FAO Support to Member Countries: Activity data and GHG estimates for the AFOLU sector

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Monitoring and Assessment of GHG in Agriculture

The 12th Workshop on GHG Inventories in Asia (WGIA12)
Capacity building for measurability, reportability and verifiability
Bangkok, Aug 4-6 2014

Outline

1. Overview of emissions from agriculture, forestry and land use
2. Agriculture, Land, and forestry statistics as activity data
3. FAOSTAT and FRA databases as a source of activity data
4. Activity data not available in FAOSTAT and FRA

Emissions from Agriculture, Forestry, and Other Land Use (AFOLU)

DOMAIN	CATEGORY		GAS reported
Agriculture	Enteric Fermentation		CH_4
	Manure Management		CH_4, N_2O
	Rice Cultivation		CH_4
	Agricultural soils	Synthetic Fertilizers	N_2O
		Manure applied to soils	N_2O
		Manure left on pasture	N_2O
		Crop residues	N_2O
		Cultivated organic soils	N_2O
	Burning - Savanna		CH_4, N_2O
	Burning – Crop residues		CH_4, N_2O

DOMAIN	CATEGORY	GAS reported
LULUCF	Forest land	CO_2
	Cropland	CO_2
	Grassland	CO_2
	Burning Biomass	CH_4, N_2O, CO_2
	Wetlands	CO_2
	Settlements	CO_2
	Other land	CO_2

Activity data: recommendations of the IPCC Guidelines

- It is good practice to use official national data
- International sources, such as FAOSTAT can be used when national information is not available.
- Cross-check national and international datasets to ensure completeness and consistency in GHG inventories.

FAO can support Member countries in relation to:

- Guidance on performing surveys and census;
- Global datasets: FAOSTAT and FRA (Forest Resource Assessment).
- Data analysis, quality assessment/quality control, and linking to national data processes

FAOSTAT and FRA as a source of activity data

- FAO has long maintained global datasets on agricultural and forest data, extremely valuable for National Greenhouse Gas (GHG) inventories for the AFOLU sector.
  - Agricultural statistics in different domains (FAOSTAT):
    - Production: Livestock, Crops
    - Resources: Fertilizers, Land
  - Forestry statistics:
    - Resources: Land (FAOSTAT)
    - Forestry: wood products (FAOSTAT)
    - Forest biomass (FRA)
- Data are collected through questionnaires compiled by Member Countries.

The FAOSTAT questionnaire

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
STATISTICS DIVISION

Questionnaire on Crop and Livestock Production and Utilization
Excel Version

Reference Years: 2009-2011

National Repo

Reporter name:
Title:
Administration and Office:
Address:
Web site address:
Signature:
Tel: Fax:

This questionnaire contains the following sections:
Section 1: Primary Crop Production
Section 2: Selected Primary Crops Utilization
Section 3: Livestock (Animal Numbers and Livestock Pr
Section 4: Selected Derived Agricultural Commodities
Section 5: Crop and Livestock Metadata

N.B.: - Data should refer to national and annual covera
- Official data previously reported have been inclu
- Description of commodities as well as instructior
- Should you have any additional data on crop an
(as an attachment to this questionnaire).

We kindly ask you to provide a re

FAO takes this opportunity to thank your Government for its
Please send back your response preferabl
or via the FAO Representative Office in your country or direc
Contact person: Mr. Nicolas Sakoff, Tel: (+39) 0

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
STATISTICS DIVISION

Reference Years: 2008-2011

Questionnaire on Agricultural Resources
Fertilizers

National Reporting Office and Contact name

Reporter name:
Title:
Administration and Office:
Address:

Tel: Email: http:// Date:

- The Questionnaire on Fertilizers has five major sections:
  Production, Domestic Availability, Utilization, Organic Material and Metadata.
- Detailed explanatory notes may be found in the 'Explanatory Notes' sheet.
- Detailed instructions may be found in the 'Instructions' sheet.
- If you have any queries regarding this questionnaire please contact:
  Mr. Robert Mayo
  Tel: (+39) 06 5705 4105
  E-mail: Robert.Mayo@fao.org

http://faostat.fao.org/site/575/default.aspx#ancor

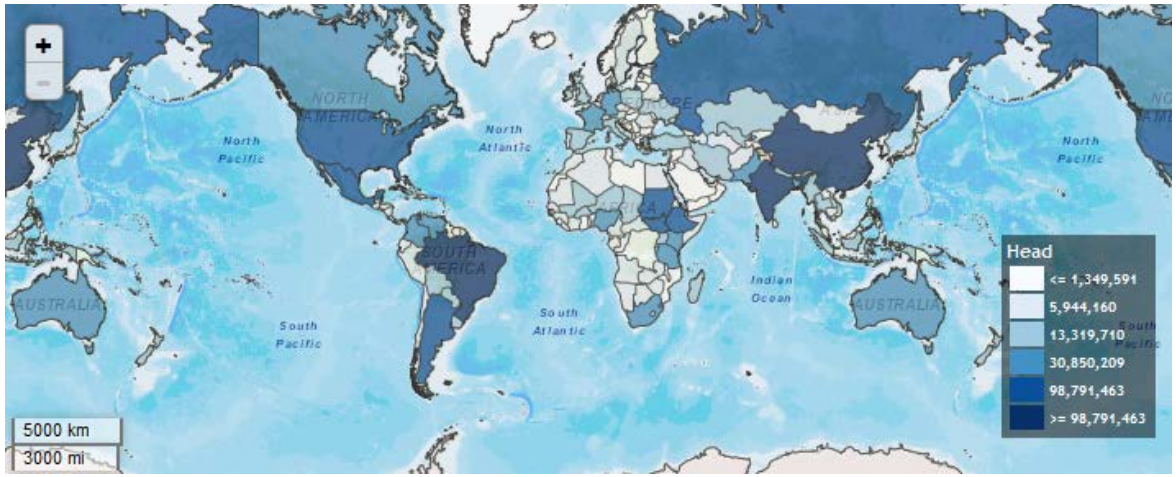
We kindly ask you to provide a reply by 19/Oct/2012

FAO takes this opportunity to thank your Government for its assistance in completing this questionnaire and looks forward to receiving a reply.
Please return one copy to:
FAO, Statistics Division, Viale delle Terme di Caracalla, 00153 Rome, Italy, **e-mail: Resource-statistics@fao.org**
or forward via the FAO Representative Office in your country
Contact person: Mr. Robert Mayo tel: (+39) 06 5705 4105 e-mail: Robert.Mayo@fao.org

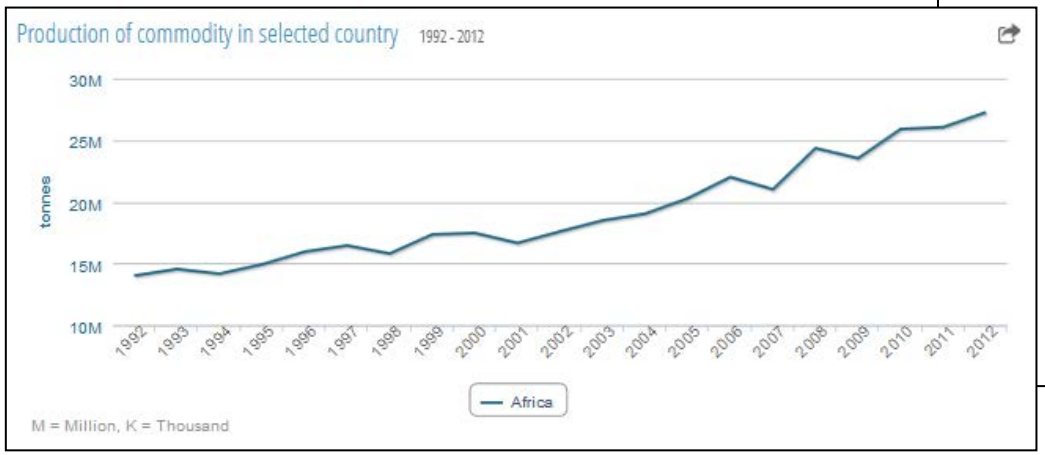
Who receives the FAOSTAT questionnaires?

	Land			Production			Fertilizers		
	Ministry	NSO	Other	Ministry	NSO	Other	Ministry	NSO	Other
Algeria	X				X		X		
Cameroon		X			X			X	
Central African Republic	X				X		X		
Democratic Republic Congo		X			X		X		
Côte d'Ivoire	X				X		X		
Egypt		X			X		X		
Ethiopia		X			X		X		
Gabon		X			X			X	
Ghana		X			X			X	
Kenya		X			X		X		
Madagascar			X				X		
Mali	X				X				X
Mauritania		X			X			X	
Morocco			X		X		X		
Namibia	X				X			X	
Nigeria		X		X			X		
Rwanda		X			X		X		
Senegal			X		X				X
South Africa			X		X			X	
Sudan	X						X		
United Republic of Tanzania		X			X			X	
Uganda	X				X			X	
Zambia		X			X			X	

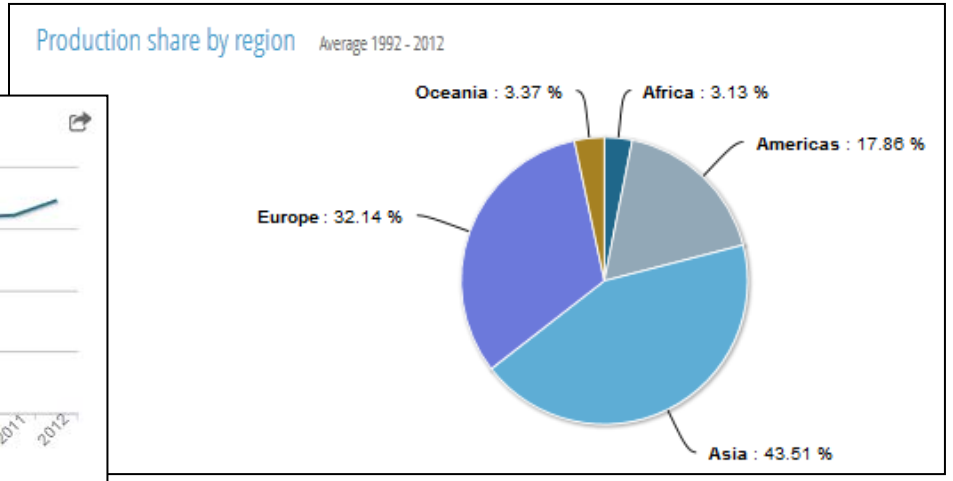
Agricultural statistics: examples



Cattle: Heads by country, average 1992-2011



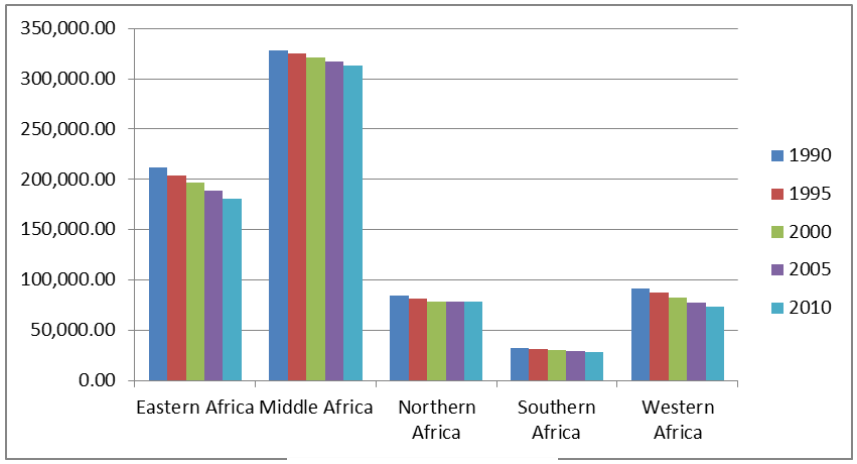
Rice production in Africa 1992-2012



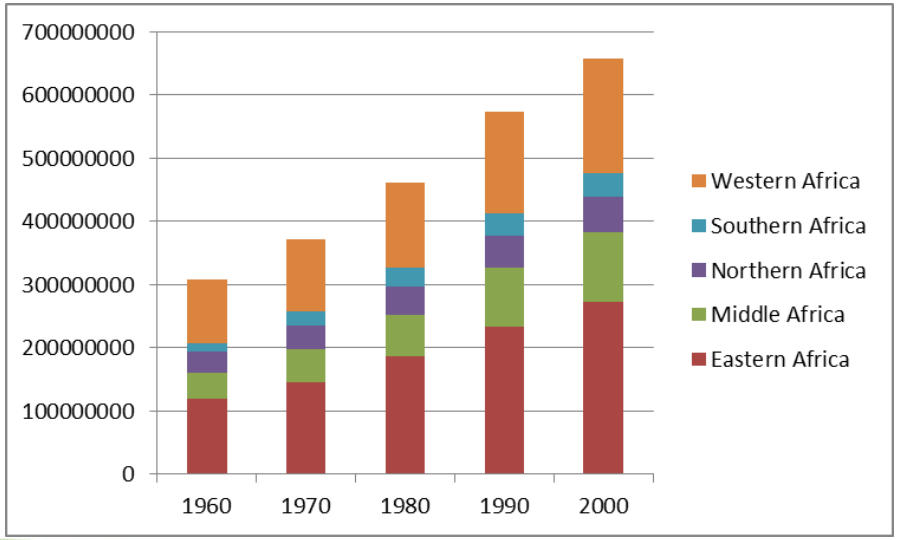
Wheat production by continent 1992-2012

http://faostat.fao.org/

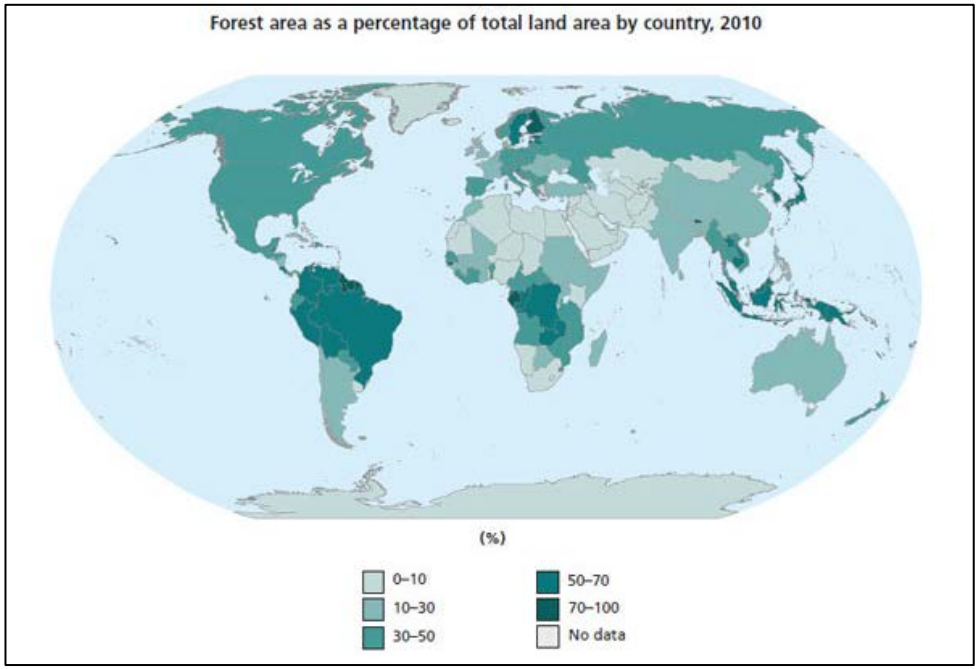
Forestry statistics: examples



Total forest area



Average Roundwood production



http://www.fao.org/forestry/fra/fra2010/en/

Live Demonstration: activity data in FAOSTAT

GHG Emissions Statistics: Categories

DOMAIN	CATEGORY		GAS reported	Data source
Agriculture	Enteric Fermentation		CH_4	FAOSTAT
	Manure Management		CH_4, N_2O	FAOSTAT
	Rice Cultivation		CH_4	FAOSTAT
	Agricultural soils	Synthetic Fertilizers	N_2O	FAOSTAT
		Manure applied to soils	N_2O	FAOSTAT
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		Crop residues	N_2O	FAOSTAT
		Cultivated organic soils	N_2O	
	Burning - Savanna		CH_4, N_2O	
	Burning – Crop residues		CH_4, N_2O	FAOSTAT

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LULUCF	Forest land	CO_2	FRA
	Cropland	CO_2	
	Grassland	CO_2	
	Burning Biomass	CH_4, N_2O, CO_2	
	Wetlands	CO_2	
	Settlements	CO_2	
	Other land	CO_2	

What was not covered in FAOSTAT and FRA?

Data on:

– Burned areas (savanna, grassland, peat and forest)

– Organic soils

are not included in FAOSTAT and FRA.

→This requires the estimation of new activity data

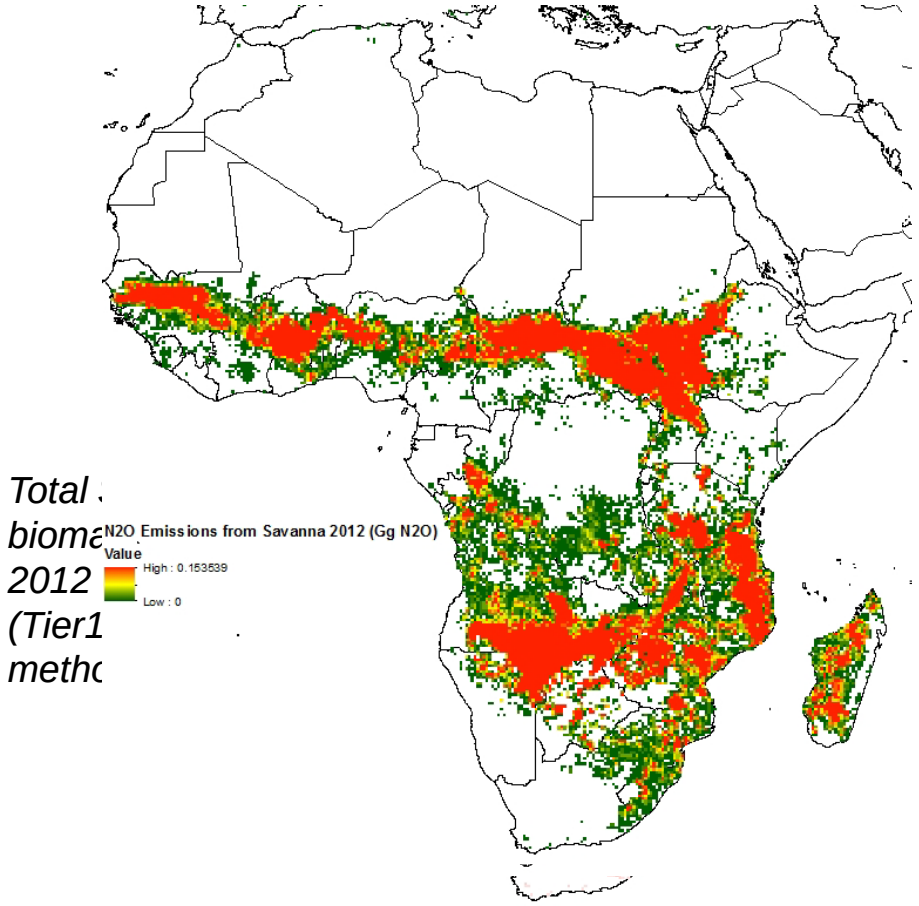
Activity Data produced from geo-spatial datasets

Activity data from geo-referenced data

- Organic soils map (HWSD)
- Land Cover map (GLC 2000)
- Burned area from satellite data (GFED4)
- Climatic map (JRC)
- Forests map (FAO-FRA)

IPCC 2006

- ***Emissions from cultivated organic soils***
- ***Emissions from Biomass Burning***



These new data are available through FAOSTAT as National aggregates, and soon for download as geo-referenced data

GHG Emissions Statistics: Categories

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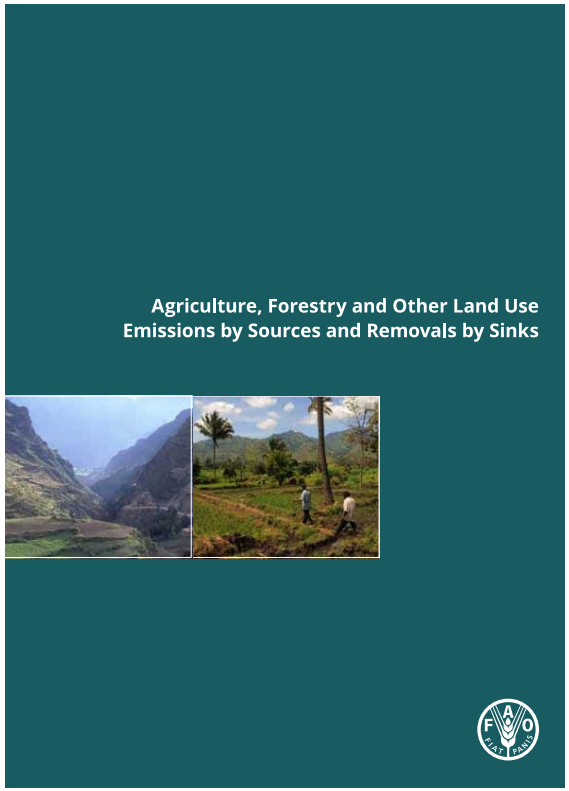
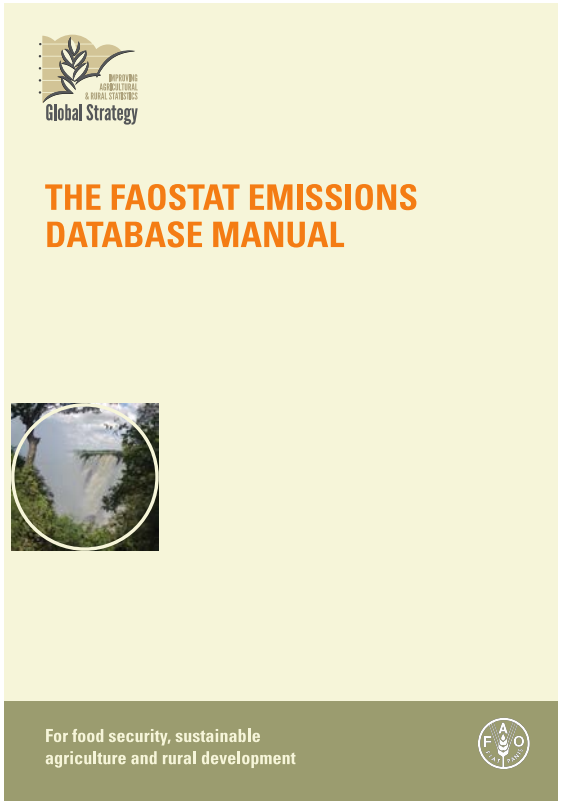
	Settlements	CO_2	
	Other land	CO_2	

Conclusions

- FAOSTAT and FRA contain official data reported by countries and can be used to complement national data
- New country-level activity data from geospatial datasets now available for use within FAOSTAT
- FAO can support member countries improve rural statistics and develop national data systems

Thank you for Your Attention!





Contact: MAGHG@fao.org

Website MAGHG: www.fao.org/climatechange/micca/ghg

WebsiteFAOSTAT: http://faostat.fao.org

With Funding From:

Federal Ministry of Food, Agriculture and Consumer Protection

NORWEGIAN MINISTRY OF FOREIGN AFFAIRS

Estimation of GHG emissions

(IPCC Guidelines for National Greenhouse Gas Inventories)

Emissions = Activity Data * Emission Factor

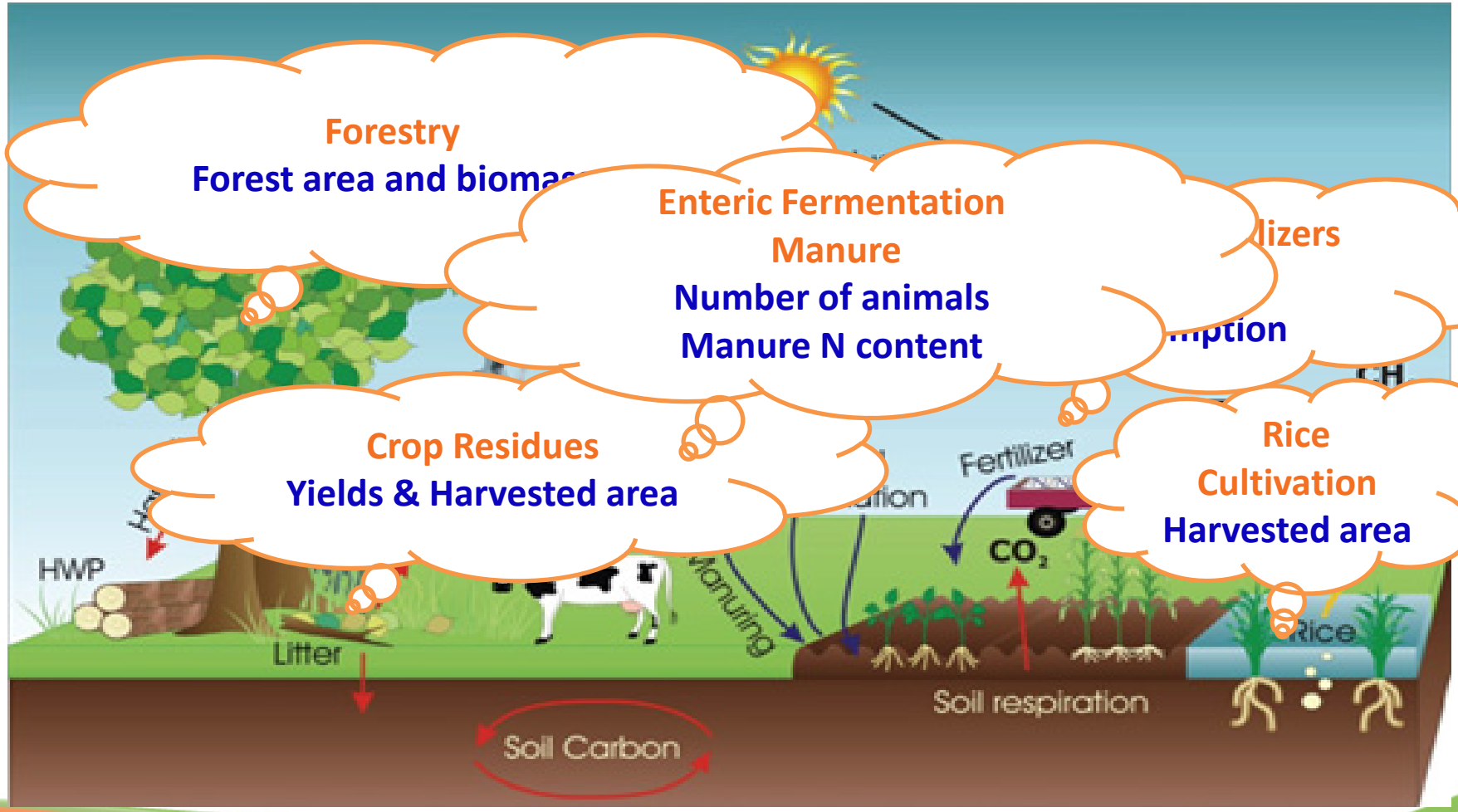
Activity data:

- information on the extent to which a human activity resulting in emissions or removals of GHG takes place during a given period of time
- typically derived from statistics, but also from other sources;
- availability and quality are the primary driving factors determining the accuracy and reliability of the GHG emissions inventory.

Emission factor:

- emissions or removals of a given GHG per activity unit

Main activity data used for the emissions estimate



IPCC, 2006