The Food and Land Use Coalition

Growing Better

Ten Critical Transitions for Transform Food and Land Use

The Global Consultation Report of the Food and Land Use Coalition
Published September 2019

The Food and Land Use Coalition

Agenda

Introduction to the Food and Land Use Coalition
Growing Better Report Overview
Ten Critical Transitions
What This Means For…
Recommendations for Different Actors

The Food and Land Use Coalition

About the Food & Land Use Coalition

Launched in 2017, FOLU brings together stakeholders to accelerate the transformation of food and land-use systems to deliver the SDGs, Paris Agreement & Aichi Biodiversity Targets.

- A self-governed coalition of diverse institutions
- With an expansive and influential network
- Reaching across global and national levels
- Delivering a robust evidence base for action

Our mission is to:

- Protect and restore the planet's natural resources and ecosystems
- Build a more resilient, prosperous rural economy for farmers and their families
- Shift food and land use systems so they become a net GHG sink
- Find a healthier, less wasteful way to feed 9+ billion people by the 2030s

Coalition partners:

AGRA Growing Africa's Agriculture · EAT · gain Global Alliance for Improved Nutrition · IIASA International Institute for Applied Systems Analysis · Sustainable Development Solutions Network · SYSTEMIQ · wbcsd · World Resources Institute

Supported by:

NICFI · MAVA Fondation pour la Nature · Gordon and Betty Moore Foundation · UKaid from the British people

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FOLU Country Platforms

Content

- Create social, environmental and economic case for change
- Break down silos for systemic solutions
- Set long-term targets and ambition, through FABLE Consortium

Influence Strategy

- Access top-level political leaders
- Get private sector engaged
- Build domestic stakeholder support & strengthen high ambition coalitions

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FOLU/FABLE country platforms
FOLU build on the work of the Food, Agriculture, Biodiversity, Land and Energy (FABLE) Consortium teams which operate in more than 20 countries.

All countries shaded are FABLE: Argentina, Australia, Brazil, Canada, China, Colombia, Ethiopia, Germany, Finland, India, Indonesia, Malaysia, Mexico, Norway, Russian Federation, Rwanda, South Africa, Sweden, United Kingdom and United States.

FOLU Country Platforms

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FOLU Australia

ClimateWorks Australia, CSIRO and Deakin University are participating in FOLU through the Land Use Futures project.

FOLU China

Core partners include WRI China, China Agricultural University and Tsinghua University.

FOLU Colombia

A vibrant national platform, comprising over 100 actors from national and local government, the private sector and civil society.

FOLU Ethiopia

Comprises the Ministry of Ag, the Ag Transformation Agency, the Environment, Forest and Climate Change Commission, and the National Planning and Development Commission.

FOLU India

Spearheaded by: the Council on Energy, Environment and Water, the Indian Institute of Management, Ahmedabad, The Energy and Resources Institute, and WRI India.

FOLU Indonesia

Housed in the National Planning Ministry BAPPENAS' signature Low Carbon Development Initiative, contributing to the formulation of the next mid-term national development plan.

FOLU Nordics

FOLU has an active and growing network across the region, led by the Stockholm Resilience Centre of Stockholm University and the EAT Foundation.

FOLU United Kingdom

FOLU has entered into a partnership in the UK with The Royal Society of Arts' "Food, Farming and Countryside Commission".

What next for the FOLU Platforms

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Deepen engagement in core countries

- Australia, China, Colombia, Ethiopia, India, Indonesia, UK
- Build on strong foundations to create nationally-owned, lasting country platforms

Grow country network

- Leverage partnerships with existing initiatives, e.g., SRC, EAT and FABLE in the Nordics
- Focus on sub-Saharan Africa, but open to opportunities
- Exploring collaboration with EU on 2050 zero emissions roadmap

Facilitate cross-country knowledge-sharing

- Peer-to-peer learning and communications
- Sharing experiences and ‘what good looks like’
- Quarterly structured engagements

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Ten Critical Transitions

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“The Making of the Growing Better Report”

11 new research papers

Markets, Policies and Technology: Pathways for Zero Deforestation Agriculture, PUC-Rio

Reforming Agricultural Subsidies for Improved Environmental Outcomes, IFPRI

Regenerative Agriculture: Identifying the Impact; Enabling the potential, Cranfield University

Prosperous Forests in the Tropical Belt, SYSTEMIQ

Seafood Demand Literature Review UCSB emLAB

Public Sector Measures to Conserve and Restore Forests: Overcoming Barriers, WRI

People, Health, Nature: A Sub Saharan African Transformation Agenda, SYSTEMIQ

Urban Expansion and Cultivated Land, NYU Marron Institute

Estimating the Ocean’s True Potential for Feeding the Planet, UCSB emLab

The Global Food Value Chain: A Snapshot, Hoffmann Centre

Impacts, Barriers & Opportunities: International trade and food and land use, Hoffmann Centre

Modelling & Analysis

IIASA-FOLU Integrated Scenarios Global Biosphere Management Model (GLOBIOM) Project

Poverty analysis using the World Bank Shockwaves Model

Hidden Costs Analysis, Food and Land Use Coalition, SYSTEMIQ

Investment Costs & Business Opportunity Analysis, Blended Finance Taskforce, SYSTEMIQ

Expert input

- Lead Authors: Per Pharo, Jeremy Oppenheim
- Endorsed by all 8 FOLU Core Partners
- Endorsed by 30+ FOLU Ambassadors
- Modelling from IIASA, World Bank, the University of Washington & University of California Santa Barbara
- Consultation with over 70 experts
- Signed off by an academic Reference Committee of 12 experts

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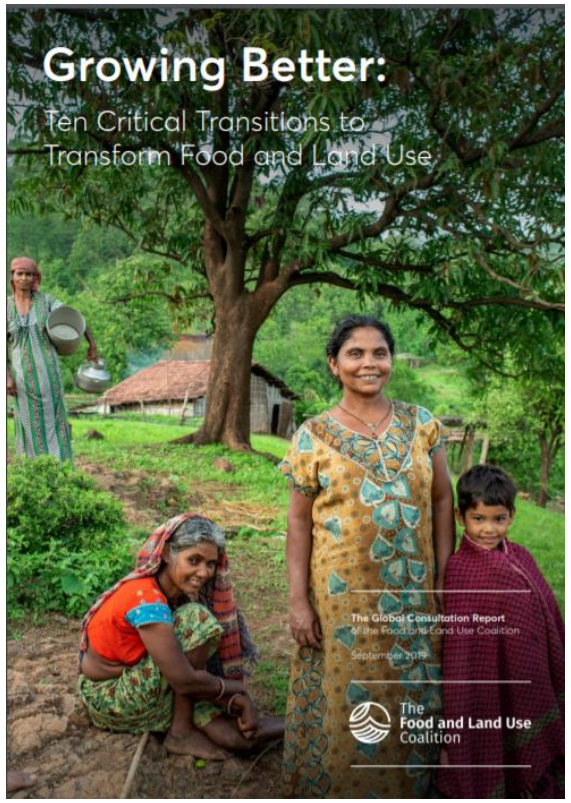
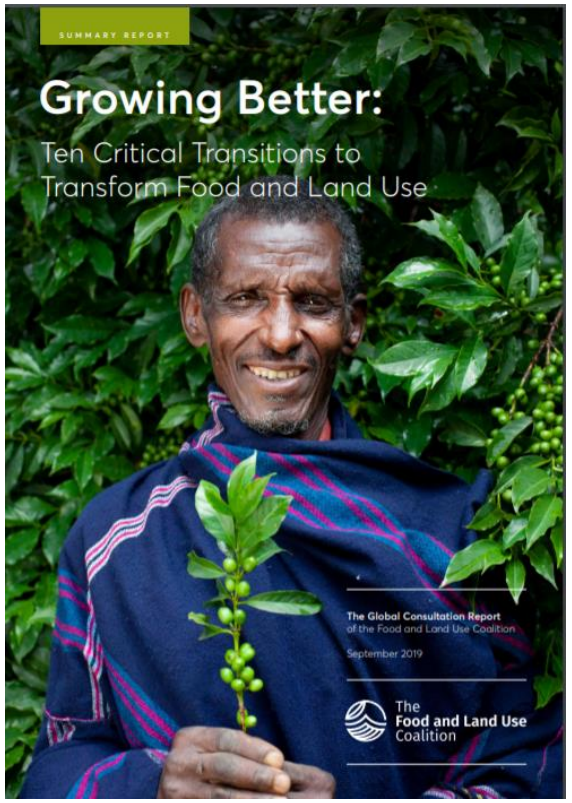
Growing Better: Ten Critical Transitions to Transform Food and Land Use

The FOLU Global Consultation Report

- The first **integrated, global assessment** of the social, economic and health benefits of transforming our food and land use systems, and the large, growing costs and risks of inaction.
- Make the case for **rapid, deep change.**
- Describes a **systemic reform agenda** and how this might be applied through ten critical transitions.
- Help to build **stakeholder confidence** that transformation is urgent, necessary, profitable and achievable.
- This is a "**consultation report**": it aims to trigger action, but also to inspire dialogue and debate across the world, helping to support a shared journey of learning, creativity and societal change.



Full Report & Executive Summary



Summary Report

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The case for change: hidden costs of food and land use systems

~2 billion ha of agricultural land degraded

62% of IUCN globally threatened species are adversely affected by agriculture

~80% of large marine eco-system subject to significant eutrophication

FOLU contributes ~**30%** of GHG emissions

Our systems waste **1/3** of food, resulting in **8%** of global emissions

+500 million farmers & fishers in poverty

820 million people hungry every day

2 billion people overweight or obese

43% of agricultural workforce are women

Agriculture accounts for **70%** of freshwater withdrawals

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Hidden costs today

Trillions USD, 2018 prices

The “hidden costs” of global food and land use systems sum to **$12 trillion**, compared to a market value of the global food system of $10 trillion.

Source: Food and Land Use Coalition, 2019

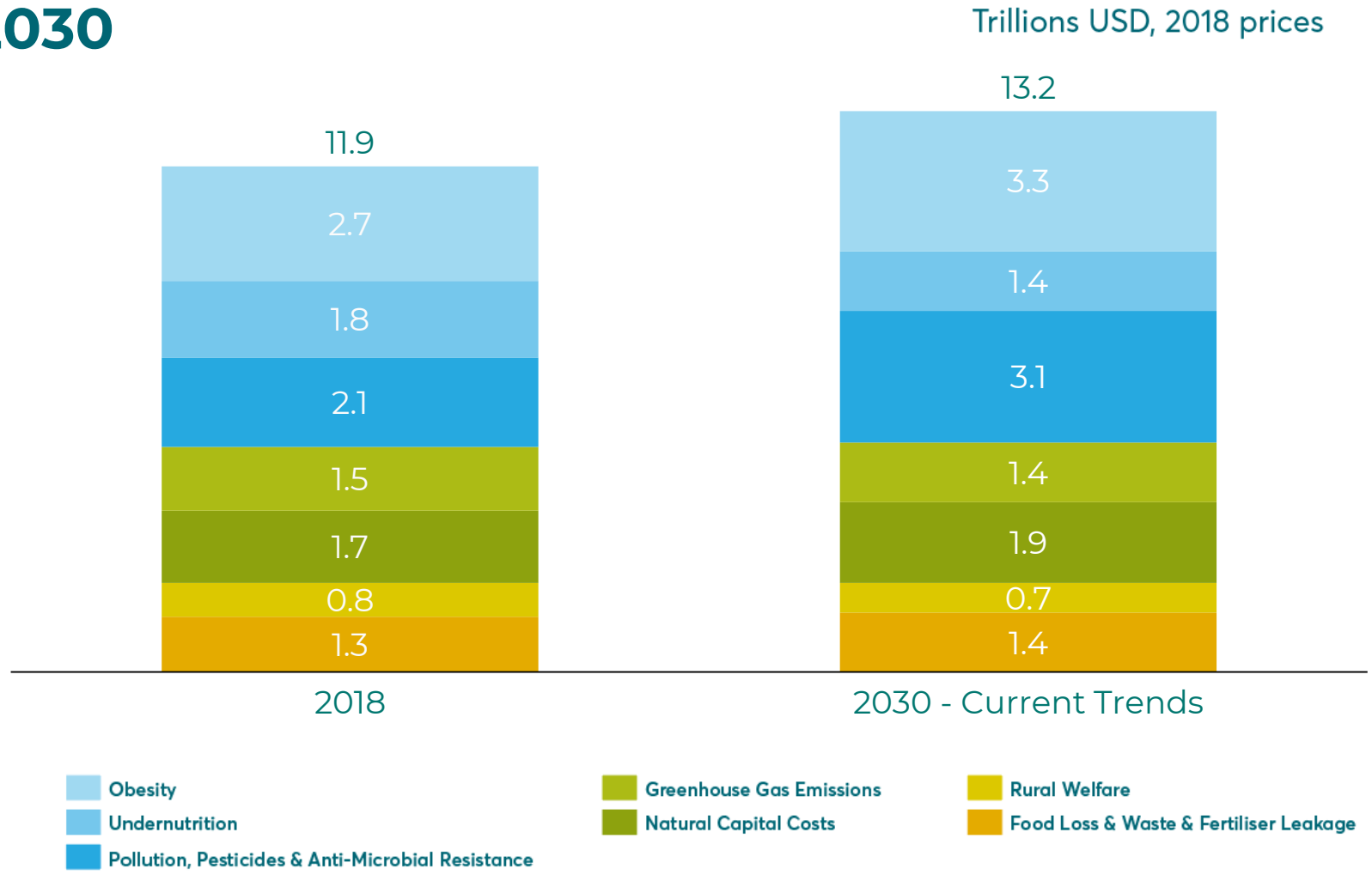
The Food and Land Use Coalition

Hidden costs in 2030

If we continue along current trends, these hidden costs could rise to more than **$13 trillion** a year by 2030.

The loss of productive life from **obesity related diseases** is set to increase by 25% by 2030, costing the global economy **$3.3 trillion** a year.

The social cost of **GHG emissions** from food and land use systems is projected to be **$1.4 trillion** by 2030.



Source: Food and Land Use Coalition, 2019

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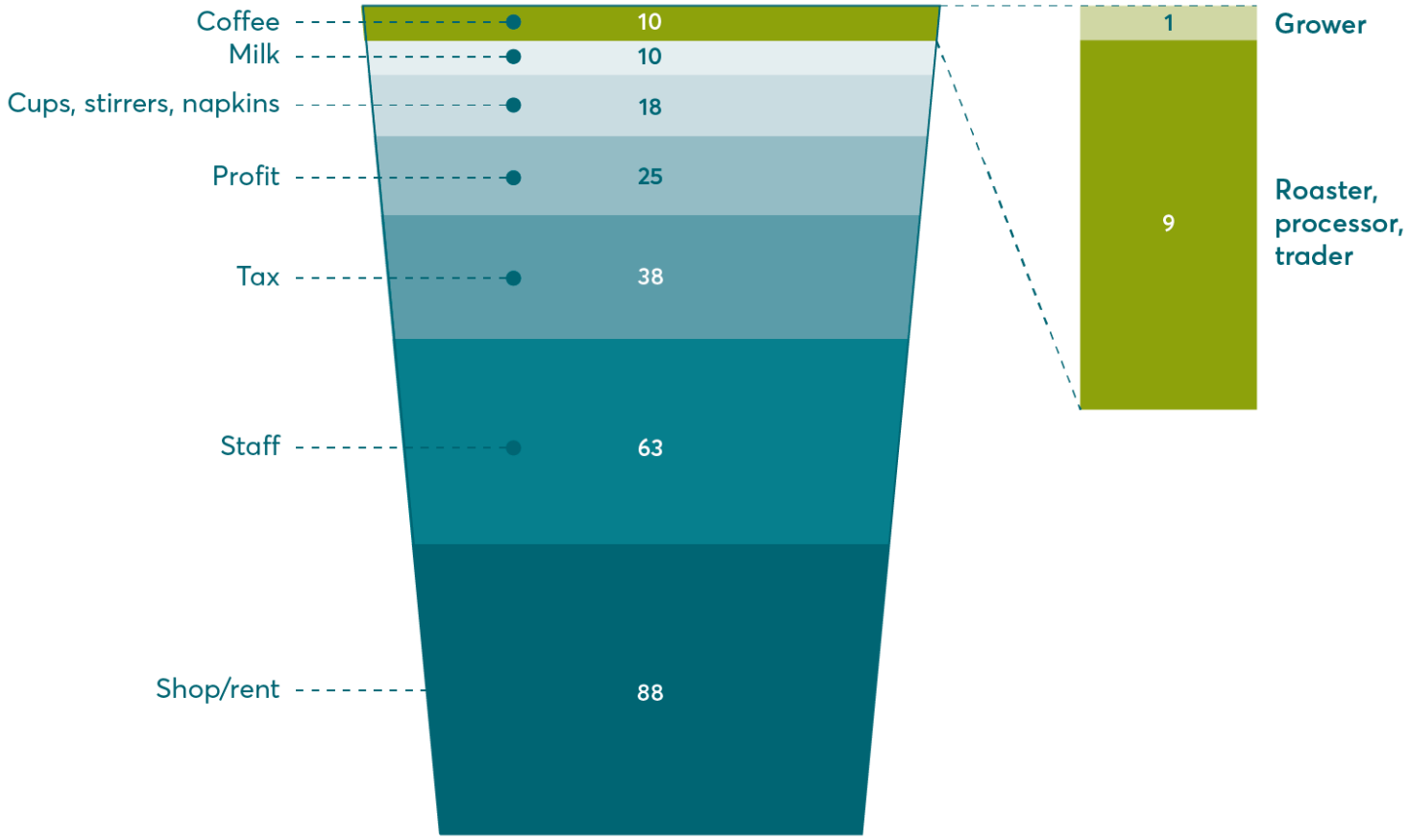
Who captures that value of a $2.50 cup of coffee?

Many primary producers involved in international supply chains are living below the poverty line.

This exhibit illustrates how this form of exclusion plays out in coffee supply chains, in which **growers at one end can receive as little as a cent and a half from each $2.50** cup of coffee bought at the other end of the chain.



Source: Allegra Strategies; International Trade Centre; FT Calculations, 2019


The
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A better future is
possible

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Myth

We must choose between economic growth and environmental sustainability.

There is no system-level trade off. Transformed food and land use systems can deliver stronger, more equitable economic growth at the same time as supporting the delivery of environmental targets, including the Paris Agreement. Safety nets should also be used to ensure a just transition.

Decarbonising the energy system is sufficient to tackle climate change and should continue to be the primary and dominant focus of climate action.

Without food and land use sector transformation, we can kiss both the Paris Agreement targets and the Sustainable Development Goals goodbye.

There is no pathway to 1.5 degrees Celsius which does not require an almost immediate end to deforestation.

Fertiliser and pesticide driven large scale monoculture is the only thing that can deliver calories in sufficient quantity to feed a growing population.

Intelligent application of a combination of regenerative practices, precision farming and increased agrobiodiversity can yield sustainable, robust overall productivity growth.

Delivering environmental goals requires everyone to give up meat.

Total global consumption of land-grazing meat should be gradually reduced. But it need not be entirely eliminated for health or environmental purposes.

This is about convergence; regions with higher meat consumption must reduce livestock-based protein intake by about two thirds, whereas poorer regions must be supported to diversify and improve their protein sources.

Reality

The Food and Land Use Coalition

Myth

Human and planetary health diets are standardised and will limit culinary enjoyment and cultural variations in what people eat.

A “human and planetary health diet” allows for significant diversity of exciting and tasty diets.

This is consistent with a broad spectrum of traditional regional diets such as Cantonese, Mediterranean, South Indian and indigenous Amazonian as well as vegetarian, flexitarian and pescatarian.

Driving up agricultural productivity is the main route to tackling rural poverty.

Developing off-farm employment, increasing rural connectedness and promoting new rural-urban linkages are at least as important as driving up agricultural productivity in tackling rural poverty.

As people’s incomes grow their diets improve.

In the absence of educational interventions and strong policy frameworks, people tend to eat less healthily as they get richer.

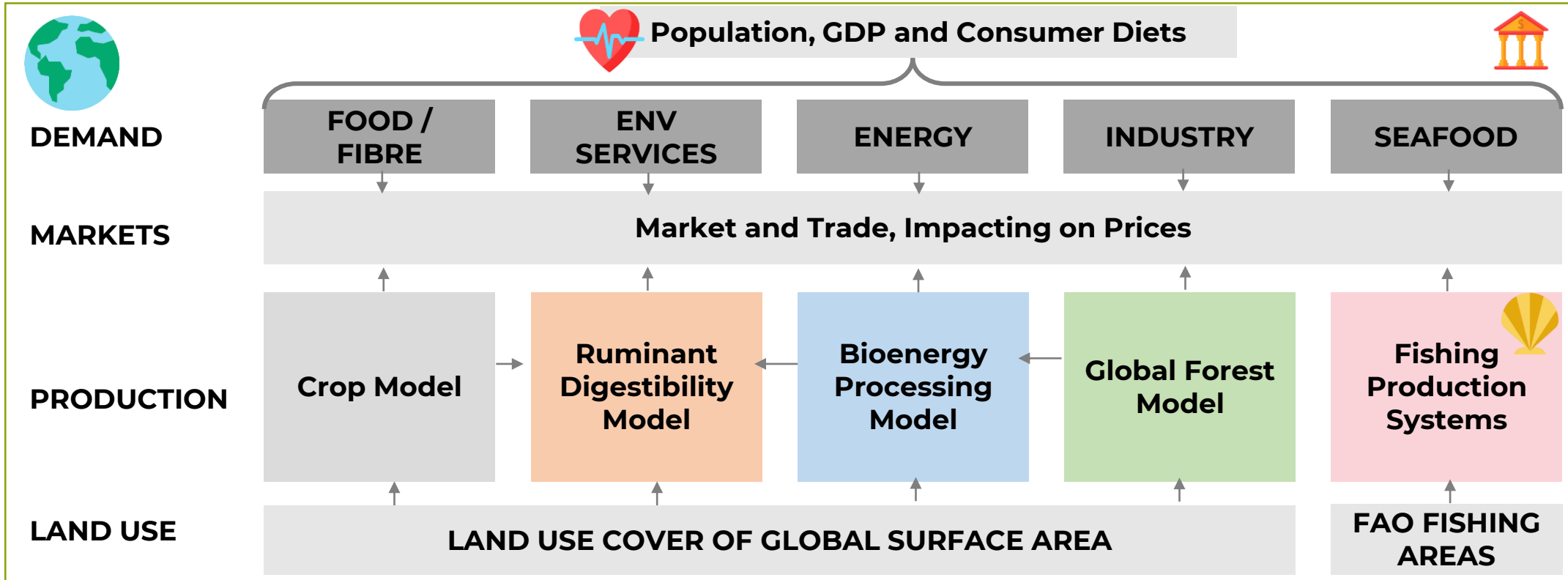
Facilitating trade in all its forms increases efficiency and resilience of the global food and land use systems.

Trade can help countries access a greater variety of foods, and comparative advantage helps make food cheaper.

But trade flows can also magnify environmental costs, with countries failing to price their natural capital properly, and can expand access to unhealthy, ultra-processed food.

Reality

THE FOLU MODELLING STORY - GLOBIOM : An integrated scenarios model



Other modelling inputs:

University of Washington: Global Burden of Disease

- Population inputs

University of Santa Barbara: emLAB

- Potential for ocean proteins

Shockwaves Model

- Income distribution and skilled employment in urban / rural sectors.

Source: Food and Land Use Coalition, 2019

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Outcomes of the “Better Futures” scenario

Better environment.

Food and land use systems are net carbon-neutral, contributing up to one-third of the mitigation needed to stay within 1.5°C; biodiversity loss halted; ocean fish stocks restored; 80% reduction in food and land use system air pollution.

Better health.

Eliminate under-nutrition and halve the disease burden associated with consuming too many calories and unhealthy food.

Inclusive development.

Boost income growth for the bottom 20% of the rural population, increase yields of low-productivity smallholders, create over 120 million extra decent rural jobs and contribute to a more secure future for indigenous and local communities across the world.

Food security.

Increase food security significantly by helping to stabilise or even lower real food prices, to supply enough food of the right quality and quantity and to improve access for the poorest and most vulnerable.

Source: Food and Land Use Coalition, 2019

2050: CURRENT TRENDS scenario

Deforestation

Deforestation continues at a rate of 6.7 million hectares (Ha) per year

6.7 mHa/yr

Agricultural land

The area of land dedicated to agriculture increases by 400 million Ha (12% of area today)

400 mHa

Restored natural land

225 million Ha are restored to natural ecosystems since 2010.

225 mHa

Biodiversity

Biodiversity loss continues to decline at a rate similar to the last 40 years.

-3.2% loss

Food and land use emissions

Emissions account for 12-13 $GtCO_2e$ putting a 1.5 degree future pathway out of reach.

12-13 $GtCO_2e$/yr

Food insecurity (2030)

By 2030 the number of food insecure people globally is 475 million.

475 million

Death due to high Body Mass Index

10.1 million people die prematurely each year due to high body mass index (BMI)

10.1 million

Ocean food economy

Wild catch declines by 15% due to overfishing leading to continued decay of global fish stocks

15% decline

2050: BETTER FUTURES scenario

Deforestation

Deforestation reduces to a rate of 0.2 million hectares (Ha) per year

0.2 mHa/yr

Agricultural land

The area of land dedicated to agriculture decreases by 1200 million Ha (37% of area today)

1200 mHa

Restored natural land

1300 million Ha are restored to natural ecosystems since 2010.

1300 mHa

Biodiversity

Biodiversity recovers by 0.2% compared to 2010.

o.2% recovery

Food and land use emissions

Emissions from food and land use systems reduce to net zero.

Net Zero

Food insecurity (2030)

Enough food is produced to completely eliminate food insecurity.

Sufficient Production

Death due to high Body Mass Index

5.6 million people die prematurely each year due to high BMI – 50% compared to current trends

5.6 million

Ocean food economy

Wild catch improves by 24%as all fisheries are managed within maximum sustainable yield.

24% increase

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Ten critical transitions

Economic Prize

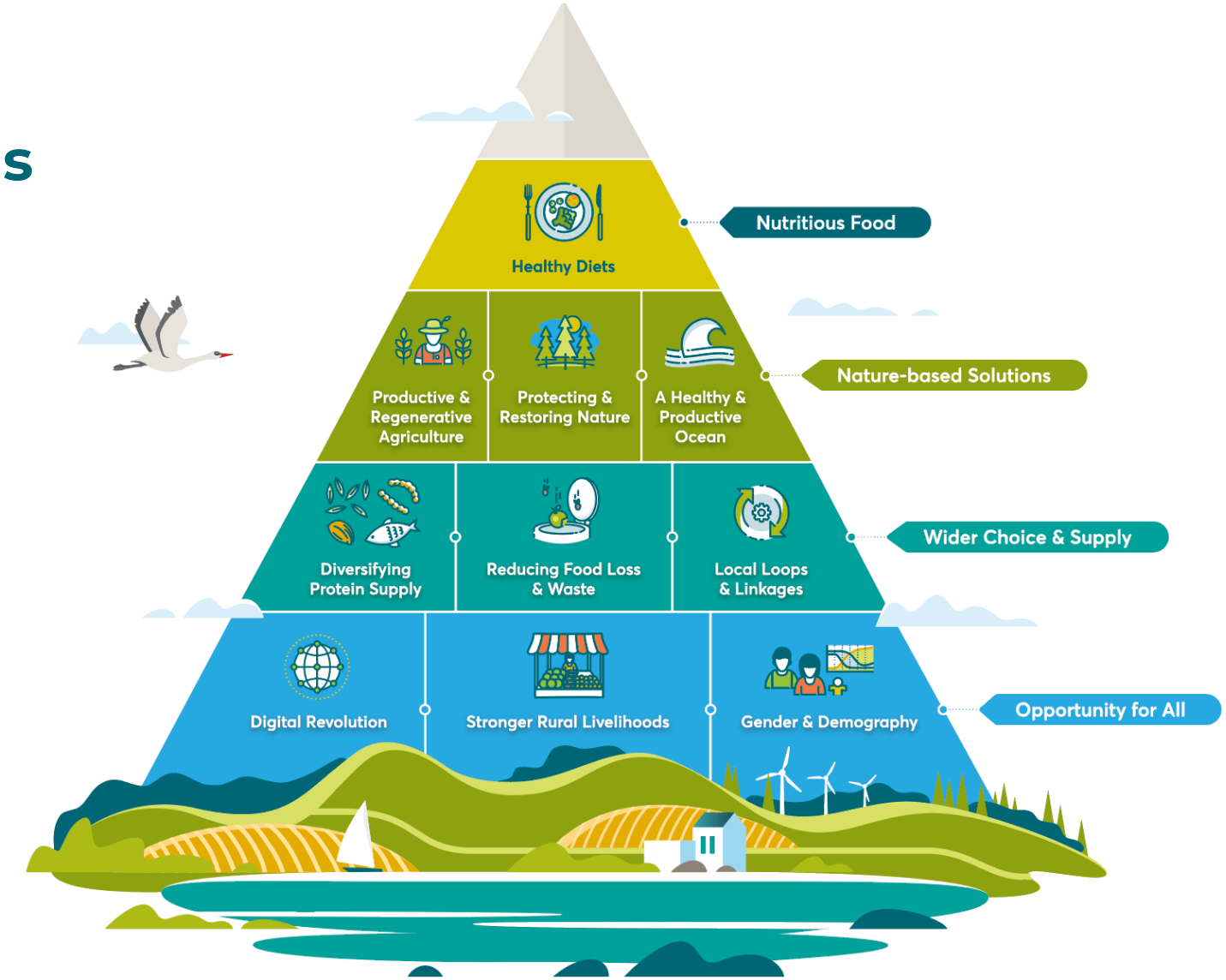
$5.7 trillion economic prize by 2030 and $10.5 by 2050 based on avoided hidden costs

Investment Requirements

$300-$350 billion required each year for the transformation of food and land use systems to 2030

Business Opportunity

$4.5 trillion annual opportunity for businesses associated with the ten critical transitions by 2030



Source: Food and Land Use Coalition, 2019

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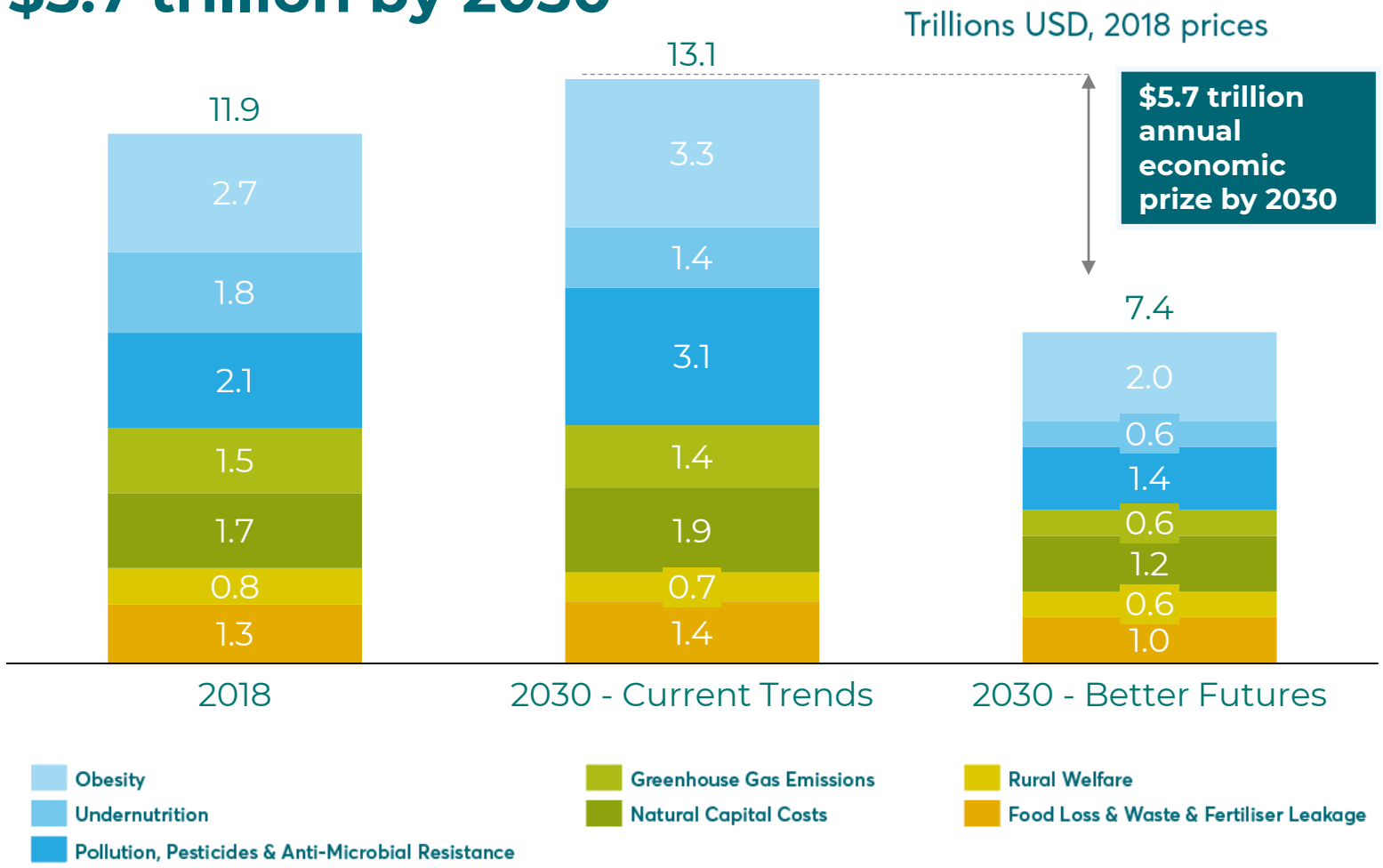
Economic prize of $5.7 trillion by 2030

The Better Futures scenario reduces hidden costs by **$5.7 trillion** by 2030 and **$10.5 trillion** by 2050.



Source: Food and Land Use Coalition, 2019

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Growing Better Report Overview

Ten Critical Transitions

What This Means For...

Recommendations for Different Actors

Ten critical transitions for a better future

Annual additional investment requirements to 2030

Economic prize by 2030

Business opportunity by 2030

Healthy Diets

Global diets need to converge towards local variations of the "human and planetary health diet" – a predominantly plant-based diet which includes more protective foods, a diverse protein supply, and reduced consumption of sugar, salt and highly processed foods. As a result, consumers will enjoy a broader range of high-quality, nutritious and affordable foods.

$1.28 trillion;

$30 billion;

$2 trillion;

Productive & Regenerative Agriculture

Agricultural systems that are both productive and regenerative will combine traditional techniques, such as crop rotation, controlled livestock grazing systems and agroforestry, with advanced precision farming technologies which support more judicious use of inputs including land, water and synthetic and bio-based fertilisers and pesticides.

$1.17 trillion;

$35-40 billion;

$530 billion;

Protecting & Restoring Nature

Nature must be protected and restored. This requires an end to the conversion of forests and other natural ecosystems and massive investment in restoration at scale; approximately 300 million hectares of tropical forests need to be put into restoration by 2030.

$895 billion;

$45-65 billion;

$200 billion;

A Healthy and Productive Ocean

Sustainable fishing and aquaculture can deliver increased supply of ocean proteins, reducing demand for land and supporting healthier, and more diverse diets. This is only possible if essential habitats - estuaries, wetlands, mangrove forests and coral reefs – are protected and restored and if nutrient and plastic pollution are curbed.

$350 billion;

$10 billion;

$345 billion;

Diversifying Protein Supply

Rapid development of diversified sources of protein would complement the global transition to healthy diets. Diversification of human protein supply through plant-based, insect-based and laboratory-cultured meat alone could account for up to 10% of the global protein market by 2030 and are expected to scale rapidly.

$240 billion;

$15-25 billion;

$240 billion;

Ten critical transitions for a better future

Annual additional investment requirements to 2030

Economic prize by 2030

Business opportunity by 2030

Reducing Food Loss & Waste

Approximately one third of food produced is lost or wasted. To produce this food that is never eaten by people requires an agricultural area almost the size of the United States. Reducing food loss and waste by just 25% would therefore lead to significant benefits relating to environmental, health, inclusion and food security.

$455 billion;

$30 billion;

$255 billion;

Local Loops & Linkages

With 80% of food projected to be consumed in cities by 2050, what urban dwellers choose to eat and how their needs are supplied will largely shape food and land use systems. This transition sets out the opportunity to strengthen and scale efficient and sustainable local food economies in towns and cities.

$240 billion;

$10 billion;

$215 billion;

Harnessing the Digital Revolution

Digitisation of food and land use systems is occurring through gene-editing techniques, precision farming, and logistics and digital marketing tools, enabling producers and consumers to make better, more informed choices, and to connect to the value chain rapidly and efficiently.

$540 billion;

$15 billion;

$240 billion;

Stronger Rural Livelihoods

Underlying all ten critical transitions is a vision of rural areas transformed into places of hope and opportunity, where thriving communities can adapt to new challenges, protect and regenerate natural capital and invest in a better future. Ensuring a just transition.

$300 billion;

$95-110 billion;

$440 billion;

Gender & Demography

Making sure women have equal access to resources, such as land, labour, water and credit, should be central to policies concerning the ten critical transitions, including by accelerating the demographic transition to a replacement rate of fertility in all countries.

$195 billion;

$15 billion;

n/a

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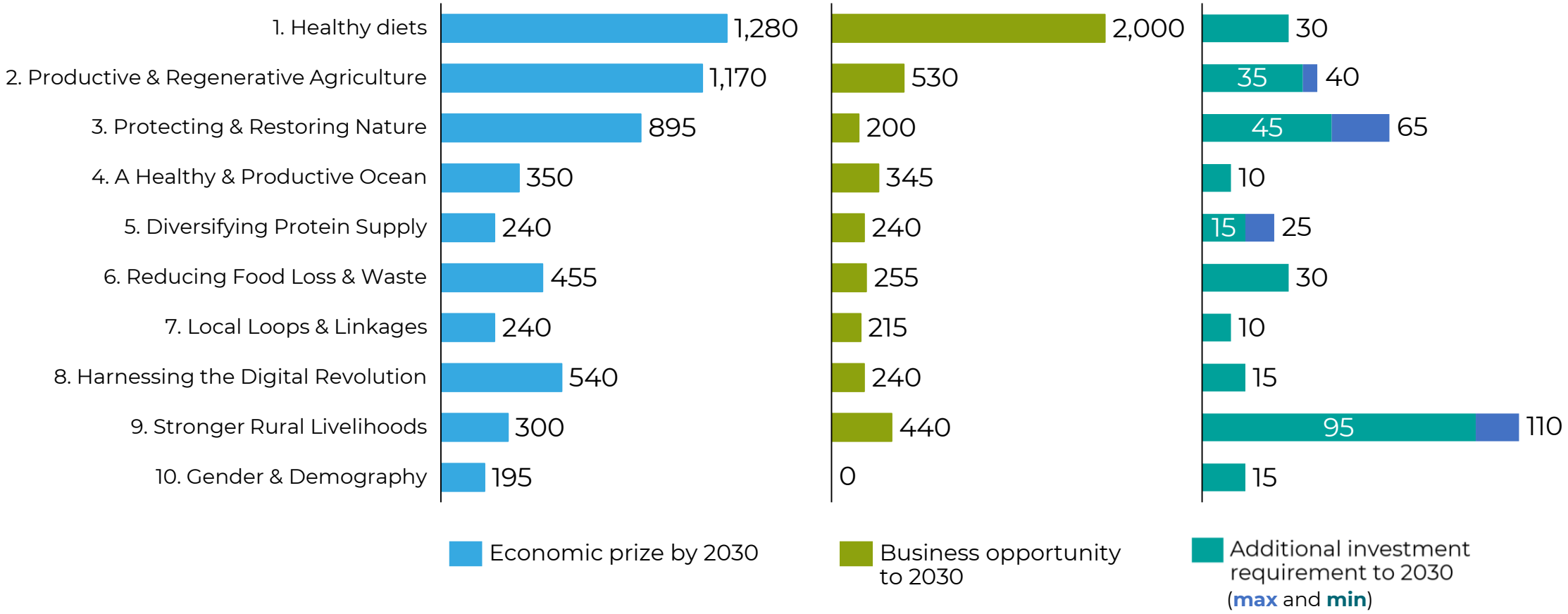
Ten critical transitions

Economic prize, business opportunity and investment requirements (USD billions)



Source: Food and Land Use Coalition, 2019

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Key recommendations (1)

Cross-cutting

- **Governments:** put a price on carbon & repurpose agricultural subsidies
- **Business:** organise pre-competitively to support positive government reform agendas
- **Finance:** establish a TCFD for nature
- **Civil society:** drive information campaigns for food and land use reform and campaigns against serial offenders

1. Promoting healthy diets

Government: Establish and promote planetary and human health dietary standards through repurposed agricultural subsidies, targeted public food procurement, taxes and regulations on unhealthy food.

Finance & Business: Redesign product portfolios based on the human and planetary health diet

2. Scaling productive & regenerative agriculture

Government: Scale up payments for ecosystem services (soil carbon/health and agrobiodiversity) plus improve extension services (training and access to technology, seeds, etc.).

Business: Deploy innovative finance to reach currently underfinanced parts of supply chains.

3. Protecting & restoring nature

Government: Put in place & enforce a moratorium on the conversion of natural ecosystems, & give legal rights & recognition to the territories of indigenous peoples.

Government: Scale REDD+ to $50 billion per year by 2030 if results delivered and establish a Global Alliance Against Environmental Crime.

4. Securing a healthy & productive ocean

Government: Protect breeding grounds, end both illegal fishing and overfishing, and provide title/ access rights to artisanal fishers.

Government & Finance: Develop new approaches and business models for insurance against catastrophic events affecting fisheries and for compensating poor fishermen for the cost of fish stock recovery.

5. Diversifying protein supply

Government: Increase R&D spending in alternative proteins, ensuring resulting IP remains in the public domain.

Finance & Business: Prepare for disruption of the food industry by strengthening risk analysis and reallocating capital in line with the results if need be.

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Key recommendations (2)

6. Reducing food loss & waste

Government & Civil Society: Leverage behavioural science to design grassroots campaigns to make wasting food as unacceptable as littering has become in many countries.

Finance: Finance income-sensitive, climate-smart storage technologies.

7. Building local loops and linkages

Government: City governments to foster local circular food economy through targeted public procurement and zoning.

Finance: Invest in emerging technologies and innovations which will close the food system loop.

8. Harnessing the digital revolution

Government: Open access to public sector data (e.g. national land registries, fisheries, etc.) and regulate and incentivise the private sector to provide open source data where appropriate.

Civil society: Create, maintain and communicate results from real-time platforms for transparency.

9. Strengthening rural livelihoods

Government: Safety nets for individuals and stranded communities to ensure a just transition.

All: Scale up rural roads and digital investments to drive productivity, end rural isolation, and, in particular, initiate a global campaign for renewable electricity access for all.

10. Gender equality & the demographic transition

Government: Increase access to education for girls, and improve access to finance and agricultural advisory services for female agricultural workers.

Health: Invest in maternal and child health and ensure access to reproductive health services and products.

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Critical transition 1: promoting healthy diets

Global diets need to converge towards local variations of the “human and planetary health diet” – a predominantly plant-based diet which includes more protective foods, a diverse protein supply, and reduced consumption of sugar, salt and highly processed foods.

As a result, consumers will enjoy a broader range of high-quality, nutritious and affordable foods.

Economic prize by 2030	**$1.28 trillion**
Annual additional investment requirement to 2030	**$30 billion**
Business opportunity to 2030	**$2 trillion**

Source: Food and Land Use Coalition, 2019

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Critical transition 1: promoting healthy diets

Human and planetary health diet

A flexible diet to tackle malnutrition in all its forms whilst keeping within planetary boundaries, and mouldable to different agricultural systems, cultural traditions, and nutritional needs.

- Predominantly **plant-based.**
- Limited unhealthy food consumption.
- **Moderate red meat consumption**: a reduction in settings currently consuming beyond their fair share; an increase where consumption is below dietary recommendations.

Barriers

- Incoherence across policies, guidelines and public investment decisions.
- Supply chains are geared towards the production of high-quantity, affordable foods that are of low nutritional value and based on limited number of crops.
- Consumer behaviour: factors such as convenience, cultural preference and affordability are important to consumers and differ from one country and region to the next.

Source: Food and Land Use Coalition, 2019

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Critical transition 1: promoting healthy diets

Examples of innovation

- **Africa Improved Foods (AIF)** is a public-private partnership in Rwanda producing nutritious fortified food products aimed at children and pregnant women.
- GAIN's **Nutritious Food Financing Facility (N3F)** aims to catalyse private sector financing to accelerate the expansion of locally produced nutritious foods in Africa and Asia.
- **Chile's sugar tax**: a levy of up to 18% on sugar-sweetened drinks introduced in 2014 caused purchases to fall by 22%.

Essential actions

Establish and promote planetary and human health dietary standards through repurposed agricultural subsidies, targeted public food procurement, taxes and regulations on unhealthy food.

Redesign product portfolios based on the human and planetary health diet.

Source: Food and Land Use Coalition, 2019

 Government  Business & Farmers

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Critical transition 2: scaling productive & regenerative agriculture

Agricultural systems that are both productive and regenerative will combine traditional techniques, such as crop rotation, controlled livestock grazing systems and agroforestry, with advanced precision farming technologies which support more judicious use of inputs including land, water and synthetic and bio-based fertilisers and pesticides.

Economic prize by 2030	**$1.7 trillion**
Annual additional investment requirement to 2030	**$35-40 billion**
Business opportunity to 2030	**$530 billion**

Source: Food and Land Use Coalition, 2019

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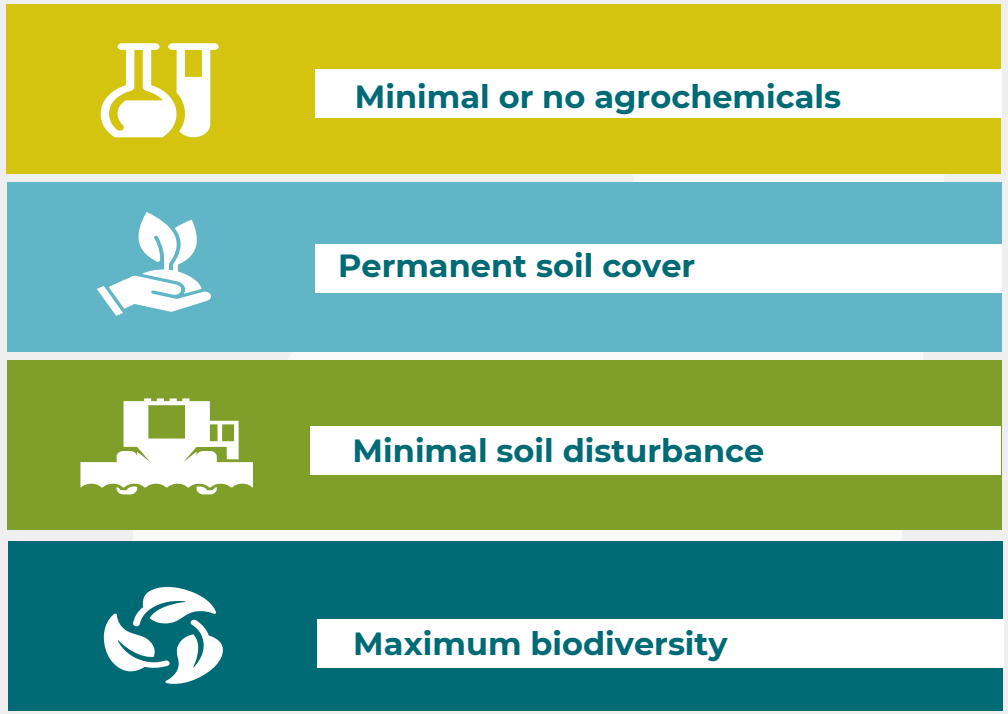
Critical transition 2: scaling productive & regenerative agriculture

5 Principles of Regenerative Agriculture



Barriers

- Subsidies currently tend to favour more input-intensive agriculture.
- Farmers face a transition risk and hold belief that shifting to regenerative practices means reducing yields.
- Insufficient R&D in new biological inputs, and lack of knowledge sharing across the pilots and experiments taking place.
- Big business is not prioritising regenerative agriculture.

Source: Food and Land Use Coalition, 2019

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Critical transition 2: scaling productive & regenerative agriculture

Examples of innovation

- **Better Cotton Initiative** provides training in sustainable, regenerative farming practices to more than 2 million farmers in 21 countries.
- **One Planet Business for Biodiversity (OP2B)** is a business-led coalition aimed at contributing to the agenda of the UN Convention on Biological Diversity.
- **Danone, the Danone Ecosystem Fund and ICRAF** work with public authorities in Pasuruan, Indonesia, to invest in land management to improve water quality and quantity.

Essential actions

Scale up payments for ecosystem services (soil carbon/health and agrobiodiversity) plus improve extension services (training and access to technology, seeds, etc.).

Shift procurement from buying commodities to investing in sustainable supply chains.

Deploy innovative finance to reach currently underfinanced parts of supply chains.

Source: Food and Land Use Coalition, 2019

 Government  Business & Farmers  Finance

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Critical transition 3: protecting & restoring nature

Nature must be protected and restored. This requires an end to the conversion of forests and other natural ecosystems and massive investment in restoration at scale; approximately 300 million hectares of tropical forests need to be put into restoration by 2030.

Economic prize by 2030	**$895 billion**
Annual additional investment requirement to 2030	**$45-65 billion**
Business opportunity to 2030	**$200 billion**

Source: Food and Land Use Coalition, 2019

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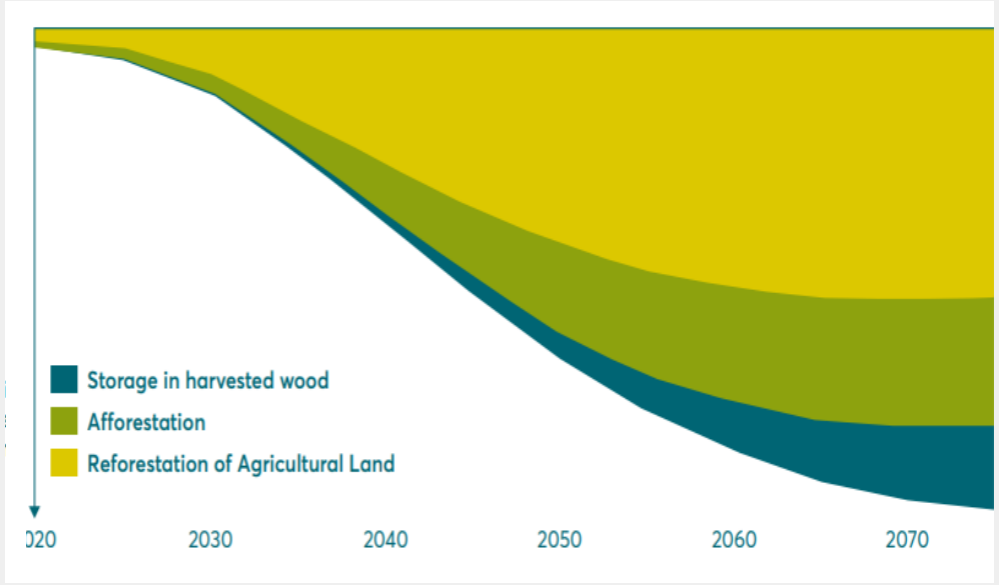
Critical transition 3: protecting & restoring nature

Carbon sequestration potential of forested land

Sequestrated carbon (negative emissions)



Barriers

- Many governments lack the capacity or the political will to establish and then enforce clear regulatory frameworks for forests and nature.
- Trade in illegal forest products not considered as a priority by international law enforcement agencies.
- Marginal legal recognition of indigenous ownership of land.
- Consumers have so far not been willing to pay more for sustainable ‘deforestation free’ food.

Source: Food and Land Use Coalition, 2019

The Food and Land Use Coalition

Critical transition 3: protecting & restoring nature

Examples of innovation

- **DETER**, an advanced monitoring system, coupled with robust enforcement on the ground, has been credited with reductions in Amazon deforestation after 2005.
- **Global Forest Watch** is an open access online platform that provides data and tools for monitoring forests, updated in real time.
- **Partnerships for Forests (P4F)**, incubates innovative business models that create shared value from protecting forests rather than degrading them.

Essential actions

Put in place and enforce a moratorium on the conversion of natural ecosystems, and give legal rights and recognition to the territories of indigenous peoples.

Scale REDD+ to $50 billion per year by 2030 if results delivered and establish a Global Alliance Against Environmental Crime.

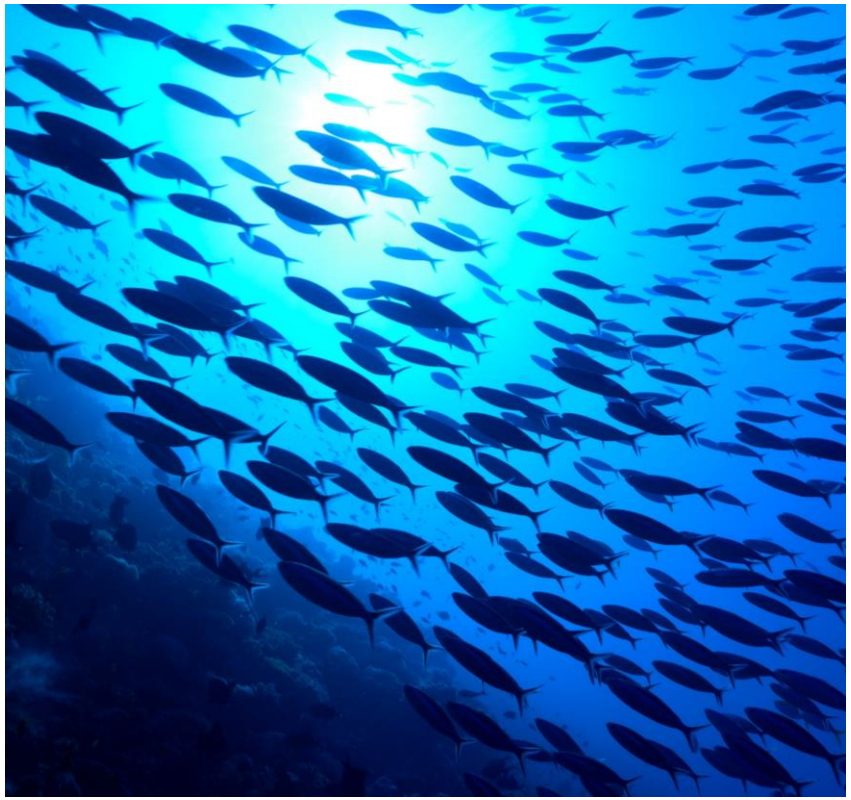
Establish transparent and deforestation-free supply chains and demand the same of suppliers.

Source: Food and Land Use Coalition, 2019

 Government  Business & Farmers

The Food and Land Use Coalition

Critical transition 4: securing a productive & healthy ocean



Sustainable fishing and aquaculture can deliver increased supply of ocean proteins, reducing demand for land and supporting healthier, and more diverse diets. This is only possible if essential habitats - estuaries, wetlands, mangrove forests and coral reefs – are protected and restored and if nutrient and plastic pollution are curbed.

Economic prize by 2030	**$350 billion**
Annual additional investment requirement to 2030	**$10 billion**
Business opportunity to 2030	**$345 billion**

Source: Food and Land Use Coalition, 2019

The Food and Land Use Coalition

Critical transition 4: securing a productive & healthy ocean

De-coupling aquaculture from fish meal and fish oil feed inputs could see significant increases in production.

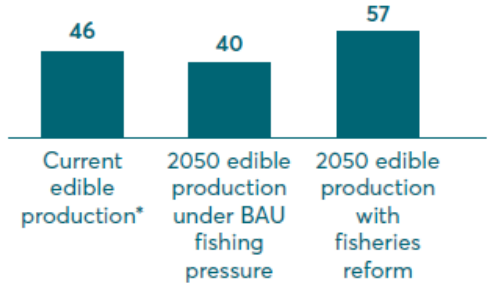
Bi-valves alone have a biological production potential at current prices which could meet requirements under the human and planetary health diet.

Meeting global seafood production goals means recognising the mariculture potential

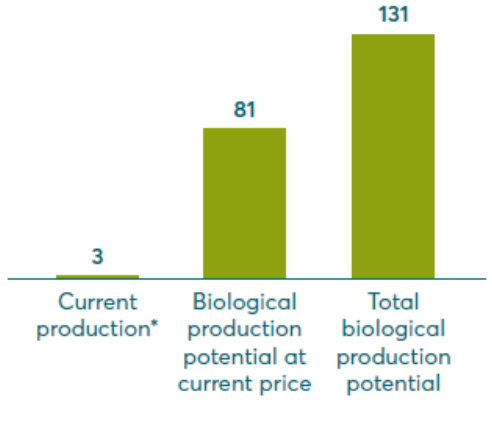
Million metric tonnes (MMT) edible weight

Comparing current production to maximum biological production potential

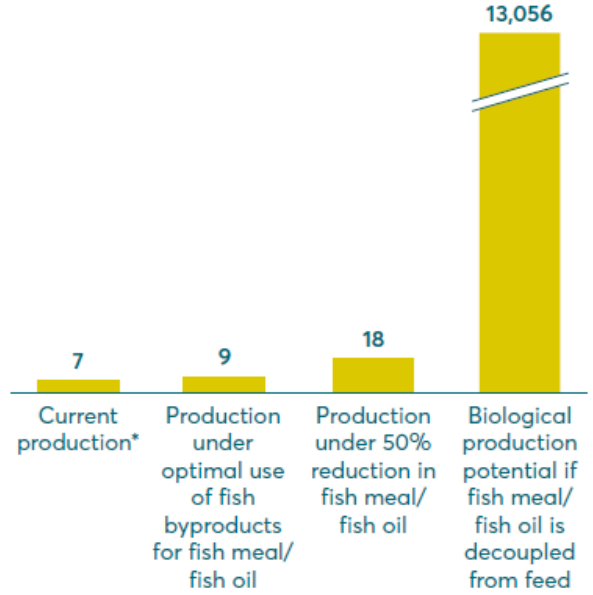
Wild capture potential
– comparatively small upside production



Bivalve mariculture potential
– untapped "environmental super protein"**



Finfish mariculture potential
– decoupling FM/FO from feed is key**



*** 2016 production, FAO (2018), SOFIA; scaled to edible meat**

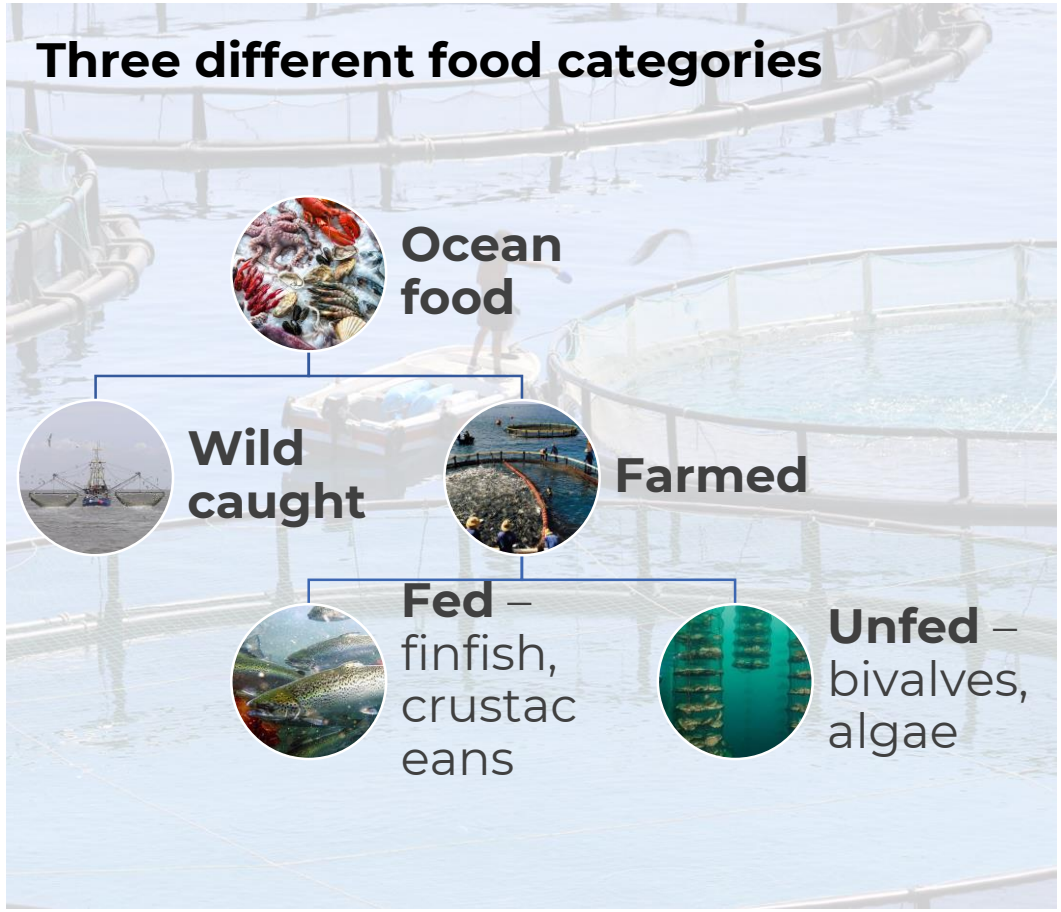
**** Values are at current price of $1,296 per ton for wild capture, $1,700 per ton for bivalves, $7,000 per ton for finfish**

† Approximate range – assumes same live to edible weight conversion ratios.

Source: Estimating the Ocean's True Potential for Feeding the Planet, emLab, University of California, Santa Barbara, 2019

The Food and Land Use Coalition

Critical transition 4: securing a productive & healthy ocean



Barriers

- Lack of demand for ecologically benign products such as molluscs.
- Current protection measures for estuaries, wetlands, mangroves and coral reefs are insufficient.
- Lack of data makes fair establishment – and policing – of fishing rights a challenge.
- Current subsidy allocation is harmful, making fishing in excess of maximum sustainable yield profitable.

Source: Food and Land Use Coalition, 2019

The Food and Land Use Coalition

Critical transition 4: securing a productive & healthy ocean

Examples of innovation

- **Evonik and DSM** have collaborated to create Veramaris: the first viable alternative to fish oil in fish feed. One metric tonne of Veramaris algal oil saves 60 MT of wild-caught fish.

Essential actions

Wild caught fisheries

- Providing titles and access rights.
- Packaging new technologies into fishery solutions.
- Innovating in insurance and finance.
- Eliminating harmful subsidies.

Marine aquaculture

- Rewriting the rules.
- Increasing investments.
- Making the case for fish to consumers.

Source: Food and Land Use Coalition, 2019

The Food and Land Use Coalition

Critical transition 5: diversifying protein supply

Rapid development of diversified sources of protein would complement the global transition to healthy diets. Diversification of human protein supply falls into four main categories: aquatic, plant-based, insect-based and laboratory-cultured. These last three sources alone could account for up to 10% of the global protein market by 2030 and are expected to scale rapidly.

Economic prize by 2030	**$240 billion**
Annual additional investment requirement to 2030	**$15-25 billion**
Business opportunity to 2030	**$240 billion**

Source: Food and Land Use Coalition, 2019

The Food and Land Use Coalition

Critical transition 5: diversifying protein supply

The future of protein

"By 2030, demand for cow products will have fallen by 70% … the U.S. cattle industry will be effectively bankrupt. Other livestock markets will follow a similar trajectory"

Rethinkx, 2019

Barriers

- Some new products would need the equivalent of U.S. FDA approval in key markets.
- Critical know-how, once discovered, will become private intellectual property patented by big-food.
- Consumer preconceptions of/reluctance to embrace 'alternative' products.
- Resistance from the meat industry: risk of stranded assets.

Source: Food and Land Use Coalition, 2019

The Food and Land Use Coalition

Critical transition 5: diversifying protein supply

Examples of innovation

- **Beyond Meat** offers mass-market solutions to replace animal protein with plant protein.
- **Impossible Foods** creates 'meaty' plant-based burgers by extracting heme from soybean plants. Their Impossible burger is now available at Burger King outlets nationwide in the US, marketed as the 'Impossible Whopper'.
- **Protix** breeds insects – 'nature's most powerful upcyclers' – fed on low-grade food waste to produce high-quality protein for animal-feed.

Essential actions

Use public procurement to secure long-term offtake for alternative protein sources.

Increase R&D spending in alternative proteins (especially those with large benefits for lower-income consumers), ensuring resulting IP remains in the public domain.

Prepare for disruption of the food industry by strengthening risk analysis and reallocating capital in line with the results if need be.

Source: Food and Land Use Coalition, 2019

Government Finance

The Food and Land Use Coalition

Critical transition 6: reducing food loss & waste (FLW)

Approximately one third of food produced is lost or wasted. To produce this food that is never eaten by people requires an agricultural area almost the size of the United States. Reducing food loss and waste by just 25% would therefore lead to significant benefits relating to environmental, health, inclusion and food security.

Economic prize by 2030	**$450 billion**
Annual additional investment requirement to 2030	**$30 billion**
Business opportunity to 2030	**$255 billion**

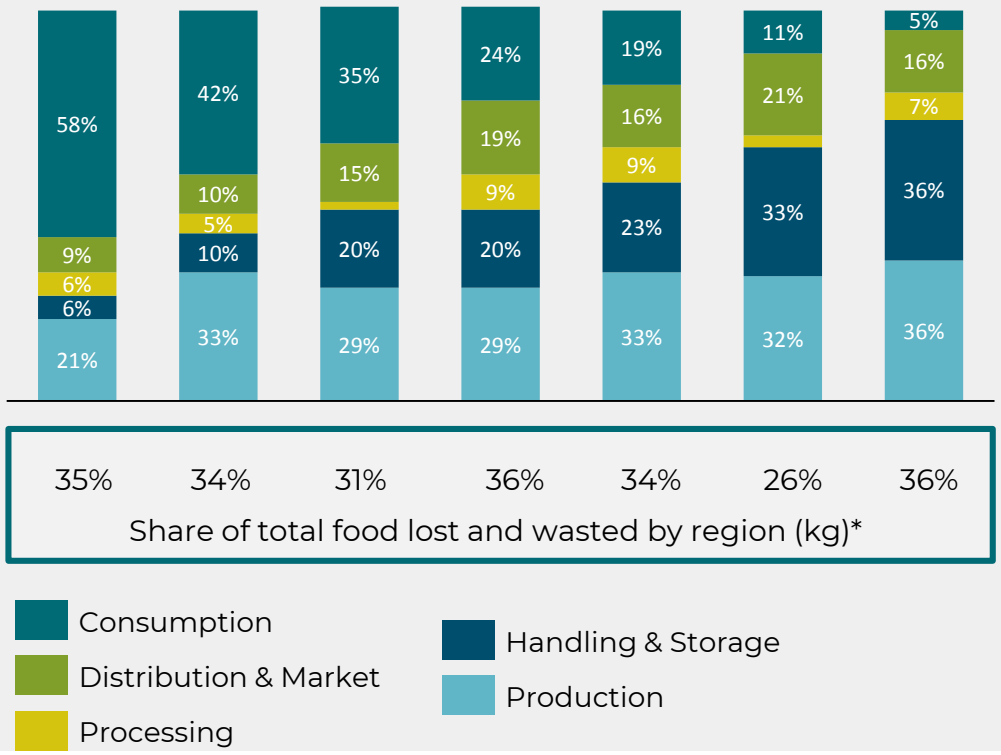
Source: Food and Land Use Coalition, 2019

The Food and Land Use Coalition

Critical transition 6: reducing food loss & waste (FLW)

Distribution of FLW by region

Share of tonnage per region



Barriers

- Lack of data on FLW.
- Limited infrastructure/schemes to make redistributing surplus food easier.
- Entrenched culture of excess where the costs of FLW are invisible to consumers.
- Policies e.g. on food safety, trade and customs, have the unintended consequence of encouraging FLW.
- Smart, cost-effective solutions are not getting sufficient finance to scale fast.

Source: Food and Land Use Coalition, 2019

The Food and Land Use Coalition

Critical transition 6: reducing food loss & waste (FLW)

Examples of innovation

- Public-private partnership in the UK: between 2007-2012, **the Courtauld Commitment** brought benefits of £6.6 billion, at an implementation cost of £26 million, a benefit-cost ration of 250 to 1.
- Tech start-up **Winnow** uses AI to guide chefs and catering businesses to adjust menus and portion sizes to minimize food waste. Users typically see food waste halve in 12 months.
- **One District, One Warehouse initiative in Ghana**: 50 warehouses will be built with capacity of 1,000 metric tonnes to provide storage for farmers' produce.

Essential actions

Regulate and incentivise companies to report on and reduce food loss and waste.

Finance income-sensitive, climate-smart storage technologies.

Leverage behavioural science to design grassroots campaigns to make wasting food as unacceptable as littering has become in many countries.

Source: Food and Land Use Coalition, 2019

 Government  Finance  Civil society

The Food and Land Use Coalition

Critical transition 7: building local loops & linkages

With 80% of food projected to be consumed in cities by 2050, what urban dwellers choose to eat and how their needs are supplied will largely shape food and land use systems. This transition sets out the opportunity to strengthen and scale efficient and sustainable local food economies in towns and cities.

Economic prize by 2030	**$240 billion**
Annual additional investment requirement to 2030	**$10 billion**
Business opportunity to 2030	**$215 billion**

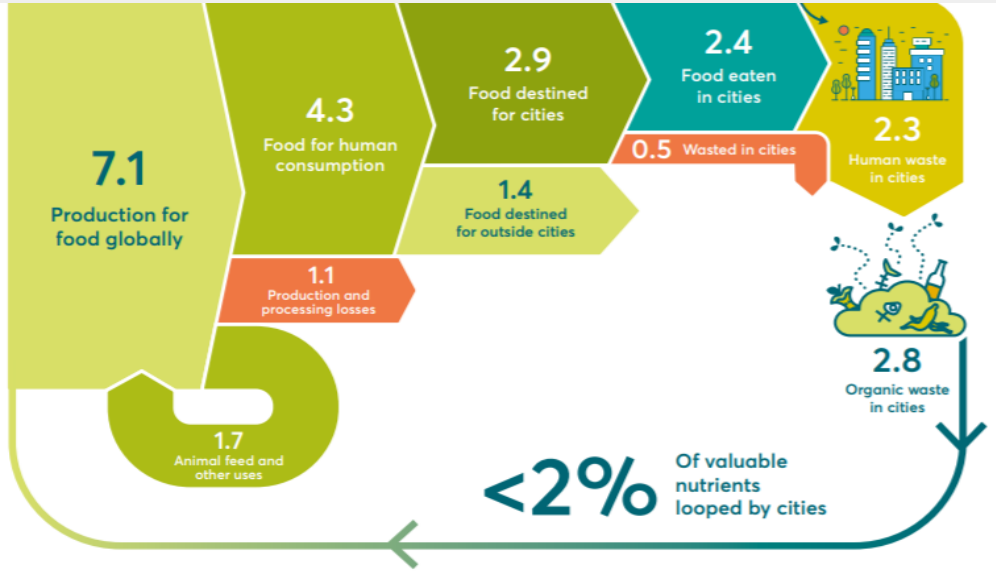
Source: Food and Land Use Coalition, 2019

The Food and Land Use Coalition

Critical transition 7: building local loops & linkages

Efficiency losses and food and land use

Billions of tonnes annually



Barriers

- Much food is produced to meet the standard specifications required for bulk transportation in long global value chains.
- Major retailers rarely have local sourcing strategies.
- Risk of contamination in urban organic waste.
- Public policies on issues from trade to public waste disposal promote standardisation, which small local suppliers' products are unlikely to meet.
- Competition for land surrounding cities.

Source: Food and Land Use Coalition, 2019

The Food and Land Use Coalition

Critical transition 7: building local loops & linkages

Examples of innovation

- **Twiga Foods** is connecting farmers to small and medium-sized vendors in Nairobi, giving urban consumers access to fresher products at more affordable prices.
- **AgriProtein** is using fly larvae fed on organic waste factories, supermarkets, farms and restaurants to create insect-based protein feed.
- **Fulcrum Bioenergy** has spent $100m over the past decade to develop technology which allows it to convert municipal solid waste, incl. food waste, into low-carbon transport fuels.

Essential actions

City governments to foster local circular food economy through targeted public procurement and zoning.

Invest in emerging technologies and innovations which will close the food system loop.

Develop recipes and products that replace traditional ingredients with food-processing by-products, ensuring valuable nutrients in by-products do not go to waste.

Source: Food and Land Use Coalition, 2019

 Government  Business & Farmers  Finance

The Food and Land Use Coalition

Critical transition 8: harnessing the digital revolution

Digitisation of food and land use systems is occurring through gene-editing techniques, precision farming, and logistics and digital marketing tools, enabling producers and consumers to make better, more informed choices, and to connect to the value chain rapidly and efficiently.

Economic prize by 2030	**$540 billion**
Annual additional investment requirement to 2030	**$15 billion**
Business opportunity to 2030	**$240 billion**

Source: Food and Land Use Coalition, 2019

The Food and Land Use Coalition

Critical transition 8: harnessing the digital revolution

A digital revolution for food & land use

Digital technology has the potential to be a powerful positive multiplier of the other transitions, catalysing change across the value chain. It can be used to:

- Monitor land use and deforestation
- Scale regenerative farming
- Connect farmers to markets
- Increase transparency

Barriers

- Concentrated market power in food value chains results in unequal access to information, and leaves little room for accountability.
- Many small farmers in the developing world cannot access or interpret data.

Source: Food and Land Use Coalition, 2019

The Food and Land Use Coalition

Critical transition 8: harnessing the digital revolution

Examples of innovation

- **The CocoaCloud project,** led by WBCSD and Outputs Insights BV, makes data, particularly weather-related, available to farmers to allow them to make data-driven agricultural management decisions.
- **BioCarbon Engineering** uses drone-enabled technology to plant seeds quickly and accurately. 2 operators with 10 drones can plant 400,000 trees a day.
- **Rwanda's** digital-based land registry system has identified owners and established an approved title for over 11 million parcels of land.

Essential actions

Open access to public sector data (e.g. on national land registries, fisheries, agriculture, soil health etc.) and regulate and incentivise the private sector to provide open source data where appropriate.

Create, maintain and communicate results from real-time platforms for transparency, as is currently done through Global Forest Watch.

Source: Food and Land Use Coalition, 2019

Government Civil society

The Food and Land Use Coalition

Critical transition 9: delivering stronger rural livelihoods

Underlying all ten critical transitions is a vision of rural areas transformed into places of hope and opportunity, where thriving communities can adapt to new challenges, protect and regenerate natural capital and invest in a better future. This means ensuring a just transition.

Economic prize by 2030	**$300 billion**
Annual additional investment requirement to 2030	**$95-110 billion**
Business opportunity to 2030	**$440 billion**

Source: Food and Land Use Coalition, 2019

The Food and Land Use Coalition

Critical transition 9: delivering stronger rural livelihoods

The benefits of stronger and more resilient rural livelihoods

Environment: They help to halt practices that contribute most to the degradation of nature

Health: They help prevent nutrient deficiencies and stunting

Inclusion: They diversify income sources and potentially reduce food import dependency

Food security: They support greater food security and address the growing inequalities found in rural and urban areas

Barriers

- Would-be entrepreneurs have poor access to finance, face high costs of capital and are often perceived as risky
- Farmers face high transportation costs and poor access to markets, limiting incomes
- Unequal distribution of power between agri-businesses and smallholder farmers means farmers get minimal share of the final value in food value chains

Source: Food and Land Use Coalition, 2019

The Food and Land Use Coalition

Critical transition 9: delivering stronger rural livelihoods

Examples of innovation

- **SunDazer** manufactures solar-powered fridges to provide portable cooling to reduce loss of produce, particularly milk, and increase farmers' incomes.
- **The Livelihoods Mount Project** in Kenya is a collaboration between Vi Agrofrestry NGO, the Livelihoods Carbon Fund and Brookside Dairy that trains farmers and links them to Brookside's supply chain
- **PepsiCo** has set up demonstration farms to work with local farmers to identify sustainable practices and share them through peer-to-peer learning

Essential actions

Safety nets for individuals and stranded communities to ensure a just transition

Establish public-private-philanthropic partnerships to train a new generation of young farmer entrepreneurs over the next decade

Scale up rural roads and digital investments to drive productivity, end rural isolation, and, in particular, initiate a global campaign for renewable electricity access for all

Source: Food and Land Use Coalition, 2019

 Government  Business & Farmers  Finance  Civil society

The Food and Land Use Coalition

Critical transition 10: promoting gender equality & accelerating the demographic transition

Women can be enormously powerful in shaping food and land use systems, thanks to their central role in agriculture and in decisions concerning nutrition, health and family planning. Making sure women have equal access to resources, such as land, labour, water and credit, should be central to policies concerning the ten critical transitions, including by accelerating the demographic transition to a replacement rate of fertility in all countries.

Economic prize by 2030	**$195 billion**
Annual additional investment requirement to 2030	**$15 billion**
Business opportunity to 2030	**n/a**

Source: Food and Land Use Coalition, 2019

It would be very hard to quantify the business opportunities specifically related to this critical transition, not least because differences across health systems across the world means that it is hard to generalise on public or private provision and modalities of delivery. One could even argue that access to reproductive and perinatal care falls into fulfilling basic needs, and as such it should not be considered a business opportunity at all.

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Critical transition 10: promoting gender equality & accelerating the demographic transition

Women make up **43% of the global agricultural workforce,** but female farmers receive only **10% of total aid** for agriculture, forestry and fishing and **5% of all agricultural extension services**

⬇

Ensuring women have equal opportunities to participate in and benefit from all Critical Transitions is therefore a prerequisite for the FOLU transformation

Barriers

- Women are generally poorly served by land and property ownership laws.
- Women farmers are particularly disadvantaged when it comes to access to finance.

Source: Food and Land Use Coalition, 2019

The Food and Land Use Coalition

Critical transition 10: promoting gender equality & accelerating the demographic transition

Examples of innovation

- **AACE Foods** is a company that processes, packages and distributes food grown in West Africa. It aims to train 2000 women micro-entrepreneurs by 2020.
- In **Rwanda,** improved access to family planning saw contraceptive use increase from 17% to 53% between 2005 and 2015. It aims to increase this to 82% by 2020.
- **AgDevCo's Smallholder Development Unit** provides up to $800k for smallholder out-grower schemes. By 2020, the fund aims to reach 500,000 farmers half of whom are women.

Essential actions

Invest in maternal and child health and nutrition as well as education for women and girls.

Ensure access to reproductive health services and products.

Increase access to education for girls, and improve access to finance and agricultural extension services for female agricultural workers.

Source: Food and Land Use Coalition, 2019

 Government  Business & Farmers  Finance  Civil society

The Food and Land Use Coalition

Agenda

Introduction to the Food and Land Use Coalition

Growing Better Report Overview

Ten Critical Transitions

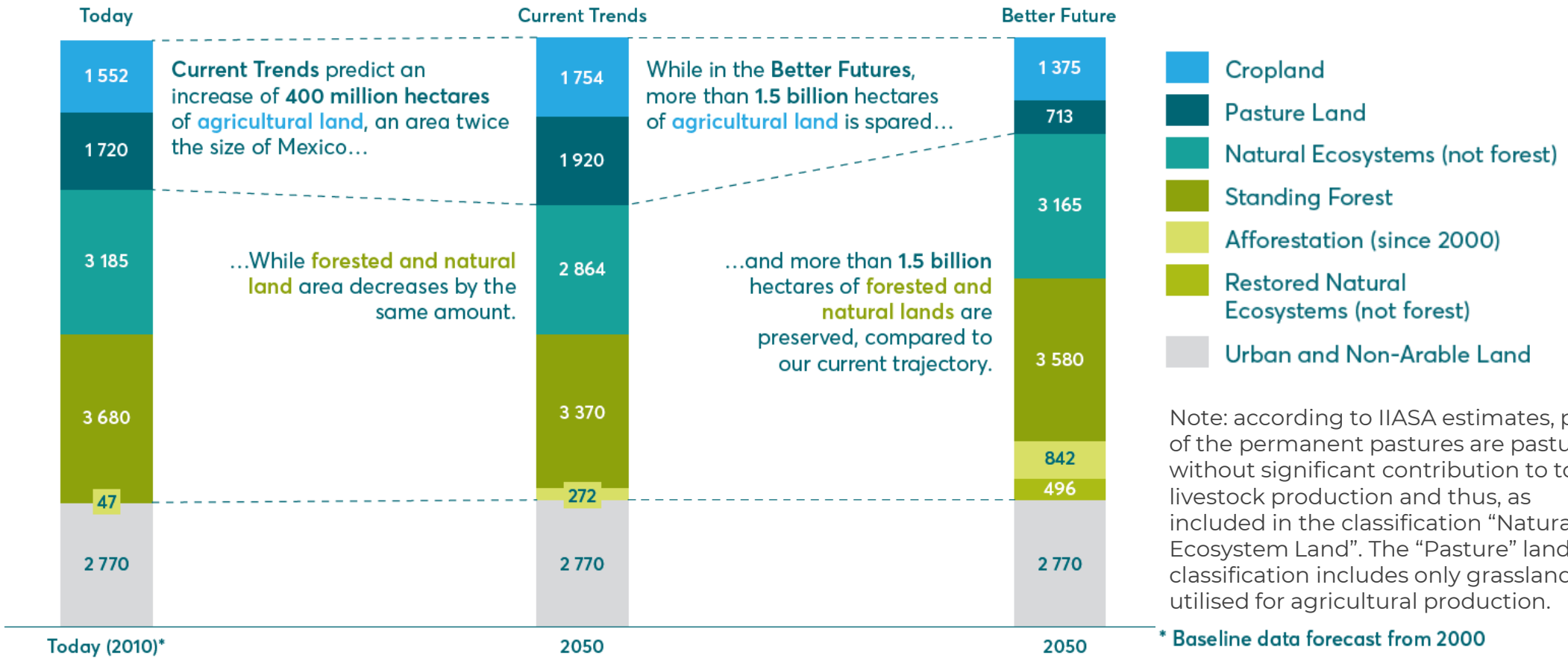
What This Means For...

Recommendations for Different Actors

The Food and Land Use Coalition

What does this mean for how we use land?

Total Surface Land Use: million hectares



Note: according to IIASA estimates, parts of the permanent pastures are pastures without significant contribution to total livestock production and thus, as included in the classification "Natural Ecosystem Land". The "Pasture" land use classification includes only grassland utilised for agricultural production.

* Baseline data forecast from 2000

Source: IIASA GLOBIOM 2019

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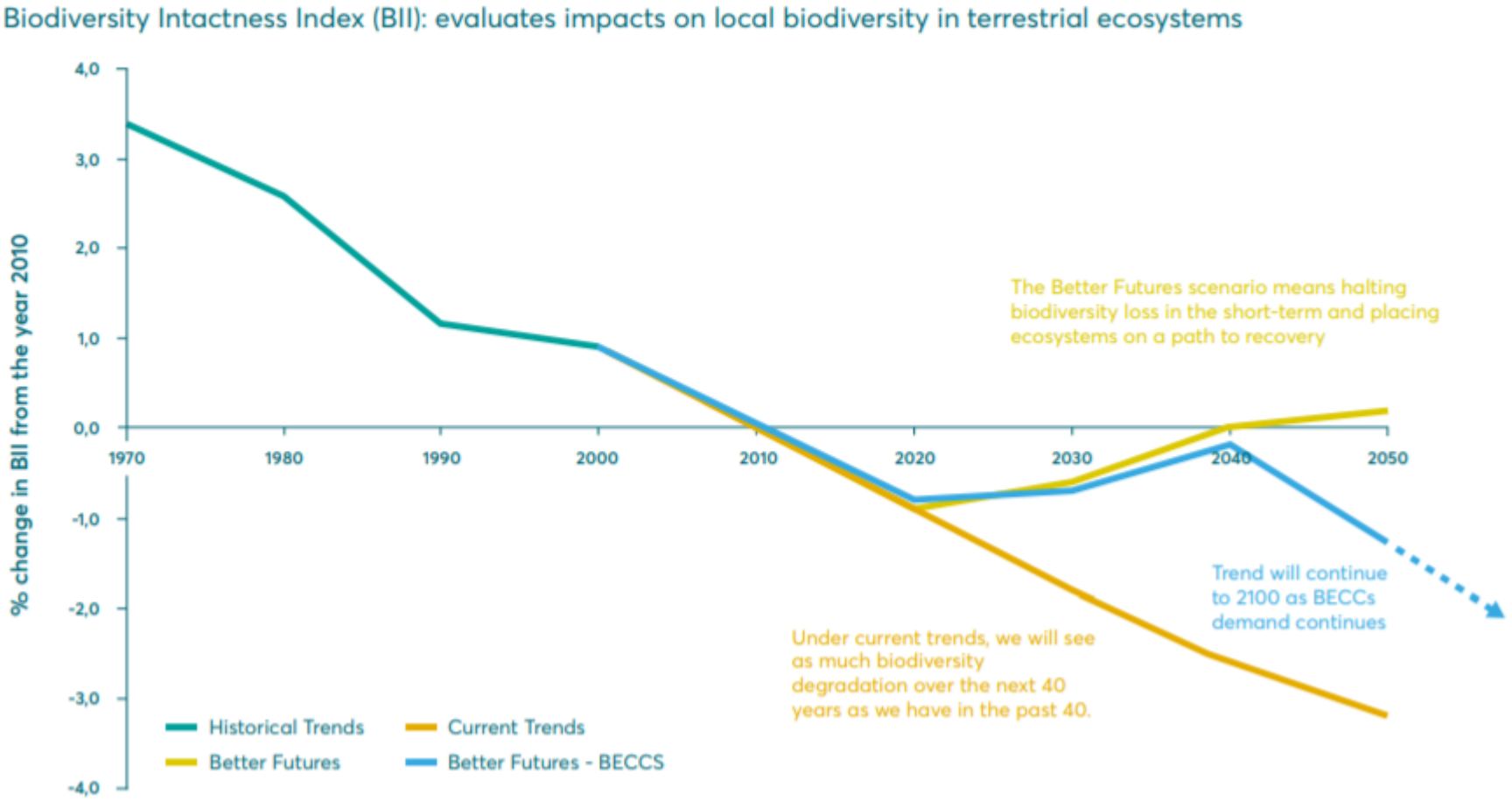
What does this mean for biodiversity?

In the Better Futures scenario, the Biodiversity Intactness Index (BII) would decrease by 1% between 2010 and 2020, which represents around one third of the losses experienced over the past 40 years.

It starts to recover after 2020, a sign of halting and reversal of biodiversity declines.



Source: IIASA GLOBIOM 2019, LeClere et al 2018

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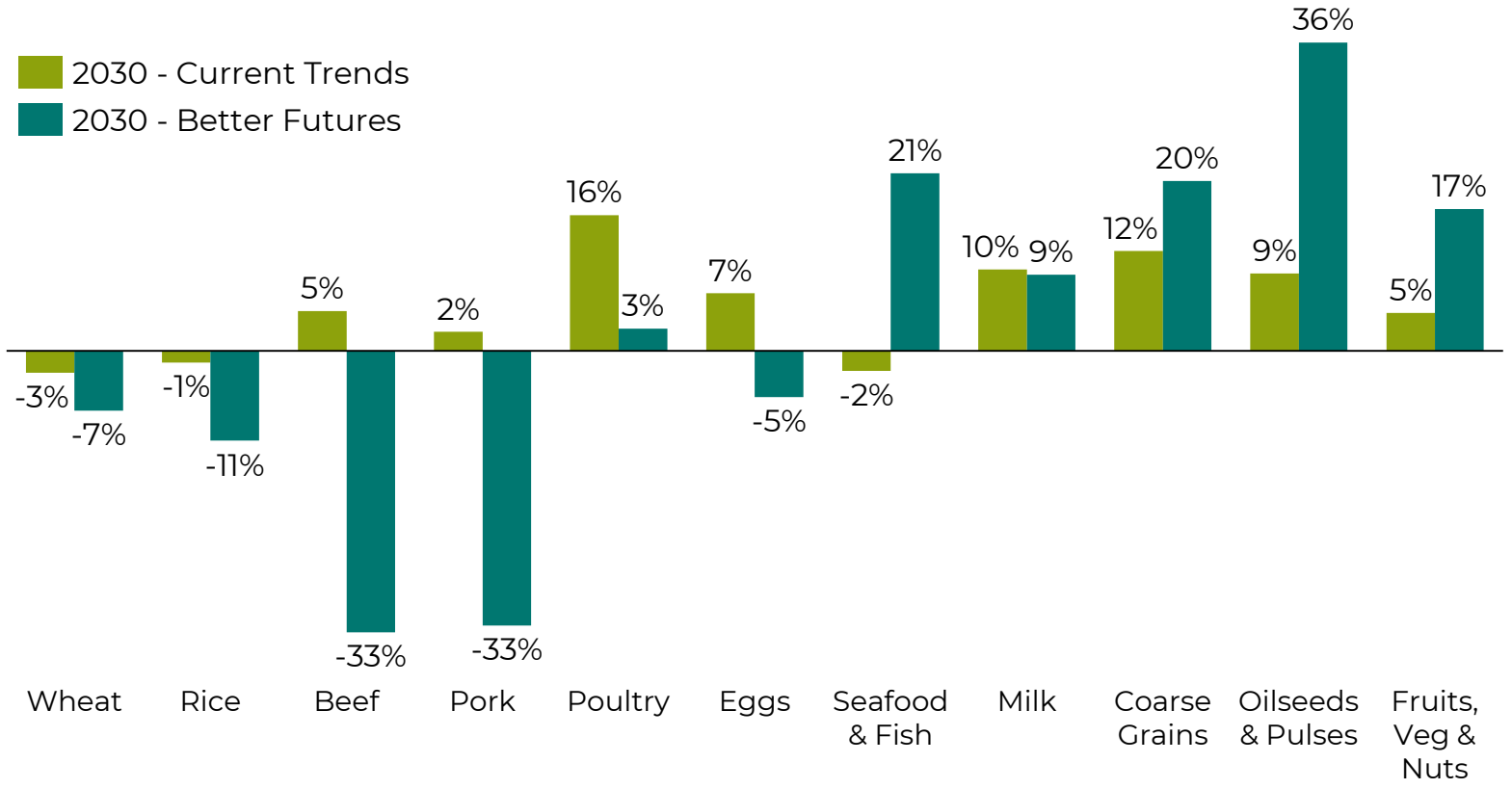
What does this mean for how we source protein?

Consumption throughout the world should converge towards the levels recommended in the human and planetary health diet.

Regions with higher meat consumption should reduce livestock-based protein intake by about two thirds, and poorer global regions (e.g. South Asia and sub-Saharan Africa) should increase consumption (by 6 and 25% on average respectively) compared to current trajectory.

Percentage Change in Protein Consumption by Source from Today to 2030 (grams of protein per capita)



Source: IIASA GLOBIOM 2019

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What does this mean for livestock?

Animal-based proteins can be highly nutritious, and well-managed livestock rearing can play a vital role in enhancing the resilience and health of the soil.

But total global consumption of land-grazing meat such as cattle and sheep should be gradually reduced.

Wealthier regions with higher meat consumption must reduce their livestock-based protein intake by about two thirds, whereas poorer global regions must be supported to diversify and improve their protein sources.

Where milk is an important source of protein and component of food security, such as in sub-Saharan Africa, improving livestock efficiency will greatly reduce the environmental impact of this need.

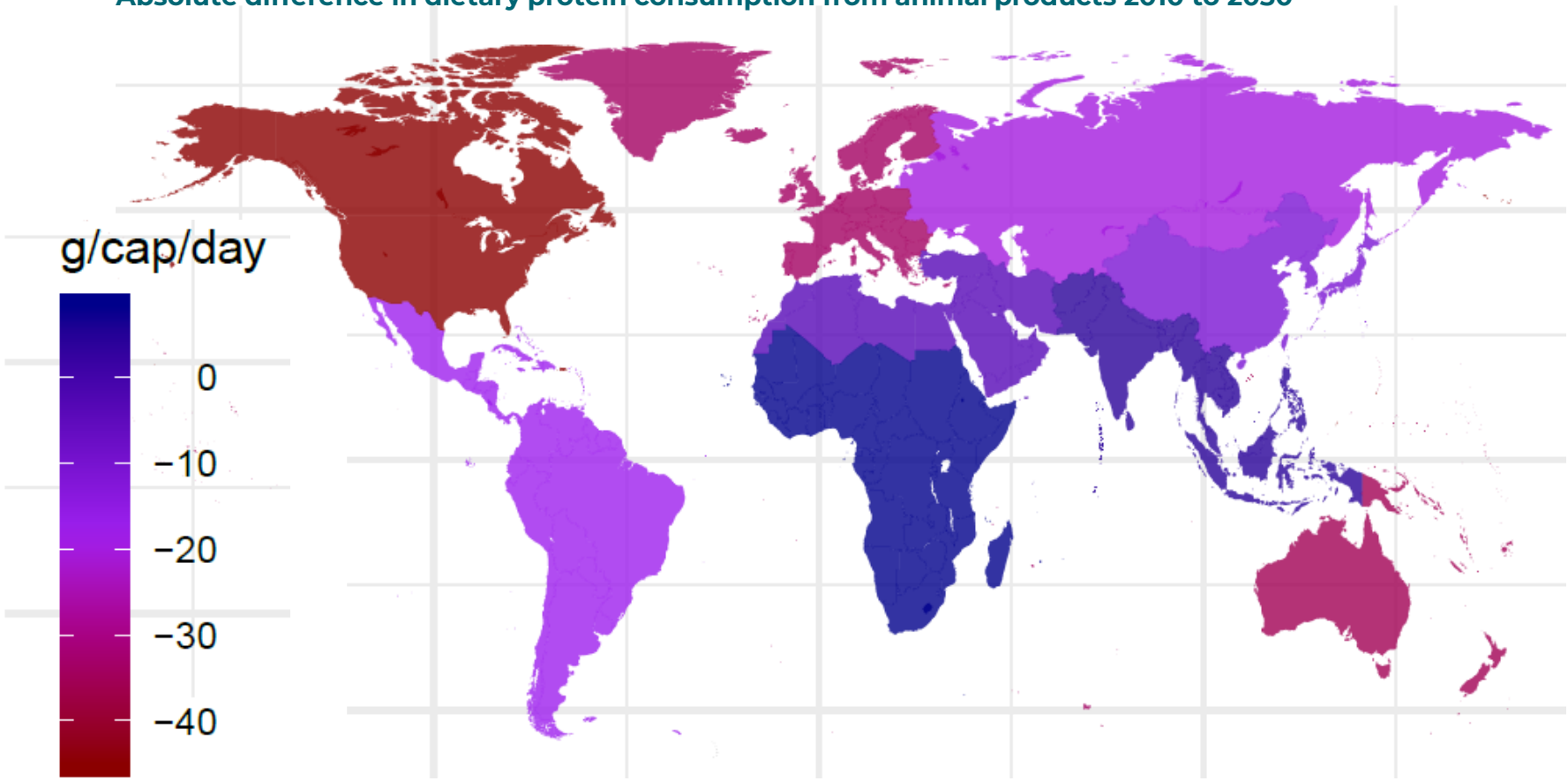
Source: Food and Land Use Coalition, 2019

The Food and Land Use Coalition

What does this mean for livestock?

Protein consumed from livestock will decrease most in Europe, Oceania and the North Americas, resulting in a convergence of per capita protein consumption globally

Absolute difference in dietary protein consumption from animal products 2010 to 2050



Source: IIASA, GLOBIOM, 2019

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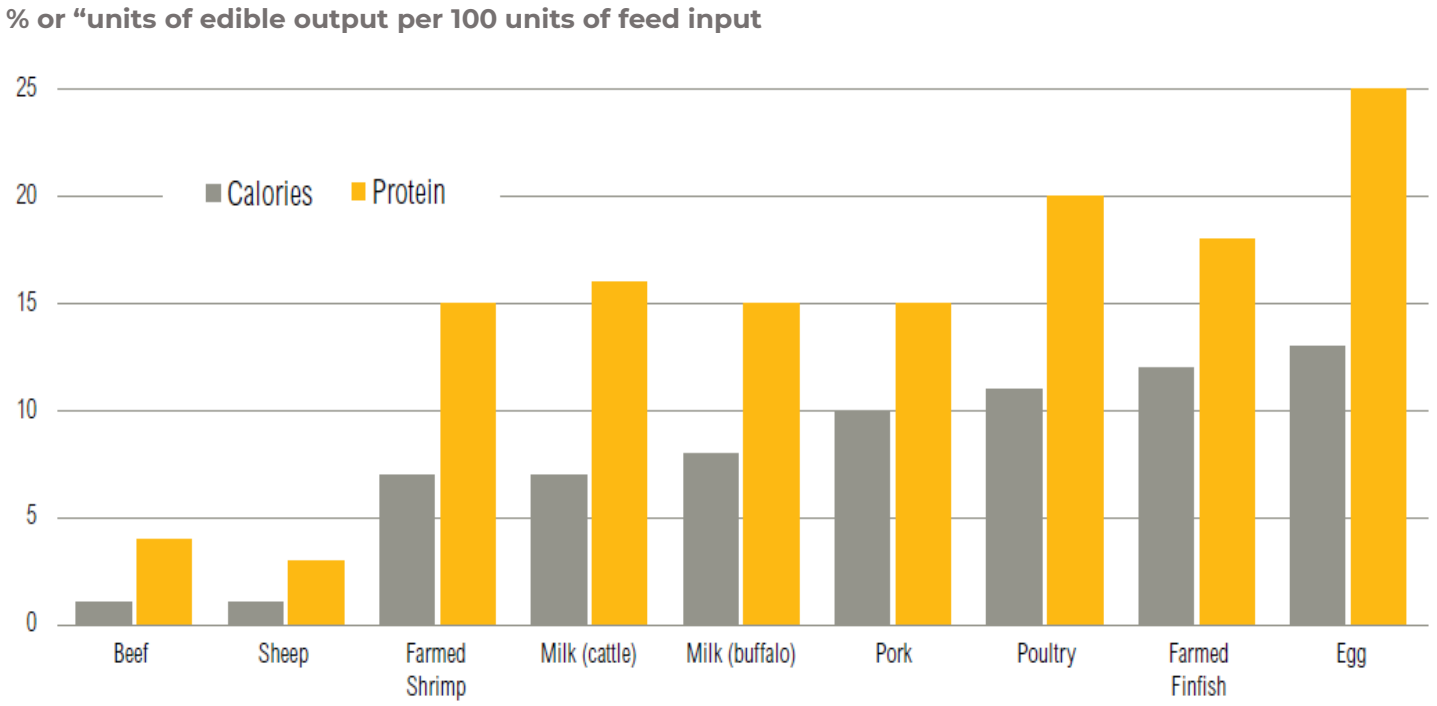
What does this mean for cattle in particular?

Beef on average requires ten times more land and emits ten times more greenhouse gases per gram of edible protein than chicken, for example.

Compared to common plant proteins such as beans, beef is on average 20 times as land- and greenhouse gas-intensive.

Beef production in a number of key producer countries is also a leading driver of tropical deforestation. And, since most suitable native grasslands are being used for pasture already, increasing demand for beef will put further pressure on tropical forests, the climate and biodiversity.

Beef is particularly inefficient in creating human-edible calories and protein



Source: World Resources Institute (2016), originally sourced from Wirsenius et al (2010), Wirsenius (2000), USDA (2013), NRC (2011), Tacon and Metian (2009) and FAO (1989)

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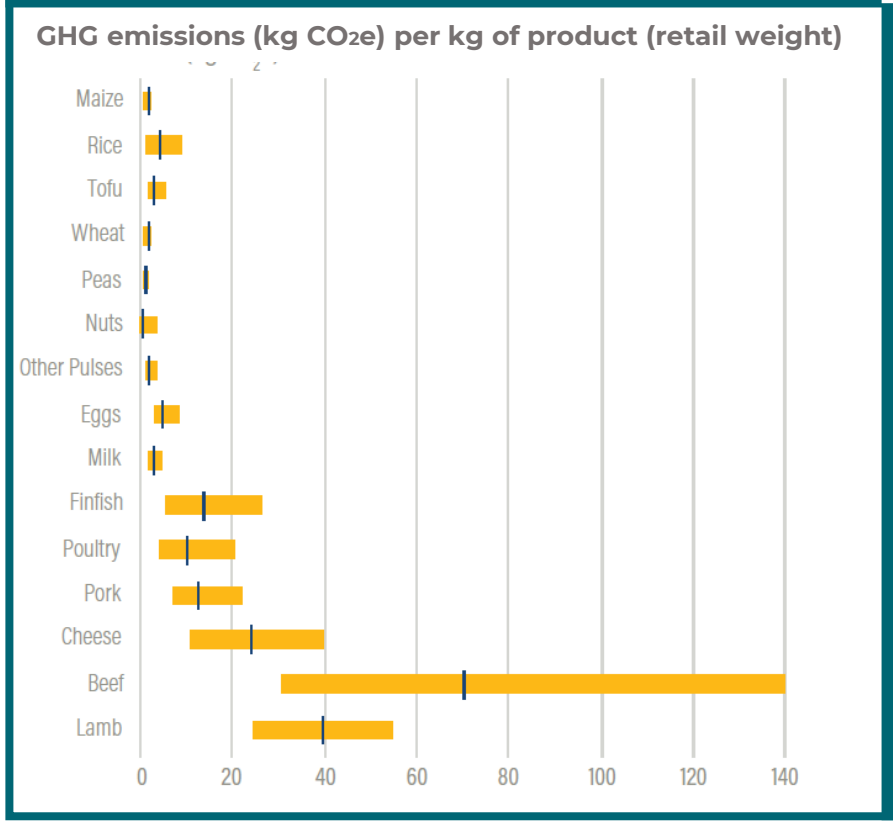
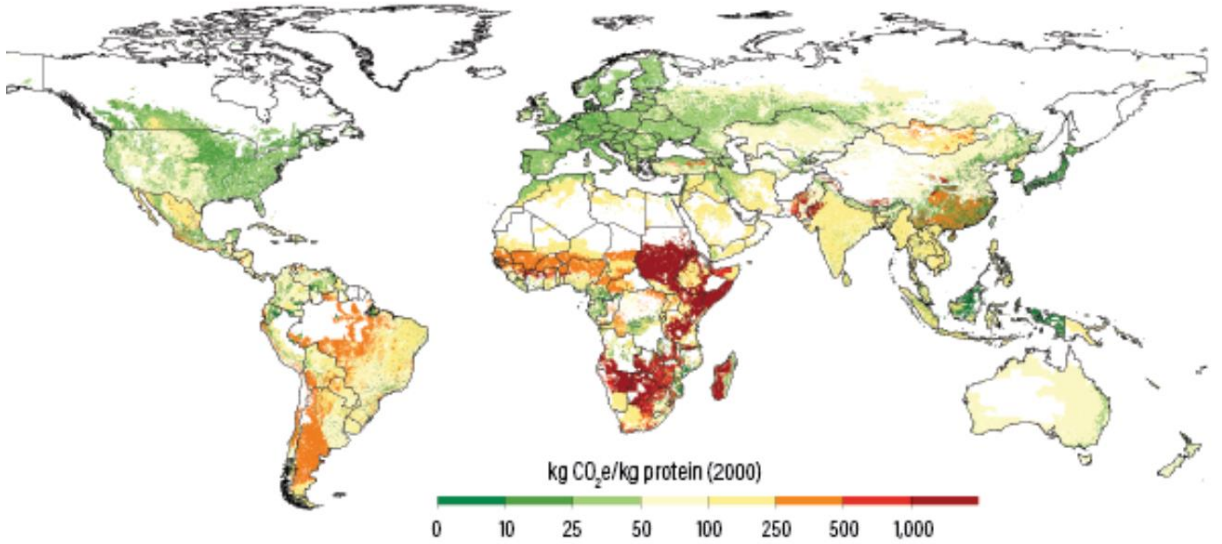
What does this mean for cattle in particular?

Animal-based foods have higher impacts than plant-based but effects between production systems vary significantly



Emissions intensity of beef production varies across the world



Source: based on raw data from Poore and Nemecek 2019, modified by WRI, and source data from Herraro et al (2013) with the map produced by WRI

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What does this mean for cattle in particular?

Improving environmental sustainability of cattle:

There are three main considerations that impact the environmental sustainability of cattle:

1. **Whether the cattle is grass-finished/ fed or grain-finished/fed**
   - ❑ Many cattle defined as “grain finished” spend the majority of their lives on pasture and only in the final months of their lives they are in the feedlots eating grain.
   - ❑ Grain-finished cattle are often more efficient from a land-use and GHG perspective (per kg of meat produced) because they gain weight more quickly on the grain feed and also can be slaughtered earlier. Some studies show that a switch to grass-finished is worse for the environment because of this feed efficiency issue.

2. **Grazing practices**
   - ❑ Some argue that there is potential for significant carbon sequestration on grazing lands as, over time, the carbon sequestered in the soil offsets the methane belched by the cattle. This is often referred to as “regenerative grazing”. However, the reality is more complicated and scaling potential likely overstated.

3. **Management practices**
   - ❑ Other management practices reduce the GHG emissions from cattle. These include: improving the quality of the pasture grasses, veterinary care, manure management, and cattle breeds, supplementing feeds with compounds like 3-NOP which has shown enteric methane reduction in trials.

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What does this mean for ocean proteins?

Oceans are a significant un-tapped source of protein.

De-coupling aquaculture from fish meal and fish oil feed inputs could see significant increases in production.

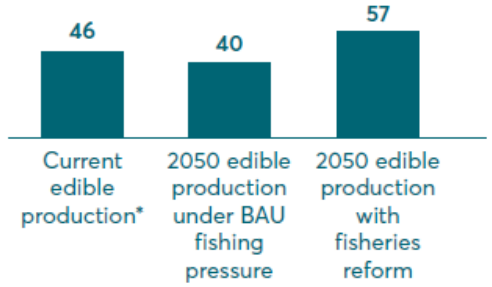
Bi-valves alone have a biological production potential at current prices which could meet requirements under the human and planetary health diet.

Meeting global seafood production goals means recognising the mariculture potential

Million metric tonnes (MMT) edible weight

Comparing current production to maximum biological production potential

Wild capture potential
– comparatively small upside production



Bivalve mariculture potential
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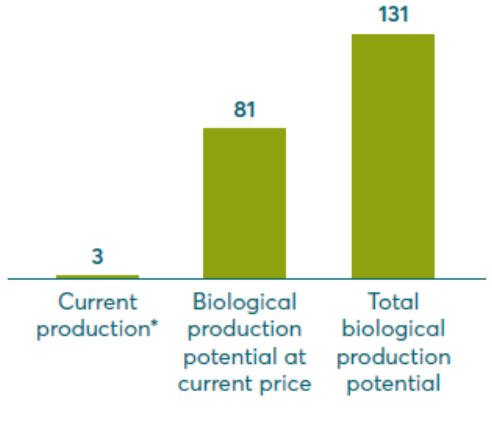

Finfish mariculture potential
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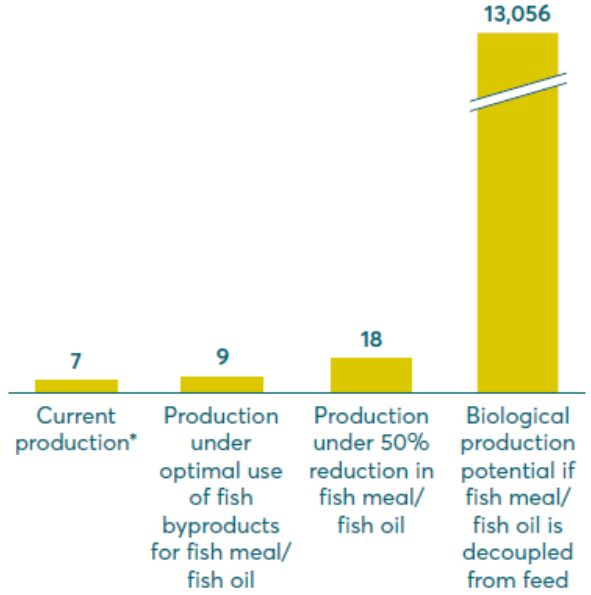

*** 2016 production, FAO (2018), SOFIA; scaled to edible meat**

**** Values are at current price of $1,296 per ton for wild capture, $1,700 per ton for bivalves, $7,000 per ton for finfish**

† Approximate range – assumes same live to edible weight conversion ratios.

Source: Estimating the Ocean's True Potential for Feeding the Planet, emLab, University of California, Santa Barbara, 2019

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What does this mean for food affordability?

- In the Better Futures scenario, average food prices can be expected to be lower than they are today in in 2050.
- The downward pressure on prices in the better futures world comes from a combination of:
  - The dietary shift towards less resource-intensive foods;
  - Ongoing increases in agricultural productivity; and,
  - Reductions in food loss and waste.
- Incomes are also expected to grow significantly on average, making food more affordable.
- But large demand shifts are likely to affect local livelihoods and will require investments in enhancing opportunities for all, including those affected by the transition,
- Both price trends and income growth will vary significantly by region.
- Safety nets need to be in place to ensure affordability for vulnerable groups.

Source: IIASA GLOBIOM 2019

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What does this mean for trade?

- Trade increases efficiency in the use of land and therefore helps support food security, biodiversity and climate mitigation.
- While trade in agricultural products has more than tripled over the past 20 years, the transformation of the food and land use system is expected to result in a stagnation of trade around current levels.
    - ➢ Intra-regional trade in sub-Saharan could increase driven by large investments in connectivity
- In the Better Futures scenario, expanding local supply to meet local demand will diversify the number of crop varieties grown at a global level, reducing the world's growing vulnerability to staple crop failures and strengthen local food security by reducing local import dependency.
- Long-distance and cross-border trade will remain critical to food security by filling gaps in local supply and helping to smooth spikes in local food prices.

Source: IIASA GLOBIOM 2019

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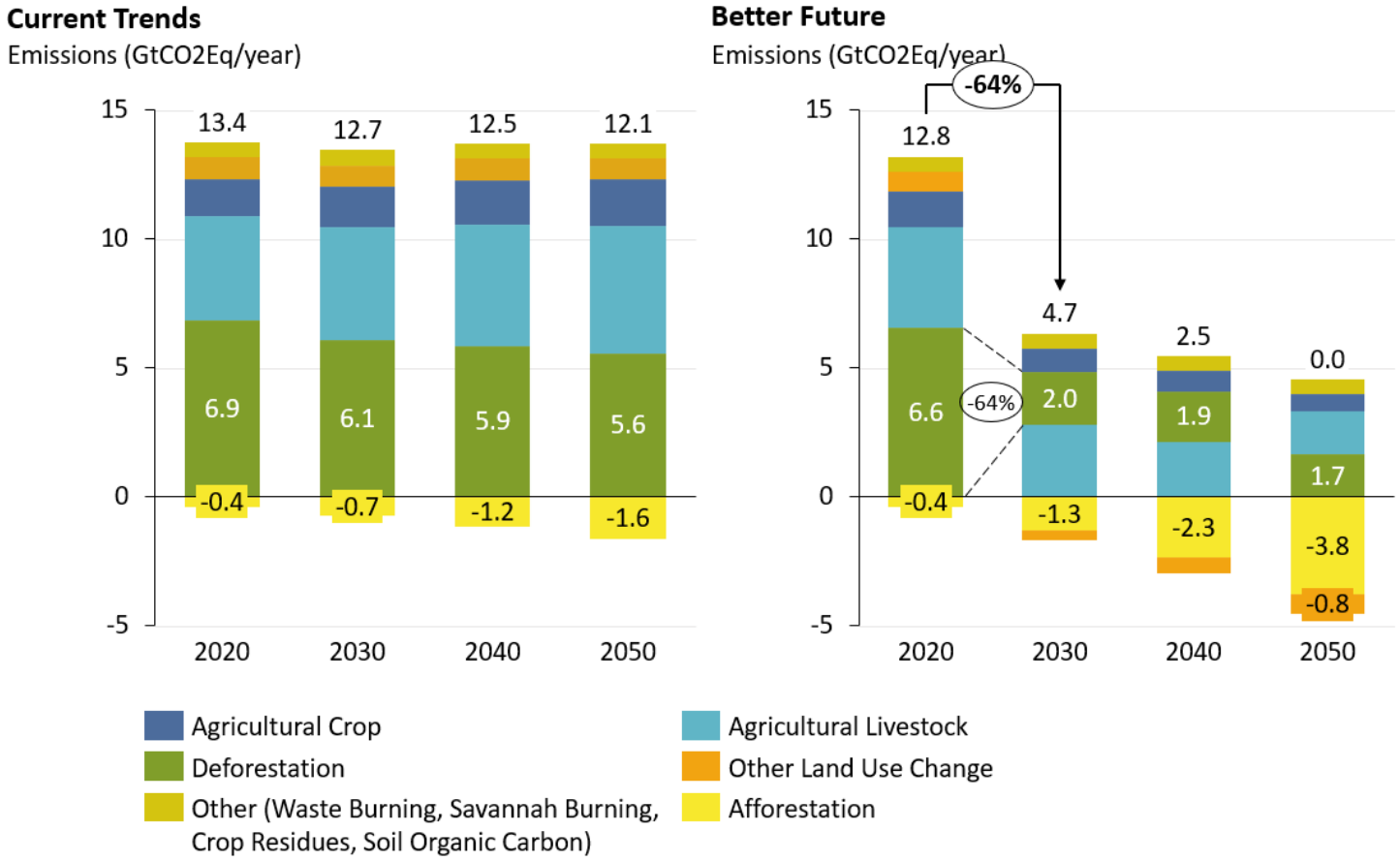
What does this mean for emissions?

The Current Trend will put us on a pathway to 2.5 - 3.5 degrees of warming, and the AFOLU sector will contribute a third of this.

In the Better Futures scenario forests are invaluable for staying on a 1.5 degree climate pathway – emissions from deforestation must be reduced by two thirds in the decade between 2020 and 2030.

This means a near halt in deforestation. Today.



Source: IIASA GLOBIOM 2019

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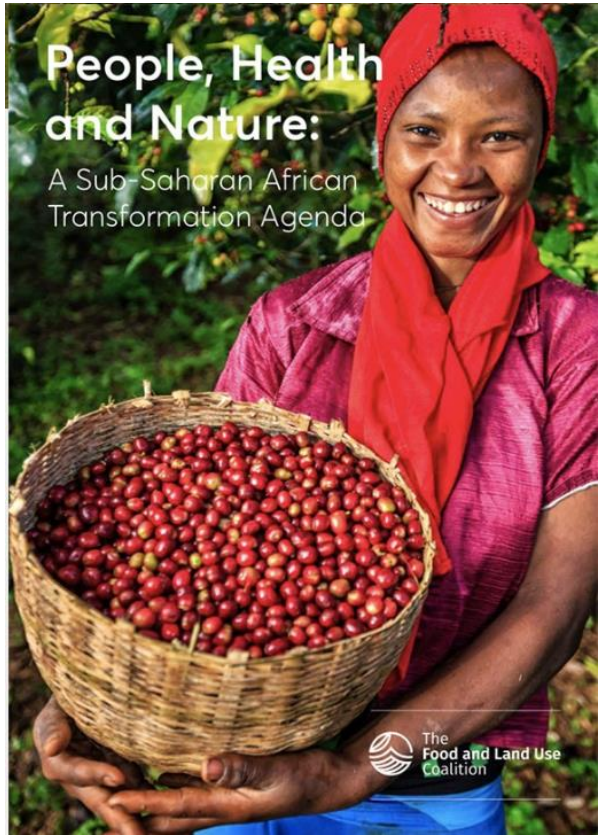
What does this mean for sub-Saharan Africa?



The opportunities and risks linked to food and land use systems in sub-Saharan Africa, and the scale of the investment needed to unlock them, warrants unprecedented international coordination.

At **$85-100 billion**, the estimated annual investment needed to support a sustainable transformation of these systems is **5% of the region's GDP**, too large for the region to finance but a small sum relative to the global economy.

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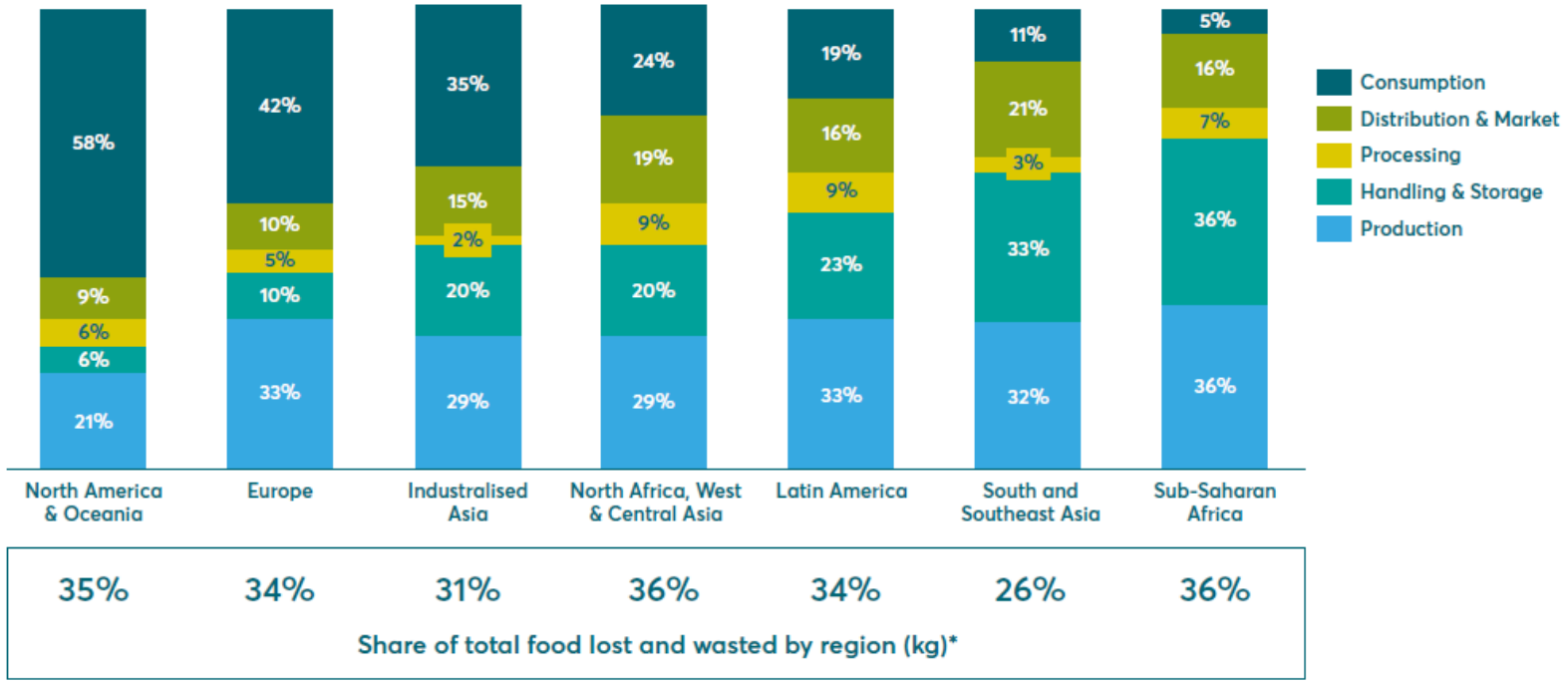
What does this mean for food loss and waste?

In higher income countries, food loss and waste is most prevalent at the consumption stage (i.e. food waste in the home), whereas in lower income countries there is a higher prevalence of food loss and waste at the production phase.

Food loss and waste must **reduce by 25%** to ensure sufficient calories for global population by 2050 within the FOLU Better Futures scenario.

Distribution of total global food loss and waste by region and stage across the supply chain

Share of tonnage per region (2007)



*Values displayed are of food loss and waste as a percentage of food supply, defined here as the sum of the "Food" and "Processing" columns of the FAO Food Balance Sheet
Note: numbers may not sum to 100 due to rounding

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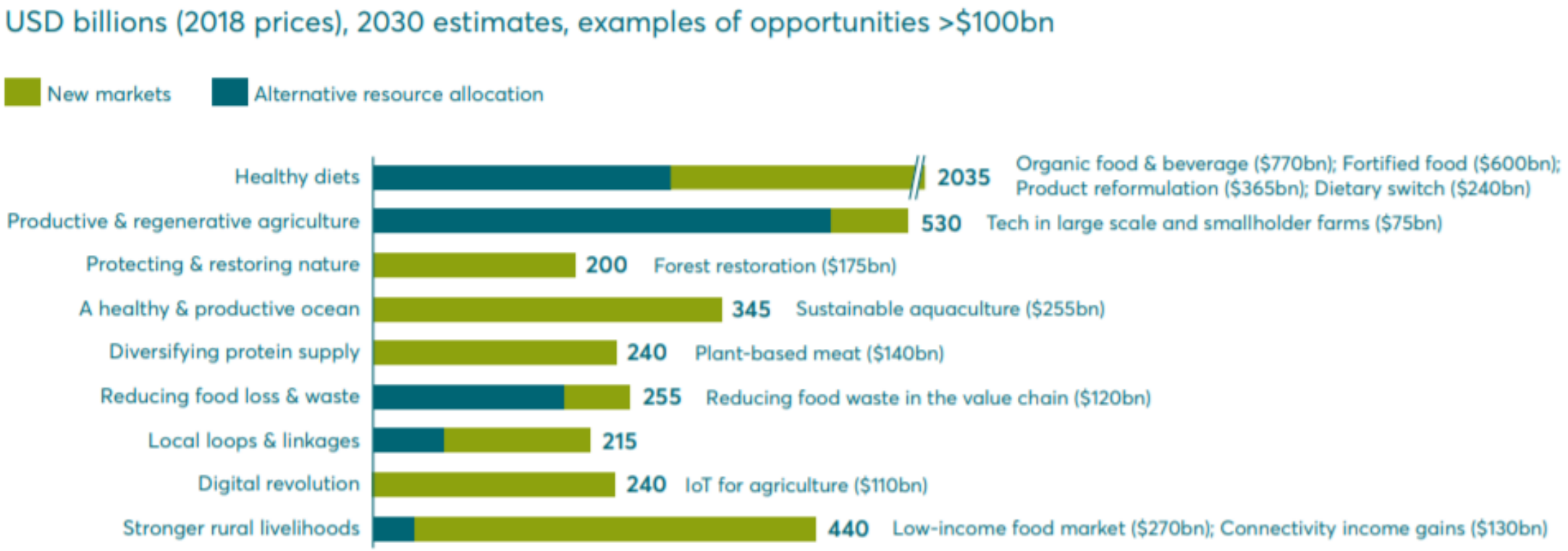
What does this mean for business?



Source: Blended Finance Taskforce, 2019

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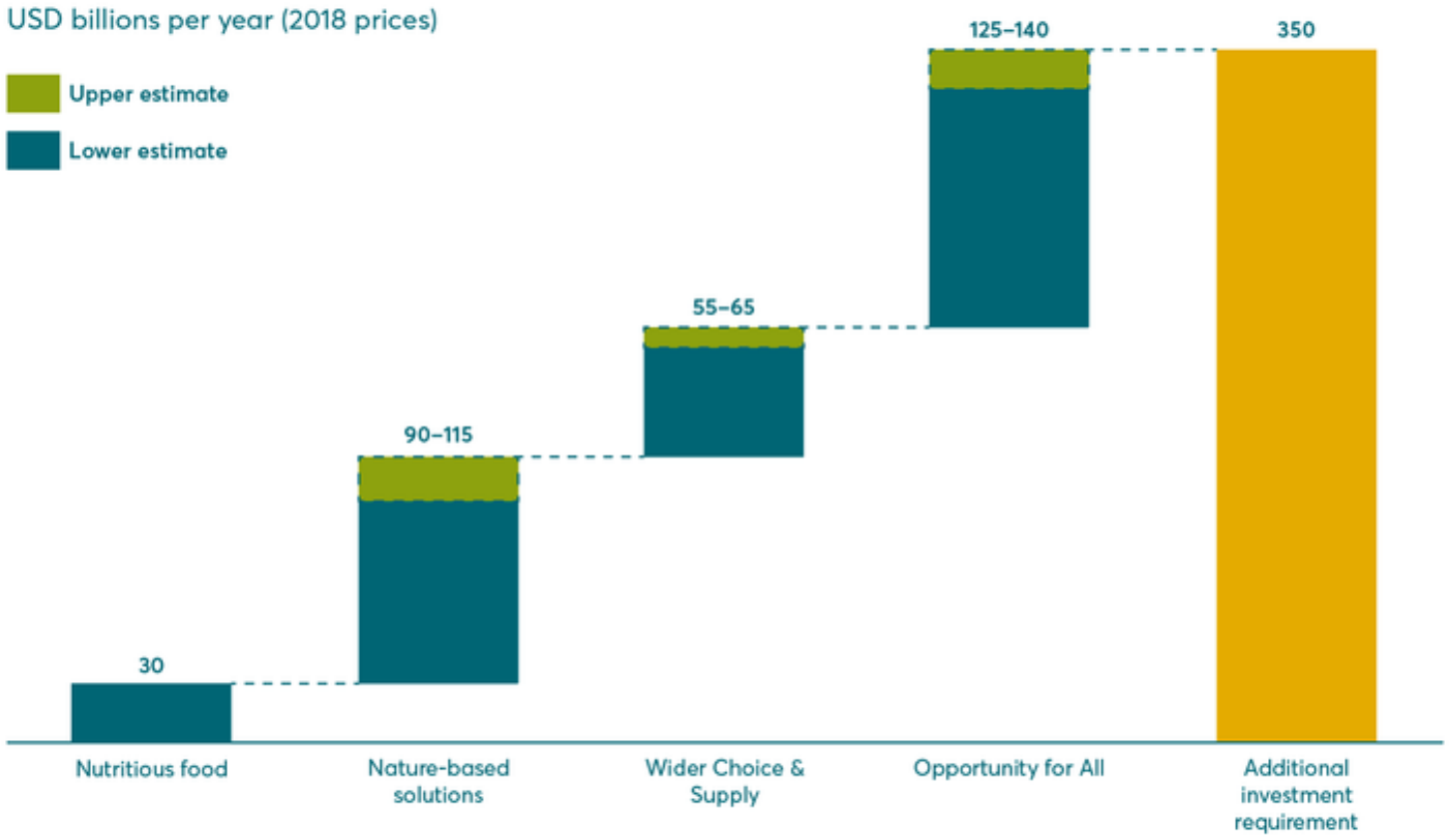
What does this mean for finance?

The additional annual investment requirements associated with the ten critical transitions are between **$300 and $350 billion** (2018 – 2030).

This is less than **0.5% of GDP**, a **return ration of more than 15:1** based on the economic prize.



Source: Blended Finance Taskforce, 2019

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What does this mean for different systems actors?

Cross Cutting Reforms to Transform Food and Land Use

Government: Establish targets; break down governmental silos; put a price on carbon; land use planning; repurpose agricultural support and public procurement; massively increase R&D and target it on healthy, natural solutions.

Business & Farmers: Organise pre-competitively to support government reform agendas and set internal standards for specific sectors; establish true cost accounting for food and land use.

Investors & Financial Institutions: Build on the Task Force on Climate-related Financial Disclosures to cover nature; develop a set of financing principles for food and land use; develop innovative finance instruments, including blended finance, to manage risks and leverage opportunities.

Participants in multilateral processes and multi-stakeholder partnerships: Raise ambition in the United Nations Framework Convention on Climate Change 2020 stock-take and ensure an ambitious outcome in the 2020 Convention on Biological Diversity in Kunming, China.

Civil Society: Drive information campaigns for food and land use reform and direct campaigns against serial offenders (public and private).

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Farmers & fishers are natural entrepreneurs and must play a central role in the transformation of food and land use systems

There are more than 500 million farmers & fishers in poverty worldwide.

43% of farmers are women but they receive less than 5% of agricultural extension services.

Farmers & fishers face growing pressures & risks: climate change, shifting public policies & support & changing consumer demand.

Certain farmer groups are feeling under attack by environmental lobbyists and want to be part of the climate solution.

We must change the rules of the game and invest in farmers, fishers & rural communities

- Pay them transparently and fairly for the ecosystem services they provide.
- Support access to land, capital and other resources including extension services and risk management tools to strengthen resilience, including safety nets.
- Address excessive market concentration to enable them to secure a decent living.
- Increase rural infrastructure investment to drive productivity and reduce rural isolation.
- Increase opportunities for value-adding activities beyond primary production and processing.
- Train 100 million young farmers!

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Agenda

Introduction to the Food and Land Use Coalition

Growing Better Report Overview

Ten Critical Transitions

What This Means For...

Recommendations for Different Actors

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What is the role of government?

1. **Put in place a framework of goals, processes and capacity to enable reforms** including clear, ambitious 2030 and 2050 system targets, a land use and water planning, increased cross-governmental collaboration and an increase in transparency and data availability.

2. **Encourage the transition to healthy diets** through guidelines for healthy food, promoting them through public health & education systems.

3. **Support farmers with the transition to regenerative agriculture** through incentives for sharing knowledge, tools and equipment.

4. **Protect and value critical ecosystems through stronger policy and enforcement** including through a moratorium on conversion of natural ecosystems, granting indigenous people secure tenure over traditional territories and formalising large-scale payment for ecosystem services including through REDD+ payments for private companies.

5. **Introduce carbon pricing**, starting at the World Bank shadow price of $\$40/tCO_2e$ and rising significantly and predictably.

6. **Repurpose agricultural subsidies and market support mechanisms** to encourage all farmers to deliver a diversity of nutritious food and environmental benefits. Increase the share of these incentives that flow to smaller farmers to promote inclusion.

7. **Increase investment in sustainable innovation to expand choice**, including a 100% increase in public R&D spending over the next decade.

8. **Catalyse more productive, local food systems** through local government use of zoning and public procurement.

9. **Reduce the gap between rural and urban standards of living** by improving rural infrastructure, strengthening the rights of rural communities to protect their land and other natural resources, attracting young entrepreneurs back to the countryside.

10. **Ensure a just transition** by establishing safety nets for vulnerable groups and using public resources to reinvigorate “stranded” communities.

11. **Promote the transformation through leadership on the international stage**.

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What is the role of business and farmers?

1. **Establish science-based targets** to make their strategies compatible with the SDGs, the Paris Agreement goals and global targets on ecosystems and biodiversity.

2. **Shift R&D and marketing resources into healthier food options**, building on the pre-competitive work of coalitions such as Food Reform for Sustainability and Health (FreSH).

3. **Establish full transparency and ban deforestation and other ecosystem conversion, crime, land grabs and exploitation throughout supply chains**. Businesses can require adherence to the same standards from all business partners and cut ties with suppliers that transgress.

4. **Shift commodity procurement strategies from buying on the spot market to investing in long-term sustainable supply from equitable partnerships**. Companies need to show leadership to address inequalities in their value chains, whether individually or through agreed (and independently monitored) collective bargaining processes.

5. **Commit to voluntary food loss and waste targets across the value chain** and engage their own e.g. 20 largest suppliers to do the same, with a shared goal of halving the amount by 2030.

6. **Support governments in adopting a comprehensive food and land use reform agenda**. To this end, companies can join or create pre-competitive business coalitions and public-private coalitions that advocate for the policies recommended in this report e.g. Business for Nature and One Planet Business for Biodiversity.

7. **Pilot true cost accounting for food** using for example methodologies developed by True Cost of Food Accounting or the approaches recommended by TEEBAgriFoods.

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What is the role of the financial community?

1. **Work with governments to improve capital markets oversight, adjust financial regulations and introduce natural capital accounting** – all actions that will support investment in the new food and land use economy.

2. **Set up pilot to extend the recommendations from the Task Force on Climate-related Financial Disclosures (TCFD)** to increase corporate and financial reporting of nature, biodiversity, public health and inclusion risks.

3. **Develop a set of core financing principles,** built on the SDGs and the Paris Agreement, and framed along the lines of the Equator Principles or Principles for Responsible Agriculture Investment, to guide capital allocation into better food and land use systems and withdraw it from high-risk companies.

4. **Develop a roadmap for public and private investors** to drive, over the next five years, between $300 billion and $350 billion a year into asset classes and instruments needed to transform food and land use systems.

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What is the role of civil society?

1. **Shift philanthropic resources towards food and land use systems**. The philanthropic community still directs less than seven percent of its total resources to the environment, and less than one percent to climate challenges, and even less to systemic reform of food and land use systems. A much larger allocation is justified, given the fundamental importance of well-functioning food and land use systems.

2. **Develop powerful communication campaigns**. The power of civil society organisations to raise awareness of the challenges and opportunities of food and land use systems, and build support for reform, cannot be overstated, particularly if they unite behind shared messages.

3. **Deploy technology tools and ground networks to drive full transparency and accountability** through food and land use systems. This action can shed light on the biophysical and legal state of forests, what damage occurs to them, which companies are responsible, who finances the companies doing the damage, and who finances the companies that own the companies doing the damage. Such insights would provide the evidence to fuel hard-hitting public campaigns against serial offenders.

4. **Support local, national and global social enterprise and impact investment** to speed development of grassroots change movements. These movements would, for example, pursue open source platforms and ensure big data contributes to the public good, promote extension services for smallholders, and help to establish seed enterprises that enable people to eat better while protecting their environment and building inclusive livelihoods.

5. **Drive academic research in under-explored areas**. There is a pressing need to strengthen integrated food economics know-how and modelling capacity. This can be done by developing tools and an international community of practitioners who can combine insights across economics, spatial modelling, climate risk analytics, nutrition, health and political science (around economic transition strategies, for example) in ways that lead to better public and private sector decision-making.

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What is the role of participants in multi-lateral processes?

1. **The 15th Conference of the Parties of the Convention on Biological Diversity in Kunming, China, in October 2020**. This conference needs to secure an ambitious agreement – at head of state and head of government level – modelled on the Paris Agreement on climate change.

2. **Paris Agreement under the UN Framework Convention on Climate Change**. Countries can integrate ambitious targets and reforms into their Low Emissions Development Strategies and updated NDCs, due in 2020, and strengthen them every five years thereafter.

3. **The UN Secretary-General, leaders of UN agencies, and presidents and shareholders of MDBs** can align their institutions' investment, advisory and normative actions on food and land use systems to support governments' reform agendas.

4. **The International Monetary Fund (IMF)** can include more consideration of climate and food and land use systems risk in its Article IV surveillance activities.

5. **International cooperation between relevant national actors and international bodies to modify international trade regimes**. Stronger coordination is needed between countries and the international bodies governing trade to ensure trade channels remain open following shortfalls in food production, to limit sudden spikes in food prices.

6. **Representatives of governments, business, finance and civil society** can develop and scale pre-competitive coalitions to pursue aspects of the critical transitions that need cross-societal collaboration. This report proposes a Global Alliance Against Environmental Crime and Finance for the Food and Land Use Economy.

7. **Mobilising for sustainable development in Africa**. The total investment required for sub-Saharan Africa's rural infrastructure, agriculture and climate mitigation is small relative to the global economy yet amounts to five percent of the region's gross domestic product (GDP). To increase investment, therefore, unprecedented coordination among national governments and the development finance community is needed.

The Food and Land Use Coalition

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