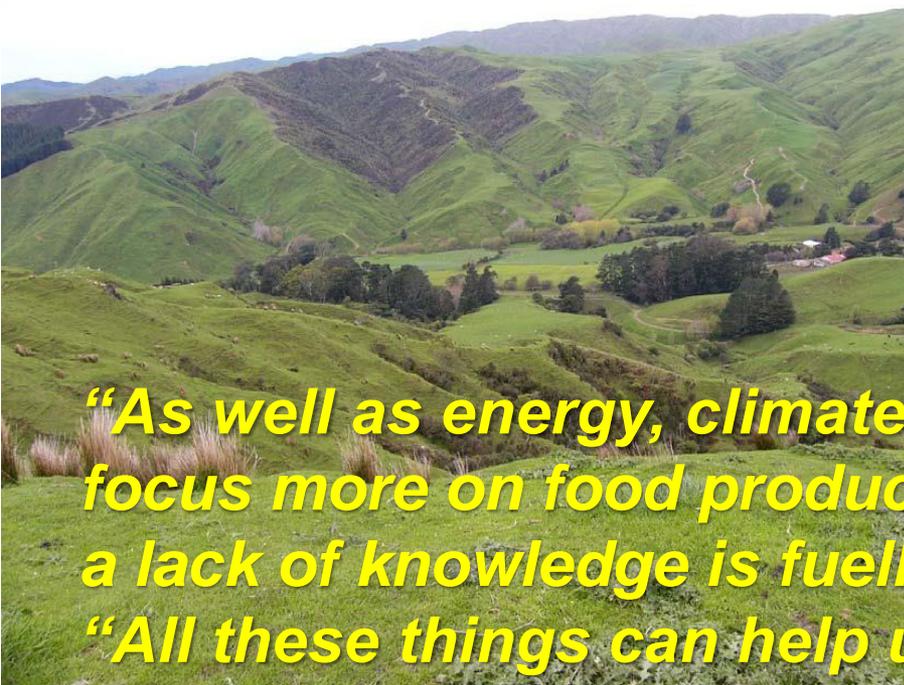


**Scientific and Technical Advisory Panel, open meeting
6th Assembly of the GEF, Da Nang. 23 June, 2018**

The future food system - for human health and a healthy planet

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“As well as energy, climate change discussions should focus more on food production and cutting food waste, but a lack of knowledge is fuelling public resistance”.

“All these things can help us ensure that, in producing the food that we need to feed the billions of people on this planet, we're not destroying the planet in the process”.



Barack Obama. 26 May, 2017

Thomson Reuters Foundation.

Climate change talks should focus on food, despite resistance.

<http://news.trust.org/item/20170526132835-rjekn/>

The linear food system

1. Extract natural resources and materials.

TAKE

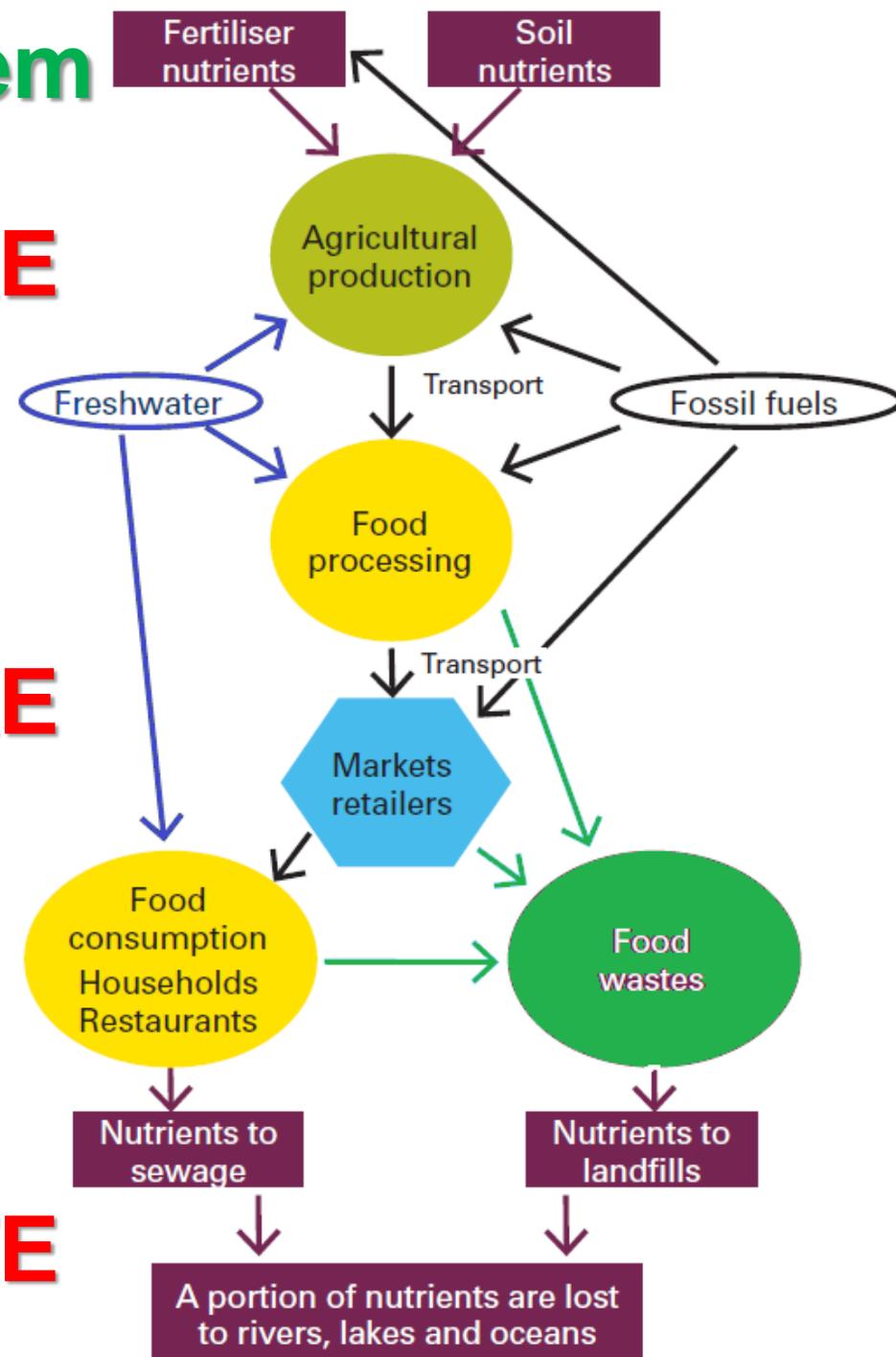
2. Add energy and water inputs then process.

MAKE

3. Sell and consume the product.

4. Dispose of wastes.

WASTE



Producing energy-smart and climate-smart food has to be part of the climate solution

Key messages:

Food supply system uses ~32% of total end-use energy and produces ~22% of GHG emissions

Renewable energy and efficiency throughout the agri-food chain can reduce CO₂ emissions.

Other GHGs from ruminant livestock, rice paddies, fertiliser use, will be more challenging to reduce.



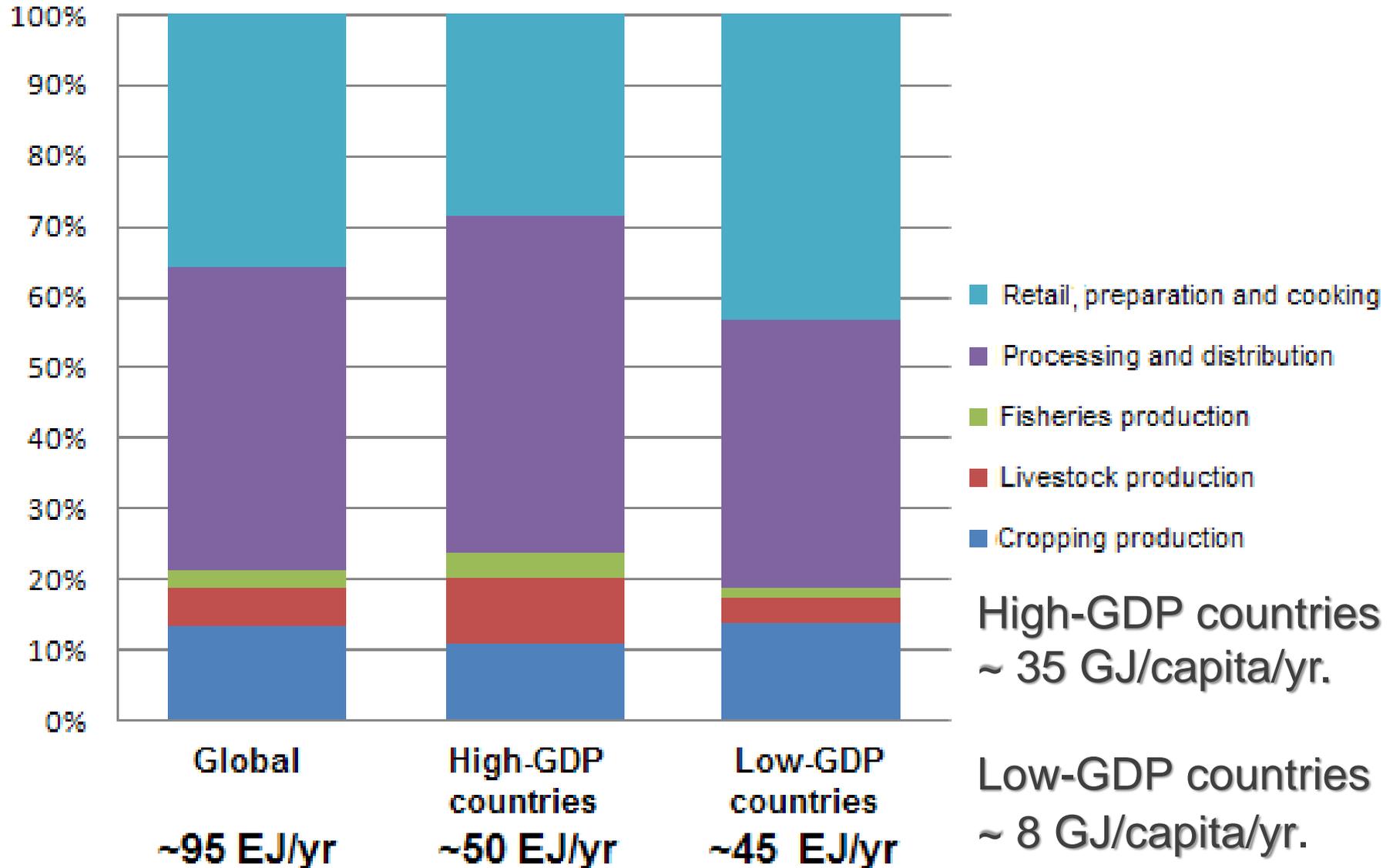
**"ENERGY-SMART" FOOD
FOR PEOPLE AND CLIMATE**
ISSUE PAPER

Ralph E H Sims

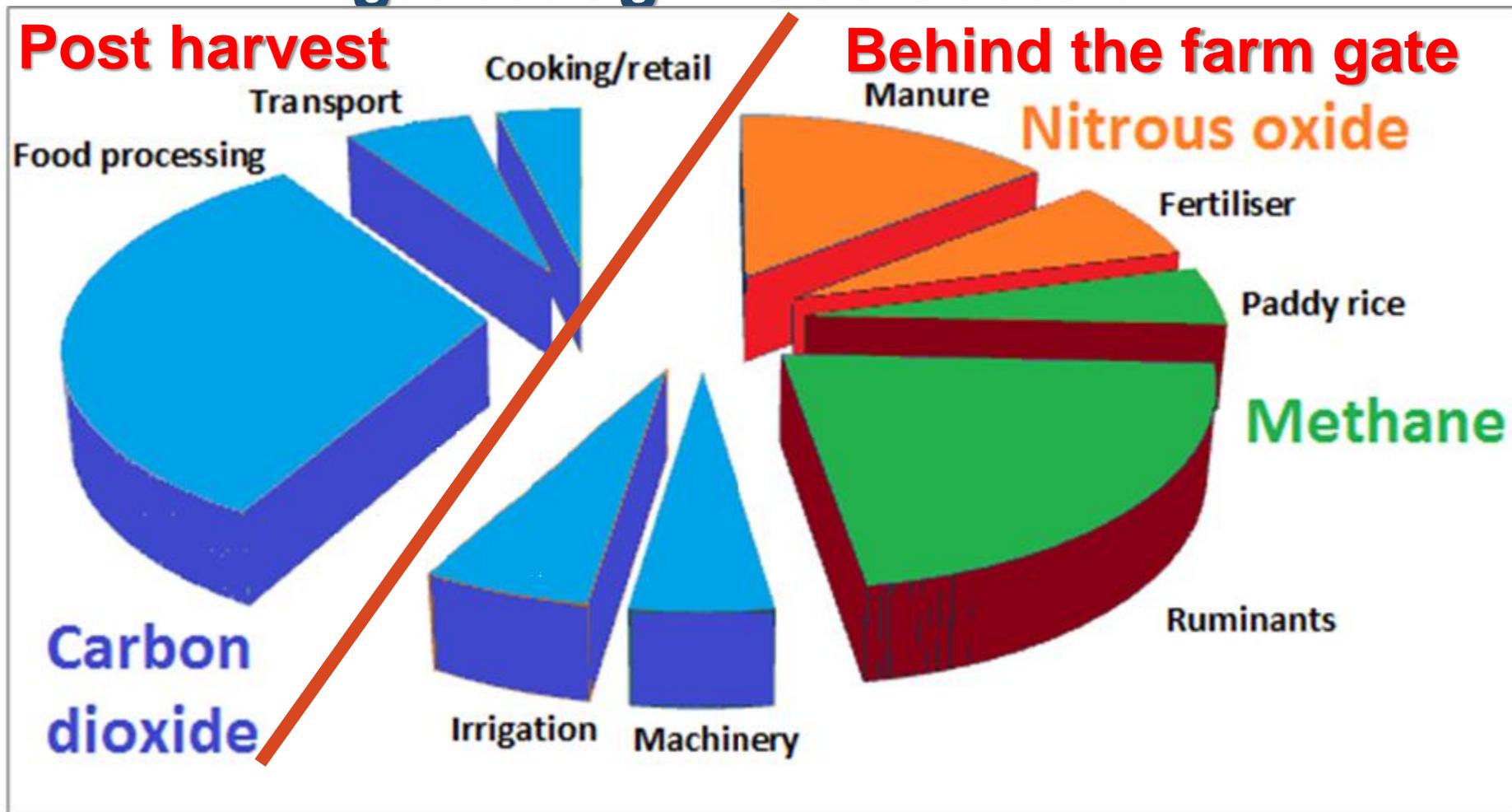


Shares of Energy inputs in Agri-food Supply chains

Around 32% of the total global end-use energy demand of ~300 EJ/yr is used for providing food.

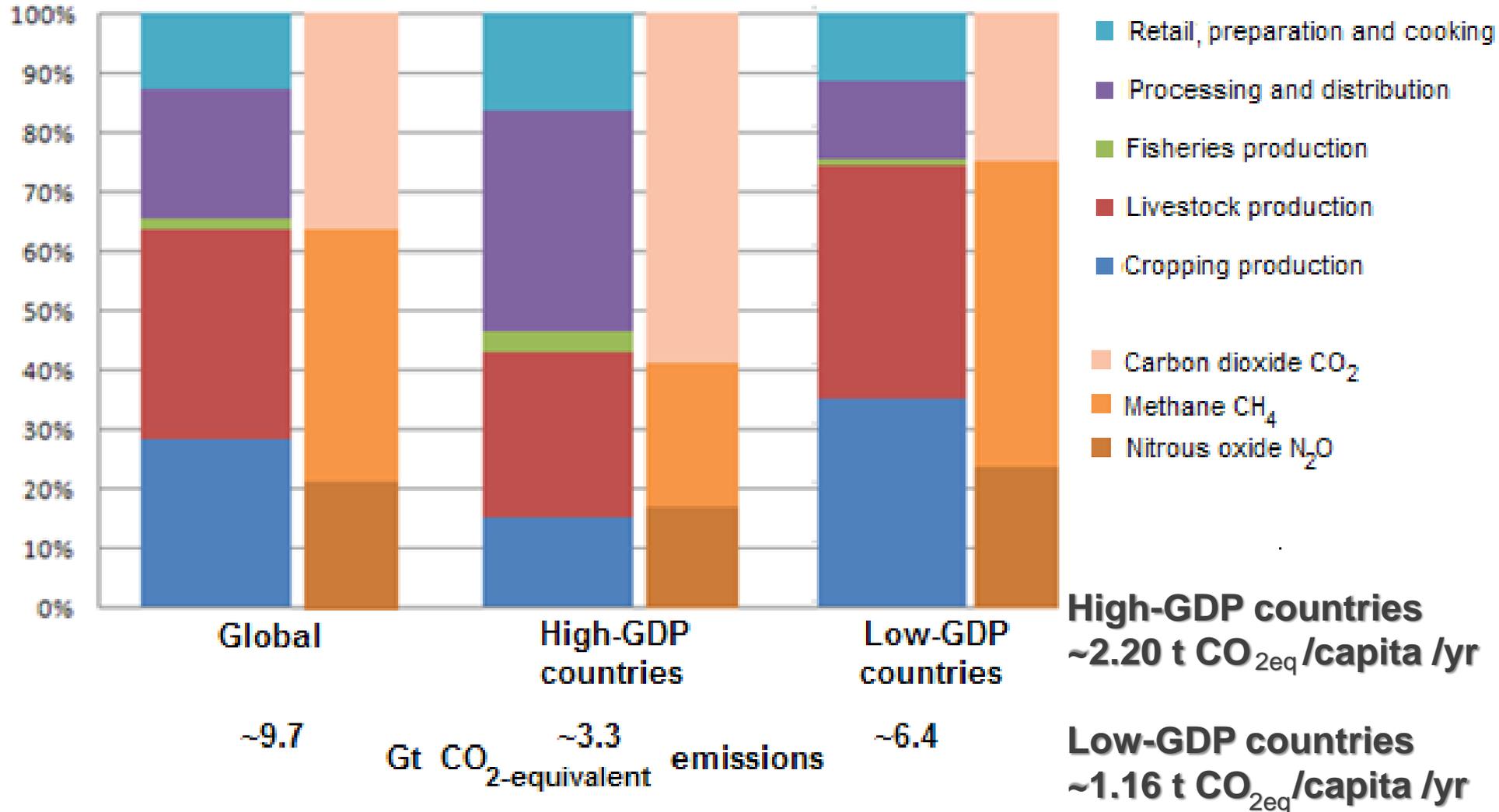


Annual GHG emissions from the global agri-food sector.



Shares of greenhouse gas emissions

Around 22% of total global GHG emissions arise from the agri-food chain) (2011 data).

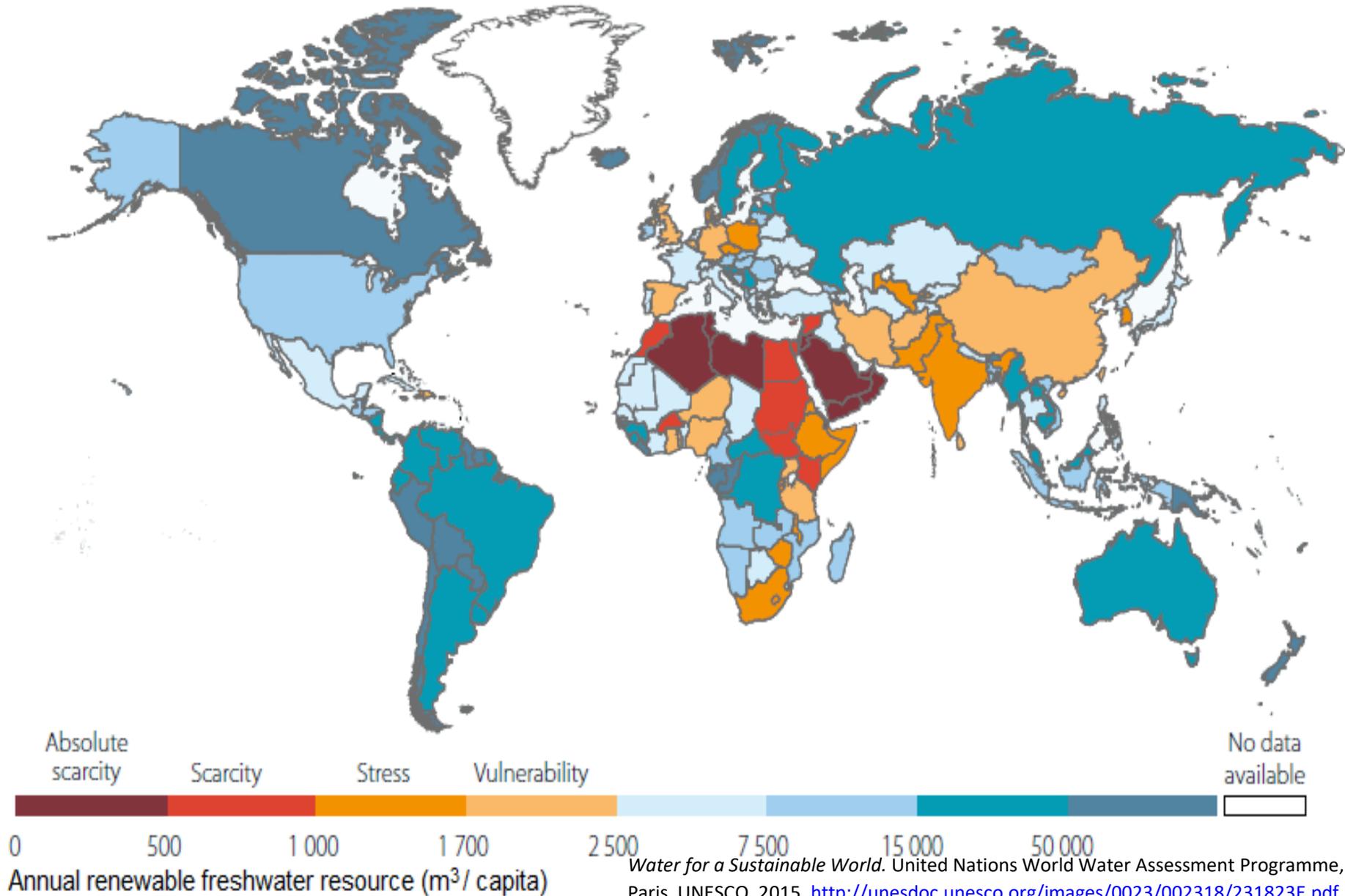


The agri-food sector also results in:

- **significant biodiversity loss from land use change and chemicals;**
- **depleted fish stocks;**
- **extensive land and water degradation;**
- **annual freshwater withdrawals of around 70% of the 4,500 billion m³ total mainly for irrigation; and**
- **over-exploitation of many aquifers.**



Availability of annual freshwater resource per capita is becoming more scarce in some regions



One challenge in moving towards a Circular Economy is that over half of the world's food is produced by the millions of small holders.



This is a 4 cow dairy farm in Kenya where the manure is used to produce biogas, the gas used for heat to pasteurise the milk, and the effluent returned to the land for growing high yielding maize crops

Sustainable Development Goals and Food Systems

Biosphere
Society
Economy

1 NO POVERTY



2 ZERO HUNGER



3 GOOD HEALTH AND WELL-BEING



4 QUALITY EDUCATION



5 GENDER EQUALITY



6 CLEAN WATER AND SANITATION



7 AFFORDABLE AND CLEAN ENERGY



8 DECENT WORK AND ECONOMIC GROWTH



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



10 REDUCED INEQUALITIES



11 SUSTAINABLE CITIES AND COMMUNITIES



12 RESPONSIBLE CONSUMPTION AND PRODUCTION



13 CLIMATE ACTION



14 LIFE BELOW WATER



15 LIFE ON LAND



16 PEACE, JUSTICE AND STRONG INSTITUTIONS

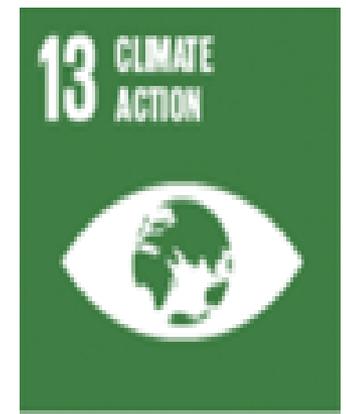
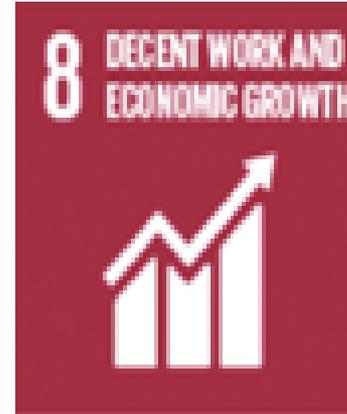
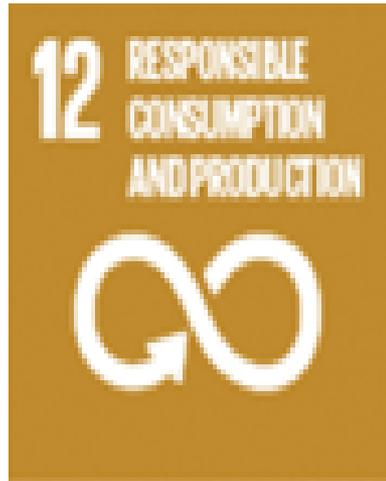


17 PARTNERSHIPS FOR THE GOALS

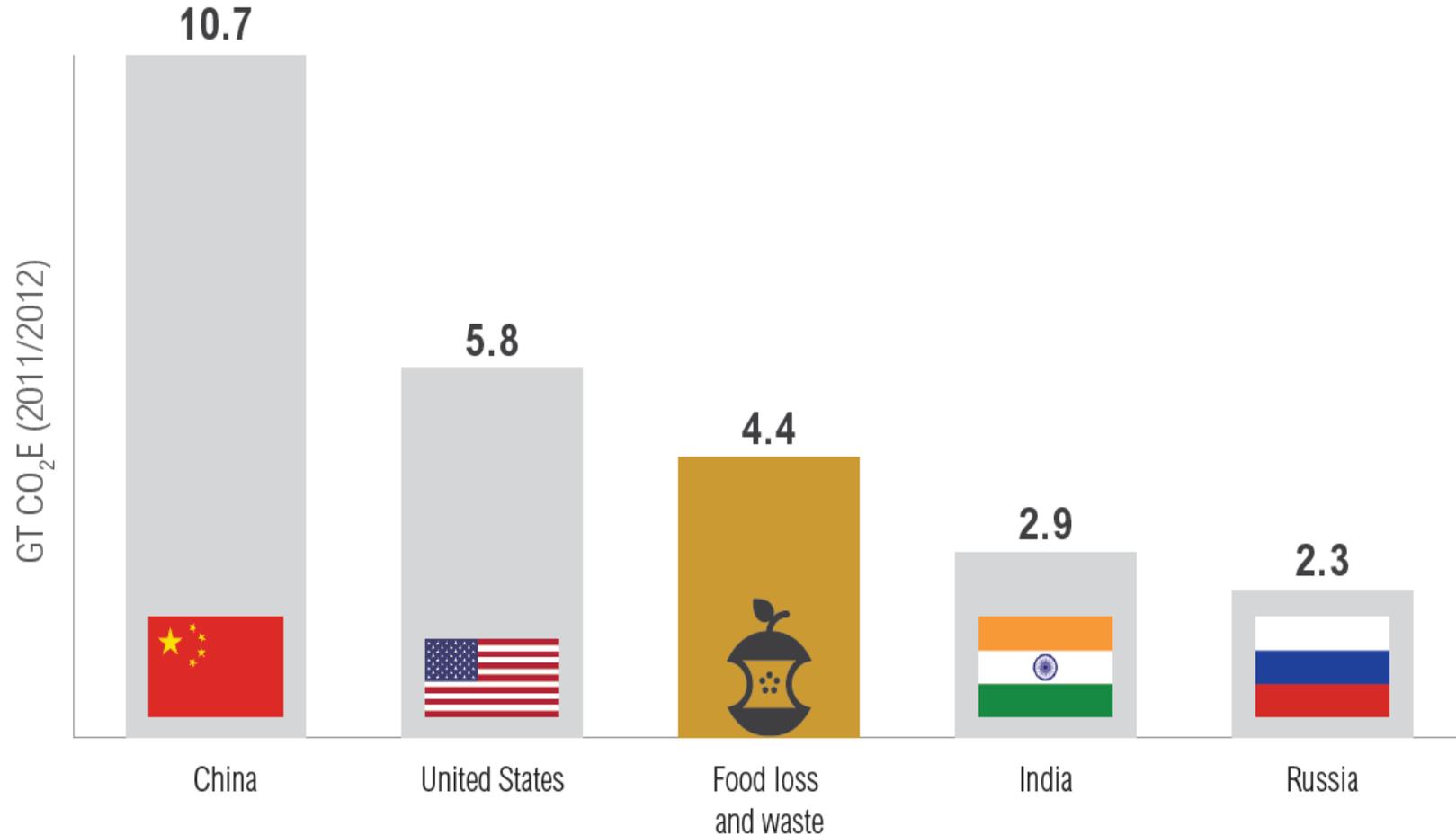


SUSTAINABLE DEVELOPMENT GOALS

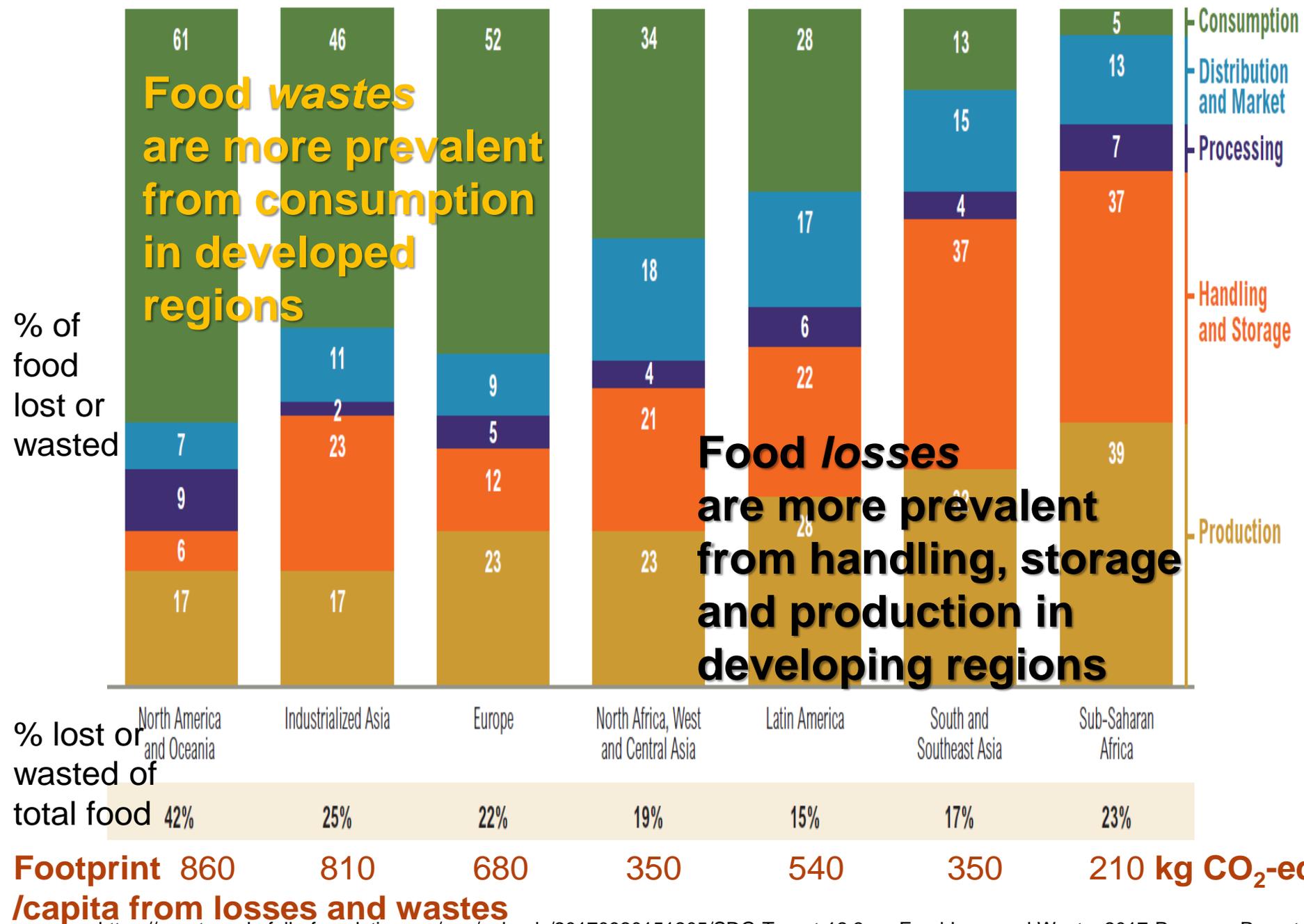
We fail to consume one third of all food produced due to post-harvest losses and retail and consumer wastes.



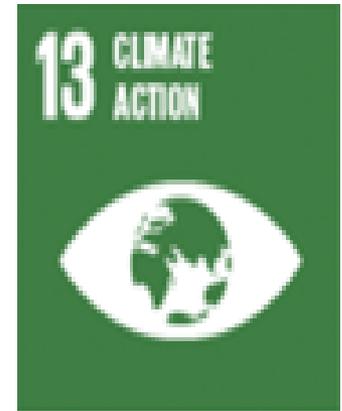
The carbon footprint from total food losses equates to the total greenhouse gas emissions of the third highest country – after China and USA.



Data includes all 6 major gases as well as CO₂ emissions from land use change.

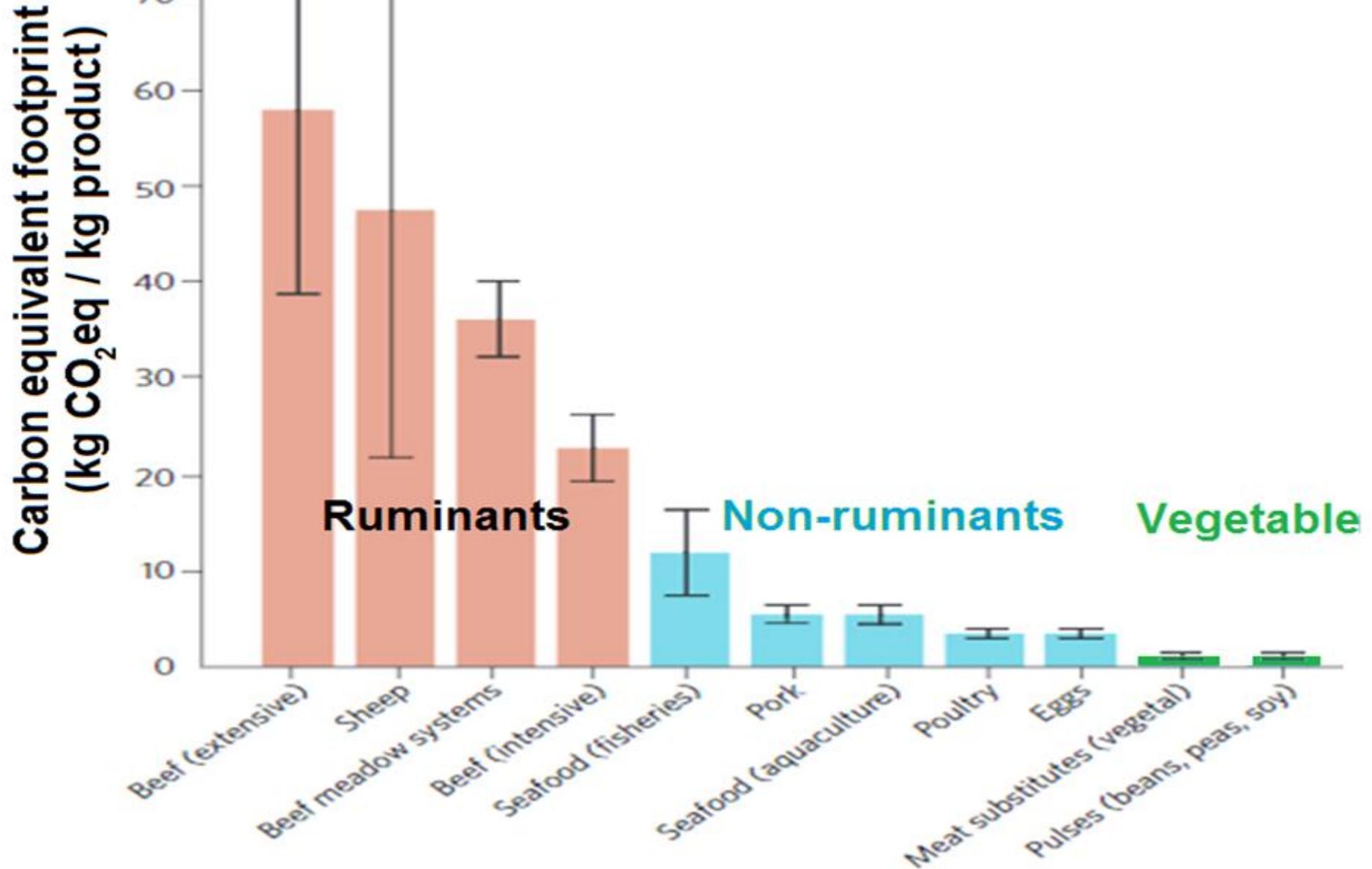


To reach climate goals, societies will need to transition away from producing and consuming animal proteins. They can be replaced with proteins from vegetable crops, insects, synthetic proteins produced in laboratories, etc.



Urban agriculture will continue to expand and could meet up to one third of local food demand.

Carbon footprints of food products



1) STAP recommends that the GEF



supports GEF-7 projects that reduce inputs per unit of food production and use resources more efficiently without decreasing productivity.

For example, by encouraging projects that involve:

- sustainable land management practices and conservation tillage;**
- low carbon food processing and transport options;**
- precision application of fertilisers, chemicals and water;**
- reducing food losses and wastes such as by improving post harvest storage systems;**
- lowering consumption of animal proteins whilst maintaining nutrition levels;**
- and**
- development of urban food production systems.**

2) STAP recommends that the GEF

A group of five children are sitting around a table in a brightly lit room, possibly a kitchen or dining area. They are engaged in conversation and eating. The child in the foreground on the right is wearing a dark blue t-shirt with 'RUGBY WORLD CUP 2015' printed on it and has her hands raised. The other children are looking towards the camera or each other. There are white bowls and plates on the table.

considers the **Circular Economy** concept when further developing the Impact Program on *Food systems, land use and restoration*.

This Impact Program aims to promote sustainable food systems, tackle the negative externalities, encourage deforestation-free commodity supply chains, and restore degraded lands.

At the early stage of child project preparation, key stakeholders, including agri-food specialists from the private sector, should be invited to:

- > help assess the practicalities of achieving key outputs and outcomes based on the latest scientific understanding, and
- > develop the project proposal in accordance with the principles of a Circular Economy.