United Nations
Framework Convention on
Climate Change

Building national capacities on measurement, reporting and verification of nationally appropriate mitigation actions

Regional workshop on promoting international collaboration to facilitate preparation, submission and implementation of nationally appropriate mitigation actions (NAMAs)

Day 3 Part IV: MRV

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Content

- NAMAs as source of diversity
- Why MRV of NAMAs?
- Key questions on MRV
- Building capacities:
  - which capacities are needed for MRV of NAMAs?

Opening question

Would you be able to identify the differences, similarities or complementarities in the following list of (real) NAMAs?

- Refrigerators
- Appliances in houses
- Renovated housing
- New housing
- Urban services in housing
- Sustainable urban development
- Transit-oriented development
- Urban public transport
- Freight transport
- Logistics

How would you know?

Which information would you need?

What would happen if a similar list comes from several different countries?

From mitigation to “nationally appropriate” actions

- At which point a mitigation action is considered and labelled as a “nationally appropriate” one?

Criteria

- According to:
  - Jurisdictional limits?
  - Geographical coverage?
  - Sector or economic activity?
  - Emission source?
  - Type: Policies, programmes, projects?
  - Technology?
  - Mitigation potential?
  - Cost per tonne? Total cost?
  - Source of funding?
  - ….

Boundary

Scope

Source of diversity

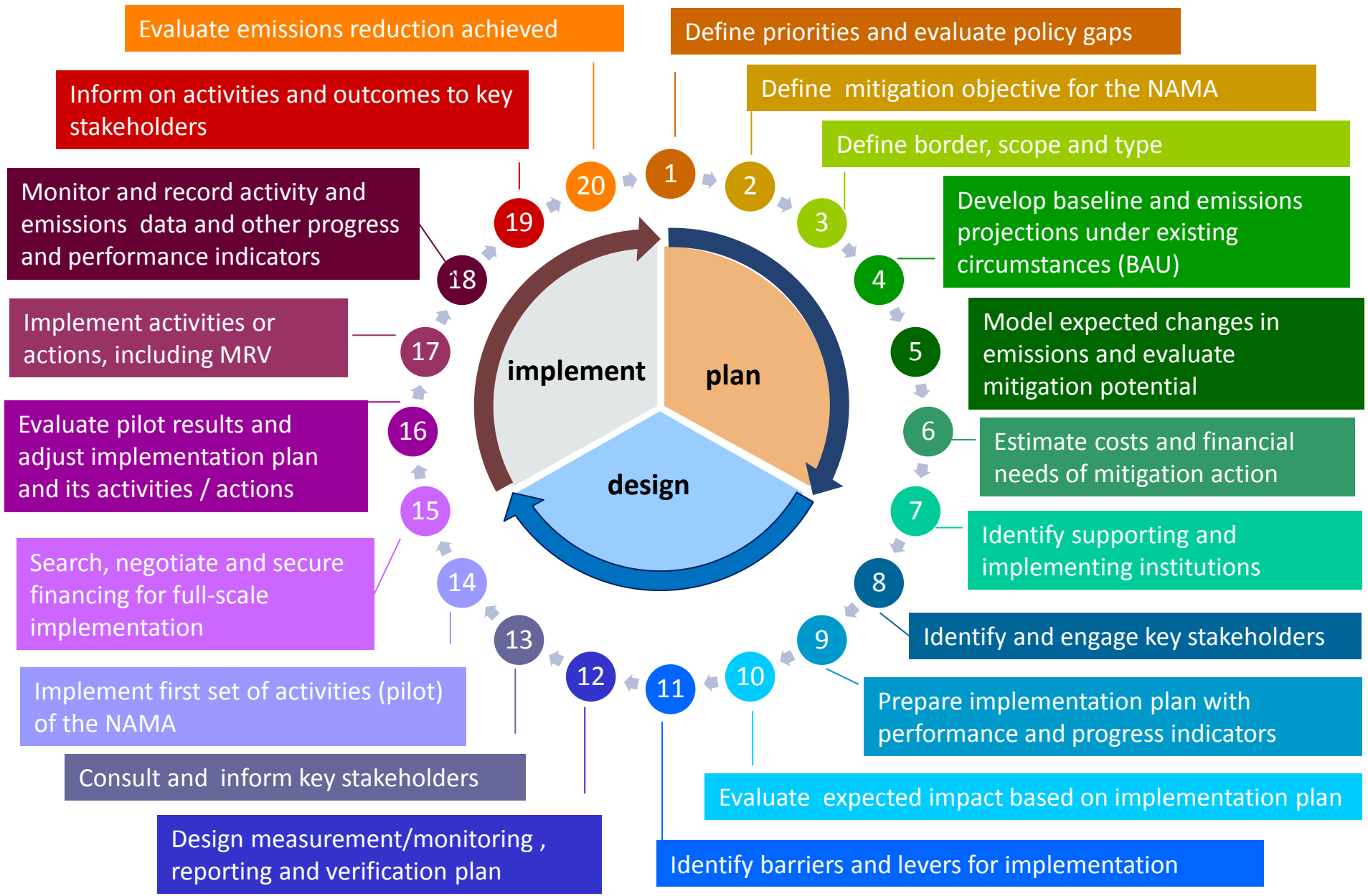
Why MRV of NAMAs? The importance of trust

MRV of NAMAs is a clarification and trust-building process

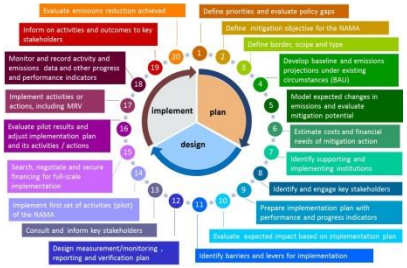
- **At the NAMA level:**
  - Define responsibilities, activities, sequencing, and expected results
  - Track performance or progress of actions
  - Detect any deviation, lack of progress or poor performance at an early stage.
  - Enable adjustment or correction of measures at an early stage.
  - Inform and share such situations in order to explain differences in projected versus real performance, and enable dissemination for learning.
  - Ensure that reduction targets are achieved as expected and correctly accounted for

- **At the country level:**
  - Demonstrate if actions were effectively taken and results obtained in terms of measurable emission reductions.
  - Ensure compliance with national policies, targets, goals, or even legal mandates
  - Provide consistency, comparability, and transparency to actions undertaken by governments (at different levels) and private sector within a country
  - Measure and aggregate the impact of measures or actions implemented in the country.
  - Evaluate contribution towards national and international mitigation goals, pledges, compromises or commitments.

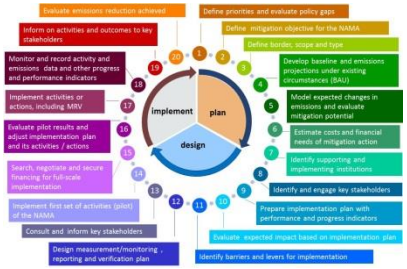
Planning, design and implementation cycle of NAMAs: **where does MRV fit?**



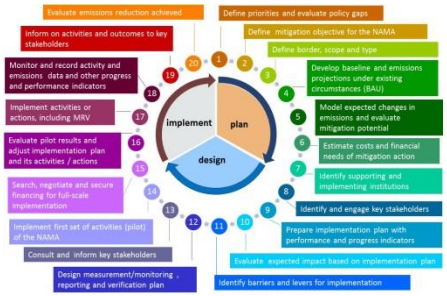
Where does MRV fit?



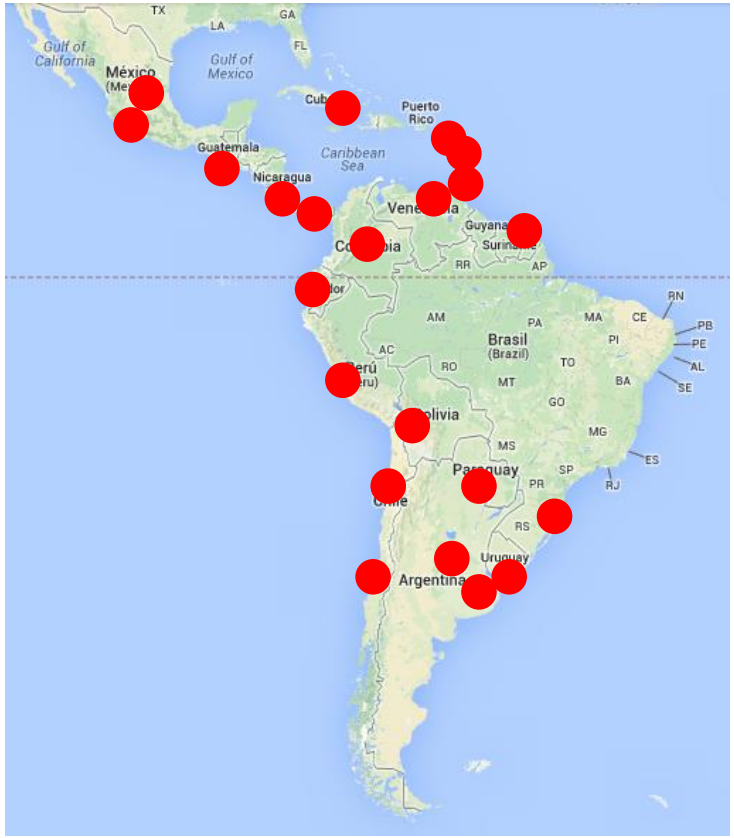
NAMA 1

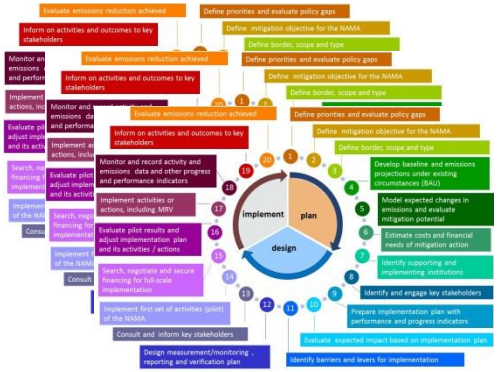


NAMA 2



NAMA 3





NAMA 4, 5,…..n

MRV of actions

MRV of support

MRV of emissions

Key questions on MRV:

- **WHAT** to measure/monitor, report or verify?
  - Define the information that is needed / important for the NAMA purpose or goal
  - **Indicators, variables and metrics** that relate to emissions
  - Information and data on resources, amounts and expenditure
- **HOW** to measure/monitor, report or verify?
  - Define the steps, procedure and method to be used to gather, check and record data
  - **Procedure and method** dependent on tier, the need for accuracy and reliability
  - Type of technology or device: cost-effectiveness vs. accuracy?
- **WHO** should measure/monitor, report or verify?
  - Define **roles and responsibilities** of people and institutions participating in the NAMA
  - Recommended to be someone who is able to control/influence the emissions level
- **WHEN** to measure/monitor, report or verify?
  - **Frequency** that allows to pick up anomalies, trends and deviations in the measured variables

MRV of NAMA: Measurement

- What to measure?
  - Activity data
  - Financial resources
  - Emissions
- Where to measure?
  - Location
  - Measurement point(s)
- How to measure?
  - Methodology
  - Technology
  - Measurement plan
- When to measure?
  - Frequency
- Who measures?
  - Allocation of responsibilities
    - Person, office, institution
  - Institutional arrangements
    - Contracts
    - Agreements for access to location or access to data
    - Authorization/approval for measurement and for person participation
    - Official designation of person, office, institution
    - Administrative arrangements for measurement: expenses, invoices, wages, etc.

What to measure/monitor?

Comparison between GHG inventory and NAMA

- Often you use the same data source for both, GHG inventory and a NAMA
- However, the level of detail often is different:
  - for GHG inventory, you may have Tier 1 or Tier 2 for a number of sources
  - for a NAMA, your data is almost equivalent to a Tier 2 or a Tier 3 calculation
- The scope between both is different:
  - For GHG inventory, it is national (the whole country) or regional (a province)
  - For NAMA, it is specific to the boundaries of the NAMA

NAMA

- Volume of associated gas flared in an oil field
- Ton of waste per day deposited in a managed disposal site
- Number of vehicles by motorisation type in the urban area
- Number of trees and diametric characteristics in the protected area

GHG Inventory

- Amount of fuel consumed per type of fuel
- Tons of waste deposited per year in managed disposal sites
- Number of vehicles by motorisation type

Data and information to measure/ monitor

Which variables, metrics or indicators do you require for your NAMA?

- Define spatial and time boundaries of those metrics
- Choose variables useful to estimate savings or reductions per intervention
  - kWh, travelled distance, l/km, ton of coal/year, m^3 of natural gas, etc.
- Indicators attached to a timeframe (units per year, month…)
- Metrics that capture indirect effects (co-benefits)
- Proxy values:
  - Use of default or proxy values if there are deemed close to real values only
  - Use default values or proxies when it's too costly to derive specific factors
  - Use default values or proxies when these have little impact on the final performance results
- If not possible to quantify emission reductions with chosen metrics, it is important to devise other appropriate indicators

Important considerations:

- Where are these metrics and its data available?
- Do you have access to them? Do they exist already?
- Do you need to make units conversions? Are these useful in their current format?
- Are they complete for all the required timeframe (no gaps)? Do you need to fill gaps in the data?

Examples of quantitative and qualitative metrics

Metrics	Examples
Quantitative Financial metrics	• Funds transferred from donor country • Value of a renewable energy asset pool funded through specific donor finance • Amount of donor funds spent on a national education programme
Quantitative Process metrics	• Number of energy efficiency training programmes that have been delivered • Number of SMEs that have been provided funding for energy efficiency programmes
Quantitative Technical metrics	• Number of new trigeneration units installed in a regional grid • Emission reductions in that grid compared to the baseline
Qualitative Process metrics	• Status of establishment of reporting system • Status of institutional strengthening programme

Source: A Primer on MRV for Nationally Appropriate Mitigation Actions, UNEP Risoe

Which capacities (skills and knowledge) **are needed to handle different types of metrics?**

How to measure/monitor?

NAMA

- Use of measurement devices for physical (flow meter, thermometer, scale), chemical (% O_2, pH), or electrical properties (Ohmmeter, voltmeter)
- Laboratory analysis and testing
- Mass and energy balance

- Monitoring Plan that defines approach, methodology, procedure for data acquisition, measurement devices, and data processing equipment to be used.

GHG Inventory

- Administrative records of fuels sales.
- Industry-wide questionnaire.
- Use of measurement devices for physical (flow meter, thermometer, scale), chemical (% O_2, pH), or electrical properties (Ohmmeter, voltmeter) if data collected on-site for some sources
- Use of remote sensing technology (LIDAR) for forest cover

- Aggregation of measured values.
- Methodology for data collection from selected information sources.

MRV of NAMA: Reporting

- For NAMAs, Reporting (is likely to) comprise the emission reduction achievements, updates of baseline data as well other key performance data related to implemented interventions.
- The benefits of reporting:
  - Know about progress, results, and achievement of goals
  - Enable learning and feedback
  - Coordination of efforts
  - Enable management of the NAMA
  - Facilitate decision making in the implementation
  - Identification of major problems or needs
  - Opportunity for correction
  - Input for verification
  - Fulfil international obligations
  - Maintain transparency of progress

MRV of NAMA: Reporting

- What to report?
  - Activity data
  - Emission factors
  - Emissions
  - Financial resources
  - Funding source
  - Assumptions made in the reporting
- How to report?
  - Reporting system (electronic, in paper)
    - Forms or reporting sheets
- When to report?
  - Frequency
  - Reporting deadlines
- Who reports?
  - Allocation of responsibilities
    - Person, office, institution
  - Institutional arrangements
    - Contracts
    - Agreements for sending/receiving reports to specific person, office, institution
    - Authorization for preparing, modifying,, accessing, archiving reports
    - Official designation of person, office, institution
    - Administrative arrangements for reporting: expenses, invoices, wages, etc.

NAMA Objective	Write the NAMA objective
Description	Insert clear description of objective, and the linkages to national policies; elaborate where multiple objectives are present.
Performance Indicator(s) or metric	State the indicator by which the achievement or progress of the objective may be assessed
Overall responsibility	Indicate the institution/department or functional unit that will have overall responsibility for the monitoring and reporting of the performance indicator
Role/duties	Stipulate the role or duties of the function name. Ensure that these responsibility and role is communicated effectively and accepted. Maintain records to demonstrate this.
Associated responsibility	Additional associated responsibility as above, add as required.
Role/duties	
Data sources	In this section identify the source of the data and information to be used in the monitoring and reporting. Where the source relies upon second or third party input this should be described and reflected in the role and responsibilities sections. The steps back to the raw source of data are required.
Calculation Methodology	Describe how the source data is manipulated to derive the reported metric. Include calculation formulae, emissions factors, conversion factors, assumptions and sources of reference data
Description of the Reporting process	Describe the reporting path the data and information follows from source to final metric. Indicate if the metric act as input into the NAMA registry. It may be beneficial to include a flow diagram describing this path.
Details of the data management systems including quality assurance and checking	Describe here the procedure by which data and information is controlled. This will include the maintenance of records, data security, use of templates and standardised templates etc. Also include details for the quality assurance the review/checking of the data and information. If this his managed by a documented procedure only the procedure title and date need be entered here
Other information	

MRV of NAMA: Verification

- The rigour and scope of NAMA verification is likely to vary with the type of NAMA.

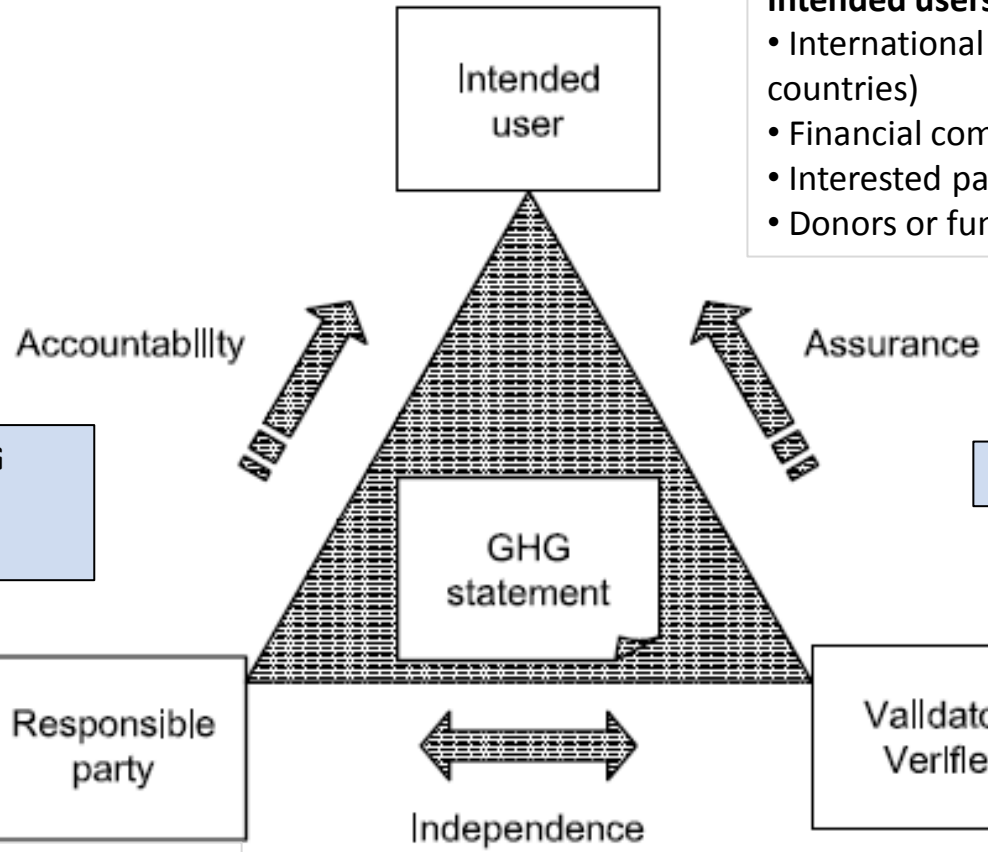
- Open debate on the exact requirements that apply to each type of NAMA:
  - Creditable NAMAs are likely to require verification similar to CDM Projects.
  - Supported NAMAs will vary in rigour dependent on host country and donor requirements
  - Domestically-supported NAMAs may be closer to a review. The MRV system adopted by a country is recognised internationally.

MRV of NAMA: Verification

- What to verify?
  - Activity data
  - Emission factors
  - Emissions
  - Financial resources
  - Funding source
  - Assumptions made in the verification
- How to verify?
  - Compliance with standards or guidelines
  - Verification methodology
    - Visit to site and offices
    - Interviews
    - Review of information and data
- When to verify?
  - Frequency
- Who verifies?
  - Allocation of responsibilities
    - Person, office, institution
    - Third party
  - Institutional arrangements
    - Contracts
    - Agreements for sending/receiving reports to specific person, office, institution
    - Authorization for preparing, modifying,, accessing, archiving verification reports
    - Official designation of person, office, institution
    - Administrative arrangements for verification: expenses, invoices, wages, etc

The role of verification

Intended users of information:.
- International community (UNFCCC, other countries)
- Financial community
- Interested parties or stakeholders
- Donors or funders of the NAMA



Criteria for GHG monitoring and reporting

Verification criteria

"Owner" of the report:
- National inventory
- State or province level inventory
- NAMA team or NAMA developer
- Single private company

Internationally accredited verifier
Nationally accredited verifier
Technical Reviewer

Source: Adapted from ISO14064 series

MRV of NAMAs: Verification

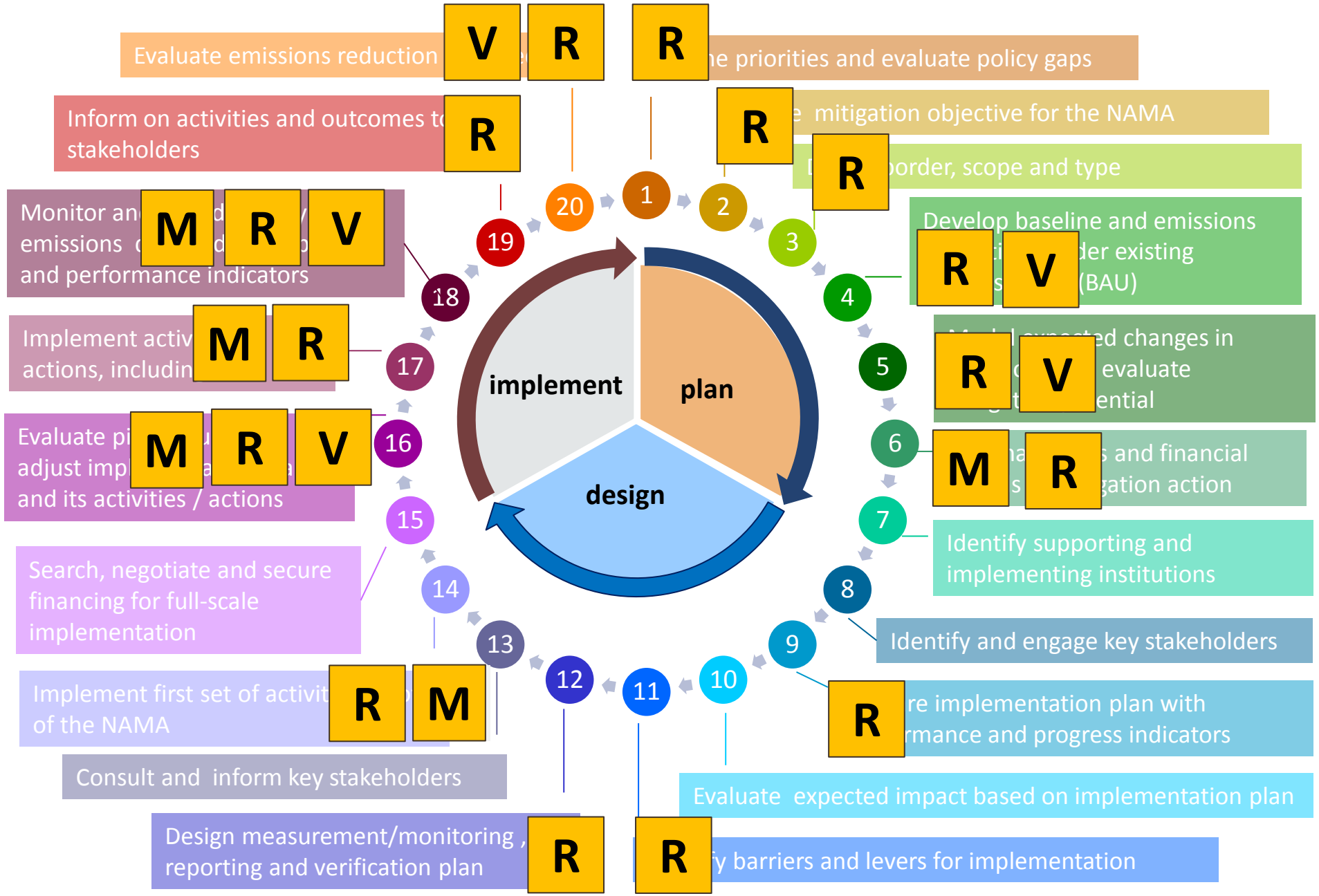
Verification example

- Audit of company level emissions under the GHG Program in Mexico
  - Verification through the ISO14064 standard
    - Review of compliance with standard
    - Review conducted by a certified verifier
  - Certification is given by the Mexican Accreditation Entity (EMA) following internationally accepted standards
  - Verified emission reports can be used as initial step for access carbon markets.

i.e. NAMA: increase carbon capture by X% through sustainable forest management

Guide	Measurement	Reporting	Verification
WHAT	Carbon stock , trees age, trees species Cost of monitoring activities	Used and residual volumes, real existence, tree species, species density, ton C per hectare per year	Use rate (ratio used and residual), diametric categories
	Existing capacities: team of specialists trained in forest management, carbon content of forests, geographic information systems Needed capacities: Hire external consultant/specialists for use of SELVA module in GIS and an Accountant		
WHO	C stock: Forestry Commission regional office, land owners. Trees ages and species: forestry specialists Volumes: technicians at wood processing site	Volumes: forest rangers, technical advisors, manager at wood processing site Ton C/ha: carbon accounting specialist; GIS and SELVA technician	Ministry for the Environment; National Forestry Commission central office, external verification consultant.
	Existing capacities: team of technical and forestry specialists trained in forest management, carbon content of forests, and geographic information systems. Needed capacities: experts from universities and research centers in the region for support with sampling; further training to land owners on carbon stock methodology; budget to buy satellite images; accountant		
HOW	C stock: Methodology for converting volume to biomass to carbon. Trees age and species: sampling and characterization, satellite images and processing	Use of SELVA and GIS to process and estimate surface and growth; Collate and aggregate data for the main variables	Use of compliance against ISO14064-part 3.
WHEN	Twice a year	Annual	Annual

Planning, design and implementation cycle of NAMAs: **where does MRV fit?**



Building capacities

Technical

- Knowledge and understanding about the sector where the action takes place
- Knowledge about methodologies to estimate emissions at national and at project level
- Data collection and management skills
- Use of databases, specialized software, statistics…
- Technical dominion over measurement instruments

Financial

- Knowledge about the funding source and its requirements for accessing funding (eligibility, application procedure)
- Team or staff trained in financial and accounting issues
- Understanding of reporting requirements

Institutional

- Institutional setup (who is in charge of NAMAs? Who is in charge of climate change policy? Who acts as liaison to multilateral agencies?)
- Understanding of institutional obligations, responsibilities, and their limitations

Legal

- Legal foundation for interaction or cross-sectorial action
- Mandate that sustains coordination efforts by one institution or body

THANK YOU