Climate MRV for Africa – Phase 2
Development of National MRV System
Procedural Set-Up: Key Elements and Principles

NIRAS Lead partner GreenStream TÜVRheinland® Precisely Right. camco clean energy

Project of the European Commission DG Clima Action

EuropeAid/136245/DH/SER/MULTI

Amr Osama Abdel-Aziz, Assen Gasharov, Mike Bess and Laura Lahti
Team Leader and Key Experts
January 2017

General Principles for MRV

- Transparency ➔ assumptions and methodologies used as a basis for reporting should be clearly explained
- Completeness ➔ inventory covers all relevant sources and sinks, as well as all gases
- Consistency ➔ application of same methodologies and data sets for subsequent reporting years
- Comparability ➔ Use methods comparable to other Parties
- Accuracy ➔ exactness of an emission or removal estimate

Key Procedural Issues

WHAT: Sectors, activities and types of gases (coverage)

WHO: Roles and responsibilities

HOW: Methodologies used, data sources, underlying assumptions, QA/QC procedures, schedule

WHEN: Timelines for MRV

Non-Compliance: Enforcement rules

WHERE: Reporting platform and data disclosure

What to MRV – GHGs and Actions ?

- Sectors: All IPCC sectors or some

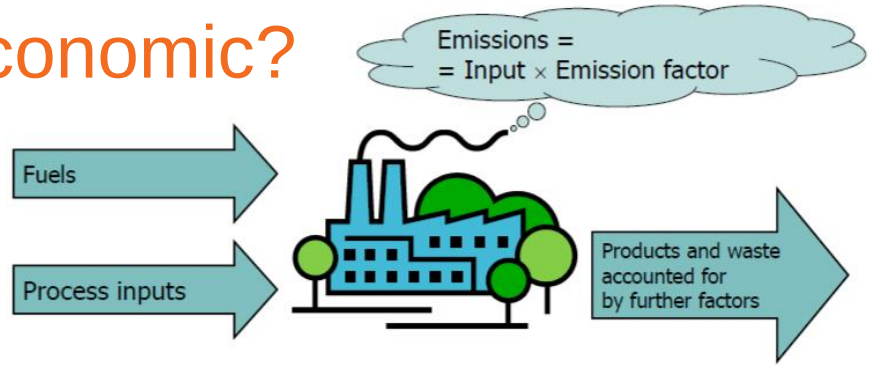
  → Key emission sources

- Gasses: CO2, CH4, N2O, HFC, PFC, SF6

  → Which gasses are relevant to which sector/activity

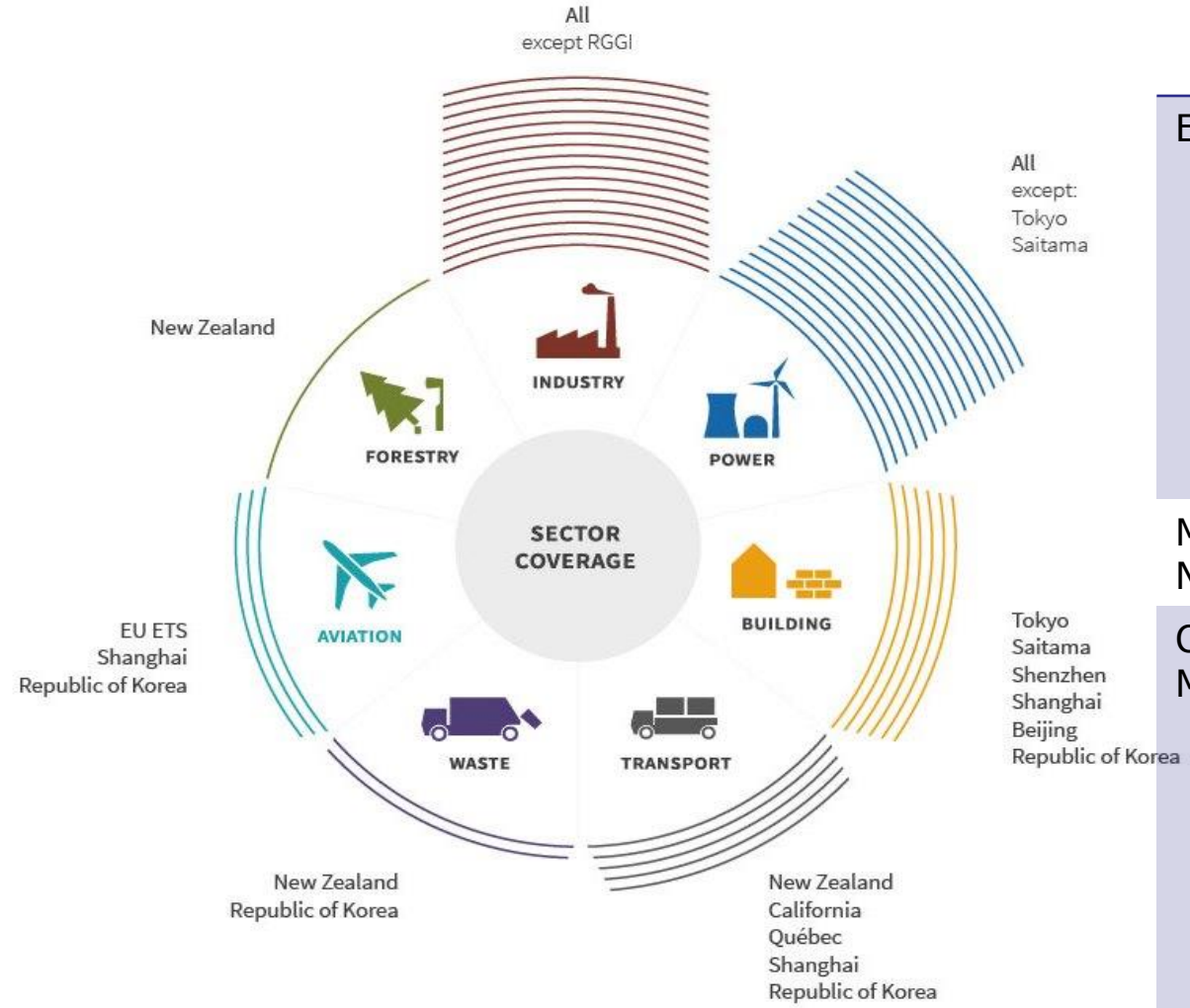
- Activities: Above certain size (MWh, tCO2, USD)

  → What is relevant and economic?



Source: EC, MRR Guidance document, 2012

What to MRV – Scope and Coverage



Program	Applicability Require.	Limits
EU ETS	Emission thresholds, Production tonnages, Source categories	> 20 MWt > 20 t/d or 2.5 t/h (production) - Aluminium, mineral oil, etc.
Mexico NER	Emission threshold	≥25,000 t CO2
California MGHGRP	Emission thresholds, Source categories	≥25,000 t CO2 ≥10,000 t CO2 for NG, LNG - Cement, lime, petroleum production facilities

Source: ICPA Status Report, 2016

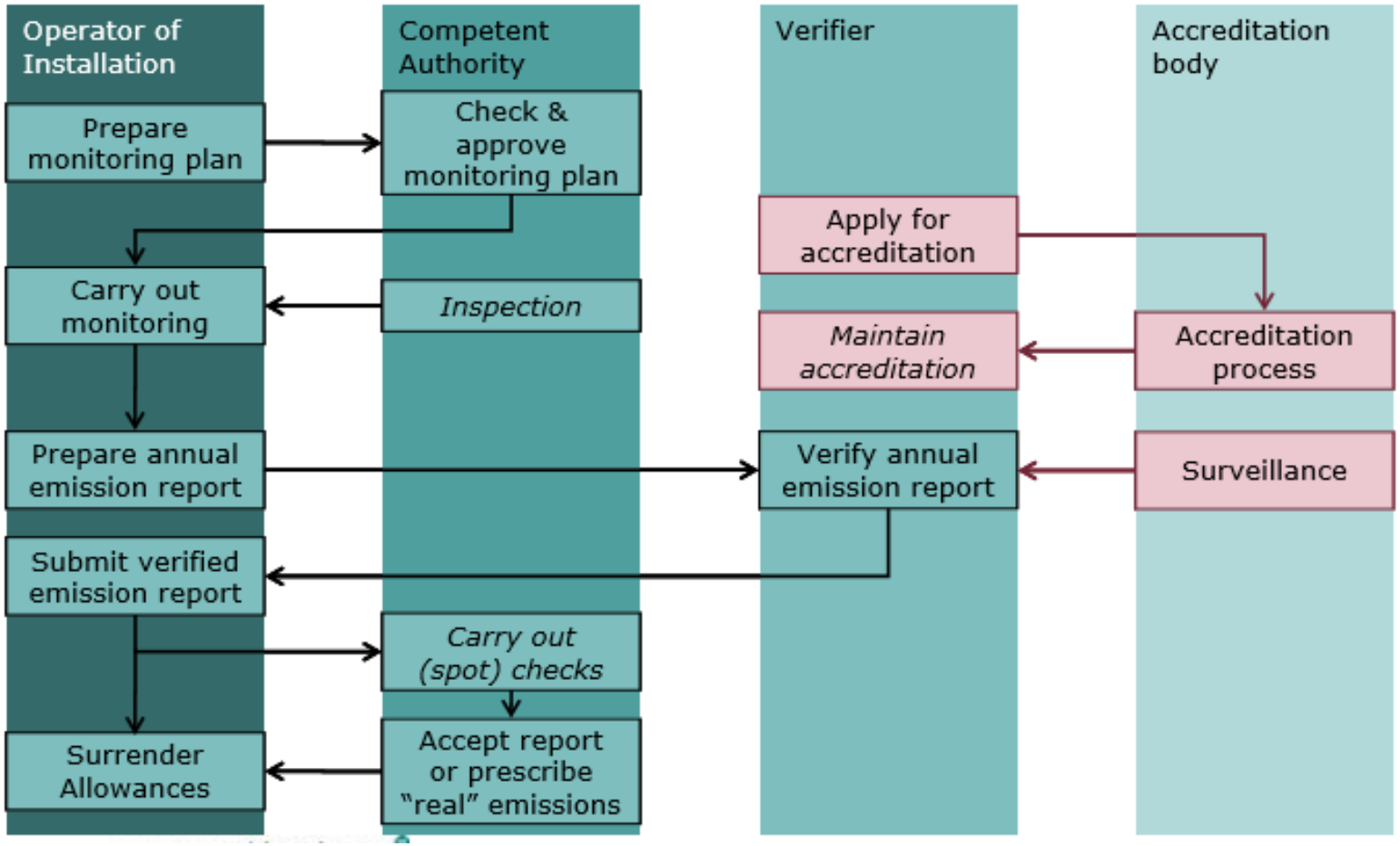
What to MRV - Support

- Financial flows
  - From whom to whom
  - Amount
  - Type of financial instrument
  - Private/public
  - New/additional
- Type of support
  - Financing
  - Technology transfer/advice
  - Capacity building
- Supported activities
  - Type of NAMA/mitigation action
  - Level of impact (sectoral, regional etc.)

Who Conducts MRV ?

- Defined reporting entity
  - Who has access to the data required?
  - What level (aggregated/ disaggregated) satisfies needs?
- May involve a range of organizations:
  - Companies
  - Industrial operators
  - Trade associations
  - Government department
  - Research institutes
- Define auditors, verifiers and accreditation agencies
- Define administrative body

Example of Who Conducts MRV – EU ETS



Source: EC, MRR Guidance document, 2012

How to MRV
Measurement Methods

- Estimation using simple models
  - Activity Data x Emission Factor
- Estimation using complex models
  - E.g. FOD Model for waste
- Direct emissions measurements
  - Recognised standards and protocols need to be followed
  - Can be continuous or based on sampling

How to MRV
Reporting Guidelines (1)

Specify and clarify methodology for:

- Each sector and category;
- Data sources and underlying assumptions to be used;
- When to use country/facility-specific data e.g. default factors;
- Identification of sources of uncertainties and methods for quantification.

How to MRV
Reporting Guidelines

Specify and clarify:

- Reporting schedule
- Reporting templates to ensure consistency and comparability
- How to document the processes
- How to archive information (format and timelines)
- Well-established QA/QC procedures

How to MRV
Reporting Guidelines – SA Example

1 Introduction
- 1.1 Purpose of the Technical Guideline

2. Overview
- 2.1. UNFCCC reporting requirements
- 2.2. Use of the IPCC Guidelines as basis for these Technical Guideline
- 2.3. Thresholds for reporting
- 2.4. Emissions
- 2.5. Emission sources
- 2.6. Updates of these Guidelines
- 2.7. Methods for measurement

3. Commonalities and Differences between the IPCC Guidelines and the Corporate Standard

4. Structure of this Technical Guideline
- 4.1. IPCC Structure

5. Reporting Sectors

6. Setting of reporting boundaries
- 6.1. Organisational Boundary
- 6.2. Operational Boundary

7. Methodology
- 7.1. IPCC Guidance on the use of Direct Measurements (tier 3) for quantification of GHG emissions

8. Timeframes

9. Activity data

10. Emission Factors

10.1. Revision of Emission Factors

10.2. Criteria to be used in the evaluation by the Competent Authority

10.3. Robustness of emission factor

10.4. Applicability of the emission factor

10.5. Documentation of emission factor

11. Quality Assurance/Quality Control and Verification requirements

11.1. Management Systems

11.2. Verification

11.3. Administration and record keeping by data providers

12. Methodological guidance – per subsector

12.1 IPCC Classification

12.2. Methodology

Method 1 – IPCC tier 1 methodology

Method 2 – IPCC tier 2 methodology

Method 3 – IPCC tier methodology

12.3. Activity Data

12.4. Default Emission Factors (and Net Calorific Values)

How to MRV
Reporting Approach – SA Example

Step 1: Exclude all your non-South African emission sources

Step 2: Exclude emissions from purchased electricity, heat or steam (scope 2 sources)

Step 3: Identify all emission sources from facilities/ operations that your company has operational control of

Non-South Africa emissions sources

A company has operational control it or one of its subsidiaries has the full authority to introduce and implement operating policies at the operation.

Step 4: Exclude road transportation emission sources

Step 5: Ensure that your data is for the most recent calendar year

Step 6: Align remaining emissions into IPCC categories

See Appendix 1 for the different IPCC categories

Step 7: Convert energy data from physical units into energy units using Net Calorific Values

Step 8: Convert data into GHG emissions using IPCC or IPCC accepted emission factors

Step 9: Convert GHG emissions into CO2e using the IPCC 3rd Assessment Report Global Warming Potentials (GWP)

Greenhouse Gas	GWP (IPCC 3rd AR)
Carbon dioxide (CO_2)	1
Methane (CH_4)	23
Nitrous oxide (N_2O)	296
Sulphur hexafluoride (SF_6)	23,900
Hydrofluorocarbons (HFCs)	120 – 12,000
Perfluorocarbons (PFCs)	5,700 – 11,900

! Ensure that all 7 GHGs are reported separately

Step 10: Report GHG emissions in Gigagrams (kilo-tonnes) CO2e for each GHG separately

How to MRV
Principles of Data Collection- IPCC 2006

- Focus on key categories
  - Largest emissions
  - Greatest potential to change
  - Highest uncertainty
- Choose procedures that continuously improve the quality of the inventory
- Collect data/information at a level of detail appropriate to the method used
- Review data collection activities and methodological needs on a regular basis

ipcc
INTERGOVERNMENTAL PANEL ON climate change
WMO UNEP

How to MRV
Quality Control Focus

- **Data Source**
  - Activity data compiled by a recognised source
  - Source has rigorous quality control standards
  - Emission factor from a peer-reviewed publication
- **Reasonable Data**
  - Emission factor consistent with scientific understanding of the emission process
  - Emission factor consistent with the IPCC guidance
  - Time series of activity data consistent with economic trends
- **Quality of Data Collection Process**
- Recognised national or international standards

Source: Managing National GHG Inventory Process, National Communications Support Unit, 2005

How to MRV
Quality Control Procedures (1)

- Assumptions and criteria for selection
  - Descriptions of activity data and emission factors properly recorded and archived
- Transcription errors in data input and references
  - Bibliographical data references are properly cited
  - Sample of input data from each category checked
- Emissions and removals calculated correctly
  - Reproduce set of emissions and removals calculations
  - Use a simple approximation method to check calculations
  - Compare between sites
- Units and conversion factors correct
  - Units properly labelled in calculation sheets
  - Conversion and adjustment factors are correct

How to MRV
Quality Control Procedures (2)

- Consistency of data between categories
  - Parameters that are common are used consistently between categories
- Correct movement of data between processing steps
  - Emissions and removals data are correctly aggregated
  - Emissions and removals data are correctly transcribed between different intermediate products
- Uncertainties estimated correctly
  - Qualifications of experts providing judgement appropriate
  - Assumptions and expert judgements recorded
  - Duplicate uncertainty calculations on a small sample of the probability distributions used by Monte Carlo analyses

How to MRV
Quality Control Procedures (3)

- Total GHG emissions checked
  - Check sum by gas
  - Check sum by source categories
- Time series consistency checked
  - Temporal consistency across years for each category
  - Consistency in the algorithm/method used for calculations throughout the time series
- Completeness checked
  - All gases are estimated
  - All source categories are estimated

How to MRV
Quality Assurance

- Periodic reviews by independent entity/expert
- Provides additional assurance that information is transparent, accurate, complete, consistent, and comparable
- Methods for QA
  - Self-certification by data provider;
  - Review by programme administrator/ competent authority;
  - Third party verification

How to MRV
QA Examples

Approach	Advantages	Challenges	Jurisdiction
Self-certification	Legal obligation to assure accuracy on reporting entity Low cost option	May not instil sufficient confidence (alone)	California, EU, Mexico, Canada, US
Review by programme administrator	Caries high level of confidence when carried in rigorous & transparent manner	Labour and cost intensive for administrator	California*, Canada, US
Third party verification	Caries high level of confidence when done by accredited 3rd parties	High cost to reporting entity or costly to administrator, if borne by programme	California, EU, Mexico

When to MRV

- Driven by reporting requirements at international level
  - NC
  - BUR
  - GHG inventory
  - Information to track NDCs

- May be driven by local needs e.g. for policy/planning
- Typically for each calendar year (or fiscal year)
- Sufficient time for verification and peer review should be allowed

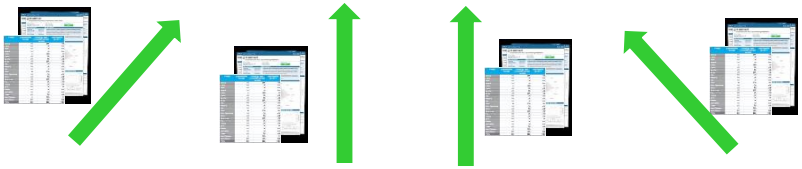
Summary of Procedural Setup

What?

When?

Who?

How?



When?

What?

Who?

When to MRV
SA Example

Aspect	Who	Timeline
Registration	Data Provider = operator	30 days after the commencement of the Regulations or within 30 days after commencing such an activity once these regulations are in force
Change in registration details	Data Provider	30 days from the date the data provider became aware of such change occurring.
Data provider to submit GHG emissions and related data	Data Provider	30 April each year. Where the 30 April falls on a Saturday, Sunday or public holiday, the submission deadline is the next working day.
Review and assessment of data submitted	Competent authority	30 days after the submission date.
Verification	3rd Party	60 days after receiving the written instruction from the competent authority.
Transitional arrangements	Data Provider	data provider may for a transitional period of up to five years from the date of commencement of these Regulations apply lower tiers than those referred to in regulation.

Enforcement Rules

- Ensures compliance in timely manner
- Can improve participation rates
- May vary from notification to fines and criminal penalties
- Measures can be taken against verifiers in case of non-compliance with verification requirements

Thank you!

Amr Osama Abdel-Aziz, Assen Gasharov, Mike Bess and Laura Lahti