- IUCN implements projects at local level where waste management, in particular marine waste is collected, recycled transformed.
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- IUCN identifies NRM needs a wider governance assumption in government programmes, mining licenses and great public works, where a combination of grey/green infrastructures are required.
- IUCN further acknowledges that WM is a particular activity under municipalities mandates and these municipalities need to be empowered and have sufficient resources to deliver on t, CSOs cannot continue replacing government responsibilities

***How does your grouping domesticate and disseminate indigenous knowledge in evidence-based decision making in NRM+WM?***

- In the provinces, IUCN involves all stakeholders in project development actions to be taken and capacity building activities.

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**THEME 4: NRM+WM practices applied by value chain actors from informal and formal sectors (Value Chain Actors)**

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Waste Advisors (WM), John Chome – Director, Malawi

**How are the Value Chain private actors engaged with the government in sustainable WM?**

A network by the name of Wes-Net has been formed for strong engagement with the government.

- Focus is on promoting the waste value chain through trainings and other capacity building activities such as composting and recycling of waste materials.  
Aim is to produce high value compost. We are currently involved in a 3-year demonstration cycle for a total of 1000 farmers in Lilongwe and Blantyre, including training of women groups. We are working with the City Councils to acquire waste and project operational costs.
- Regarding plastic waste, focus is on subsidizing the pickers and capacitating those that recycle plastics. The aim is to demonstrate to the government better methodologies and technological WM options.

***What are snags or gaps in terms of your best practices and innovations in WM operations?***

- There are two main problematic areas: About 80% of compost waste is organic but the problem is its quality. Fertilizers are costly and degrading soils. We are doing research -collaborating with Universities and NGOs to characterize compost degradation.
- We have identified the critical factors for making compost apart from composition of compost. We monitor compost temperatures both physically and remotely. We are also working towards waste separation including awareness rising.
- We also work with the Malawi Bureau of standards to set compost standards. Another issue is to do with government commitments, responses and a priority, i.e., prioritizing funding to compost to replace chemical fertilizers is an issue. Regarding a ban on plastic waste, this has taken 5 years to implement pending a court injunction.

***What can you comment on the volume of trash in terms of your technological solutions you are engaged in i.e., supply and demand?***

This is a clear challenge as waste productivity does not match the Agro-processing requirements by far. One bag of chemical fertilizers can tender 1 acre but this takes roughly the equivalent of 40 bags of organic matter, which is a clear drawback.

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**THEME 5: Improved collaboration between experts from public and private sectors on research and innovation issues (science-policy- practices interface)- (expert groups and think tanks)**

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Private Consultant (Alstone Mwanza), Zambia

***Are there collaborative science-policy-practices R&I networks implemented by your institution?***

Different types of collaboration



	<p>ns exist when it comes to implementing science-policy-practices R&amp;I networks. The type depends on the type of research. Collaboration may exist between the Government and the research institution, Government and Training institution, Private sector and the Training or research institute.</p> <p><b><i>What are the challenges affecting effective collaboration between experts within public-private sector?</i></b></p> <ul style="list-style-type: none"> <li>- Differences in priorities and expectations among collaborators. This sometimes make other people to pull off before the end of the project</li> <li>- When collaboration has to involve foreign organization, there are a lot of bureaucratic procedures and conditions set to obtain research permits</li> <li>- The Government is not very keen in using research findings. Most of decisions on Natural resources management are driven by political interest and not by scientific information. Generally, research findings do not feed into decision making</li> </ul> <p><b><i>Are there collaborative science-policy-practices R&amp;I networks implemented by your institution?</i></b></p> <ul style="list-style-type: none"> <li>- Different types of collaborations exist when it comes to implementing science-policy-practices R&amp;I networks. The type depends on the type of research. Collaboration may exist between the Government and the research institution, Government and Training institution, Private sector and the Training or research institute.</li> </ul> <p><b><i>What are the challenges affecting effective collaboration between experts within public-private sector?</i></b></p> <ul style="list-style-type: none"> <li>- Differences in priorities and expectations among collaborators. This sometimes make other people to pull off before the end of the project</li> <li>- When collaboration has to involve foreign organization, there are a lot of bureaucratic procedures and conditions set to obtain research permits</li> <li>- The Government is not very keen in using research findings. Most of decisions on Natural resources management are driven by political interest and not by scientific information. Generally, research findings do not feed into decision making</li> </ul> <p><b><i>Are there collaborative science-policy-practices R&amp;I networks implemented by your institution?</i></b></p> <ul style="list-style-type: none"> <li>- IMLAF- aiming at innovation and marketing for Lake Victoria fish in collaboration with SUA and DANIDA-2017.</li> <li>- In 2018 the research on exploration of level of micro-plastics on living organisms and relation with public health. The findings revealed that 1 in 5 fish contained confirmed micro-plastics in their gastrointestinal tracts, these shocking statistics kick-started groups into action to tackle plastic pollution in Mwanza. The collaboration was done with CUWAS-Bugando and the project is still on-going to find innovative solution to tackle this problem.</li> <li>- Lake Victoria Environmental Management Project (LVEMP) where one of the innovations was controlling water weeds by the use of caterpillars</li> <li>- Other innovations ongoing so far in NRM is how to get rid of post-harvest in fish where still some solutions are being formulated.</li> </ul> <p><b><i>What are the challenges affecting effective collaboration between experts within public-private sector?</i></b></p> <ul style="list-style-type: none"> <li>- So many regulations and laws in operations</li> <li>- Lack of clear platform for the experts to share their understanding (multidisciplinary careers) and coming into one say/conclusion on how to solve existing challenges. This greatly affects decision making in NRM.</li> </ul>
Private Consultant (Alstone Mwanza), Zambia	
National fish quality and control laboratory, Mr. Michael Peter Mhina - Researcher, Tanzania	
Mwanza City Council, Fanuel Kasenene - Environmental Officer, Tanzania	

- Collaboration exists with private companies, international organizations and research institutions on waste management.
- In 2016 research on sanitation technologies was initiated and implemented in local context at community level. Because of rock hills and topography of Mwanza city, most of sanitation infrastructures and facilities are affected; hence it gave a concern to design a project that will solve this problem.
- Lake Victoria Water & Sanitation Initiative Project– Mwanza was done in collaboration with UN Habitat, Mwanza Urban water supply authority, Mwanza municipal and Illemela municipal council. The outcome of the project was formulation of “Simplified Sewage System” SSS technology to the communities so as to enhance sanitation management.
- Other are; Youth-led Mwanza City Informal Settlements Baseline Survey with UN Habitat-2018, Using GIS to enhance Data in Solid Waste Management in collaboration with UNDP + SWISS Contact.

***What are the challenges affecting effective collaboration between experts within public-private sector?***

- Most of the projects are top-down approaches hence affecting our networking performances and collaboration in R&I in WM.
  - Community acceptance on WM initiatives is still a problem
  - Political will and influence
  - Financial and technological limitations on WM
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## Appendix VIII: Number of policies and policy-related instruments reviewed

### (a) Reviewed WM Policies and strategies and programs

Country	Policy	Act	Strategy	Plan
<b>MALAWI</b> <sup>120,121</sup>				
-National Environmental Policy (1996)	2			
-The National Sanitation Policy (2006)				
-Environment Management, Act No. 19 of 2017		1		
-National Waste Management Strategy (2019-2023)			1	
-National Environmental Master Plan (2022-2032)				3
-Infections control and waste management plan (2016)				
-National Environmental Action Plan (1994)				
<b>Sub-total</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>3</b>
<b>MOZAMBIQUE</b> <sup>122</sup>				
National Environmental Policy, Resolution N. 5/1995;	1			
-Environmental Law No. 20/97		1		
-National Strategy for the Integrated Management of urban solid waste in Mozambique for the Period 2013-2025 (2012).			1	
-Technical Directive for the implementation and operation of landfills (2009)				1
<b>Sub-total</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>TANZANIA</b> <sup>123,124</sup>				
-National Environmental Policy, 2021	1			
-Environmental Management Act No.20 of 2004		1		
-National Climatic Change Response Strategy (2021-2026)			6	
-Implementation Strategy for the National Environmental Policy (2022-2032)				
- The National Solid Waste Management Strategy (2018) for United Republic of Tanzania.				
- Investment guide on Waste Management in Tanzania				
- Municipal Wastewater Management in Tanzania				
- Regional E Waste Management Strategy 2022-2027				
-National Environmental Master Plan (2022-2032)				1
<b>Sub-total</b>	<b>1</b>	<b>1</b>	<b>6</b>	<b>1</b>
<b>ZAMBIA</b> <sup>125</sup>				
-The National Policy on Environment (NPE) 2007	2			
-The National Health Policy, 2012				
- Environmental Act.No.4 of 2015		2		
- The Solid Waste Regulation and Management Act, 2018				
-The National Solid Waste Management Strategy (NSWMS) 2004			1	
<b>Sub-total</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>0</b>
<b>TOTAL</b>	<b>6</b>	<b>5</b>	<b>9</b>	<b>5</b>

### (b) Reviewed NRM Policies and strategies and programs

<sup>120</sup> Government of Malawi (2019) Sixth National Report to the Convention on Biological Diversity

<sup>121</sup> Government of Malawi (2019). National Waste Management Strategy 2019-2023

<sup>122</sup> Ministry of Land, Environment and Rural Development. (2019). Sixth National Report on the Implementation of Convention on Biological Diversity in Mozambique. MITADER. 152 pp.

<sup>123</sup> World Bank. 2019. Tanzania: Country Environmental Analysis – Environmental Trends and Threats, and Pathways to Improved Sustainability. 2019. Washington, DC: World Bank

<sup>124</sup> United Republic of Tanzania (2019). The 6<sup>th</sup> National Report for the Convention on Biological Diversity

<sup>125</sup> Zambia Environmental Management Agency (2017). Zambia Environment Outlook Report 4

Country	Policy	Act	Strategy	Plan
<b>MALAWI</b> <sup>126</sup>				
-National Forestry Policy 2016	4			
-National Parks and Wildlife Policy 2016				
-National Fisheries and Aquaculture Policy 2016				
National Policy on Wetlands 2018				
-National Parks and Wildlife Act 1992(2017) amended		4		
-Forestry Act 1977 (2014) amended				
-Fisheries conservation and Management Act 1997				
-Forestry Act Amended 2019				
-The Malawi Growth and Development Strategy (2017)			6	
-National Strategy for sustainable development 2004				
-National Biodiversity strategy and action plan 2015-2025				
-National Forest Restoration Strategy				
-National Wetlands implementation plan 2018-2028				
-National Fisheries strategy				
-Malawi National Forestry Programme (2001)				1
<b>Sub-total</b>	<b>4</b>	<b>4</b>	<b>6</b>	<b>1</b>
<b>MOZAMBIQUE</b> <sup>127</sup>				
-The 2009 Conservation Policy (Resolution 63/2009)	3			
-Forest policy and Implementation Strategy 2020				
-National land Policy (1995)				
- Law on forest and wildlife Act (Act No 10/99)		3		
- The 2003 Law on Local State Agencies (Law 8/2003, known as LOLE after its Portuguese acronym)				
- Fisheries Law No 22/2013				
-Mozambique Country Strategic Plan (2022-2026)			5	
-National Strategy and Action Plan of Biodiversity (2015-2035).				
-Forest Policy and Implementation Strategy (2020-2035);				
-Resolution N0. 48/2020 approving the aquaculture development strategy 2020-2030				
-Mozambique National REDD+ Strategy				
- Mozambique Agenda 2025				3
- Strategic Forestry Agenda of Mozambique 2019-2035 and National Forestry Programme				
- Mozambique National Strategic Tourism Development Plan (2016)				
<b>Sub-total</b>	<b>3</b>	<b>3</b>	<b>5</b>	<b>3</b>
<b>TANZANIA</b> <sup>128</sup>				
-National Forest Policy 1988	4			
- National Wildlife Policy, 2007				
-National Tourism Policy, 1999				
-Zanzibar National Forest Policy 199				
-Zanzibar Forest Resources and Conservation Act.No.19 of 1996		4		
-Forest Act No. 14 of 2002				
-Wildlife Conservation Act No. 5 of 2009				
-Tourism Act.No.29 of 2008				
-The National Forest Policy Implementation Strategy (2021-2031)			5	
-National Wildlife Management Areas Strategy (2023-2033)				

<sup>126</sup> Government of Malawi (2019) Sixth National Report to the Convention on Biological Diversity

<sup>127</sup> Ministry of Land, Environment and Rural Development. (2019). Sixth National Report on the Implementation of Convention on Biological Diversity in Mozambique. MITADER. 152 pp.

<sup>128</sup> United Republic of Tanzania (2019). The 6<sup>th</sup> National Report for the Convention on Biological Diversity

-The National Anti-Poaching Strategy (2023-2033)				
- National Human-Wildlife Conflict Management Strategy 2020–2024				
-Strategy for Addressing Land use challenges in Tanzania (2017)				
- National Biodiversity Strategy and Action Plan (NBSAP) 2015-2020				1
<b>Sub-total</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>1</b>
<b>ZAMBIA<sup>129</sup></b>				
-National forestry policy 2014	4			
-National Parks and Wildlife policy 2018				
-National Climatic Change Policy 2016				
-National Fisheries and Aquaculture Policy 2023				
-Wildlife Act No 14 of 2015		4		
-Climate change act 2022				
-Forest act No.4 of 2015				
-The Tourism and Hospitality Act (2015)				
-Zambia Tourism Strategy (2018-2038)			3	
-National Strategy to Reduce Emission from Deforestation and Forest degradation (2015)				
-Zambia Climate Change Response Strategy (2010)				
-Zambia Tourism Master plan (2018-2038)				3
-National Investment Plan to Reduce Deforestation and forest Degradation (2018-2022)				
-National Fisheries and Aquaculture Policy Implementation Plan (2022-2026)				
<b>Sub-total</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>3</b>
<b>TOTAL</b>	<b>15</b>	<b>15</b>	<b>19</b>	<b>8</b>

<sup>129</sup> Zambia Environmental Management Agency (2017). Zambia Environment Outlook Report 4

## Appendix IX: Waste management stakeholder responses

- a) Existing research outputs (e.g., innovative solutions, recommendations) in WM+NRM developed / revised by the research and tertiary education institutes (by country, stakeholder and category: new/existing).

Country	Existing Research	Institution
Malawi	Biogas digester Biomass production	Malawi University of Science and Technology
Mozambique		-
Tanzania	Improved machines for carbonation Use of waste tires for kitchen gardens, Re-recycling of agriculture waste into compost, Sewage waste recycling Nitrogen bio-fortified and Palletized commercial-grade organic fertilizer Solid waste bulkiness reduction through solid waste sorting	-Ardhi University -Sustainable Agriculture Tanzania -Sokoine University -Institute of rural Development
Zambia	-	-

- b) Priority topics incorporated in the research agenda of the research and tertiary education institutes (by country and stakeholder).

Country	Priority Topics	Institution
Malawi	- Waste to energy - Biofertilizer production - Environmental management	- Malawi University of Science and Technology
Mozambique	- Marine litter Monitoring programme - Occurrence of Microplastic on water column and biotic	- Instituto Oceanografico de Mocambique - Rovuma University
Tanzania	- Resource recovery and reuse, - Environmental Toxicology - Sustainable agriculture - Biotechnology and the Environment - Solid waste management	- Ardhi University - Sustainable Agriculture Tanzania - Sokoine University of Agriculture - Institute of Rural Development Planning
Zambia		-

- c) Collaborative research and innovation projects in WM+NRM implemented between research and tertiary education institutes (by country)

Country	Projects	Institution
Malawi	Biogas production Biomass gasification	Malawi University of Science and Technology
Mozambique	-	-
Tanzania	Resource recovery Agriculture and energy Participatory agriculture Sustainable environment	Ardhi University Sustainable Agriculture Sokoine University of Agriculture
Zambia	Student waste management challenge	Mulungushi University

- d) Research-based modules introduced into the curriculums of the tertiary education institutes (by country and stage)

Country	Modules	Institution
Malawi	waste to energy	Malawi University of Science and Technology
Mozambique	-	-
Tanzania	Waste Management Biotechnology Environmental Toxicology Environmental Chemistry Environmental Law and Legislation Housing and sanitation Pollution management	Ardhi University Sokoine University of Agriculture Institute of Rural Development Planning-
Zambia	-	-

e) Evidence-based public WM+NRM policies / policy-related instruments endorsed (by country/sub-region, category, sector, stage of endorsement)

Country	Endorsed instruments	Institution
Malawi	National waste management strategy Health care waste management policy Personal protective equipment Infection prevention and control policy National Environmental Policy Environmental Management Act Environmental Management Regulations Lilongwe City Waste Management bylaws Lilongwe City Waste Management Policy Lilongwe City Private Waste Operators Guidelines National Waste management strategy Malawi National Environmental policy (2006)	Chikwawa District Council Lilongwe District Health Office Lilongwe City Council Environmental affairs department
Mozambique	Regulation on Solid waste management Environmental Law No. 20/97, Integrated Urban Solid Waste Management Strategy in Mozambique (2013-2015); Regulations on the Management of Urban Solid Waste (Decree n.94/2014, Regulations on the Management of Hazardous Waste (Decree n.83/2014). solid waste law, number 13/2006 of 15 June, regulation of solid waste, integrated management strategy for urban solid waste Environmental Law 20/97, National Strategy for Solid Waste Management Integrated Urban Solid Waste Management Plan, Regulation on Urban Solid Waste Management, Regulation on the Management of Dangerous Solid Waste, Responsibilities extended to packaging producers and importers, Regulation on the Environmental Impact Assessment process	Conscious generation Maputo city council Provincial Directorate of Territorial Development and Environment (Niassa) Ministry of Land and Environment
Tanzania	Public Health Act No.1 of 2009, Environmental Management Act 2004, By-laws 2010, Public health act 2016 National Policy for Solid Waste Management, EMA 2004,	Morogoro Municipality - Ilemela Municipal Council - Vice President's Office -

National Environmental Policy,  
National Guideline for Healthcare Waste Management,  
Water supply and Sanitation act 2019, Public Health Act 2009  
National Environmental Policy 2021  
The local government Act No.12

**Zambia**

Lusaka City Council -

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## Appendix X: Natural resource management stakeholder responses

- a) Existing research outputs (e.g., innovative solutions, recommendations) in WM+NRM developed / revised by the research and tertiary education institutes (by country, stakeholder and category: new/existing).

Country	Existing Research	Institution
Malawi	National ecosystem assessment, Plastic Recycling Modern fish smoking kitchen, Fish traps made from durable materials, Solar tent drier for fish, Small scale cage culture structure, Digitalization of fish catch assessment information Student based as part of training SMART Development of a flood resilience system for Blantyre city, Best germination conditions for African Mahogany ( <i>Khaya anthotheca</i> ) have been identified, Linking micro-finance to water supply in rural areas has been undertaken, Using informal waste pickers as part of waste management/soil management Identification of factors that affect availability of groundwater supply among others	Lilongwe University of Agriculture and Natural Resources – Indigenous and Local Knowledge and Waste Management- Malawi College of Fisheries: Department of fisheries, Ministry of Natural Resources and Climate change -. Malawi college of forestry and wildlife - Department of National Parks and Wildlife - Malawi University of Business and Applied Sciences (MUBAS) -
Mozambique	-	Polytechnic Institute of Earth Science and Environment Eduardo Mondlane University Center for Studies on the Environment and Local Development (CEMEDEL)
Tanzania	Conservation education on the effect of pollution in the environment, Use of bio gas, Recycling of materials and Enaction of By-laws regarding to pollution Sanitation planning Modern beehive and organic farming, Afforestation through traditional knowledge of indigenous tree Identification and training natural resources champions, Facilitating innovation for participatory NRM, NRM in transitional, Forestry of Magu Briquettes production from an invasive/encroacher species, Hair Growth Stimulation or Hair Loss Prevention Using an Extract of <i>Albizia anthelmintica</i> , <i>Lonchocarpus eriocalyx</i> , skin-lightening and improving wrinkle using extract of <i>Maerua edulis</i> Reinforced Boma Rainwater Harvesting, Improved charcoal stoves, Nature based solutions,	Community Based Conservation Training Centre (CBCTC) Likuyu Sekamaganga - Nelson Mandela Institution of Science and Technology - Tanzania Forestry Research Institute (TAFORI) St. Augustine University of Tanzania - Governance Links Tanzania - Institute of Resource Assessment, University of Dar es Salaam Tanzania Wildlife Research Institute (TAWIRI)- and

<b>Zambia</b>	soil-water conservation, improved seed varieties Community Game Ranches, Governance materials, Engendered elections, Human wildlife conflict insurance. Community Forest management	Sokoine University of Agriculture - The University of Zambia Center for International Forestry Research (CIFOR) Integrated Land and Resource Governance Program (USAID)
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**b) Priority topics incorporated in the research agenda of the research and tertiary education institutes (by country and stakeholder).**

<b>Country</b>	<b>Priority Topics</b>	<b>Institution</b>
<b>Malawi</b>	CBNR and Protected Area Management, Wildlife and Ecotourism and Environmental Management Ecosystem-based fisheries management, Participatory fisheries management, fisheries stock assessment, Catch assessment Community-based natural resources management, Silviculture, Wildlife population census. Wildlife conservation and management, Wildlife ecology, Collaborative management Water Resources Management, Restoration of Degraded Areas (including re- afforestation programs) Pollution Control	Lilongwe University of Agriculture and Natural Resources- Malawi College of Forestry and wildlife - Department of National Parks and Wildlife- Malawi University of Business and Applied Sciences (MUBAS) Malawi College of Fisheries: Department of fisheries, Ministry of Natural Resources and Climate change
<b>Mozambique</b>	Territorial Planning, Solid Waste Management, Biodiversity Management wildlife Community development through natural resources management, Systematically and dynamic mapping.	Polytechnic Institute of Earth Science and Environment Eduardo Mondlane University Center for Studies on the Environment and Local Development (CEMEDEL)
<b>Tanzania</b>	Landscape restoration Agroecology Political ecology Management of Natural Forests and Biodiversity Conservation Forest Resources Assessment Sustainable utilization of forest resources Conservation of Endangered wildlife species Application of traditional knowledge on forest management Api-culture organic farming Participatory NRM Equitable access and utilization of NRM Co-creation of sustainable NRM solutions Natural resources	Nelson Mandela Institution of Science and Technology Tanzania Forestry Research Institute (TAFORI) St. Augustine University of Tanzania Global Links Tanzania Institute of Resource Assessment, University of Dar es Salaam Tanzania Wildlife Research Institute (TAWIRI) Sokoine University of Agriculture

	Ecological systems water resources management Monitoring of animal population ecology, including, rare, endemic, and key stone species of different taxa as indicators of ecosystem health Socio economic profiles of human populations living adjacent to the National Parks as indicator of present and future pressure of resource utilization within and adjacent to the national parks Water resources monitoring and sustainable utilization by both humans and wildlife give n the increasing the general scarcity of water amidst multiple users Natural Resources Management Natural Resources Governance Wetlands Conservation and Management	
<b>Zambia</b>	Climate change Governance Livelihoods	The University of Zambia -

**c) Collaborative research and innovation projects in WM+NRM implemented between research and tertiary education institutes (by country).**

<b>Country</b>	<b>Projects</b>	<b>Institution</b>
<b>Malawi</b>	Malawi National Ecosystems Assessment Restoring fisheries for sustainable livelihoods, Aquaculture value chain project, Nsomba Nchuma project, Lake Malawi national park community fisheries management Monitoring programmes	Lilongwe University of Agriculture and Natural Resources - Malawi College of Fisheries: Department of fisheries, Ministry of Natural Resources and Climate change - Malawi college of forestry and wildlife Department of National Parks and Wildlife - Malawi University of Business and Applied Sciences (MUBAS) Polytechnic Institute of Earth Science and Environment Eduardo Mondlane University - Center for Studies on the Environment and Local Development (CEMEDEL) Community-Based Conservation Training Centre (CBCTC) Likuyu Sekamaganga Nelson Mandela Institution of Science and Technology Tanzania Forestry Research Institute (TAFORI) - St. Augustine University of Tanzania - Governance Links Tanzania -
<b>Mozambique</b>	Adopting renewable energy for rural communities, Biomass project, Sustainable fishing, SECOSUD II Project	
<b>Tanzania</b>	Nature based Solutions for managing invasive species Coordinated Invasive Plant Management to Protect Tanzanian Biodiversity and livelihoods, Woody weeds in Eastern Africa, Assessing and mitigate their negative impacts on biodiversity, ecosystem services and rural livelihoods, Advancing Improvement of Moring species for agriculture through development of Genomic Selection Technology, Enhancing accessibility of Forest Flora Data in Tanzania Afforestation through traditional knowledge, wildlife corridors management,	

<b>Zambia</b>	Apiculture and organic farming Community participation in the construction of Rusumo hydroelectric power project, NRM and climate change in the Nile basin Ecosystem management in Malawi and Tanzania, Environmental Risk Management under Increasing Extremes and Uncertainty Control of Invasive/encroacher species Eleusine Jaegery in the Ngorongoro Conservation Area Enhancing the Usability of Data for Sustainable Livelihood and Conservation in The Eastern Arc Mountains of Tanzania, Integrated Community-driven for sustainable enhancement of Food production in East Africa, Green Technologies and Innovations-based Agri-business for Enhancing Youth and Employment in Morogoro	Institute of Resource Assessment, University of Dar es Salaam - Tanzania Wildlife Research Institute (TAWIRI) - Sokoine University of Agriculture -
	Woodland restoration through assisted Natural resources regeneration	The University of Zambia Center for International Forestry Research (CIFOR) Integrated Land and Resource Governance Program (USAID) -

**d) Research-based modules introduced into the curriculums of the tertiary education institutes (by country and stage)**

<b>Country</b>	<b>Modules</b>	<b>Institution</b>
<b>Malawi</b>	Biodiversity Conservation, Ecosystems Management, Ecological Modelling, Landscape ecology, GIS and Remote Sensing, Transboundary Natural Resources Management, Indigenous Knowledge in NRM, Habitat Ecology, Human Wildlife Conflict, Wildlife Management, Ecotourism, Land Resources Management, Water Resources Management, Water Governance, Environmental and Natural Resources Law and Policy, Forest Policy and Law Natural Resources Management	Lilongwe University of Agriculture and Natural Resources - Malawi College of Fisheries: Department of fisheries, Ministry of Natural Resources and Climate change Malawi college of forestry and wildlife Department of National Parks and Wildlife Malawi University of Business and Applied Sciences (MUBAS) -
<b>Mozambique</b>	Territorial Planning, Solid Waste Management, Biodiversity Management	Polytechnic Institute of Earth Science and Environment - Eduardo Mondlane University Center for Studies on the Environment and Local Development (CEMEDEL)
<b>Tanzania</b>	Wildlife habitat management, Ecosystems management, Participatory wildlife management Biological resources interpretation Conservation government,	Community-Based Conservation Training Centre (CBCTC) Likuyu Sekamaganga - Nelson Mandela Institution of Science and Technology -

Human dimension of conservation

Tanzania Forestry Research Institute (TAFORI) -  
St. Augustine University of Tanzania  
Governance Links Tanzania  
Institute of Resource Assessment,  
University of Dar es Salaam  
Tanzania Wildlife Research Institute (TAWIRI)  
Sokoine University of Agriculture  
The University of Zambia  
Center for International Forestry Research (CIFOR)  
Integrated Land and Resource Governance Program (USAID)

Zambia -

**e) Evidence-based public WM+NRM policies / policy-related instruments endorsed (by country/sub-region, category, sector, stage of endorsement)**

Country	Endorsed instruments	Institution
<b>Malawi</b>	National Wildlife policy 2018 National Forestry policy 2016 National forestry landscape restoration strategy National charcoal strategy REDD+ strategy Fisheries and Aquaculture policy, Fisheries conservation and management Act, Fisheries conservation and management regulations	Department of National Parks and Wildlife - Department of Forestry Fisheries Department -
<b>Mozambique</b>	Environmental Policy and Law Land Policy and Law Fisheries Policy and Law Biodiversity Conservation Law Forest and Wildlife Law Traditional Medicine Policy Strategy and Action Plan for the Conservation of Biological Diversity Mangrove Strategy Forestry and wildlife law and its regulation, Environmental Law, Solid waste management law	Ministry of Earth and Environment - Provincial Directorate of Territorial Development and Environment of Niassa DPDTAN -
<b>Tanzania</b>	Environment policy Biodiversity conservation, Sustainable Forest management/ participatory forest management, Marine protected areas (MPAs), Waste management strategies, Pollution control measures, Climate change and adaptation Wildlife Policy 2007	Morogoro Municipal Council Tanzania Wildlife Management Authority (TAWA) Ministry of Natural Resource and Tourism
<b>Zambia</b>	Forestry policy of 2014 Aquaculture regulation	National Assembly of Zambia Department of National Parks and wildlife Forestry department Fisheries department