



Food and Agriculture Organization  
of the United Nations

# Meeting the climate change mitigation commitments of **Least Developed Countries**

*The role of the agricultural sectors and the need for urgent action*



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Photo on the cover: man with daba - a traditional Mossi agricultural tool - in front of a small reservoir called Bouli, which FAO is planning to rehabilitate to increase cultivated land in the village of Kamdaogo, Burkina Faso.

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Although not directly referenced in this document, the analysis builds on the approach explored in the Regional analysis of the Nationally Determined Contributions of Eastern Africa: Gaps and opportunities in the agriculture sectors (*Crumpler et al. 2017*).

## Abbreviations and acronyms

CAIT	Climate Analysis Indicators Tool	NDC	Nationally Determined Contributions
CSA	Climate-smart agriculture	PES	Payments for ecosystem services
FAO	Food and Agriculture Organization of the United Nations	REDD+	United Nations Programme on Reducing Emissions from Deforestation and Forest Degradation
FAOSTAT	Food and Agriculture Organization Corporate Statistical Database	SIDS	Small Island Developing States
GDP	Gross domestic product	SRI	System of Rice Intensification
GHG	Greenhouse Gases	WB	The World Bank
IEA	International Energy Agency	WRI	World Resource Institute
IPCC	Intergovernmental Panel on Climate Change		
LDC	Least Developed Countries		
NAMA	Nationally Appropriate Mitigation Action		
NAP	National Adaptation Plan		
NAPA	National Adaptation Programmes of Action		



# Executive summary



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For the Least Developed Countries (LDCs), achieving the commitments following the ratification of the Paris Agreement will require a great effort, as the availability of financial, social, and technical resources are often limited or directly dependent upon the higher income nations. The 47 LDCs account for 13 percent of the global population, 1 percent of global GDP and 5.75 percent of global GHG emissions. These countries not only face more challenging tasks than other countries, as overall conditions within each nation may not facilitate the accomplishment of the stated goals, but they are more vulnerable to climate change and therefore experience the greatest impacts. For FAO, this important set of countries, in which the agricultural sectors stands out as the main economic activity, are top priority Member Nations for collaboration and implementation of climate action.

Mitigation and adaptation goals established through Nationally Determined Contributions (NDCs) offer an insight into domestic policies regarding national action to address climate change. They indicate each country's standing point on climate-driven strategies, actions needed to reinforce them, limitations and, in some cases, the required budget to achieve them. The analysis of these communications provides recommendations for this particular group; including capacity development, technological transfer and financial support, while stressing the importance of the agricultural sectors. Moreover, to maximize country ownership and commitment, critical for achieving sustainable

results on a large scale, a system-wide capacity development approach for LDCs, that interdependently empowers people, strengthens institutions and enhances the enabling policy environment based on assessed needs, is recommended.

Climate-related strategies in agriculture offer a way of targeting the countries' development goals and needs. Mitigation actions not only reduce LDCs' vulnerability to climate shifts, but also ensure livelihoods and food security, preserve natural resources, provide higher productivity and income, and keep pace with population growth.

In this document, FAO shares an overview of GHG emissions from LDCs and their willingness, and capability to address their submitted NDCs. It reviews the most common goals and the barriers faced by LDCs in order to achieve them, offering generalized recommendations to aid this pursuit. In this way funding partners have an idea of the potential posed by climate action implemented in LDCs.

This analysis was constructed to support governments, international organizations, aid institutions and global funding entities when selecting a country for project implementation, prioritizing them by the urgency of their needs. Countries were prioritized based on climate vulnerability, development indicators, level of CO<sub>2</sub> emissions and level of policy planning.







# Introduction

Action towards achieving the goals of the 2030 Agenda for Sustainable Development, particularly those to be fulfilled by all countries in order to contribute to climate change mitigation and adaptation, must be addressed promptly and on a cross-sectoral policy basis. Due to their special needs for social, financial and technical support, the Least Developed Countries face a particularly challenging task.

LDCs display the lowest indicators of income and human development, are highly vulnerable to economic and environmental shocks, have weak institutions and governance, and confront severe structural impediments to sustainable development. Their high dependence on agricultural and land-use activities makes the LDCs an important subset of countries for FAO to collaborate with in terms of policy development and climate action implementation.

In recognition of the importance of the agricultural sectors, which include crops, livestock, forestry, fisheries and aquaculture, nearly all of the 47 LDCs include sustainable

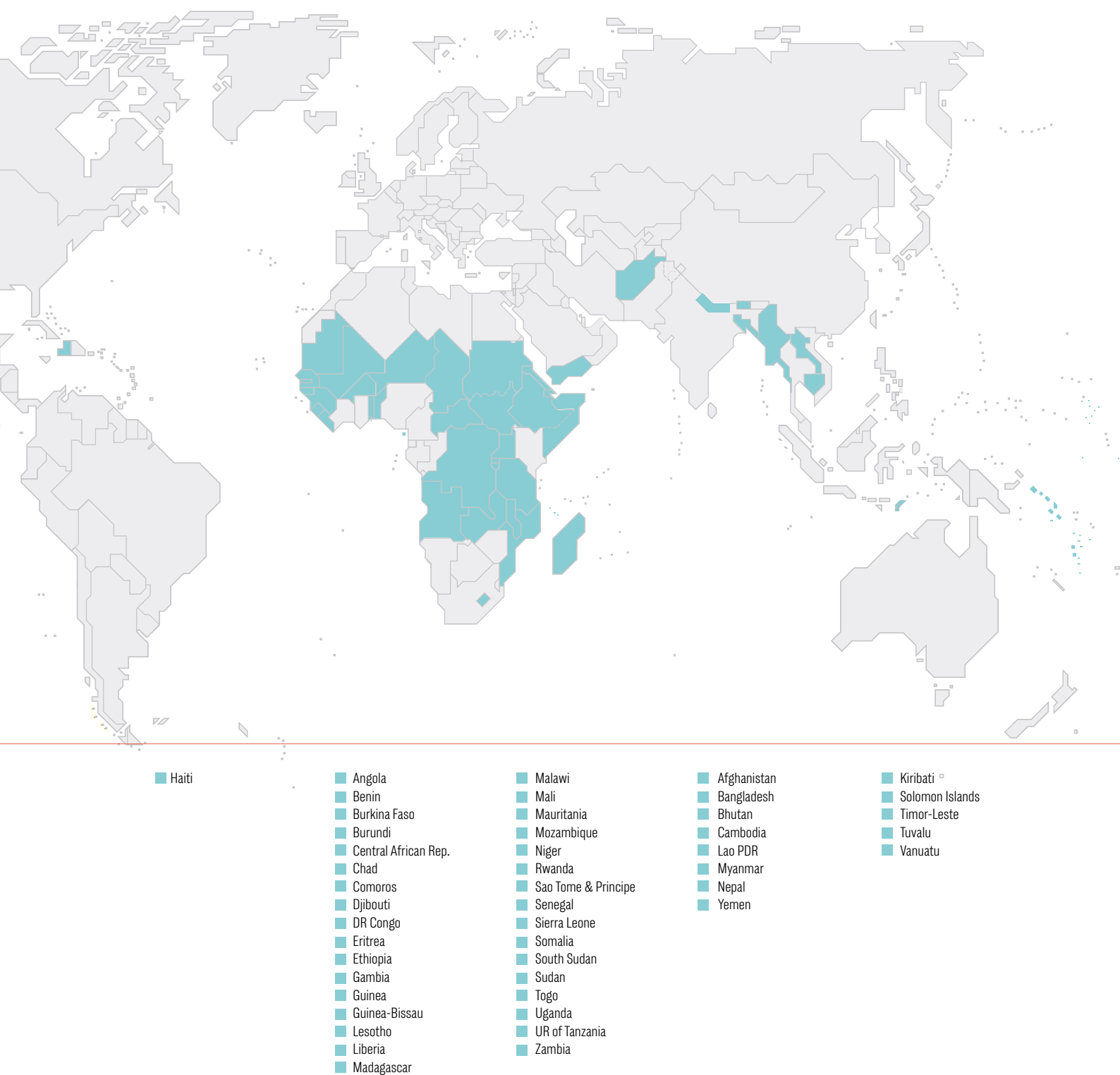
land-use practices in their prioritized policies; aiming for low emission crops and livestock production, emission reduction related to deforestation and mitigation action through reforestation.

NDCs are an opportune document for examining mitigation goals across countries in order to determine areas of commonality and synergy for potential cross-sectoral policy development.

An analysis of the potential of proposed actions for achieving mitigation goals in LDCs is presented as a tool to understand the differing degrees of impact that certain policies can have, depending on national contexts. Grouping countries based on the urgency of need, highlights the countries that should benefit first from financial support to implement their NDCs.

A better understanding of the target climate actions in the agricultural sectors can help FAO determine the best roadmap to support and collaborate with LDCs in this endeavour.

*This document is offered as a guidance-only tool and does not intend to prioritize climate support and financial aid to specific countries in anyway. Climate action strategies must be tailored following national social, financial, and environmental contexts, being site-specific actions and not a one-size-fits-all measure.*



### LDC countries of the world

Map source: <http://www.un.org/Depts/Cartographic/map/profile/world00.pdf>

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## Understanding the Least Developed Countries

LDCs account for 13 percent of the global population. Most of these countries are in Africa, holding 34 out of 47, while eight countries are in Asia, Haiti in the Caribbean, and the remaining four in Oceania.

In 2015, LDCs represented less than 1 percent of the global GDP, with an average growth of 3.8 percent, the lowest level recorded for this group in the past two decades.

Most LDCs have vulnerable communities and face development challenges due to widespread hunger, malnutrition and poverty. These are driven by low commodity prices, humanitarian crises, slow reduction in poverty and climate vulnerability. The slow growth highlights the need to

diversify production and exports, and enhance agricultural productivity in LDCs.

As agriculture is the main source of food, income and employment in rural areas, it has a direct impact on the wellbeing of the rural population. On average, agriculture, forestry and fisheries in LDCs contribute from 10 to 30 percent of national GDP. In 14 countries, these activities make up to 50 percent.

Increasing agricultural productivity is, without doubt, central to boosting incomes in LDCs, particularly in countries where subsistence agriculture is highly vulnerable to the effects of climate change.

## Nationally Determined Contributions and the agricultural sectors

Nationally Determined Contributions are the main national policy frameworks through which countries lay out their climate commitments to the international community, composed of both mitigation and adaptation policy goals.

Following the Paris Agreement, each country must report their NDC implementation progress on a biennial basis. LDCs, however, are exempt from this requirement and are allowed to submit this information at their discretion. Agriculture provides a way forward for the accomplishment in reducing GHG emissions, while ensuring the provision of healthy food and development in these countries.

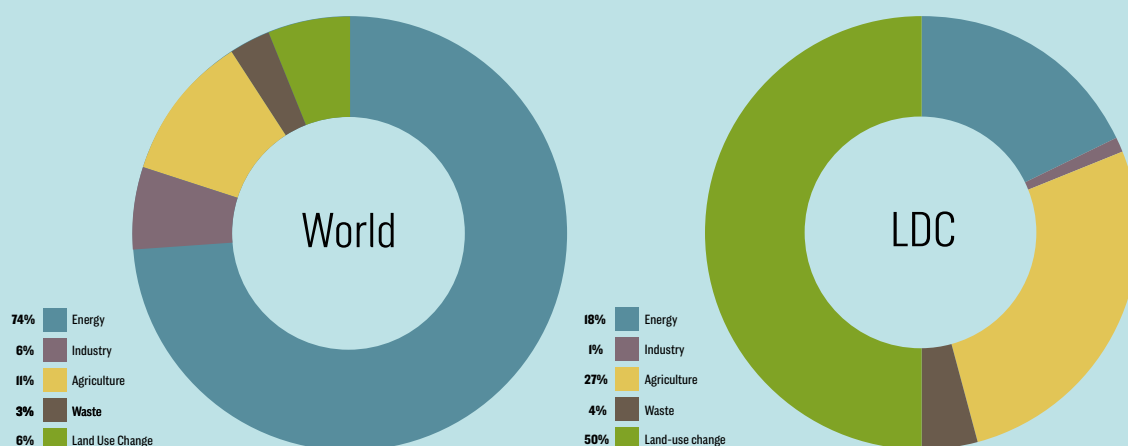
The close linkage between land use practices, national economic growth, livelihoods and food security in LDCs makes policies dealing with this sector especially important.

Addressing adaptation and mitigation co-benefits through research, capacity development and implementation of policies and measures, the agricultural sectors in LDCs have many opportunities for GHG emissions reductions, particularly through changes in land use.



## BOX I. How much GHG do LDCs emit? The importance of the agricultural sectors

In 2015, LDCs represented just 5.75 percent of global GHG emissions. Unlike the worldwide trend where the energy sector is the greatest contributor to national GHG emissions, among LDC countries the agriculture, land use and forestry sectors are the greatest contributors, emitting up to 50% of GHGs.



Over one-third of the LDC countries omit the agricultural sectors from their mitigation policies, only including adaptation policies for the sector. Other countries only contain supplementary or conditional mitigation policies for the agricultural sectors. LDCs have prioritized adaptation over mitigation actions given their low contribution to the global GHG emissions and their high vulnerability to climate impacts.

Nonetheless, and considering the latest recommendation from the IPCC<sup>1</sup>, climate resilience should be acquired through mitigation actions: limiting emissions would give people and ecosystems more time to adapt and remain below the threshold beyond which climate change risks become unacceptably high.

Therefore, climate action must be rapid and far-reaching. With agriculture-based mitigation action, LDCs can lead the way in reducing GHG emissions, achieving carbon neutrality by 2050.

<sup>1</sup> IPCC 2018. Special Report on Global Warming of 1.5° C

# What actions to reduce emissions are the Least Developed Countries planning to carry out in the agricultural sectors?

In spite of the clear differences in the planning and implementation of mitigation actions, LDCs have several common means of reducing emissions and preparing for climate shifts.<sup>2</sup> Priority sectors for LDCs are agriculture, mainly crops and livestock, forestry, water, food security, bioenergy and disaster risk reduction.

**Forestry and Land Use:** Mainly focusing on highly degraded and coastal ecosystems, reinforce reforestation and forest regeneration for increasing resilience to climate change. While promoting climate-smart agriculture, agroforestry and agroecological systems, actions include the implementation of REDD+ programs and National Adaptation Plans. Forestry policies promote mitigation and adaptation actions, through sustainable forest and land management, conservation and creation of protected areas, protection of forested carbon sinks and overall maintenance of ecosystem services.

**Energy and biofuels:** Strong emphasis on shifting energy sources toward renewable energies and efficient use of biomass. Access to clean modern energy, particularly in the agricultural sectors will not only allow countries to mitigate GHG emissions, but also to promote sustainable economic growth. Therefore, local, national, regional and global energy strategies should be supported, in order to assist LDCs in overcoming the barriers of making a sustainable transition towards renewable energy.

**Soil health:** Less than half of the LDCs directly mention soils in adaptation and mitigation policies; referred to as soil management, soil fertility, soil erosion, soil degradation, carbon sequestration, and water balance preservation. Given

the co-benefits from sustainable soil management, focusing on soil health, efficient use of fertilizers, and reduction of soil pollution, can greatly contribute to meeting NDC goals across the agriculture, forestry, energy, and water sectors.

**Water:** Nearly all of the NDCs focus on drinking water distribution and availability, especially during the dry seasons. Sectoral water policies are also closely related to the energy and agricultural sectors, with many countries referring to irrigation projects. Improvement and expansion of power-irrigated areas will enhance energy efficiency, agricultural productivity and water efficiency.

**Sustainable use of natural resources and conservation of ecosystems:** Though indirectly mentioned, protection of ecosystems is highlighted for the maintenance of nutrient cycling, carbon sequestration, pest regulation, and water filtration. Given the large dependency of LDCs on agriculture, protecting ecosystem services can play a key role in increasing the resilience of agricultural systems and dependent communities to climate change and other threatening factors. LDCs that are also part of Small Island Developing States (SIDS) face even greater challenges and are more prone to suffer from climate change and social, environmental and economic threats.

Regardless of the actions to be implemented, all LDCs mentioned support needs related to capacity development, technology transfer and finance. Developed countries and the international community have committed to assist developing countries in these areas. Providing guidance to funding entities supporting LDC countries is particularly important.

<sup>2</sup> A summary fact sheet for every country can be found in Annex 2. They offer an overview of countries' emissions, socio-economic indicators, and the specific policies mentioned for mitigation and adaptation in the agricultural sectors.

## Potential of cross-sectoral policy implementation and financing aid



Prior to the implementation of any climate action project, it is necessary to recognize differences within the category of Least Developed Countries. Not all of the LDCs have the same capacity or political, economic, or social conditions to ensure that different governmental institutions work together. As a result, the influence and transformational capacity of potential policy interventions will vary.

In order to select a country respecting the differences in policy potential, an intervention index highlights the countries that need support more urgently.<sup>3</sup> This index identifies where policy implementation efforts can be most effective, focusing on the most needy countries and

potentially tailoring new approaches for specific countries. Classification of countries' priorities was based on climate vulnerability, development indicators, level of CO<sub>2</sub> emissions and level of policy planning.

This index does not only prioritize countries, but also helps identify gaps and opportunities to enhance mitigation targets in LDCs. It provides a general foundation from which financing entities can prioritize countries and determine resource allocation, highlighting the areas with the largest potential impact, with a series of suggested policies and actions.

3

The methodology used for this analysis is presented in Annex I.



The index includes two main categories of indicators: urgency of action and feasibility of action. Urgency of action englobes the socio-economic conditions and climate vulnerability of every country. Feasibility of action assesses social, economic and environmental conditions in each country, their priority sectors and their ambitions to reduce GHGs emissions.<sup>4</sup>

Based on this analysis, countries were prioritized by the urgency of their needs and grouped into five categories:

- **Urgency based on emissions and vulnerability:** Countries where support for action must be immediate. This includes high level of vulnerability to climate change, low socio-economic indicators and high level of emissions.
- **Urgency based on emissions:** Countries where socio-economic indicators are higher than in the rest of LDCs but have high levels of emissions from the agricultural sectors.
- **Urgency based on vulnerability:** Countries with a low level of emissions from the agricultural sectors but face high climate vulnerability. These countries also include SIDS.
- **Readiness:** Countries with ongoing climate action and a low level of emissions, that can be models for other countries.
- **Unconnected action:** Countries with significant mitigation actions in one sector but with high GHG emissions in the rest.
- **Self-paced action:** Although climate action is necessary, the socio-economic conditions and vulnerability in these countries allow them to undertake mitigation projects on their own or at a later stage with external support.

<b>Urgency based on emissions and vulnerability</b>	Central African Republic, Malawi, Mali, Mozambique, South Sudan
<b>Urgency based on emissions</b>	Afghanistan, Angola, Benin, Burkina Faso, Chad, Ethiopia, Gambia, Guinea, Liberia, Madagascar, Mauritania, Niger, Rwanda, Sierra Leone, Solomon Islands, Somalia, Sudan, Timor Leste, Uganda, UR of Tanzania, Zambia
<b>Urgency based on vulnerability</b>	Guinea-Bissau, Haiti, Kiribati, Tuvalu, Vanuatu
<b>Readiness</b>	Bhutan, Burundi, Comoros, Djibouti, Eritrea, Lao PDR
<b>Unconnected action</b>	DR Congo, Sao Tome and Principe, Togo
<b>Self-paced action</b>	Bangladesh, Cambodia, Lesotho, Myanmar, Nepal, Senegal, Yemen

<sup>4</sup> Taking the forestry sector, as an example, we observed if it is included as a priority sector for action in the NDC, the percentage of forest cover, the deforestation rate and the emissions from the sector. A country able to take action in this sector would include it as a priority, ensure it is highly forested with low levels of deforestation or large reforestation campaigns, and potential to mitigate GHG emissions through carbon sinks and sequestration.

# Least Developed Country-specific policy recommendations



LDCs are countries confronting severe structural impediments to sustainable development. They are highly vulnerable to economic and environmental shocks and have low levels of human assets. Specific policies must be crafted to support LDCs in achieving the mitigation goals set out in their NDCs, building resilience and adapting to climate change. The following recommendations may guide a more effective implementation of climate-related interventions in LDCs. Although designed to be specific recommendations for all LDCs, they allow for local and regional adjustments and must be implemented based on the national specificities.

## **Efficient use of biomass and inclusion of other renewable energy sources**

The use of biomass as energy for cooking is a common trend in LDCs, a major contributor to GHG emissions and a driver of forest degradation. However, the link between biomass use, food, and culture differs between countries and may require different approaches to promote a shift away from biomass

dependence. Promoting local participation is crucial for the successful and sustainable implementation of any improved cookstove program or fuel-switching agenda. Thus, it is recommended that efforts begin by researching community needs and cultural contexts and embracing a bottom-up strategy.

## **Establish value chain policies that promote sustainable agricultural production**

Economic measures that promote and reward sustainable natural resources management and agricultural practices must be mainstreamed. This would increase production and profit from the agriculture, forestry, fisheries and aquaculture sectors, while offering the co-benefits of improved socio-economic conditions and increased resilience to climate change. Sustainable production of priority crops in LDCs, mostly through carbon neutral and low carbon agriculture, offers new opportunities for diversifying and strengthening agricultural value chains. Access to

carbon markets, certification and labeling approaches, blockchain and alternative trading systems could represent an advantage for livelihoods dependent on widely traded commodities.

### **Development and implementation of effective cross-cutting policies**

Multi-sectoral policies that promote synergies between economic, social, and sustainable development must be constructed and prioritized, allowing an easy transition to their implementation. Policies at national, regional and local level should facilitate nation-wide mitigation alongside climate adaptation for the poor and vulnerable.

### **Strengthening institutional capacities and governance**

As part of a system-wide capacity development process, further strengthening of policy frameworks and institutional arrangements to support the implementation of their NDCs is still needed, particularly through multi-sectoral cooperation and inter-ministerial coordination. Several countries emphasize the inclusion of all levels of stakeholders through national, subnational and regional cooperation among governments and non-state actors, including South-South and Triangular Cooperation. Monitoring and evaluating of implementation strategies and elaboration and application of mitigation and vulnerability indicators to measure progress made in meeting their contribution commitments is vital. Some NDCs include detailed measures for monitoring and reporting the performance of their adaptation and mitigation strategies for specific regions. This also supports reporting at national level in the long-term.

### **Access to international climate funds**

Due to the lack of private investment or limited governmental support, access to existing and innovative financing mechanisms is a top priority. International funding entities must pay special attention to sectors where additional finance is crucial and allocate a substantial share to LDCs. Moreover, these countries need an enhanced capacity to develop and manage investments, both for the design of projects and the various financing requirements, especially when financing long-term projects.

### **Climate finance through domestic funds**

International funds are limited and obtaining them has become an even more competitive process. Options for the generation of domestic funds should include public and private partnerships, the expansion of budget support for climate action, environmentally responsible incentives, the reform of fiscal regimes, the establishment of Payment for Ecosystem Services (PES) schemes, access to carbon markets and premium agricultural products, and the enhancement of green and blue funding mechanisms.

### **Capacity development and technology transfer**

System-wide capacity development in project formulation, implementation and access to funding for climate action is still missing. With limited availability of technological resources for quantifying GHG emissions and their reduction potential, in the agricultural and land-use sectors, raising awareness and enhancing capacity is a first step towards reaching the NDC targets.

### **Social protection and inclusion**

Consider the implementation and scaling-up of social protection systems in all agricultural sectors, particularly in rural areas. Allocate special attention to the reduction of child labour in agriculture, develop and implement a strategy for engaging youth in these sectors, create enabling conditions for social inclusion and empower women working along the agricultural value chain. Climate action must address power imbalances and inequality regarding gender, labour conditions, tenure rights, market access, migration patterns and stakeholder conflicts.

### **Cooperation among LDCs**

Although LDCs share their dependence on agriculture with low socio-economic indicators, there is still great diversity among these countries. Partnerships between countries sharing similar environmental conditions, agricultural practices or vulnerabilities to climate change, will allow an exchange of experiences and innovation, along with promoting a call for assistance and development. It is important for LDCs to learn from each other, especially considering their limited resources.



**A participatory approach for achieving mitigation and resolution of environmental conflicts**

The issues faced by highly vulnerable, poor and food insecure natural resource dependents, who maybe contribute to land-use pressures due to limited alternative opportunities, should be prioritized land-use pressures due to limited alternative opportunities, should be prioritized. A thorough understanding of the drivers, needs and possible opportunities to support them, in order to reduce associated emissions, must be done in close participation with these people to ensure that while safeguarding their human rights, they benefit and are empowered.

**Bringing coherence**

Climate action must emphasize the need to ensure poverty eradication and food security, in accordance with the Paris Agreement, the United Nations 2030 Agenda for Sustainable Development and other international instruments. Strategies and mechanisms that enable the fulfillment of these plans and agreements will support climate action while targeting the country's development goals, remaining gaps and needs.



## **BOX 2.** FAO intervention areas to fulfill NDCs

FAO identified common challenges that are preventing LDC countries from fulfilling their NDC commitments and ambitions in the agricultural sectors, as well as the types of support from the international community that are required to address them.

Key actions under these five intervention areas are:

### **1. Compliance with the Paris Agreement's enhanced transparency framework**

- I.1. National GHG inventories
- I.2. Tracking adaptation
- I.3. Reporting on international support and pending gaps

### **2. Coherent policy frameworks for climate action in the agricultural sectors**

- 2.1. Inclusive national planning
- 2.2. Policy coherence
- 2.3. Targeted policy support for the agricultural sectors

### **3. Research, analysis and tools**

- 3.1. Enhancing the evidence base for adaptation
- 3.2. Enhancing the evidence base for mitigation
- 3.3. Facilitating South-South cooperation and exchange
- 3.4. Developing, sharing and utilizing tools and guidelines

### **4. Capacity development for implementation and action in the agricultural sectors**

- 4.1. Strengthening capacities for climate action in the agricultural sectors
- 4.2. Strengthening capacities for monitoring and reporting
- 4.3. Inter-ministerial coordination

### **5. Investment for the development of the agricultural sectors**

- 5.1. Supporting access to public international climate finance
- 5.2. Unlocking private sector investment
- 5.3. Guiding national public sector investment

The global community must rapidly scale up support in these areas. International organizations, technical agencies, financial institutions and other actors must work closely with LDCs in order to implement a coordinated response to these challenges.

# Annex I. Least Developed Countries and their Nationally Determined Contributions



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## Country-specific targets and urgency of intervention

This document is based on a review of the Nationally Determined Contributions submitted by Least Developed Countries, with a focus on their mitigation and adaptation contributions in the agricultural sectors, their means of implementation and support needs.

Socio-economic data for each country was obtained from FAOSTAT, The World Bank's World Development Indicators, World Resources Institute Climate Access Indicators Tool (CAIT), and the World Energy Outlook.<sup>5</sup>

Constructed as a guide, the intervention index highlights the countries that are in greater need of support to address their NDC targets, based on the urgency and feasibility of action.

Due to the complexity of the indicators used for its construction, the intervention index uses a simple categorical aggregation approach, following the binary equally-weighted variation method (OECD, 2015).

Following the statistical assumptions for this kind of approach, a simple model was designed, highlighting emissions from the agricultural sectors and the share of the rural population that is undernourished.

The index is limited by the data available for each country, and adjusted for comparability.

<sup>5</sup> Data extracted from the database currently available (2018). Some indicators include data from previous years, from the latest records available in every country. Data for Sudan and South Sudan is aggregated in most of the indicators.



Urgency of action		
Population	Million	WB, 2018
Share of rural population	Percentage	WB, 2018
Rural population growth	Rate	WB, 2018
GDP per capita	Constant 2010 USD	WB, 2018
Share of GDP from agricultural sectors	Percentage from total GDP	WB, 2018
Number of people undernourished	Millions (3-year average)	FAOSTAT, 2018
Climate vulnerability	Number of climatic threats, as recognized by each country	NDCs
GHG emissions	Tonnes of CO <sub>2</sub> -eq	WRI, 2018
Feasibility of action		
Contribution	Percentage of GHG reduction relative to BAU scenarios	NDCs
Support needed for implementing actions	Current USD specified or unspecified	NDCs
Action in agriculture	Included as a priority sector	NDCs
Land under agriculture	Percentage from total land cover	FAOSTAT, 2015
Emissions from agriculture	Percentage from total emissions	FAOSTAT, 2016
Action in forestry	Included as a priority sector	NDCs
Forest area	Percentage from total land cover	FAOSTAT, 2015
Emissions from forestry	Percentage from total emissions	FAOSTAT, 2016
Deforestation	Rate	FAOSTAT, 2016
Action in energy sector	Included as a priority sector	NDCs
Use of biomass	Percentage from total energy source	IEA, 2017
Emissions from energy sector	Percentage from total emissions	FAOSTAT, 2016
Water management	Included as a priority action	NDCs
Gender and social inclusion	Included as a priority action	NDCs
Migration and conflict management	Included as a priority action	NDCs
MRV and M&E	Included as a priority action	NDCs
DRR/M	Included as a priority action	NDCs

## Annex 2. Country fact sheets



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### Overview and climate action in agricultural sectors

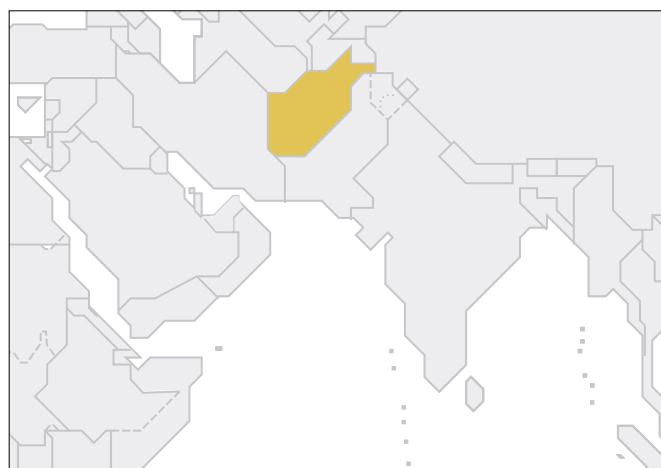
The following pages contain the mitigation and adaptation actions, extracted from their respective Nationally Determined Contributions, to be implemented by every country in agricultural sectors.

Information for each country is accompanied by key facts on their emissions, mitigation goals and socio-economic data. These are:

- Rural population in absolute numbers and share of total population
- Rural population growth rate
- Share of total population undernourished

- Major climate impacts (experienced and potential)
- GHG emissions by sector
- Emission reduction target (unconditional and conditional to funding)
- Required funds for implementation (nationally allocated and conditional to external funding)

The base colour in each page references the intervention index used for this review.<sup>6</sup>



### Urgency based on emissions

## Climate action in agricultural sectors

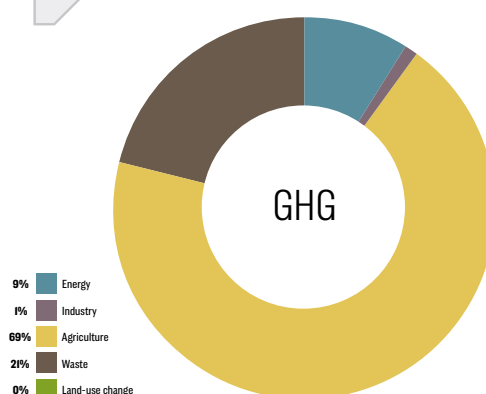
### Mitigation

- Collaborate through South-South cooperation on low carbon agriculture and livestock
- Sequester carbon in forests and on rangelands
- Promote clean cookstoves, use of biomass, wind and solar energy
- Improve management of rice paddies
- Increase afforestation and reforestation
- Improve Cropping Systems
- Reduce and optimize application of fertilizers

### Adaptation

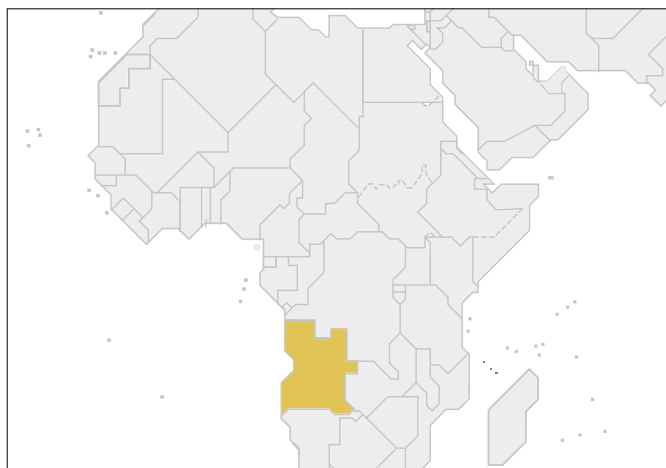
- Promote adaptive land water management
- Improve irrigation infrastructure
- Improve access to water and water security for rural communities and farmers
- Improve national dataset on agriculture and food security
- Ensure better spatial planning, focusing on agricultural production

## Afghanistan



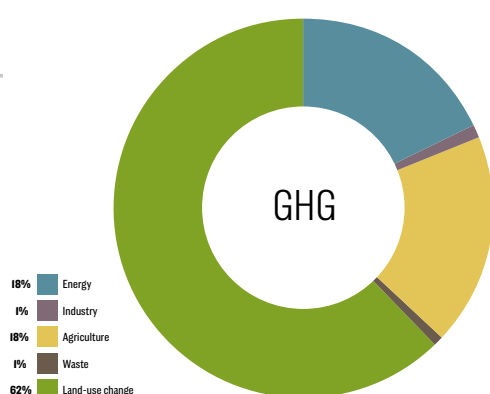
<b>Population</b>	<b>34.6 million</b>
<i>Rural</i>	72.9%
<i>Growth rate</i>	2.1%
<i>Undernourished</i>	21.6%
GDP per capita	562 USD
GDP from agriculture	21.9%
Major climate impacts	heat waves, floods, drought, glacial lake outburst floods
Unconditional emission reduction target	5%
Conditional emission reduction target	10%
Unconditional funds required	unspecified
Conditional funds required	17.4 billion USD

Map source: <http://www.un.org/Depts/Cartographic/map/profile/world00.pdf>



## Urgency based on emissions

# Angola



<b>Population</b>	<b>28.8 million</b>
<i>Rural</i>	<i>55.2%</i>
<i>Growth rate</i>	<i>1.9%</i>
<i>Undernourished</i>	<i>12.1%</i>
GDP per capita	3,308 USD
GDP from agriculture	NA
Major climate impacts	drought, flash floods, forest fires, sea level rise, changing temperature, rainfall patterns
Unconditional emission reduction target	unspecified
Conditional emission reduction target	81%
Unconditional funds required	unspecified
Conditional funds required	14.7 billion USD

## Climate action in agricultural sectors

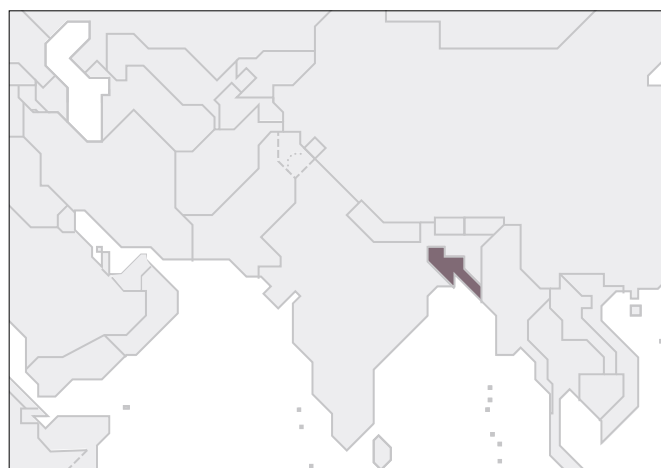
### Mitigation

- Stabilize emissions from agricultural and animal production
- Increase carbon sequestration in forests
- Rehabilitate land, improve management of rangelands and encourage agroforestry
- Promote sustainable charcoal through a value chain approach
- Encourage afforestation and reforestation of degraded forest lands and mangroves
- Promote alternative renewable energies to avoid deforestation (wind, solar and hydroelectric). Promote sugarcane for ethanol production

### Adaptation

- Increase the resilience of agro-pastoral livelihoods by improving crops and livestock production, animal health and nutrition, and soil and water management
- Increase water availability and extend water and electrical networks
- Build resilience and reduce vulnerability of marine fisheries systems
- Improve Disaster Risk Reduction management to support agropastoral communities





### Self-paced action

## Climate action in agricultural sectors

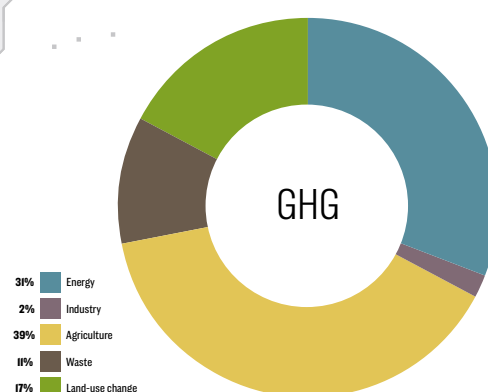
### Mitigation

- Reduce emissions from agricultural land and livestock
- Increase mechanization leading to a reduction in draft cattle
- Increase the proportion of organic manure in the fertilizer mix
- Promote rice cultivation with alternate irrigation
- Promote reforestation and afforestation in forest reserves and coastal mangroves
- Encourage use of improved cookstoves and Solar Home Systems

### Adaptation

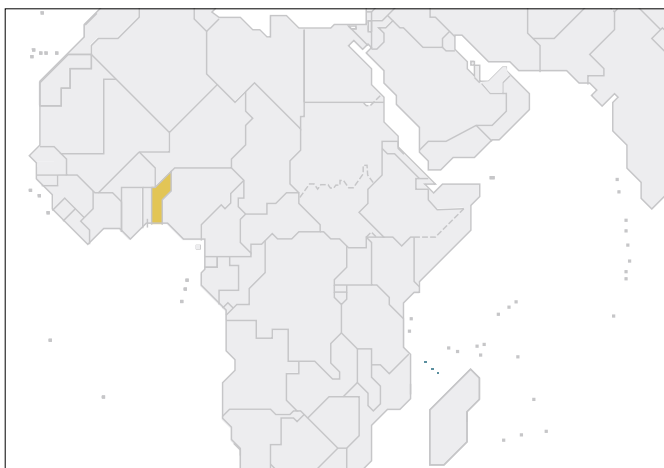
- Introduce improved, stress tolerant (salinity, drought and flood crops
- Use an energy efficiency labelling programme to promote sales of high efficiency products in the market
- Promote community-based conservation of wetlands and coastal areas
- Introduce ecosystem-based adaptation approaches, such as forestry co-management
- Improve early warning systems for flash floods, cyclones, floods, and drought and cyclone and storm surge protection.

## Bangladesh



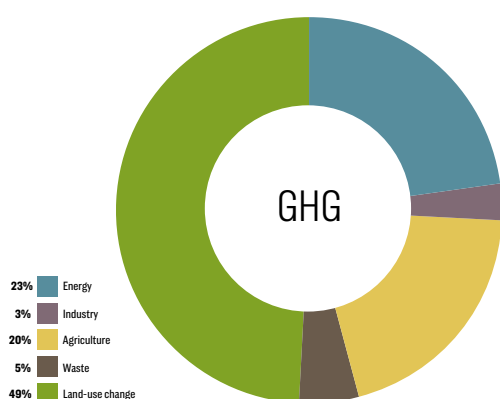
<b>Population</b>	<b>162.9 million</b>
<i>Rural</i>	<i>64.9%</i>
<i>Growth rate</i>	<i>-0.1%</i>
<i>Undernourished</i>	<i>14.9%</i>
GDP per capita	1,359 USD
GDP from agriculture	14.8%
Major climate impacts	drought, floods, cyclones, sea level rise, storm surges, saltwater intrusion, ocean acidification
Unconditional emission reduction target	5%
Conditional emission reduction target	10%
Unconditional funds required	unspecified
Conditional funds required	unspecified

Map source: <http://www.un.org/Depts/Cartographic/map/profile/world00.pdf>



## Urgency based on emissions

### Benin



<b>Population</b>	<b>10.9 million</b>
<i>Rural</i>	<i>55.6%</i>
<i>Growth rate</i>	<i>1.9%</i>
<i>Undernourished</i>	<i>10.1%</i>
GDP per capita	789 USD
GDP from agriculture	25.5%
Major climate impacts	drought, floods, windstorms, changing temperature and rainfall patterns, sea level rise
Unconditional emission reduction target	3.6%
Conditional emission reduction target	12.5%
Unconditional funds required	3.6 billion USD
Conditional funds required	8.1 billion USD

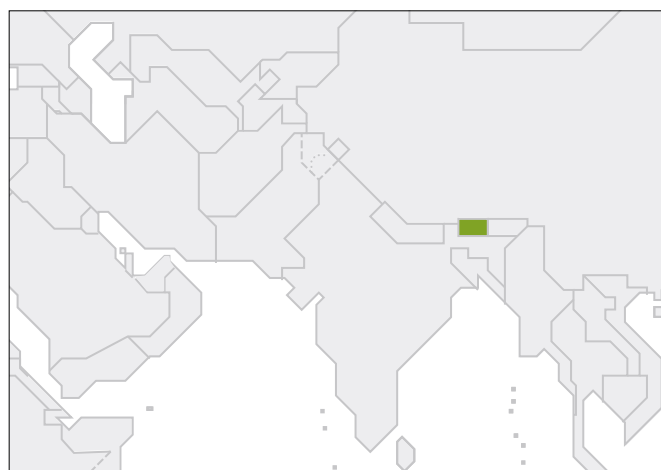
## Climate action in agricultural sectors

### Mitigation

- Shift to climate-smart agriculture, for lowering or eliminating emissions
- Improve farming techniques and crop production
- Promote soil fertility management techniques
- Develop and irrigate rice-growing area with water control
- Promote the economic use of firewood energy and fuel-efficient cookstoves
- Sequester carbon in forest ecosystems through reforestation and afforestation

### Adaptation

- Improve irrigation infrastructure
- Promote integrated water management to ensure water availability
- Improve meteorological and climate alert systems for agricultural communities
- Address coastal erosion



## Readiness

# Climate action in agricultural sectors

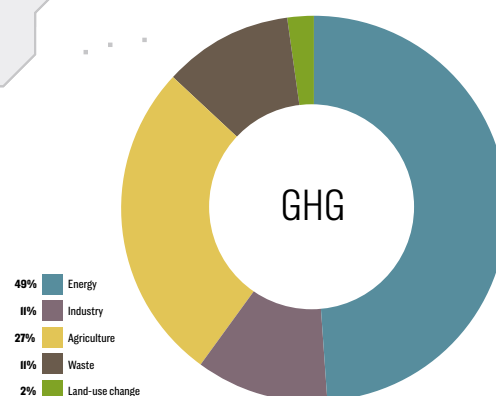
## Mitigation

- Promote climate-smart agriculture and livestock farming
- Promote agroforestry or agrosilvopastoral systems
- Pursue organic farming and conservation agriculture
- Integrate sustainable soil and land management technologies
- Diversify mix of energy sources (solar, wind, small hydro, biomass)
- Manage forests sustainably and conserve biodiversity

## Adaptation

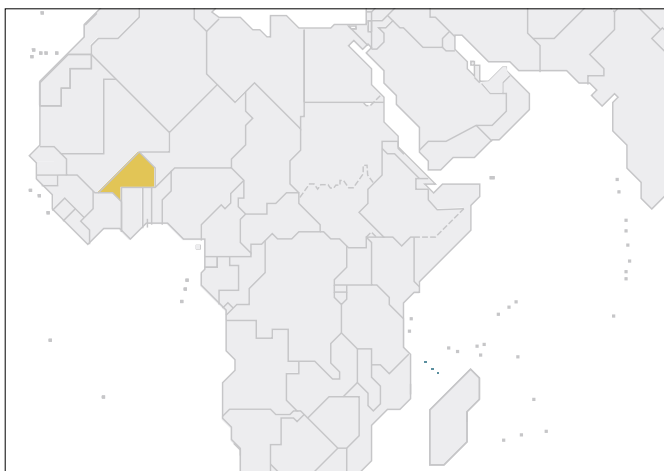
- Promote improved irrigation systems and management
- Integrate watershed and wetland management
- Develop and integrate climate resilient crop varieties and conservation of plant genetic resources
- Ensure surveillance and enhanced emergency response to agricultural pests and diseases
- Develop monitoring, assessment, and warning systems for flash floods, landslides, forest fires and windstorm hazards to reduce risks to crops and human settlements

## Bhutan



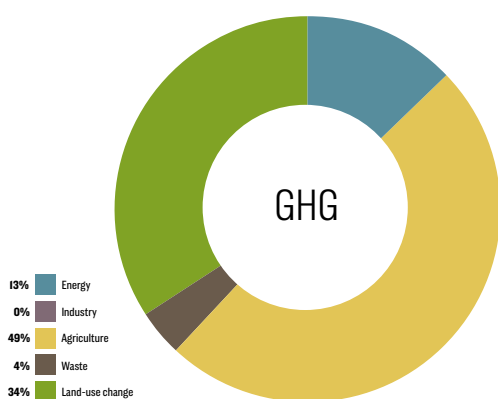
<b>Population</b>	<b>798 000</b>
<i>Rural</i>	60.6%
<i>Growth rate</i>	0.1%
<i>Undernourished</i>	NA
GDP per capita	2,773 USD
GDP from agriculture	17.3%
Major climate impacts	flash floods, glacial lake outburst floods, windstorms, forest fires, landslides
Unconditional emission reduction target	unspecified
Conditional emission reduction target	unspecified
Unconditional funds required	unspecified
Conditional funds required	unspecified

Map source: <http://www.un.org/Depts/Cartographic/map/profile/world00.pdf>



## Urgency based on emissions

# Burkina Faso



<b>Population</b>	<b>18.6 million</b>
<i>Rural</i>	<i>69.3%</i>
<i>Growth rate</i>	<i>1.7%</i>
<i>Undernourished</i>	<i>19.9%</i>
GDP per capita	627 USD
GDP from agriculture	30.8%
Major climate impacts	changing temperature and rainfall patterns, drought, groundwater depletion
Unconditional emission reduction target	6.6%
Conditional emission reduction target	11.6%
Unconditional funds required	1.1 billion USD
Conditional funds required	6.6 billion USD

## Climate action in agricultural sectors

### Mitigation

- Practice integrated soil fertility management
- Promote sustainable land management
- Implement agroforestry and best forestry practices (selective cutting of firewood, assisted natural regeneration)
- Diversify energy sources (solar, wind, biogas)

### Adaptation

- Cultivate early or drought-resistant crop varieties
- Implement water and soil conservation techniques
- Introduce water-efficient irrigation systems
- Improve access to climate information





## Readiness

## Climate action in agricultural sectors

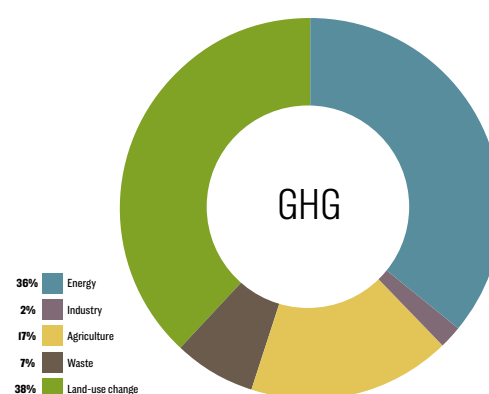
### Mitigation

- Promote climate-smart agriculture
- Promote agroforestry and increase forest cover
- Increase energy efficiency in production, transport, distribution and consumption. Distribute renewable energies (biogas, wind power and gasification)
- Improve waste management from agriculture, forestry and livestock (peat carbonization, coffee husks, rice hulls, sugarcane leaves and sawdust)
- Drain intermittently rice cultivation
- Manage forest sustainably and encourage reforestation
- Promote improved home ovens and crafts industries (including charcoal)

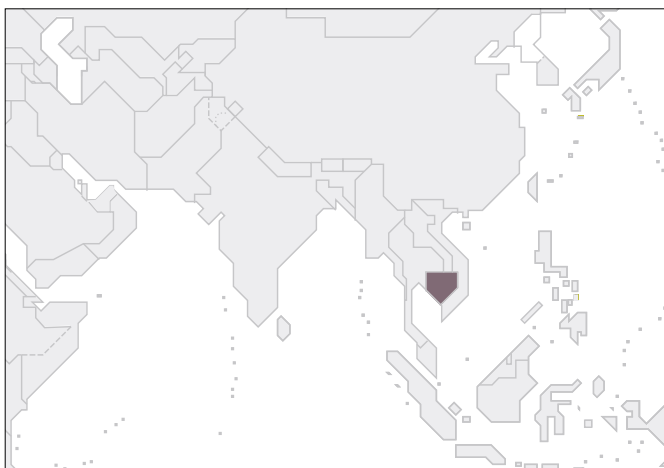
### Adaptation

- Promote integrated water resources management for agriculture and livestock
- Protect aquatic and land-based ecosystems
- Research and extension of drought-resistant forest species

## Burundi

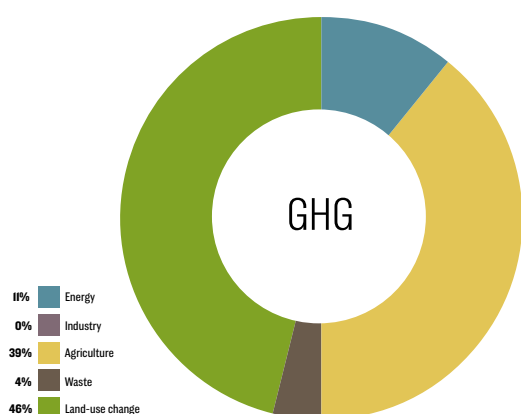


<b>Population</b>	<b>10.5 million</b>
<i>Rural</i>	87.6%
<i>Growth rate</i>	2.8%
<i>Undernourished</i>	NA
GDP per capita	286 USD
GDP from agriculture	39.7%
Major climate impacts	changing temperature and rainfall patterns
Unconditional emission reduction target	3%
Conditional emission reduction target	17%
Unconditional funds required	unspecified
Conditional funds required	unspecified



## Self-paced action

# Cambodia



<b>Population</b>	<b>15.8 million</b>
<i>Rural</i>	79.1%
<i>Growth rate</i>	1.3%
<i>Undernourished</i>	15.2%
GDP per capita	1,270 USD
GDP from agriculture	26.7%
Major climate impacts	floods, drought, windstorms, saltwater intrusion
Unconditional emission reduction target	26.7%
Conditional emission reduction target	26.7%
Unconditional funds required	unspecified
Conditional funds required	unspecified

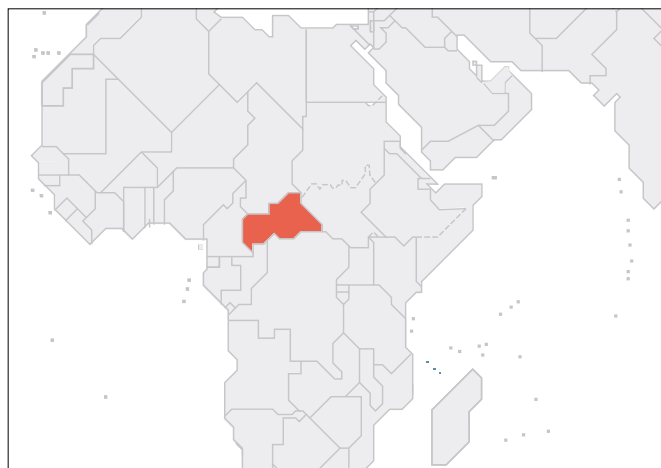
## Climate action in agricultural sectors

### Mitigation

- Promote low-carbon planning and technologies
- Increase climate-smart farming systems
- Increase forest cover
- Increase use of renewable energy (solar, hydropower, biomass and biogas) and use renewable energy for irrigation
- Promote energy efficiency in rice mills and through clean cookstoves
- Reduce emissions from waste through the use of biogas and water filters

### Adaptation

- Develop crop varieties suitable to Agro-Ecological Zones and resilient to climate change
- Promote adaptive aquaculture production systems and practices, particularly in coastal areas
- Strengthen early warning and climate information systems
- Adapt agriculture systems to changes in water variability



### Urgency based on emissions and vulnerability

## Climate action in agricultural sectors

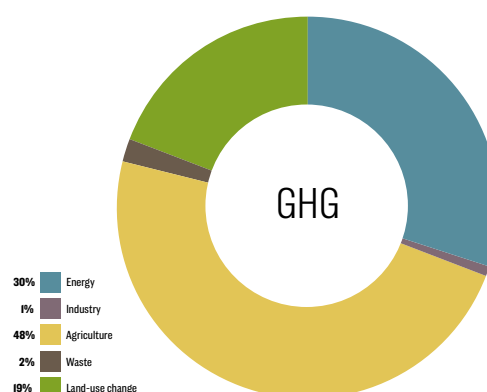
### Mitigation

- Promote sustainable soil management and sustainable agricultural and forestry systems
- Reforest and rehabilitate exploited forested areas. Develop industrial forestry sites
- Promote improved cookstoves
- Diversify energy sources. Encourage the use of wood waste as fuel for forestry companies
- Introduce national biofuels programme
- Promote urban, suburban and community forestry

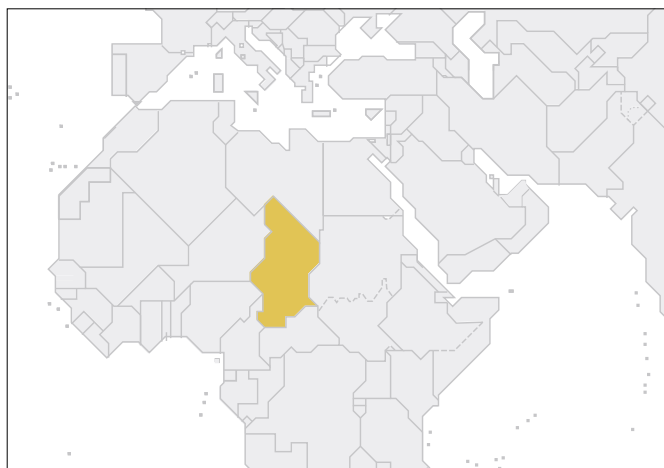
### Adaptation

- Diversify agricultural systems and adapted crop varieties
- Diversify livelihoods and systems of production (fishing, aquaculture, agriculture, husbandry, hunting, forests)
- Improve drinking water supply. Establish a water quality monitoring system

## Central African Rep.

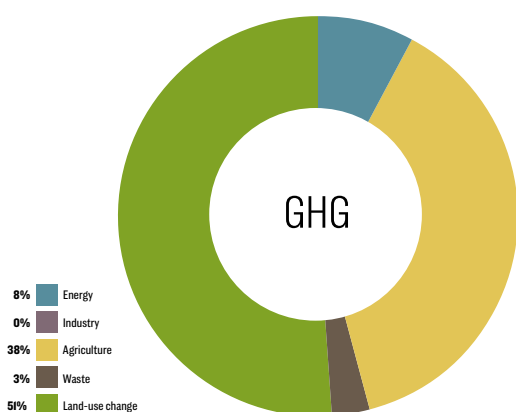


<b>Population</b>	<b>4.6 million</b>
<i>Rural</i>	59.7%
<i>Growth rate</i>	0.6%
<i>Undernourished</i>	63.1%
GDP per capita	382 USD
GDP from agriculture	42.6%
Major climate impacts	drought, extreme rainfalls, floods
Unconditional emission reduction target	3.7%
Conditional emission reduction target	1.31%
Unconditional funds required	339 million USD
Conditional funds required	3.5 billion USD



## Urgency based on emissions

### Chad



<b>Population</b>	<b>14.4 million</b>
<i>Rural</i>	77.4%
<i>Growth rate</i>	2.9%
<i>Undernourished</i>	31.8%
GDP per capita	664 USD
GDP from agriculture	50.1%
Major climate impacts	desertification, water loss
Unconditional emission reduction target	18.2%
Conditional emission reduction target	71%
Unconditional funds required	3.3 billion USD
Conditional funds required	17.9 billion USD

## Climate action in agricultural sectors

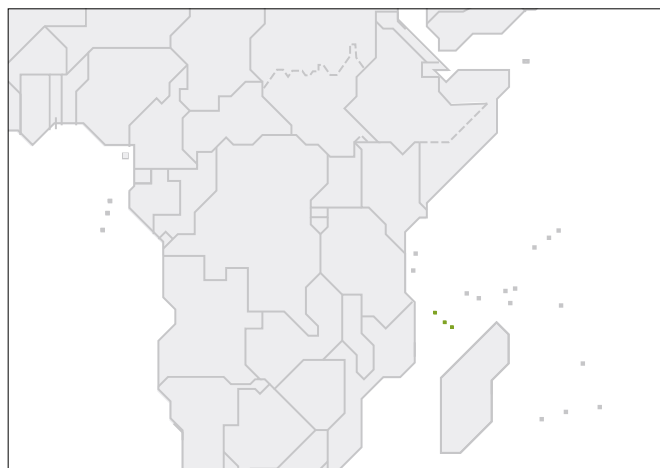
### Mitigation

- Develop the agrosilvopastoral and fishery sectors
- Improve agricultural production and access to inputs (organic fertilizers, seed for food crops and fodder resistant to drought) and technologies
- Develop an agro-ecological approach (soil fertility management, agroforestry development, and water and soil conservation)
- Improve agricultural and livestock value chains using renewable energy sources (hydroelectricity, solar, wind)

### Adaptation

- Support the Great Green Wall initiative
- Diversify activities (multiple livestock species, combining agriculture and livestock, sale of harvest transportation services, fodder crops, etc.)
- Ensure animal genetic diversity
- Develop irrigation for rainfed and flood-recession crops and livestock





## Readiness

## Climate action in agricultural sectors

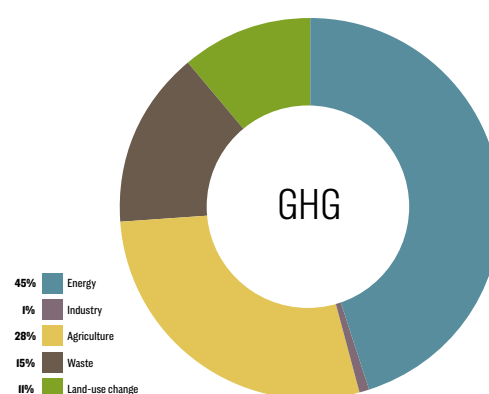
### Mitigation

- Promote conservation agriculture
- Promote reforestation and afforestation of grasslands and wastelands
- Promote agroforestry and tree crops
- Increase access to clean energy (geothermal, hydro and solar)
- Reduce dependence on wood for fuel
- Promote clean cookstoves and fuels

### Adaptation

- Strengthen water resource management capabilities
- Increase access to drinking water
- Rehabilitate watersheds and forests and support the diversification of livelihoods that depend on these lands

## Comoros

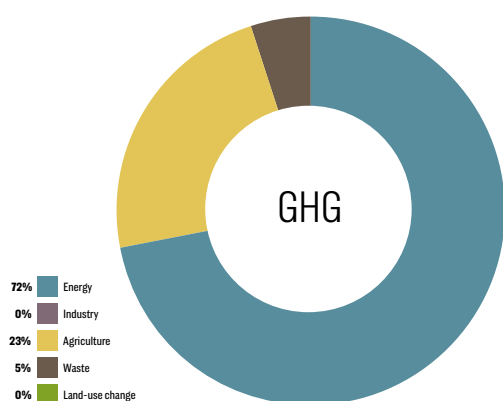


<b>Population</b>	<b>795 000</b>
<i>Rural</i>	71.6%
<i>Growth rate</i>	2.2%
<i>Undernourished</i>	NA
GDP per capita	775 USD
GDP from agriculture	NA
Major climate impacts	changing temperature and rainfall patterns, windstorms, sea level rise, cyclones, ocean acidification
Unconditional emission reduction target	84%
Conditional emission reduction target	84%
Unconditional funds required	67.5 million USD
Conditional funds required	607.5 million USD



## Readiness

# Djibouti



<b>Population</b>	<b>942 000</b>
<i>Rural</i>	<i>22.6%</i>
<i>Growth rate</i>	<i>1.2%</i>
<i>Undernourished</i>	<i>10.6%</i>
GDP per capita	1,862 USD
GDP from agriculture	NA
Major climate impacts	drought, extreme temperatures, sea level rise, flash floods, salinization of soil and water
Unconditional emission reduction target	40%
Conditional emission reduction target	20%
Unconditional funds required	3.8 billion USD
Conditional funds required	1.6 billion USD

## Climate action in agricultural sectors

### Mitigation

- Promote sustainable land management
- Reforest through agroforestry systems
- Reduce fuelwood consumption for cooking
- Introduce shaded agropastoral systems
- Produce energy production from biomass, combined with waste management

### Adaptation

- Introduce the Drought Resilience and Sustainable Livelihoods Program
- Ensure long-term, guaranteed access to water resources
- Restore coral reefs and mangroves
- Secure access to funding for climate resilience, in the interest of the development of agropastoral companies



## Unconnected action

# Climate action in agricultural sectors

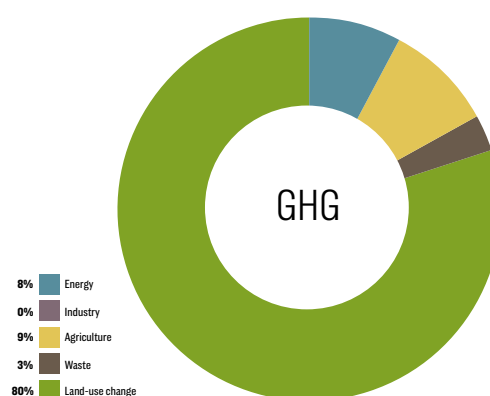
## Mitigation

- Enhance agroecological practices
- Promote the rational management of forest resources
- Protect and preserve vulnerable ecosystems in coastal areas

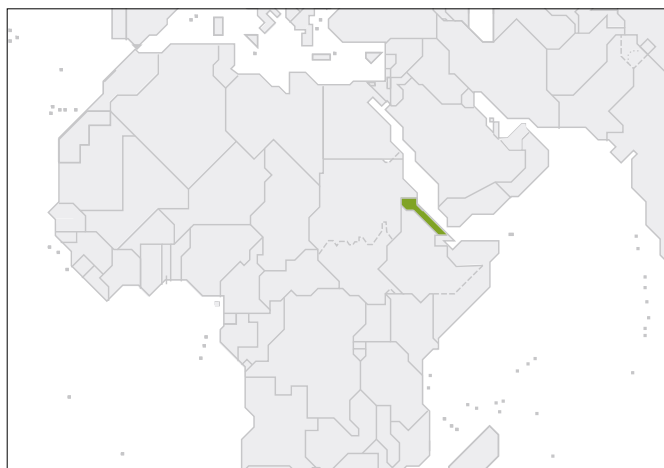
## Adaptation

- Increase access to drinking water
- Support livelihoods diversification
- Establish early warning systems

## DR Congo

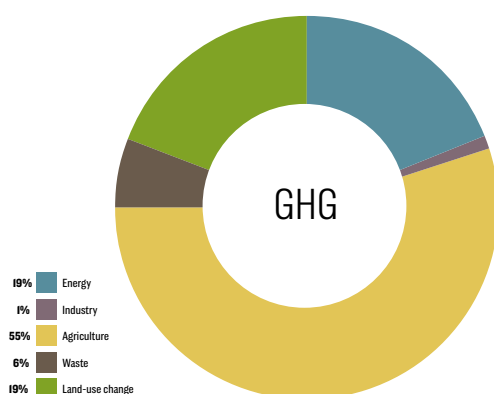


<b>Population</b>	<b>78.7 million</b>
<i>Rural</i>	57.0%
<i>Growth rate</i>	2.4%
<i>Undernourished</i>	NA
GDP per capita	406 USD
GDP from agriculture	21.9%
Major climate impacts	extreme rainfalls, coastal erosion, floods, heat waves, seasonal drought
Unconditional emission reduction target	unspecified
Conditional emission reduction target	17%
Unconditional required funds	unspecified
Conditional required funds	21.6 billion USD



## Readiness

### Eritrea



<b>Population</b>	<b>5.2 million</b>
<i>Rural</i>	<i>99.7%</i>
<i>Growth rate</i>	<i>2.3%</i>
<i>Undernourished</i>	<i>NA</i>
GDP per capita	915 USD
GDP from agriculture	NA
Major climate impacts	increasing temperatures, sea-level rise, drought, desertification, groundwater depletion
Unconditional emission reduction target	39.2%
Conditional emission reduction target	41.4%
Unconditional funds required	2.0 billion USD
Conditional funds required	3.7 billion USD

## Climate action in agricultural sectors

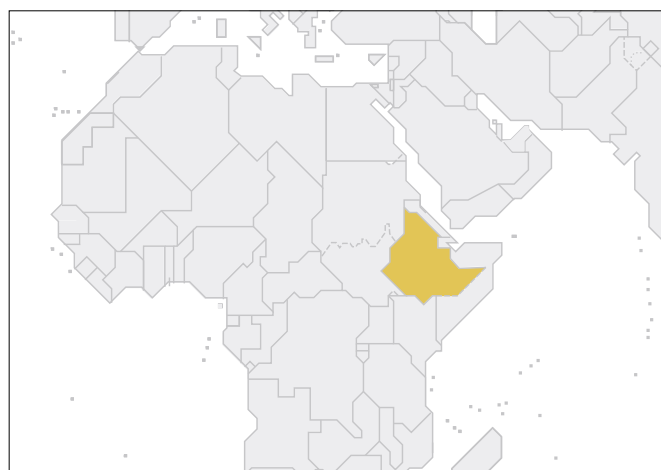
### Mitigation

- Promote conservation and climate-smart agriculture
- Increase livestock productivity and pulse production
- Support reforestation with agroforestry and silvopasture
- Rehabilitate degraded lands for agriculture
- Implement sustainable land management practices
- Promote charcoal production and biogas production from farm waste
- Promote fuel-efficient wood stoves

### Adaptation

- Develop and promote improved irrigation systems
- Promote desalination of seawater for the economic sectors





## Urgency based on emissions

# Climate action in agricultural sectors

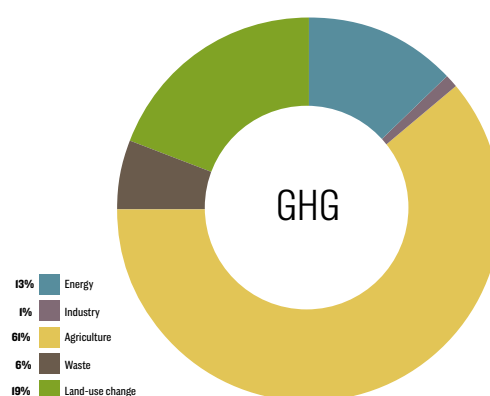
## Mitigation

- Introduce improved crop and livestock production practices
- Promote agroforestry and sustainable afforestation of degraded forest areas
- Encourage ecological farming and Sustainable Land Management practices
- Promote integrated pest management
- Improve livestock production practices
- Increase carbon sequestration through reforestation and protect carbon stocks in landscapes

## Adaptation

- Breed and make available improved crop and fodder varieties
- Enhance irrigation systems through rainwater harvesting and water conservation
- Improve water use efficiency
- Develop insurance systems for farmers and pastoralists in extreme weather events (floods and drought)

# Ethiopia

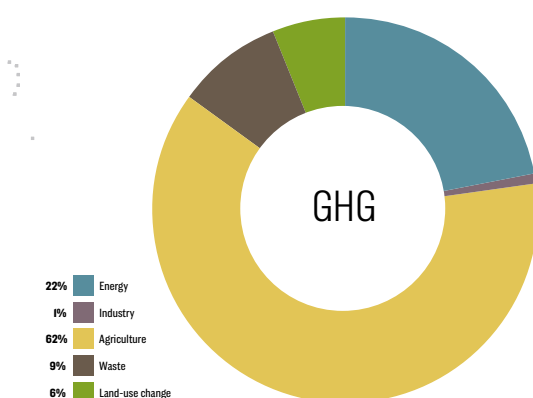


<b>Population</b>	<b>102.4 million</b>
<i>Rural</i>	<i>80.1%</i>
<i>Growth rate</i>	<i>1.9%</i>
<i>Undernourished</i>	<i>27.9%</i>
GDP per capita	707 USD
GDP from agriculture	37.2%
Major climate impacts	drought, floods
Unconditional emission reduction target	64%
Conditional emission reduction target	64%
Unconditional funds required	unspecified
Conditional funds required	unspecified



## Urgency based on emissions

### Gambia



<b>Population</b>	<b>2.0 million</b>
<i>Rural</i>	<i>39.8%</i>
<i>Growth rate</i>	<i>1.6%</i>
<i>Undernourished</i>	<i>9.8%</i>
GDP per capita	473 USD
GDP from agriculture	17.8%
Major climate impacts	unspecified, recognized high vulnerability
Unconditional emission reduction target	9.3%
Conditional emission reduction target	36.1%
Unconditional funds required	unspecified
Conditional funds required	unspecified

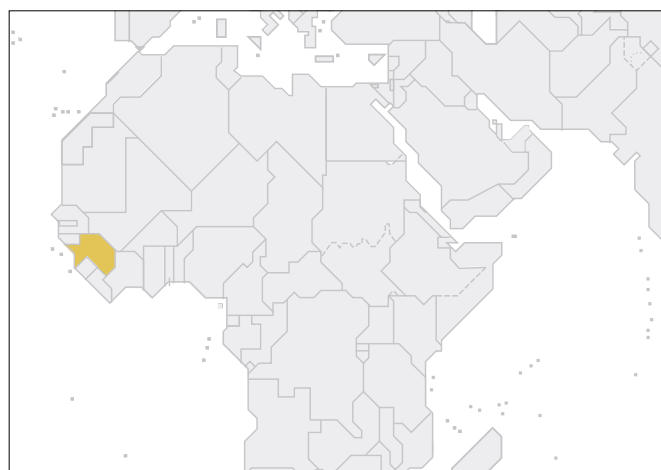
## Climate action in agricultural sectors

### Mitigation

- Introduce innovative soil and water management practices
- Replace flooded rice fields with efficient upland rice
- Increase afforestation
- Promote efficient cookstoves to reduce firewood and charcoal consumption
- Introduce poultry, small ruminants and cattle production
- Enrich and manage rangelands
- Promote appropriate farm mechanization and establish irrigation schemes

### Adaptation

- Strengthen agro-climatic monitoring and early warning in the agricultural sectors to increase food security
- Introduce improved crop varieties
- Enhance resilience of coastal, estuarine and riverine livelihoods



## Urgency based on emissions

# Climate action in agricultural sectors

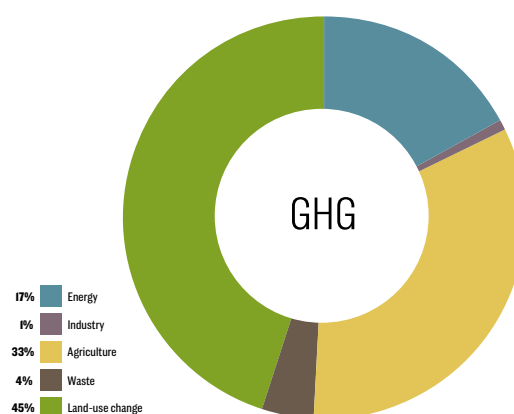
## Mitigation

- Develop agro-ecological fish farming techniques
- Improve pastoralism management to limit land degradation due to overgrazing
- Promote reforestation and afforestation of mangroves
- Promote sustainable management of replanted areas
- Reduce demand for firewood and charcoal with improved stoves
- Preserve and restore riparian forests

## Adaptation

- Diversify agricultural products
- Improve rice yields introducing varieties resilient to salt water, low-input varieties and cropping techniques suited to a drier climate
- Promote controlled irrigation and develop hydro-agricultural schemes

## Guinea



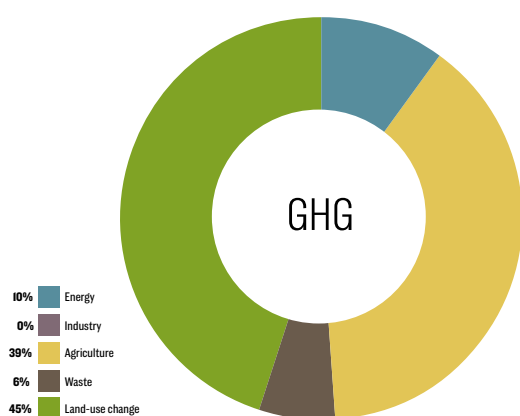
<b>Population</b>	<b>12.4 million</b>
<i>Rural</i>	62.3%
<i>Growth rate</i>	1.7%
<i>Undernourished</i>	17.7%
GDP per capita	661 USD
GDP from agriculture	20.2%
Major climate impacts	increasing temperatures, changing rainfall patterns, sea level rise
Unconditional emission reduction target	unspecified
Conditional emission reduction target	13%
Unconditional funds required	unspecified
Conditional funds required	8.2 billion USD

Map source: <http://www.un.org/Depts/Cartographic/map/profile/world00.pdf>



### Urgency based on vulnerability

## Guinea-Bissau



<b>Population</b>	<b>1.8 million</b>
<i>Rural</i>	<i>50.0%</i>
<i>Growth rate</i>	<i>1.0%</i>
<i>Undernourished</i>	<i>27.5%</i>
GDP per capita	642 USD
GDP from agriculture	49.1%
Major climate impacts	changing temperature and rainfall patterns, sea level rise
Unconditional emission reduction target	unspecified
Conditional emission reduction target	unspecified
Unconditional funds required	742 million USD
Conditional funds required	742 million USD

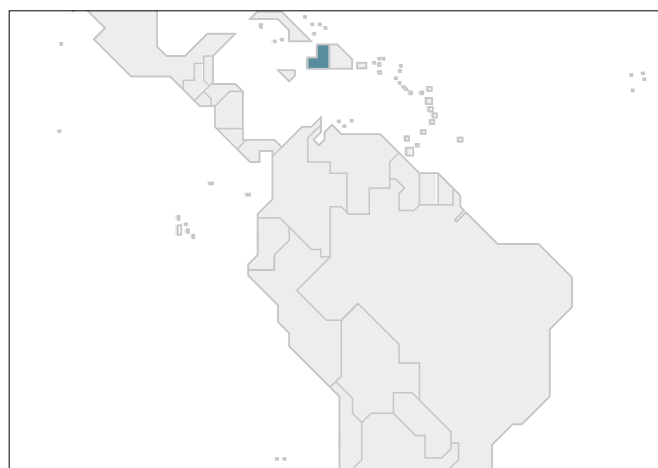
## Climate action in agricultural sectors

### Mitigation

- Develop effective management of agroecological zones
- Promote reforestation and forest conservation efforts
- Ensure sustainable management of forests and agroforestry systems

### Adaptation

- Introduce short-cycle and drought resistant seeds and fodder
- Promote hydro-agricultural planning
- Promote drought-resistant and low-rainfall forestry species
- Protect coastal areas and soil against wind and water erosion and rising sea levels
- Capture and store rainwater for water management in the dry season
- Conduct research into new timber varieties that are tolerant to climate hazards



## Urgency based on vulnerability

# Climate action in agricultural sectors

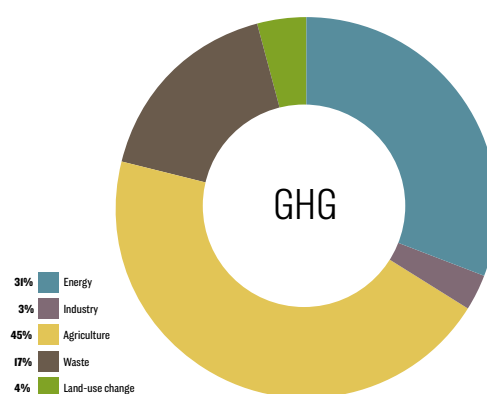
## Mitigation

- Promote agricultural conservation, transformation and valorization of agricultural products
- Improve pasture management for livestock production
- Restore, improve and extend agroforestry systems
- Promote soil conservation and regeneration
- Protect mangroves and reforest
- Decrease the use of traditional biomass
- Increase energy efficiency in the production of charcoal

## Adaptation

- Develop agricultural techniques adapted to climate change
- Develop species adapted to saline water and drought

# Haiti



<b>Population</b>	<b>10.8 million</b>
<i>Rural</i>	40.2%
<i>Growth rate</i>	-1.5%
<i>Undernourished</i>	46.1%
GDP per capita	740 USD
GDP from agriculture	NA
Major climate impacts	tropical storms, floods, drought, sand storms, changing temperature and rainfall patterns
Unconditional emission reduction target	unspecified
Conditional emission reduction target	unspecified
Unconditional funds required	25.4 billion USD
Conditional funds required	25.4 billion USD

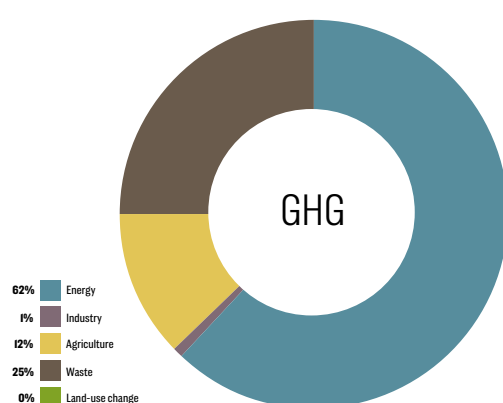
Map source: <http://www.un.org/Depts/Cartographic/map/profile/world00.pdf>





## Urgency based on vulnerability

### Kiribati



<b>Population</b>	<b>114 000</b>
<i>Rural</i>	<i>55.5%</i>
<i>Growth rate</i>	<i>1.5%</i>
<i>Undernourished</i>	<i>78.7%</i>
GDP per capita	1,587 USD
GDP from agriculture	NA
Major climate impacts	floods, coastal erosion, storm surges, sea level rise, drought
Unconditional emission reduction target	12.8%
Conditional emission reduction target	49%
Unconditional funds required	75 million USD
Conditional funds required	6.9 million USD

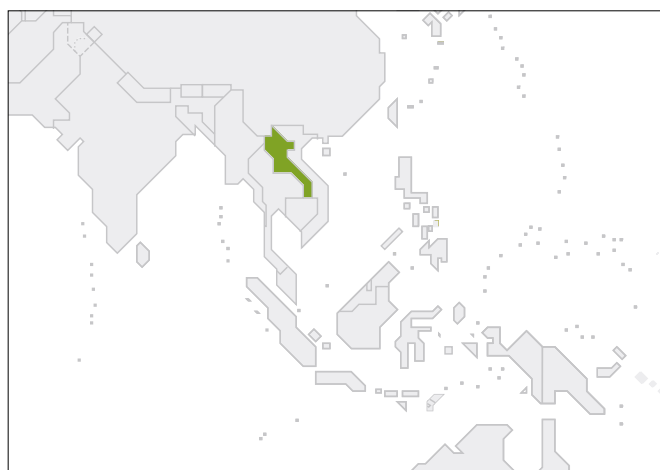
## Climate action in agricultural sectors

### Mitigation

- Expand mangrove forests
- Use coconut oil as biodiesel for electricity generation

### Adaptation

- Invest in shoreline protection to mitigate the effects of erosion
- Improve access to water and water security for rural communities
- Promote adaptive water management



## Readiness

# Climate action in agricultural sectors

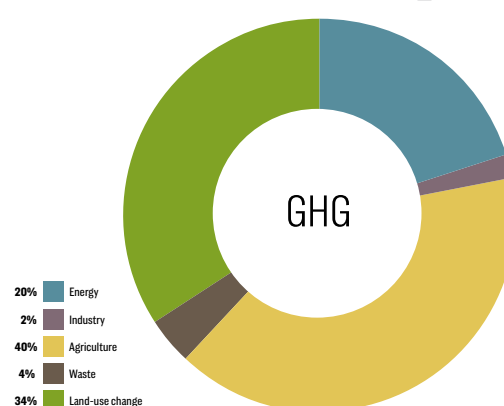
## Mitigation

- Increase climate resilient farming systems, practices and technologies
- Promote sustainable community forest management and agroforestry
- Improve soil conservation on agricultural land
- Increase forest cover through restoration and rehabilitation
- Use land to grow bioenergy crops

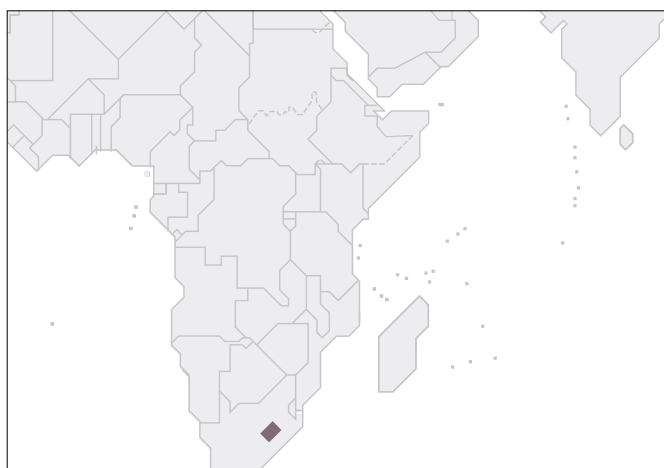
## Adaptation

- Improve crops and encourage animal diversification in flood and drought-prone areas
- Ensure efficient water use in cropping systems and increase short rotation cropping
- Promote improved management and integrate land use planning of forest watersheds and wetlands
- Promote integrated watershed management for agroforestry, wildlife management, and fisheries
- Enhance climate resilient water infrastructure and irrigation systems
- Promote appropriate rice cultivation and animal production techniques and varieties

## Lao PDR

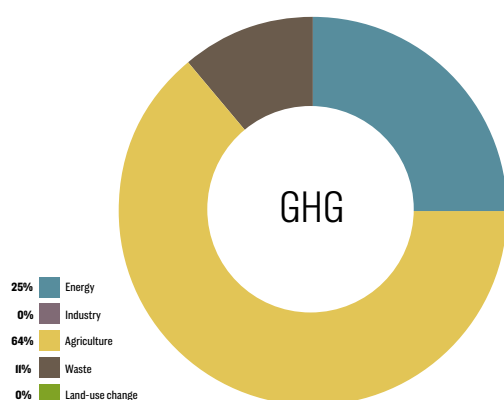


<b>Population</b>	<b>6.7 million</b>
<i>Rural</i>	60.3%
<i>Growth rate</i>	-0.3%
<i>Undernourished</i>	17.8%
GDP per capita	2,339 USD
GDP from agriculture	19.5%
Major climate impacts	floods, drought
Unconditional emission reduction target	unspecified
Conditional emission reduction target	unspecified
Unconditional funds required	12.5 million USD
Conditional funds required	2.4 billion USD



## Self-paced action

# Lesotho



<b>Population</b>	<b>2.2 million</b>
<i>Rural</i>	72.2%
<i>Growth rate</i>	0.6%
<i>Undernourished</i>	13.6%
GDP per capita	1,040 USD
GDP from agriculture	5.8%
Major climate impacts	extreme temperatures, changing rainfall patterns
Unconditional emission reduction target	10%
Conditional emission reduction target	25%
Unconditional funds required	0.27 billion USD
Conditional funds required	0.32 billion USD

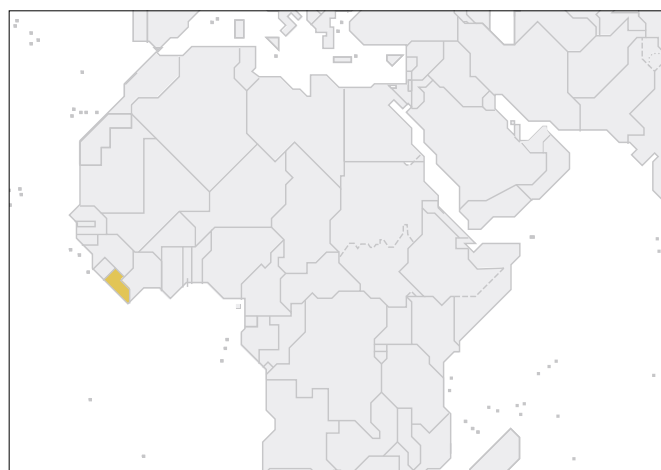
## Climate action in agricultural sectors

### Mitigation

- Promote climate-smart agriculture and agroforestry
- Promote the use of biodigesters on livestock farms
- Improve rangeland management and mechanization
- Improve forest management; reduce deforestation and increase afforestation and reforestation
- Improve land and soil management practices
- Gradually replace mineral fertilizers with organic fertilizers
- Adopt clean and efficient cookstoves and fuels
- Upscale sustainable production of fuelwood and reduce use of fuelwood

### Adaptation

- Diversify and increase access to drought-resistant crops and livestock feeds
- Provide weather forecasts and early warning systems
- Increase efficient irrigation systems and dams; increase rainwater and sustainable groundwater harvesting



## Urgency based on emissions

# Liberia

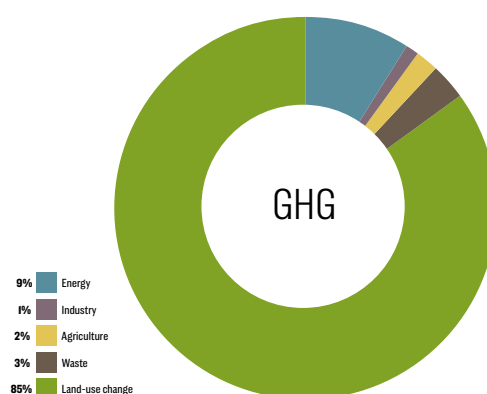
## Climate action in agricultural sectors

### Mitigation

- Promote intercropping, irrigation and optimization of lowland/swamp farming systems
- Encourage agroforestry diversification and livestock production systems
- Develop climate-smart fisheries and aquaculture systems
- Increase forest cover and reforestation of degraded lands
- Implement large-scale biomass projects for energy production
- Distribute fuelwood and charcoal saving cookstoves

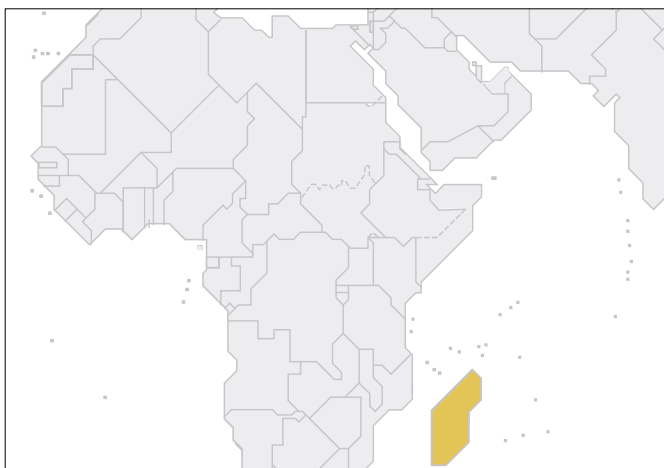
### Adaptation

- Develop and promote drought-resistant, flood-tolerant, and early maturing crop varieties
- Establish a gene bank of climate resilient varieties of indigenous food crops
- Manage and conserve coastal mangrove ecosystems



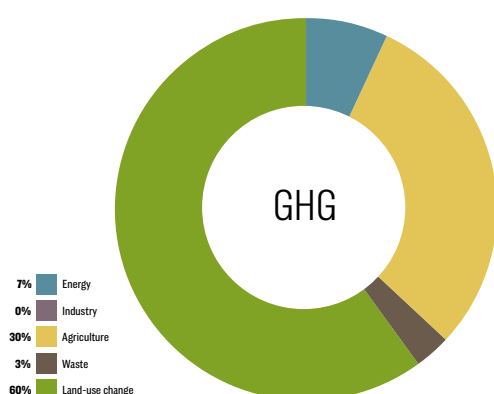
<b>Population</b>	<b>4.6 million</b>
<i>Rural</i>	49.9%
<i>Growth rate</i>	1.7%
<i>Undernourished</i>	41.2%
GDP per capita	455 USD
GDP from agriculture	34.2%
Major climate impacts	floods, changing rainfall patterns, increasing temperatures, coastal erosion
Unconditional emission reduction target	100%
Conditional emission reduction target	100%
Unconditional funds required	unspecified
Conditional funds required	unspecified

Map source: <http://www.un.org/Depts/Cartographic/map/profile/world00.pdf>



## Urgency based on emissions

# Madagascar



<b>Population</b>	<b>24.9 million</b>
<i>Rural</i>	64.2%
<i>Growth rate</i>	1.7%
<i>Undernourished</i>	41.4%
GDP per capita	402 USD
GDP from agriculture	24.7%
Major climate impacts	extended drought, changing rainfall patterns, cyclones, floods, sea level rise
Unconditional emission reduction target	22.3%
Conditional emission reduction target	22.3%
Unconditional funds required	1.7 billion USD
Conditional funds required	40.4 billion USD

## Climate action in agricultural sectors

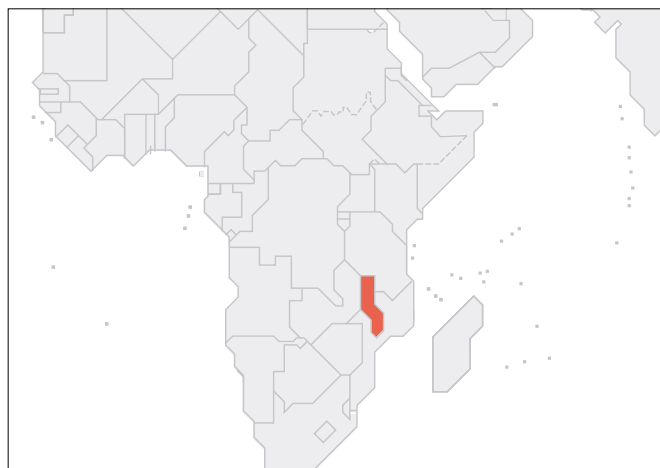
### Mitigation

- Implement conservation and climate-smart agriculture
- Disseminate intensive/improved rice systems and rainfed farming techniques
- Adopt agroforestry on a large scale and promote arboriculture
- Encourage reforestation in primary forest areas and mangroves
- Ensure the sustainable production of timber and the conservation of indigenous species
- Promote fuel-efficient cookstoves and rural electrification

### Adaptation

- Introduce resilient integrated farming systems
- Restore natural forests and reinforce habitat connectivity
- Promote integrated Water Resources Management
- Increase flood and cyclone resistant hydro-agricultural infrastructures
- Implement ecosystem-based adaptation in coastal, inshore and marine areas





## Urgency based on emissions and vulnerability

### Climate action in agricultural sectors

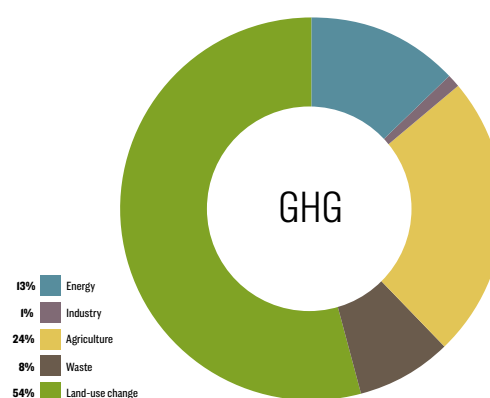
#### Mitigation

- Implement conservation agriculture and agroforestry
- Promote irrigated agriculture
- Encourage afforestation, reforestation, and forest conservation
- Promote the use of biomass briquettes and biofuels to substitute firewood and charcoal
- Distribute fuel-efficient cookstoves

#### Adaptation

- Promote sustainable forest livelihoods
- Promote growth of drought tolerant crop varieties
- Promote on-farm water conservation technologies
- Disseminate extension and training materials to encourage climate resilient agronomic practices
- Support research into drought tolerant and fast-growing tree species

## Malawi

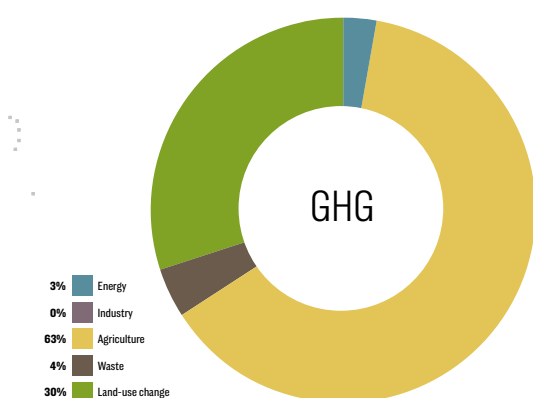


<b>Population</b>	<b>18.1 million</b>
<i>Rural</i>	83.5%
<i>Growth rate</i>	2.7%
<i>Undernourished</i>	24.9%
GDP per capita	300 USD
GDP from agriculture	28.1%
Major climate impacts	drought, floods
Unconditional emission reduction target	50%
Conditional emission reduction target	50%
Unconditional funds required	unspecified
Conditional funds required	unspecified



## Urgency based on emissions and vulnerability

### Mali



<b>Population</b>	<b>18.0 million</b>
<i>Rural</i>	<i>59.3%</i>
<i>Growth rate</i>	<i>1.7%</i>
<i>Undernourished</i>	<i>3.9%</i>
GDP per capita	780 USD
GDP from agriculture	42.1%
Major climate impacts	desertification, drought, floods, windstorms, wildfires, changing rainfall patterns
Unconditional emission reduction target	80%
Conditional emission reduction target	80%
Unconditional funds required	6.3 billion USD
Conditional funds required	47.3 billion USD

## Climate action in agricultural sectors

### Mitigation

- Promote the System of Rice Intensification
- Reduce emissions by interconnecting the livestock sector and fertilizer use
- Pilot a program on climate-smart and climate resilient agriculture
- Increase resilience to climate change through the national pastoral development programme
- Promote afforestation and rural electrification
- Introduce a large-scale renewable energy development programme
- Support a national strategy for the development of biofuels

### Adaptation

- Support the Strategic Investment Framework for Sustainable Land Management
- Introduce forage crops and cereal banks



### Urgency based on emissions

## Climate action in agricultural sectors

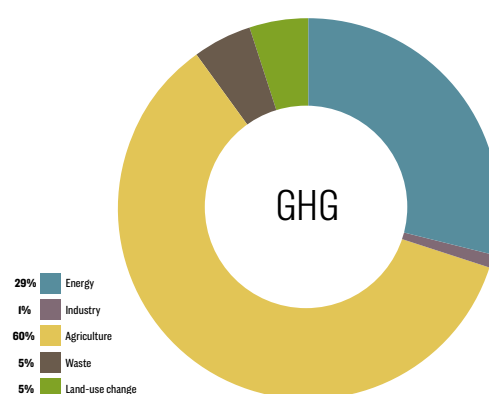
### Mitigation

- Promote reforestation
- Introduce sustainable management of rangelands
- Regenerate lands by promoting aerial seeding of degraded lands
- Promote responsible fishing and increase fish farming
- Restore natural pastures
- Increase energy efficiency

### Adaptation

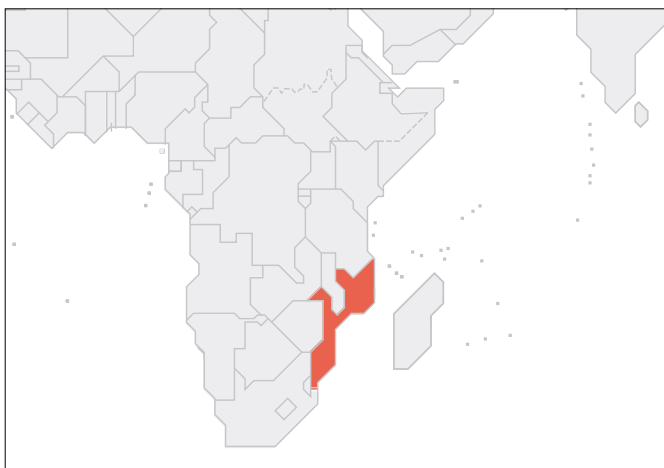
- Support the marketing of agricultural products and climate insurance
- Improve local breeds
- Integrate sustainable wetland rehabilitation and management
- Develop desalination projects for coastal areas

## Mauritania



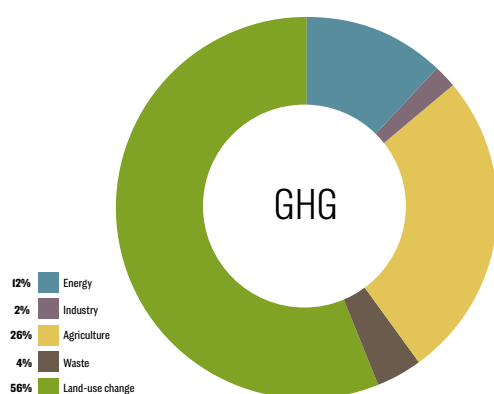
<b>Population</b>	<b>4.3 million</b>
<i>Rural</i>	39.5%
<i>Growth rate</i>	1.3%
<i>Undernourished</i>	4.6%
GDP per capita	1,102 USD
GDP from agriculture	27.4%
Major climate impacts	desertification, drought, changing temperature and rainfall patterns, sea-level rise
Unconditional emission reduction target	2.7%
Conditional emission reduction target	19.6%
Unconditional funds required	1 billion USD
Conditional funds required	17.6 billion USD

Map source: <http://www.un.org/Depts/Cartographic/map/profile/world00.pdf>



## Urgency based on emissions and vulnerability

# Mozambique



<b>Population</b>	<b>28.8 million</b>
<i>Rural</i>	<i>67.5%</i>
<i>Growth rate</i>	<i>2.4%</i>
<i>Undernourished</i>	<i>25.7%</i>
GDP per capita	382 USD
GDP from agriculture	24.8%
Major climate impacts	drought, floods, cyclones, coastal erosion, saltwater intrusion
Unconditional emission reduction target	23.2%
Conditional emission reduction target	23.2%
Unconditional funds required	unspecified
Conditional funds required	unspecified

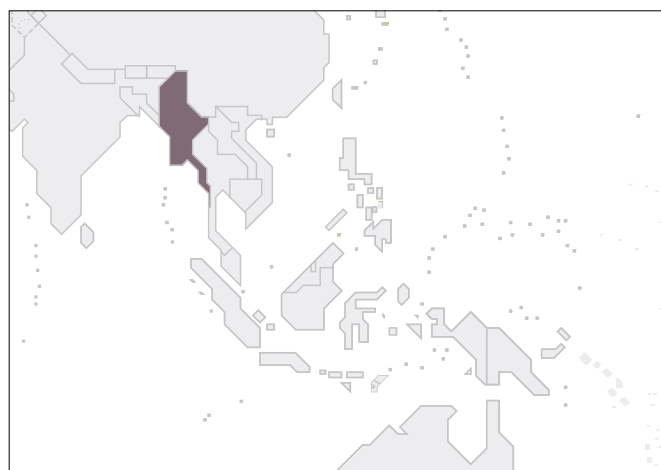
## Climate action in agricultural sectors

### Mitigation

- Reduce soil degradation
- Promote tree systems for local use
- Promote the transfer and adoption of clean technologies
- Encourage conservation and sustainable use of energy from biomass

### Adaptation

- Increase resilience of agriculture, livestock and fisheries
- Protect floodplains, coastal areas, and other areas vulnerable to floods
- Improve effectiveness and use of spatial planning mechanisms
- Promote integrated water resource management
- Introduce early warning systems
- Establish climate risk insurance



## Self-paced action

## Climate action in agricultural sectors

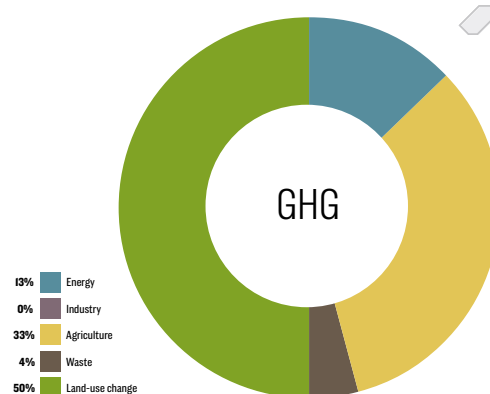
### Mitigation

- Reduce emissions from rice paddy fields and burning of agricultural residues
- Implement climate-smart agriculture
- Increase systematic control of soil quality and irrigation water
- Improve livestock production for disease and animal feed management
- Promote Sustainable Forest Management
- Increase national forest cover
- Decrease deforestation
- Increase electricity access from clean energy sources in rural communities
- Increase number of energy efficient cookstoves

### Adaptation

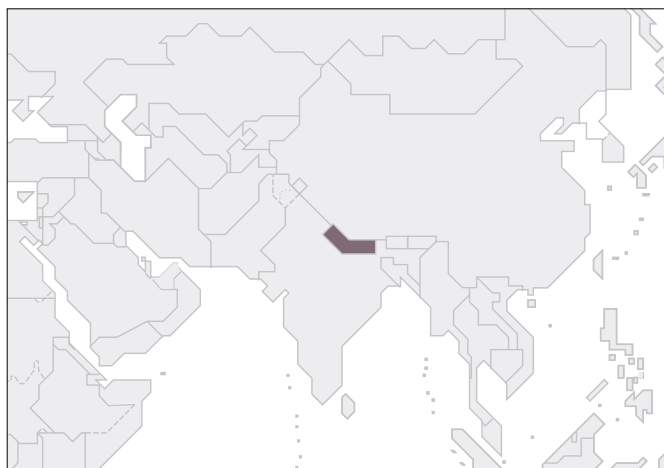
- Develop early warning systems
- Improve water irrigation for agriculture
- Increase mangroves and protect coastal zones

## Myanmar



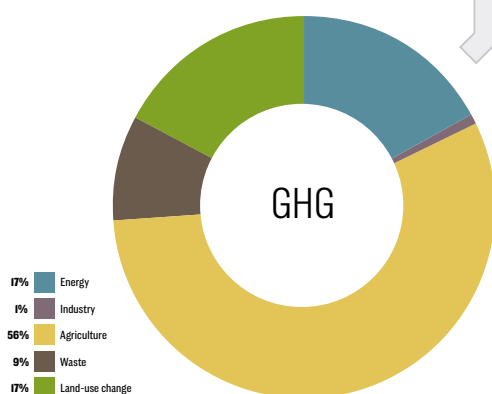
<b>Population</b>	<b>52.9 million</b>
<i>Rural</i>	<i>65.35%</i>
<i>Growth rate</i>	<i>0.1%</i>
<i>Undernourished</i>	<i>17.2%</i>
GDP per capita	1,195 USD
GDP from agriculture	25.5%
Major climate impacts	tropical storms, cyclones, drought, floods
Unconditional emission reduction target	unspecified
Conditional emission reduction target	unspecified
Unconditional funds required	unspecified
Conditional funds required	unspecified





## Self-paced action

# Nepal



<b>Population</b>	<b>29.0 million</b>
<i>Rural</i>	<i>81.0%</i>
<i>Growth rate</i>	<i>0.7%</i>
<i>Undernourished</i>	<i>7.9%</i>
GDP per capita	729 USD
GDP from agriculture	42.1%
Major climate impacts	glacial lake outburst floods, drought, landslides
Unconditional emission reduction target	unspecified
Conditional emission reduction target	unspecified
Unconditional funds required	unspecified
Conditional funds required	unspecified

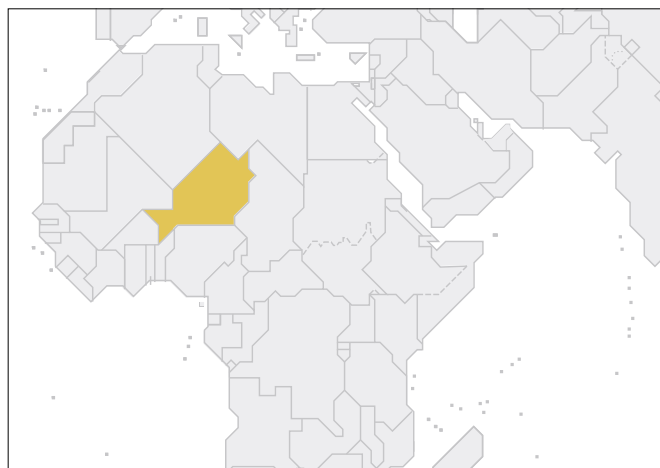
## Climate action in agricultural sectors

### Mitigation

- Promote efficient technologies to increase climate friendly agriculture
- Encourage afforestation and enhance carbon sequestration
- Manage forests sustainably
- Implement forest, soil and water conservation activities
- Introduce micro-hydro, solar, biogas and clean cookstoves in rural communities

### Adaptation

- Promote local and indigenous crop varieties
- Develop flood and drought-resistant crop varieties
- Introduce stress tolerant (salinity, drought and flood) crops, livestock and fish species



## Urgency based on emissions

# Climate action in agricultural sectors

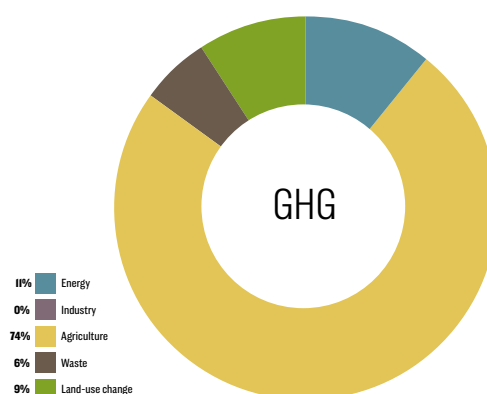
## Mitigation

- Restore agricultural, forest and pastoral land
- Promote sustainable land management practices in all agroecological areas
- Manage forests sustainably and reduce deforestation
- Increase resilience of ecosystems and encourage households to sequester carbon
- Distribute improved cookstoves and reduce the demand for wood
- Promote domestic use of biogas and biofuels
- Increase hydroelectric and wind capacity

## Adaptation

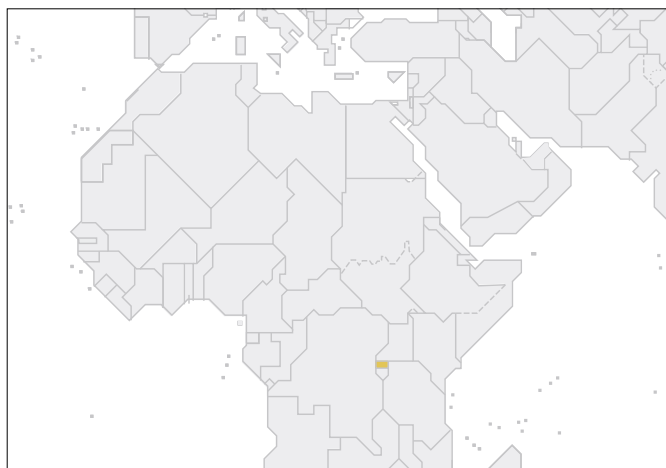
- Introduce a strategic framework of sustainable land management techniques
- Support the Assisted Natural Regeneration and fixation of dunes
- Increase access to drinking water

# Niger



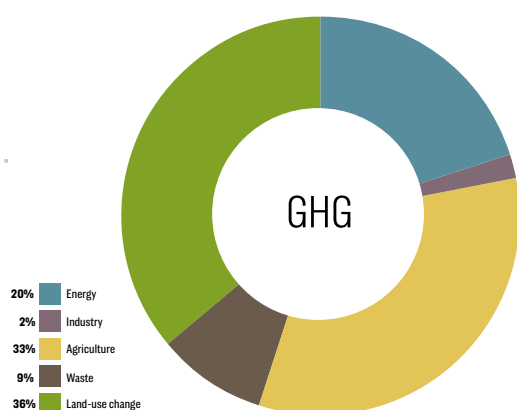
<b>Population</b>	<b>20.7 million</b>
<i>Rural</i>	<i>81.0%</i>
<i>Growth rate</i>	<i>3.5%</i>
<i>Undernourished</i>	<i>10.6%</i>
GDP per capita	359 USD
GDP from agriculture	41.5%
Major climate impacts	drought, floods, wind, sand and dust storms, changing temperature and rainfall patterns
Unconditional emission reduction target	3.5%
Conditional emission reduction target	31.1%
Unconditional funds required	1.7 billion USD
Conditional funds required	7.5 billion USD

Map source: <http://www.un.org/Depts/Cartographic/map/profile/world00.pdf>



## Urgency based on emissions

### Rwanda



<b>Population</b>	<b>11.9 million</b>
<i>Rural</i>	<i>70.2%</i>
<i>Growth rate</i>	<i>1.1%</i>
<i>Undernourished</i>	<i>40.3%</i>
GDP per capita	703 USD
GDP from agriculture	31.5%
Major climate impacts	floods, landslides, drought, changing temperature and rainfall patterns
Unconditional emission reduction target	unspecified
Conditional emission reduction target	unspecified
Unconditional funds required	unspecified
Conditional funds required	unspecified

## Climate action in agricultural sectors

### Mitigation

- Promote sustainable forestry, agroforestry and agroecology
- Promote soil conservation and land husbandry
- Improve forest management to manage degraded forest resources
- Compost organic waste and irrigate using wastewater
- Promote environmentally sustainable use of biomass fuels and production of charcoal and reduce wood consumption

### Adaptation

- Promote water storage and rainwater harvesting, water conservation, and efficient irrigation
- Strengthen local markets to add value to agricultural products
- Establish a national integrated water resource management framework

## Climate action in agricultural sectors

### Mitigation

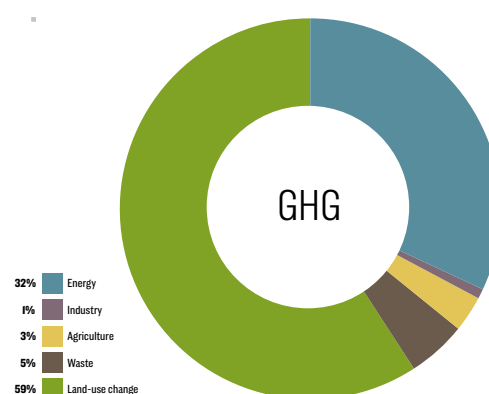
- Ensure 47% of the national electricity system is renewable energy

### Adaptation

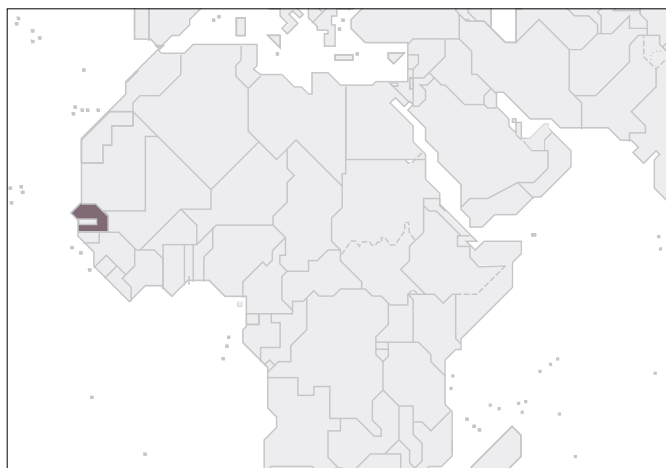
- Increase coastal communities' resilience to tidal, river and storm flooding and coastal erosion

## Unconnected action

## Sao Tome and Principe

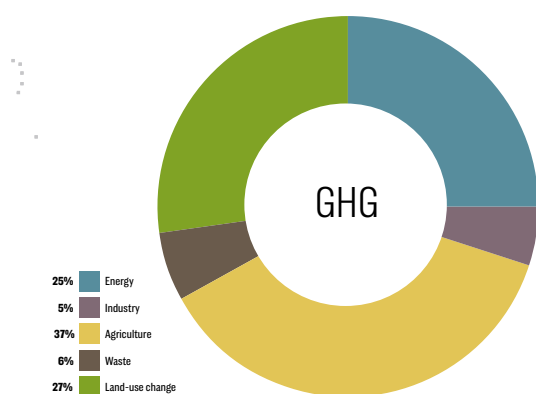


<b>Population</b>	<b>200 000</b>
<i>Rural</i>	34.3%
<i>Growth rate</i>	0.6%
<i>Undernourished</i>	45.0%
GDP per capita	1,715 USD
GDP from agriculture	11.8%
Major climate impacts	changing temperature and rainfall patterns, groundwater depletion, sea level rise, coastal erosion
Unconditional emission reduction target	unspecified
Conditional emission reduction target	24%
Unconditional funds required	unspecified
Conditional funds required	unspecified



## Self-paced action

# Senegal



<b>Population</b>	<b>15.4 million</b>
<i>Rural</i>	<i>56.0%</i>
<i>Growth rate</i>	<i>1.6%</i>
<i>Undernourished</i>	<i>11.0%</i>
GDP per capita	953 USD
GDP from agriculture	17.5%
Major climate impacts	changing temperature and rainfall patterns, sea level rise, salinization
Unconditional emission reduction target	19.2%
Conditional emission reduction target	72.6%
Unconditional funds required	19.5 billion USD
Conditional funds required	19.5 billion USD

## Climate action in agricultural sectors

### Mitigation

- Promote agroforestry and reduce rates of deforestation
- Intensify rice production to reduce water consumption
- Develop pastoral units and reduce emissions from grazing
- Reforest and protect mangrove forests
- Support the Great Green Wall initiative
- Distribute efficient lighting, stoves and refrigerators and promote improved sustainable charcoal production
- Use waste from agro-industry to produce biomass energy

### Adaptation

- Promote agricultural pastoral and fisheries' insurance
- Strengthen the resilience of ecosystems in coastal areas
- Promote integrated water resource management





## Urgency based on emissions

# Climate action in agricultural sectors

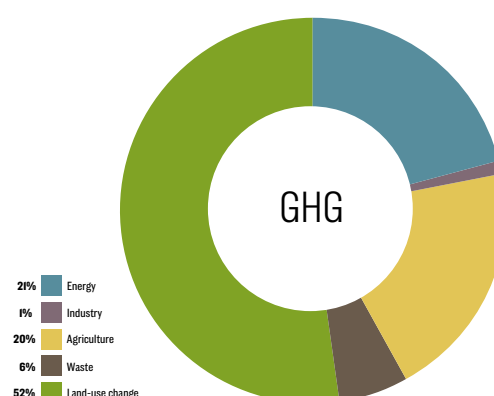
## Mitigation

- Adopt climate-smart and conservation agriculture
- Promote agricultural practices that increase soil fertility and crop yield
- Introduce integrated crop and livestock management
- Manage grazing systems
- Expand use of clean cookstoves
- Produce sustainable charcoal and reduce dependence on firewood
- Develop alternative energy sources such as biofuels from sugarcane, corn, rice and similar crop residues

## Adaptation

- Resore degraded lands
- Improve management of coastal and fisheries resources
- Promote and facilitate early warning and disaster preparedness systems

# Sierra Leone

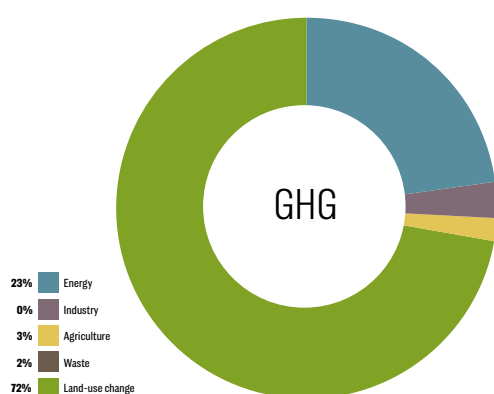


<b>Population</b>	<b>7.4 million</b>
<i>Rural</i>	59.7%
<i>Growth rate</i>	1.6%
<i>Undernourished</i>	27.0%
GDP per capita	505 USD
GDP from agriculture	59.4%
Major climate impacts	unspecified, recognized high vulnerability
Unconditional emission reduction target	35%
Conditional emission reduction target	35%
Unconditional funds required	unspecified
Conditional funds required	unspecified



## Urgency based on emissions

# Solomon Islands



<b>Population</b>	<b>600 000</b>
<i>Rural</i>	<i>77.2%</i>
<i>Growth rate</i>	<i>1.4%</i>
<i>Undernourished</i>	<i>15.0%</i>
GDP per capita	2,005 USD
GDP from agriculture	NA
Major climate impacts	drought, floods, changing rainfall patterns, increasing ocean and air temperatures, extreme cyclones, sea level rise
Unconditional emission reduction target	30%
Conditional emission reduction target	20%
Unconditional funds required	126 million USD
Conditional funds required	280 million USD

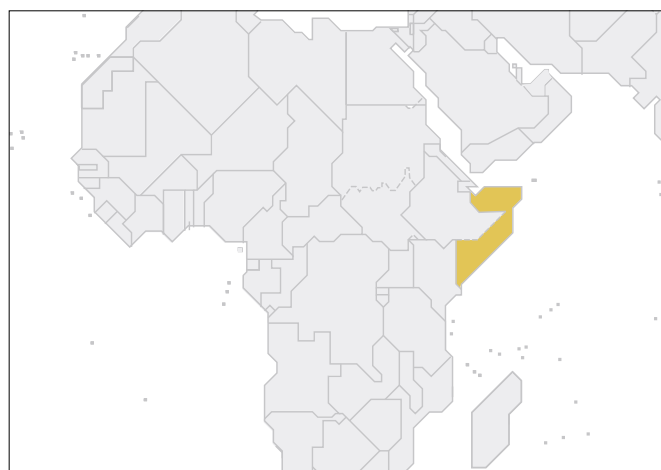
## Climate action in agricultural sectors

### Mitigation

- Promote and enhance sustainable subsistence-based farming
- Increase energy efficiency

### Adaptation

- Increase value added to agricultural, livestock, agroforestry, aquaculture, and fishery products to achieve sustained growth
- Ensure effective management of fisheries' resources and promote livelihood opportunities
- Develop and implement an integrated Water Resources Management strategy and program



### Urgency based on emissions

## Climate action in agricultural sectors

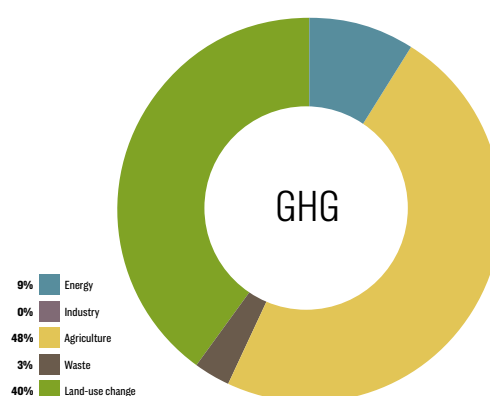
### Mitigation

- Promote sustainable grazing, forestry products, and agriculturally productive zones
- Improve value chains in agriculture, horticulture, poultry, livestock, and fisheries
- Promote reforestation and rehabilitation of degraded lands
- Introduce integrated land-use management planning principles
- Encourage rangeland management, reforestation and agroforestry
- Promote production of sustainable charcoal (green charcoal)
- Introduce fuel-saving cooking practices and fuel-efficient technologies such as clean cookstoves

### Adaptation

- Rehabilitate degraded areas with a high potential for cultivation
- Diversify rural household income and livelihoods
- Facilitate large-scale water capture, and ensure water storage facilities and effective irrigation systems are in place

## Somalia

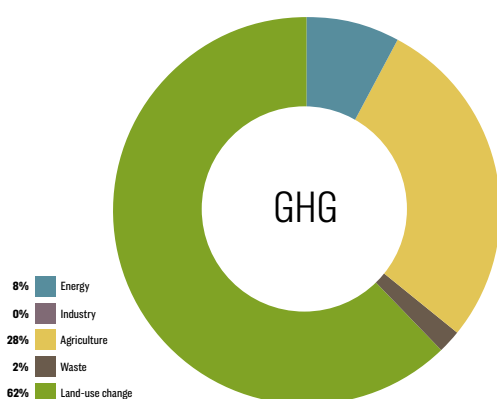


<b>Population</b>	<b>14.3 million</b>
<i>Rural</i>	60.0%
<i>Growth rate</i>	2.1%
<i>Undernourished</i>	NA
GDP per capita	434 USD
GDP from agriculture	NA
Major climate impacts	floods, drought, cyclones
Unconditional emission reduction target	unspecified
Conditional emission reduction target	unspecified
Unconditional funds required	unspecified
Conditional funds required	unspecified



## Urgency based on emissions and vulnerability

### South Sudan



<b>Population</b>	<b>12.2 million</b>
<i>Rural</i>	<i>81.0%</i>
<i>Growth rate</i>	<i>2.6%</i>
<i>Undernourished</i>	<i>84.2%</i>
GDP per capita	759 USD
GDP from agriculture	39%
Major climate impacts	drought, flash floods, changing temperature and rainfall patterns
Unconditional emission reduction target	unspecified
Conditional emission reduction target	unspecified
Unconditional funds required	unspecified
Conditional funds required	unspecified

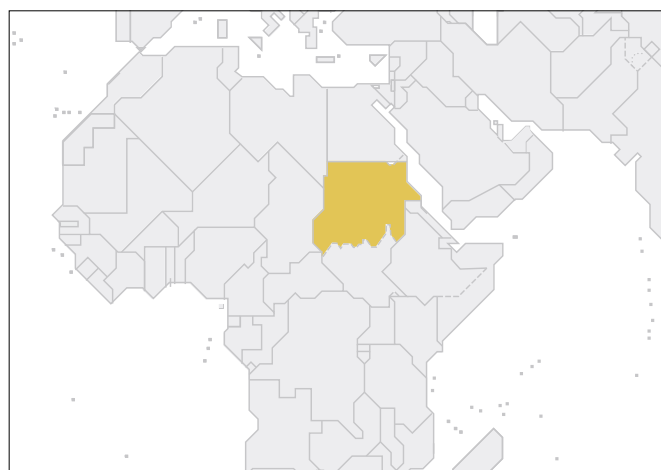
## Climate action in agricultural sectors

### Mitigation

- Promote sustainable climate-smart agriculture and livestock production and management
- Promote agroforestry practices
- Encourage both reforestation and afforestation. Prevent deforestation and forest degradation
- Increase soil erosion control and carbon sequestration
- Promote afforestation of degraded landscapes and restore watersheds
- Increase the use of clean and carbon-neutral energy
- Increase efficient use of biomass, fuelwood and charcoal

### Adaptation

- Diversify land production systems and livelihoods
- Harvest and retain water for different uses
- Support community-based adaptation strategies
- Introduce integrated watershed and wetland management
- Ensure disaster prevention mechanisms and early warning systems are in place



## Urgency based on emissions

# Sudan

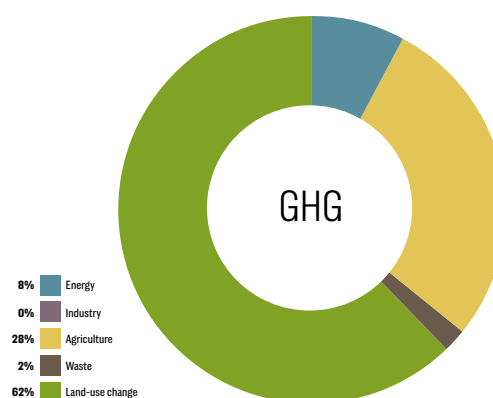
## Climate action in agricultural sectors

### Mitigation

- Introduce agroforestry. Increase Arabic gum production
- Sustainably manage grazing areas and rangelands
- Conserve and sustainably manage forests
- Reduce emissions from deforestation and forest degradation. Increase carbon sequestration
- Promote afforestation and reforestation of irrigated agricultural areas
- Encourage sustainable use of charcoal and firewood

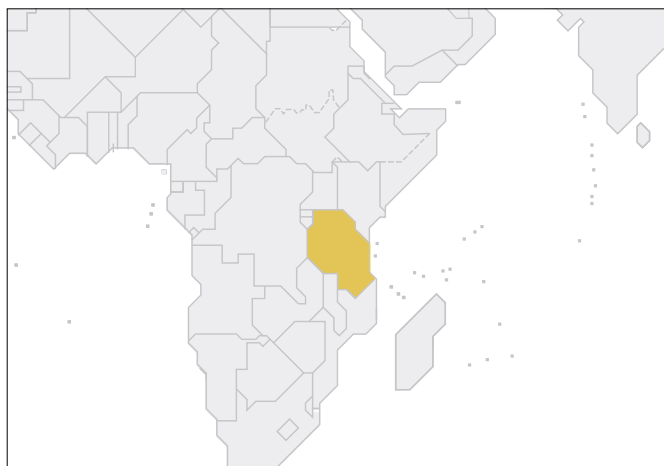
### Adaptation

- Promote afforestation and reforestation of irrigated agricultural areas
- Increase animal production and diversify livestock breeds
- Introduce Integrated Water Resources Management
- Promote revolving microcredit funds to support small water harvesting projects



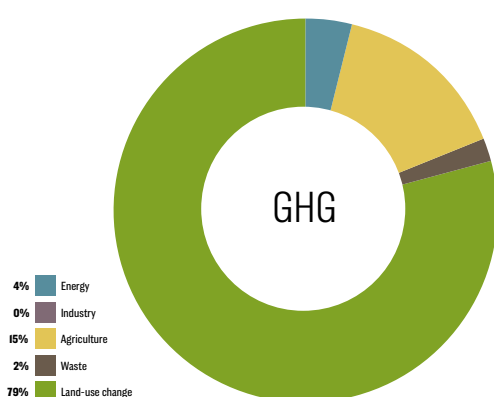
<b>Population</b>	<b>39.6 million</b>
<i>Rural</i>	<i>66.0%</i>
<i>Growth rate</i>	<i>2.1%</i>
<i>Undernourished</i>	<i>26.0%</i>
GDP per capita	2,415 USD
GDP from agriculture	39%
Major climate impacts	increasing temperature, changing rainfall patterns, drought, floods
Unconditional emission reduction target	unspecified
Conditional emission reduction target	unspecified
Unconditional funds required	unspecified
Conditional funds required	unspecified

Map source: <http://www.un.org/Depts/Cartographic/map/profile/world00.pdf>



## Urgency based on emissions

### Tanzania (United Republic of)



<b>Population</b>	<b>55.6 million</b>
<i>Rural</i>	67.7%
<i>Growth rate</i>	2.1%
<i>Undernourished</i>	31.1%
GDP per capita	877 USD
GDP from agriculture	31.5%
Major climate impacts	drought, floods, changing temperature and rainfall patterns
Unconditional emission reduction target	15%
Conditional emission reduction target	15%
Unconditional funds required	unspecified
Conditional funds required	72.6 billion USD

## Climate action in agricultural sectors

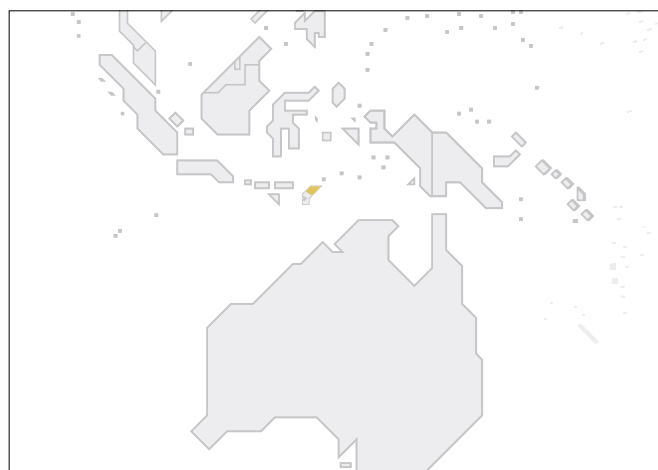
### Mitigation

- Improve agricultural land and water management
- Increase yields through climate-smart agriculture
- Promote sustainable pasture and rangeland management. Enhance infrastructure development in the livestock sector
- Enhance sustainable forest management and enhance carbon stocks
- Strengthen tree planting programs and initiatives
- Support a mangrove and shoreline restoration programme
- Promote efficient use of woodfuel

### Adaptation

- Promote livelihood diversification
- Protect smallholder farmers against climate related shocks through crop insurance
- Promote integrated water resource development and management
- Protect and conserve water catchments and rainwater harvesting infrastructure
- Strengthen management of coastal resources and beach erosion/sea level rise control systems





### Urgency based on emissions

## Climate action in agricultural sectors

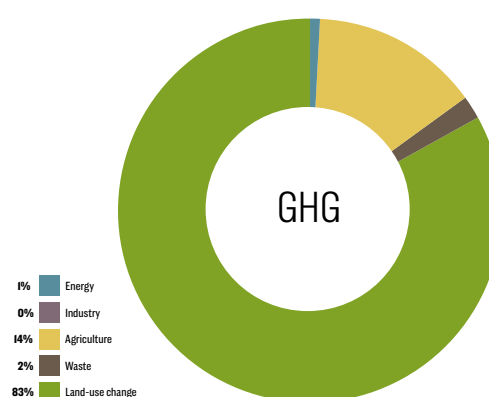
### Mitigation

- Promote sustainable agriculture by reducing slash-and-burn and introducing climate-smart technologies
- Improve livestock management
- Reduce erosion and increase soil fertility through sustainable land management in standing cultivation
- Reforest and use sustainable wood for fuel
- Integrate agroforestry and watershed management
- Conserve forests to enhance and expand carbon sinks, and sequester carbon in mangrove plantations
- Reduce fuelwood use for household cooking

### Adaptation

- Rehabilitate degraded lands to prevent landslides
- Increase coastal resilience
- Build climate resilient infrastructure and improve water harvesting, management and distribution

## Timor-Leste

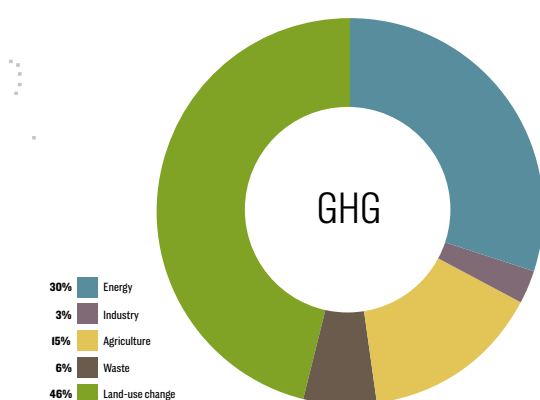


<b>Population</b>	<b>1.3 million</b>
<i>Rural</i>	66.6%
<i>Growth rate</i>	1.3%
<i>Undernourished</i>	23.6%
GDP per capita	1,405 USD
GDP from agriculture	NA
Major climate impacts	drought, floods, tropical storms, landslides, wildfires, sea level rise
Unconditional emission reduction target	unspecified
Conditional emission reduction target	unspecified
Unconditional funds required	unspecified
Conditional funds required	unspecified



## Unconnected action

### Togo



<b>Population</b>	<b>7.6 million</b>
<i>Rural</i>	<i>59.5%</i>
<i>Growth rate</i>	<i>1.7%</i>
<i>Undernourished</i>	<i>10.5%</i>
GDP per capita	578 USD
GDP from agriculture	41.3%
Major climate impacts	changing temperature and rainfall patterns
Unconditional emission reduction target	11.1%
Conditional emission reduction target	20%
Unconditional funds required	unspecified
Conditional funds required	unspecified

## Climate action in agricultural sectors

### Mitigation

(Mitigation actions do not include the forestry sector, the greatest contributor to GHG emissions)

- Identify and promote varieties of rainfed rice
- Strengthen integrated soil fertility management. Promote the use of organic matter to increase decomposition in paddy fields
- Promote waste management for livestock and harvest remnants
- Encourage agroforestry and other land-use practices that increase carbon storage on farmland
- Promote household use of biomass and solar electricity
- Distribute clean cookstoves

### Adaptation

- Improve water management
- Enforce sustainable forest planning and protection



## Urgency based on vulnerability

### Climate action in agricultural sectors

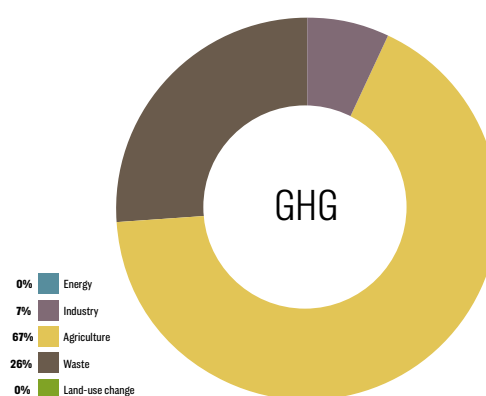
#### Mitigation

Tuvalu's NDC does not include any mitigation policies for the agricultural sectors

#### Adaptation

No adaptation policies are directly mentioned in the NDC, but are noted to be articulated in other national documents, such as National Adaptation Programmes of Action (NAPA), National Communications, National Strategic Action Plan for Climate Change and Disaster Risk Management, and the National Climate Change Policy

## Tuvalu

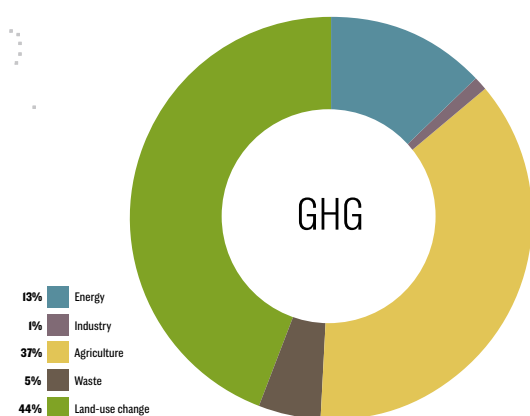


Population	11 000
Rural	39.4%
Growth rate	-1.4%
Undernourished	NA
GDP per capita	3,084 USD
GDP from agriculture	NA
Major climate impacts	floods, coastal erosion, saltwater intrusion, drought, cyclones, storm surges
Unconditional emission reduction target	60%
Conditional emission reduction target	60%
Unconditional funds required	unspecified
Conditional funds required	unspecified



## Urgency based on emissions

# Uganda



<b>Population</b>	<b>41.5 million</b>
<i>Rural</i>	<i>83.6%</i>
<i>Growth rate</i>	<i>2.9%</i>
<i>Undernourished</i>	<i>36.6%</i>
GDP per capita	580 USD
GDP from agriculture	25.8%
Major climate impacts	changing temperature and rainfall patterns, groundwater depletion, landslides, drought, floods
Unconditional emission reduction target	22%
Conditional emission reduction target	22%
Unconditional funds required	2.3 billion USD
Conditional funds required	5.5 billion USD

## Climate action in agricultural sectors

### Mitigation

- Promote climate-smart agriculture techniques for cropping
- Promote rangeland management, livestock breeding and manure management practices
- Encourage agroforestry
- Reverse deforestation trend and increase forest cover
- Develop wetland management. Increase wetland coverage and number of Ramsar sites
- Promote energy efficient cooking stoves
- Increase efficiency in traditional use of biomass

### Adaptation

- Diversify crops and livestock
- Expand value addition, post-harvest handling and storage, and access to markets including micro-financing.
- Promote biodiversity and watershed conservation
- Expand small-scale water infrastructure



## Urgency based on vulnerability

# Climate action in agricultural sectors

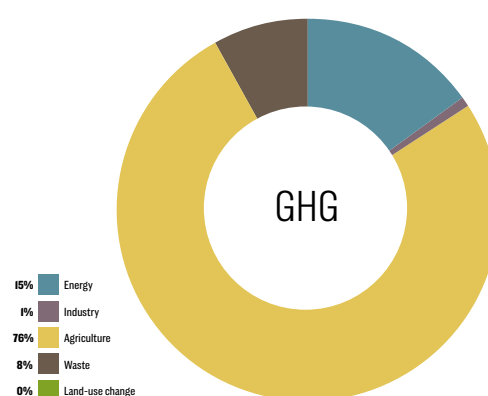
## Mitigation

- Support and implement sustainable forest management
- Reduce deforestation and promote good land care
- Enhance Integrated Coastal Zone Management
- Increase rural electrification through a Nationally Appropriate Mitigation Action (NAMA)
- Substitute fossil fuels with coconut oil-based electricity generation

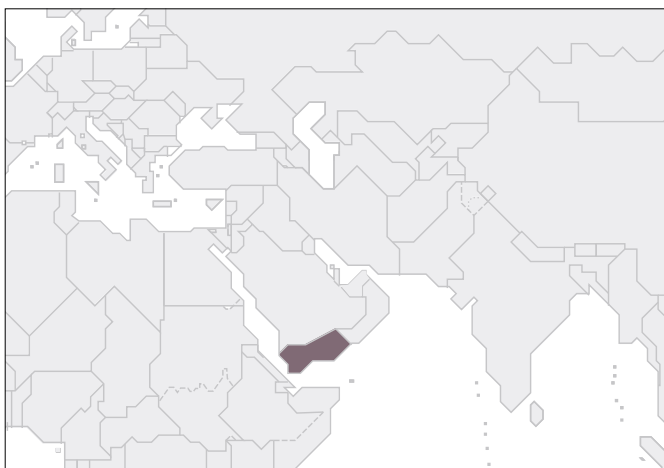
## Adaptation

- Increase community-based marine resource management
- Promote conservation areas and locally managed areas to protect habitats and ecosystems, and carbon sinks
- Support integrated water resource management

## Vanuatu

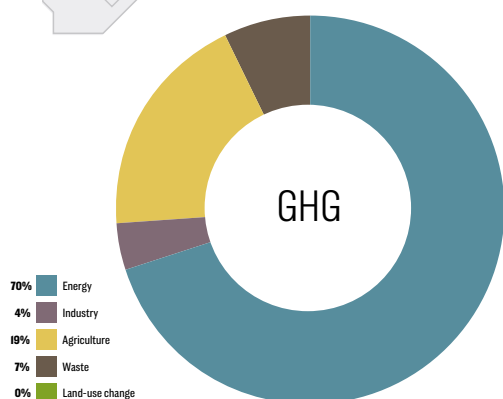


<b>Population</b>	<b>270 000</b>
<i>Rural</i>	73.6%
<i>Growth rate</i>	1.7%
<i>Undernourished</i>	33.3%
GDP per capita	2,860 USD
GDP from agriculture	31.5%
Major climate impacts	unspecified, recognized high vulnerability
Unconditional emission reduction target	unspecified
Conditional emission reduction target	30%
Unconditional funds required	unspecified
Conditional funds required	275 million USD



## Self-paced action

### Yemen



<b>Population</b>	<b>27.5 million</b>
<i>Rural</i>	<i>64.8%</i>
<i>Growth rate</i>	<i>1.6%</i>
<i>Undernourished</i>	<i>27.9%</i>
GDP per capita	990 USD
GDP from agriculture	9.7%
Major climate impacts	drought, floods, changing temperature and rainfall patterns, coastal erosion, sea level rise, desertification
Unconditional emission reduction target	1%
Conditional emission reduction target	13%
Unconditional funds required	unspecified
Conditional funds required	unspecified

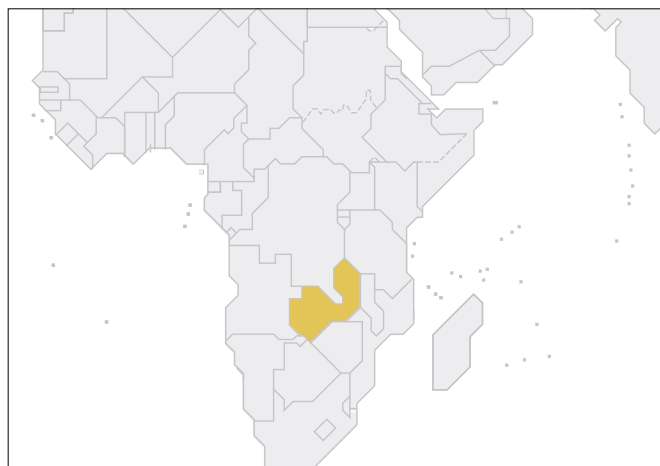
## Climate action in agricultural sectors

### Mitigation

- Support sustainable crop and livestock production
- Promote improved cropping systems
- Promote proper land management and soil conservation practices
- Enhance integrated Coastal Zone Management
- Introduce solar photovoltaic water pumping systems for irrigation

### Adaptation

- Support drought management
- Promote integrated natural resource management and preservation of sensitive ecosystems
- Promote rainfed agriculture and rainwater harvesting



## Urgency based on emissions

# Climate action in agricultural sectors

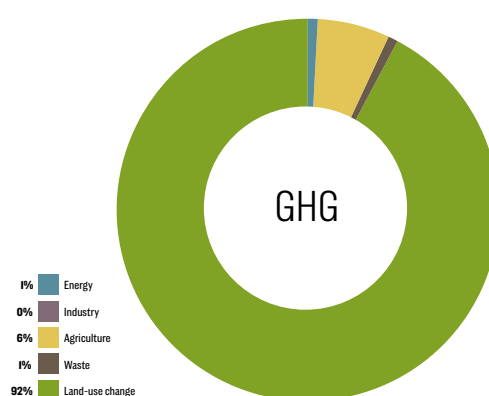
## Mitigation

- Promote conservation and climate-smart agriculture. Reduce the use of fertilizers and tillage
- Improve soil productivity and carbon sequestration
- Support agroforestry
- Improve livestock and rangeland management
- Improve aquaculture management
- Promote forest regeneration and afforestation
- Introduce and increase the blending of biofuels with fossil fuels. Switch from diesel and coal to biodiesel and biomass
- Promote improved biomass and electric stoves

## Adaptation

- Introduce drought-tolerant livestock breeds
- Diversify livelihoods in rural communities
- Protect forests in watershed catchments
- Promote irrigated water management. Promote rainwater harvesting

# Zambia



<b>Population</b>	<b>16.6 million</b>
<i>Rural</i>	58.6%
<i>Growth rate</i>	2.2%
<i>Undernourished</i>	44.6%
GDP per capita	1,270 USD
GDP from agriculture	6.5%
Major climate impacts	drought, flash floods, extreme temperatures
Unconditional emission reduction target	25%
Conditional emission reduction target	22%
Unconditional funds required	15 billion USD
Conditional funds required	35 billion USD



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