

Overarching *Whereas*

1. The economic environment in which farmers operate is **distorted by significant scale of uncosted impacts (externalities)**, both positive and negative.
2. Food systems are a critical employer of **human labour** and can generate **sufficient calories** to sustain the current human population
3. Facing **many challenges**: (i) growing population; (ii) we produce enough calories, but we waste a lot; (iii) we do not provide adequate nutrition and our agri-food systems promote bad health.
4. Despite the emergence of a significant market-based sustainable agricultural sector, this has **not transitioned into the mainstream**
5. The corollary: food systems which exploit nature and have negative consequences for human health dominate and are **currently more profitable**

Overall Objective

1. For TEEB AgriFood to **provide a rationale for and then to develop a common valuation framework** for assessment; this framework identifies, categorises and quantifies the range of positive and negative externalities and impacts which arise from different food and farming systems
2. For TEEBAgriFood to **demonstrate how this framework can be used**, and therein the invisibilities that are revealed through its adoption

Success criteria

1. **Adoption of the framework at scale**, therein prompting a range of interventions, the sum of which will shift economics towards more sustainable production systems which preserve and build natural and social capital, avoid pollution and improve public health and wellbeing.
2. Contribution to a **new agricultural research agenda** that leads to (i) the development of new methodologies and (ii) the cataloguing of data that are aligned with the framework

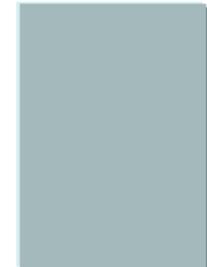
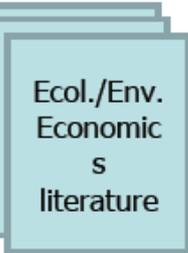
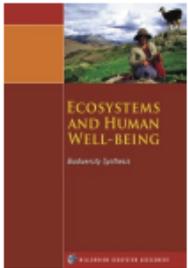
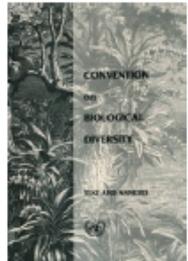
The *Foundations* Report nested within TEEBAgriFood

- The main aim of the report is to provide **theoretical scientific and economic foundations**
- The secondary aim of the report is to show how the theory has been and can be **applied**
- The report includes a **Theory of Change**
- The Foundations report is to be considered alongside various forthcoming **Policies** reports

Overall structure of what follows in Chpt 1

- 1. TEEB** Genesis, Rationale, Scope and Achievements
- 2. Rationale** for the report: Why TEEBAgriFood?
- 3. Structure** of the report – walkthrough the narrative flow across chapters

TEEB initiative (2008-2012)



**G8+5
Potsdam
2007**

“Potsdam Initiative – Biological Diversity 2010”

The economic significance of the global loss of biological diversity....
Importance of recognising, demonstrating & responding to values of nature...



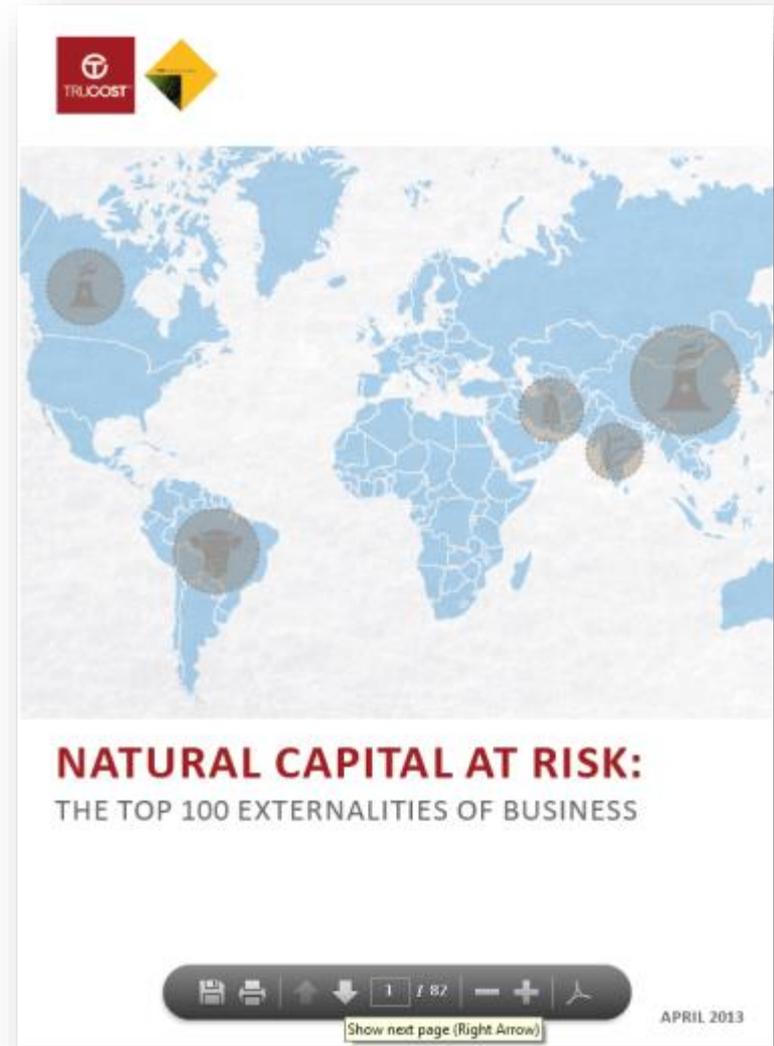
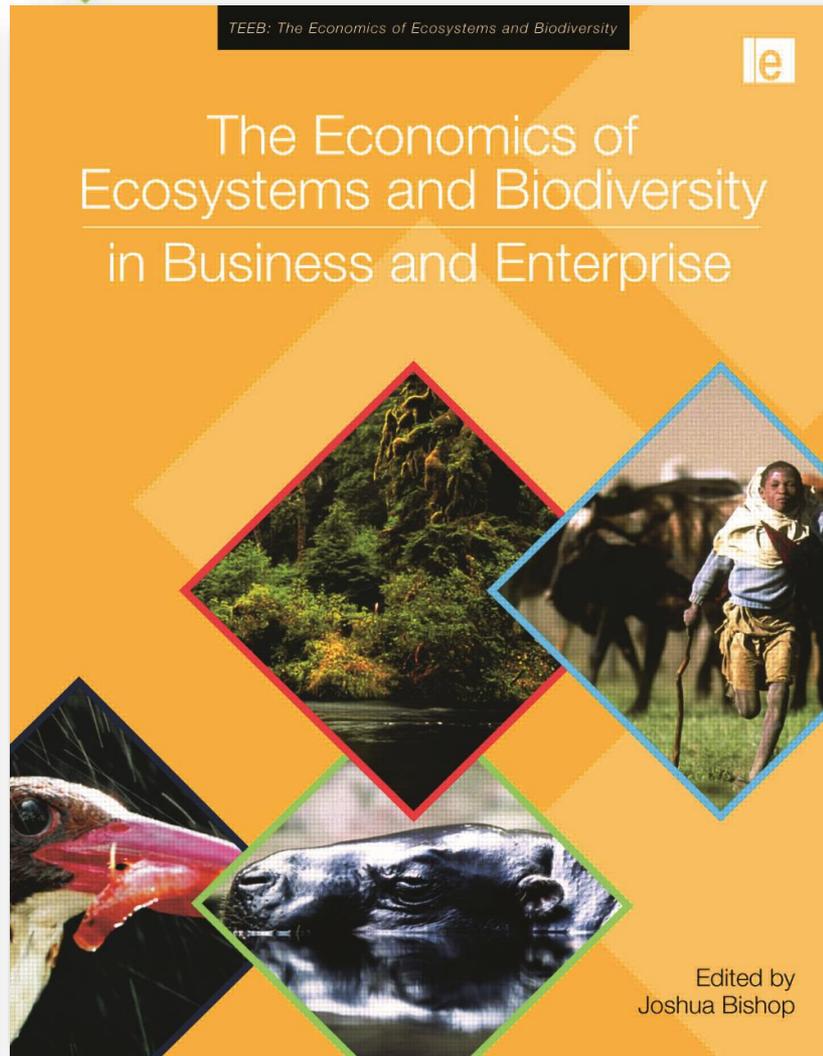
- CBD COP11 India**
- National TEEB Work**
- Sectoral TEEB Work**
- Business Externalities Work**
- Rio+20 Brazil**

India, Brazil, Belgium, Japan & South Africa
Sept. 2010



BD COP 10 Nagoya, Oct 2010

TEEB for Business





Why select the Agriculture sector?

7.1.2 THE GLOBAL 20 REGION-SECTORS

Ranking of the 20 region-sectors with the greatest total impact across the 6 EKPIs when measured in monetary terms.

RANK	SECTOR	REGION	NATURAL CAPITAL COST, US\$ BN	REVENUE, US\$ BN	IMPACT RATIO
1	COAL POWER GENERATION	EASTERN ASIA	452.8	443.1	1.0
2	CATTLE RANCHING AND FARMING	SOUTH AMERICA	353.8	16.6	18.8
3	COAL POWER GENERATION	NORTHERN AMERICA	316.8	246.7	1.3
4	WHEAT FARMING	SOUTHERN ASIA	266.6	31.8	8.4
5	RICE FARMING	SOUTHERN ASIA	235.6	65.8	3.6
6	IRON AND STEEL MILLS	EASTERN ASIA	225.6	604.7	0.4
7	CATTLE RANCHING AND FARMING	SOUTHERN ASIA	163.0	174.0	0.8
8	CEMENT MANUFACTURING	EASTERN ASIA	147.0	5.8	23.0
9	WATER SUPPLY	SOUTHERN ASIA	111.7	14.1	7.9
10	WHEAT FARMING	NORTHERN AFRICA	100.1	7.4	13.6
11	RICE FARMING	EASTERN ASIA	99.3	91.2	1.1
12	WATER SUPPLY	WESTERN ASIA	86.7	18.4	4.7
13	FISHING	GLOBAL	86.1	136.0	0.6
14	RICE FARMING	NORTHERN AFRICA	84.2	1.2	69.6
15	CORN FARMING	NORTHERN AFRICA	80.4	1.7	47.8
16	RICE FARMING	SOUTH-EASTERN ASIA	79.7	41.0	1.9
17	WATER SUPPLY	NORTHERN AFRICA	76.4	3.4	22.2
18	SUGARCANE	SOUTHERN ASIA	75.6	6.0	12.5
19	PETROLEUM AND NATURAL GAS EXTRACTION <i>(excludes water and land use)</i>	EASTERN EUROPE	72.6	371.6	0.2
20	NATURAL GAS POWER GENERATION	NORTHERN AMERICA	69.4	122.7	1.0



‘The Good’

+ **Agriculture employs 1 in 3 people of the world’s economically active labour force**, or about 1.3 billion people. For the 70 per cent of the world's poor living in rural areas, agriculture is the main source of income and employment.

+ **Smallholder farms (i.e. less than 2 hectares) represent over 475 million of the world’s 570 million farms** and, in much of the developing world, they produce over 80 per cent of the food consumed.

+ **Food production systems produce approximately 2,800 calories per person per day** which is enough to feed the world population.

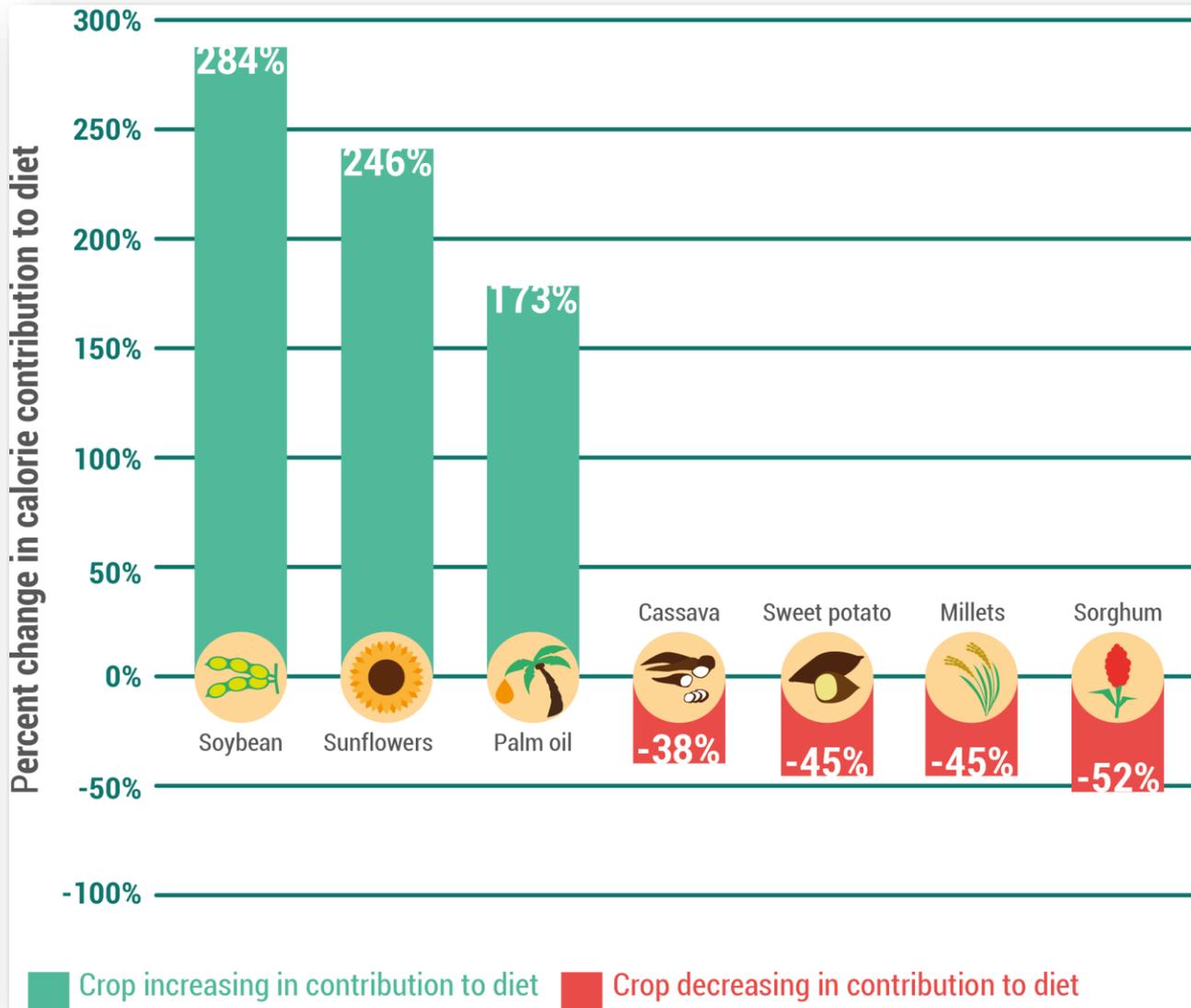


‘The Bad’

- **Eighty per cent of new agricultural lands have replaced tropical forests since the 1980s**, a trend resulting in significant biodiversity loss and ecosystem degradation.
- **Crop and livestock farming produce between five and six billion tons of CO₂-equivalent in greenhouse gas (GHG) emissions each year**, mostly in developing countries where the agricultural sector has expanded in recent years.
- **The agricultural sector utilizes 70 per cent of the water resources we withdraw from rivers, lakes and aquifers**, raising serious concerns in terms of sustainability and security.

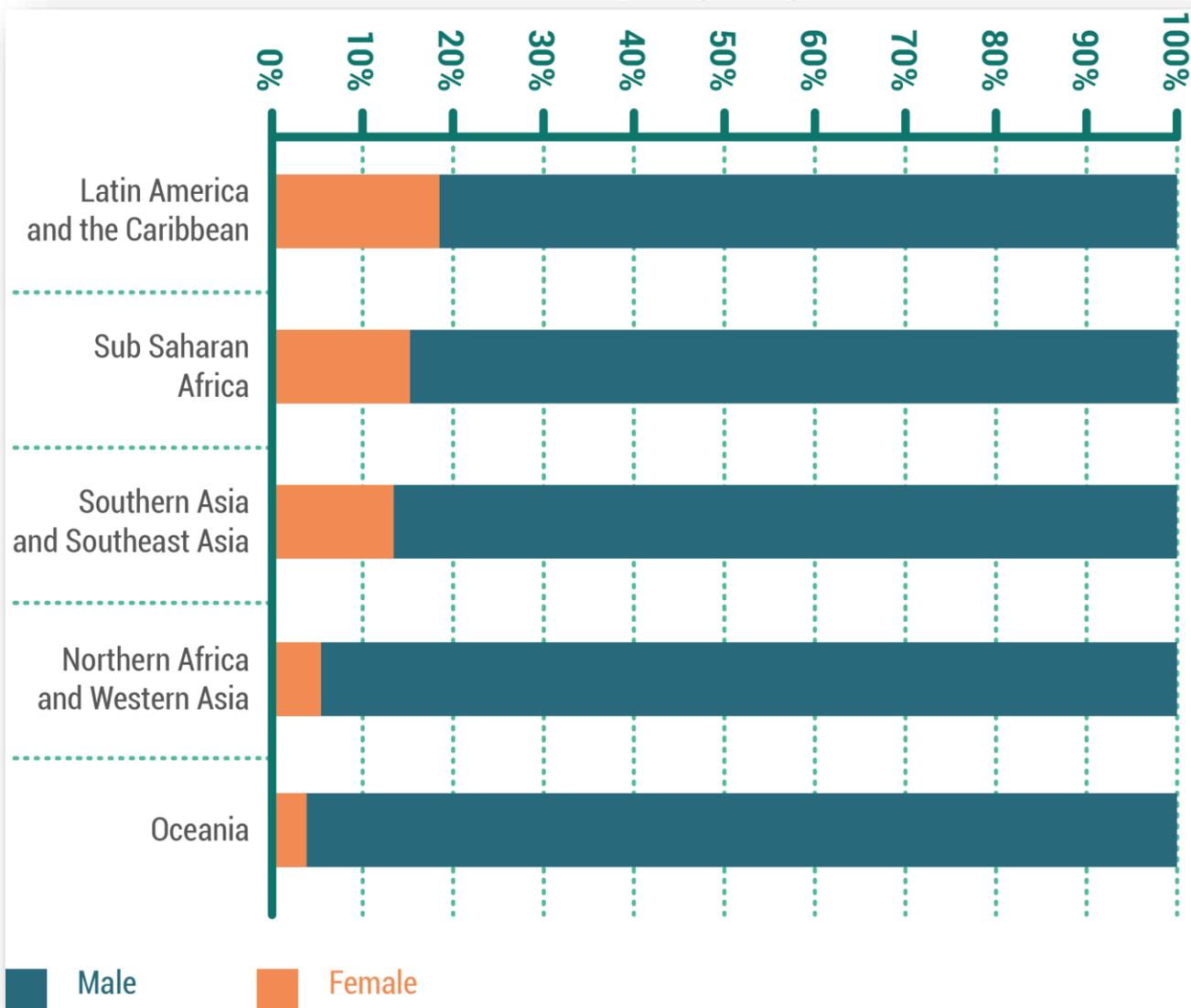


Average change in the calories from crops in national diets worldwide (1961-2009)





Share of male and female agricultural holders in main developing regions





Percentage of global population that is overweight or obese (today and in 2030) and its economic impact

Today:

30%

In 2030:

41%



Obesity has roughly the same economic impact as smoking or armed conflict



\$2.0
trillion



\$2.1
trillion



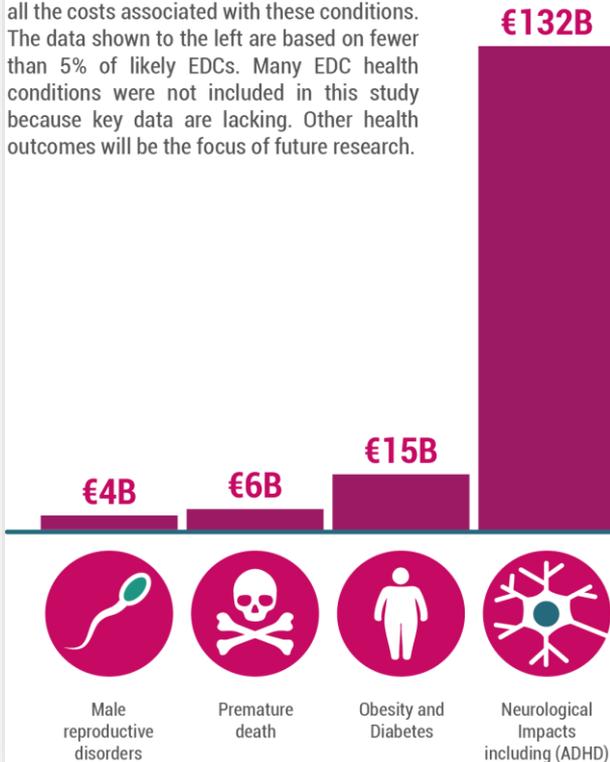
\$2.1
trillion



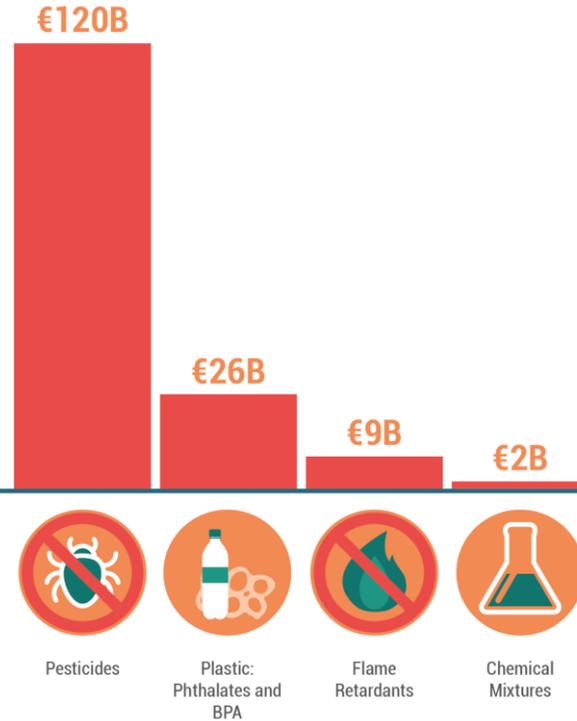
Health effects from endocrine disrupting chemicals cost the US \$ 167 billions each year

€157B Cost by Health Effect

Note: The economic estimates do not include all the costs associated with these conditions. The data shown to the left are based on fewer than 5% of likely EDCs. Many EDC health conditions were not included in this study because key data are lacking. Other health outcomes will be the focus of future research.



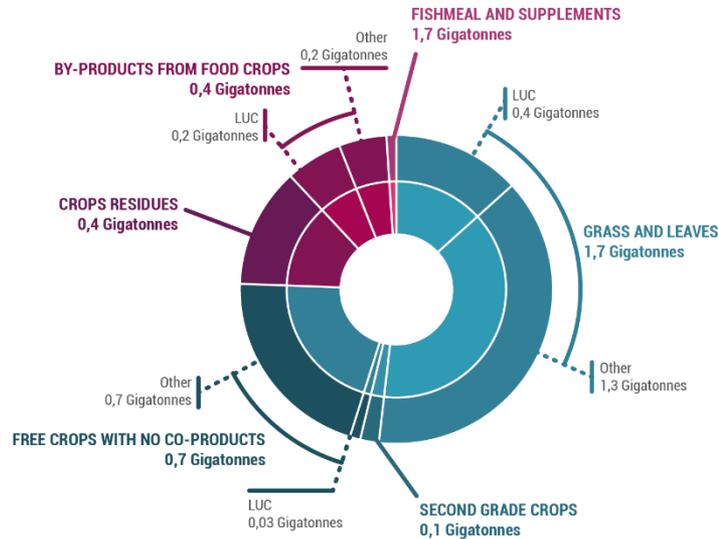
€157B Cost by EDC Type



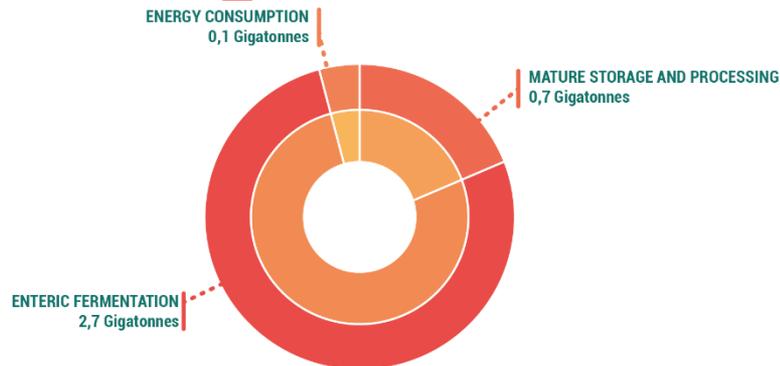


GHG emissions from global livestock supply chains, by production activities and products

A FEED PRODUCTION



A LIVESTOCK PRODUCTION





Drying red chilis under the sun provides one of the few sources of employment for women in an area of Bangladesh.

Fix food metrics

For sustainable, equitable nutrition we must count the true global costs and benefits of food production, urge **Pavan Sukhdev, Peter May and Alexander Müller**.

Current patterns of crop and livestock production and of processing, transport and consumption, are not delivering healthy, nutritious food to society. They are generating large and unacceptable impacts on the environment and on vulnerable populations.

Food systems are now the source of 60% of terrestrial biodiversity loss, 24% of greenhouse-gas emissions, 33% of soil degradation and 61% of the depletion of commercial fish stocks¹. And the increasing homogenization of food sources worldwide is narrowing the genetic diversity in animals and plants that is crucial to secure human nutritional needs against climatic and other changes.

Food systems are undermining human health all over the world, by permitting, or even promoting, inappropriate diets or unsafe foods. As the *Global Nutrition Report*, released this September puts it: "Diet is now the number-one risk factor for the global burden of disease"².

Around 800 million people in developing countries consume less than the 2,100 kilocalories per day recommended by the World Food Programme³ because of failures in access and distribution. At the same time, 1.9 billion people in the developed world take in more than 3,000 kilocalories per day⁴. As processed foods high in fat and carbohydrates come to dominate, even in developing nations, "the number of children under 5 who are overweight is approaching the number who suffer from wasting"⁵.

Yet agriculture employs around 1.3 billion people. Around 1 billion work on small farms⁶ (less than 2 hectares). Admittedly, their working conditions could mostly not be rated as 'decent'⁷ by the International Labor Organization's definition, but what are the chances that society could provide alternative employment to these people if their 500 million small farms gave way to concentrated, large-scale and highly mechanized agribusiness? The world is already short of about 200

million jobs⁸, and major industries such as steel and car making employ only 6 million and 9 million people worldwide, respectively.

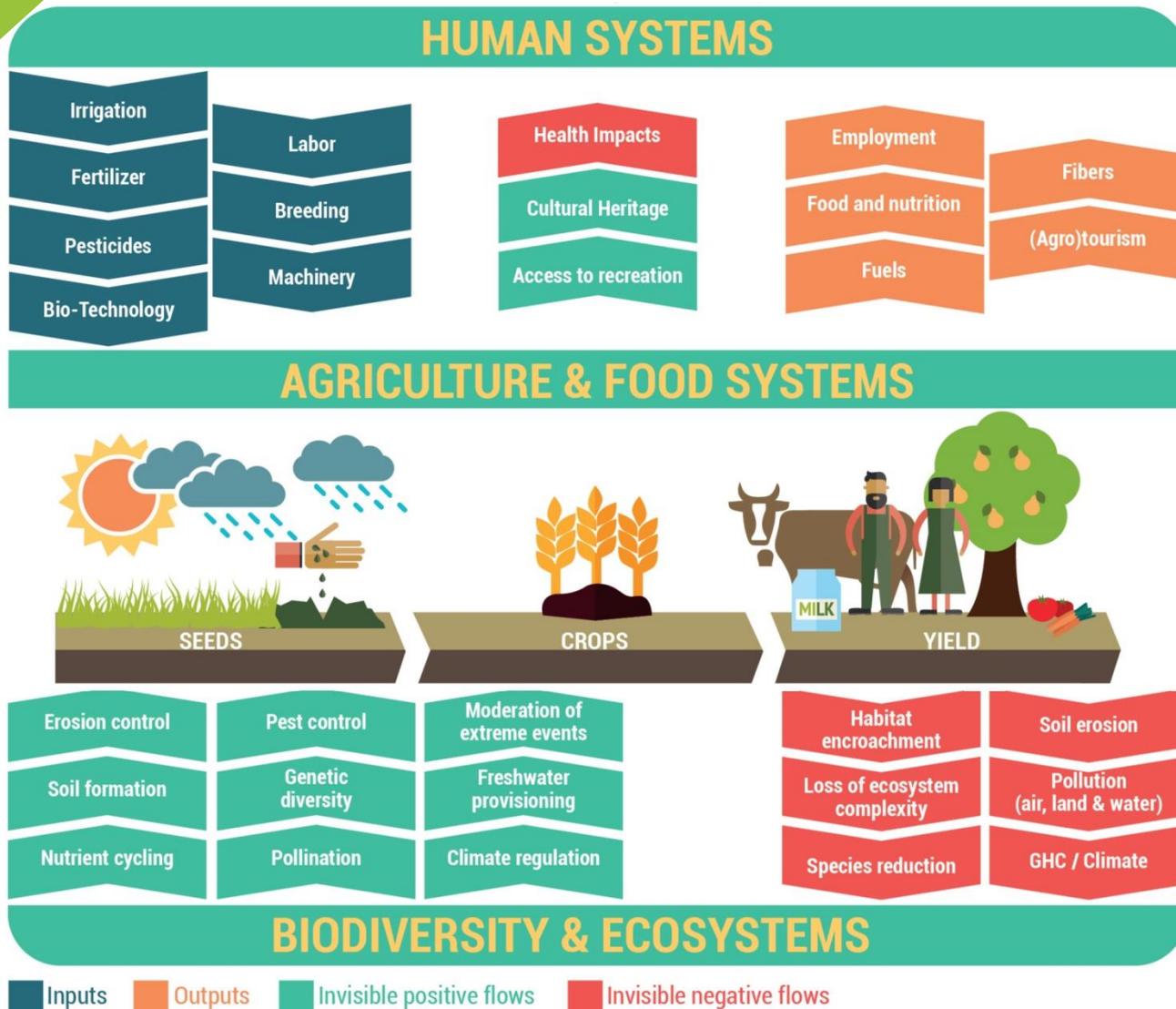
Small-scale agriculture provides subsistence, employment and most of the food directly consumed by urban residents throughout the developing world. It also ensures that rural landscapes are conserved as a touchstone for cultural identity.

Current metrics for agricultural performance do not recognize or account for any of these costs or benefits. The emphasis on yields or profits per hectare is as reductive and distorting as is gross domestic product, with its disregard for social and natural capital. Food metrics must be urgently overhauled or the United Nations' Sustainable Development Goals will never be achieved.

HOLISTIC EVALUATION

We contend that a sustainable food system has three key attributes. It should deliver adequate nutrition and health across all

Impacts and Dependencies arising within the farm gate





TEEB AgriFood Framework

Value-Chain Stages	Production (and associated waste)			Processing and Distribution (and associated waste)			Consumption (and associated waste)
	Landscape	Infrastructure and Manufacturing	Farm	Wholesale	Food and Beverage	Retail	Industry/Household/ Hospitality
Visible and Invisible flows							
Captured by System of National Accounts (SNA) (Profits, Wages, Taxes net of Subsidies, etc.)							
Provisioning (Materials, Energy, etc.)							
Regulation and maintenance (Soil, Water, Habitat for biodiversity, etc.)							
Cultural (Heritage, Recreation, etc.)							
Health (Nutrition, Diseases, Antibiotic resistance, etc.)							
Pollution (Nitrates, Pesticides, Heavy metals, etc.)							
Emissions (CO ₂ , CH ₄ , etc.)							
Social values (Food security, Gender equality, etc.)							
Risks and uncertainties (Resilience, Health, etc.)							

Footnote...

Food & Beverage

Farming systems? Systems?

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