1st Day – 15 April 2016:
The UNFCCC process and National GHG inventories

This presentation provides basic concepts on the international processes linked to the United Nations Framework Convention on Climate Change (UNFCCC). It provides some historical background for the Convention; highlights its primary goals and the statistical mechanisms associated to its implementation: namely the processes of monitoring, reporting and verification. Following the principle of common but different responsibilities and capacities all Parties to the Convention have obligations to measure and report their level of greenhouse gas emissions (GHG). Likewise, although within different processes these inventories are submitted to and assessed internationally through specific Convention mechanisms. The presentation discusses different requirements for developed, Annex I, and developing, non-Annex I, parties to the convention, within the context of existing IPCC guidelines. It then links the various reporting mechanisms to the need to develop robust underlying statistics, with a focus on the agriculture, forestry and land use sectors. Mechanisms discussed are National Communications, Biennial Update Reports, and the most recent reporting requirements established at COP21 in Paris, the Nationally Determined Contributions. Methodological and institutional challenges and opportunities associated with the required statistical processes towards are identified, with examples of FAO activities, data and tools in support of member countries.

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The UNFCCC process and National GHG inventories

15 –17 April 2016, Kampala, Uganda

ENVIRONMENT – TEAM
FAO STATISTICS DIVISION

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Outline

- UNFCCC process
- Data needs, reporting obligations and mechanisms with a focus on GHG inventories
- IPCC - knowledge generation - guidelines - tiered approach
- Supporting national capacities for reporting needs and associate statistical processes

The United Nations Convention on Climate Change (**UNFCCC**)

- Framework for international cooperation to combat climate change (1992 – entry into force on March 1994);
- Currently 196 Parties to the convention;
- Complex intergovernmental negotiations under the following bodies: COP (Conference of the Parties) – SBSTA – SBI – ADP;
- The Kyoto Protocol (2008-2012/2013-2020): first legally binding mechanism – 192 Parties the Kyoto protocol;
- Uganda accession to UNFCCC in 2002 (entry into force on 2005);

UNFCCC Goals and Approaches

Ultimate objective is to stabilize greenhouse gas concentrations

"at a level that would prevent dangerous anthropogenic (human induced) interference with the climate system"

Such level should be achieved

"within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure and within a timeframe that ensures that food production is not threatened and to enable socio-economic development to proceed in a sustainable manner"

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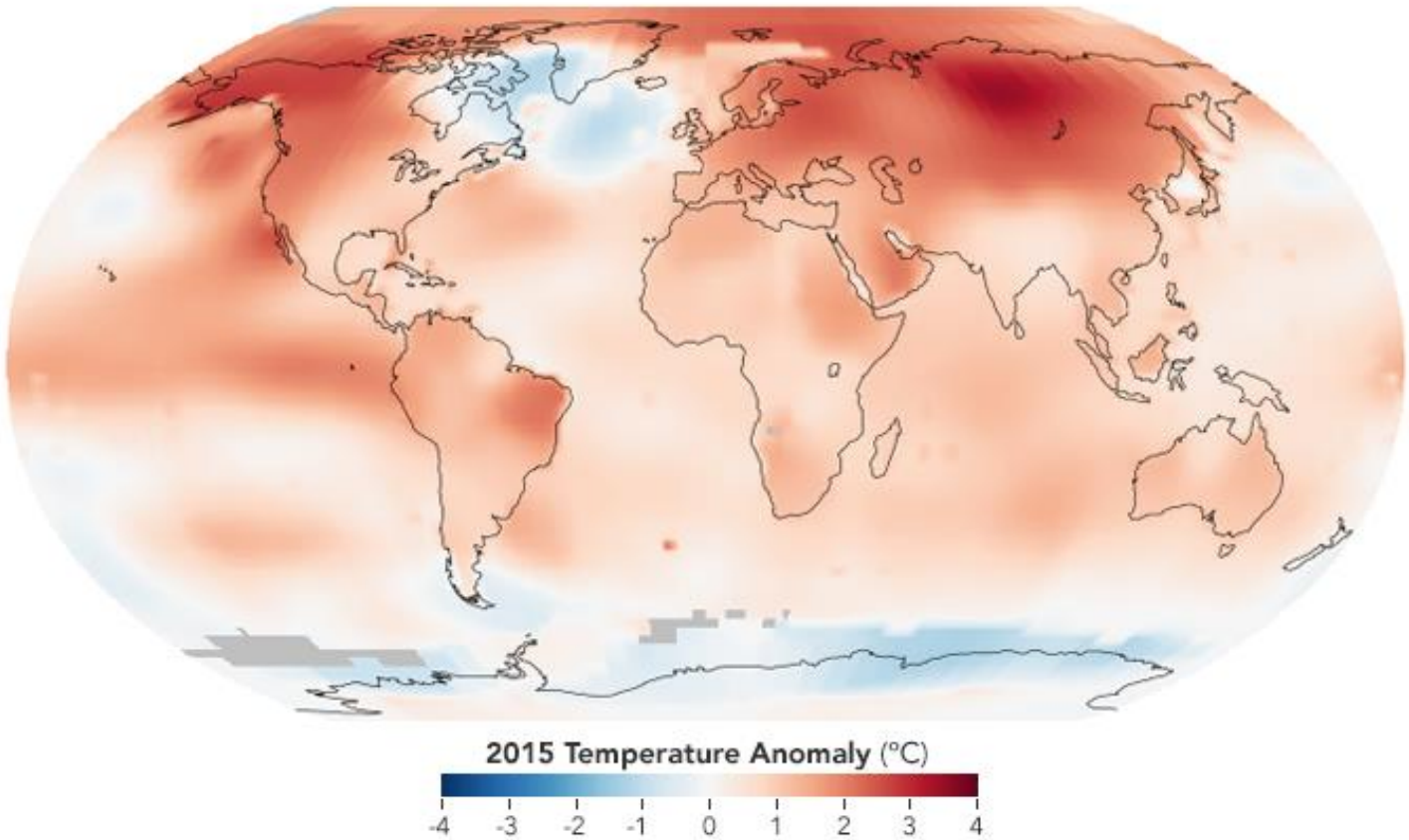
2015 the hottest year on records



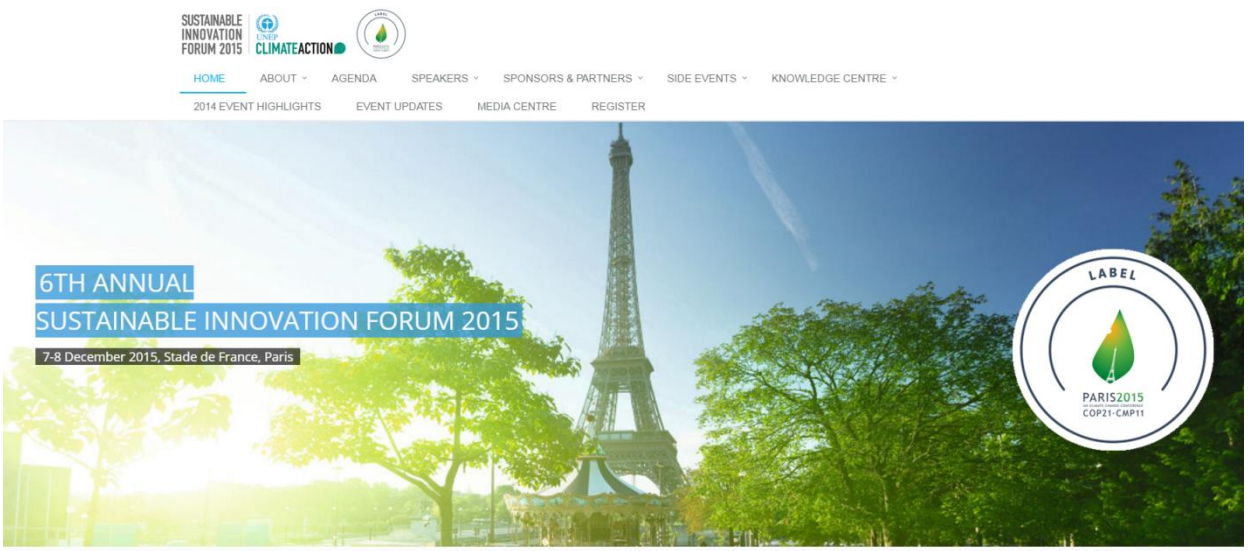
"The future is happening now," WMO Secretary-General Petteri Taalas said in a statement. "The alarming rate of change we are now witnessing in our climate as a result of greenhouse gas emissions is unprecedented in modern records."

Conference of the Parties in Paris (COP 21)

- **Historic agreement** to combat climate change;

- Increase in global average temperature **well below 2 °C** above pre-industrial levels and pursuing efforts to limit increase even further to 1.5 °C temperature;

- Global **stocktaking every 5 years** to assess the collective progress



Parties to the Convention

Enshrined in the Convention the: Principle of equity and **common but differentiated responsibilities** and **respective capabilities**

Annex I Parties include the industrialized countries that were members of the OECD (Organisation for Economic Co-operation and Development) in 1992, plus countries with economies in transition, including the Russian Federation, the Baltic States, and several Central and Eastern European States;

Non-Annex I Parties are mostly development countries. Certain groups of development countries are recognized by the Convention as being especially vulnerable to adverse impacts of climate change (e.g. countries with low-lying coastal areas and those prone to desertification and drought);

49 Parties classified by UN as **least developed countries** (**LDCs**) are given special consideration under the Convention: Parties are urged to take full account of the special situation of LDCs when considering funding and technology-transfer activities

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Reporting to the Convention

Parties to the Convention **must submit national reports on implementation** of the Convention in accordance with the principle of "common by different responsibilities and capabilities"

The importance of reliable data: Accurate, consistent and internationally comparable data on GHG emissions is essential to take appropriate mitigation actions and ultimately to achieve the objective of the Convention.

Relevant and high quality information on most effective ways to mitigate and adapt to climate change **contributes towards global sustainable development**.

Monitoring Reporting and Verification	
Annex I Parties NGHGI, BRs REVIEW	**Non-Annex I** Parties NCs, BURs International Consultation and Analysis

MRV for Developing Country Parties

- **Measurement (M)** measures the efforts to address cc and impact of these efforts. National level **GHG emissions**, mitigation actions, support needed and received;

- **Reporting (R)** national communications and BURs to UNFCCC secretariat – National Focal points – Uganda: Ministry of Water and Environment;

- **Verification (V)** addressed at international level through the International Consultation and Analysis (ICA) of the BURs;

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Reporting mechanisms to the UNFCCC: non-Annex I

- **National communications** (NCs): information on GHG inventories, measures to mitigate and facilitate adaptation. 3 years after entering the Convention and every 4 years since;

http://unfccc.int/national_reports/nonannex_i_natcom/submitted_natcom/items/653.php

Uganda Oct. 2002 and Oct. 2014

- **Biennial Update Reports** (BURs): update on NC, GHG inventories, mitigation actions, constraints and gaps, support needed and received. Every 2 years after Dec. 2014.
  http://unfccc.int/national_reports/nonannex_i_natcom/reporting_on_climate_change/items/8722.php

  Least developed countries and small islands submission of BURs at their own discretion;

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non-Annex I LDCs and small islands

National Adaptation Programme of Actions (NAPAs): for LDCs (Uganda) and small islands focus on most urgent needs with regard to adaptation to climate change (use existing information).

NAPA I Uganda 2007

Uganda order of priorities (from UNFCCC-NAPA by country database)

1. Community Tree Growing Project;
2. Land Degradation Management Project;
3. Strengthening Meteorological Services;

4 & 5. Water resources (Sanitation and Water for Production);

6. Drought adaptation;
7. Vectors, Pests and Diseases control;
8. IK and Natural Resources Management;
9. Climate Change and Development Planning

Intended National Determined Contribution (INDC)

INDC, in preparation of the COP21 of Paris and after

Under a global framework that drives collective action towards a **low-carbon and climate-resilient future** and in **the context of national priorities, circumstances and capabilities**

- **Quantifiable information** on The reference point (including base year); Time frame and periods for implementation; Planning processes; Scope and coverage; Methodological approached including those for estimating and accounting for GHG emissions (and removals); Undertakings in adaptation planning;

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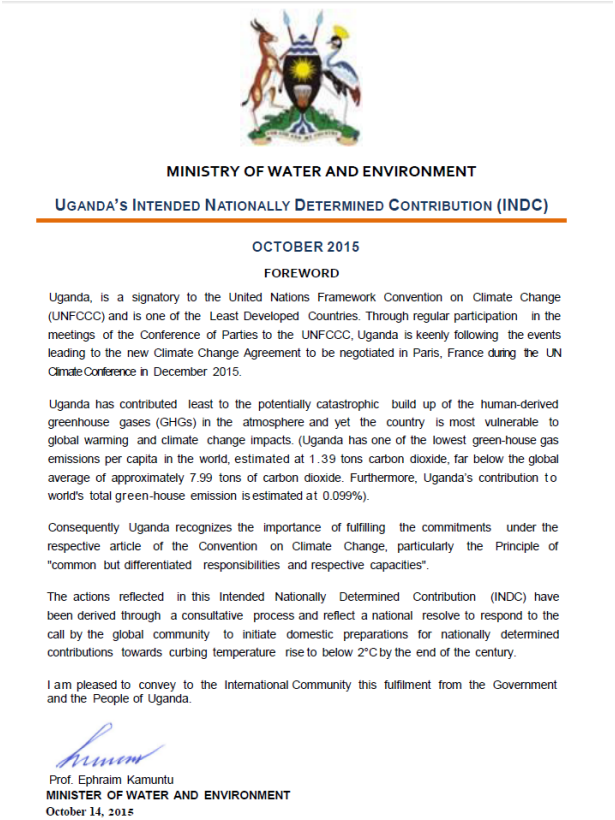
Uganda Intended National Determined Contributions

- One of the lowest GHG emissions per capita in the world – **1.36 tons of CO_2** – global average is 7.99;
- In 2007-08 **climate change damages** equivalent to **4.4%** of the national budget;
- Priority on **reducing vulnerability** of its population, environment and economy;
- Priority on **adaptation** in agriculture and livestock, forestry and infrastructure, water, energy, health and disaster risk management;

Focus on Sustainable Land Management (SLM) and Climate Smart Agriculture (CSA) programs (e.g. FAO regional initiative)



MINISTRY OF WATER AND ENVIRONMENT

UGANDA'S INTENDED NATIONALLY DETERMINED CONTRIBUTION (INDC)

OCTOBER 2015

FOREWORD

Uganda, is a signatory to the United Nations Framework Convention on Climate Change (UNFCCC) and is one of the Least Developed Countries. Through regular participation in the meetings of the Conference of Parties to the UNFCCC, Uganda is keenly following the events leading to the new Climate Change Agreement to be negotiated in Paris, France during the UN Climate Conference in December 2015.

Uganda has contributed least to the potentially catastrophic build up of the human-derived greenhouse gases (GHGs) in the atmosphere and yet the country is most vulnerable to global warming and climate change impacts. (Uganda has one of the lowest green-house gas emissions per capita in the world, estimated at 1.39 tons carbon dioxide, far below the global average of approximately 7.99 tons of carbon dioxide. Furthermore, Uganda's contribution to world's total green-house emission is estimated at 0.099%).

Consequently Uganda recognizes the importance of fulfilling the commitments under the respective article of the Convention on Climate Change, particularly the Principle of "common but differentiated responsibilities and respective capacities".

The actions reflected in this Intended Nationally Determined Contribution (INDC) have been derived through a consultative process and reflect a national resolve to respond to the call by the global community to initiate domestic preparations for nationally determined contributions towards curbing temperature rise to below 2°C by the end of the century.

I am pleased to convey to the International Community this fulfilment from the Government and the People of Uganda.

Prof. Ephraim Kamuntu
MINISTER OF WATER AND ENVIRONMENT
October 14, 2015

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Uganda INDC

Mitigation measures: CSA for cropping; Livestock breeding and manure management practices

Total emissions

36,500 $GgCO_2eq$/ year in **2000** (INDC 2014);

Approx. 77,300 $GgCO_2eq$/ year in **2030** BAU (INDC 2014);

Cumulative impact could result in 22% reduction compared to BAU projection

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General Challenges for non-Annex I Parties: Improve statistical processes

Since inception of the process:

- **Many progresses** made towards improved quality and quality of data (IPCC guidelines, best practices, Tiered approach);
- **Technical and financial mechanisms** in place to assist non-Annex I Parties for their national communication and biennial update reports (GCP and GEF-UNDP);
- Institutional arrangements: **UNFCCC Focal Points**;

But..

- **Data gaps** and need for statistical capacity development; technical and institutional arrangements;
- Further coordination and good governance needed to **strengthen linkages with sustainable development** and with adaptation and ensure **multiple co-benefits** for rural development and food security are achieved;

…and Opportunities

- Generate reliable data and robust statistics **for evidence-based decision making process** for mitigation and adaptation

- **Strengthen institutional coordination** at national and international level for improved national level planning;

- Identify synergies between climate change response actions and the **2030 sustainable development agenda**

- Better access to **funding mechanisms** (GCP, GEF);

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Background material / Notes (1)

The **Convention**: UNFCCC Established in 1992 at the Earth summit along with its sister Rio conventions: UNCBD (Convention on Biodiversity) and UNCCD (convention to Combat Desertification);
http://unfccc.int/essential_background/convention/items/6036.php

COP supreme decision-making body for the Kyoto Protocol. COP serves as the meeting of the parties to the Kyoto Protocol (CMP) –countries that are not parties to the Protocol only observers. Kyoto PROTOCOL: First commitment (37 industrialized countries and EC reduction on average 5% against 1990 level; Second commitment at least 18% below 1990 level;

SBSTA Subsidiary Body for Scientific and Technological Advice; SBI Subsidiary Body for Implementation (serves both the COP and the CMP) ; ADP Ad hoc Working Group on the Durban Platform for Enhanced Action (negotiations for a new global agreement - that was in preparation of the COP Paris.
Paris Agreement: http://unfccc.int/paris_agreement/items/9485.php

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Background material / Notes (2)

National reports: Non-Annex I National Reports

Submitted national communications (NCs):
http://unfccc.int/national_reports/non-annex_i_natcom/submitted_natcom/items/653.php

Submitted Biennial Update Reports (BURs):
http://unfccc.int/national_reports/non-annex_i_natcom/reporting_on_climate_change/items/8722.php

Submitted national adaptation programme of actions (NAPAs):
http://unfccc.int/adaptation/knowledge_resources/ldc_portal/items/4722.php

Monitoring, Reporting and Verification (MRV) for non-Annex I parties:
http://unfccc.int/national_reports/non-annex_i_natcom/items/2716.php

Background material / Notes (3)

Intended Nationally Determined Contributions (INDCs)

UNFCCC Focal Points to the secretariat of the Convention, through UNFCCC Submission Portal:
http://www4.unfccc.int/submissions/indc/Submission%20Pages/submissions.aspx

Uganda INDC (October 2015):
http://www4.unfccc.int/submissions/INDC/Published%20Documents/Uganda/1/INDC%20Uganda%20final%20%2014%20October%20%202015,%20minor%20correction,28.10.15.pdf

FOCUS
ON GHG INVENTORIES and
LINKAGE to NATIONAL STATISTICS

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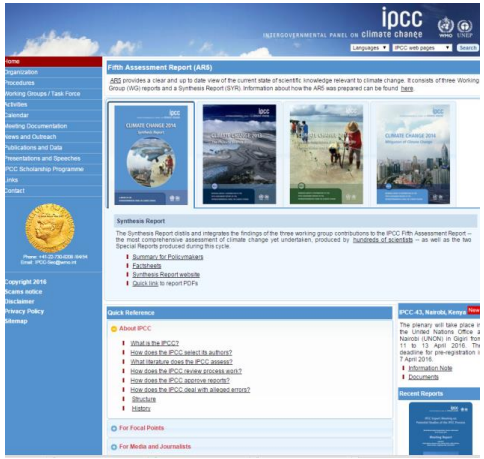
Intergovernmental Panel on Climate Change (IPCC)

International body for assessing the science related to climate change – Based on rigorous and balanced scientific information



Provide a **scientific basis** for governments

to develop climate-related policies;

Guidelines and best-practices both methodological and institutional;

WGI: Physical Science Basis;

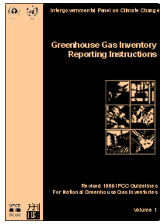
WGII: Impacts, Adaptation & Vulnerability;

WGIII: Mitigation of Climate Change

TFI: **Task Force on National GHG Inventories**

IPCC Guidelines for National GHG Emission Inventories

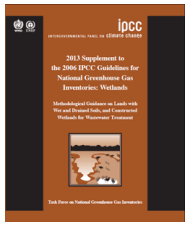
- **Revised 1996 Guidelines** for National Greenhouse Gas Inventories (Revised 1996 IPCC Guidelines), IPCC (1997);



- Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories (GPG 2000), IPCC (2000);
- Good Practice Guidance for Land-Use, Land-Use Change and Forestry (GPG-LULUCF), IPCC (2003);

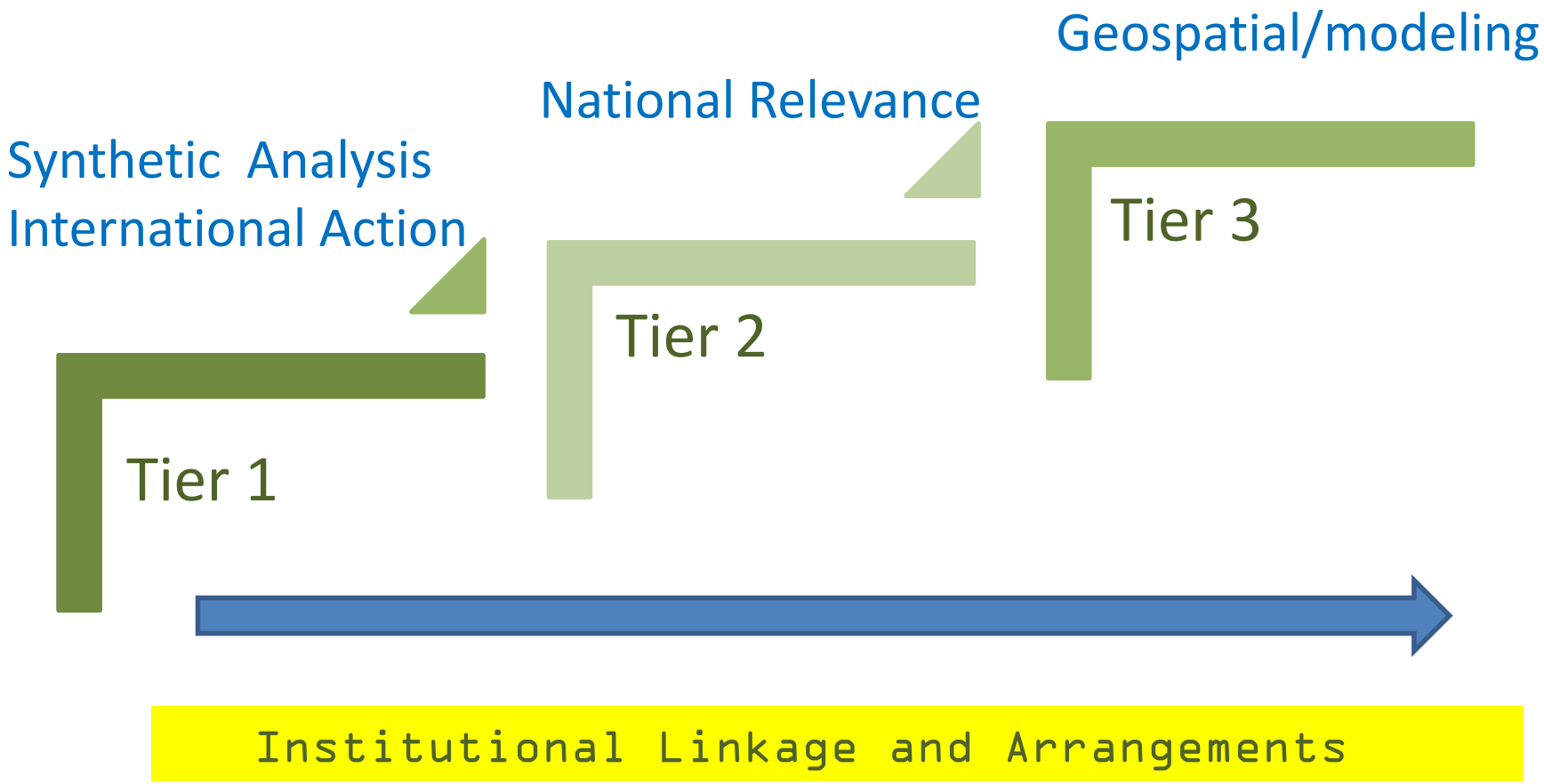
- **2006 IPCC Guidelines** for National Greenhouse Gas Inventories (2006 IPCC Guidelines), IPCC (2006) **VOL 4 AFOLU sector;**

- **2013 Supplement** to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: **Wetlands** (Wetlands Supplement), IPCC (2014);



- 2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol (KP Supplement), IPCC (2014);

A Phased Tiered Approach for integrating data



FAO and statistical processed linked to the Convention

- Main objective of the **Convention** (...ensure that food production is not threatened) and **FAO** mandate on sustainable food and agriculture, food security, are tightly linked;

- FAO **collects and disseminates reliable data to support evidence-based decision making process;**

- FAO ongoing **support to its country members** capacities and requests;

- **FAOSTAT** data currently used as reference as per IPCC guidelines;

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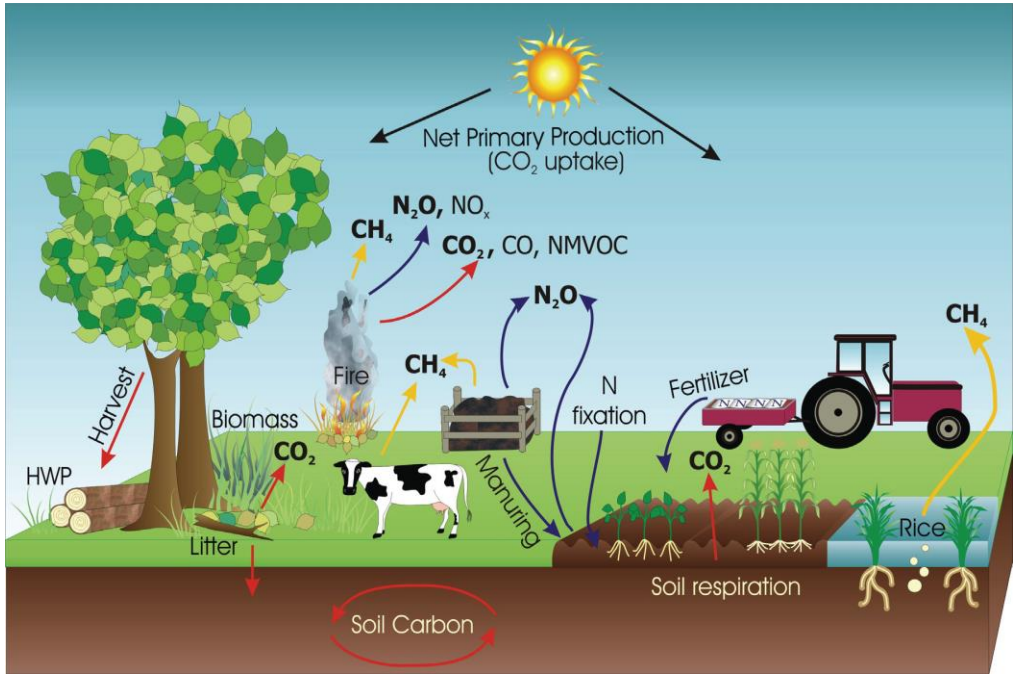
AFOLU in National GHG Inventory

AFOLU: Agriculture, Forestry and Other Land Use and Land Use change

Biomass C Stock Changes

Non-CO_2 GHG Emissions from Burning



Soil N_2O Emissions

Rice Methane

Soil C Stock Changes

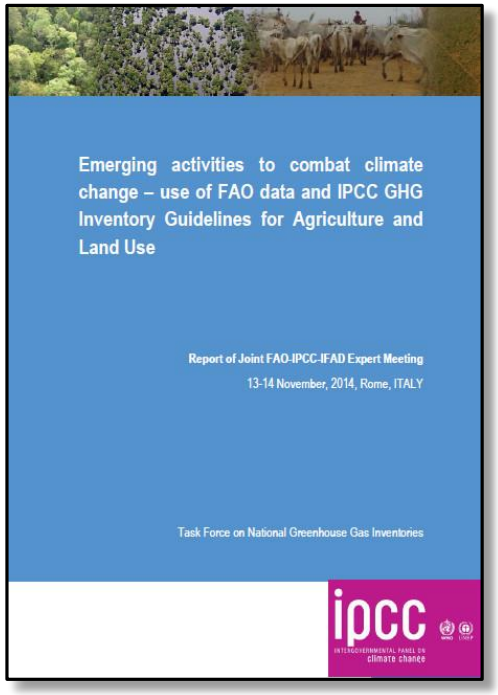
Enteric Methane

CH_4 and N_2O from Manure

From 2006 IPCC Guidelines

FAO Statistical Work on GHG Emissions

- FAO database with estimates and updates GHG Emissions from AFOLU;
- 1961-2014 (Agriculture); 1990-2015 (LULUCF): ~185 Countries
- Reference **Tier 1** GHG Inventory using 2006 IPCC Guidelines:
  - Facilitate national, regional and global analysis, including IPCC Assessment Reports
  - Support member countries report under UNFCCC, addressing data gaps and needs in data QA/QC
  - Explore policy-relevant emission indicators in support of analyses linked to resilience, food security, including SDGs processes



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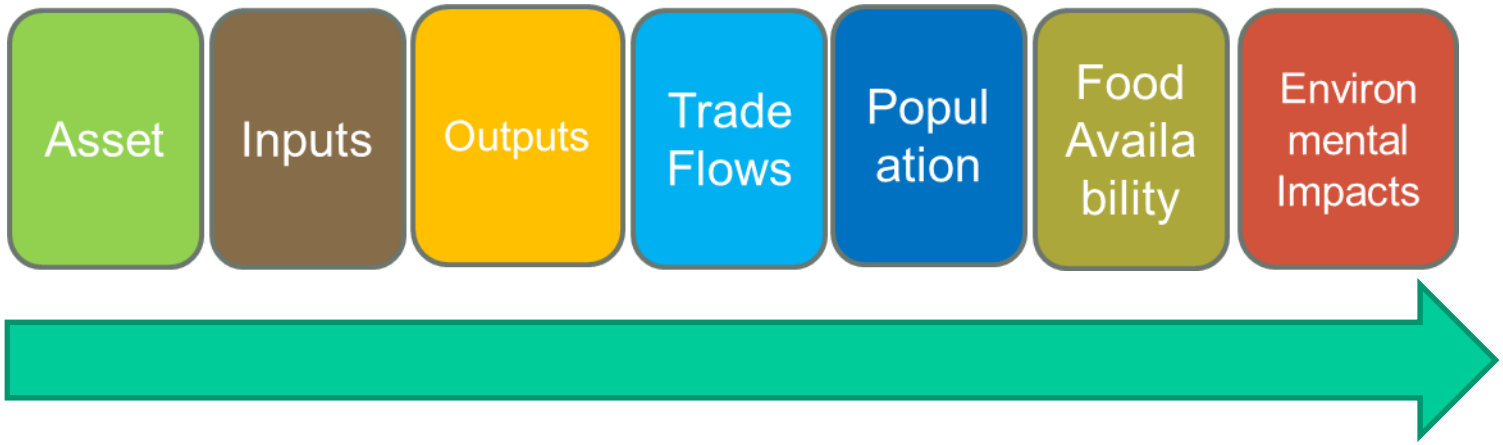
www.ipcc-nggip.iges.or.jp/public/mtdocs/pdfiles/1411_FAO-IPCC-IFAD_Rome_AFOLU.pdf

Developing indicators

As part of the emerging System on Economic and Environmental Accounting in Agriculture

e.g. Agricultural GHG emissions/ Crop Production
e.g. Agricultural GHG emissions/ Rural Population
e.g. Agricultural GHG emissions/ Food (primary crops)



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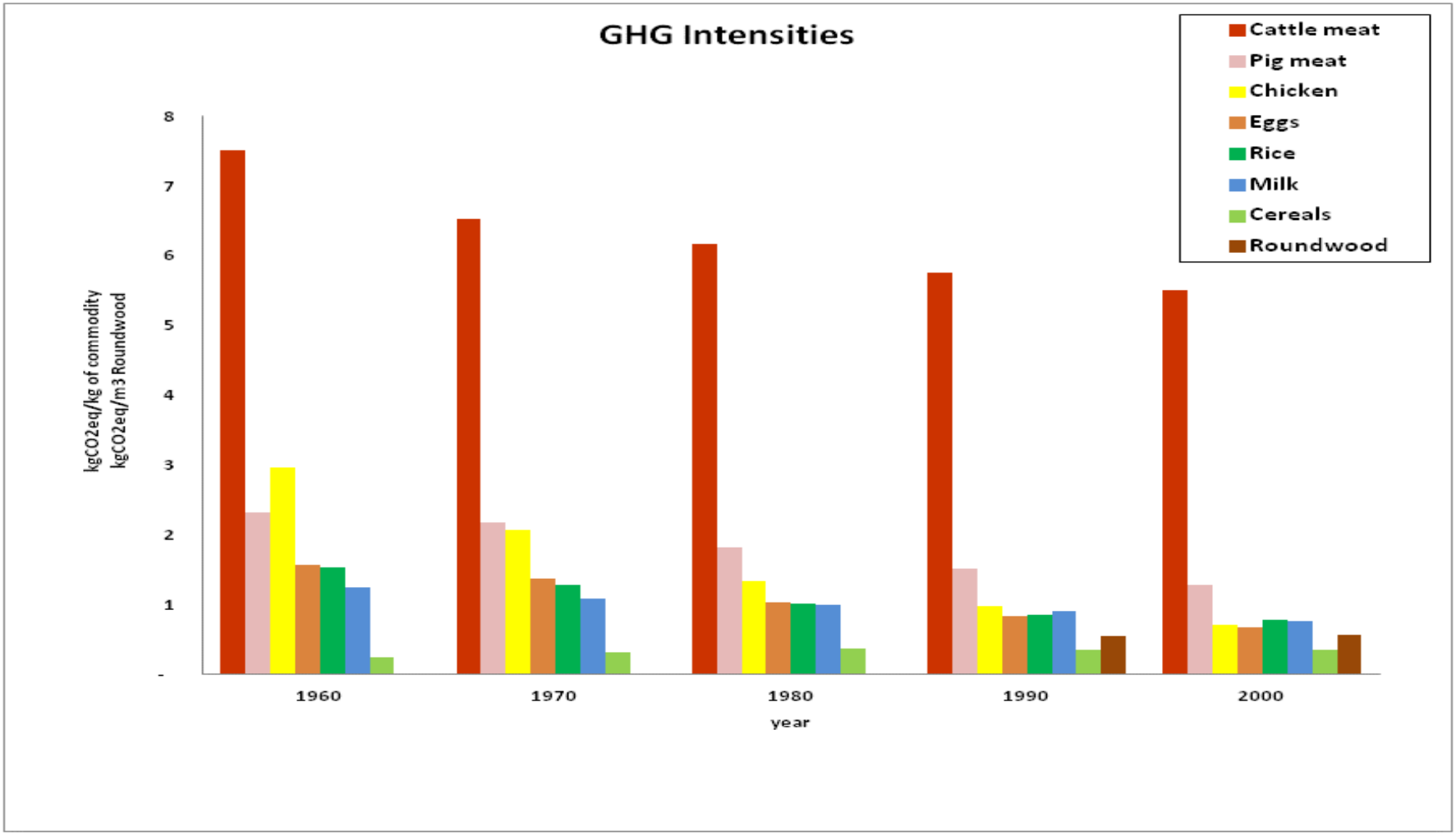
Developing indicators (cont.)



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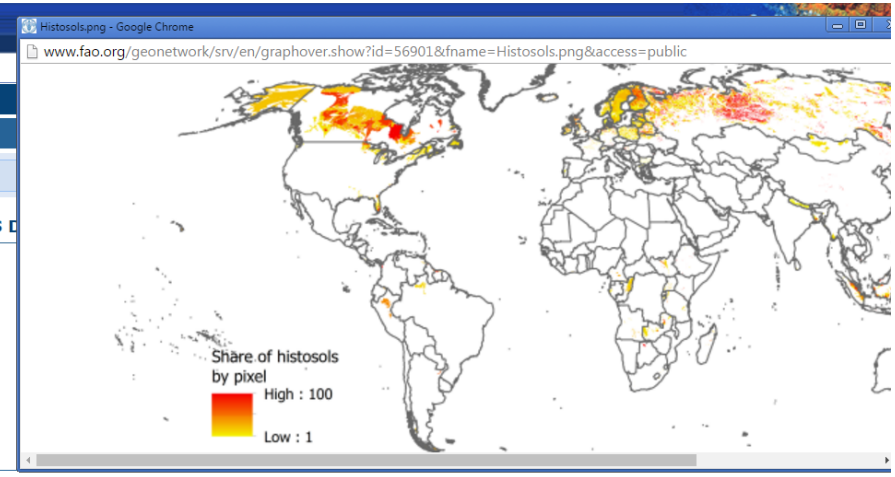
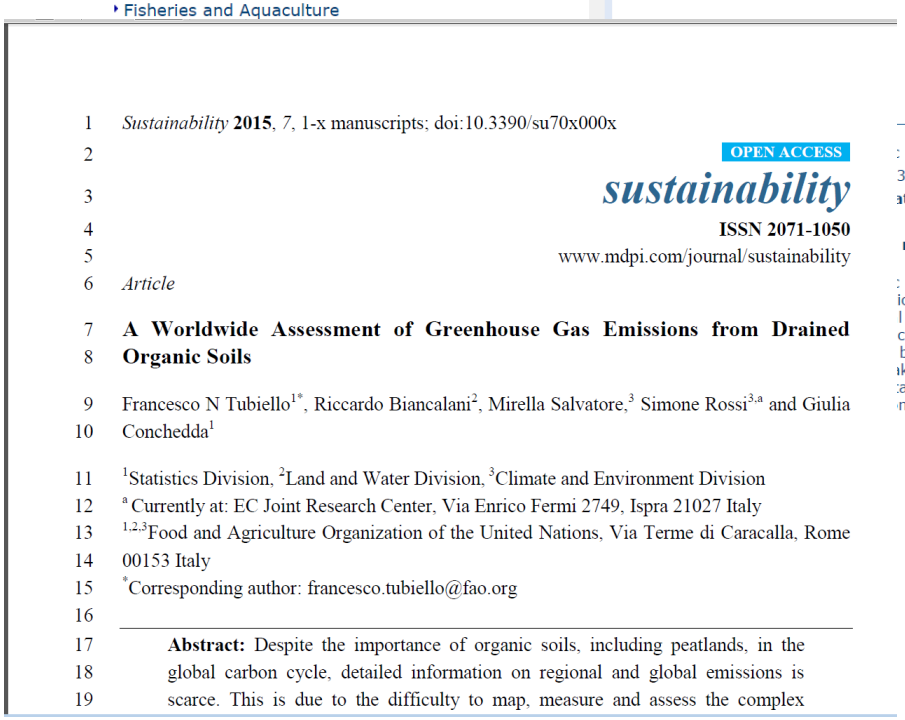
Enabling access to geospatial data

GeoNetWork http://www.fao.org/geonetwork/srv/en/main.home





Sustainability **2015**, *7*, 1-x manuscripts; doi:10.3390/su70x000x

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sustainability

ISSN 2071-1050

www.mdpi.com/journal/sustainability

Article

A Worldwide Assessment of Greenhouse Gas Emissions from Drained Organic Soils

Francesco N Tubiello[1*], Riccardo Biancalani[2], Mirella Salvatore,[3] Simone Rossi[3,a] and Giulia Conchedda[1]

[1]Statistics Division, [2]Land and Water Division, [3]Climate and Environment Division
[a] Currently at: EC Joint Research Center, Via Enrico Fermi 2749, Ispra 21027 Italy
[1,2,3]Food and Agriculture Organization of the United Nations, Via Terme di Caracalla, Rome 00153 Italy
[*]Corresponding author: francesco.tubiello@fao.org

Abstract: Despite the importance of organic soils, including peatlands, in the global carbon cycle, detailed information on regional and global emissions is scarce. This is due to the difficulty to map, measure and assess the complex

: soils (histosols) and drained organic soils
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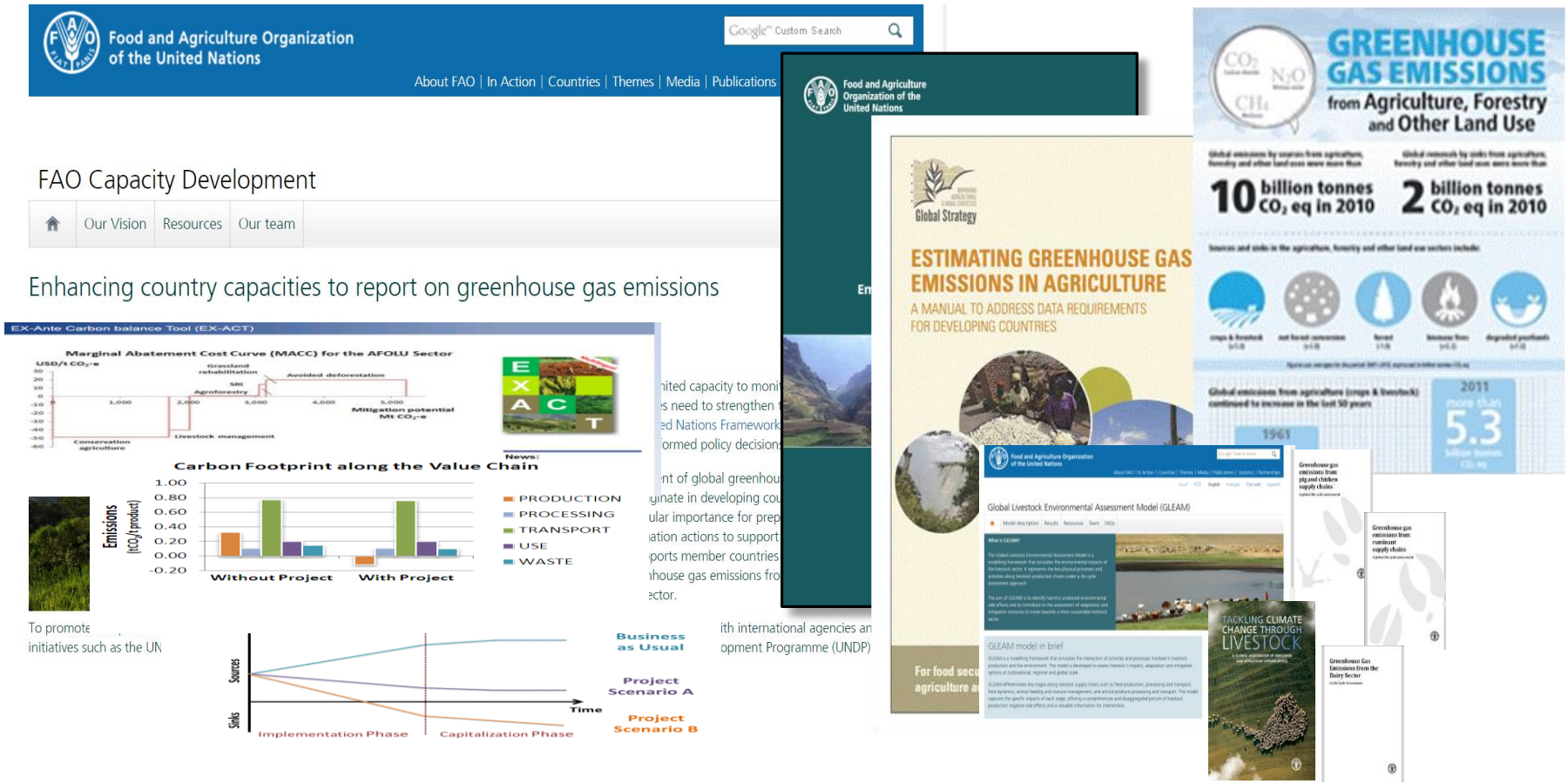
map: Map represented in raster or vector form

: soils and peatlands in particular have high influence on climate change and on the global carbon cycle. Indeed, the
ion of organic soils entails drainage which causes significant release of CO2 in the atmosphere.Detailed information on
l and global emission trends of these soils is however scarce, due to the difficulty to map, measure and assess the comp
cs of land, soil and water interactions that are required for a correct understanding of the degradation of organic soils
by human activity. A geospatial analysis of drained organic soils and associated greenhouse gas emissions (GHG) were
ken as part of the FAOSTAT global database of emissions for the Agriculture, Forestry and Other Land Use AFOLU sector
abase was first published in FAOSTAT in 2012 and it is updated yearly (FAO, 2016). Emissions estimates are derived fro
n factors as reported in the 2006 IPCC guidelines and from activity data, namely the spatial distribution of organic soils

On-going work on ensuring access to both activity data, parameters and estimates as geospatial information

FAO Capacity Development in support of national statistical processes related to the UNFCCC

Knowledge Generation; GHG Data Analyses, Manuals in support of GHG Inventory and submission processes; Emissions database; Ex-Ante Carbon Balance; GLEAM



Overview into third day of this training

Focus on the FAO emissions database

Practical exercises: activity data & calculations

1) Exercises with the **FAOSTAT Land use** database: Emissions from Forest Land;

2) Exercises with the **FAOSTAT Agriculture** database: Emissions from Livestock domains (Enteric Fermentation; Manure Left on Pastures and Applied to Soils and MMS);

3) Emissions from organic soils (**FAOSTAT Land Use** & **Agriculture);**

4) Key messages;

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THANK YOU

Contacts:
Giulia Conchedda
Geospatial Statistics Analyst
Email: giulia.conchedda@fao.org

web page:
http://www.fao.org/economic/ess/environment/en/
Email: Environment-Statistics@fao.org