ipcc
INTERGOVERNMENTAL PANEL ON climate change
WMO UNEP

Chapter 11

Agriculture, Forestry, and Other Land Use

- AFOLU -

Carmenza Robledo Abad, Lead Author

Helvetas Swiss Intercooperation

Umweltnatur- und Umweltsozialwissenschaften, ETH Zürich



AFOLU in the IPCC ARs

IPCC SAR (IPCC WGIII, 1996)
Agricultural and forestry mitigation were dealt with in separate chapters

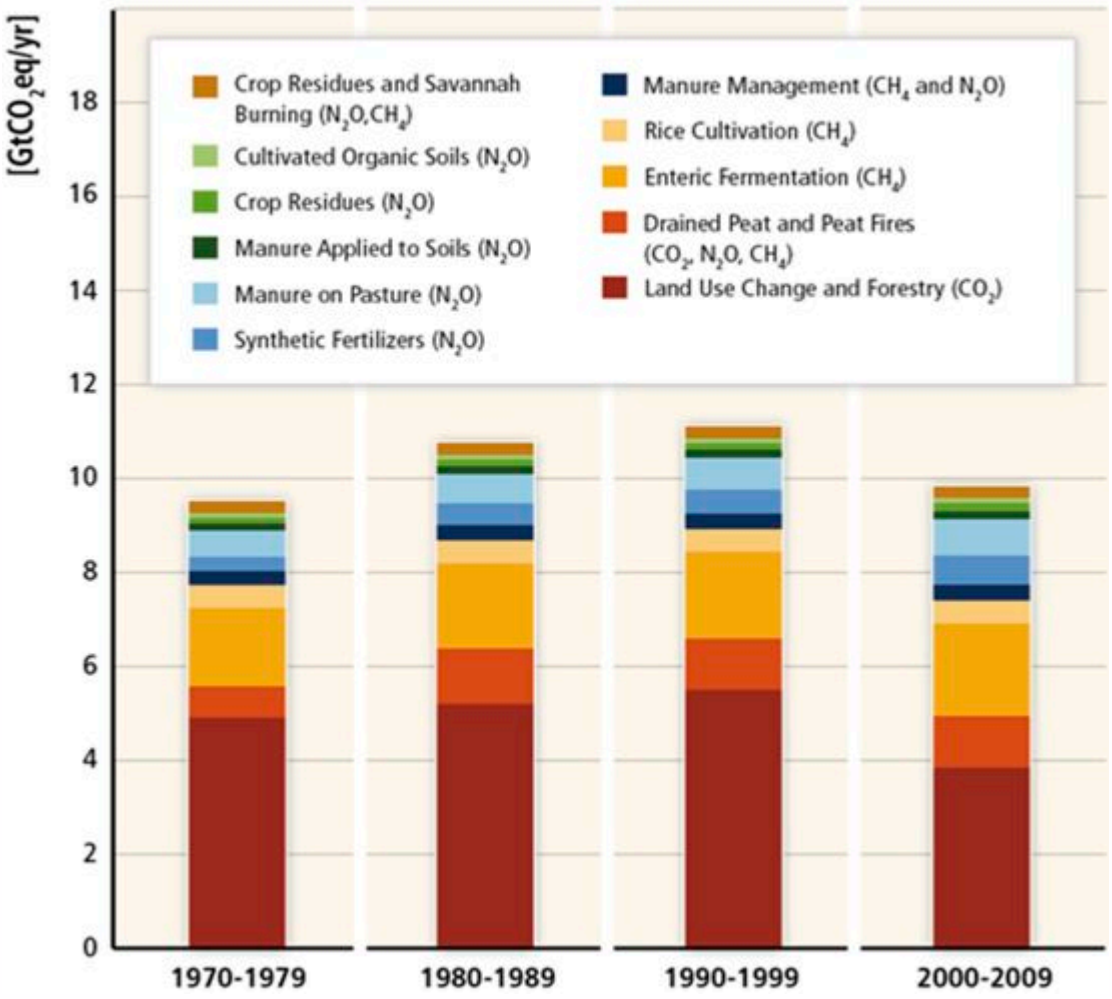
IPCC TAR (IPCC WGIII, 2001)
No separate sectoral chapters on either agriculture or forestry.

IPCC AR4 (IPCC WGIII, 2007)
Agricultural and forestry mitigation were dealt with in separate chapters

IPCC AR5
First time - the terrestrial land surface, comprising agriculture, forestry and other land use (AFOLU), is considered together in a single chapter.

- Ensure all land based mitigation options can be considered together
- Minimise the risk of double counting or inconsistent treatment (e.g. different assumptions about available land)
- Consider systemic feedbacks between mitigation options related to the land surface

AFOLU emissions for the last four decades



Current trends

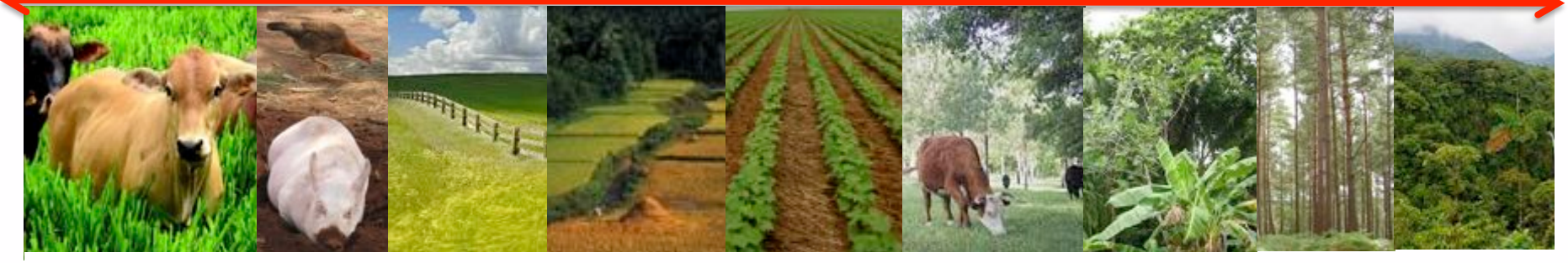
- ↓ Cropland area
- ↑ Irrigated crop area
- ↑ World grain harvest
- ↑ Use of fertilizers
- ↑ Livestock
- ↑ Demand of fish
- ↓ Deforestation

Just under 25% of anthropogenic GHG emissions (~9–12 $GtCO_2eq/yr$)

AFOLU mitigation options

SUPPLY SIDE

Livestock mgmt. Cropland mgmt. Int. systems Forestry

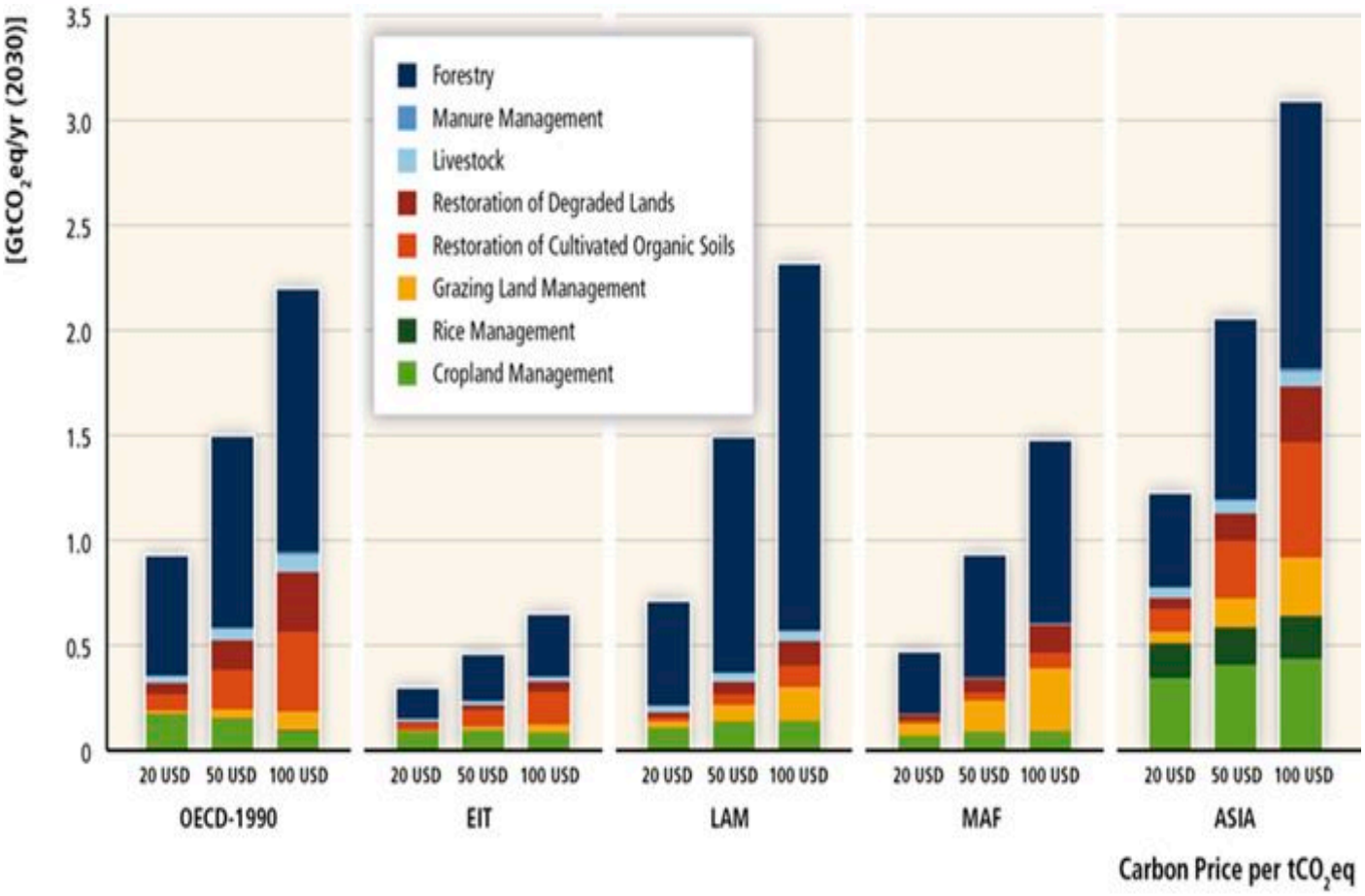


… and bioenergy (annex)

DEMAND SIDE

Dietary change
Improvement in the food chain
Use of wood products

Economic mitigation potentials in the AFOLU sector by region by 2030 – Supply side.

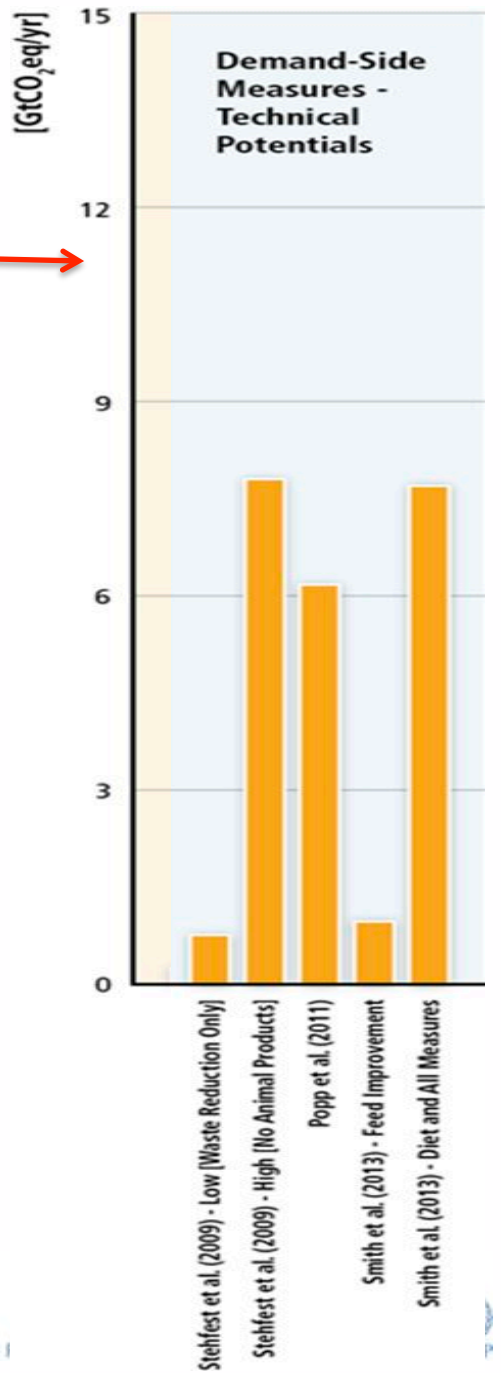


Three price scenarios;

- ✓ 20 USD/tCO_2e
- ✓ 50 USD/tCO_2e
- ✓ 100 USD/tCO_2e

Supply side: economic mitigation 7.18 - 10.6 $GtCO_2e$/yr at carbon prices up to 100 USD/tCO_2e. About a third can be achieved at <20 USD/tCO_2e

Global potential from demand side



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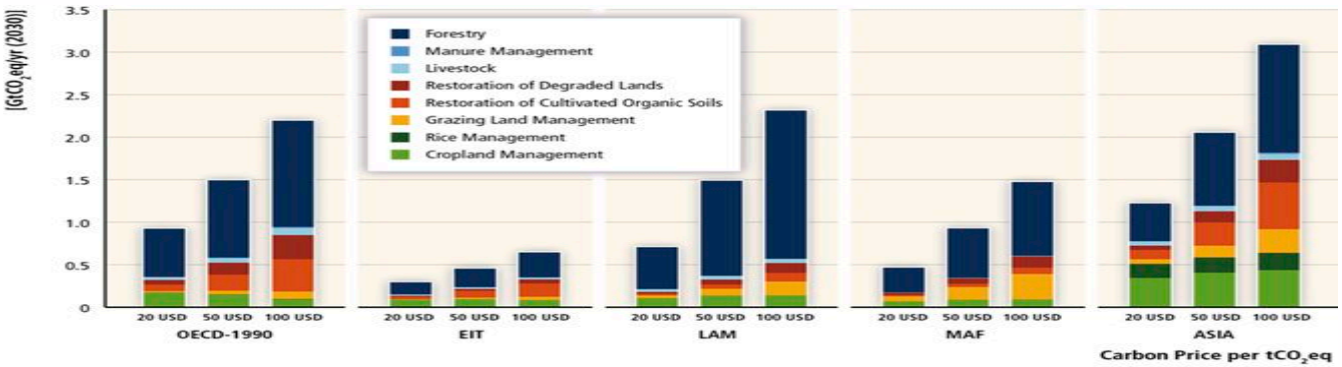
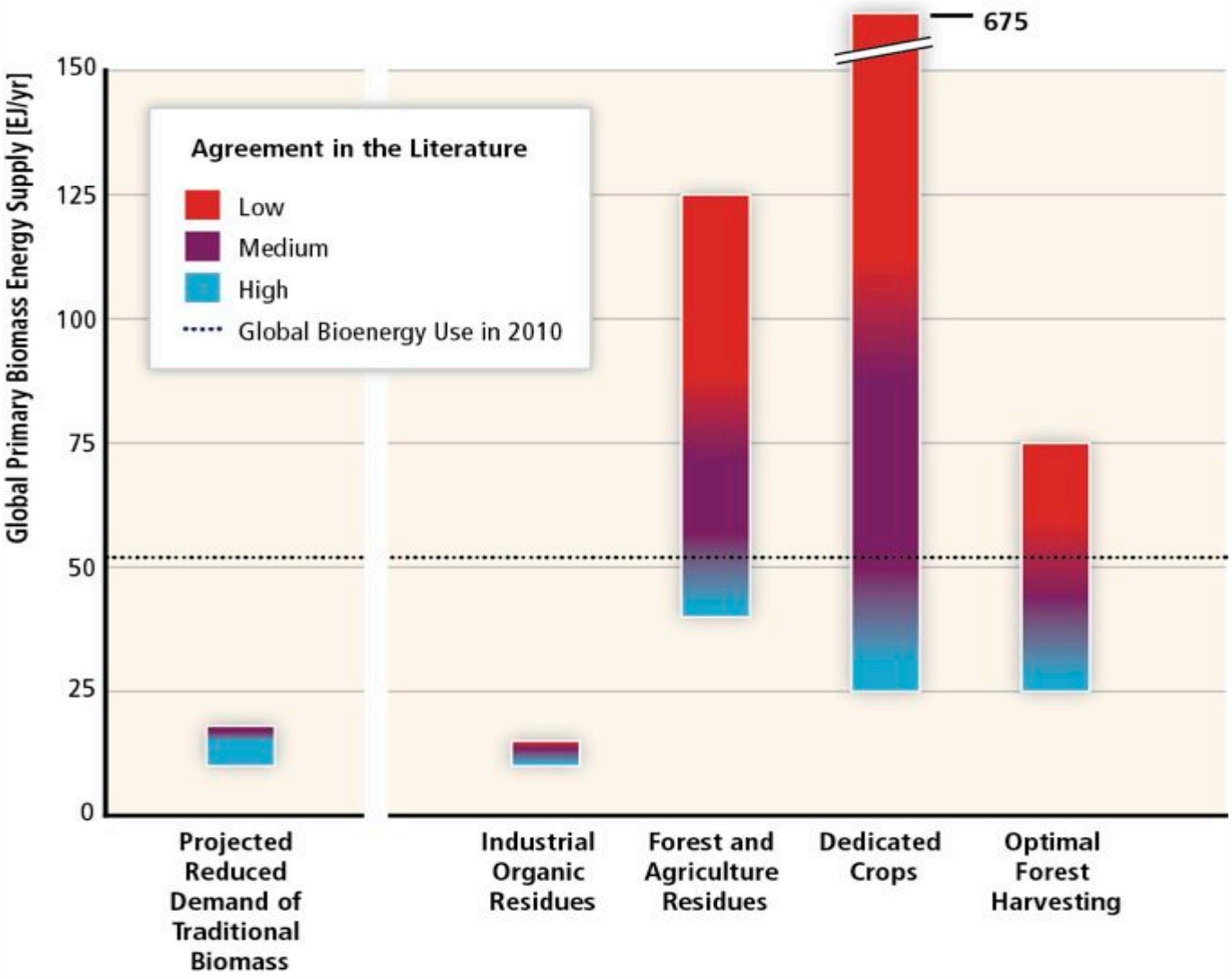
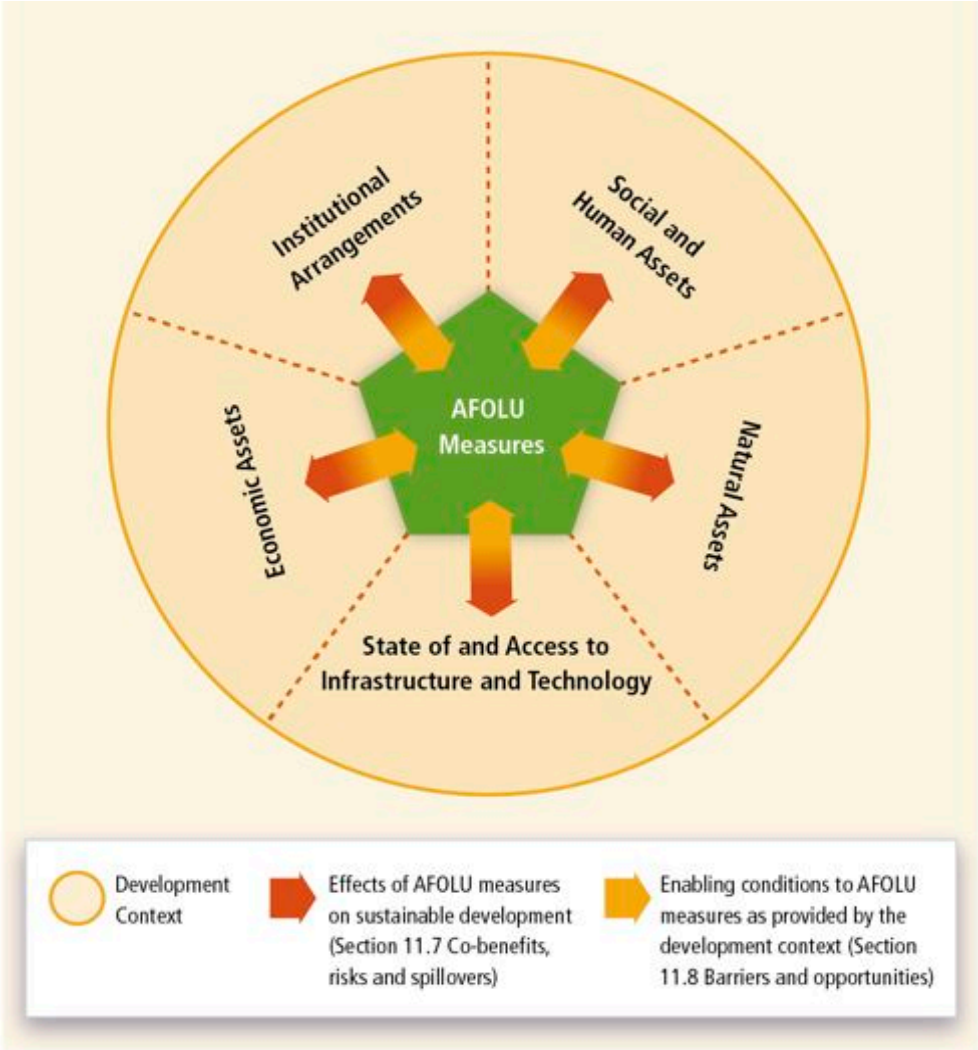
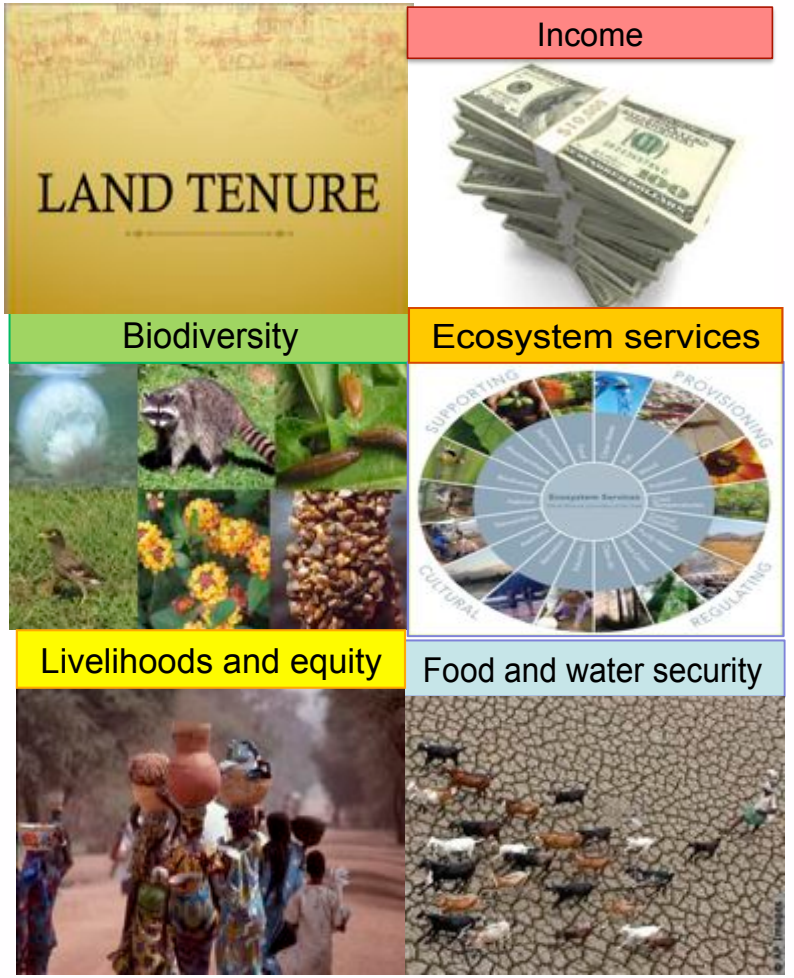


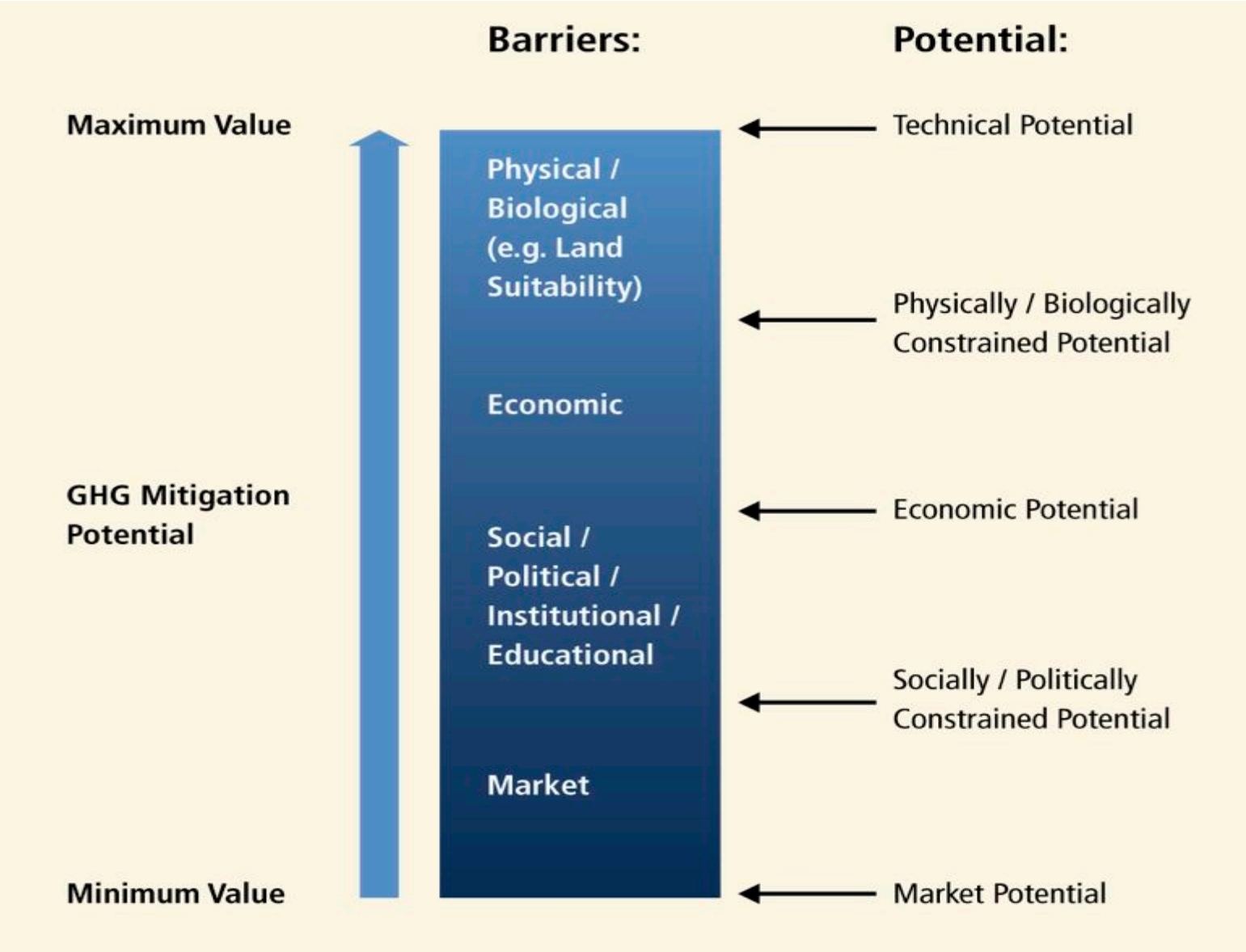
Bioenergy: Global Technical Bioenergy Potential for 2050



AFOLU and sustainable development






Barriers:
Potential:
Maximum Value
GHG Mitigation Potential
Minimum Value
Physical / Biological (e.g. Land Suitability)
Economic
Social / Political / Institutional / Educational
Market
Technical Potential
Physically / Biologically Constrained Potential
Economic Potential
Socially / Politically Constrained Potential
Market Potential

Summary

- Around **25% of the yearly GHG emissions** come from the AFOLU sector (ca. 9 – 12 $GtCO_2e/yr$)
- The **economic mitigation potential of supply-side options** shows that at carbon prices up to 100 USD/tCO_2e ca 80% of the emissions from the sector can be reduced/offset by 2030.
- When assessing overall potential one needs to include **trade-offs** and feedbacks with **land-use competition**
- **Impacts on sustainable development are case- and site specific** and they depend on scale, scope, and pace of implementation.
- AFOLU mitigation options can **impact adaptation capacity** of social and ecological systems.
- **Good governance** is central for reducing most mitigation barriers in this sector

Land based mitigation: real potential or alibi?

Thank you!