



International Partnership  
on Mitigation and MRV



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# MRV Workshop Uganda

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## Workshop Documentation and Report

18<sup>th</sup> – 20<sup>th</sup> June 2014, Entebbe - Uganda

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### **About the International Partnership on Mitigation and MRV**

In the framework of the Petersberg Climate Dialogue in May 2010 in Bonn/Germany, South Africa, South Korea and Germany launched the International Partnership on Mitigation and MRV. The overall aim of the Partnership is to support a practical exchange on mitigation-related activities and MRV between developing and developed countries in order to help close the global ambition gap. The Partnership is comprised of approximately 60 members, more than half of which are developing countries. The International Partnership on Mitigation and MRV has no formal character and is open to new members. Any country with an ambitious or upcoming climate agenda is very welcome to join. <http://mitigationpartnership.net/>

### **About the Low Emission Capacity Building Programme**

The UNFCCC negotiations call for developed national and international organizations to support developing countries' efforts to address greenhouse gas emissions in alignment with national development priorities. In this context, the Low Emission Capacity Building Programme (LECBP) was launched in January 2011 as part of a joint collaboration between the European Union (European Commission and Member States) and the United Nations Development Programme. Since its inception the LECB Programme has grown both in scope and breadth, proudly including 25 participating countries and enhanced technical support through generous contributions from the European Commission, the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, the Australian Department of Climate Change and Energy Efficiency and AusAID.

## Main Findings of the MRV Workshop in Uganda

The MRV Workshop was held in Entebbe/Uganda in June 2014, with participants from over 20 different institutions involved in the national MRV process. Building on the expertise of the participants in their respective topics, coupled with guidance on implementation mechanisms and requirements towards a robust national MRV system through the training, the following main findings were developed:

1. MRV Action Plans within four mitigation sectors;
2. The mapping of information requests and data flows between institutions present at the workshop;
3. A next step assessment focused on institutional and capacity, information and financial barriers for the sectors.

*Please refer to the main workshop report for a more detailed description of the workshop.*

### 1. MRV Action Plans

Throughout the workshop, the working groups had some time for reflection and to fill in the MRV action plan template. By the end of the workshop, the action plan provides a course of action for the participants of the respective Sector. This shows which institutions should be involved, procedural regulations and the methodology to be used. Furthermore, the action plans entail the determination of resources needed for the process, the envisaged institutional leadership and long term costs.

#### MRV Action Plan for the Waste sector

	MRV of Emissions	MRV of NAMAs in Sector
<b>Institution</b>	Solid Waste: NEMA and Urban authorities Wastewater: DWRM/NEMA/ Urban authorities/NWSC	CCU/DWRM/NEMA/Urban authorities
<b>Procedure</b>	- Urban authorities to regulate - private operators provide data to regulator - DWRM to estimate emissions - large private operators estimate own emissions	Urban Authorities report to designated regulator (NEMA/CCU)  Private operators to DWRM/CCU
<b>Methodology</b>	- UNFCCC CDM approved methodologies	- IPCC 2006 GL for national inventories - WRI NAMA accounting methodology - GIZ MRV guidance
- <b>Indicators</b>	Solid Waste: - tonnage/day - type or character of waste  Waste Water: - COD (BOD) - mSolid Waste: - tonnage/day - type or character of waste  Waste Water: - COD (BOD) - m <sup>3</sup> /day produced	- GHG emission reduction of methane
- <b>Type of</b>	- national inventory	Situation analysis/needs assessment/

<b>baseline</b>	- Baseline scenario based on survey	socio economic assessment
- <b>target</b>	Low emission devt. Strategy; national targets - technology determined target - policy/regulatory requirement	- LEDS - regulatory requirements
<b>Leadership</b>	Urban authorities and local Governments - NEMA/DWRM	- NEMA - DWRM - CCU
<b>Resources, capacities, staff</b>	- human resource for measurement/reporting - technology and enforcement - financial resources	human resource for measurement/reporting - technology and enforcement - financial resources
<b>Long-term costs</b>	- capital for technologies and enforcement - revision in mandate of institutions	- verification costs (HR/maintenance) - renew revision of regulations

### MRV Action Plan for the Energy sector

MRV of	Emissions
<b>Institution</b>	<ul style="list-style-type: none"> <li>M: See previous sheet for primary data collectors (e.g. Rural electrification Board)</li> <li>R: Ministry of Energy</li> <li>V: QA/QC by GHG INV team; NEMA to do Environmental Impact Assessments/external regulatory authority (to check emissions profile of energy suppliers)</li> </ul>
<b>Procedure</b>	<ul style="list-style-type: none"> <li>M: Done on a periodic basis by data providers (sometimes in response to requests or for publications)</li> <li>R: Ministry of Energy aggregates data on a periodic basis (sometimes in response to requests)</li> <li>V: GHG INV prepared as part of Nat Comm process; NEMA to do Environmental Impact Assessments at inception level and then if there are complaints</li> </ul>
<b>Methodology</b>	
- <b>Indicators</b>	- Tonnes of biomass generated/consumed - Kw/hrs of electricity generated/consumed
- <b>Type of baseline</b>	Base year ? Baseline scenario ?
- <b>target</b>	
<b>Leadership</b>	Ministry of Energy
<b>Resources, capacities, staff</b>	Have staff but need capacities enhanced & financing to conduct energy GHG inventory on an annual basis. Other recommendations are: <ul style="list-style-type: none"> <li>- level of autonomy (independent institution)</li> <li>- ensure regulations that require involvement of data providers to Ministry (as incentive to be responsible)</li> </ul>
<b>Long-term costs</b>	National budget allocation that is sufficient for the purpose of data collection, compilation and analysis

## MRV Action Plan for the Transport sector

MRV of	Emissions	NAMAs
<b>Institution</b>	MOWI/KCCA	MOWI/KCCA/URA/Police
<b>Procedure</b>	Setting standards	Development of policy and regulatory framework
<b>Methodology</b>	Use of IPCC Methodology	Stakeholder engagement
- <b>Indicators</b>	Emission Factors Activity Data (fleet, stock, fuel)	Policy and regulatory framework
- <b>Type of baseline</b>	Annual emission data	Number of cars and number of passengers per car
- <b>target</b>	At least 10% emission reduction	50% reduction in private car usage
<b>Leadership</b>	MOWT, CCU, UBOS, KCCA, UNBS, MEMD	UBA, MOWT, MEMD, KCCA
<b>Resources, capacities, staff</b>	Transport engineers; statisticians; env. Officers; Transport economists; emission testing gadgets	Licensing of officers and transport economists; motor vehicle inspections; enforcement officers
<b>Long-term costs</b>	Government and Grants	Government and Grants; User contribution

## MRV Action Plan for the Agricultural sector

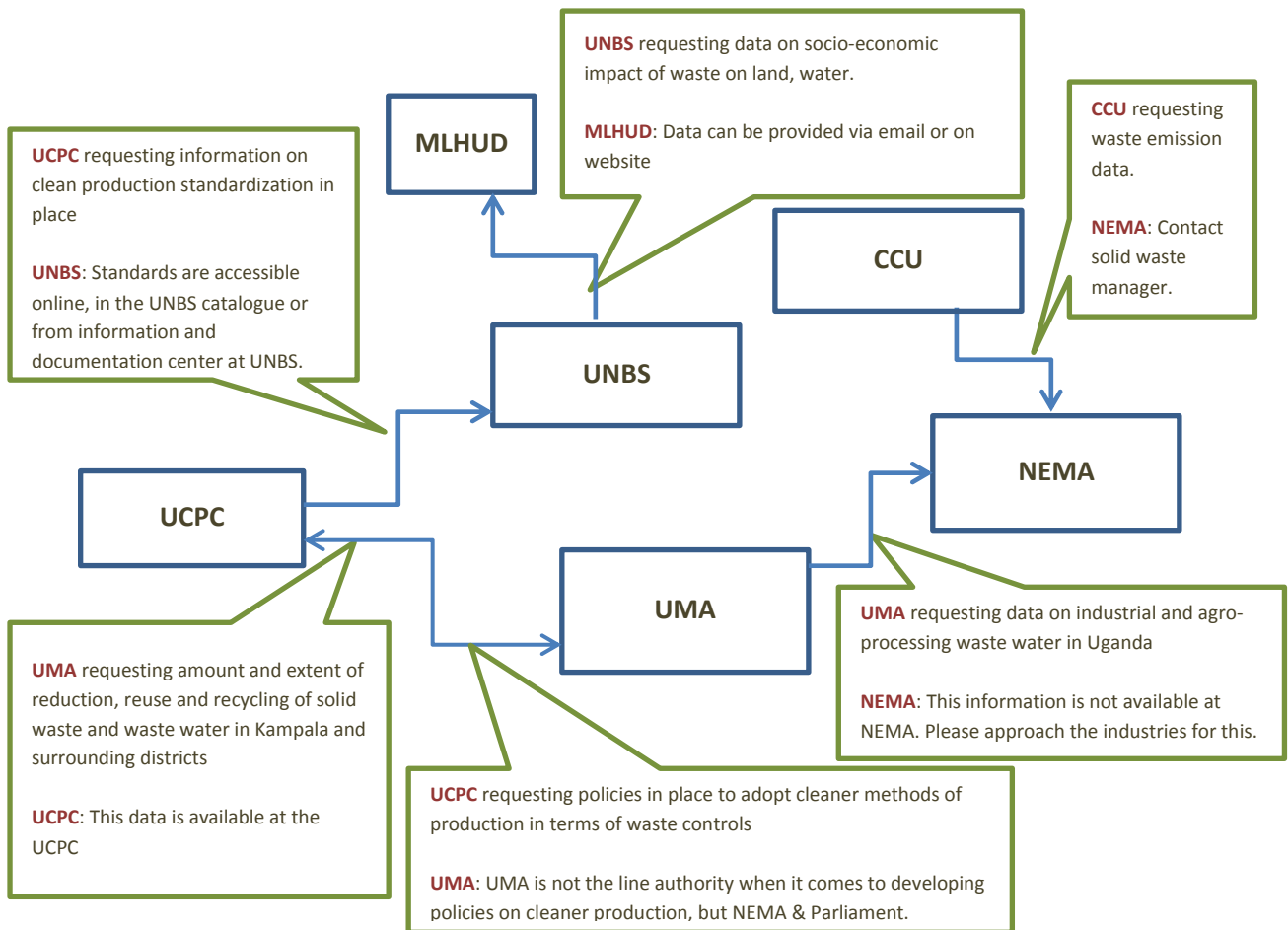
MRV of	Emissions	NAMAs
<b>Institution</b>	CCU/MAAIF	MAAIF/CCU
<b>Procedure</b>	MAAIF/CCU	CCU/MAAIF
<b>Methodology</b>	IPCC Guidelines	IPCC Guidelines
- <b>Indicators</b>	Tonnes of gases and co2 equiv.	- Amount of rice produced - Average conversion from lowland to upland.
- <b>Type of baseline</b>	BAU Base year 2000	Wetland rice
- <b>target</b>	Percentage reduction	Average reduction
<b>Leadership</b>	MAAIF/CCU NEMA	MAAIF/CCU Local govern. /UFFE
<b>Resources, capacities, staff</b>	Private sector: MOFPED Public service Development partners	From: Civil society, Development partners, private sector

## 2. Communication mapping

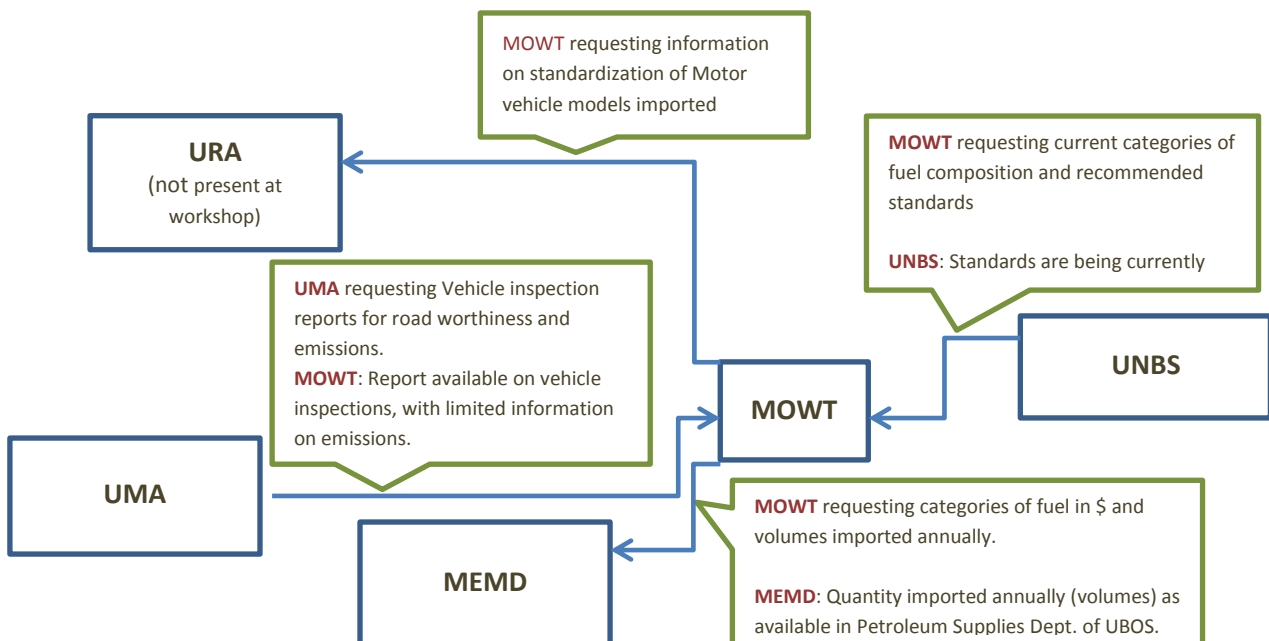
One main finding of the workshop has been that the data and information needed for MRV processes often seems to be available with the respective institutions while a data flow and the quality of presentation is lacking efficiency and transparency. Therefore, an exercise was introduced to the workshop to map data inquiries between the institutions present. Participants were asked to write down data queries on cards which were then distributed to the recipient institution who send back their replies.

The depiction of the communication flows, building on the workshop exercise including the queries and replies can be seen beneath:

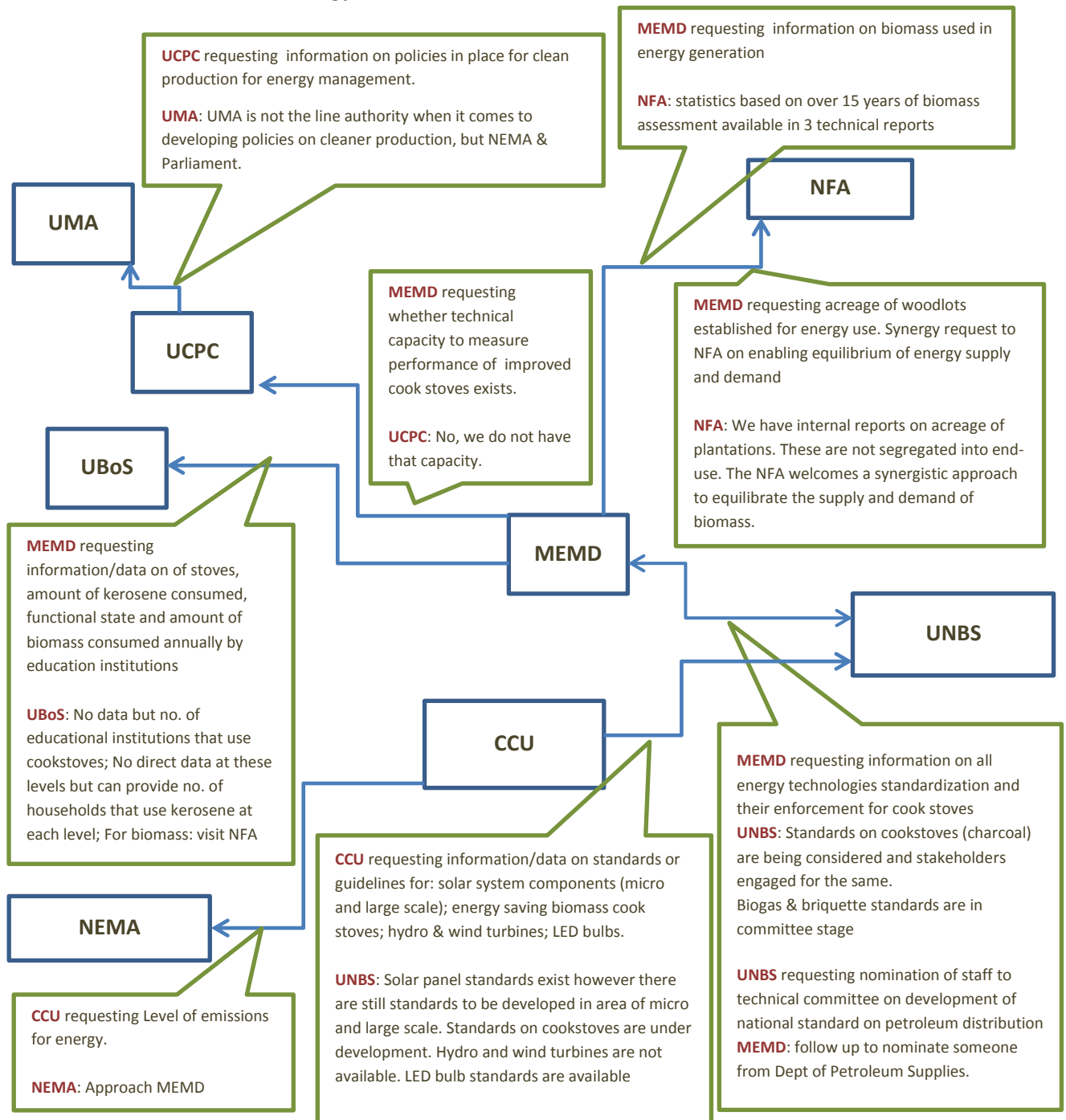
### Communication Flow Chart Waste Sector



### Communication Flow Chart Transport:



### Communication Flow Chart Energy:





### 3. Next Steps

In the final exercise of the workshop, the participants were asked to fill out a next step assessment based on the findings of the workshop. Guided by questions on a template form, the next step analysis was focused on institutional and capacity, information and financial barriers. The consolidated results are shown in the table below.

The next step assessment clearly shows an existing structure for data generation within existing institutions in Uganda. While these structures exist, the communication and sharing of the results needs to be established under the creation of MOU's and defined roles with the establishment of lead organizations. Information sharing systems are needed for a better access, transparency and comparability of data.

There is a need expressed for further capacity building for guidance on MRV as well as in initiating the cooperation and knowledge exchange of the various institutions involved in the MRV processes.

#### Next Steps working group responses

Barrier type	Guiding questions	Energy	Agriculture	Waste	Transport
Institutional	<i>Which organization will be responsible for/coordinate the MRV</i>	MEMD. <ul style="list-style-type: none"> <li>➤ Identify a focal point in the Ministry</li> <li>➤ Work with CCU &amp; LECB project to refine the NAMA concepts based upon MRV training in Entebbe</li> </ul>	MAAIF. <ul style="list-style-type: none"> <li>➤ CCU should persuade MAIAF to actively get involved in MRV</li> </ul>	Wastewater: DWRM  Solid waste: NEMA <ul style="list-style-type: none"> <li>➤ Initiate process for integrating NAMAs into current work plans and strategic medium-term/long-term plans</li> </ul>	MOWT <ul style="list-style-type: none"> <li>➤ Establish gazetted parks outside the city (2018)</li> <li>➤ Procurement of buses (2014)</li> </ul>
	<i>Which organisations will also need to be involved, e.g. in data collection</i>	Please see the institutional arrangements table (URA, UBoS, NFA, Ministry of Education, NBS, CCU, MOWT, fuel companies, schools, private sector, 3 <sup>rd</sup> party auditors) <ul style="list-style-type: none"> <li>➤ Identify key focal points in every</li> </ul>	<ul style="list-style-type: none"> <li>➤ Call upon UBoS and UNBS to be on board</li> </ul>	NWSC, NEMA, DWRM, urban and local authorities, KCCA <ul style="list-style-type: none"> <li>➤ Propose a strategic framework for waste NAMA</li> </ul>	UBoS, URA, KCCA, police <ul style="list-style-type: none"> <li>➤ Need comprehensive stocktaking on vehicles in city (2014)</li> </ul>

		institution to be involved in data collection & reporting			➤ Implementation of existing regulations on road work (2014)
	<i>Can existing organisations be used or are new institutions needed.</i>	Yes. Use existing institutions.	No action. We can use existing institutions.		Use existing institutions. ➤ Clear collaboration platform on data exchange implemented and enforced (2014)
	<i>Are appropriate legal instruments, MOU, etc, in place to allow good working practices?</i>	No. ➤ Engage with every institution to clearly define roles & responsibilities and the type of formal agreement that is required.	No. ➤ To be established	➤ Review existing regulatory framework to cater for NAMAs	No! ➤ Strategic partnership coordinated by lead Ministry (2015)
	<i>Are there any organizations that have a vested interest in supporting/blocking MRV?</i>	Yes, URA may create challenges (taxes). ➤ Higher-level engagement/negotiation to ensure that URA will be supportive of the objectives of the NAMAs	Unknown. ➤ Needs to be investigated	Policy Committee on environment/natural resources ➤ Set policy performance targets (office of Prime Minister)	➤ Need to be back up by resources and capacity building (2015)
<b>Capacity</b>	<i>Are key members of the organization involved in MRV well-trained on technical aspects of MRV?</i>	No ➤ Undertake a capacity assessment of all involved insitutions ➤ Undertake a capacity building programmes	No ➤ Undertake a capacity building programmes	No ➤ Design training programmes & seek finance ➤ Cooperation among institutions to fill gaps	No. Need political commitment. ➤ Need for sensitization (2015) ➤ Cooperation among institutions to fill gaps
	<i>Are sufficient numbers of staff trained up to minimize disruption to the MRV process in case</i>	No. ➤ Same steps as above – use a capacity	No. ➤ As above – use a capacity	No. ➤ Map capacity requirements and establish expert capacity to be	Partially. ➤ Need for benchmarking results from countries that have

	<i>key staff are not able to carry out the work?</i>	building programme	building programme	trainers of trainers	worked on MRV (2015) ➤ Placement/attachment in the field
<b>Information</b>	<i>Are there good information management systems (IMS) in place to ensure that process are not affected by change in personnel?</i>	No. ➤ Set up an independent IMS in collaboration with CCU's national MRV system (to ensure compatibility)	No. ➤ Establish an IMS	Yes. ➤ But need to renew and improve based on NAMA needs	No. ➤ Develop systems of information (integrated) for information exchange between stakeholders and update info (2016)
	<i>Does the data exist to properly carry out MRV?</i>	Some data exists, but not all. (Some is too aggregated and some doesn't exist.) ➤ Undertake a data mapping to identify the key data gaps. Assess costs of addressing key data gaps and build cost into the NAMA. ➤ Set up a reference database	➤ Data exists, but needs to be organized and put to use	Yes, but it has not been properly elaborated. Needs to be elaborated for providers. With better elaboration/description the effort needed to use the data for MRVs and NAMAs in general will be reduced. Current data is extremely difficult to use on its own.	No. ➤ Need to create integrated data & information system (2015)
	<i>Who holds the data needed to carry out the MRV?</i>	MEMD and other primary data providers (listed above; also see institutional mapping) ➤ Undertake stakeholder engagement & awareness raising on data needs and importance of MRV. Undertake capacity building as needed.	➤ Several institutions but data needs to be consolidated	Urban authorities, NEMA, DWRM, private sector	Different institutions ➤ Need for information consolidation between institutions and should be done by MOWT deliberately (2015)



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<b>Financial</b>	<p><i>Are there sufficient funds to pay for a fully functioning/improved MRV system</i></p>	<p>No.</p> <ul style="list-style-type: none"> <li>➤ Review the costing of MRV component of the NAMAs (is it accurate?) and ensure the full costs of MRV are reflected in the concepts.</li> <li>➤ Seeking funding for the NAMA (and its MRV system)</li> </ul>	<p>No.</p> <ul style="list-style-type: none"> <li>➤ Seek funding for the NAMAs</li> </ul>	<p>No.</p> <ul style="list-style-type: none"> <li>➤ Resource mobilization strategy</li> </ul>	<p>No.</p> <ul style="list-style-type: none"> <li>➤ Strategic partnership in soliciting funds between institutions (2016)</li> </ul>
	<p><i>Where would the funds come from?</i></p>	<p>Donors/investors (and in long-term, funded from the national budget)</p> <ul style="list-style-type: none"> <li>➤ Seek donor funding for the NAMA.</li> <li>➤ Look into longer-term sustainability of NAMAs through innovative funding mechanisms such as revolving funds.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Seek funding for the NAMAs</li> </ul>	<ul style="list-style-type: none"> <li>➤ Private sector: comply to regulation</li> <li>➤ Government fiscal instruments</li> <li>➤ Development partners to support capacity building and piloting innovative mechanism as target stakeholders get a buy in (i.e. to support uptake of technology)</li> </ul>	<p>Government, donors</p> <ul style="list-style-type: none"> <li>➤ Have clear strategic plan for short- and long-term</li> <li>➤ Interest in GHG emission reductions (2016)</li> </ul>

## **Workshop Report:**

### **Workshop Background and Objectives**

The GIZ *MRV Training* was held in Entebbe, Uganda from 18-20 June 2014 as a joint initiative of the International Partnership on Mitigation and the *UNDP Low Emission Capacity Building (LECB) Programme*. The Workshop took place at the Imperial Golf View Hotel Entebbe.

### **Background and Scope of MRV Training**

Many countries are currently struggling with the challenge of developing and implementing an appropriate national system that meets their specific needs for measurement, reporting and verification (MRV). While some institutional mechanisms for measurement and evaluation may often exist in countries (in the form of policy tracking, national GHG inventories and air quality measurement systems) these systems are not sufficient for responding to newly emerging MRV responsibilities. As such, countries are faced with whether to adapt and expand existing institutional systems and mandates to also reflect MRV needs or to create a new set of arrangements exclusively for MRV of NAMAs.

Developing a robust institutional framework that encompasses the relevant institutional entities as well as the necessary staff, systems and processes is essential for an effective MRV system. However, the approaches that countries have taken vary widely, ranging from top-down integrated MRV systems that cover multiple reporting needs to bottom up systems that focus on a specific policy, action, or regions.

The *Deutsche Gesellschaft für internationale Zusammenarbeit (GIZ)* has developed a MRV Training to address the specific capacity building needs for a measurement, reporting and verification upon which the workshop was held.

UNDP LECB supports Uganda in its aim to build a comprehensive MRV system in order to track GHG emission reductions and co-benefits related to NAMAs. By bringing together different stakeholders from various national institutions involved in the national MRV processes, the training provided guidance on the background and requirements of how to implement a robust MRV System.

### **Workshop Rationale and Objectives**

In order to support Uganda's process towards the implementation of a robust MRV System, UNDP, in partnership with the International Partnership on Mitigation and MRV, brought together government and civil society representatives, in a three-day workshop held in Entebbe on 18<sup>th</sup> till the 20<sup>th</sup> of June 2014.

Specifically, the objectives of the workshop were to:

1. Provide expertise on the background and objectives of MRV Systems
2. Introduce concepts of MRV System implementation
3. Gather an overview over existing structures and MRV mechanisms in place and developing a next step assessment

## Methodology and Agenda

The Methodology used in the workshop stems from the GIZ MRV Training. The tools used for this purpose were the [GIZ MRV Tool](#), as well as the [GIZ Stocktaking Tool](#). National and international experts held presentations throughout the workshop, followed by group exercises and plenary discussions.

Uganda has developed eight Nationally Appropriate Mitigation Actions (NAMAs) in four different mitigation sectors (see below). These were used to serve as a platform for the participants to identify knowledge and capacity gaps, as well as the institutional arrangements in place, in order to move towards a robust national MRV System.

Split into four working groups, the participants chose the sector closest to their competency. The training provided consolidated background information material on each NAMA concept.

1. Energy Sector
  - a. The Promotion of the Use of Efficient Institutional Stoves in Educational Institutions
  - b. Fuel Efficiency in Motor Vehicles
2. Waste Sector
  - a. Integrated Wastewater Treatment for Agro-process Water in Uganda
  - b. Reduction, Recycling and Reuse of Solid Waste in Kampala City
3. Agriculture
  - a. Developing appropriate strategies and techniques to reduce methane emissions from livestock production in Uganda
  - b. Promoting the cultivation of high-yielding upland rice in Uganda
4. Transport
  - a. Bus Rapid Transit (BRT) for Kampala
  - b. Periodic vehicle inspection for emissions and roadworthiness

The three day workshop was built upon the following building stones:

1. Introduction to the workshop and rationale of MRV settings
2. Mapping of the current mechanisms in place and data availability
3. MRV of Emissions
4. MRV of NAMAs
5. MRV of co-benefits
6. Integration of MRV settings into a robust national MRV System
7. Steps Forward

See Appendix A for the full Agenda.

## Participants

The workshop brought together 35 participants from over 20 different institutions, including Ugandas Climate Change Unit, key governmental agencies, national monitoring experts, donor organizations and academia. The full participants list is provided in Appendix B.

## Summary of Presentations and Discussions

### 1<sup>st</sup> Day

The first day included the opening of the workshop and presentation of national and international experts on MRV, followed by the introduction of the participants and their expectations to the workshop. An introduction to MRV and UNFCCC requirements was given in how to integrate data into one robust national MRV system. It was noted, that MRV systems compile data on

- Emissions to track national and international progress towards mitigation objectives;
- Emissions reductions (mitigation actions) to account for quantified impacts of policies and actions;
- Support for mitigation actions to identify gaps and facilitate access to finance, technology and capacity building.

Thereby, MRV systems

- create trust among Parties through transparency;
- compile information basis for national planning and implementation of policies on sustainable development and green growth, and
- provide lessons learnt.

Inventories of emissions are the only *measurable* component of MRV *directly* linked to climate change and GHG inventories are the *centerpiece* of national MRV systems. To integrate various data into one robust MRV System, it can be built around the planned mitigation actions, while the MRV'd emission reductions should link into the MRV'd emissions in the inventory, and the MRV'd support (from stakeholders) should be linked to the MRV'd mitigation actions (and their emission reductions).

On a further step, the [GIZ Stocktaking Tool](#) was used by the participants in break out groups to discuss short-, medium- and longer term needs for Uganda's MRV system improvements. This stocktaking tool should be considered as a guidance which countries can apply to design an MRV system improvement plan. The results from the break out groups showed a focus on different aspects. Table 1 displays the actions needed that were identified by the groups:

**Table 1: Actions needed for national MRV system based on group discussions**

<b>Action required in the short term:</b>	<p>Designation of institution for LEDS development, coordination, implementation and monitoring needed.</p> <p>Lack of enforcement and implementation of national laws and/or regulations in place to mandate and enable implementation of mitigation activities.</p> <p>Clear definition of responsibility for coordinating mitigation action development, implementation and monitoring needed, including the designation of focal points by the line ministries.</p> <p>There is a need for regular reporting on LEDS development as a responsibility of a designated institution.</p>
<b>Medium term action required:</b>	<p>There is a need to seek financial resources from the strategic partners including govt. commitments on the national budget allocation.</p> <p>There is a need for capacity building on a domestic MRV system for reporting and data collection related to mitigation.</p> <p>A comprehensive national greenhouse gas inventory is needed.</p> <p>A national overarching MRV system is needed.</p> <p>NAMA concepts need to further evolve in line with MRV System.</p>
<b>Long term action required:</b>	<p>The national climate change Strategy needs dissemination to population.</p> <p>The implementation of more mitigation projects is needed</p> <p>Existing laws need to be reviewed to cater to mandatory emission reporting</p>

The afternoon of the first day was dedicated to MRV of Emissions as well as the mapping of data availability and flows. National GHG Inventories form the basis for mitigation policies, projections and scenario settings. Inventory systems are live systems that operate year-round, geared to addressing specific outcomes. Therefore, having a GHG inventory that meets some/all of the UNFCCC Guidelines and underpin MRV requirements provides credibility. A national GHG inventory agency is a nationwide resource of technical expertise that can be drawn upon across a wide range of technical and policy areas. This section of the workshop concentrated on this basis that MRV of Emissions forms the center of every national MRV System.

In the afternoon session, the MRV of Emission segment of the *GIZ MRV Tool* was introduced to the participants in a click session. The Tool serves as a capacity building instrument for building MRV Systems.



Within the break-out groups, the participants gathered an overview over the data availability and flows needed to monitor emissions for the inventory of the mitigation sectors agriculture and waste, transport and energy. The results are comprised in table 2 below.

## Mapping data availability

### Data sources for inventory

By sector	Emissions factors/ activity data	How to calculate data	Data owners	Accessibility of data	How to generate data	Data quality
Waste	Default factors Tier 1 (IPCC Guidelines)					
	Solid waste produced per day (tons/day) Type of solid waste (glass, organic, metal etc.)	No. of trucks, waste bins, carrying capacity, average tonnage,	Municipal, towns authorities; Schools; Regulators like NEMA	Through urban authority reports Regulator reports Feasibility study reports Approved EIA reports	Desk review by matching different sets of existing literature Projections/ extrapolation based on existing estimates Simulation based models	Data from urban authorities and regulators is usually fairly accurate & reliable CSOs data is not reliable Accuracy of models based on whether they fit domestic assumptions – difficult to explain to local stakeholders.
	Wastewater BOD, COD content of water; volume of wastewater;	Metres Volume flow rate estimations; Laboratory analysis	NWSC; Private sector; Urban authorities; NEMA/DWRM	Reports of NWSC corporation NEMA Urban authority Feasibility reports Approved EIA reports		
By sector	Emissions factors/ activity data	How to calculate data	Data owners	Accessibility of data	How to generate data	Data quality
Transport	Fuel-efficiency and consumption in motor vehicles	Activity data using Tier 1 of IPCC	MoWT	medium	Periodic vehicle inspection and surveys/registers	fair
	Vehicle type	Activity data using Tier 1 of IPCC	MoWT	High	Periodic vehicle inspection and surveys/registers	Good
	Engine capacity	Activity data using Tier 1 of IPCC	URA	High	Periodic vehicle inspection and surveys/registers	Good
	Vehicle fleet	Activity data using Tier 1 of IPCC	MoWT	Medium	Periodic vehicle inspection and surveys/registers	fair
	Vehicle stock	Activity data using Tier 1	URA/MoWT/UBOS	Medium	Periodic vehicle inspection and	Good

By sector	Emissions factors/ activity data	How to calculate data	Data owners	Accessibility of data	How to generate data	Data quality
	Energy	Type of fuel	of IPCC Activity data using Tier 1 of IPCC	MEMD/MoWT and URA/UBOS	high	surveys/registers Periodic vehicle inspection and surveys/registers
Average distance covered per vehicle		Activity data using Tier 1 of IPCC	MEMD/MoWT and URA/UBOS	high	Periodic vehicle inspection and surveys/registers	Good
Have grid emission factor Use default IPCC EFs						
Energy	Biomass use (tonnes)	Weight (tonnes)	Ministry of Energy Rural Electrification Agency (under MoEnergy) National Forest Authority Utilities Electric generation companies Solar companies Large informal sector Uganda Bureau of Statistics	Ministry/Department/ Agency newsletters & annual publications  Annual reports of utility companies  Data is there but not always accurate or harmonized between agencies/depts  Main challenge is the informal sector	Stakeholder interviews/ surveys; Census (every 10 years); Annual reports & stakeholder publications; Policy documents & gazettes; Bureau of Statistics requests; Projects implemented (reports)	Data is there but not always accurate or harmonized between agencies/depts. (i.e. between primary data originators and other data collators)  Main challenge is the informal sector
	Electricity generated and consumed RE installations, incl. capacity generated (hydro, thermal, solar)	Electric metering (KW/hrs)	Ministry of Energy Rural Electrification Agency Utilities Electric generation companies Solar companies Uganda Bureau of Statistics	Ministry/Department/ Agency newsletters & annual publications  Annual reports of utility companies  Data is there but not always accurate or harmonized between agencies/depts	Stakeholder interviews/ surveys; Census (every 10 years); Annual reports & stakeholder publications; Policy documents & gazettes; Bureau of Statistics requests; Projects implemented (reports)	Data is there but not always accurate or harmonized between agencies/depts. (i.e. between primary data originators and other data collators)
By sector	Emissions factors/ activity data	How to calculate data	Data owners	Accessibility of data	How to generate data	Data quality
Agriculture	For manure: Population size; type of livestock; EF of the type of Feeds;		Ministry of agriculture  UBOS		Census and use of inventories	Dependable

For upland rice: distribution of rice type per acre; capacity of tractor per area; type of fuel	MAAIF
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Building on the findings of the data availability exercise, a plenary discussion was held on the accessibility and validity of GHG data in Uganda. During the discussion, it became clear that an open access to activity data and data sharing between institutions involved in the MRV process is not given. While the information needed seems to be available with the respective institutions, a data flow and the quality of data presentation is lacking efficiency and transparency.

## 2<sup>nd</sup> Day

The second day started with a presentation from James Kakeeto on *MRV in energy access projects – experiences in Uganda*.

Building on the findings of the first day on the general concept of a robust MRV System and the implementation of a GHG inventory, the second day focused on MRV of NAMAs. Due to the underlying issue of data sharing, an information flow exercise segment was included in the afternoon to further increase the understanding of the challenge at hand.

Rationale of MRV of NAMAs:

It is not easy to understand whether a specific NAMA has caused an MRV'd change and to what extent. Therefore, good information and communication are of vital importance. Gathering and keeping a record of information for reporting relies on good communication and coordination between all entities involved in the monitoring process. It is essential to define clear roles and responsibilities and to give transparent guidance to each organization involved in developing and implementing the NAMA MRV-plan. This will ensure the reliability and consistency of the measured information, as well as its timely reporting and verification.

The calculation of emission reductions and costs will have to be based on proven or credible methods while using the best available data. Monitoring quality and reliability of data and an open and transparent access to information increases the efficiency of the MRV process. Emission mitigation and mitigation costs should be calculated based on proven or credible methods using the best available data. Furthermore, a continuous review and improvement of the MRV plan should be performed to further increase the scope and efficiency. Organizations with different expertise should be involved, in order to maximize technical capabilities.

### Institutionalization of MRV of NAMAs

After a click session by the participants through the MRV of NAMA segment within the GIZ MRV Tool, a group exercise on the institutional arrangements of MRV of NAMAs was introduced. The results of this

exercise displayed in Table 3 show the list of institutions that should be involved in the respective NAMA MRV process as well as their possible roles.

**Table 3: Institutions involved in NAMA MRV process**

Energy NAMAs	Organisations to be engaged	Key functions and Role in MRV			
Promotion of use of efficient institutional cookstoves in educational institutions	Ministry of Energy	Ministry of Energy influences Ministry of Education on cookstoves policy R: feeds data into national MRV system V: Planning Unit goes to verify what is reported			
	Ministry of Education	Only policy is on lighting, not cookstoves. Have school inspectors. V: of impacts/co-benefits of NAMA			
	Ministry of Local Govt	Ministry of Education influences local education officers			
	School (nominated focal point)	MAIN STAKEHOLDER M: Functioning of cookstoves M: Change in use of biomass (tonnes, costs saved) reports to Ministry of Energy (EE division)			
	Bureau of Standards	Propose technology standards			
	Private Sector (Renewable Energy Associations) -- Cookstove providers	Install stoves of established standards M: data on the capacity of stoves installed, performance records of all stoves at the point of installation and reported to Ministry of Energy			
	External auditor	3 <sup>rd</sup> party verifier			
Fuel efficiency in motor vehicles	Ministry of Energy	Set policy for imported vehicles (fuel efficiency) R: feeds data into national MRV system			
	Uganda Revenue Authority	M: Number of cars imported and reported annually to Bureau of Statistics M: taxes levied; reported annually			
	Bureau of Standards	Set standard & policy with Ministry of Energy for imported vehicles			
	Bureau of Statistics	V: of number of cars imported			
	Fuel companies	R: fuel consumption, sales, quality of fuel			
	Ministry of Transport	Set policy for imported vehicles (vehicle age) R: maintains vehicle fleet database that draws from URA data as part of national MRV system			
	External auditor	3 <sup>rd</sup> party verification of fuel marking			
Waste NAMAs	Organisations to be engaged	Key functions and Role in MRV			
			Reduction, Recycling and Reuse of Solid Waste in Kampala City	NEMA	- Regulatory role -that requires the urban authorities and developers to provide information or data - Verification of data/information from private sector and urban authorities - Ensure compliance with regulations - Lead coordinator of the implementation of the solid waste NAMA
			CCU	Provide overall regulatory framework on NAMA activities	
			Urban Authorities and local authorities e.g. KCCA, Municipal councils	- Record and compile data on solid waste-generation - On ground implementation of the NAMA - Submit data/information to NEMA on quarterly basis for review	
UMA-for industrial solid wastes	Mobilize its members to comply With NEMA regulations for solid waste management and				

		<ul style="list-style-type: none"> <li>- participation in NAMA</li> <li>- MRV activity</li> </ul>
	UNBS	Developing standards for the regulators –both solid waste and waste water

Integrated Wastewater Treatment for Agro-process Water in Uganda	NEMA-Industrial wastes	<ul style="list-style-type: none"> <li>- Provide data of chemicals content of discharged industrial waste water</li> <li>- Verify data provided by the industries and enforce compliance with effluent discharge standards</li> <li>- Provided data on municipal waste water-chemical content, volumes. Etc</li> <li>- Potential implementer of Waste water NAMA</li> </ul>
	NWSC-Municipal waste	<ul style="list-style-type: none"> <li>- Collect data for discharge courses</li> </ul>
	DWRM	
	Civil society working group for chemicals and wastes	<ul style="list-style-type: none"> <li>- Mobilize community to participate in data generation and verification exercises</li> </ul>
	UNBS	<ul style="list-style-type: none"> <li>- Developing standards for the regulators</li> </ul>
	UMA	<ul style="list-style-type: none"> <li>- Mobilize members to provide data on waste water quantity and quality and comply with effluent discharge standards</li> </ul>
	CCU	<ul style="list-style-type: none"> <li>- Provide overall regulatory framework on NAMA activities</li> </ul>

Agriculture NAMAs	Organisations to be engaged	Key functions and Role in MRV
Promoting the cultivation of high-yielding upland rice in Uganda/ Developing appropriate strategies and techniques to reduce methane emissions from livestock production	MAAIF	Leading Institution <ul style="list-style-type: none"> <li>- Legal drafting of bills</li> <li>- Have database collection</li> <li>- QA</li> <li>- Publicity/awareness</li> <li>- Funding</li> </ul>
	UCDA UFFA UFEA NFA UNBS NEMA	<ul style="list-style-type: none"> <li>- Coordination of sectoral players</li> <li>- Regulation of the system</li> <li>- Standard development</li> <li>- Supervision and complaining</li> </ul>
	Research Institutions	<ul style="list-style-type: none"> <li>- Teaching of academic part</li> <li>- Research</li> <li>- Experimentation/pilots/practicals</li> <li>- Veting on credibility of scientists</li> </ul>
	Local Governments	<ul style="list-style-type: none"> <li>- Data collection</li> <li>- Supervision</li> <li>- Funding</li> </ul>
	NGOs	<ul style="list-style-type: none"> <li>- Funding</li> <li>- Research</li> <li>- Information dissemination</li> </ul>
	Farmers Associations: UFEA/UFFE	<ul style="list-style-type: none"> <li>- Information dissemination</li> <li>- Coordination of Farming</li> </ul>
	CCU	<ul style="list-style-type: none"> <li>- Ensure compliance</li> <li>- MRV</li> </ul>

### **Data communication exercise**

Building on the plenary discussion the first day on the accessibility and validity of GHG and activity data in Uganda, it had become clear that an open access to activity data and data sharing between institutions involved in the MRV process offers room for improvement. While the information needed often seems to be available with the respective institutions, a data flow and the quality of presentation is lacking efficiency and transparency.

Therefore, an exercise was introduced to the workshop to map data inquiries between the institutions present. Participants were asked to write down data queries on cards which were then distributed to the recipient institution who send back their replies. The depiction of the results from the sectors can be seen in Appendix C.

It was noted in the succeeding plenary discussion, that in the real world context, the cooperation level might not be as high compared to the workshop exercise. Therefore, process designs are needed to prevent queries from just being sent from one side to the other. Furthermore, one point of frustration mentioned by participants was that the quality of data when received is often poor.

The following discussion concentrated on possibilities of incentivizing cooperation between organizations and individuals as this is posing a serious barrier for national MRV and will have to be addressed.

### **Presentation on linking MRV of Emissions with MRV of NAMAs into one robust MRV System**

Following the exercise on communication needs, the presentation on the linkage of MRV mechanisms into one robust MRV System concluded the second day of the workshop. In this presentations, it was shown how to utilize IPCC inventory software to integrate GHG impacts of NAMAs into a robust national inventory.

## **3<sup>rd</sup> Day**

The final day concluded the workshop by introducing the topic of MRV of co-benefits and the finalization of the MRV plan, as well as the discussion of next steps to be taken towards improving Uganda's MRV Systems. Final remarks brought the three day MRV workshop to an end.

### **Introduction to MRV of co-benefits**

NAMAs need to be anchored in national strategies and sustainable development co-benefits play a crucial role for their success. The consideration of co-benefits to mitigation actions envisaged in the project outline can create support from different stakeholders that otherwise would not have been involved.

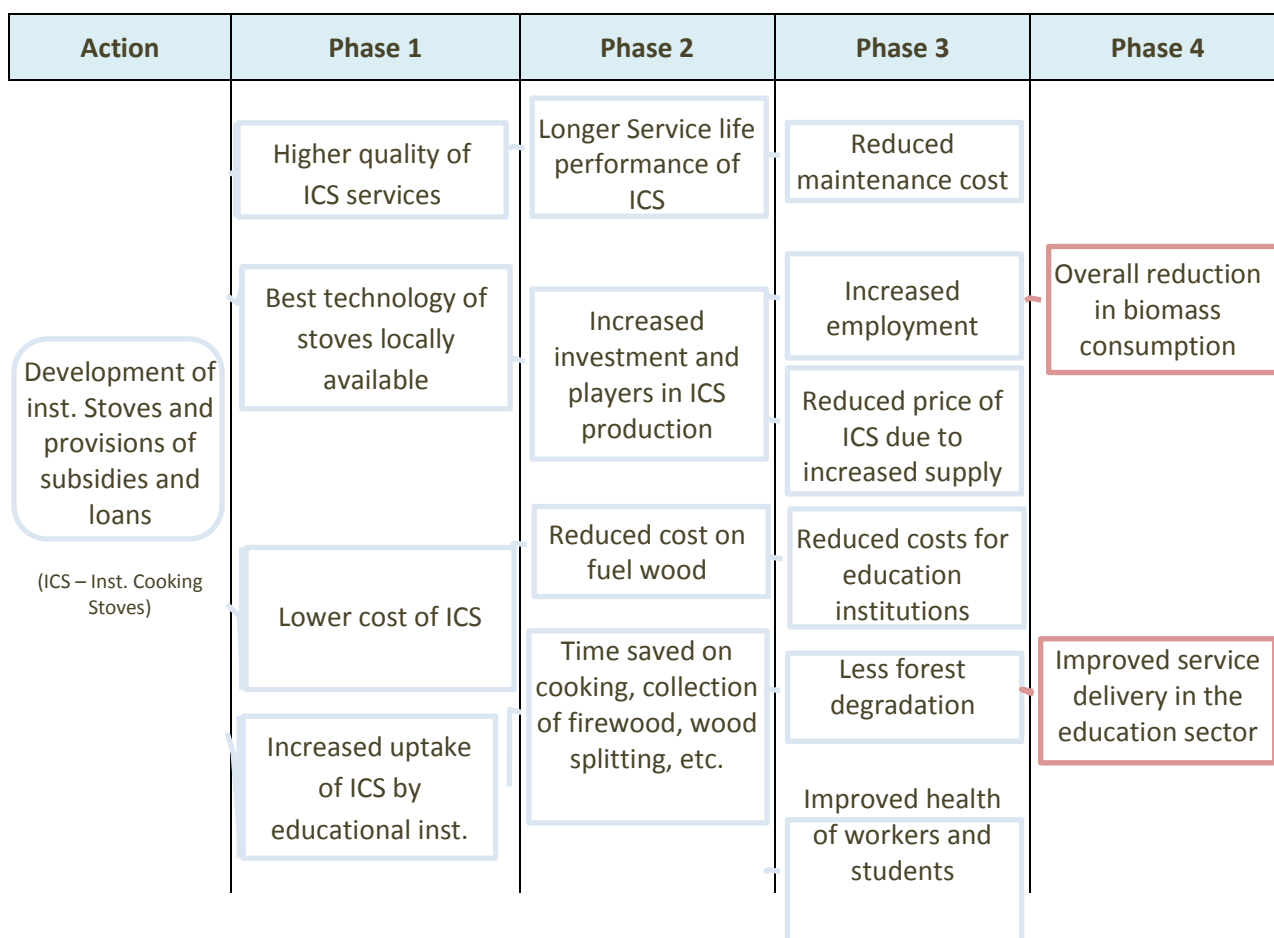
One method to measure the progress of impacts of NAMAs is to identify key indicators linked to the objective of the policy to use as a proxy. Indicators make it possible to more precisely measure the attainment of goals. They may measure quantitative or qualitative results of a project. Each

implemented activity should have its separate indicators that reflect what the action seeks to achieve, e.g.: Job creation in specific field, decreased numbers of respiratory diseases in a specific setting, or the improvement of water pollution by % in specific area. Non intended effects should be considered and monitored as well.

One lesson from MRV of co-benefits is, that it is important to first analyze the whole sector and, subsequently measure the action against a set of indicators and priorities of the country in order to find the “best” Action with maximum sustainable development benefits and mitigation potential

In the group exercise, the participants were asked to develop an indicator chain to monitor the different phases of the NAMA concepts. The depictions of the indicator chain by the energy group that was working on the improved institutional cooking stove NAMA is shown below. The other indicator chains can be found in Appendix D.

**Indicator chain Energy sector:**



## MRV Action Plan

At the end of each session the working groups had some time for reflection and to fill in the MRV action plan. By the end of the workshop, the action plan should set out a clear course of action for the participants of the respective topic.

**Table 4: MRV Action Plan for the Waste sector**

MRV of	Emissions	NAMAs
<b>Institution</b>	Solid Waste: NEMA and Urban authorities Wastewater: DWRM/NEMA/ Urban authorities/NWSC	CCU/DWRM/NEMA/Urban authorities
<b>Procedure</b>	- Urban authorities to regulate - private operators provide data to regulator - DWRM to estimate emissions - large private operators estimate own emissions	Urban Authorities to regulator (NEMA/CCU)  Private operators to DWRM/CCU
<b>Methodology</b>	- UNFCCC CDM approved methodologies	- IPCC 2006 GL for national inventories - WRI NAMA accounting methodology - GIZ MRV guidance
- <b>Indicators</b>	Solid Waste: - tonnage/day - type or character of waste  Waste Water: - COD (BOD) - mSolid Waste: - tonnage/day - type or character of waste  Waste Water: - COD (BOD) - m <sup>3</sup> /day produced	- GHG emission reduction of methane
- <b>Type of baseline</b>	- national inventory - Baseline scenario based on survey	Situation analysis/needs assessment/ socio economic assessment
- <b>target</b>	Low emission devt. Strategy; national targets - technology determined target - policy/regulatory requirement	- LEDS - regulatory requirements
<b>Leadership</b>	Urban authorities and local Governments - NEMA/DWRM	- NEMA - DWRM - CCU
<b>Resources, capacities, staff</b>	- human resource for measurement/reporting - technology and enforcement - financial resources	human resource for measurement/reporting - technology and enforcement - financial resources
<b>Long-term costs</b>	- capital for technologies and enforcement - revision in mandate of institutions	- verification costs (HR/maintenance)



**Table 5: MRV Action Plan for the Energy sector**

MRV of	Emissions
<b>Institution</b>	<ul style="list-style-type: none"> <li>M: See previous sheet for primary data collectors (e.g. Rural electrification Board)</li> <li>R: Ministry of Energy</li> <li>V: QA/QC by GHG INV team; NEMA to do Environmental Impact Assessments/external regulatory authority (to check emissions profile of energy suppliers)</li> </ul>
<b>Procedure</b>	<ul style="list-style-type: none"> <li>M: Done on a periodic basis by data providers (sometimes in response to requests or for publications)</li> <li>R: Ministry of Energy aggregates data on a periodic basis (sometimes in response to requests)</li> <li>V: GHG INV prepared as part of Nat Comm process; NEMA to do Environmental Impact Assessments at inception level and then if there are complaints</li> </ul>
<b>Methodology</b>	
- <b>Indicators</b>	<ul style="list-style-type: none"> <li>- Tonnes of biomass generated/consumed</li> <li>- Kw/hrs of electricity generated/consumed</li> </ul>
- <b>Type of baseline</b>	<ul style="list-style-type: none"> <li>Base year ?</li> <li>Baseline scenario ?</li> </ul>
- <b>target</b>	
<b>Leadership</b>	Ministry of Energy
<b>Resources, capacities, staff</b>	Have staff but need capacities enhanced & financing to conduct energy GHG inventory on an annual basis. Other recommendations are: <ul style="list-style-type: none"> <li>- level of autonomy (independent institution)</li> <li>- ensure regulations that require involvement of data providers to Ministry (as incentive to be responsible)</li> </ul>
<b>Long-term costs</b>	National budget allocation that is sufficient for the purpose of data collection, compilation and analysis

**Table 6: MRV Action Plan for the Transport sector**

MRV of	Emissions	NAMAs
<b>Institution</b>	MOWI/KCCA	MOWI/KCCA/URA/Police
<b>Procedure</b>	Setting standards	Development of policy and regulatory framework
<b>Methodology</b>		
- <b>Indicators</b>	Emission Factors Activity Data (fleet, stock, fuel)	Stakeholder engagement Policy and regulatory framework
- <b>Type of baseline</b>	Annual emission data	Number of cars and number of passengers per car
- <b>target</b>	At least 10% emission reduction	50% reduction in private car usage
<b>Leadership</b>	MOWT, CCU, UBOS, KCCA, UNBS, MEMD	UBA, MOWT, MEMD, KCCA
<b>Resources, capacities,</b>	Transport engineers;	Licensing of officers and transport

<b>staff</b>	statisticians; env. Officers; Transport economists; emission testing gadgets	economists; motor vehicle inspections; enforcement officers
<b>Long-term costs</b>	Government and Grants	Government and Grants; User contribution

**Table 7: MRV Action Plan for the Agricultural sector**

MRV of	Emissions	NAMAs
<b>Institution</b>	CCU/MAAIF	MAAIF/CCU
<b>Procedure</b>	MAAIF/CCU	CCU/MAAIF
<b>Methodology</b>	IPCC Guidelines	IPCC Guidelines
- <b>Indicators</b>	Tonnes of gases and co2 equiv.	- Amount of rice produced - Average conversion from lowland to upland.
- <b>Type of baseline</b>	BAU Base year 2000	Wetland rice
- <b>target</b>	Percentage reduction	Average reduction
<b>Leadership</b>	MAAIF/CCU NEMA	MAAIF/CCU Local govern. /UFFE
<b>Resources, capacities, staff</b>	Private sector: MOFPED Public service Development partners	From: Civil society, Development partners, private sector

## Next Steps

In the final exercise of the workshop, the participants were asked to fill out a next step assessment based on the findings of the workshop. Guided by questions on a template form, the next step analysis was focused on institutional and capacity, information and financial barriers. The consolidated results are shown in Table 8 below.

The next step assessment clearly shows an existing structure for data generation within existing institutions in Uganda. While these structures exist, the communication and sharing of the results needs to be established under the creation of MOU's and defined roles with the establishment of lead organizations. Information sharing systems are needed for a better access, transparency and comparability of data.

There is a need expressed for further capacity building for guidance on MRV as well as in initiating the cooperation and knowledge exchange of the various institutions involved in the MRV processes. Funds for the creation of a robust Ugandan MRV System will have to be mobilized, as there is insufficient funding expressed at the moment.

**Table 8: Next Steps working group responses**

Barrier type	Guiding questions	Energy Sector	Agricultural Sector	Waste Sector	Transport Sector
Institutional	<i>Which organization will be responsible for/coordinate the MRV</i>	MEMD. <ul style="list-style-type: none"> <li>➤ Identify a focal point in the Ministry</li> <li>➤ Work with CCU &amp; LECB project to refine the NAMA concepts based upon MRV training in Entebbe</li> </ul>	MAIAF. <ul style="list-style-type: none"> <li>➤ CCU should persuade MAIAF to actively get involved in MRV</li> </ul>	Wastewater: DWRM  Solid waste: NEMA <ul style="list-style-type: none"> <li>➤ Initiate process for integrating NAMAs into current work plans and strategic medium-term/long-term plans</li> </ul>	MOWT <ul style="list-style-type: none"> <li>➤ Establish gazetted parks outside the city (2018)</li> <li>➤ Procurement of buses (2014)</li> </ul>
	<i>Which organisations will also need to be involved, e.g. in data collection</i>	Please see the institutional arrangements table (URA, UBoS, NFA, Ministry of Education, NBS, CCU, MOWT, fuel companies, schools, private sector, 3 <sup>rd</sup> party auditors)	<ul style="list-style-type: none"> <li>➤ Call upon UBoS and UNBS to be on board</li> </ul>	NWSC, NEMA, DWRM, urban and local authorities, KCCA <ul style="list-style-type: none"> <li>➤ Propose a strategic framework for waste NAMA</li> </ul>	UBoS, URA, KCCA, police <ul style="list-style-type: none"> <li>➤ Need comprehensive stocktaking on vehicles in city (2014)</li> </ul>

		➤ Identify key focal points in every institution to be involved in data collection & reporting			➤ Implementation of existing regulations on road work (2014)
	<i>Can existing organisations be used for are new institutions needed.</i>	Yes. Use existing institutions.	No action. We can use existing institutions.		Use existing institutions. ➤ Clear collaboration platform on data exchange implemented and enforced (2014)
	<i>Are appropriate legal instruments, MOU, etc, in place to allow good working practices?</i>	No. ➤ Engage with every institution to clearly define roles & responsibilities and the type of formal agreement that is required.	No. ➤ To be established	➤ Review existing regulatory framework to cater for NAMAs	No! ➤ Strategic partnership coordinated by lead Ministry (2015)
	<i>Are there any organizations that have a vested interest in supporting/blocking MRV?</i>	Yes, URA may create challenges (taxes). ➤ Higher-level engagement/negotiation to ensure that URA will be supportive of the objectives of the NAMAs	Unknown. ➤ Needs to be investigated	Policy Committee on environment/natural resources ➤ Set policy performance targets (office of Prime Minister)	➤ Need to be back up by resources and capacity building (2015)
<b>Capacity</b>	<i>Are key members of the organization involved in MRV well-trained on technical aspects of MRV?</i>	No ➤ Undertake a capacity assessment of all involved insitutions ➤ Undertake a capacity building programmes	No ➤ Undertake a capacity building programmes	No ➤ Design training programmes & seek finance ➤ Cooperation among institutions to fill gaps	No. Need political commitment. ➤ Need for sensitization (2015) ➤ Cooperation among institutions to fill gaps
	<i>Are sufficient numbers of staff trained up to minimize disruption to</i>	No. ➤ Same steps as above – use a capacity	No. ➤ As above – use a	No. ➤ Map capacity requirements and	Partially. ➤ Need for benchmarking results

	<i>the MRV process in case key staff are not able to carry out the work?</i>	building programme	capacity building programme	establish expert capacity to be trainers of trainers	from countries that have worked on MRV (2015) ➤ Placement/attachment in the field
<b>Information</b>	<i>Are there good information management systems (IMS) in place to ensure that process are not affected by change in personnel?</i>	No. ➤ Set up an independent IMS in collaboration with CCU's national MRV system (to ensure compatibility)	No. ➤ Establish an IMS	Yes. ➤ But need to renew and improve based on NAMA needs	No. ➤ Develop systems of information (integrated) for information exchange between stakeholders and update info (2016)
	<i>Does the data exist to properly carry out MRV?</i>	Some data exists, but not all. (Some is too aggregated and some doesn't exist.) ➤ Undertake a data mapping to identify the key data gaps. Assess costs of addressing key data gaps and build cost into the NAMA. ➤ Set up a reference database	➤ Data exists, but needs to be organized and put to use	Yes, but it has not been properly elaborated. Needs to be elaborated for providers. With better elaboration/description the effort needed to use the data for MRVs and NAMAs in general will be reduced. Current data is extremely difficult to use on its own.	No. ➤ Need to create integrated data & information system (2015)
	<i>Who holds the data needed to carry out the MRV?</i>	MEMD and other primary data providers (listed above; also see institutional mapping) ➤ Undertake stakeholder engagement & awareness raising on data needs and importance of MRV. Undertake capacity building as needed.	➤ Several institutions but data needs to be consolidated	Urban authorities, NEMA, DWRM, private sector	Different institutions ➤ Need for information consolidation between institutions and should be done by MOWT deliberately (2015)



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<b>Financial</b>	<i>Are there sufficient funds to pay for a fully functioning/improved MRV system</i>	<p>No.</p> <ul style="list-style-type: none"> <li>➤ Review the costing of MRV component of the NAMAs (is it accurate?) and ensure the full costs of MRV are reflected in the concepts.</li> <li>➤ Seeking funding for the NAMA (and its MRV system)</li> </ul>	<p>No.</p> <ul style="list-style-type: none"> <li>➤ Seek funding for the NAMAs</li> </ul>	<p>No.</p> <ul style="list-style-type: none"> <li>➤ Resource mobilization strategy</li> </ul>	<p>No.</p> <ul style="list-style-type: none"> <li>➤ Strategic partnership in soliciting funds between institutions (2016)</li> </ul>
	<i>Where would the funds come from?</i>	<p>Donors/investors (and in long-term, funded from the national budget)</p> <ul style="list-style-type: none"> <li>➤ Seek donor funding for the NAMA.</li> <li>➤ Look into longer-term sustainability of NAMAs through innovative funding mechanisms such as revolving funds.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Seek funding for the NAMAs</li> </ul>	<ul style="list-style-type: none"> <li>➤ Private sector: comply to regulation</li> <li>➤ Government fiscal instruments</li> <li>➤ Development partners to support capacity building and piloting innovative mechanism as target stakeholders get a buy in (i.e. to support uptake of technology)</li> </ul>	<p>Government, donors</p> <ul style="list-style-type: none"> <li>➤ Have clear strategic plan for short- and long-term</li> <li>➤ Interest in GHG emission reductions (2016)</li> </ul>

## Appendix

### Appendix A: Workshop Agenda

Day 1			
	Time	Agenda	Trainer/Speaker
Introduction (top-down)	09:00	Welcome	Representative from the Government of Uganda; Rebecca Carman, UNDP
	09:15	Brief introductory round	all
	09:30	Introduction to the workshop	Sebastian Wienges, Tobias Fritz
	09:45	Expectations of the training	all
	10:20	Presentation: Introduction to MRV and UNFCCC requirements – Integrating various different data into one robust national MRV system	Sebastian Wienges
	10:40	<i>Ugandan Vision of a National MRV System</i>	N.N.
	11:00	<b>Coffee Break</b>	
	11:20	Presentation of Stocktaking Tool	Sebastian Wienges
	11:30	Group exercise: brief run through checklist of Stocktaking Tool to identify gaps and prioritize action	Break-out groups
	13:00	<b>Lunch Break</b>	
	14:00	Presentation of results from the break-out groups, and identification of MRVable indicators for building a climate architecture	Break-out groups; all
MRV of Emissions (bottom-up)	14:30	Presentation: Introduction to MRV of Emissions	Tobias Fritz
	14:50	Click session: Getting to know the MRV-Tool (MRV of Emissions section)	all
	15:10	Q&A	all
	15:30	Group exercise: Mapping data availability and flows	Break-out groups
		<b>Coffee Break</b>	
	16:30	Presentation of results from break-out groups: Completing the MRV Plan	Break-out groups
	17:00	<b>End of Day 1</b>	

Day 2			
	Time	Agenda	Trainer/Speaker
NAMAs (bottom-up)	9:00	<i>Presentation: MRV in energy access projects – experiences in Uganda</i>	James Kakeeto BTC/CCU
	9:30	Presentation: Introduction to MRV of NAMAs	Tobias Fritz
	9:40	Click session: Getting to know the MRV-Tool (MRV of	all

		NAMAs section)	
	<b>10:00</b>	Q&A	all
	<b>10:20</b>	Group exercise: Institutional arrangements for MRV of NAMAs	Break-out groups
	<b>11:40</b>	<b>Coffee Break</b>	
	<b>12:00</b>	Presentation of results from the break-out groups: Discussion if and how MRV of different NAMAs fit in one national MRV system Completing the MRV Plan	Break-out groups
	<b>12:40</b>	Q&A	all
	<b>13:00</b>	<b>Lunch Break</b>	
	<b>14:00</b>	Group exercise: NAMAs and the MRV of Co-benefits	Break-out groups
	<b>15:00</b>	Presentation of results from the break-out groups Discussion if and how MRV of different NAMAs fit in one national MRV system	Break-out groups
	<b>15:20</b>	<b>Coffee Break</b>	
	<b>15:40</b>	Group exercise: Communication and Data Flows	Break-out groups
	<b>16:45</b>	Presentation of The International Partnership on Mitigation and MRV: Objectives and Opportunities for supporting capacity-building	Sebastian Wienges
	<b>17:00</b>	<b>End of Day 2</b>	

Day 3			
	Time	Agenda	Trainer/Speaker
Robust MRV system (wrap-up)	<b>9:00</b>	Presentation: Introduction to MRV of Co-benefits	Tobias Fritz
	<b>9:15</b>	Group exercise: NAMAs and the MRV of Co-benefits	Break-out groups
	<b>10 :30</b>	Presentation of results from the break-out groups Discussion if and how MRV of different NAMAs fit in one national MRV system	Break-out groups
	<b>10:45</b>	<b>Coffee Break</b>	
	<b>10:50</b>	Group Exercise: completion of the MRV Action Plan	Break-out Groups
	<b>11:50</b>	Presentation of results from the break-out groups	Break-out Groups
	<b>15:00</b>	A Robust Integrated MRV system: Linking MRV of NAMAs with MRV of Emissions	Sebastian Wienges
	<b>12:20</b>	Next Steps and Timeline: Based on Stock Taking, MRV-Tool and MRV-Plan from workshop: What and when are the next steps to be taken?	Break-out Groups/ Plenary
	<b>14:00</b>	Discussion if necessary data are available	Plenary
	<b>14:30</b>	Open discussion, feedback and evaluation of workshop	all
	<b>15:00</b>	<b>End of Day 3</b>	



## Appendix B: List of Participants

<b>NAME</b>	<b>DESIGNATION</b>	<b>INSTITUTION</b>
AGETA EMMANUEL	STANDARDS OFFICER	UGANDA NATIONAL BUREAU OF STANDARDS
XAVIER MUGUMYA	COORDINATOR CLIMATE CHANGE	NATIONAL FORESTRY AUTHORITY
SSENYONJO NICHOLAS	CEO	UGANDA ENVIRONMENTAL EDUCATION FOUNDATION/NATIONAL NGO FORUM
RICHARD MUGAMBWA	PROJECT MANAGER, MUNICIPAL SOLID WASTE	NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY
MARTIN OJOK	CDM TRAINEE	BTC-CCU
KAKEETO JAMES	CDM CONSULTANT /TRAINEE	BTC-CCU
MARTHA K.N. KASOZI	NATIONAL TECHNICAL ADVISOR	CAMCO/CCU
RONALD TWESIGYE	CDM CONSULTANT	SOUTHPOLE CARBON
ISAAC KIFAMULUSI	CDM TRAINEE	CCU/BTC
RODA MWANGALA	TECHNICAL ASSISTANT	UGANDA CLEANER PRODUCTION CENTRE
MARTHA BBOSA	PM/LECB	UNDP/MWE/CCU
SSEBBUGGA-KIMEZE	CDM TRAINEE	BTC-CTB/CCU
CHEKWOTI IRENE	CDM TRAINEE	BTC-CCU
MICHAEL MBOGGA	LECTURER	MAKERERE UNIVERSITY
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DEVELOPMENT

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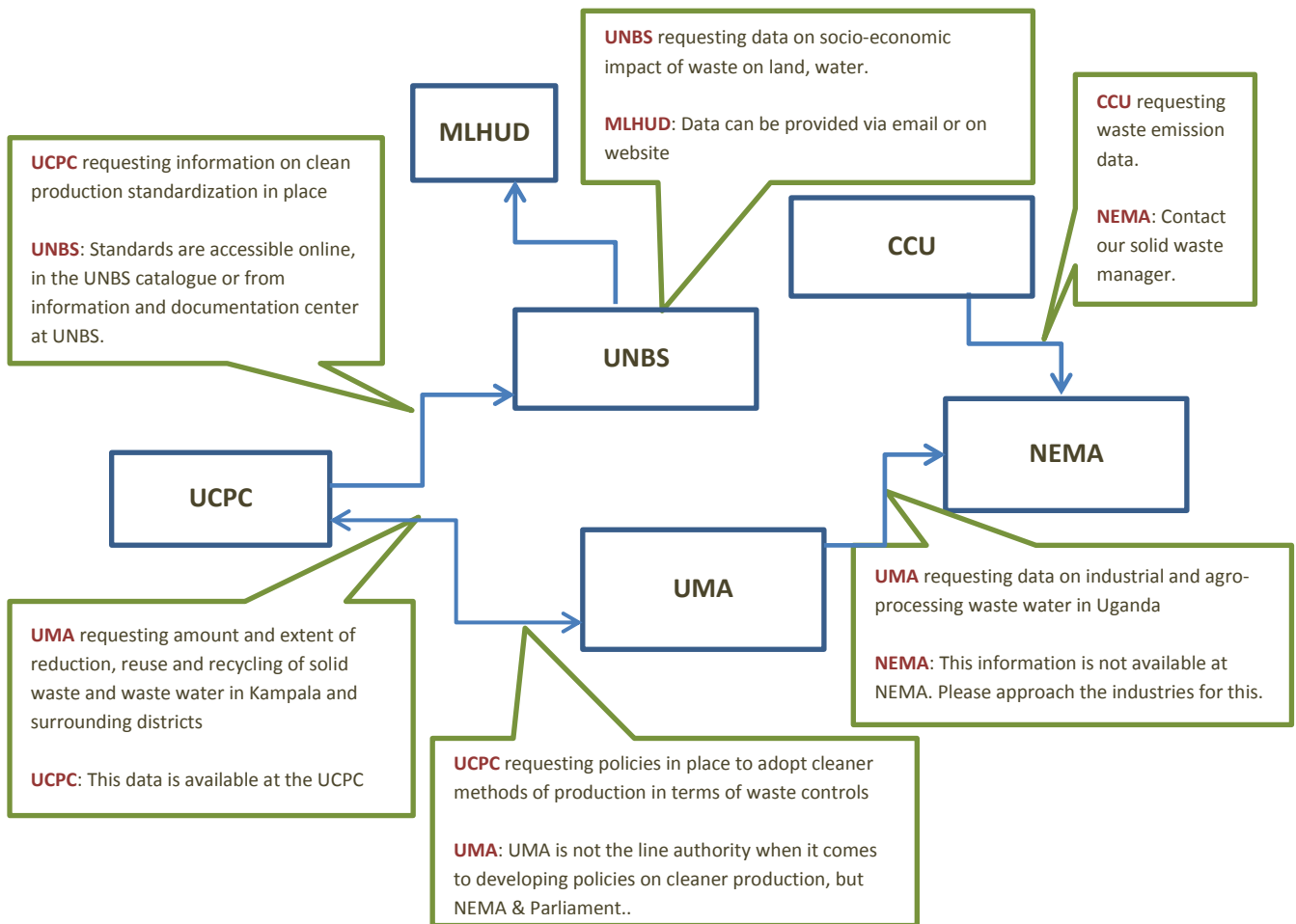
MARK PURDON  
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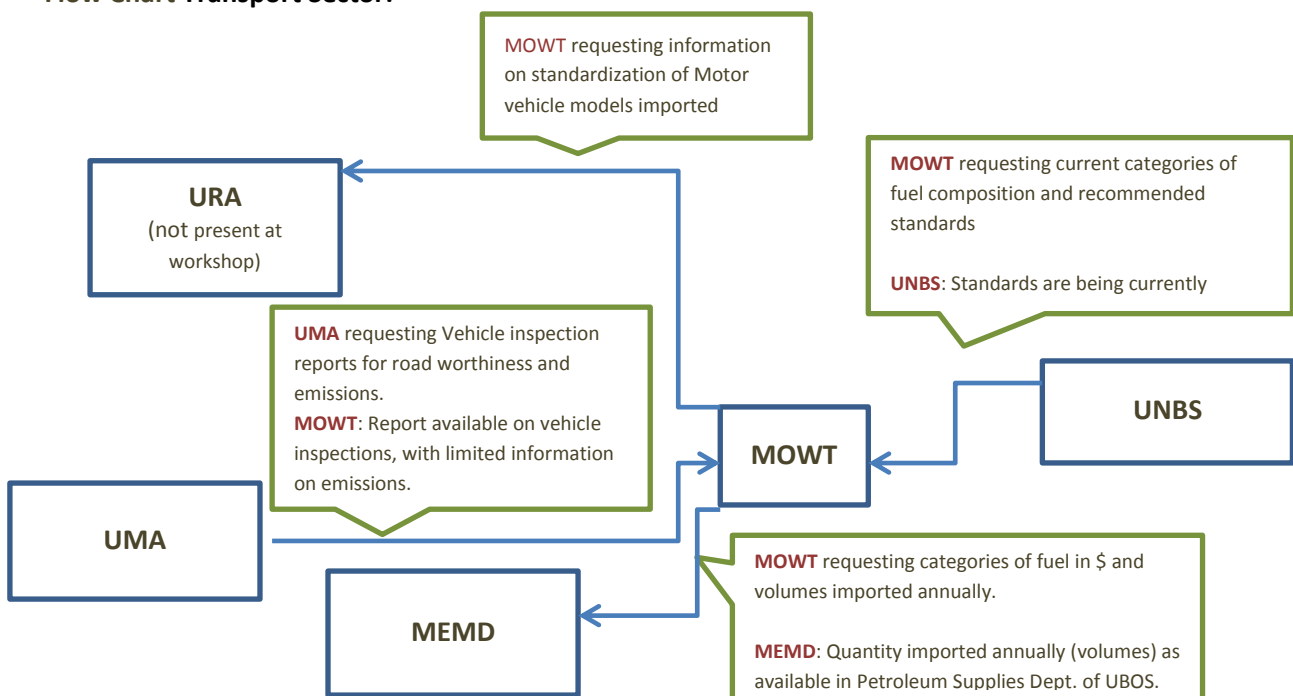
LSE  
MAKERERE  
UNIVERSITY/NARL

## Appendix C: Communication Flow Chart

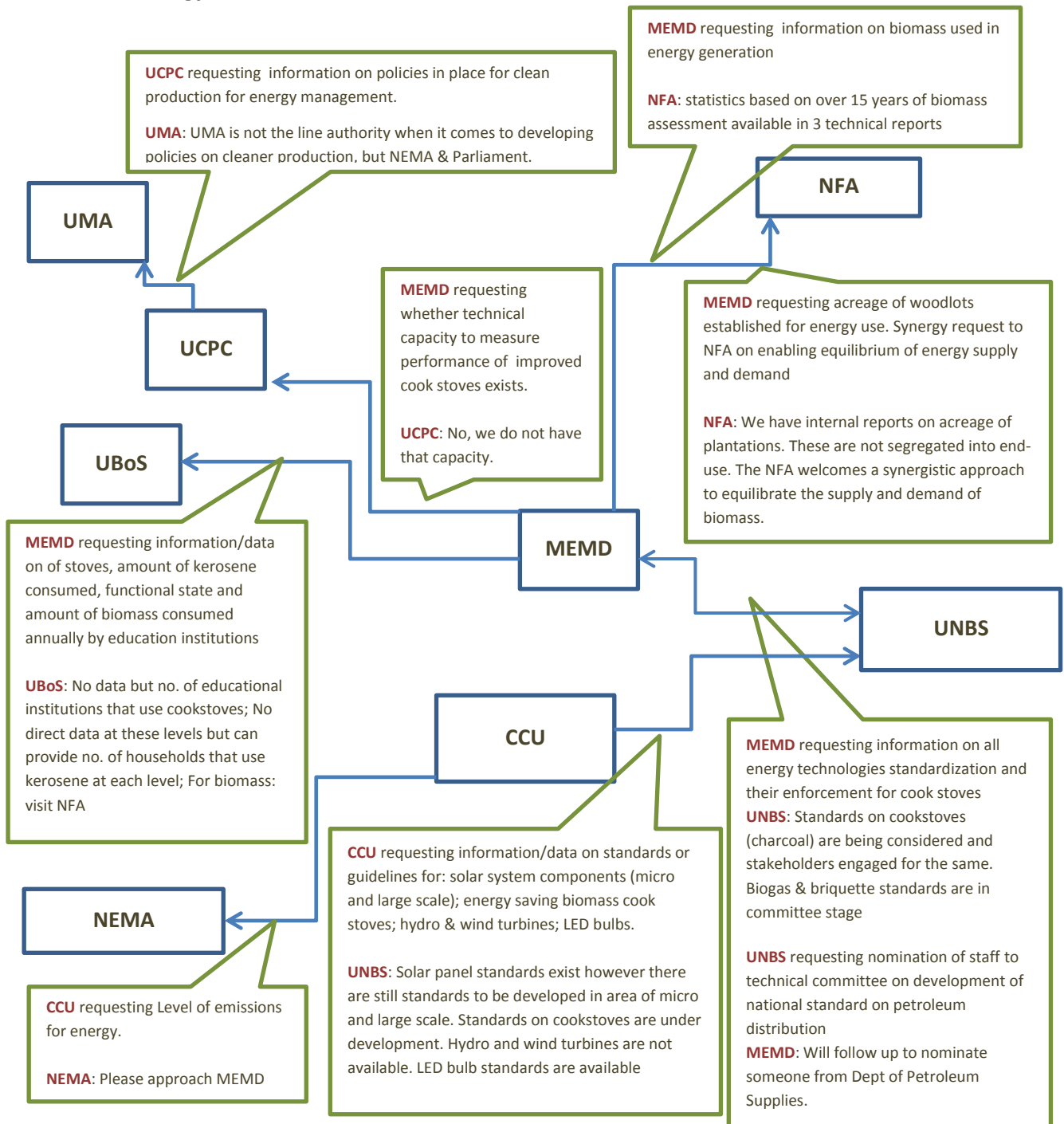
### Flow Chart Waste Sector



### Flow Chart Transport Sector:

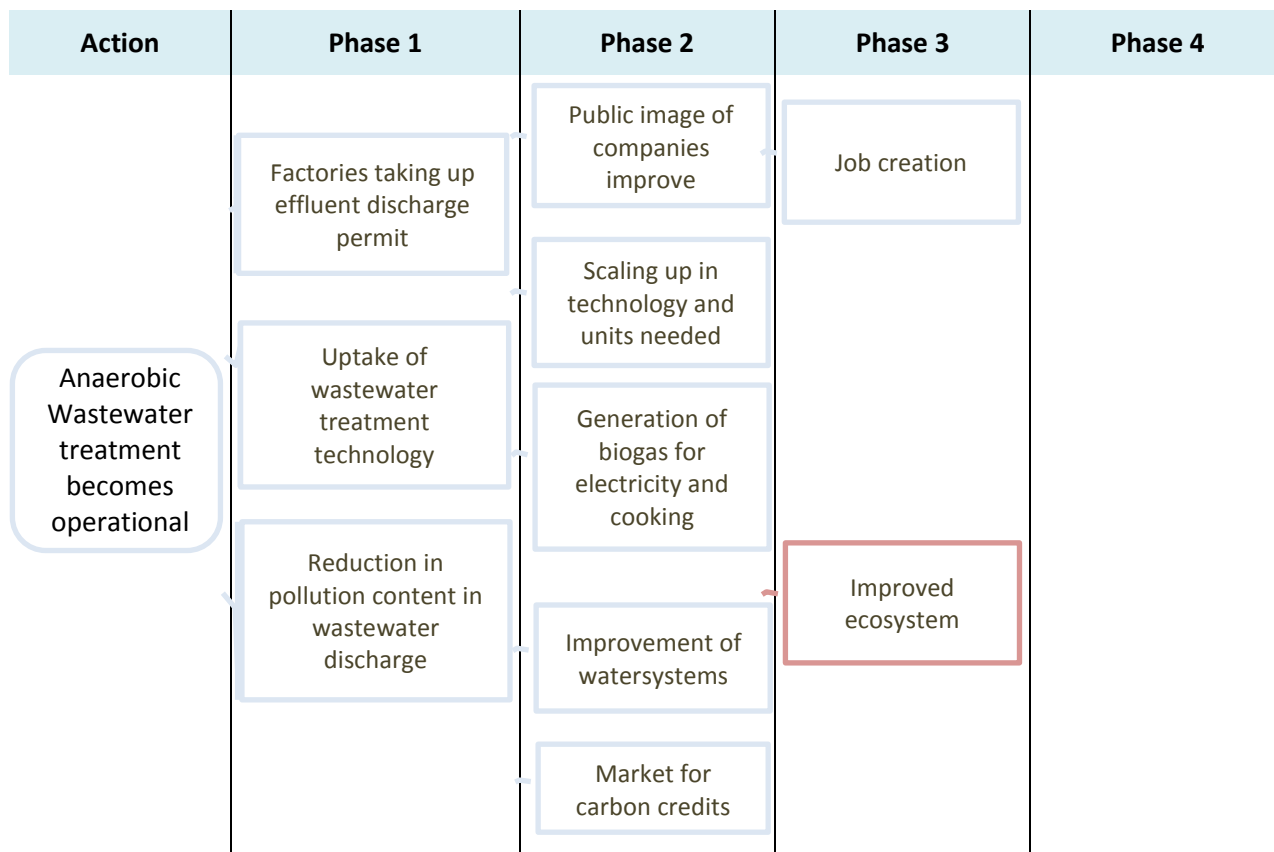


**Flow Chart Energy Sector:**

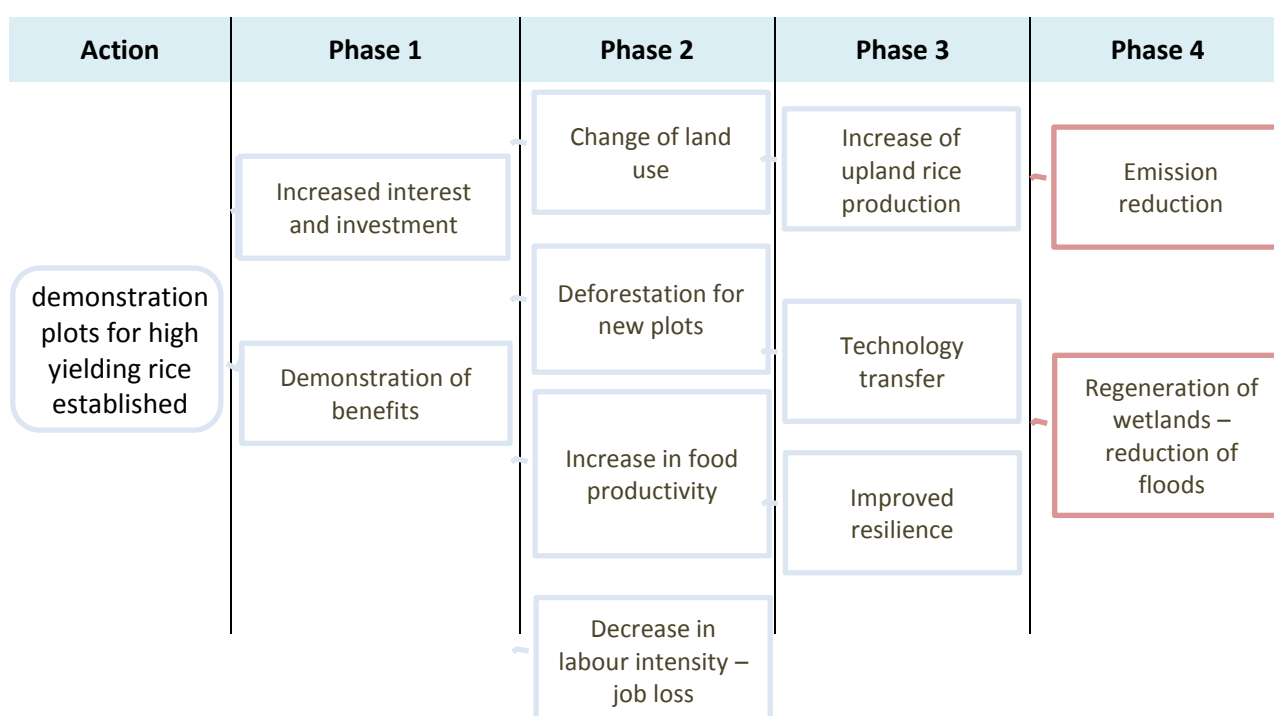


## D: Indicator chains for MRV of co-benefits

### Waste



### Agriculture



Market for carbon credits

### Transport

