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

Agriculture is the Solution!

for climate change

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Marta A. Alfaro and Kiyoto Tanabe

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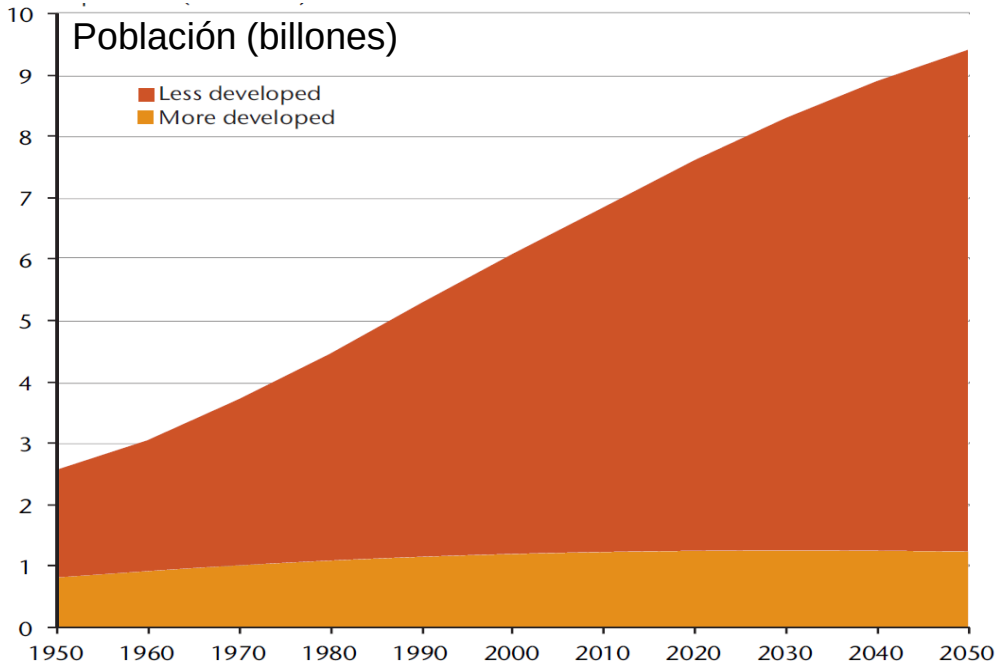
Introduction

- Key facts about climate change
- Contribution of agriculture
- Role of IPCC
- Final thoughts

Increasing world population



FAO (2007)

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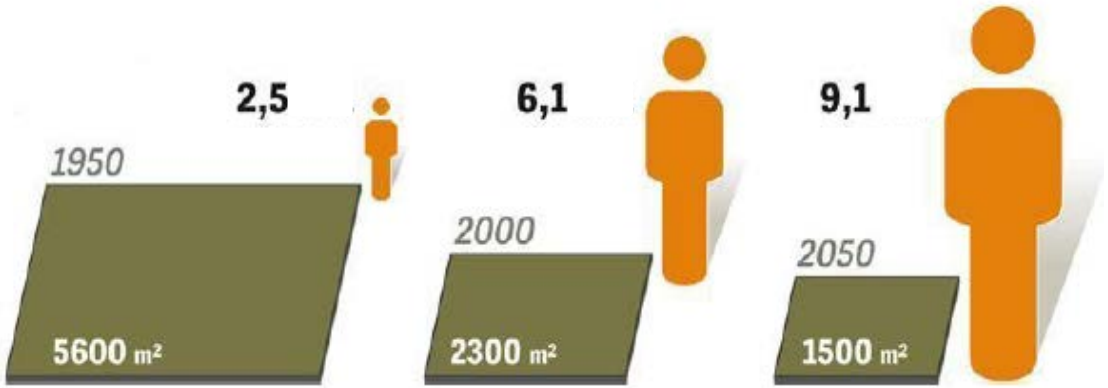
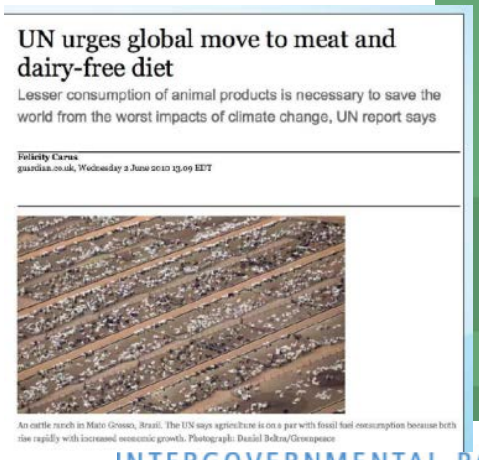
Increasing role of farming in worldwide food security



Changes in traditional agricultural systems

- ~50% more livestock in 2050 (FAO)
- Grow 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 2 June 2010 13.09 BST

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: Daniel Beltra/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 agribusiness 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.

Celebrating Animals | Confronting Cruelty

THE HUMANE SOCIETY OF THE UNITED STATES

humanesociety.org/food

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Climate Change and Greenhouse Gases

Fuente: UNEP –GRID-Arendal.

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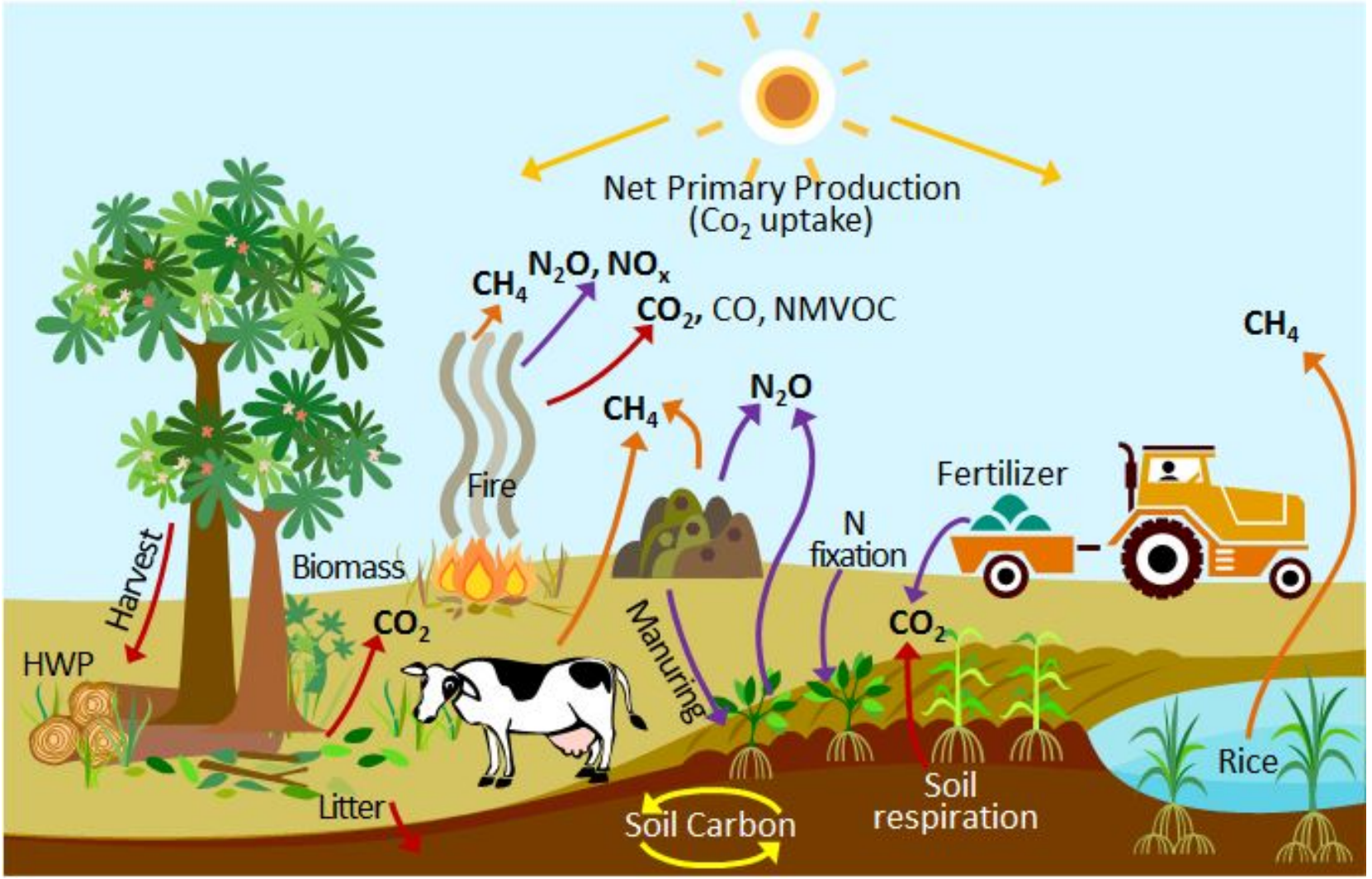
Agriculture and greenhouse gases

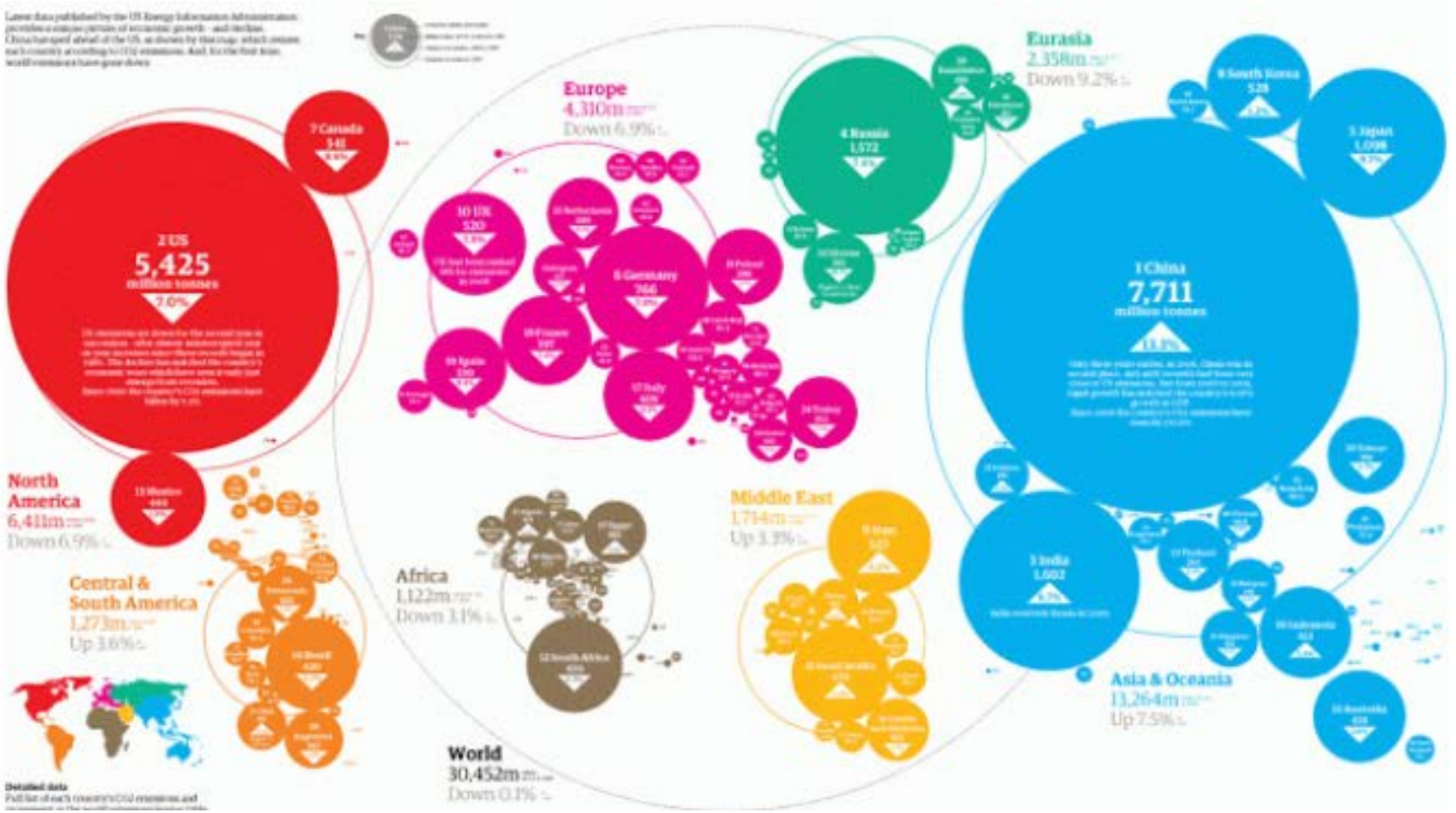


Greenhouse gases relevant for the agriculture sector

Gas	Life (years)	PGW (100 years)	Origen
CO_2	-	1	Respiration, use of fosil fuels
CH_4	12	25	Rice cultivation, ruminants, manure management
N_2O	121	298	Soils under grazing or with nitrogen fertilizer application, manure mangement and application to soils

Fuente: IPCC (2013)

Greenhouse gas emissions at a global scale



FAO (2009)

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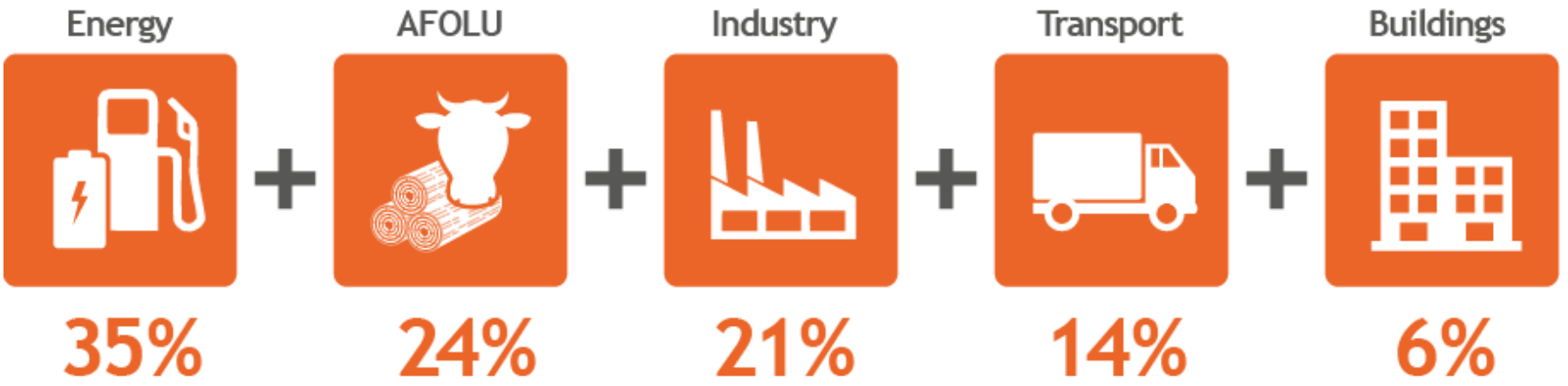
Contribution of agriculture and forestry sector to global emissions (AFOLU)



IPCC, FAOSTATS (2014)

Agriculture as carbon sink

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

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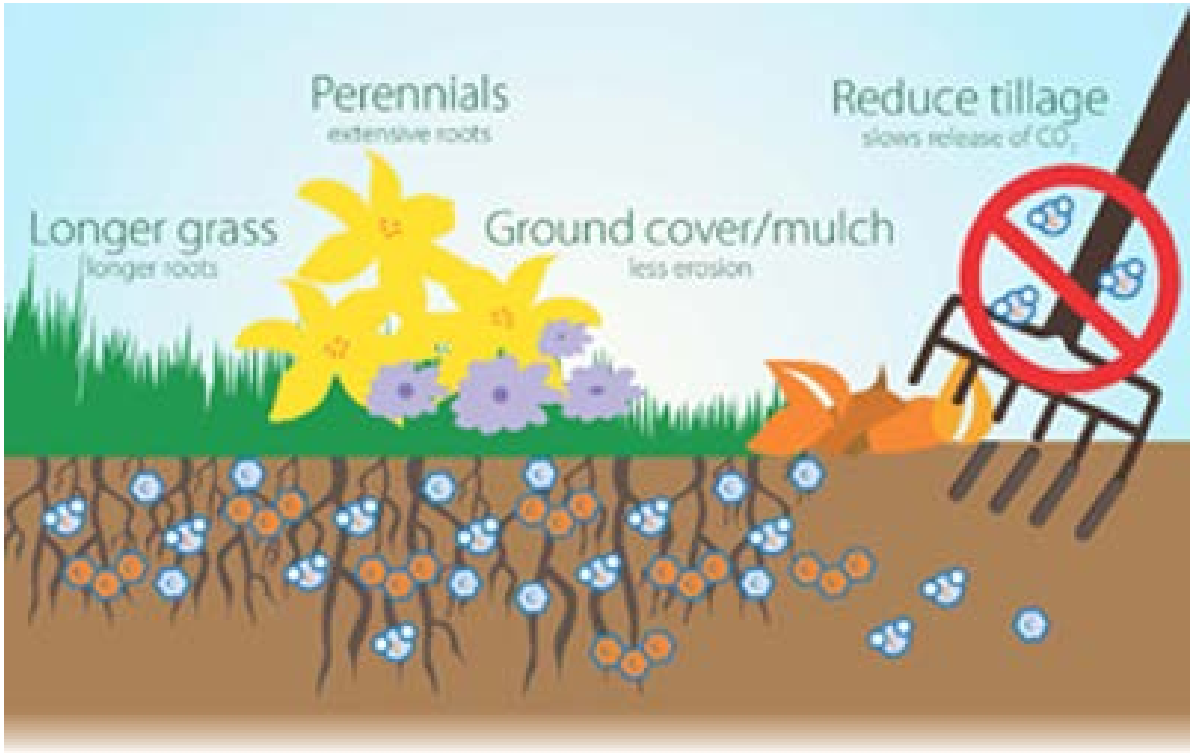
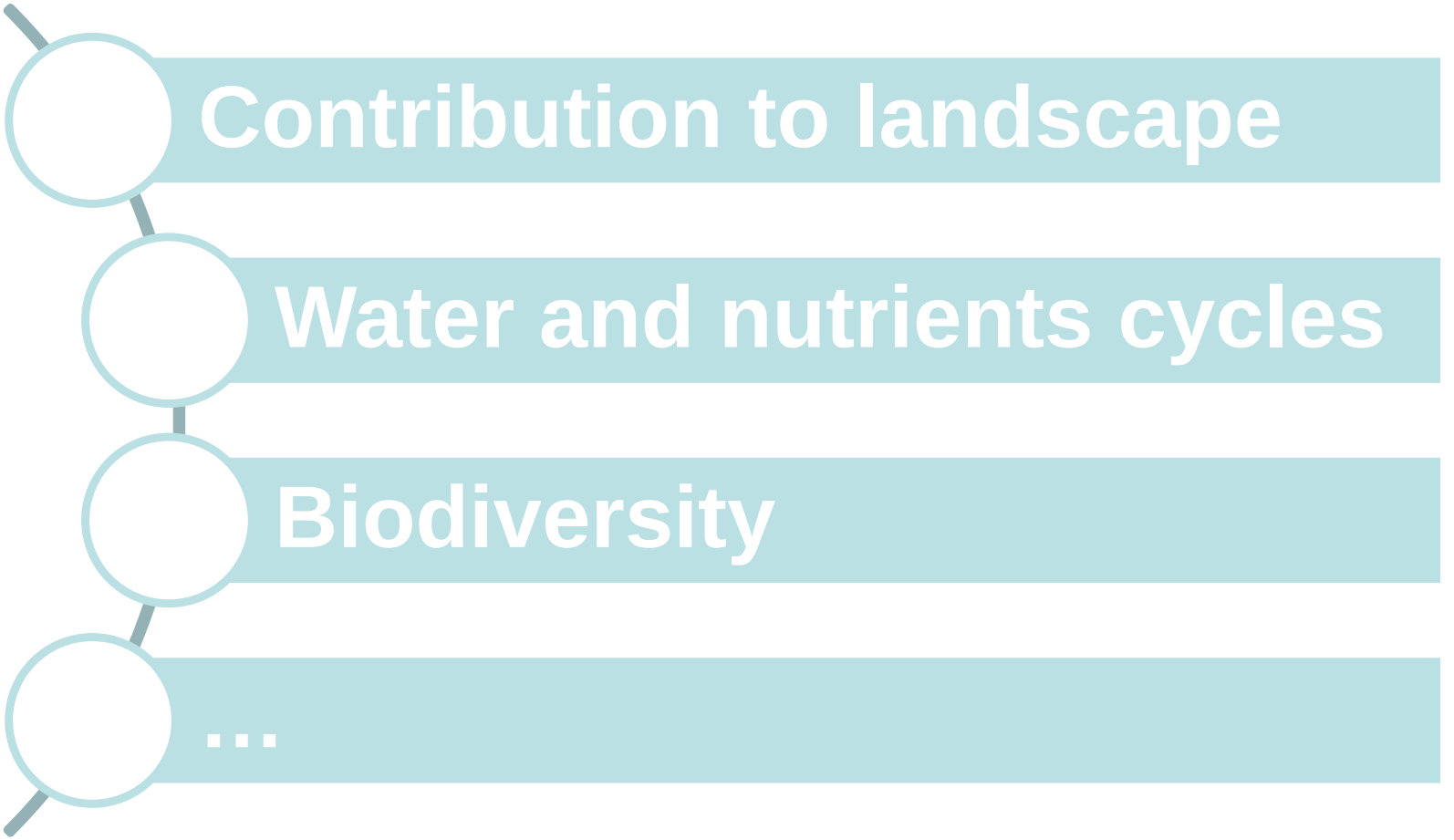
Some options

- Soils can be a major source of CO2 sink
- Soil carbon sequestration refers to the storage of C in soils



Contributions of agriculture beyond climate change



What is IPCC?

- Role and History -

The role of the IPCC is …

"… to **assess** on a comprehensive, objective, open and transparent basis the **scientific, technical and socio-economic information** relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts and options for adaptation and mitigation."

"IPCC reports should be **neutral with respect to policy**, although they may need to **deal objectively with scientific, technical and socio-economic factors** relevant to the application of particular policies."

Principles Governing IPCC Work, paragraph 2
Source: http://www.ipcc.ch/pdf/ipcc-principles/ipcc-principles.pdf

Science/Policy Interface

IPCC – jointly established by **WMO and UNEP**, action endorsed by the **UN General Assembly**

Intergovernmental Panel: 195 member States appointing National Focal Points

Hundreds of **scientists and experts from around the world** are involved in the preparation of IPCC reports

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FAR SAR TAR AR4 AR5 SR15 MR AR6

IPCC – jointly established by WMO and UNEP

UNFCCC

Kyoto Protocol

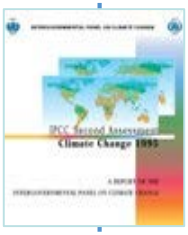
Adaptation

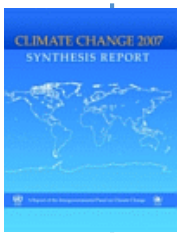
2 °C limit

Paris Agreement

SROCC
SRCCL

UNFCCC Global Stocktake



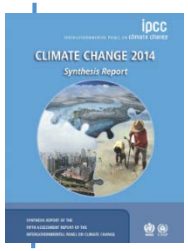


Science of climate change (exponential growth in peer-reviewed literature)

Growing public awareness

Involvement of various actors

Nobel Peace Prize



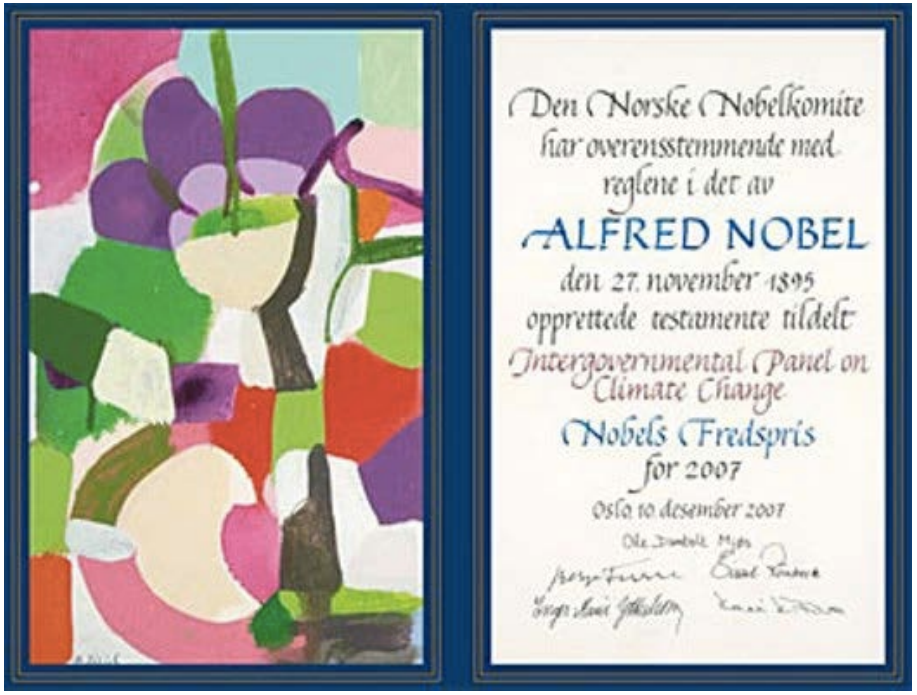
1988 1995 2007 2018 2019 2023

1970s-1980s 1990 2001 2013-2014 2021-2022

IPCC has made an impact

FAR (1990)	led to	UNFCCC
SAR (1995)	input for	Kyoto Protocol
TAR (2001)	focused attention on	Impacts of climate change and need for adaptation
AR4 (2007)	input for	Decision on 2°C limit; basis for post Kyoto Protocol agreement
AR5 (2013/2014)	input for	 Paris Agreement

Achievements: 2007 Nobel Peace Prize



The **Intergovernmental Panel on Climate Change**
and Albert Arnold (Al) Gore Jr. were awarded the **Nobel Peace Prize**
"for their efforts to build up and disseminate greater knowledge about man-made climate change, and to lay the foundations for the measures that are needed to counteract such change".

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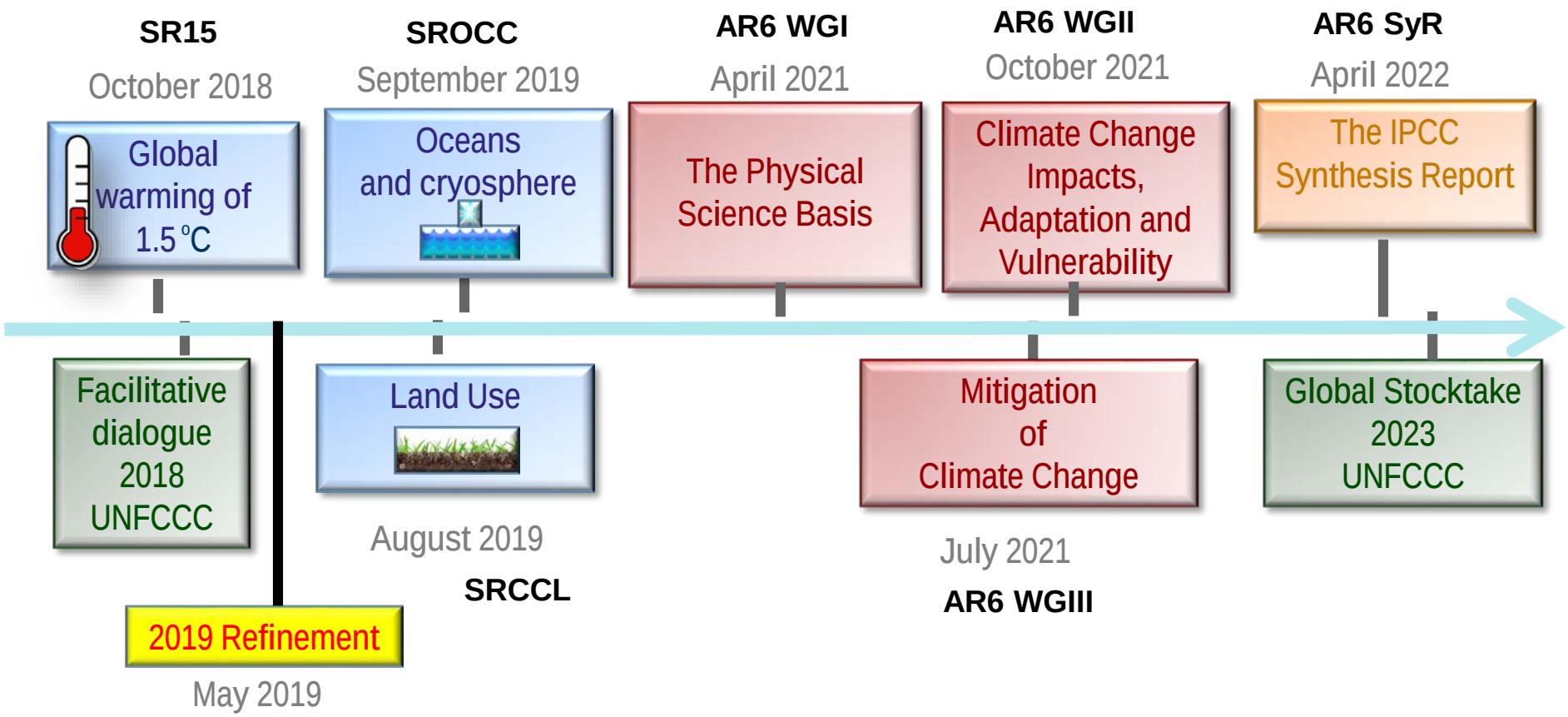
Timeline for the forthcoming AR6 reports



* *Dates are subject to change*

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What happened last week in Kyoto?

- 49th Session of IPCC -

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IPCC Plenary

IPCC Bureau

IPCC Executive Committee

IPCC Secretariat
(in Geneva, Switzerland)

Working Group I	Working Group II	Working Group III	Task Force on National Greenhouse Gas Inventories (TFI)
The Physical Science Basis	Climate Change Impacts, Adaptation and Vulnerability	Mitigation of Climate Change	
TSU (France/China)	TSU (Germany/South Africa)	TSU (UK/India)	TSU (Japan)

Authors, Contributors, Reviewers

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IPCC – Panel and Plenary Sessions

- Panel - Decision making body of the IPCC.
- Representatives of IPCC member governments meet in Plenary Sessions at least once a year.
- Attended by hundreds of officials and experts from relevant ministries, agencies and research institutions from member countries and from Observer Organizations.
- Works by consensus to
  - Decide on the budget & work programme
  - Decide on issues related to principles and procedures
  - Decide on the structure and mandate of IPCC Working Groups and Task Forces
  - Decide on the scope and outline of its reports
  - Approve and adopt IPCC reports
  - Elect the IPCC Chair, other members of the IPCC Bureau and the Task Force Bureau. /etc.

The 49th Session was held in Kyoto (May 2019)

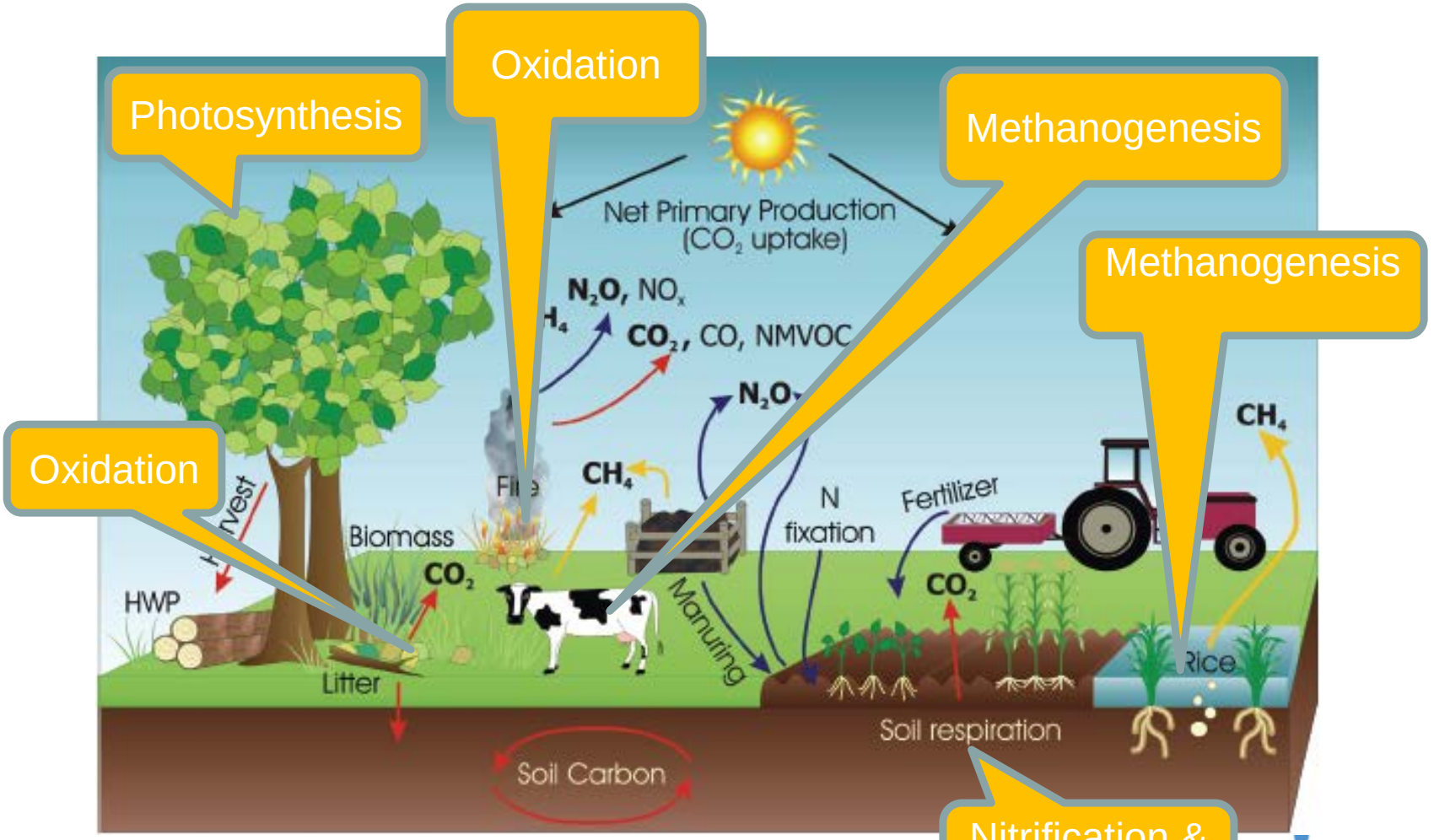
The main agenda item was adoption/acceptance of the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories produced by the Task Force on National Greenhouse Gas Inventories (TFI).

What are national GHG Inventories?

- Anthropogenic Emissions/Removals of Greenhouse Gases
- National and annual estimates

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2[(1)]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total
	CO_2 equivalent (kt)								
Total (net emissions)[(1)]	1245764.48	36099.86	22667.43	31776.63	3280.06	2165.76		1360.96	1343115.17
1. Energy	1250301.61	2484.74	6712.35						1259498.70
A. Fuel combustion (sectoral approach)	1249822.05	1667.77	6712.26						1258202.08
1. Energy industries	566643.99	293.16	2631.43						569568.59
2. Manufacturing industries and construction	338129.90	493.13	1854.26						340477.29
3. Transport	215803.65	169.55	1974.04						217947.24
4. Other sectors	129244.52	711.93	252.52						130208.96
5. Other	NO	NO	NO						NO
B. Fugitive emissions from fuels	479.56	816.97	0.09						1296.62
1. Solid fuels	0.49	533.12	NO,NE						533.61
2. Oil and natural gas	479.07	283.85	0.09						763.01
C. CO_2 transport and storage	NE,NO								NE,NO
2. Industrial processes and product use	46551.39	46.38	1748.15	31776.63	3280.06	2165.76		1360.96	86929.33
A. Mineral industry	35111.89								35111.89
B. Chemical industry	4757.48	28.13	1389.13	147.44	110.80	92.80		1229.80	7755.57
C. Metal industry	6300.60	18.26	NO	1.29	9.59	159.60			6489.34
D. Non-energy products from fuels and solvent use	299.09	NO	NO						299.09
E. Electronic Industry				111.61	1631.36	351.31		131.16	2225.44
F. Product uses as ODS substitutes				31516.29	1517.95				33034.24
G. Other product manufacture and use			359.02		10.36	1562.06			1931.44
H. Other	82.33	NO	NO						82.33
3. Agriculture	531.74	27958.38	11040.64						39530.76
A. Enteric fermentation		7400.57							7400.57
B. Manure management		2411.31	4543.48						6954.79
C. Rice cultivation		18077.30							18077.30
D. Agricultural soils		NO	6475.78						6475.78
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		69.20	21.39						90.59
G. Liming	369.97								369.97
H. Urea application	161.77								161.77
I. Other carbon-containing fertilizers	NO								NO
J. Other		NO	NO						NO
4. Land use, land-use change and forestry[(1)]	-64926.94	57.79	209.36						-64659.80
A. Forest land	-68162.38	3.99	132.34						-68026.05
B. Cropland	3651.84	51.57	26.13						3729.54

Agriculture is an integral part of national GHG inventory



Terrestrial sources/sinks of GHGs

Paris Agreement and National GHG Inventory

- In order to build mutual trust and confidence among the Parties and to promote effective implementation of the Paris Agreement, a transparency framework for action needs to be enhanced.
- To that end, it is essential that all the Parties produce and report high-quality and reliable national GHG inventories (national emission data).
- Paris Agreement Article 13, paragraph 7:
  - Each Party shall regularly provide …:
    (a) A national inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse gases, prepared using good practice methodologies accepted by the Intergovernmental Panel on Climate Change and…

Source: IISD/ENB

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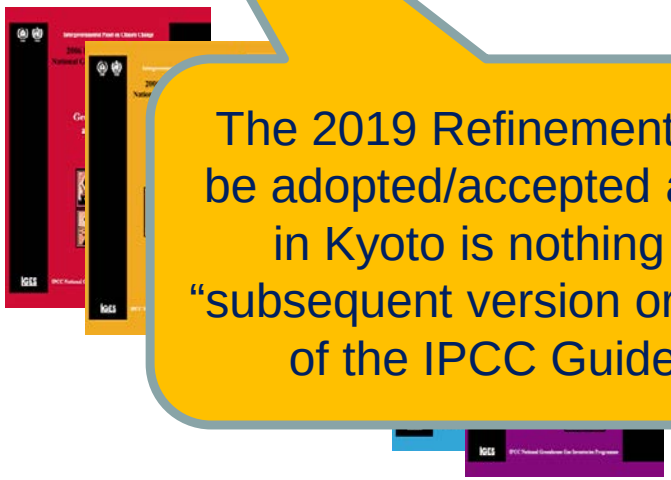
2019 Refinement and Paris Agreement

- "Katowice Climate Package" was adopted by the UNFCCC COP24/CMA1 in December 2018 to operationalize the Paris Agreement. It stipulates:
  - Each Party shall use the *2006 IPCC Guidelines*, and shall use *any subsequent version or refinement of the IPCC guidelines* agreed upon by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA).



The 2019 Refinement which will be adopted/accepted at IPCC-49 in Kyoto is nothing but this "subsequent version or refinement of the IPCC Guidelines"!!

Final thoughts

- Higher demands for farmers
- New scenarios for agriculture
- New opportunities
- Significant role