

Commissioning and managing agriculture inventory research projects: Perspectives in Peru

Carlos A. Gómez

Professor and Leader Research Group Livestock and climate change

Universidad Nacional Agraria La Molina

Perú

Objective of this presentation: Describe in Peru the process of designing research to meet inventory needs contributing to inventory improvements

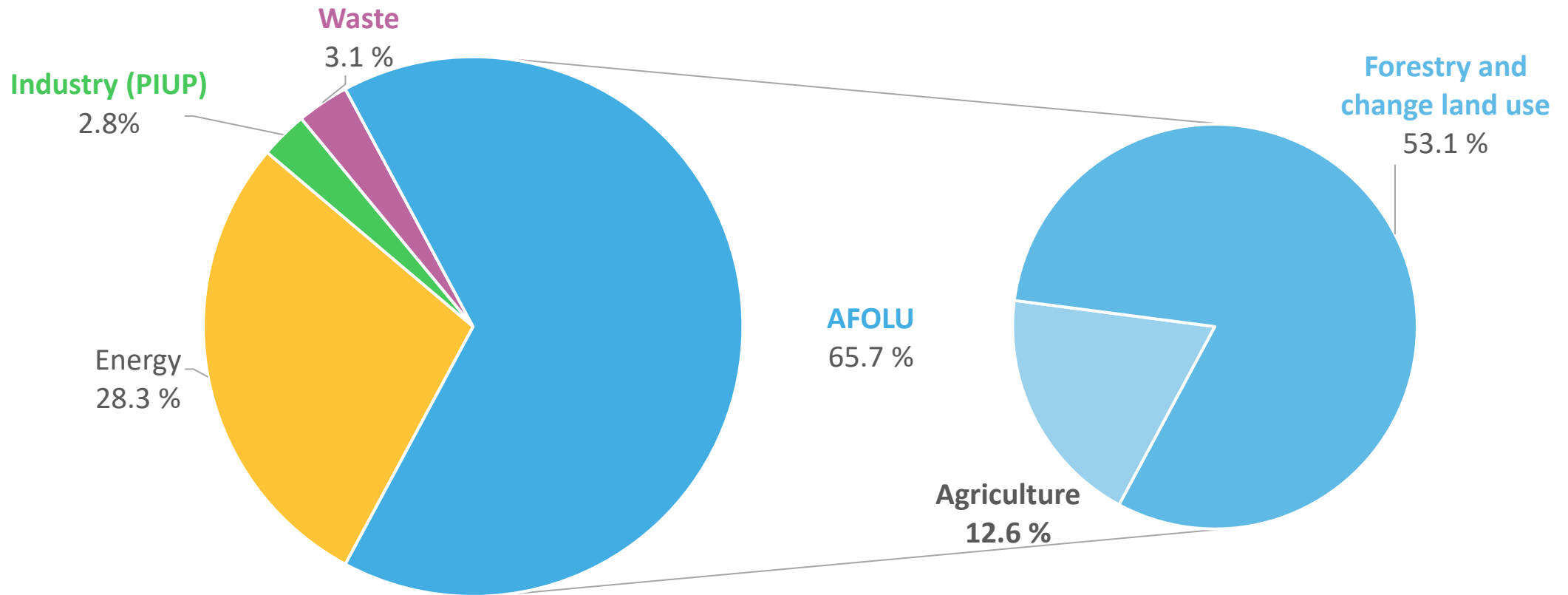
National Peru Inventory: 2000, 2005, 2010, 2014, 2016, 2018

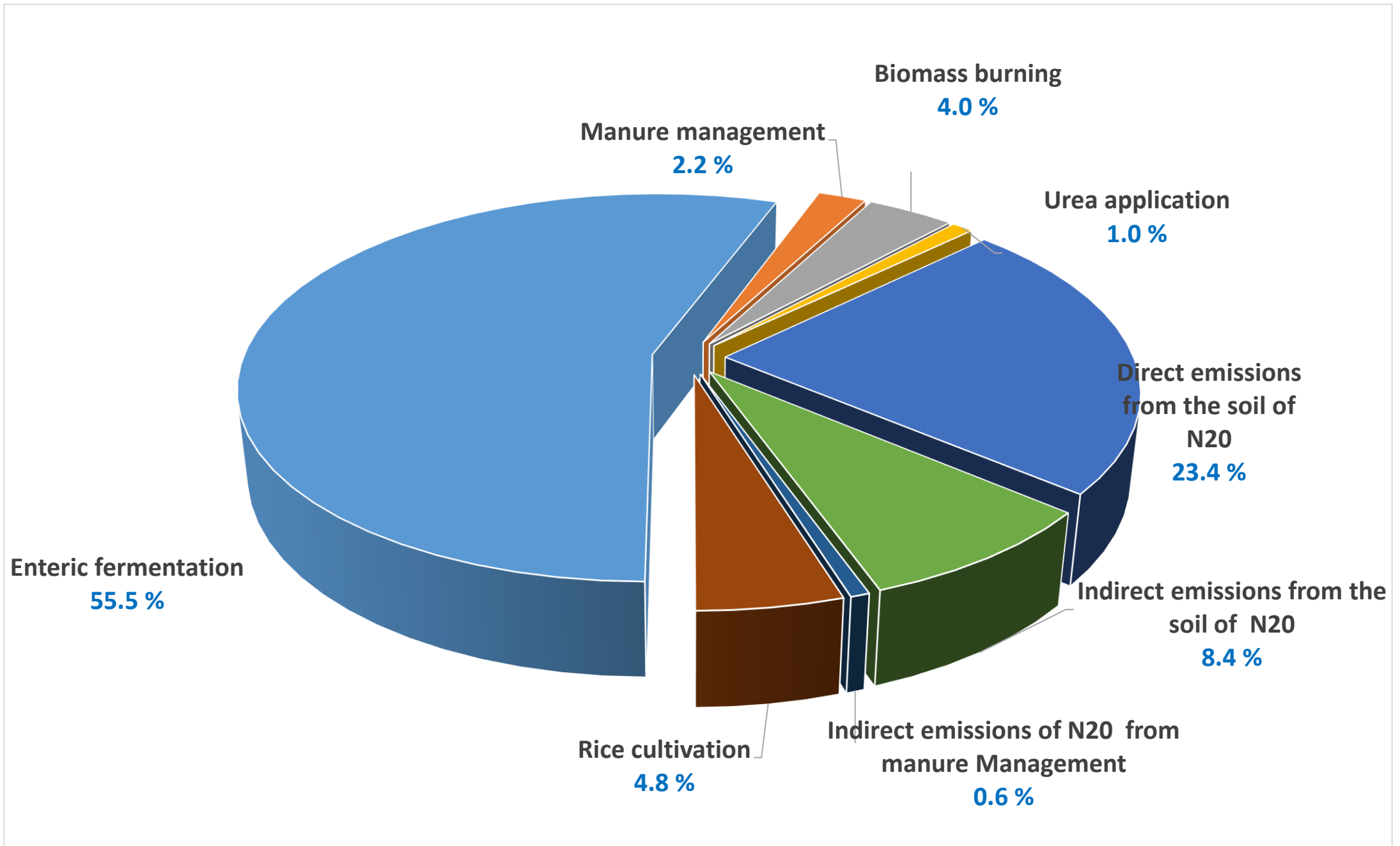
(<https://infocarbono.minam.gob.pe/inventarios-nacionales-gei/intro/>)

The Ministry of the Environment (receives, reviews and consolidates) information from the different sectors

The Ministry of Agriculture is in charge of the agricultural sector

Emissions of Peru from different sources, 2016





The IPCC Guidelines explain that emissions from a GHG source are typically calculated as

$$\text{Emissions} = \text{Activity data} \times \text{Emission factor}$$



As the ministry of the Environment leads inventory efforts it identifies, in coordination with the specific sector, gaps in the process that requires support of research for improvements

Limited expertise for identification of the cost benefit of different research options that could contribute to the improvement of inventories

Enteric methane vs. N₂O from the soil

Activity data vs. emission factor ?



Already identified, for the agricultural sector research can be conducted by:

- Staff of the Ministry of Agriculture including the National Research Institute and/or
- Staff of the Universities

Actual methodology level of inventories in the agriculture sector

Subcategories	Methodology level
Enteric methane	Tier 2 Cattle/ Tier 1 other animals
Manure management	Tier I
Biomass burning	Tier I
Urea application	Tier I
Direct emissions from the soil	Tier I
Indirect emissions from the soil	Tier I
Indirect emissions from manure	Tier I
Rice cultivation	Tier I

Tier 2: Expert opinion and statistics

At present based on the emission factors used for inventories it was identified as a gap the improvement in precision of the emission factor for enteric methane cattle

$$EF = \left[\frac{GE + \left(\frac{Y_m}{100} \right) + 365}{55.65} \right]$$

EF= emission factor, kg CH₄ head⁻¹ yr⁻¹

GE= gross energy intake, MJ head⁻¹ day⁻¹

Y_m= methane conversion factor, per cent of gross energy in feed converted to methane

The factor 55.65 (MJ/kg CH₄) is the energy content of methane

Search of funding for this purpose. National and/or cooperation sources

The ministry of the Environment proposed that to UNDP in the framework of a integral project for improvement of inventories

Invites a research group in a University to conduct that project as the staff at the Ministry of Agriculture have limited specific expertise for that activity neither the time.



Seed Project funded by CYTED: Low - Carbon Livestock - Research Network



Objective: Contribute to improve the quantification of GHG emissions and the inventories of the livestock sector of the participating countries (7 S.A. + Spain) and the identification of future mitigation options

Time: 2022-2024

TAKE HOME MESSAGE

- Staff at the responsible institutions (Environment/agriculture) will benefit from improving their expertise in relation to identification and prioritization of gaps in inventory that will be supported by research
- Universities or research institutions should develop expertise to conduct research that could support improvement of inventories