Pathways to Sustainable Food System in China - Perspectives from FOLU & FABLE

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The Food and Land Use Coalition

世界资源研究所 WORLD RESOURCES INSTITUTE

Who We Are

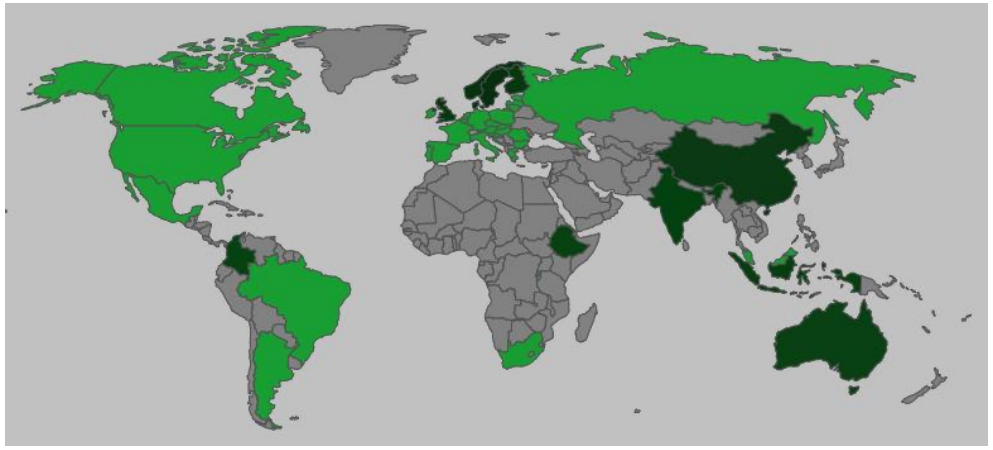
The Food and Land Use Coalition

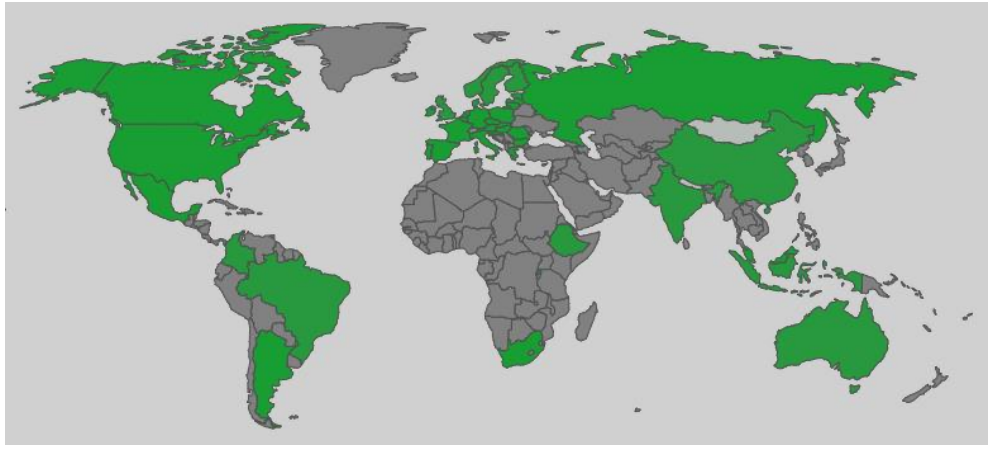
FOLU: Food and Land Use Coalition. Launched in 2017, FOLU brings together stakeholders to accelerate the transformation of food and land-use systems to deliver the **SDGs, Paris Agreement** & **CBD Biodiversity Targets**.

FABLE: The Food, Agriculture, Biodiversity, Land-Use, and Energy (FABLE) Consortium. A collaborative initiative launched in 2017 operating as **part of the Food and Land-Use Coalition** (FOLU) to **understand** how countries can make the transformation.

FOLU & FABLE Country Teams

Argentina
Australia
Brazil
Canada
China
Colombia
Ethiopia
European Union
Finland
Germany
India
Indonesia
Malaysia
Mexico
Russian Federation
Rwanda
South Africa
Sweden
United Kingdom
United States





FOLU & FABLE International Partners

What We Have

The Food and Land Use Coalition

FOLU is co-chaired by Shenggen Fan, Agnes Kalibata and Paul Polman. Our Ambassadors champion FOLU by engaging decision-making at local, country and global level and driving changes in FOLU countries

Global Ambassador Network

Peter Bakker	President and CEO of the World Business Council for Sustainable Development
Svein Tore Holsether	President, Yara International
Jeremy Oppenheim	Founding Partner, SYSTEMIQ
Paul Polman	Chief Executive Officer, Unilever, Chair, Food and Land Use Coalition
Gunhild Stordalen	Founder and Executive Chair of EAT
Emanuel Faber	Chief Executive Officer, Danone
Dominic Waughray	Managing Director, Head of the Centre for Global Public Goods, World Economic Forum

Inger Andersen (UNEP)
Sharan Burrow
Helen Clark
Wiebe Draijer
Shenggen Fan(CAU)
Jessica Fanzo
Marion Guillou
André Hoffmann
Cristiana Paşca Palmer
Vineet Rai
Jaidev Shroff
Feike Sijbesma
Erik Solheim (WRI)
Ishmael Sunga
Izabella Teixeira
Laura Tuck
Sam Kass
Marco Lambertini(WWF)
David MacLennan
Strive Masiyiwa
Sara Menker
Divine Ntiokam
Ndidi Nwuneli
Ngozi Okonjo-Iweala (WTO)
Lawrence Haddad(GAIN)
Naoko Ishii
Kathy Willis
Ann Tutwiler
Gerda Verburg
Sunny Verghese
Ajay Vir Jakhar
Agnes Kalibata (AGRA)

Why the Food and Land Use System Matters

The Food and Land Use Coalition

Sustainable food systems don't just help to end hunger. They can help the world achieve critical progress on **all 17** Sustainable Development Goals. The health of food systems profoundly affects the health of our bodies, as well as the health of our **environment, economies and cultures.**

~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

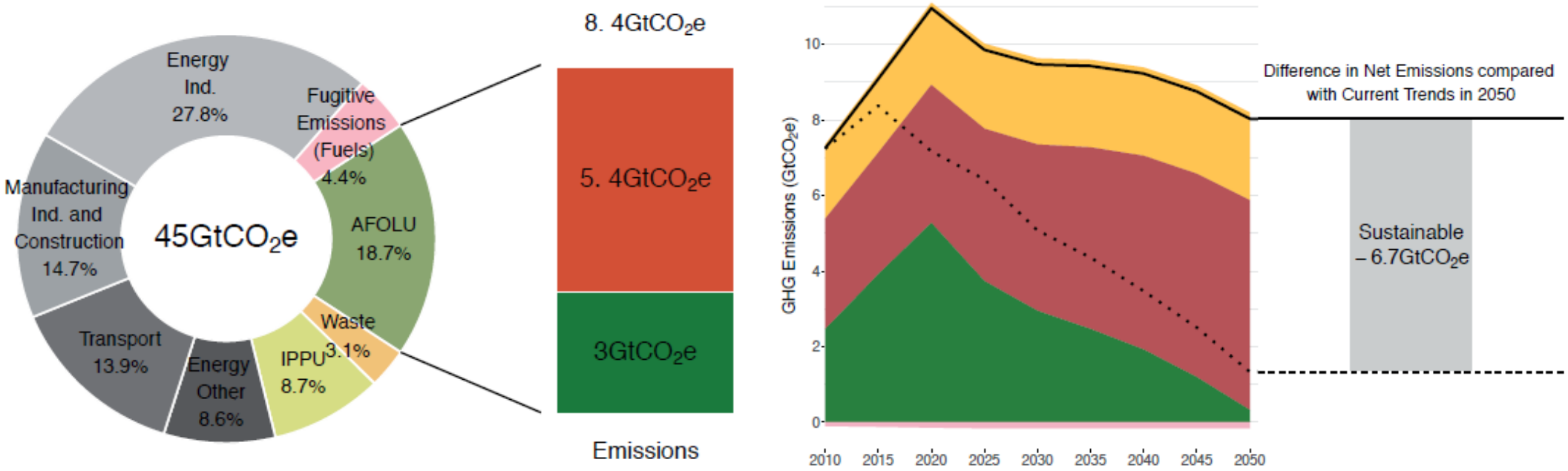
Agriculture accounts for **70%** of freshwater withdrawals

GHG Emissions in AFOLU

The Food and Land Use Coalition

AFOLU sector accounts for an estimated **8.4 Gt CO2e** per year of net anthropogenic GHG emissions and **18.7%** of total GHG emissions between 2007-2016. The Sustainable Pathway projects an **83% reduction (6.7 Gt CO2e)** in net GHG emissions in 2050.

Core Partner



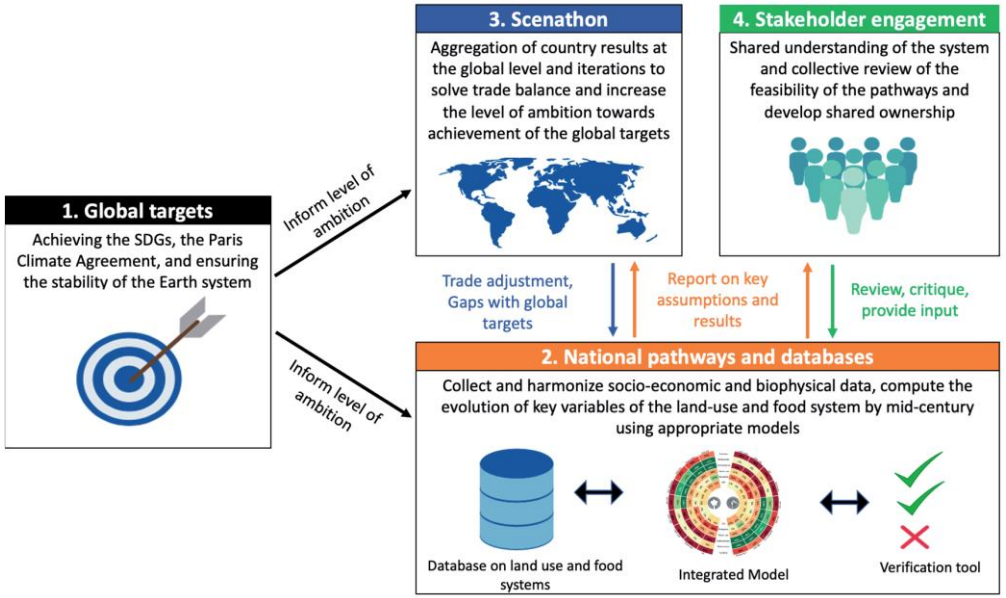
Source: FABLE, 2020

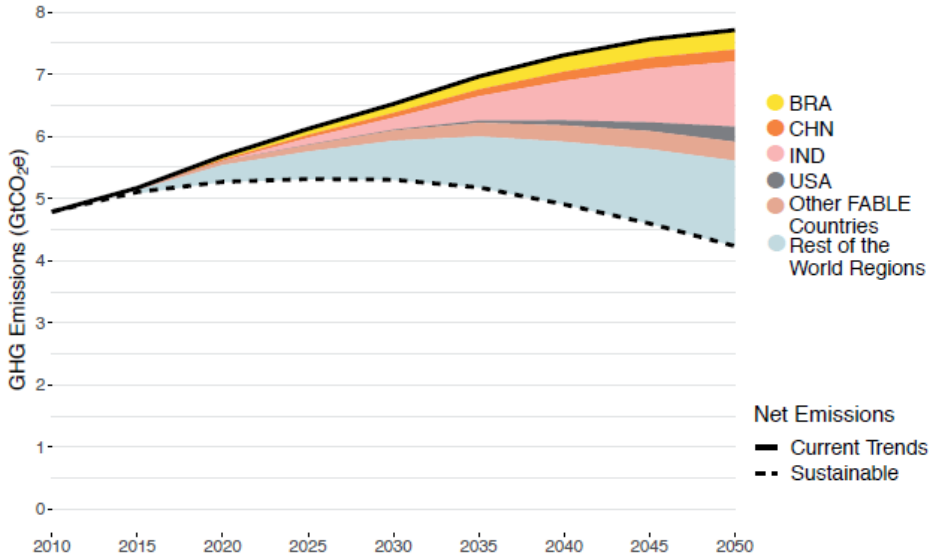
How We Were Getting There

The Food and Land Use Coalition

We have used a **Scenathon** approach which analyzes 76 products and covers five-year time step over 2000-2050. And we have found a Sustainable Pathways concurrently meet objectives related to food security, GHG emissions, water use, and biodiversity.

Scenario and Marathon





How We Were Getting There

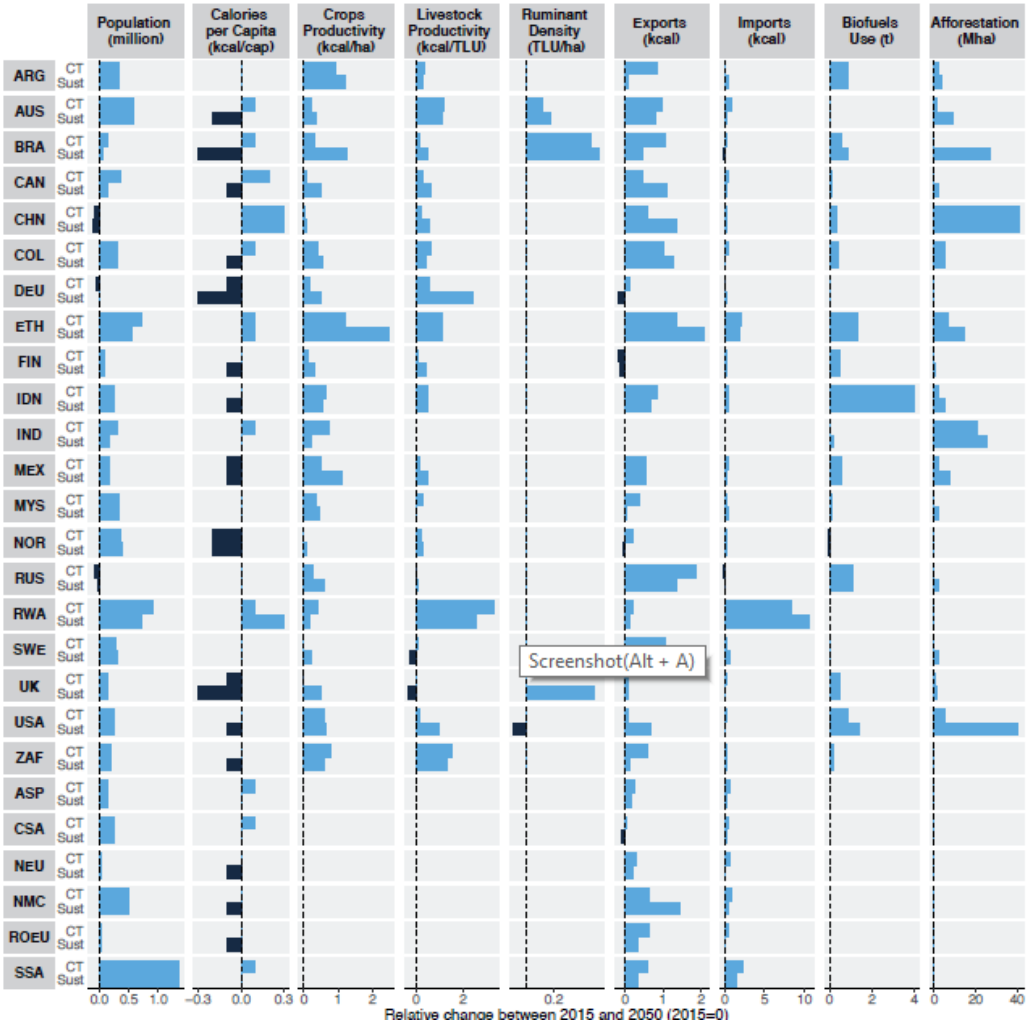
The Food and Land Use Coalition

Target Setting

Table A *Global FABLE targets*

AREA	GLOBAL TARGET
Land and Biodiversity	**A minimum share of earth's terrestrial land supports biodiversity conservation.** *No net loss by 2030 and an increase of at least 20% by 2050 in the area of land where natural processes predominate.*
	A minimum share of Earth's terrestrial land is within protected areas. *At least 30% of global terrestrial area by 2030*
	Zero net deforestation. *Forest gain should at least compensate for the forest loss at the global level by 2030*
Greenhouse gas emissions from AFOLU	**Greenhouse gas emissions from crops and livestock** *compatible with keeping the rise in average global temperatures to below 1.5°C, which we interpret as below 4 $GtCO_2e\ yr^{-1}$ by 2050 (3.9 Gt for non-CO_2 emissions and 0.1 Gt for CO_2 emissions)*
	Greenhouse gas emissions and removals from Land-Use, Land-Use-Change, and Forestry (LULUCF) *compatible with keeping the rise in average global temperatures to below 1.5°C. Negative global greenhouse gas emissions from LULUCF by 2050*
Food security	**Zero hunger.** *Average daily energy intake per capita higher than the minimum requirement in all countries by 2030*
	Low dietary disease risk. *Diet composition to achieve premature diet related mortality below 5%*
Freshwater	**Water use in agriculture** *within the limits of internally renewable water resources, taking account of other human water uses and environmental water flows. Blue water use for irrigation <2,453 km^3yr^{-1} (global estimates in the range of 670-4,044 km^3yr^{-1}) given future possible range (61-90%) in other competing water uses*
Nitrogen	**Nitrogen release from agriculture within environmental limits.** *N use <69 Tg N yr^{-1} total industrial and agricultural biological fixation (global estimates in the range of 52-113 Tg N yr^{-1}) and N loss from agricultural land <90 Tg N yr^{-1} (global estimates in the range of 50-146 Tg N yr^{-1}) by 2050*
Phosphorous	**Phosphorus release from agriculture within environmental limits.** *P use <16 Tg P yr^{-1} flow from fertilizers to erodible soils (global estimates in the range of 6.2-17 Tg P yr^{-1}) and P loss from agricultural soils and human excretion <8.69 Tg P yr^{-1} flow from freshwater systems into ocean by 2050*

Assumptions



Pathways to Sustainable Food System

The Food and Land Use Coalition

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

FOLU China Team

The Food and Land Use Coalition

Launched in 2019, FOLU China has brought together 20+ stakeholders from various sectors in China, to catalyze integrated transformation of China and global food system.

Core Partner

WORLD RESOURCES INSTITUTE

wbcsd

SUSTAINABLE DEVELOPMENT SOLUTIONS NETWORK
A GLOBAL INITIATIVE FOR THE UNITED NATIONS

The Nature Conservancy

syngenta Global

良食基金 GOOD FOOD FUND GoodFoodChina.net

ENERGY FOUNDATION 能源基金会

International Institute for Applied Systems Analysis
IIASA

MEE

THE NEW CLIMATE ECONOMY

CCICED

AGFEP

中国农业科学院 CAAS

PEKING UNIVERSITY 1898

RENMIN UNIVERSITY OF CHINA 1937

浙江大学 ZHEJIANG UNIVERSITY 1897

中国科学院 CHINESE ACADEMY OF SCIENCES

TUSDO 清华大学全球可持续发展研究院 INSTITUTE FOR SUSTAINABLE DEVELOPMENT GOALS TSINGHUA UNIVERSITY

中国生物多样性保护与绿色发展基金会 CBCGDF 1985

中国农业大学 CHINA AGRICULTURAL UNIVERSITY 1905

What We Have Known About China

The Food and Land Use Coalition

Food and land use system **plays a vital role in carbon emission mitigation** in China, as China needs to feed its 1.4 billion people with degradated land, water, biodivesity and growing resource consumptions.

Challenges for China's Food System

 Biodiversity	As of 2018 **610,000 km²** of land has been designated as key ecological land encircled by red lines for protection
 Land degradation & soil health	Between 1991 and 2010, the average yearly growth rate for fertiliser use was **3.7%** and usage per hectare increased from **188** kg to **246** kg
 Water Resources	China has the second highest water withdrawals for agriculture in the world **~385 billion m³**.
 Climate Change	In 2016, China's emissions from agricultural totalled **691 million** tonnes of CO2, with a **20%** increase since 1990
 Deforestation	From 2001 to 2018, China lost **9.42Mha** of tree cover, equivalent to **a 5.8%** decrease in tree cover since 2000 and **3.04Gt** of CO2 emissions
 Marine Resources	Fish production has increased from **13** million tonnes in1990 to **62** million tonnes in 2017 and per capita consumption is nearly **double** the global average

Sustainable Pathways for China

The Food and Land Use Coalition

Under the Current Trends, annual GHG emissions increase to 1,038 Mt CO2e in 2030, before declining to **74 Mt CO**2e in 2050;

The Sustainable Pathways leads to a **reduction** of GHG emissions by **875% (647 Mt CO2e)** by 2050 compared to Current Trends

Current Trends vs. Sustainable Pathways

Figure 2 | Evolution of the area where natural processes predominate

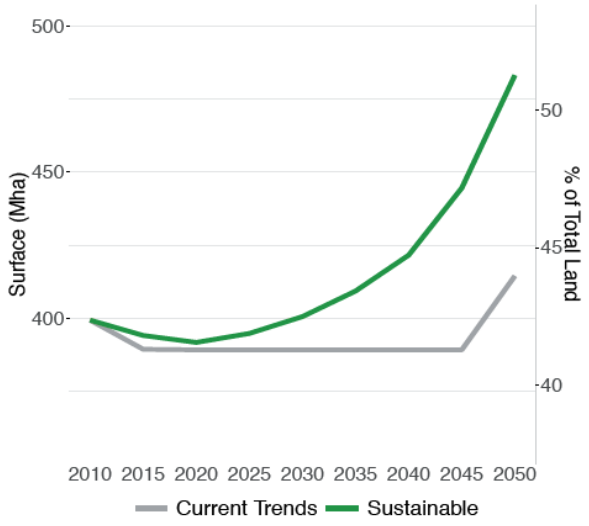


Figure 4 | Projected AFOLU emissions and removals between 2010 and 2050 by main sources and sinks for the Current Trends Pathway

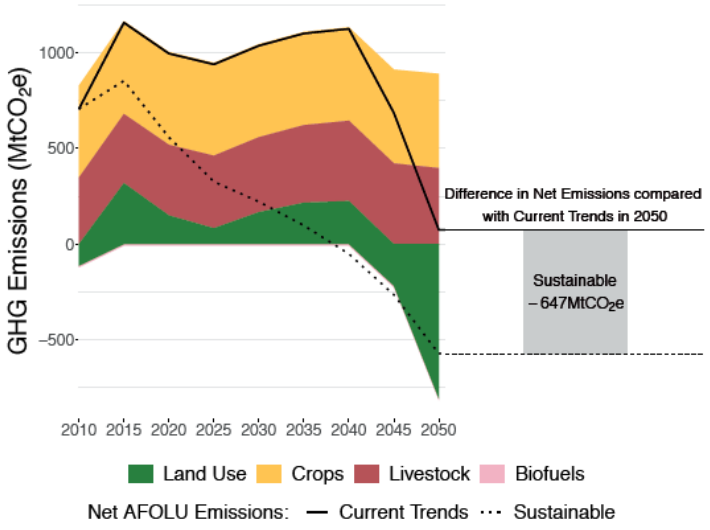
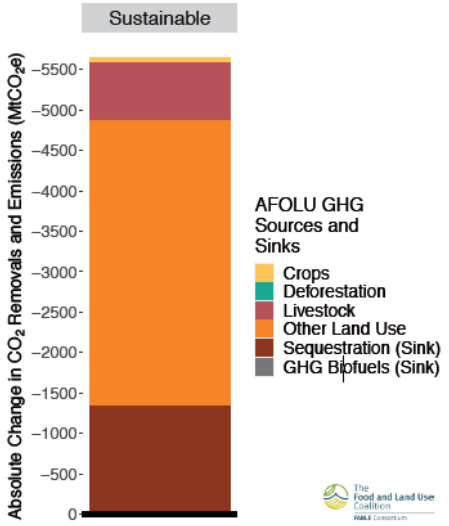


Figure 5 | Cumulated GHG emissions reduction computed over 2020-2050 by AFOLU GHG emissions and sequestration source compared to the Current Trends Pathway



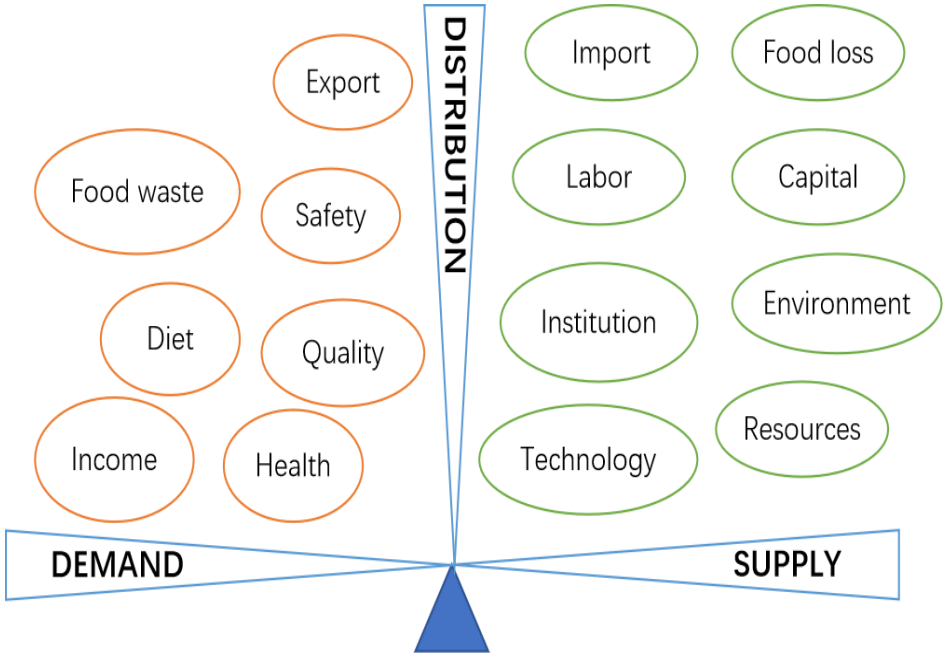
What We Are Thinking

The Food and Land Use Coalition

Agricultural reforms in China have been focused on supply side rather than **demand side,** which will be more and more critical as China is heading for a well-off society.

Start from the Demand and Consumption Side

- **Individuals**: Get closer to food producers and eat less & sustainable food
- **Government**: Cut down hidden costs with policy incentives and consumption governance
- **Scientists:** Identify China's sustainable diet structure and find technical solutions
- **Enterprises**: Produce more fresh food & greening supply chain
- **Civil society**: Promote 'green consumption' life style
- **International Communities**: Provide examples and experiences for food system transformation



What We Aim to Do

The Food and Land Use Coalition

Find vital solutions for food and land use systems delivering for all, particularly for **China's 2060 carbon neutralility** and SDG commitment.

Mission

- **Find** a healthier, less wasteful way to feed 1.4 billion people by the 2030s
- **Promote** regenerative and productive farming by technical and policy innovations
- **Protect** and **restore** China's and global natural resources and ecosystems with stronger international engagement
- **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

What We Have Achieved in FOLU 1.0 (2019-2020)

The Food and Land Use Coalition

FOLU 1.0 **has triggered transformations** in multiple sectors in food system, diet and consumption, sustainable agriculture, food loss and waste, food supply chain and taken covid-19 emergency action.

2019

- Launch the Chinese Global report and bring stakeholders and partners together

2021

- Faciliate two Food System Summit Dialogues
- Draft the national action agenda
- **Produce the Global and China Food Policy Report together with China Agricultural University**

2020

- Produce background reports on agriculture, rural economy and papers/op-eds on CBD post-2020 framework, sustainable diets, food system transformation, China's covid-19 stories
- Advise the State Council on greening supply chain through CCICED task force Phase I study
- Integrate concepts of sustainable diets into national policies
- Launch Global Food Economics and Policy Academy in CAU
- Co-organize the first Food System Summit Dialogue in China
- Initiate action alliances on sustainable diets, reducing food loss and waste, and agriculture with key partners

What We Will Do in FOLU 2.0 (2021-2024)

The Food and Land Use Coalition

We will focus on **5 priority strategic transitions**, diet shifting, regenerativa agriculture, nature conservation, FLW reduction and greening supply chain, which are all highly relevant to China's ambitions on carbon neutrality.

Promoting Healthy and Sustainable Diets

- Support national diet policy development and implemetation
- Forge alliances on sustainable diet
- Develop municipal food policy initiatives

Scaling productive & regenerative agriculture

- Develop recommendations on greening agricultural subsidies and eco-compensation
- Demonstrate regenerative approach in diverse farming systems

Protecting and Restoring Nature

- Develop integrated afforestation/ reforestation solutions to reverse tree cover loss & carbon emmission
- Support China's leadership in Nature Based Solution and CBD

Reducing Food Loss and Waste

- Set FLW target for the government and private sector
- Engage leading food companies to reduce FLW and scale up

Greening Food Supply Chain

- Build economic and business cases for green supply chain
- Engage the CCICED to implement policy recommendations like traceability system, inter-ministerial cooperation, CBD COP 15, Climate COP-26, south-south cooperation

Critical transition 1:
promoting healthy diets

Aspired outcome: Policy recommendations on healthy and sustainable diets are reflected in the implementation of the Food and Nutrition Development Plan (2021-2035) and other relevant policies.

Barriers to implementation

- The perception that sustainable diets is a foreign concept that is being imposed on China.
- Attempts to curb meat consumption may elicit a nationalistic response, with questions about why Western countries which consume more meat per capita are asking China to curb its meat consumption.

Theory of change

- Conduct research on what these concepts mean in the Chinese context, and then push the recommendations therein to key bodies working on diets, nutrition and health.
- Develop a local food policy initiative in one Chinese city which, if successful, could be scaled up to other cities and even nationally.

Critical transition 2:
scaling productive & regenerative agriculture

The Food and Land Use Coalition

Aspired outcome: China adopts systematic eco-compensation measures for sustainable agriculture, and national, provincial and county level policies promote greater uptake of agroecological practices

Barriers to implementation

- There has been little follow-up for major government program related to sustainable agricultural practices.
- Sustainable agricultural policies have tended to get diluted or distorted gradually at provincial, municipality and lower administrative levels.

Theory of change

- Develop eco-compensation standards for key agroecological practices to encourage the upscale of these practices together with CAU.
- Develop policy recommendations on sustainable crop-livestock production and other farming system together with RCRE.
- Promote FOLU messages around agriculture through CAU which is already a member of Policy Action Committee of Just Rural Transition
- Spread FOLU message through the alliance around sustainable agriculture that Syngenta is in the process of forming

Critical transition 3:
protecting & restoring nature

Aspired outcome: Scientific insights on sustainable land stewardship, including integrated pathways, afforestation/reforestation solution, ecological redlining, are effectively communicated to government agencies and used to inform policymaking.

Barriers to implementation

- China lacks integration across the policy areas that must be reformed to ensure sustainable food and land use.
- Communications channels for science to reach policy makers are not well structured, obvious, or easily accessible.
- Current ecological redlining policy has not explicitly considered the climate dimension

Theory of change

- Build the links between scientists and policymakers for uptake of the FABLE/FOLU recommendations by government bodies.
- Start dialogues with the key science advisory body about integrating a climate dimension into the design of the policy to facilitate the integration of nature conservation and climate mitigation/ adaptation in China.

Critical transition 6:
reducing food loss & waste

The Food and Land Use Coalition

Aspired outcome: Policy makers develop policies and plans to reduce food loss and waste (FLW) while the private sector takes steps to measure and reduce FLW along food supply chains.

Barriers to implementation

- Lack of measurement of the country's food loss and
- Lack of public-private partnerships along the supply chain
- Lack of the understanding on potential contribution of reducing food loss and waste to GHG emissions reductions

Theory of change

- The "Target-Measure-Act" approach will be adopted to address the barriers
- The key stakeholders will be convened and engaged through both top-down and bottom-up models.
- Scale up efforts through the "Improving Resource Efficiency and Reducing Food Loss and Waste" Platform
- Work with WRI China team to maximize efficiency of FOLU platform.

Critical transition X:
Greening Supply Chain

The Food and Land Use Coalition

Aspired outcome: Policy makers and market actors publish policies and take action on greening key international soft commodity supply chains, including policy collaborations between China, producer countries and consumer countries.

Barriers to implementation

- Greening international soft commodity supply chains is highly cross-cutting among various ministries.
- Lack of long-term coordination mechanisms, both for domestic and international efforts.
- Lack awareness and transparency on the business value of greening their international soft commodity supply.

Theory of change

- Make the political, economic, and business case for greening China's soft commodity supply chains
- Get top level political commitment to announce a Chinese policy initiative on greening soft commodity value chains, and
- Support institutional arrangements focusing on value chain security and sustainability

The Food and Land Use Coalition

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