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Integrating agriculture in National  
Adaptation Plans (NAP–Ag) Programme

*Experiences of integrating agriculture in sectoral  
and national adaptation planning processes*

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# Guatemala's progress in developing a national monitoring and evaluation system for adaptation in the agriculture sector

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## Authors

*This case study was authored by Ninni Ikkala Nyman (UNDP), with contributions from Elisa Distefano (FAO) and Eliseo Gálvez Ramírez (FAO). It was reviewed by Rohini Kohli (UNDP), Subhi Shama, (UNDP), Rebecka Ramstedt (FAO), Fernando García (UNDP Guatemala) and Dunia Lopez (UNDP Guatemala).*

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## Highlights

- ➔ Guatemala has developed a monitoring, evaluation and reporting (M&E) system for adaptation in the agriculture sectors, referred to as MER-agriculture, to monitor adaptation actions and achievement of policy goals.
- ➔ MER-agriculture identifies 102 indicators on climate variability; vulnerability; risks and threats; food security; and adaptation practices.
- ➔ A consultative process was applied to design the M&E system, ensuring it builds on and strengthens existing M&E systems, data, programmes and policies.
- ➔ Challenges have included delays in revising existing M&E systems and defining institutional arrangements for implementation of MER-agriculture.
- ➔ Key recommendations and next steps include agreement on institutional roles in operationalising MER-agriculture; piloting MER-agriculture at local level and updating it to enhance bottom-up adaptation planning and learning; full integration into broader, iterative adaptation planning and budgeting in the agriculture sector
- ➔ The MER-agriculture system contributes to, and is a component of, Guatemala's commitments to adaptation under the forthcoming updated nationally determined contribution (NDC).



## Case study objectives

This case study provides an overview and analysis of lessons learned in developing a national monitoring and evaluation (M&E) system for adaptation in the agriculture sector in Guatemala, led by the Ministry of Agriculture, Livestock and Food Security (MAGA). It presents the climate and policy context into which the M&E system is developed; the consultative process that was applied for designing the M&E system; and the outcome, or the M&E system itself. Finally, lessons learned in terms of challenges, successes and next steps are discussed.

## The context

Guatemala is developing a national M&E system and protocol to track adaptation progress in the agriculture sectors (agriculture, livestock and food security). The effort is led by the MAGA, in close collaboration with the Ministry of Environment and Natural Resources (MARN), as key government actors overseeing implementation of national goals and actions on adaptation and agriculture. The process to develop the M&E system was supported by the Integrating Agriculture in National Adaptation Plans (NAP-Ag) Programme (see Box 1).

### Box 1

#### The NAP-Ag Programme

The Integrating Agriculture in National Adaptation Plans (NAP-Ag) Programme, coordinated by the United Nations Development Programme (UNDP) and the Food and Agriculture Organization of the United Nations (FAO), is addressing climate change adaptation concerns related to the agriculture sectors in 11 countries' existing national planning and budgeting processes. The initiative is also improving these countries' prospects of accessing climate finance through for example the Global Environment Facility (GEF) and the Green Climate Fund (GCF).

In addition, the NAP-Ag Programme is contributing to the achievement of targets laid out in partner countries' nationally determined contributions (NDC) and the Sustainable Development Goals (SDGs), in particular SDG 2 Zero Hunger and SDG 13 Climate Action by strengthening the resilience and adaptive capacity to climate-related hazards and natural disasters in all countries and by integrating climate change measures into national, policies, strategies and planning.

The NAP-Ag Programme is funded by the International Climate Initiative (IKI) of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU). It started implementation in 2015 and is closing in December 2020.

M&E of adaptation in the agriculture sectors is guided by national priorities. This comprises international commitments, including achievement of targets and commitments under the United Nations Framework Convention on Climate Change (UNFCCC), its Paris Agreement and Guatemala's nationally determined contribution (NDC) (NDC, 2015). At national level, this includes complying with the Framework Law on Climate Change (*Ley Marco de Cambio Climático, Decreto 07-2013*) and the results and priorities set out in the National Action Plan on Climate Change (*Plan de Acción Nacional de Cambio Climático - PANCC, 2016*).

Guatemala's first NDC in 2015 identifies 8 priority sectors, three of which are directly relevant for the agriculture sectors: agriculture, livestock and food security; forest resources; and integrated water resource management. The second NDC is likely to continue this prioritisation. The PANCC has an overall goal for the agriculture and food security sectors, namely: *"Increasing food production (livestock and vegetables) through the implementation of adaptation actions that reduce vulnerability of families impacted by climate change, and guarantee their food security and nutrition"* (Guatemala, 2016:72). The PANCC further identifies two overall indicators and targets for the goal: i) 10 percent increase in production of food with emphasis on basic grains, traditional and non-traditional crops, for adaptation; and ii) 5 percent decrease in crop losses due to climate change.

National development and planning priorities are set forward in the National Development Plan or *Plan Nacional de Desarrollo K'atun, Nuestra Guatemala 2032*, which integrates adaptation and mitigation under the strategic priority on natural resource management. It encompasses

**“Increasing food production (livestock and vegetables) through the implementation of adaptation actions that reduce vulnerability of families impacted by climate change, and guarantee their food security and nutrition”**

Guatemala, 2016:72

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sustainable forest management, water resources management, agricultural technology, production and family farming for food security, among others.

Further, the Strategic Plan for Climate Change of MAGA 2018-2027 (*Plan Estratégico de Cambio Climático del Ministerio de Agricultura, Ganadería y Alimentación (MAGA) 2018-2027*) and the related Action Plan 2018-2022 (*Plan de Acción 2018-2022*) provide sectoral priorities for climate change, the implementation and monitoring of which will be carried out through annual and multi-annual work plans.

Additional relevant plans and policies which identify a range of national and sectoral goals and targets, which are relevant for adaptation and agriculture, are listed in Table 2.

Guatemala has two relevant M&E systems in place, on which to build the M&E system for agriculture and adaptation. These include the M&E systems: for rural and agricultural development (*Sistema de Planificación, Seguimiento y Evaluación - SIPSE*); and an emerging national M&E system for climate change (*Sistema Nacional de Información sobre Cambio Climático - SNICC*).

The SIPSE is an internal M&E system managed by MAGA. It registers and tracks expenditure and delivery of MAGA's annual work plan, aiming to assess the achievement of results. The management of the SNICC is under MARN. It is divided into three areas: climate science; vulnerability and adaptation; and GHG emissions and absorption. The area on vulnerability and adaptation has sub-themes on agriculture, livestock and food security; and on forest resources, ecosystems and protected areas. SNICC is currently under development, with some draft indicators. It aims to collect information from a range of institutions, including MAGA. All sectors are, under the Climate Law, committed to contributing their relevant climate information to SNICC.

**“Small agricultural producers, who rely heavily on subsistence agriculture, are expected to be hardest hit, with current impacts of climate variability and change already leading to an estimated 55 percent loss of produce during periods of drought”**

MARN, 2015b

### Box 2

#### Climate change impacts, economy and agriculture

Guatemala is highly vulnerable to climate change (MARN, 2015a). It is an isthmus country, exposed to extreme events such as hurricanes, tropical storms and droughts, all of which are predicted to increase in frequency due to climate change (MARN, 2015a). Temperatures are forecasted to increase between 2.5°C to 4.1°C by 2050, whilst rainfall is expected to decrease by 9.5 percent to 12.4 percent within the same time period (MARN, 2015b).

Around 30 percent of the population works in the agriculture sector (UNDP, 2019). 40-70 percent of losses due to climate change (as measured in terms of impact on Gross Domestic Product (GDP) are expected to be in the agriculture sector (MARN, 2015a:4). Small agricultural producers, who rely heavily on subsistence agriculture, are expected to be hardest hit, with current impacts of climate variability and change already leading to an estimated 55 percent loss of produce during periods of drought (MARN, 2015b).

The MER-agriculture system includes indicators for rainfall and temperature, as well as employment rate in agriculture, agriculture as percentage of GDP, amongst others.

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## The process of designing M&E of adaptation in agriculture sectors

The Ministry of Agriculture, Livestock and Food Security, with support of the NAP-Ag programme, started a participatory internal consultation process in 2017 with key departments and Vice Ministries to develop a System of Monitoring, Evaluation and Reporting (*Sistema de*





*Monitoreo, Evaluación y Reporte*) or MER-agriculture in short (*MER-agricultura*) for adaptation to climate change in the agriculture, livestock and food security sectors. The MER-agriculture is a results-based system that defines indicators for measuring policy goals and actions taken by MAGA that contribute to adaptation within the agriculture, livestock and food security sector. MER-agriculture is overseen by the Climate Change Unit of MAGA, in close collaboration with the Department of Planning that oversees the SIPSE platform.

The design of the MER-agriculture system followed a step-wise consultative process. With support of the NAP-Ag programme, several of the steps proposed for designing and developing an M&E system for adaptation in the agriculture sectors, in the *Technical Guidance Note on Strengthening M&E for Adaptation Planning in Agriculture Sectors* (FAO and UNDP, 2019) were thereby carried out: analysing policy context; defining adaptation goals, a focus and scope for the M&E system; identifying indicators and data sources; and proposing how to feed into decision-making.

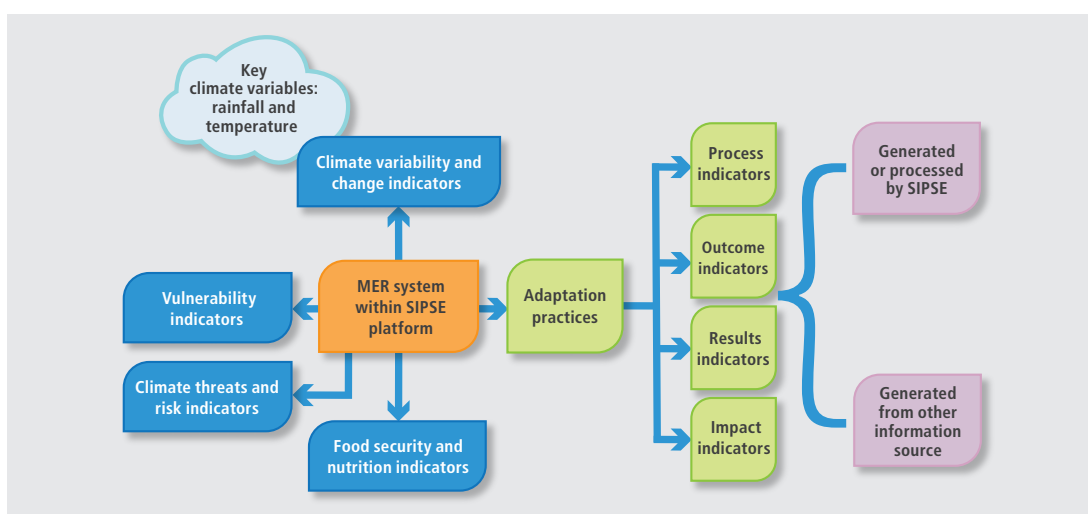
First, a desk review was carried out analysing policies, laws, relevant technical documentation, climate change analysis and lessons learned. The review aimed to conceptualise the key aspects related to adaptation in the agriculture sectors in Guatemala. This led to the definition of key sub-sectors and sub-systems, which would guide the design and priorities of MER-agriculture, as described below.

MER-agriculture was designed to cover adaptation actions in four key agriculture sub-sectors: agriculture, livestock, forestry and fisheries, with food security as a cross-cutting theme. A set of climate change adaptation practices were identified and prioritised by subsector, based on extensive internal consultation and review within MAGA. Priority was given to activities that were included in MAGA's annual work plan, had assigned funding or budget, and were already being implemented on the ground. These actions served as a basis for identifying indicators and "tagging" current activities for adaptation.

The MER-system itself was then conceptualised and designed. This included initial development and identification of draft indicators, followed by prioritisation of indicators, using selection criteria. Reporting systems were also proposed. The indicators were categorised into the following five sub-systems:

- **Climate variability:** Covers rainfall and temperature.
- **Vulnerability:** Exposure to climate change, combined with sensitivity and adaptive capacity. Analysis of vulnerability, including at sub-national level, considers for example physical, economic, social and cultural vulnerability.
- **Risks and threats:** Risks and threats to bio-physical systems and dependent human systems, which are likely to be compounded by climate change. Includes factors of exposure such as condition of agro-ecosystems and ecosystems.
- **Food security:** Existing measurements of e.g. nutrition and production.
- **Adaptation practices:** A set of prioritised practices implemented by MAGA covering a range of practices from institutional capacity to resources, implemented adaptation measures and outcomes.

These are described in Figure 1, in the large green and blue boxes.

**Figure 1**
**Design of MER-agriculture and indicators**


The next critical phase is to implement and operationalise the MER-agriculture system. Initial steps of the implementation phase have included carrying out a baseline study. It has also included developing “protocols for data gathering” for each indicator. MER-agriculture needs to be merged with the SIPSE system and feed into, for example, annual work planning processes. The MER-agriculture online data management platform has been designed, along with user manuals, and initial capacity building and presentations have been held. As MER-agriculture evolves, institutional and governance arrangements will need to be set up, including with contributing institutions’ responsibilities on e.g. generating, gathering and systematising data and information. Overall, the MER-agriculture system is likely to evolve, be updated and remain dynamic over time.

The information provided by the MER-agriculture system aims to guide decision-making at three levels: i) operational level (incl. extension workers); ii) strategic level (technical staff at director level within MAGA); iii) political level (high-level decision-makers within MAGA). In addition to MAGA staff, MER-agriculture is expected to be used by agricultural producer organisations, local and regional associations. Specific attention has been given to strengthening capacities of extension workers, including at municipal level. Key external partners for the implementation of MER-agriculture include MARN, CONAP, INAB, INSIVUMEH, MINFIN, SEGEPLAN, SESAN as shown in Table 1 below. Special close collaboration will be needed with MARN, to ensure complimentary between MER-agriculture and the evolving SNICC M&E system. Proposed institutional arrangements for implementation of MER-agriculture are provided in Figure 2.

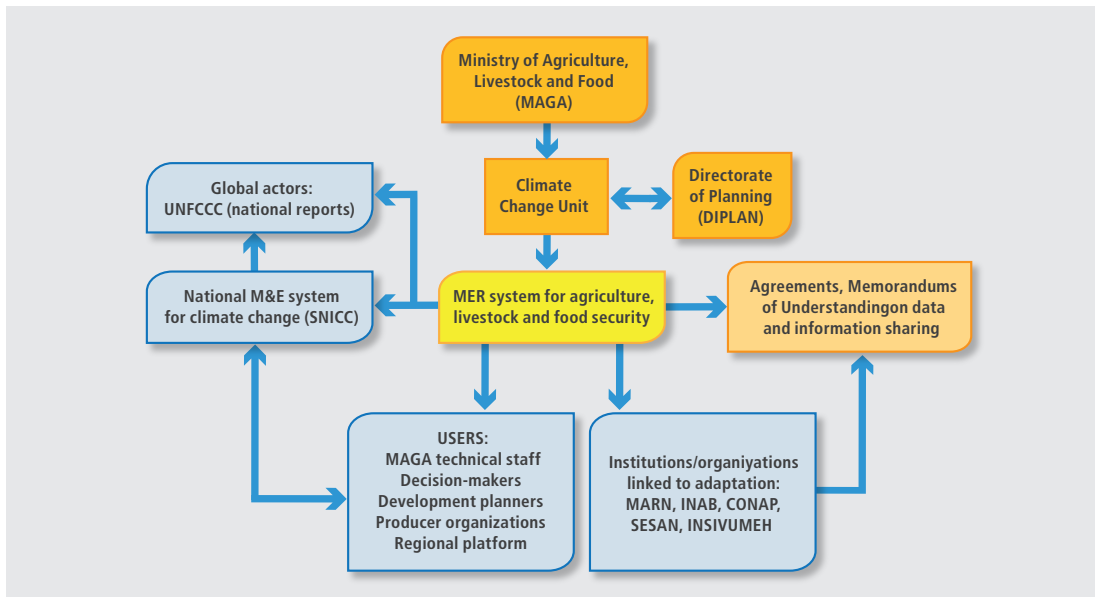
**Table 1**
**Key institutions for the design and implementation of MER-agriculture**

Institution – Spanish	English	Role
MAGA – Ministerio de Agricultura, Ganadería y Alimentación	Ministry of Agriculture, Livestock and Food	Oversight of M&E system Data on adaptation measures
MARN – Ministerio de Ambiente y Recursos Naturales	Ministry of Environment and Natural Resources	Linking MER-agriculture and SNICC M&E systems
CONAP – Consejo Nacional de Áreas Protegidas	National Council of Protected Areas	Data on protected areas
INAB – Instituto Nacional de Bosques	National Institute of Forests	Data on forests
INSIVUMEH – Instituto Nacional de Sismología, Vulcanología, Meteorología e Hidrología	National Institute of Seismology, Volcanology, Meteorology and Hydrology	Data on climate variability and change
MINFIN - Ministerio de Finanzas	Ministry of Finance	General information sharing
SEGEPLAN – Secretaría de Planificación y Programación de la Presidencia	Secretariat of Planning and Programming of the Presidency	General information sharing
SESAN – Secretaría de seguridad alimentaria y nutricional	Secretariat of Food Security and Nutrition	User of data provided by MER-agriculture

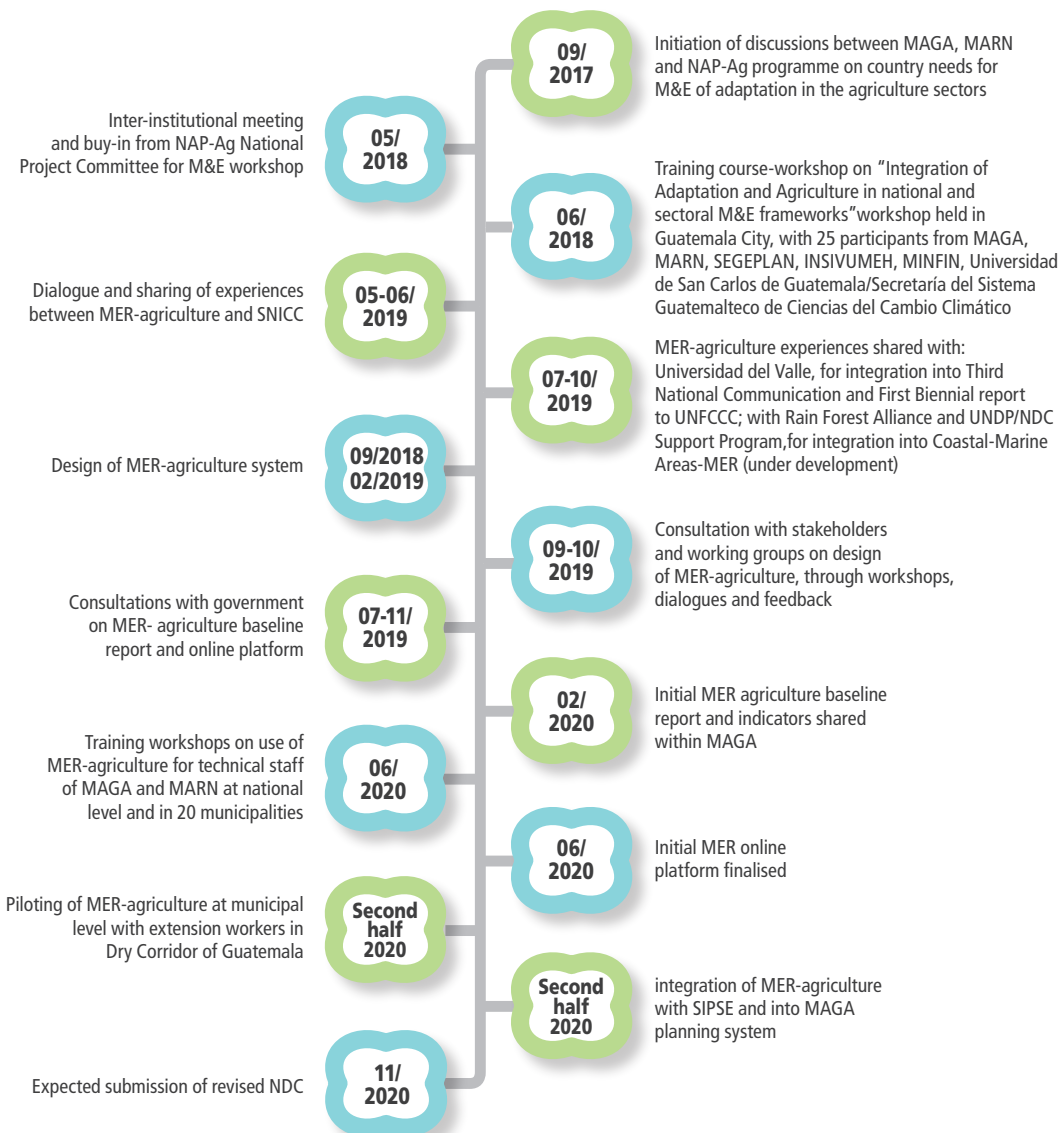


Figure 2

Institutional arrangements for MER-agriculture



Timeline for developing MER-agriculture M&E system



## Results/outcomes

The purpose of MER-agriculture is to monitor on-going adaptation-relevant actions; guide current and future institutional programme development and investments; as well as monitor achievement of policy goals and targets set out in key sectoral and national plans and strategies. MER-agriculture will give evidence for programme management and decision-making, by providing a single annual planning and reporting system on adaptation. A full list of all policies and plans from which goals and targets for individual level indicators have been taken to guide the design of MER-agriculture is provided in Table 2.

**Table 2**

### Key plans and policies guiding the goals and targets set for MER-agriculture indicators

Policy in Spanish	Policy in English
<b>Development plans and policies</b>	
Plan Nacional de Desarrollo K'atun: nuestra Guatemala 2032	National Development Plan K'atun, Our Guatemala 2032
Política General de Gobierno 2016-2020	General Government Policy 2016-2020
Política Nacional de Desarrollo Rural Integral Agenda Rural 2016-2020	National Policy on Integrated Rural development Rural Agenda 2016-2020
Política institucional para la igualdad de género y Marco Estratégico de Implementación 2014-2023	Institutional Policy for gender equality and Strategic Implementation Plan 2014-2023
Objetivos de Desarrollo Sostenible (ODS)	Sustainable Development Goals SDGs
<b>Agriculture plans and policies</b>	
Política Agropecuaria 2016-2020	Agricultural Policy 2016-2020
Política de promoción de riego 2013-2023	Policy to promote irrigation 2013-2023
Estrategia nacional para la prevención de la desnutrición crónica 2016-2020	National Strategy for the prevention of chronic malnutrition 2016-2020
Plan Estratégico de Cambio Climático del MAGA 2018-2027 y Plan de Acción 2018-2022	Strategic Climate Change Plan of MAGA 2018-2027 and Action Plan 2018-2022
Plan Operativo Anual 2018 - MAGA	MAGA Operational Plan 2018
Plan de capacitación para el fortalecimiento de capacidades técnicas en cambio climático del MAGA	Capacity plan for strengthening technical capacities in climate change, MAGA
<b>Climate change, energy and environment plans and policies</b>	
Plan de Acción Nacional de Cambio Climático (PANCC)	National Action Plan on Climate Change (2016)
Contribución Nacionalmente Determinada (2015)	Nationally Determined Contribution (2015)
Política y Estrategia nacional para la reducción de riesgo a los desastres en Guatemala	National Policy and Strategy for disaster risk reduction in Guatemala
Política energética 2013-2027	Energy Policy 2013-2027
Estrategia nacional de producción sostenible y uso eficiente de leña 2013-2024	National Strategy for Sustainable Production and Use of Firewood 2013-2024



Each indicator is further tied to a sub-system, as discussed above, and a theme. MER-agriculture is divided into 5 sub-systems, which are further classified into 30 themes, as shown in Table 3. MER-agriculture comprises a total of 102 indicators. The majority of indicators are based on existing data, already gathered by other institutions, or by MAGA under the SIPSE system. Some new indicators were designed, in particular for adaptation practices.

**Table 3****MER-agriculture sub-systems, themes and indicators**

Sub-system	Number of indicators	Themes (with number of related indicators)	
Climate variability	2	Rainfall (1)	Temperature (1)
Vulnerability	31	Public investment (5)	Labour market (2)
		Production of goods and services (2)	Lack of resilience (5)
		Demographics (7)	Food insecurity (2)
		Migration and remittances (3)	Socio-economic fragility (5)
Risks and threats	12	Deforestation and forest degradation (4)	Sanitation (4)
		Ecosystem disruption (3)	Protected Areas (1)
Food security and nutrition	37	Access to food (9)	Food consumption (7)
		Biodiversity (10)	Availability of food (11)
Adaptation practices	20	Capacity building (1)	Community food production (2)
		Irrigation projects (3)	Food assistance (1)
		Community development (1)	Institutional governance (1)
		Diversification of production (2)	Soil conservation (2)
		Food production (1)	Forestry and agroforestry (1)
		Sanitation and households (2)	Food storage (1)
		Agricultural technology and commercialization (1)	Alternatives to firewood (1)
<b>Total</b>	<b>102</b>	<b>30</b>	

Some examples of indicators by sub-system are provided in Table 4. For example, the risks and threats sub-system includes threats to bio-physical systems likely to be compounded by climate change. Deforestation and forest cover are measured, as well as Protected Area coverage – which are expected to relate to e.g. access to water and soil erosion rates under a changing climate.

The vulnerability sub-system includes a range of indicators that measure physical, economic, social and cultural vulnerability and build primarily on existing socio-economic data. Issues such as poverty, emigration and portion of work force in agriculture are considered. Food security is another sub-system that has a large number of indicators, again using existing data on e.g. income, health and production to measure e.g. production of key crops, food security by household and access to clean water.

The sub-system on adaptation practices could be considered the key sub-system of MER-agriculture, as it measures directly actions taken under MAGA to address adaptation. As shown in figure 3, the indicators for the sub-systems on climate variability, vulnerability, risk and threats act as contributing or framing indicators for measuring the sub-system of adaptive capacity, through adaptation practices (with food-security as a cross-cutting sub-system).

Adaptation practice indicators are chosen for a range of adaptation-relevant practices, such as soil conservation, agroforestry and irrigation. Programmes in food security were identified as particularly pertinent for adaptation. Indicators are designed for both on-going projects (for which a baseline can be set), as well as new activities. Indicators on capacity building and training are also included. As a lot of data would be new, an annual survey to be gathered by MAGA, is proposed to gather this information.

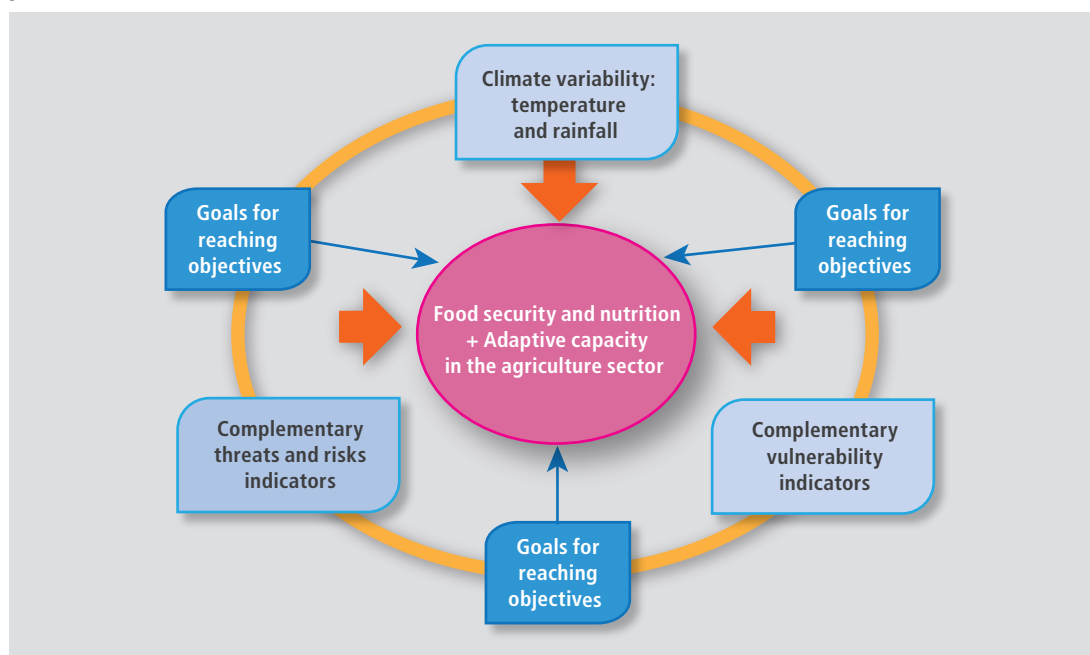
Table 4

## Sample of indicators from MER-agriculture, by sub-system

Sub-system	Indicators (examples)	Baseline	Nr of goals
Risks and threats	Deforestation rate	0.50%	4
	Protected Area coverage (ha)	38.31%	2
	Forest coverage in ha (by forest type – coniferous)	297,983	4
Vulnerability	Poverty rate	59.3%	5
	Rate of emigration	13.91%	3
	Portion of work force in agriculture	33.10%	4
Food Security	Production of rice (in millions of tonnes/yr)	33,732,31	6
	Food security in households	19.2%	4
	Access to clean water	60.20%	4
Adaptation practices	Nr of participants in institutional capacity building on climate change (in 2018)	15 women 104 men	6
	Nr of irrigation projects	10	6
	Support provided to soil conservation measures (ha)	No data	6
	Nr of households adopting sustainable agro/forestry practices	No data	6

Figure 3

## Relationship between indicators and goals, related to food security and adaptation practices



Generic metrics are defined for measuring the indicators, namely an initial evaluation of: a) positive situation; b) situation of concern; c) action or intervention required. The indicators will then be measured, against the baseline, on four scales: i) shows improvement; ii) inconsistent trend; iii) shows deterioration; iv) stable or not relevant. Data gathering will be from three primary sources: i) data from the SIPSE system; ii) statistical and other information sources, including external sources; and iii) surveys.

The MER-online data management platform has been designed to gather data on each indicator. It enables generating and analysing data e.g. by sub-system or filtering data according to e.g. geographical area or gender. Data will be generated at four geographical scales – national, departmental, municipal and community levels.

## Lessons learned

**Successes** include that MER-agriculture has been developed applying broad internal consultation processes within the agriculture sector, whilst also reaching out to other key players, to ensure buy-in. MER-agriculture builds on and feeds into an existing M&E system, SIPSE, and identifies synergies with SNICC, thereby strengthening existing M&E systems, rather than creating wholly new ones.

There is a comprehensive set of guiding policies, plans and strategies on adaptation and agriculture in Guatemala. MER-agriculture ties directly into a set of national and sectoral goals and targets, and allows for global reporting of results. It also links to the important task of revising Guatemala's NDC.

MER-agriculture builds on and directly relates to budgeted, on-going climate action and provides a resource for guiding programme planning and decision-making on adaptation. The creation itself of MER-agriculture contributes to MAGAs, the sector's and Guatemala's contribution of advancing and scaling-up action on adaptation in the agriculture sectors.

A baseline has been developed, which provides a strong starting point from which to begin to measure indicators.

**Key challenges** have been the lack of sectoral vulnerability and impact assessments, which would help further define and prioritise adaptation actions.

Institutional capacities on adaptation would need to be strengthened within MAGA, to allow for strategic planning and implementation of adaptation across the sector. This will also require political and institutional support, leadership and ownership within MAGA. Human and financial resources will need to be allocated to fully implement MER-agriculture.



Integrating into existing institutional systems, guidelines and dynamics can be slow and bureaucratic. Integrating MER-agriculture into SIPSE requires a number of revisions, agreements and decisions, which need to undergo internal processes of discussion and consensus.

Another, related issue is harmonising with institutional architecture and clarifying institutional responsibilities. Initial design of MER-agriculture has required more straightforward forms of agreement and discussion between institutions and Ministries. However, as the MER system is rolled out, more detailed and complex agreements will be required, including with regards to data collection and e.g. intellectual property rights, processing and using information. Information needs to be gathered from numerous sources, from numerous institutions.

Implementation of MER-agriculture provides an **opportunity** to increase knowledge and capacity across MAGA on adaptation, beyond the Climate Change Unit, and to mainstream it into operations. There is also an opportunity to strengthen coordination with other key Ministries, academia, NGOs and civil society. This also includes outreach and implementation of MER-agriculture, including in terms of data collection and use, at local level.

## Recommendations and next steps

- **Clarify and agree institutional arrangements, roles and responsibilities for MER-agriculture** – Operationalising the MER-agriculture system will require clarifying both internal and external roles and responsibilities, including with regards to data collection and use. In terms of next steps, alignment with SIPSE is on-going. Integrating MER-agriculture will require reviewing and updating the data information system of SIPSE. The Climate Change Unit of MAGA will oversee: technical capacity to gather and update relevant data from SIPSE; generating and analysing information from surveys; managing statistical and external data of MER-agriculture. The roles of other units within MAGA, of local partners and of other institutions, including MARN, will need to be agreed and clarified.
- **Pilot MER-agriculture at local level and adjust to ensure bottom-up learning on adaptation** – Adaptation action primarily takes place at local level, in particular in the agriculture sectors. M&E of adaptation, and in particular learning on adaptation, will need to be integrated into, and learn from, local level planning and implementation of adaptation. MER-agriculture will need to be tested at local level and, where appropriate, adjusted to respond to local needs.



Initially planned piloting of the MER-agriculture system at sub-national level with sub-national government and agricultural extension workers, in the Dry Corridor of Guatemala, had to be cancelled due to travel restrictions and the COVID 19 pandemic. MAGA has received support for these follow-up activities from the NDC Enhancement Facility.

- **Fully integrate M&E into broader, iterative adaptation planning and budgeting in the agriculture sector** – MER-agriculture builds on existing planning and reporting systems within the agriculture sector. However, it also identifies indicators for emerging and scaled-up adaptation actions in the sector, in line with priorities set forward in plans and policies. The operationalisation of MER-agriculture is therefore part of a broad process of scaled-up planning, budgeting and implementation of adaptation in the agriculture sector. Adaptation still needs to gain further political buy-in and ownership, and be institutionalized into MAGA's planning processes. Overall, MER-agriculture will remain part of an iterative adaptation planning process and will be continuously updated and revised, as adaptation learning evolves and in accordance with broader changes in adaptation planning and implementation.

Next steps include capacity building on adaptation, specifically on the use of MER-agriculture and harmonisation with SIPSE and SNICC, which will reach out to MAGA and MARN technical staff, including local level agricultural extension workers. Steps will also include a process for identifying and prioritising adaptation actions within the agriculture sector.

The MER-agriculture system can contribute to key national and international monitoring, evaluation and learning, including NDC cycles. Guatemala is expected to submit its revised NDC in November 2020. The MER-agriculture system, and MAGA's active participation, are identified as key components that can directly contribute to defining adaptation targets and better provision of data, especially from local and sub-national level, for enhanced M&E of adaptation in the following prioritised sectors: i) agriculture, livestock and food security; ii) coastal and marine zones; iii) forests, ecosystems and Protected Areas.

A functioning MER-agriculture system will allow for evidenced-based planning and decision-making on adaptation in the agriculture sector, support enhanced adaptation actions, and contribute to the achievement of national and global goals on sustainable development, climate change and agriculture.

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## Further information

### Guidelines:

- UNFCCC National Adaptation Plan – Technical guidelines for the National Adaptation Plan process (2012)
- Addressing Agriculture, Forestry and Fisheries in National Adaptation Plans – Supplementary guidelines (2017)
- Addressing forestry and agroforestry in National Adaptation Plans – Supplementary guidelines (2020)
- Addressing fisheries and aquaculture in National Adaptation Plans – Supplementary guidelines (2020)

### NAP-Ag:

- [www.fao.org/in-action/naps/partner-countries/guatemala/en/](http://www.fao.org/in-action/naps/partner-countries/guatemala/en/)
- [www.adaptation-undp.org/naps-agriculture/partner-countries/guatemala](http://www.adaptation-undp.org/naps-agriculture/partner-countries/guatemala)

#### ➤ **Food and Agriculture Organization of the United Nations (FAO)**

[www.fao.org/in-action/naps](http://www.fao.org/in-action/naps)  
FAO-NAPs@fao.org | Julia.Wolf@fao.org

#### ➤ **United Nations Development Programme (UNDP)**

[www.adaptation-undp.org/naps-agriculture](http://www.adaptation-undp.org/naps-agriculture)  
Rohini.Kohli@undp.org

#### ➤ **Germany's Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU)**

[www.bmu.de/en](http://www.bmu.de/en)

#### ➤ **International Climate Initiative (IKI)**

[www.international-climate-initiative.com](http://www.international-climate-initiative.com)

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