Chapter 11

Agriculture, Forestry, and Other Land Use

- AFOLU -

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AFOLU in the IPCC ARs:

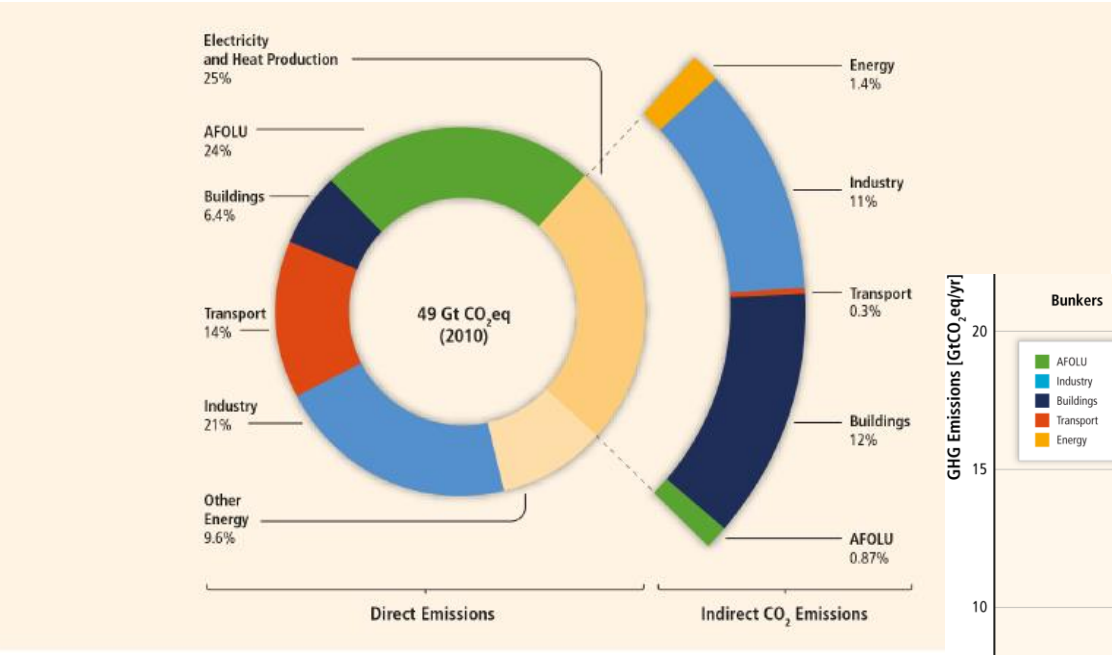
IPCC AR4 (IPCC WGIII, 2007)
Agricultural and forestry mitigation were dealt with in separate chapters

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

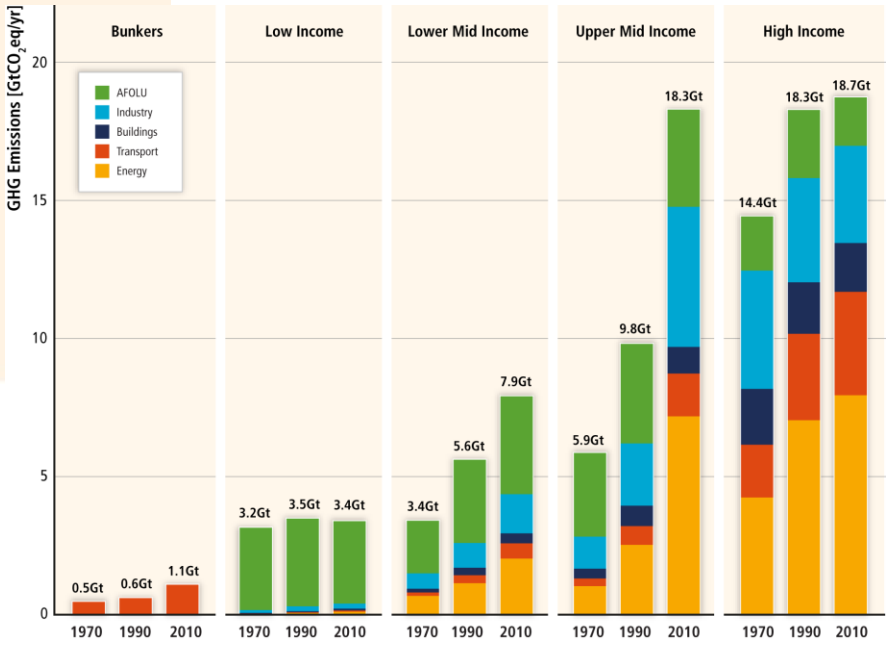
- Ensure all land based mitigation options can be considered together
- Minimise the risk of double counting or inconsistent treatment (e.g. different assumptions about available land)
- Consider systemic feedbacks between mitigation options related to the land surface

NEW FINDINGS of AR5:

AFOLU represents 20-24% of total emissions. Globally the largest emitting sector after energy…

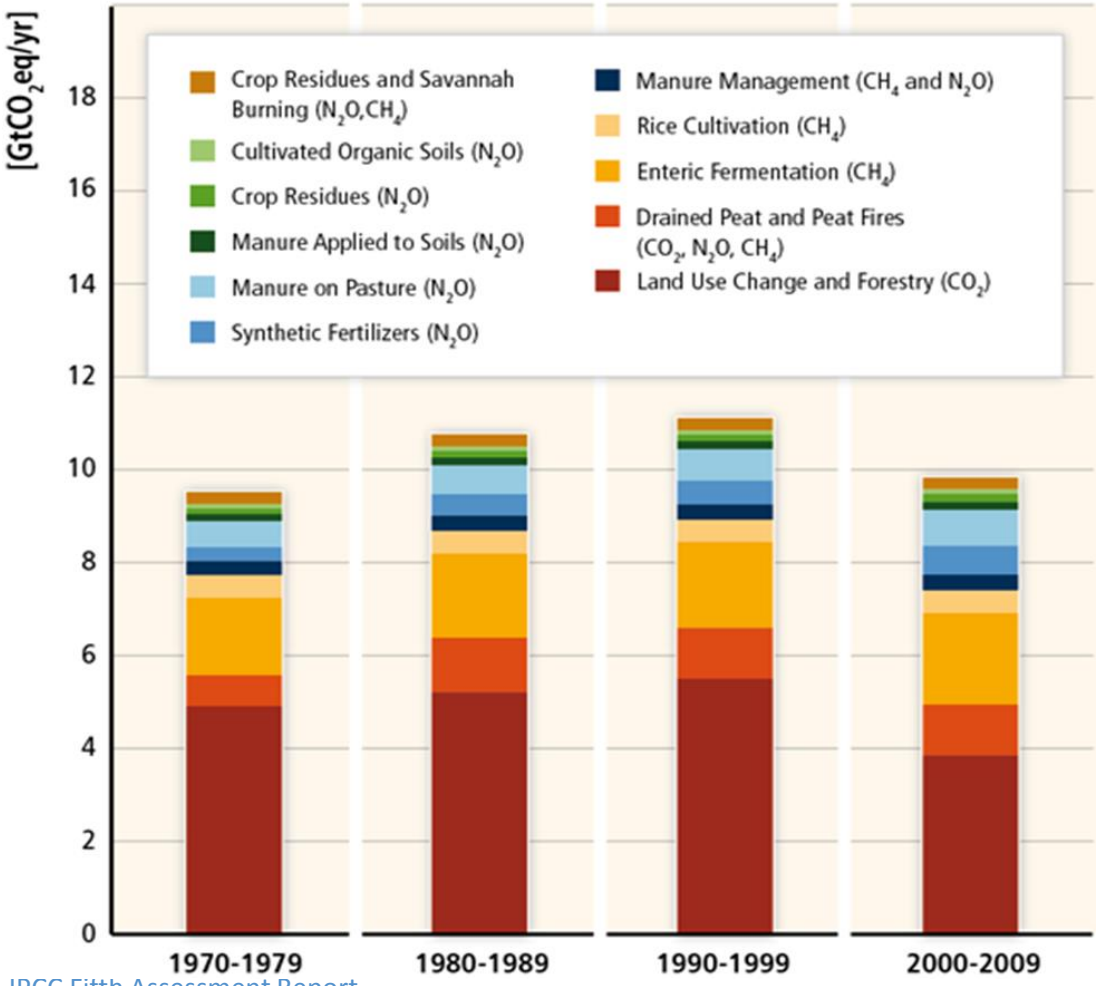


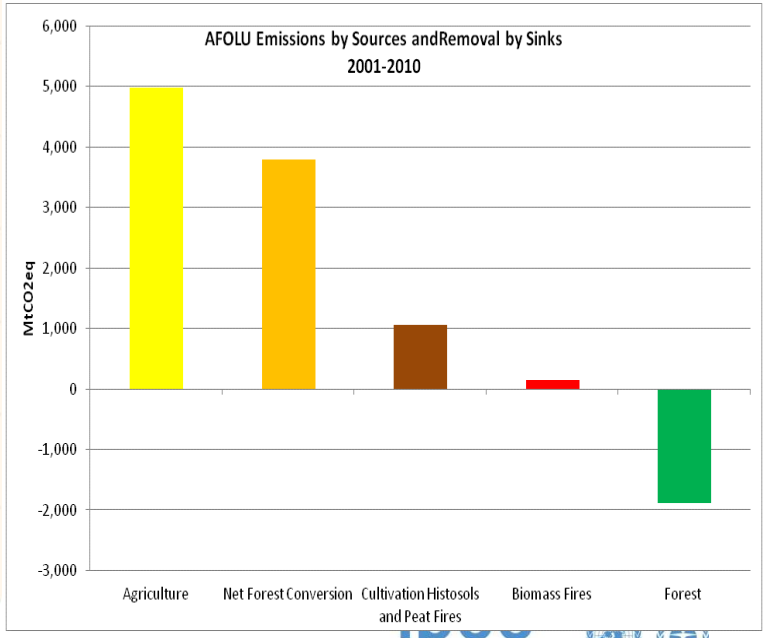
…and even more important in developing countries



AFOLU emissions decreased overall in the last decade …

…but crop and livestock agriculture kept increasing becoming the dominant AFOLU emission source

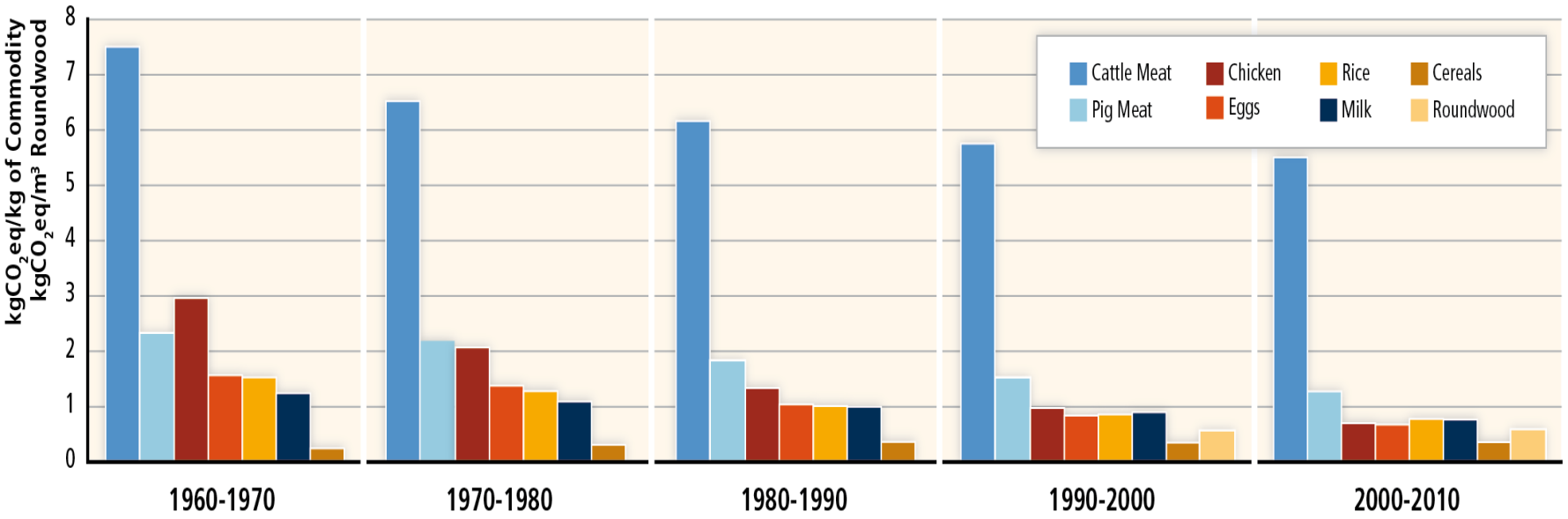




IPCC Fifth Assessment Report

INTERGOVERNMENTAL PANEL ON climate change

Emissions intensity of AFOLU commodities kept falling over the last several decades, as agriculture and forestry become more efficient



AFOLU mitigation options:

SUPPLY SIDE

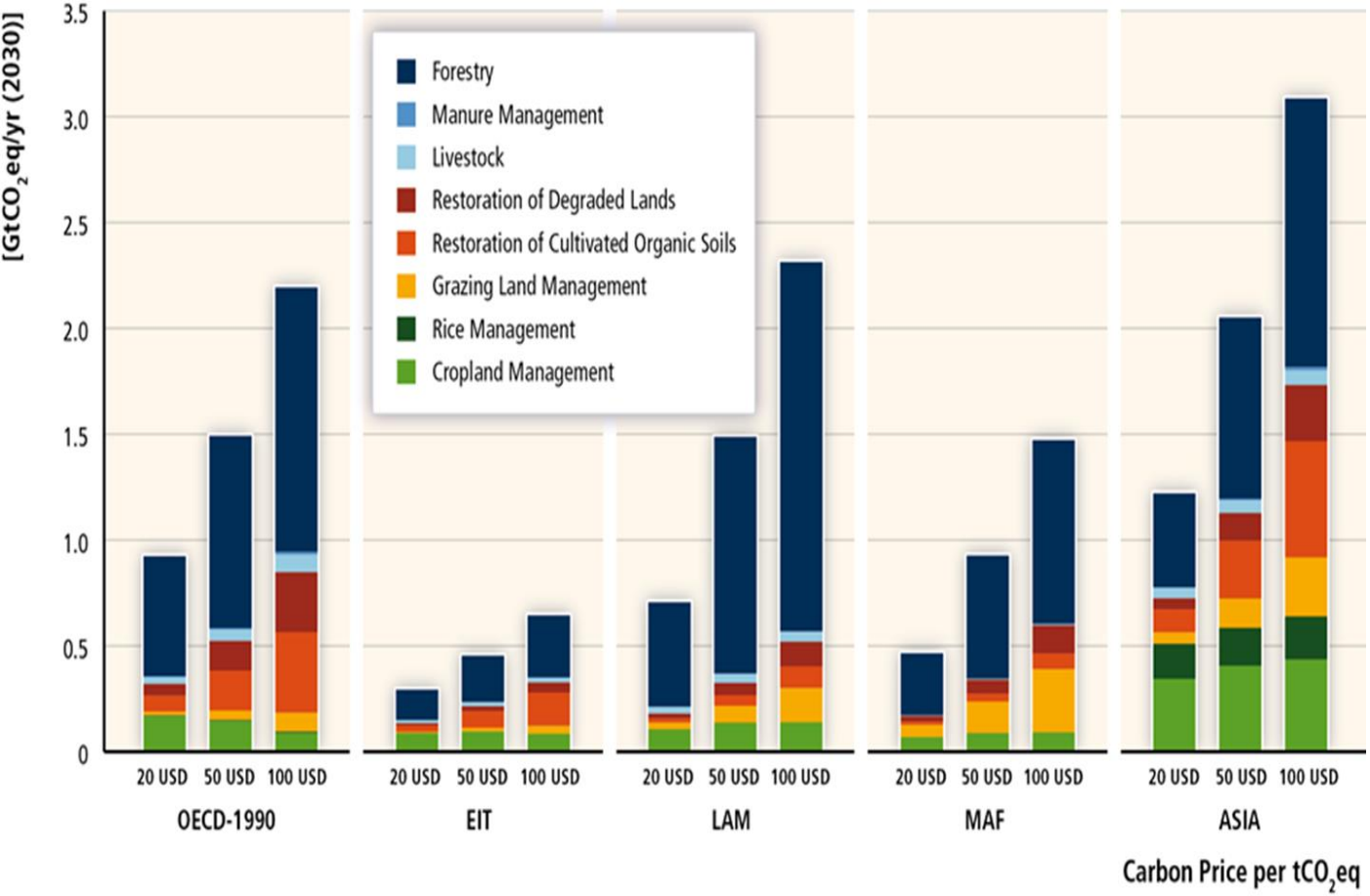
Livestock mgmt. Cropland mgmt. Int. systems Forestry

… 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.

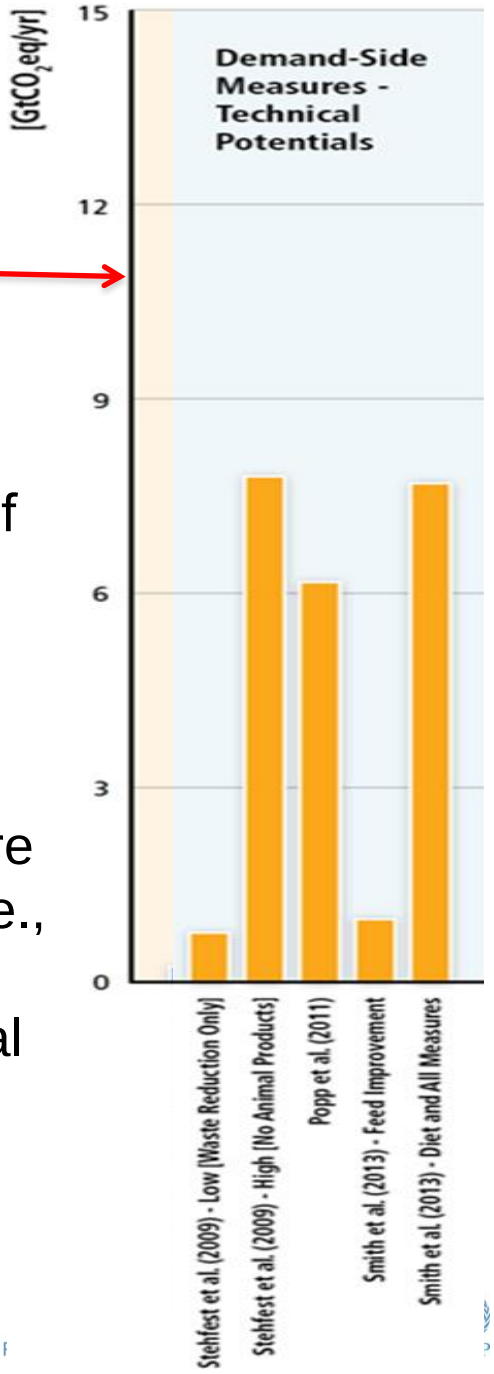


Three price scenarios;

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

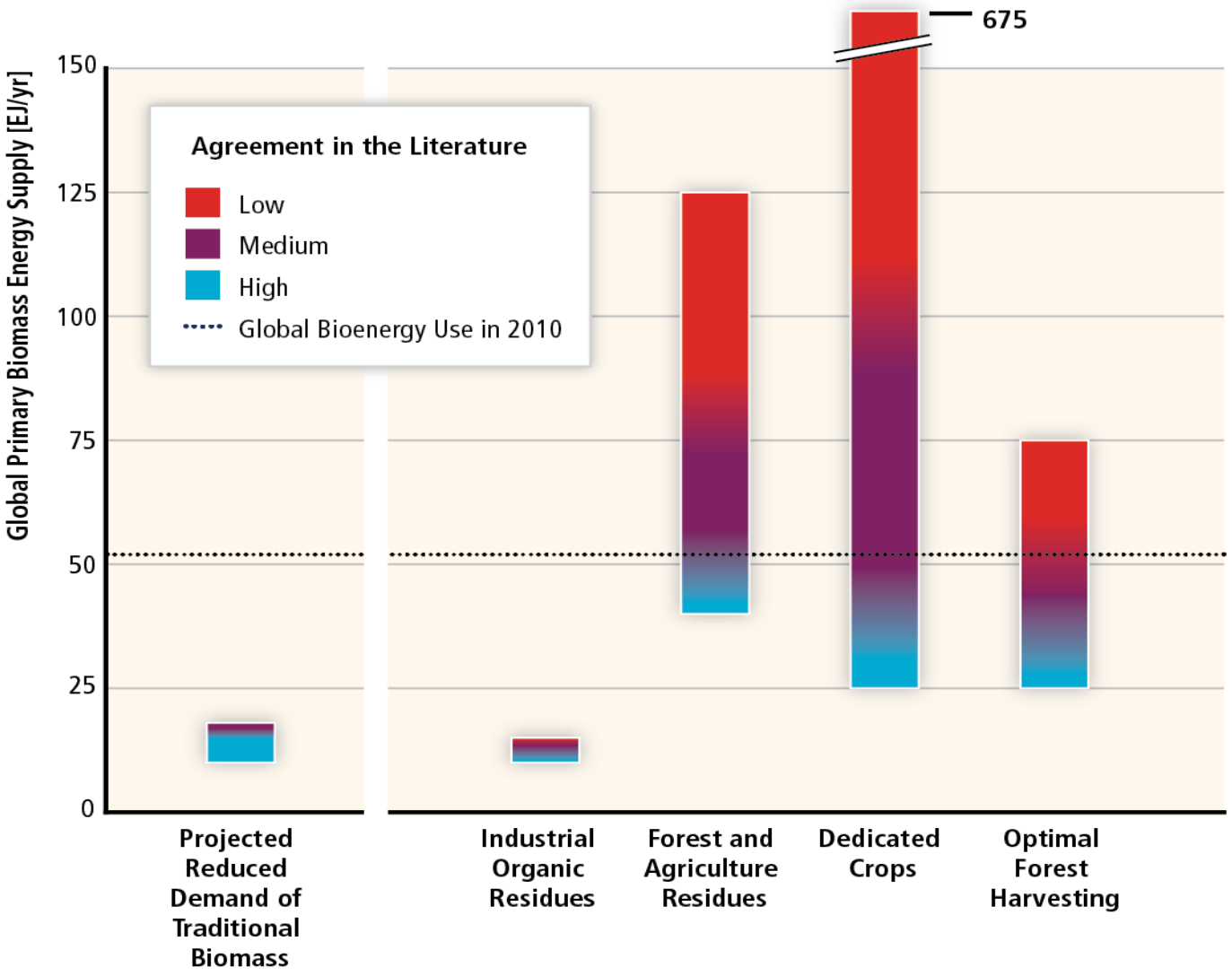
Supply side: economic mitigation 7.18 - 10.6 $GtCO_2e$/yr at carbon prices up to 100 USD/tCO_2e. About a third can be achieved at <20 USD/tCO_2e

Global potential from the demand side…
…as important as the supply side

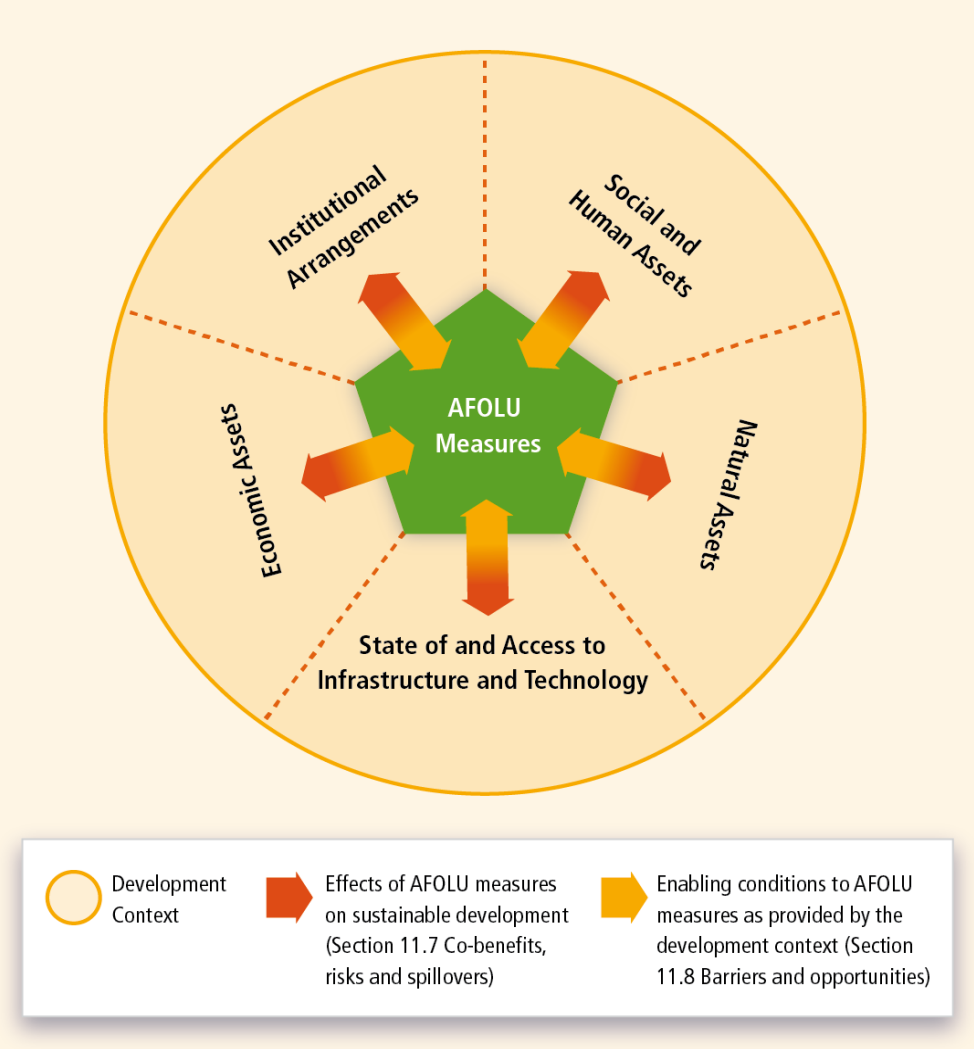


- Reduced losses in the food supply chain
  - Globally, rough estimates suggest that ~30–40% of all food produced is lost in the supply chain from harvest to consumption.
- Changes in human diets towards less emission-intensive products
  - Land use and GHG effects of changing diets require widespread behavioural changes to be effective; i.e., a strong deviation from current trajectories (increasing demand for food, in particular for animal products).
- Demand-side options related to wood and forestry

Bioenergy: Global Technical Bioenergy Potential for 2050



AFOLU and sustainable development



AR5 AFOLU Summary Findings:

- **20-24% of anthropogenic GHG emissions** come from the AFOLU sector (ca. 9 – 12 $GtCO_2e/yr$); **crop and livestock agriculture** is now the dominant source of AFOLU emissions
- **A combination of supply-side and demand side options** can reduce up to 80% the emissions from the sector by 2030.
- Assessment of overall potential, including **bioenergy**, needs to include analysis of **trade-offs** and feedbacks with **land-use competition**
- **Many positive linkages with sustainable development and with adaptation exist, but are case- and site specific** as they depend on scale, scope, and pace of implementation.
- **Good governance** is central for reducing mitigation barriers in this sector and ensure multiple co-benefits for rural development and food security are achieved



Land based mitigation:
Time to tap the real potential

Thank you!

Frequently Asked Questions

- How much does AFOLU contribute to GHG emissions and how is this changing?
  - Annual GHG emissions (mainly CH_4 and N_2O) from agricultural production in 2000–2010 were estimated at 10–12% of global emissions (5.0–5.8 $GtCO_2eq/yr$).
  - Annual GHG flux from land use and land-use change activities accounted for 9–11% of total GHG emissions (4.3–5.5 $GtCO_2eq/yr$).
- What is the potential of the mitigation options for reducing GHG emissions?
  - Global economic mitigation potentials in agriculture in 2030 are estimated to be 0.5–10.6 $GtCO_2eq/yr$.
  - Reducing food losses and waste can reduce GHG emissions by 0.6–6.0 $GtCO_2eq/yr$.
  - Changes in diet could result in GHG emission savings of 0.7–7.3 $GtCO_2eq/yr$.
  - Forestry mitigation options are estimated to contribute 0.2–13.8 $GtCO_2/yr$.