

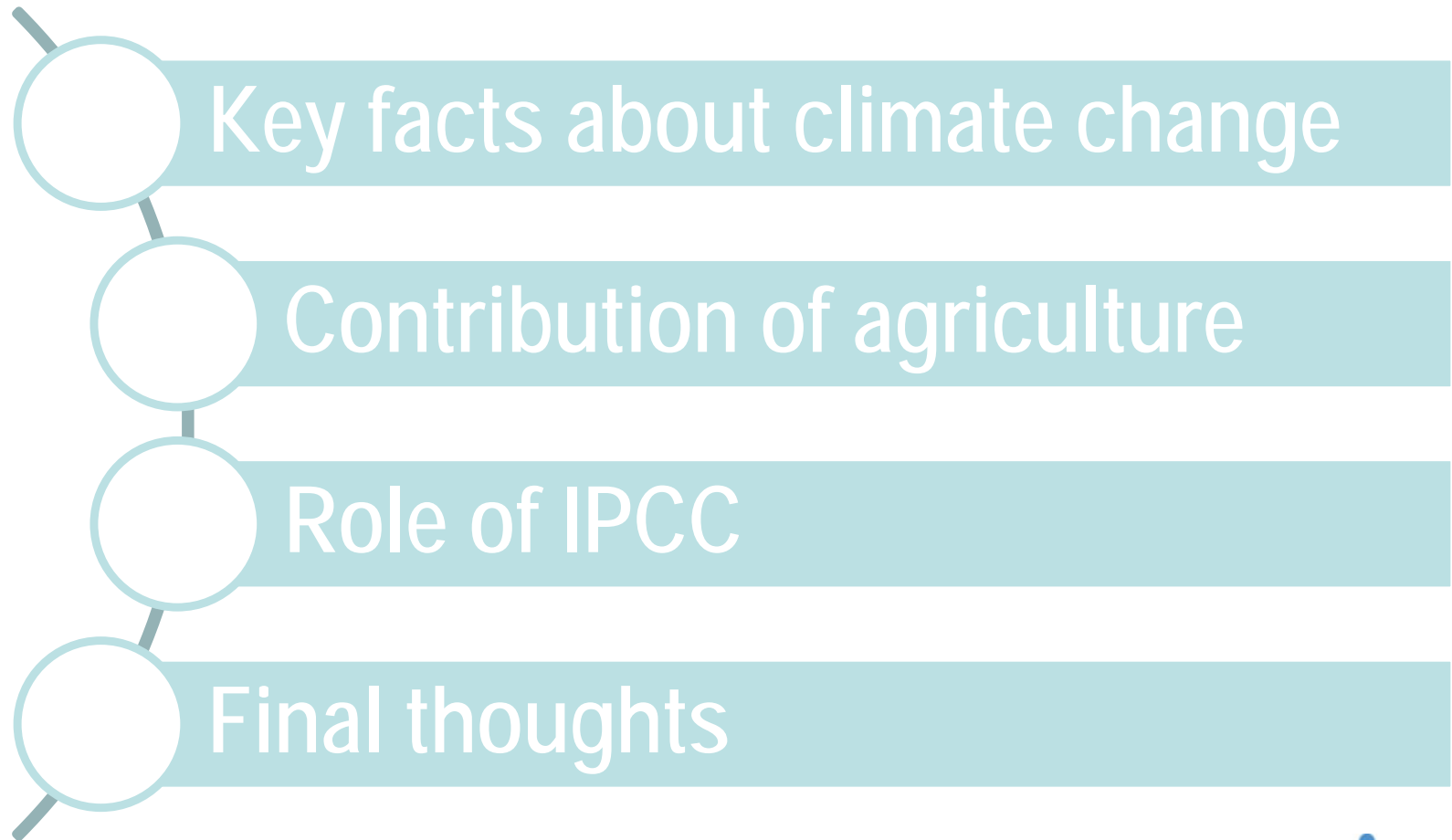
# The Role of Agriculture, Forestry and Other Land Uses in the World of Global Warming

Agriculture is the Solution!  
for climate change

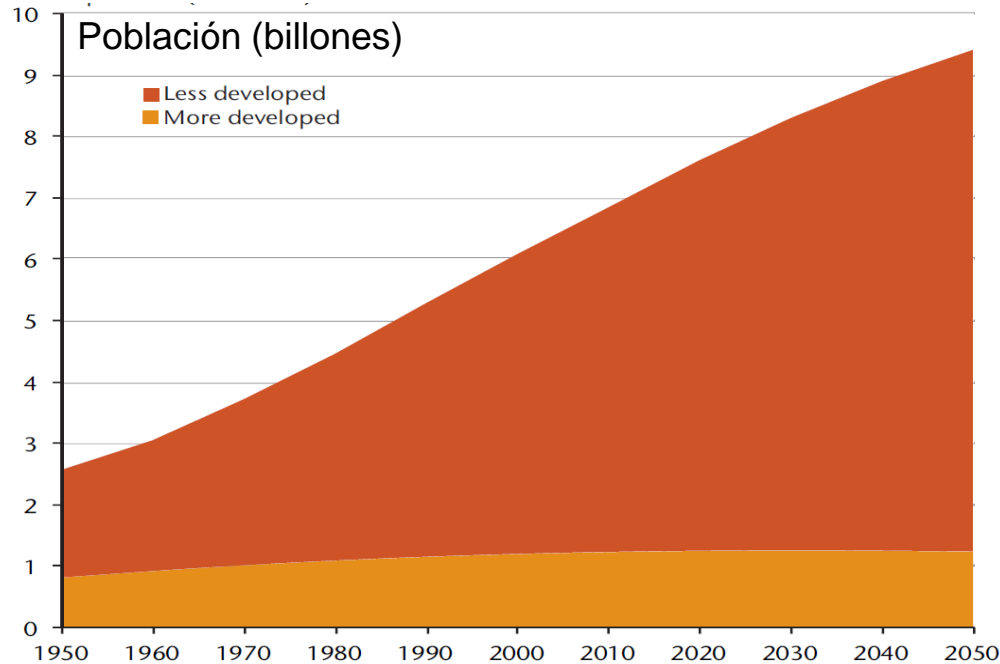
13 May 2019

Marta A. Alfaro and Kiyoto Tanabe

# Introduction



# Increasing world population



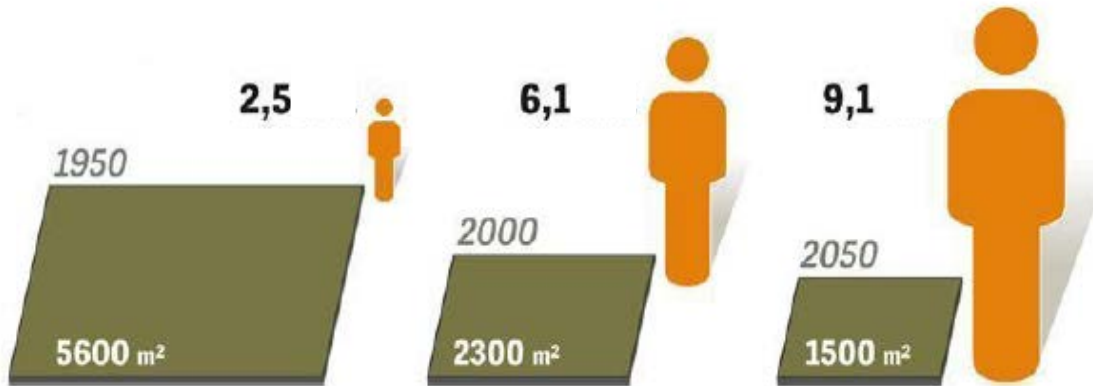
FAO (2007)

World population clock live

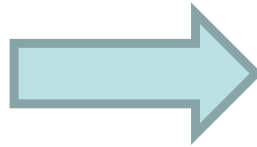
**7,664,014,116**

World population  
Right now

# Increasing role of farming in worldwide food security



# Changes in traditional agricultural systems



- ~50% more livestock in 2050 (FAO)
- Growth expected in Asia and Latam countries
- Potential negative externalities of food chains
- New consumer
- International negotiations

**UN urges global move to meat and dairy-free diet**  
Lesser consumption of animal products is necessary to save the world from the worst impacts of climate change, UN report says

Felicity Carus  
guardian.co.uk, Wednesday 3 June 2014 13:09 KEET



An cattle ranch in Mato Grosso, Brazil. The UN says agriculture is on a par with fossil fuel consumption because both rise rapidly with increased economic growth. Photograph: David Jabra/Greenpeace

Which one of these contributes more to Global Warming?



It's not the one that starts a car.

According to the United Nations Food and Agriculture Organization, animal agriculture contributes to global warming even more than transportation does. Reducing the amount of meat, eggs, and dairy products in your diet is one of the most effective ways to reduce greenhouse gas emissions. Find out more about farm animal welfare, factory farming's environmental impacts, and what you can do to help.

Controlling Animals • Combating Climate

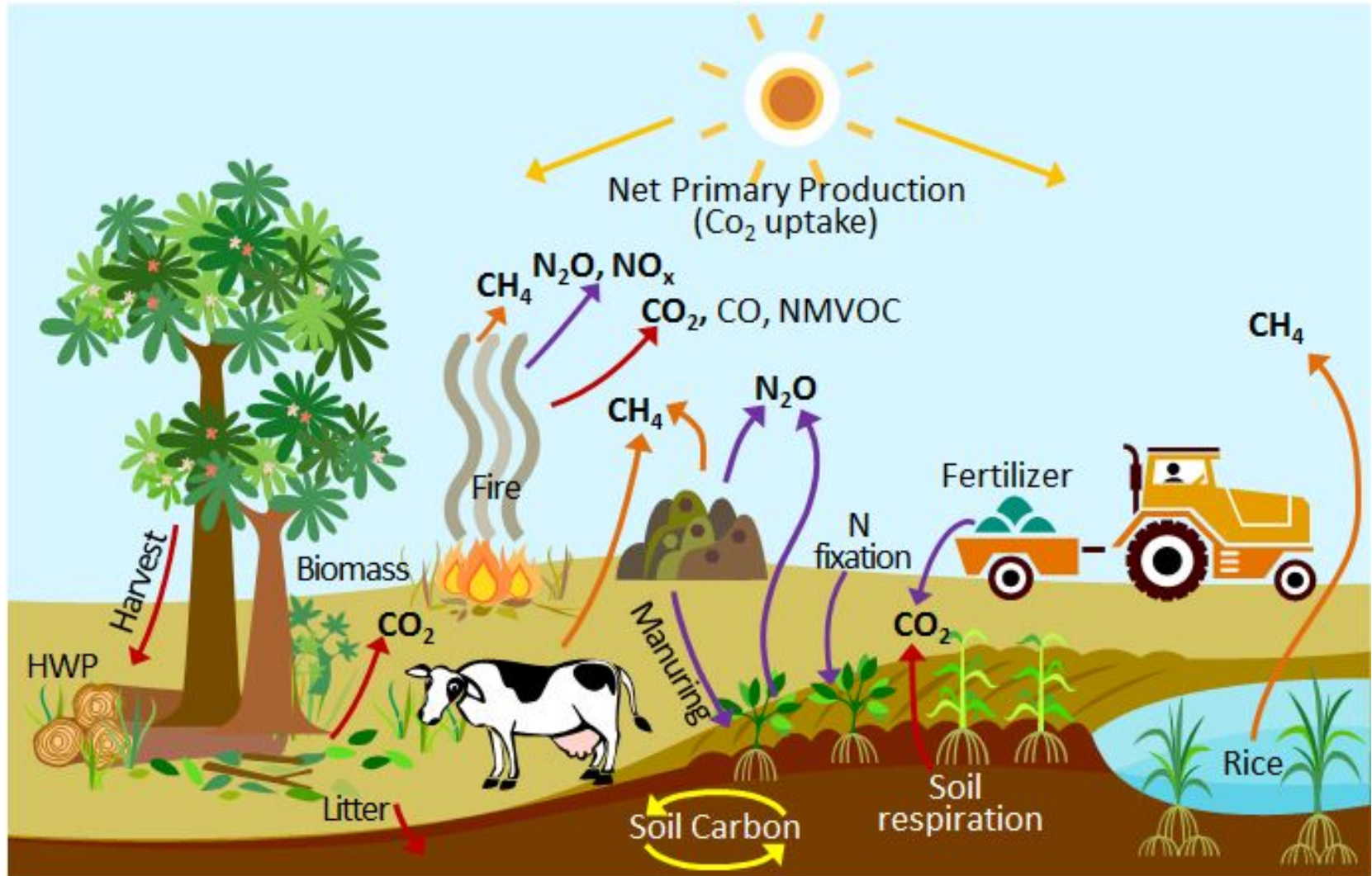
THE HUMANE SOCIETY  
of the United States  
humane.org/food

# Climate Change and Greenhouse Gases



Fuente: UNEP -GRID-Arendal.

# Agriculture and greenhouse gases



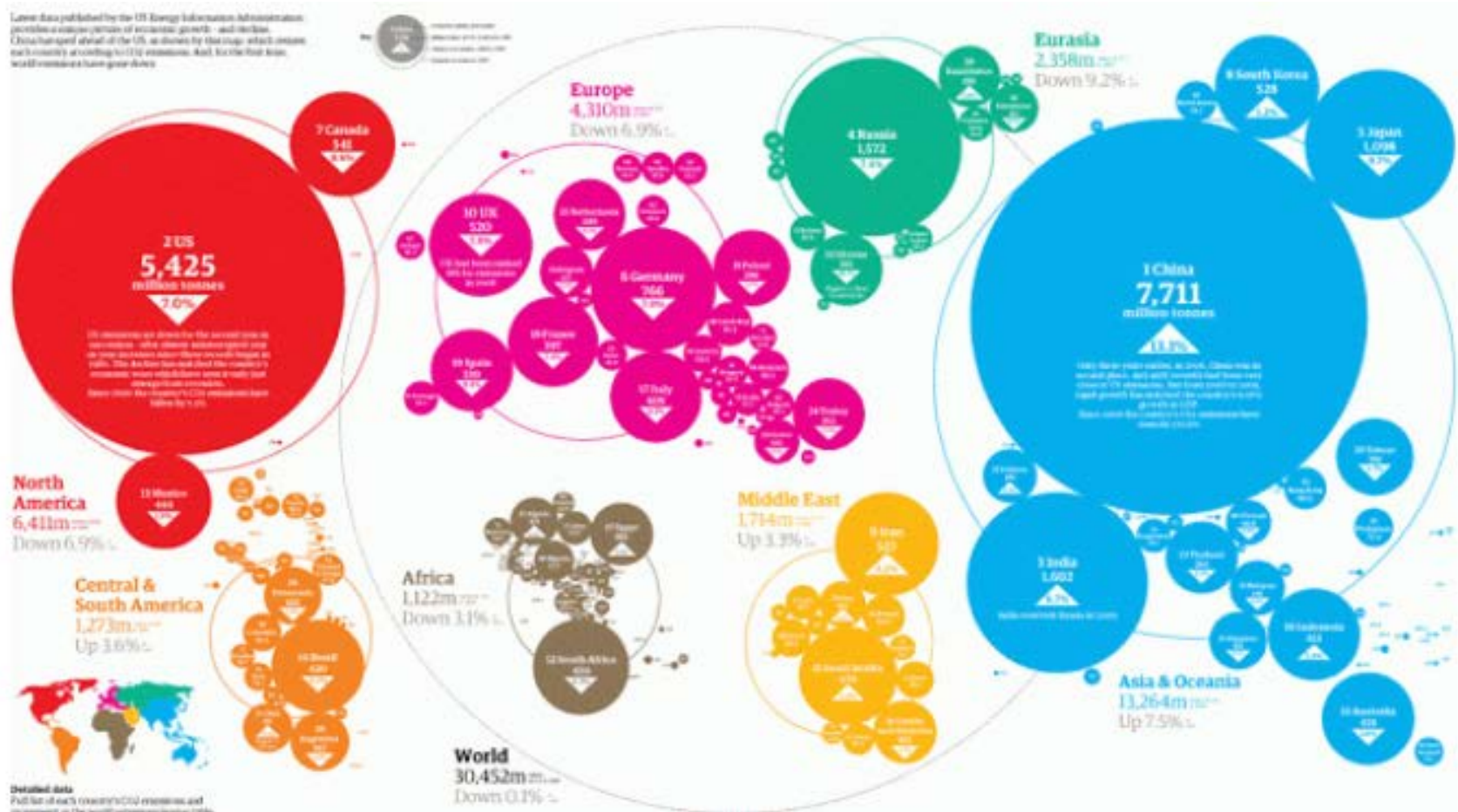
# Greenhouse gases relevant for the agriculture sector

Gas	Life (years)	PGW (100 years)	Origen
CO <sub>2</sub>	-	1	Respiration, use of fossil fuels
CH <sub>4</sub>	12	25	Rice cultivation, ruminants, manure management
N <sub>2</sub> O	121	298	Soils under grazing or with nitrogen fertilizer application, manure management and application to soils

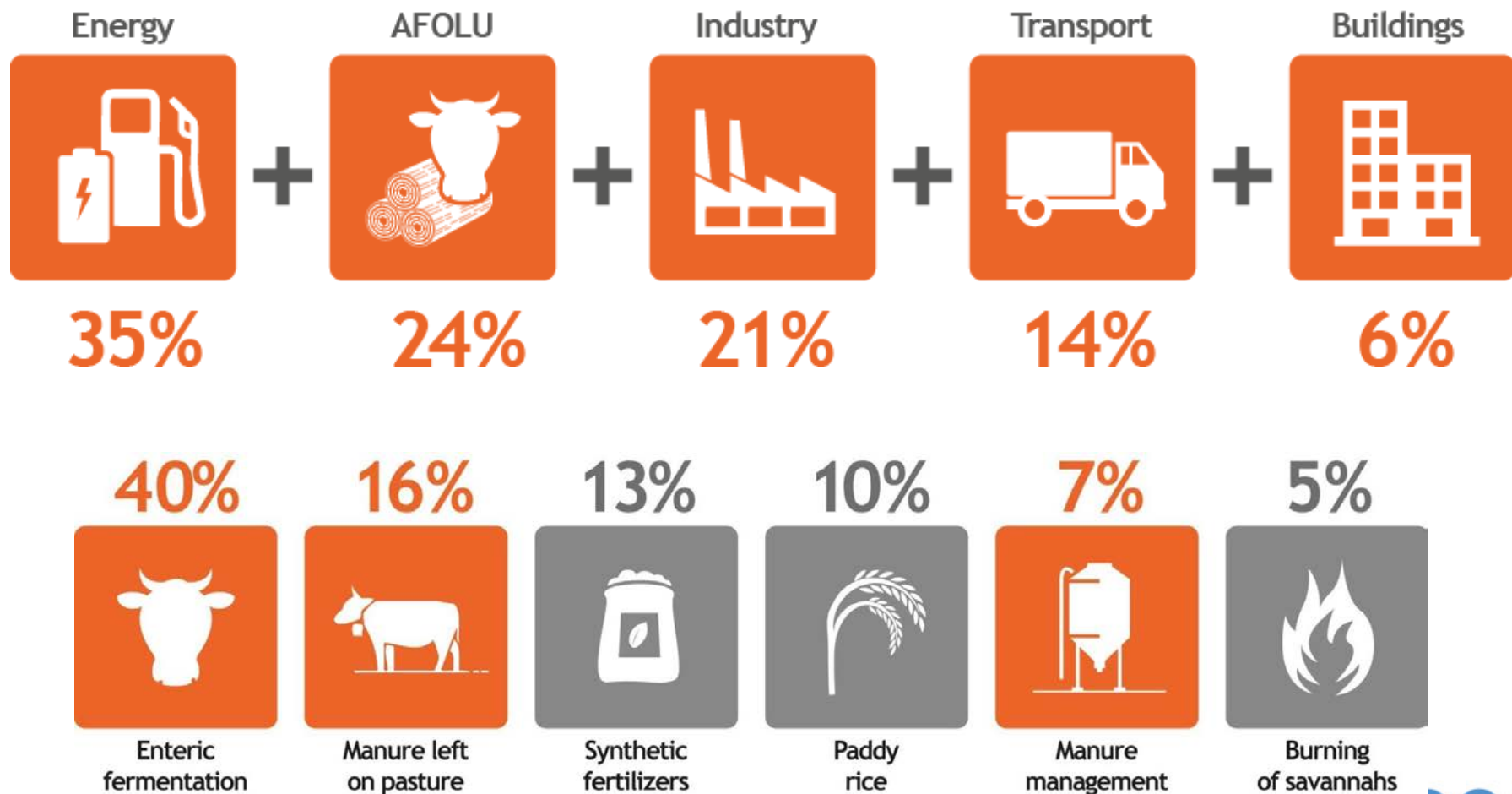
Fuente: IPCC (2013)



# Greenhouse gas emissions at a global scale



# Contribution of agriculture and forestry sector to global emissions (AFOLU)



# Agriculture as carbon sink

**4 PER 1000**  
CARBON SEQUESTRATION IN SOILS  
FOR FOOD SECURITY AND THE CLIMATE

**4.3** billion tons of carbon / year  
CO<sub>2</sub> emissions  
Sources: Industry, Transport, Buildings, Deforestation, Human activities.

**1500** billion tons of carbon  
The world's soils contain 1500 billion tons of carbon in the form of organic material.  
absorption of CO<sub>2</sub> by plants  
storage of organic carbon in soils

**4%** (0.4%) a year  
If we increase by 4% (0.4%) a year the quantity of carbon contained in soils, we can halt the annual increase in CO<sub>2</sub> in the atmosphere, which is a major contributor to the greenhouse effect and climate change.  
increased absorption of CO<sub>2</sub> by plants: farmlands, meadows, forests...  
**+4%** carbon storage in the world's soils  
= more fertile soils = soils better able to cope with the effects of climate change

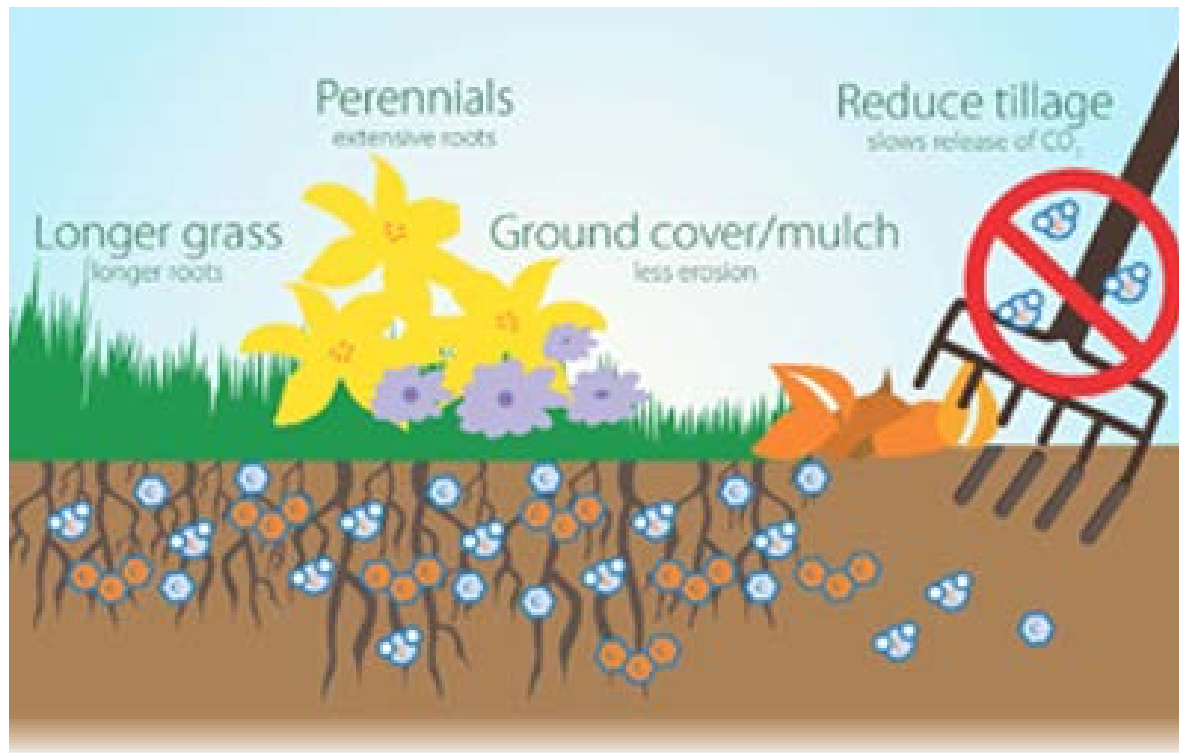
**HOW CAN SOILS STORE MORE CARBON?**  
The more soil is covered, the richer it will be in organic material and therefore in carbon. Until now, the combat against global warming has largely focused on the protection and restoration of forests. In addition to forests, we must encourage more plant cover in all its forms.

Accueil / Home  
FRANCAIS  
COMPRENDRE  
LES ENJEUX  
AGIR!  
ENGLISH  
UNDERSTAND  
THE ISSUES  
TAKE ACTION!

The goal of the Initiative is to engage stakeholders in a transition towards a productive, resilient agriculture, based on a **sustainable soil management** and generating jobs and incomes, hence ensuring sustainable development

# Some options

- Soils can be a major source of CO<sub>2</sub> sink
- Soil carbon sequestration refers to the storage of C in soils



# Contributions of agriculture beyond climate change

