

## Monitoring & Evaluation (M&E) Plan Malawi

---

Date : 26-04-2021

Version : 2

*Authors : TNO : N. Montenegro Navarro, M. Derks, P.F. van den Oosterkamp  
SIB-K : E. Amadi, C. Mutubuki-Makuyana, A. Chinyepe*

### Objective of the M&E Plan and Impact Statement:

- The M&E Plan and Impact Statement must be designed based on the Technical Assistance Response Plan and must enable the Implementer to complete the Closure Report at the end of the assistance.

### Process for filling in the form:

- The Implementer must identify relevant quantitative and qualitative indicators as specified in the Closure Report. A sub-set of indicators to monitor and assess must be chosen among these.
- The Implementer may also identify other specific, measurable, achievable, relevant, and time-bound indicators suitable to monitor Activities, Outputs and anticipated Outcomes from the technical assistance and add to the M&E Plan and Impact Statement.
- During implementation of the TA or FTA, the Implementer must collect all relevant data as described in the Monitoring & Evaluation Plan. Aggregated data on selected indicators as well as an updated version of the Impact Statement will be presented in the Closure Report at the end of the assistance.

Basic Information	
Title of response plan	Assessment of the current status of the circular economy in the waste sector for developing a waste stream specific roadmap in Malawi
Technical assistance reference number	2020000022
Country/ countries	Malawi
NDE focal point and organization	Mr. Frederick Munthali , Mr. Lyson Kampira, National Committee for Science and Technology
Sector(s) addressed	Waste sector
Technologies supported	Technologies focusing on recirculation
Implementation period and total duration	01-02-2021 – 01-03-2022 (13 months)
Total budget for implementation	\$ 243,950
Designer of the response plan	CTCN, TNO
Implementer of response plan	TNO

(A) Outputs and Activities as described in the Response Plan	(B) Indicator	(C) Expected results	(D) Method and frequency for data collection	(F) Comments
See Implementation plan	<i>Select relevant indicators from the Closure Report (at least one core indicator, section B). You may also define additional relevant indicators to be added.</i>	<i>Add the expected quantitative or qualitative target/value of the indicator (e.g. number of studies, policy recommendations, etc.).</i>	<i>Describe the expected method and frequency for data collection (e.g. survey, head count at a training workshop, application of a standard methodology etc.)</i>	<i>Describe any assumptions made or anticipated challenges for collecting quantitative and qualitative data</i>
<b>Overall impact of the Technical Assistance</b>	<p>Anticipated metric tons of CO<sub>2</sub> equivalent emissions reduced or avoided as a result of the follow-up of the technical assistance (on an annual basis / in total)</p> <p>Total anticipated amount of funding/investment required (USD) as a result of the follow-up of the TA</p>	<p>X metric tons of CO<sub>2</sub> equivalent emissions anticipated to be reduced or avoided<sup>1</sup></p> <p>X amount of funding / investment anticipated<sup>2</sup></p>	<p>Estimation of emissions reduction potential of identified best practices for the roadmap (Activity 5.1) compared to the status quo (Activity 2.2).</p> <p>Calculation of the amount of funding / investment required for the implementation of the roadmap (Activity 5.1) and classification by type of funding source (public, private)</p>	<p>This impact analysis is part of activity 4.2” analysis of environmental impact “ and part of the roadmap. Also, in line with section 6 of the technical assistance plan under “Intended Contribution to the expected impact of the technical assistance.</p> <p>The calculation of the project costs of a pilot project and a potential funding source will be calculated under activity 5.2 (concept for a pilot project) and</p>

<sup>1</sup> The result of this indicator will be evaluated based on the outcomes of Activity 5.1 (Roadmap) and 5.2 (Pilot Project).

<sup>2</sup> The result of this indicator will be evaluated based on the outcomes of Activity 5.1 (Roadmap) and 5.2 (Pilot Project).

				will also be estimated under activity 5.1 (roadmap).
	Contribution to gender balance (Indicator 3)	30% ratio of female to male engaged in the execution of the project.	Ratio of female to male calculated at the start and the end of project. Meeting participant lists, stakeholder interview reports	Data on the persons engaged by the project disaggregated by gender.
<b>Output 1: Development of an implementation plan and communication documents</b>	Communication and reporting documents finalised and validated	5 major stakeholders involved for feedback on draft communication and reporting documents engaged in at the start of the project.	TNO to prepare draft documents and update with stakeholder input	Final implementation and communication documents , available for use in the project .
<b>Output 2: Analysis of existing circular economy initiatives and key players in Malawi</b>	Analysis of the status quo of the waste sector in Malawi	1 final and complete market assessment report produced and validated	Desk research, including review of existing strategies, policies and reports, questionnaires, validated with interviews.	Written confirmation from the NDE and project proponent for the acceptance of the market assessment report
Activity 2.1 Kick off meeting	Kick-off meeting organized	1 kick off meeting organized	Contact of relevant stakeholders through CTCN.	Participants can be contacted and involved in time.

	Number of participants disaggregated by gender and type of institution	Minimum of ten registered participants	Excel sheet/file with participants to the kick-off meeting.	Includes also gender data .
Activity 2.2 Analysis of the status quo of circularity in the waste sector	Stakeholder groups engaged	5 stakeholder groups engaged during the execution of the project.	Database of stakeholders disaggregated by gender. Source of information (primary and secondary data): webinar / workshop / event registration forms; meeting reports; literature review, interviews.	All stakeholders interacted with will provide all the required information in the database; for secondary data, all information is readily available or obtainable.
	Number of market overviews produced	1 schematic market overview of the waste sector including stakeholder map and complete value chain data which is linked with indicator on number of stakeholders and indicator on data collection for each identified waste stream (value chain overview)	Desk research, market analysis, validation through interviews	All data on types of players in the waste value chains is accessible.
	Number of stakeholders interviewed per stakeholder group	At least 1 stakeholder interviewed per stakeholder group (minimum of 5 and maximum of 15 interviewees)	Identification through the NDE and project proponent, interviews, interview reports	Stakeholders are able and willing to be interviewed.
	Analysis of generation of waste by composition (e.g. organic, paper, plastics, metals, glass, agricultural) (Indicator 45), including check on completeness of data collection	Character and size (kton/yr) of waste streams. Drafted report on amount of waste generated by composition, developed; Data collection complete based	Data collected through reports, databases; municipal reports; NGOs studies; literature review, when necessary sampling.  Data saturation through secondary data analysis and	Information on waste generation by composition and sources are available. Primary data validates secondary data.

		on validation of project stakeholders	validation through primary data collection (live and virtual interviews)	
	Number of private sector actors in identifying best practices and investment opportunities in Malawi.	10 private sector players involved in the project.	Enterprises identified during stakeholder meetings held during the period of the project. Identified enterprises will be updated on an ongoing basis.	Willingness of private sector actors to share investment perspectives and best practices.
	Waste related enterprises identified in Malawi (Indicator 31)	2 waste related enterprises identified as a best practice.	Desk research and interviews.	Stakeholder are ready to share information about the waste related enterprises that are considered as a best practice. Best practices are available in the country.
<b>Output 3: Identification of the perceived value of the circular economy and of benefits, weaknesses, opportunities and challenges in Malawi's waste sector.</b>	Analysis of the perceived value and benefits, weaknesses, opportunities and challenges to implementation of circularity in the waste sector.	1 final and complete report on the perceived value and benefits, weaknesses, opportunities and challenges to implementation of circularity in the waste sector.	Desk research (including market assessment, policy and regulation analysis) and validation through interviews/questionnaires.	Written confirmation from the NDE and project proponent for the acceptance of the report
Activity 3.1 Analysis of the perceived benefits	Identified technological & innovative solutions per waste stream (Indicator 39 - adjusted)	3 best practices identified and documented highlighting industrial, technical & innovative solutions per waste stream with their challenges & solutions explained.	Interviews with stakeholders identified in output 2, assessment of available technologies and innovations through secondary research.	Waste related enterprises are willing to share technological/non-technological and innovative solutions they are using.

	Perceived benefits of the circular economy for each waste stream have been identified	Overview of all perceived benefits (economic, social and environmental) for the circular economy for each waste stream, including a summary on valuable products / by-products	Interviews/ questionnaires with the identified stakeholders.	Stakeholders have concrete ideas about the benefits of the circular economy.
Activity 3.2 Analysis of strengths and opportunities	Strengths and opportunities for each waste stream have been identified.)	Complete and validated report on strengths and opportunities in terms of environmental & other policies, regulations or initiatives supporting circular economy, climate change including, per waste stream	Data collected during interviews and secondary data collection.	Policies, environmental and other related regulations and initiative document available.
	Main economic activities identified that will be impacted by circular waste systems	Overview of the economic sectors that are impacted the most by a circular economy.	Desk research, market assessment.	The expected impact for the various sectors can be determined.
Activity 3.3 Analysis of weaknesses and barriers	Barriers / weaknesses (market, culture, funding, regulatory, external competition) to an adoption of circular economy analysed for each waste stream (added)	Report on barriers and weaknesses limiting circular economy progress (e.g. market, culture, funding, regulatory, external competition) for each waste stream	Review of policy and regulations documents to identify, barriers & weakness. Validation through interviews	All stakeholders interacted with will provide all the required information.
Activity 3.4 Development of an indicator matrix	Circularity potential of different waste streams compared on a transparent indicator matrix	One indicator matrix developed with transparent and comparable circular economy indicators between different economic activities and waste streams	Based on the analysis of outputs 2 and 3, validated through interviews.	Sufficient indicators are identified to construct an informative matrix.

Activity 3.5 Stakeholder meeting on the prioritization of waste streams	Prioritization meeting organised	One meeting organized	Meeting report	
	Number of participants disaggregated by gender and type of institution	All participants disaggregated by gender and type of institution	Meeting report including participants list disaggregated by gender and type of institution	The necessary stakeholders are willing and able to participate.
	Number of waste streams prioritized for further analysis	One waste stream or combination of waste streams selected	Meeting report	
<b>Output 4: Circularity analysis of one prioritized waste stream</b>	Circularity pathways for the prioritized waste stream analysed	1 final and complete report on the circularity analysis	Desk research, validated with interviews/ questionnaires	Written confirmation from the NDE and project proponent for the acceptance of the circularity report
<b>Activity 4.1 Identification and analysis of circularity pathways for the prioritized waste stream</b>	Number of international best practices for circularity pathways identified	Best practices identified for circularity implementation within the prioritized waste value chain relating to technology, policy, and engagement.	Further deep analysis of the results from Output 2 and 3 for the specific waste stream, validation with further desk research and interviews.	Sufficient in depth information available.
	Requirements evaluated per identified best practice	Overview of requirements for the adoption of the identified best practices.	Further deep analysis of the results from Output 2 and 3 for the specific waste stream, validation with further desk research and interviews.	Sufficient insights available into what requirements are at play.
	Economic, social, institutional and environmental impact	Overview of the impacts of the identified best practices.	Impact analyses comparison of the base status versus the	There is enough base information available to make rough estimates on the impacts.

	estimated of the identified best practices.		hypothesized end status of the adoption.	
Activity 4.2 Market analysis for the adoption of the identified circularity pathway in Malawi	Identified circularity best practices evaluated in the national context, evaluating the suitability, impact (social, economic, environmental, institutional) and costs.(link to 5.1 as well)	Report on the potential adoption of the best practice in national context. Relating to potential adopters, potential interest, requirements, benefits and gaps.	Stakeholder analysis based on the outputs of activity 4.1. Validated with interviews.	Potential adopters are available and willing to share information.
	Quantified Waste Value in Malawi (Indicator 35)	Drafted report on the quantified market value for circular economy for waste products in Malawi.	Stakeholder analysis based on the outputs of activity 4.1. Validated with interviews.	Potential adopters are available and willing to share information.
	Investment opportunities leaning on circularity in waste management in Malawi (Indicator 33 & 34 - adjusted)	1 investment opportunity identified.	Data collected during interviews and secondary data collection.	Stakeholders are willing to share information about the waste related enterprises that are considered as a best practice.
Activity 4.3 Stakeholder meeting on circularity analysis	Circularity analysis meeting organised	One meeting organized	Meeting report	
	Number of participants disaggregated by gender and type of institution	All participants disaggregated by gender and type of institution	Meeting report, including participants list disaggregated by gender and type of institution	The necessary stakeholders are willing and able to participate.
	Circularity pathway with prioritized best practices has been identified	One clear circularity pathway with best practices has been agreed upon with the stakeholders	Meeting report with circularity pathway, including prioritized best practices	

	Prioritized pilot project	Pilot project for Output 5.2 has been selected in agreement with stakeholders	Meeting report with selected pilot project	All relevant stakeholders participate.
<b>Output 5: Development of a circular economy road map and identification of a potential circularity pilot project</b>	Circular economy roadmap and pilot project concept developed	1 final and complete report on the roadmap and pilot project conceptualization	Processing of prior harvested data, validation and expansion through desk research and interviews.	Written confirmation from the NDE and project proponent for the acceptance of the report and pilot project concept
Activity 5.1 Development of a roadmap for increased circularity in the prioritized waste stream	Quantification of short-, medium- and long-term recommendations	Overview of short-, medium- and long-term recommendations for the roadmap on: a. technologies (5), b. Legal reforms (3), policies, regulations c) Awareness campaign & capacity building (2) ,d. Private sector engagement, market creation developed (2).	Recommendations based on assessment of data and best practices identified and validated in output 4 and activity 5.1.	Relevant recommendations can be made on all time scales for all topics.
Activity 5.2 Identification of a potential circular economy project for Malawi within the prioritized waste stream	Identified bankable business model for the waste value chain (Indicator 38)	1 identified profitable business model for the waste value chain	The necessary stakeholders for the business model will be identified and the potential value proposition constructed. The required (private) investment for the pilot project will be estimated.	Stakeholders will be identified that can potentially participate in the business model.
	Complete and validated outline for the pilot project	1 full outline developed including waste volumes, outputs, impacts, infrastructure, technological structures,	Based on in depth project assessment, qualitative and quantitative.	Sufficient information on the intended technologies and context is available.

		potential stakeholders, location in the value chain, costs, timeline and performance indicators.		
	Number of female entrepreneurs or stakeholders involved (added) in the pilot project	30% percentage to the total amount of stakeholders involved are female	Purposive sampling used in the methodology of the study to ensure more gender parity.	Females are engaged in the waste management value chain and own/manage some of the business in Malawi.
Activity 5.3 Establishment of communication material	Communication material developed	Communication material in at least written form on the results of the technical assistance, summary of the roadmap and the potential for a circular value chain	Processing results from previous outputs	Conclusions have been drawn in the previous outputs.
Activity 5.4 Presentation of final results	Final meeting organised	One meeting organized	Meeting report	
	Number of participants disaggregated by gender and type of institution	All participants disaggregated by gender and type of institution	Meeting report including participants list disaggregated by gender and type of institution	The necessary stakeholders are willing and able to participate.

## List of impact indicators for a circular value chain in South West Africa

Disclaimer: the longlist of indicators was constructed by using (i) scientific literature on waste management assessment in developing countries (e.g. da Silva et al. (2019) and Ikhlayel (2018)), (ii) H2020 proposal CATALYSE Africa on circular value chains for energy to business hubs, developed by THI, TNO and others, and (iii) TNO's and SIB's inhouse expertise. Note that this longlist includes indicators that are especially relevant to assess implementation of waste management strategies, which is not part of this project's scope. However, some indicators can still be used ex-ante.

References:  
da Silva, Luciana & Prietto, Pedro & Korf, Eduardo. (2019). Sustainability Indicators For Urban Solid waste Management IN Large And Medium-Sized Worldwide Cities. Journal of Cleaner Production. 237. 117802. 10.1016/j.jclepro.2019.117802.  
Ikhlayel, Mahdi. (2018). Indicators for establishing and assessing waste management systems in developing countries: A holistic approach to sustainability and business opportunities. Business Strategy & Development. 1. 10.1002/bsd2.7.

Category	No.	Indicator	Description	Unit	SDG	
Social	1	stakeholder involvement	amount or ...x number.. and level of involvement of each stakeholder		9, 12	
	2	community involvement	amount or ... y numbers?percentage and level of involvement of the community		11	
	3	change of gender balance	percentual change of woman/man ratio and extra youth employment	%	5	
	4	distribution of wealth	level in which wealth is distributed within community or region		10	
	5	development of labour circumstances	improvement in the labour circumstances in the waste sector		8	
	6	changes in public health and safety	improvement of public health and safety through better waste management		11, 13	
	7	cleaner environment	improvement in perception of the cleanliness of environment	%	11, 13	
	8	education level	awareness for waste prevention or circular usage		4	
	9	stress reduction	change in stress levels experienced in community		3	
	10	customer/citizen satisfaction	level of satisfaction with living environment		3	
	11	access to disposal facilities	level of access commonities have to adequate disposal facilities		9, 12	
	12	customer/citizen participation	level of participation in waste management		12	
Economic	13	affordable waste collection prices (if applicable)	price of waste collection	\$	9, 12	
	14	avoided costs for society	costs avoided through proper waste management	\$	9, 12	
	15	reduction of unemployment rate	reduction in the rate of unemployment in the waste sector	%	8	
	16	changed profit	change in the profitability of waste management	%	8	
	17	locally re-invested profit	percentage of profit that is re-invested in the local community	%	8, 10	
	18	local household income	change in income of household because of waste management	%	1	
	19	degree of self financing (financial sustainability) of waste collection	level in which the waste management system can support it self or is dependent on subsidy	%	9, 12	
	20	efficiency in collecting waste	time it takes to collect waste per capita	min/capita	9, 12	
	21	expenditure on waste management per capita	costs of waste collection per capita	\$/capita	9, 12	
	22	costs of waste collection	total coste of the waste collection services	\$	9, 12	
	23	costs of the landfill disposal	total costs of disposal of waste that is not treated or recycled	\$	9	
	24	costs of recycling	total costs of recycling the waste	\$	9, 12	
	25	costs of energy recovery	total cost of recovering energy from waste	\$	9	
	26	job creation	jobs created through new waste management system (for women, for youth)	amount of jobs	8	
	27	fair salary	salary of jobs in new waste management system compared to minimal wage	%	8	
	28	fees for collection services	costs paid per capita for collection of waste	\$	12	
	29	fees for waste disposal	costs for waste disposal which is not collected	\$	9, 12	
	30	Formal vs informal waste handling	Division of waste handling from formal to informal sector	%	9, 12	
	31	Waste related enterprises	Number of waste related enterprises	amount	9	
	32	Waste related SME's	Number of waste related SMEs	amount	9	
	33	Public investments in infrastructure	Public investments in infrastructure	\$	9, 12	
	34	Private investments in infrastructure	Private investments in infrastructure	\$	9, 12	
	35	waste value	value of the waste collected	\$/ton	9, 12	
	36	stakeholder participation	participation of stakeholders in waste sector		9, 17	
	37	collaboration within value chain	collaboration between stakeholders in value chain		9, 17	
	38	profitable business models for value chain	profitability of each of the stakeholders' BM as result of the new system	\$	8, 9	
	39	level of innovation within value chain	level of innovation through new system		9	
	Environmental	40	clean(er) air	reduction in local air pollution	%	13
		41	avoided CO2	tons of CO2 avoided through waste management	tons	13
42		water usage	percentual change of water usage through waste management	%	6	
43		land usage	percentual change of land usage through waste managemetn	%	13	
44		generation of solid waste per capita	amount of waste created per inhabitant per year	kg/capita/year	12	
45		generation of waste by composition (e.g. organic, paper, plastics, metals, glass, agricultura	amount of waste created per inhabitant per waste stream per year	kg/capita/waste stream/year	12	
46		coverage of waste collection per stream	percentage of waste that is collected per waste stream per year	%/stream/year	9, 12	
47		degree of seperation at household level	waste streams seperated at household level per year		12	
48		waste avoided	amount of waste avoided through new waste management strategies per year	ton/year	9, 12	
49		degree of segragation after collection	waste streams seperated after collection		9, 12	
50		disposal of waste in environment	percentual change in waste disposal in environment	%	12	
51		disposal of waste in sanitary and controlled landfills	percentual change in waste disposal in proper landfills	%	9, 12	
52		energy generation by waste	energy generated through waste burning	MWh	9, 12	
53	recycling rate of solid waste	percentage of solid waste which is recycled	%	9, 12		
54	material recovery per capita	materials recoverd per capita	%	9, 12		
55	waste processed in MRU (material recovery unit)	amount of waste processed in a material recovery unit compared to total amount of waste	tons of CO2 per year	9, 12		
56	treated waste at composting facility	total percentage of collected waste that is treated at composting facility	%	9, 12		
57	energetically recovered waste	percentage of energetically recovered waste	%	9, 12		
58	environmental management and policy	environmental management and supporting policies in place		9, 12		
59	methane reduction	tons of methande avoided through waste management	tons	13		
60	soil quality	quality of the soil		13		
61	water quality	quality of the water		6		