



Food and Agriculture
Organization of the
United Nations

THE WORK OF FAO TO ENHANCE NATIONAL CAPACITIES TO REPORT ON CLIMATE CHANGE

AGRICULTURE, FORESTRY AND OTHER LAND USE





This infographic booklet shows what the Food and Agriculture Organization of the United Nations (FAO), through both the REDD+/National Forest Monitoring teams and Mitigating Agriculture GHG Emissions Towards Wider Opportunities (MAGHG-2) project under the Mitigation of Climate Change in Agriculture (MICCA) Programme, provides to its member countries regarding the Measurement, Reporting and Verification (MRV) framework. It also presents experiences on the ground with examples from activities in Africa, Asia and Latin America and the Caribbean, and highlights useful resources.

In 2015, two significant global efforts were undertaken to combat climate change and boost sustainable development



The **Paris Agreement**. Adopted in December 2015, the Paris Agreement represents a commitment by the international community to limit the rise of the global average temperature to well below 2 degrees Celsius. To reach this goal, each country has formulated individual climate commitments, referred to as Nationally Determined Contributions (NDCs).



The **2030 Sustainable Development Agenda** and its **17 Sustainable Development Goals (SDGs)**. The SDGs are a set of global objectives that will shape national development plans over the next 15 years, from ending poverty and hunger to sustaining our natural resources and responding to climate change.

Under the Paris Agreement, countries are required to provide national inventory reports of their greenhouse gas (GHG) emissions and information on the progress in implementing their NDCs. The reporting procedures of the Paris Agreement will probably build upon the already existing Measurement, Reporting and Verification (MRV) framework. This framework requires developing countries to submit **National Communications (NC)** every four years and **Biennial Update Reports (BUR)** every two years.

The BUR should also go through the United Nations Framework Convention on Climate Change (UNFCCC) International Consultation and Analysis (ICA). Countries are also required to set up domestic MRV for their Nationally Appropriate Mitigation Actions (NAMAs) and voluntarily undertake MRV of their activities to reduce emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries (REDD+). MRV represents a particular challenge, as countries can experience difficulties in collecting information and regularly updating their national statistics.



FAO Country Support

INSTITUTIONAL ARRANGEMENTS

GHG ESTIMATES & REPORTING, INCLUDING QUALITY ASSURANCE/ QUALITY CONTROL:

NC National Communication

BUR Biennial Update Report, including REDD+ results

FREL/FRL Forest Reference Emission Level/
Forest Reference Level

NDC Nationally Determined Contributions

DATA COLLECTION & ANALYSIS

NFI National Forest Inventory

Census of Agriculture/Agricultural surveys

NFMS National Forest Monitoring System

FAO resources

FAO Corporate Statistical Database
fao.org/faostat/en/#data

FAOSTAT

Forest Resources Assessment
fao.org/forest-resources-assessment

FRA

GlobAllomeTree

Platform to share and provide free access to tree allometric equations, wood densities, biomass expansion factors and raw data: globalloometree.org

National Forest Monitoring Systems
slms4redd.org/wordpress

NFMS
web portals

GFOI

Global Forest Observations Initiative, a set of methods and guidelines for estimating carbon stocks to support countries in their effort to build NFMS: gfoi.org/methods-guidance

Open Foris, a set of free and open-source software tools on data collection and analysis: openforis.org

Open
Foris

LCCS

Land Cover Classification System concepts and user manual: fao.org/3/a-i5428e.pdf

System for earth observations, data access, processing and analysis for land monitoring is a cloud computing platform for geographical data processing: sepal.io

SEPAL

Map Accuracy
Assessment &
Area Estimation

Map Accuracy Assessment and Area Estimation: A Practical Guide: fao.org/3/a-i5601e.pdf

Building a sustainable national greenhouse gas inventory for Agriculture, Forestry and Other Land Use: The national greenhouse gas inventory for agriculture: fao.org/elearning/#/elc/en/course/NGHGI

E-learning

WCA

World Programme for the Census of Agriculture: fao.org/economic/ess/ess-wca

AFOLU Emissions Analysis tools, a set of tools that can support countries in addressing UNFCCC reporting requirements: fao.org/in-action/micca/resources/tools/ghg

AFOLU

Voluntary
guidelines
on national
forest monitoring

fao.org/3/a-i6767e.pdf

Emerging approaches to Forest Reference Emission Levels and/or Forest Reference Levels for REDD+.

FREL/FRL
for REDD+

NFMS
for REDD+
MRV

National Forest Monitoring Systems for REDD+ Measurement, Reporting and Verification: Forthcoming

The UN-REDD Programme: fao.org/3/a-i4846e.pdf

Technical considerations for Forest Reference Emission Level and/or Forest reference Level construction for REDD+ under the UNFCCC. The UN-REDD Programme: fao.org/3/a-i4847e.pdf

REDD+
under the
UNFCCC

From Reference Levels to Results Reporting – REDD+ under the UNFCCC: fao.org/3/a-i7163e.pdf



DEMOCRATIC REPUBLIC OF THE CONGO

FAO-supported activities on the ground



SATELLITE LAND MONITORING SYSTEM

The Democratic Republic of the Congo (DRC) has developed a Satellite Land Monitoring System (SLMS) called TerraCongo to keep track of forest cover changes in the country. FAO provided continuous capacity development activities for technical staff and established a remote sensing laboratory for generating activity data. FAO supported and empowered DRC in developing and implementing the National Forest Monitoring System (NFMS) web portal.



NATIONAL FOREST INVENTORY

The DRC implemented a pilot national forest inventory (NFI) to estimate country-specific emission factors and assess the feasibility of implementing the first forest inventory at the national scale. FAO provided technical support in designing the methodology and is now managing the upcoming complete NFI with the support of the Central African Forest Initiative (CAFI).



WORKSHOPS

DRC together with FAO has organized several hands-on workshops on the national GHG inventory for the Land Use, Land Use Change and Forestry (LULUCF) sector.



EXCHANGING KNOWLEDGE

DRC and Côte d'Ivoire worked together to adopt methods and tools for national GHG inventories. The two countries also compiled a list of data gaps in the compilation of their national GHG inventory for the LULUCF sector.



KICK-OFF

DRC and FAO held a national kick-off meeting in 2016 to define how to obtain data for the preparation of the first BUR for the Agriculture, Forestry and Other Land Use (AFOLU) sector.

The way forward

DRC and FAO continue to collaborate with funding from Central African Forest Initiative on:

Data collection to enable the preparation of the national GHG Inventory for the AFOLU sector.

The construction of the forest reference emission level.

Submission of the first BUR in collaboration with the United Nations Environment Programme.

Development of the technical annex on REDD+ results.

Assessment of changes in land use, land cover and forest cover using TerraCongo.

Implementation of the first complete National Forest Inventory.

Open
Foris
Collect

SEPAL

NFMS
web
portals

FAO resources



ETHIOPIA

FAO-supported activities on the ground



INSTITUTIONAL ARRANGEMENTS

Ethiopia has worked on the establishment of a Measurement, Reporting and Verification (MRV) Unit to support REDD+ activities in the country. This Unit will put in place a self-sustaining and consistent process for estimating national-scale forest emissions and removals and reporting them internationally. FAO has supported the implementation of this national MRV unit.



NATIONAL FOREST INVENTORY

Ethiopia carried out a NFI between 2013 and 2016. Data was collected from all regions and all strata, including forest and non-forest land use classes. FAO has assisted in the collection and elaboration of the forest inventory data and in the development of country-specific emissions factors for the LULUCF sector from the NFI. These country-specific emission factors were essential for constructing the national forest reference level (FRL).



FOREST REFERENCE LEVEL

Ethiopia constructed and submitted an FRL in 2016. FREL/FRL are benchmarks for assessing each country's performance in implementing REDD+ activities. FAO has supported the generation of forest change data that were essential for constructing the national FRL.

The way forward

Ethiopia and FAO continue to collaborate on:

Preparation of the first BUR.

Preparation of the REDD+ technical annex.

Capacity development of the national MRV team for the development of regional FRLs.

Intensification of NFI in forest strata for improved emission factors in all biomes and regions.

Improvement of activity data estimates and forest maps.

Training on geospatial data processing using SEPAL.

Development and implementation of NFMS web portal.



FAO resources



BANGLADESH

FAO-supported activities on the ground



TRAINING

Bangladesh has organized several hands-on workshops on the national GHG inventory for the Land Use, Land Use Change and Forestry (LULUCF) sector. The workshops were set up to provide support on methodologies for estimating emissions. FAO provided technical support for the implementation of these workshops.



EMISSION FACTORS AND PARAMETERS

Bangladesh and FAO conducted an intensive literature review of emissions factors and parameters for the LULUCF sector. The emission factors have been reviewed and submitted to the Intergovernmental Panel on Climate Change's Emission Factor Database. FAO has supported the development of a database of emission factors and parameters.



NATIONAL GHG INVENTORY

Bangladesh and FAO organized a series of meetings with the national team in charge of the preparation of the country's third National Communications. The meetings helped identify the gaps in data collection and put in place activities to improve the available data sets. A database of activity data was developed with support from FAO.

The way forward

Bangladesh and FAO continue to collaborate on:

Implementation of the national forest inventory, which will increase knowledge on forests resources and produce new high-quality country-specific data on forestry and land-use change.

Construction and submission of the Forest Reference Emission Level/Forest Reference Level with information from the National Forest Monitoring System.

Open
Foris
Collect

GlobAllomeTree

Open
Foris
Calc

LCCS

FAO resources



PAPUA NEW GUINEA

FAO-supported activities on the ground



NATIONAL FOREST MONITORING SYSTEM

Papua New Guinea (PNG) has developed a National Forest Monitoring System (NFMS), which consists of TerraPNG and Collect Earth. The system provides spatially explicit information on land use and land-use change, which can be used to monitor the implementation of REDD+ activities over time. FAO also supported the Satellite Land Monitoring System laboratory, which will house the NFMS, and supported the development of the NFMS web portal.



NATIONAL FOREST INVENTORY

PNG's first National Forest Inventory (NFI) will collect information on forest resources, which will assist in the conservation and management of the country's unique forests. The NFI methodology and design were based on information obtained from remote sensing and previous studies. FAO has provided and will continue to provide support in the implementation of the NFI.



NATIONAL GHG INVENTORY

PNG has collected data to prepare the national GHG inventory for the Agriculture, Forestry and Other Land Use (AFOLU) sector. To support this, FAO has held hands-on workshops on data collection.



FOREST REFERENCE LEVEL

In January 2017, PNG constructed and submitted a forest reference level (FRL), which was prepared using the NFMS. FAO also gave support in the preparation the FRL.

The way forward

Papua New Guinea and FAO continue to collaborate on:

Preparation of the national GHG inventory for the AFOLU sector for the first BUR.

Technical support to REDD+, NFMS and FRL.

Implementation of the NFI.

Open
Foris
Collect Earth

NFMS
web
portals

Open
Foris
Collect

FAO resources



ECUADOR

FAO-supported activities on the ground



DATA COLLECTION

Ecuador has engaged key stakeholders to collect data for the national GHG inventory for the Agriculture and Land Use, Land Use Change and Forestry (LULUCF) sectors. FAO has provided support on data collection and the establishment of institutional arrangements.



SOUTH-SOUTH COOPERATION

Ecuador shared and gained knowledge through different south-south cooperation initiatives on data collection and GHG inventories for the Agriculture and LULUCF sectors. FAO has worked with Ecuador and is supporting a south-south cooperation network in Latin America and the Caribbean Region (*Red Latinoamericana de Inventarios Nacionales de Gases de Efecto Invernadero -RedINGEI*) for the submission of the BUR and NC.



NATIONAL FOREST MONITORING SYSTEM

Ecuador is developing a NFMS that provides data for the estimation and reporting of forest-related emissions and removals, not exclusively for REDD+. FAO has supported the institutional arrangement and assisted throughout the process with capacity development activities.



BIENNIAL UPDATE REPORT

Ecuador has prepared and submitted the first BUR, including the REDD+ technical annex. FAO has provided continuous support to prepare the national GHG inventory for the Agriculture and LULUCF sectors, the submission of the FREL and the preparation of the first BUR.

The way forward

Ecuador and FAO continue to collaborate on:

Development of the NDC for the Agriculture and Land Use, Land Use Change and Forestry sectors.

Technical analysis process under the International Consultation and Analysis.

Preparation of the third National Communications.

AFOLU
Emissions
Analysis Tools

FAO resources



PARAGUAY

FAO-supported activities on the ground



NATIONAL FOREST MONITORING SYSTEM

Paraguay has developed a National Forest Monitoring System (NFMS), which includes a Satellite Land Monitoring System that has generated the first official national maps of forest cover and forest-cover change and the National Forest Inventory (NFI), which includes a country-wide assessment of Paraguay's forests. Geoportal, an online portal open to the public, provides access to key information from the maps and the NFI. FAO provided support with the implementation of the methodology, data collection and processing, and the assessment of the NFI.



FOREST REFERENCE EMISSION LEVEL

Paraguay has constructed and submitted in January 2016 its national Forest Reference Emission Level (FREL). The preparation of the FREL has benefited from data collected through the NFMS. FAO has supported Paraguay in the preparation of the FREL.



NATIONAL GHG INVENTORY

Paraguay has collected data to prepare the national GHG inventory for the Agriculture and Land Use, Land Use Change and Forestry (LULUCF) sectors. In December 2015, Paraguay submitted its first BUR, which has gone through the International Consultation and Analysis process. The preparation of the national GHG inventory has benefited from data obtained from the NFMS. FAO has provided technical support for the preparation of the GHG inventory.

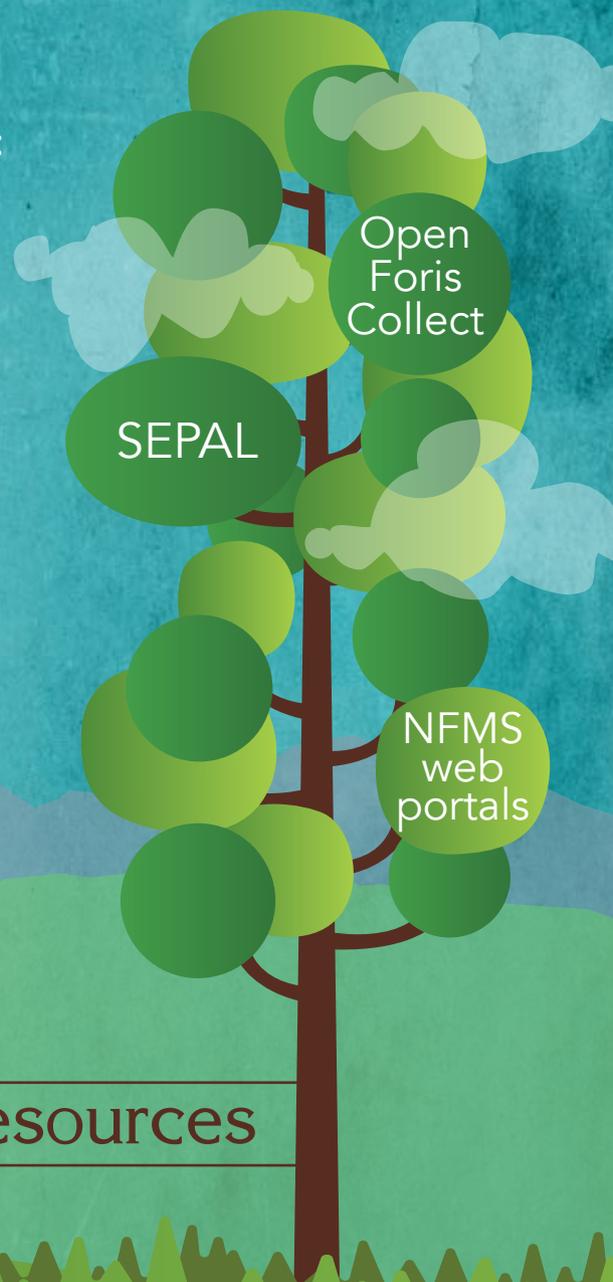
The way forward

Paraguay and FAO continue to collaborate on:

Updating and improving the national GHG inventory for the second BUR implementing the 2006 IPCC guidelines for the Agriculture, Forestry and Other Land Use sector.

Preparing, in cooperation with the World Bank, a new project proposal *Pobreza, Reforestación, Energía y Cambio Climático* (PROEZA) for submission to the Green Climate Fund.

FAO resources



THE WAY FORWARD

Moving from the MRV framework to the Transparency Framework of the Paris Agreement and building capacities to support member countries in this area.

Moving from FREL/FRL to REDD+ results and REDD+ implementation.

FAO is able to help countries to access different funds that can support capacity building, such as the Capacity Building Initiative for Transparency, and the implementation of mitigation and adaptation activities, such as the Global Environment Facility and the Green Climate Fund.

COUNTRY SUPPORT



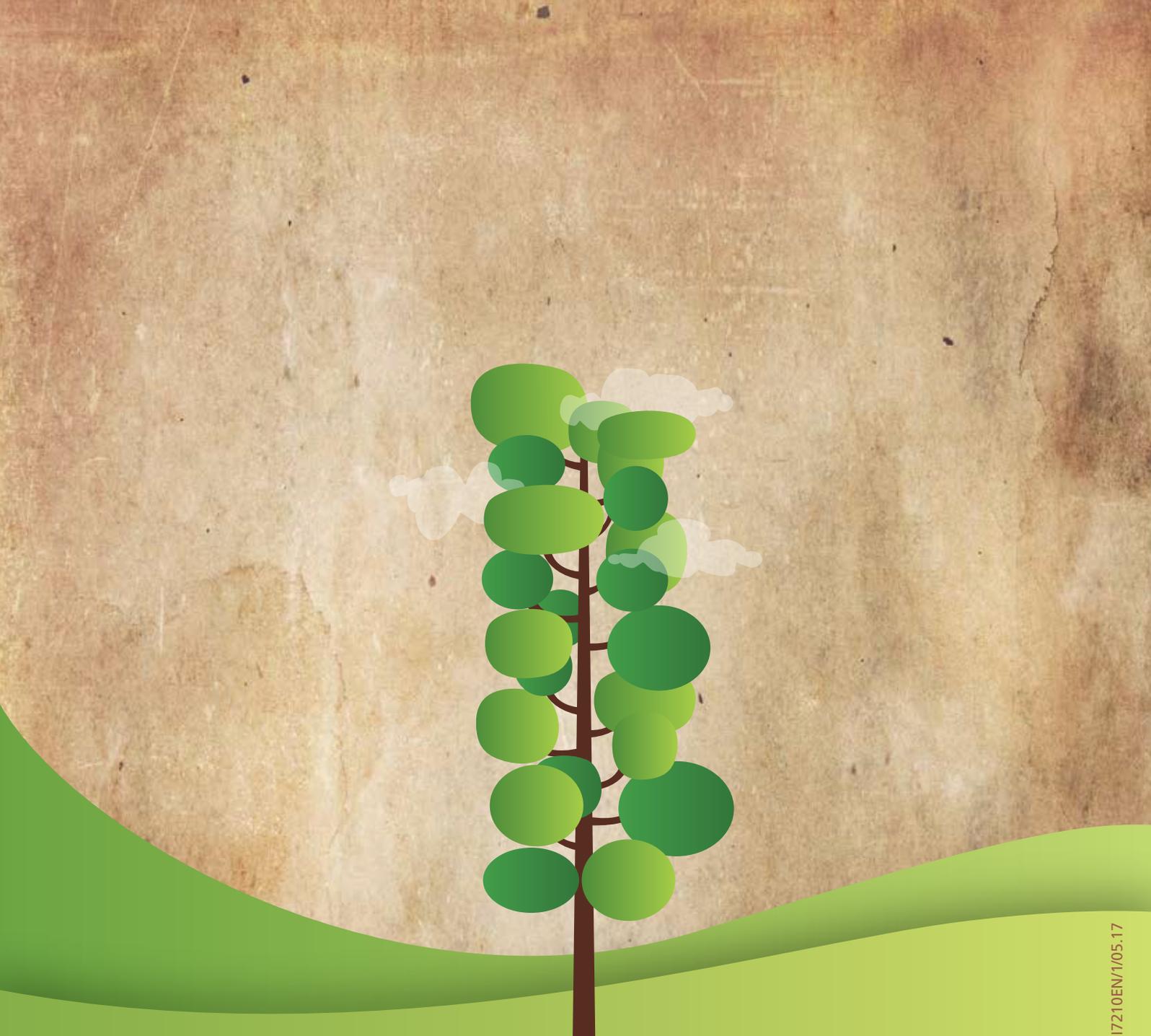
FAO REDD+/NFM team

FAO MICCA

Benin, Chad, Costa Rica, Mexico, Morocco, Mozambique, Uruguay

REDD+/NFM team & FAO MICCA

Colombia, Côte d'Ivoire, Democratic Republic of the Congo, Dominican Republic, Ecuador, Myanmar, Papua New Guinea, Paraguay



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