Balkan Nature Talks Conference

Session 4: Tools and mechanisms for biodiversity conservation

Ecosystem services valuation, challenges and opportunities

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March 27th, 2024. Geneva, Switzerland.

I Background and Context

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2050 Goals

Section G. Global goals for 2050

12. The Kunming-Montreal Global Biodiversity Framework has four long-term goals for 2050 related to the 2050 Vision for biodiversity.

GOAL A

The integrity, connectivity and resilience of all ecosystems are maintained, enhanced, or restored, substantially increasing the area of natural ecosystems by 2050;

Human induced extinction of known threatened species is halted, and, by 2050, the extinction rate and risk of all species are reduced tenfold and the abundance of native wild species is increased to healthy and resilient levels;

The genetic diversity within populations of wild and domesticated species, is maintained, safeguarding their adaptive potential.

GOAL B

Biodiversity is sustainably used and managed and nature's contributions to people, including ecosystem functions and services, are valued, maintained and enhanced, with those currently in decline being restored, supporting the achievement of sustainable development for the benefit of present and future generations by 2050.

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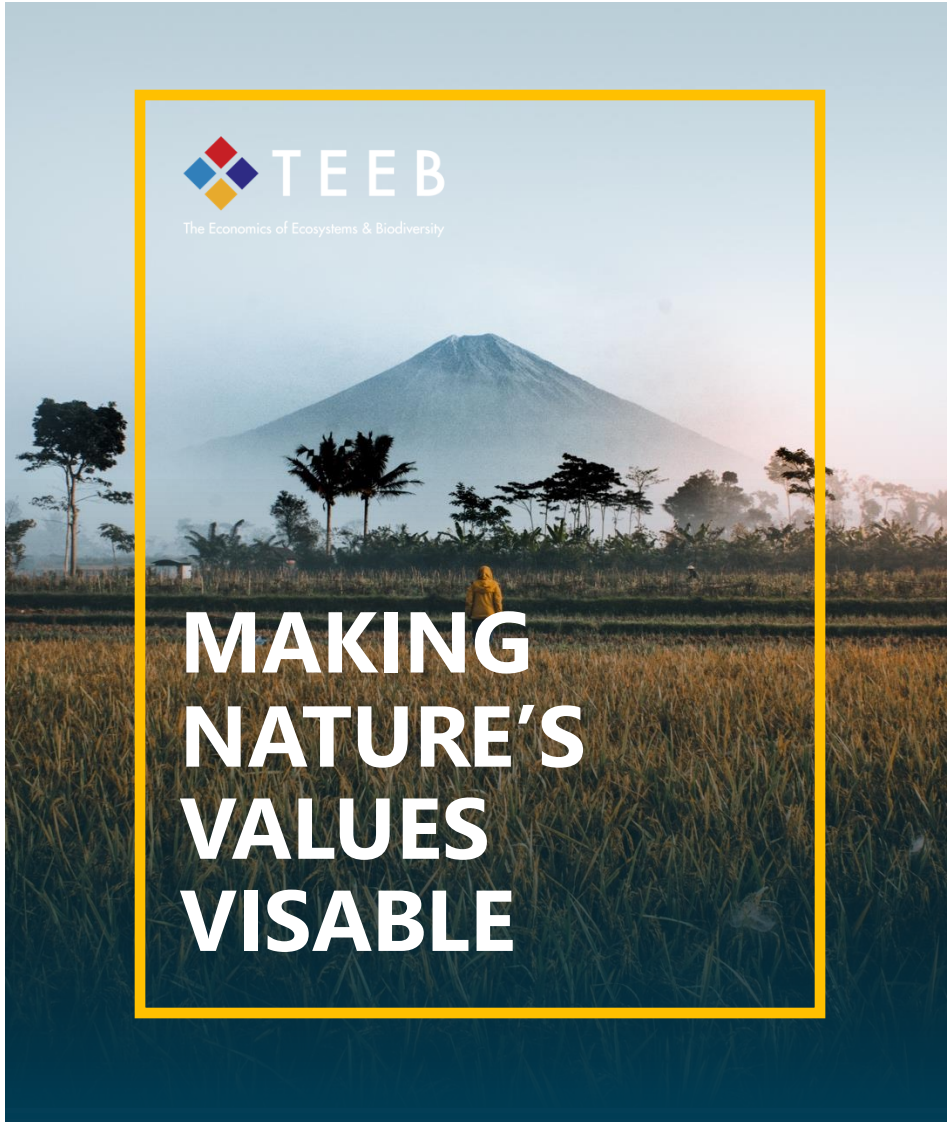
The Economics of Ecosystems & Biodiversity

Mission: To incorporate the value of nature in public and private sector decision making, at all levels.

Following a scientific approach to valuation, decision makers can recognize and account for the benefits provided by ecosystems and biodiversity, demonstrate those values in economic terms, and capture those values with the decisions they make.



Background and Context

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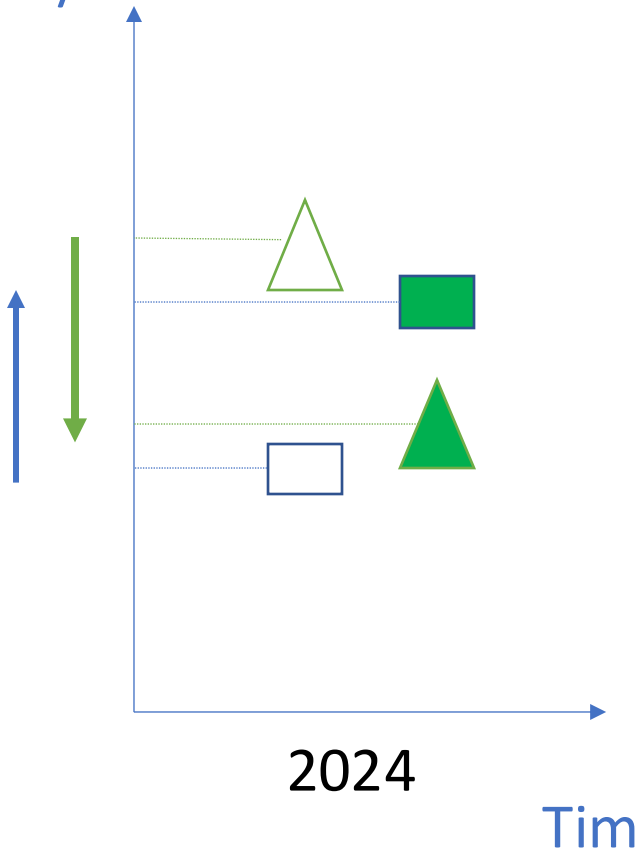
Financial/Economic flows



Pro-nature option (ignoring externalities)

Business as Usual (ignoring externalities)

Pro-nature option (including externalities)

Business as Usual (including externalities)

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II Transforming food systems

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Why select the Agriculture sector?

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7.1.2 THE GLOBAL 20 REGION-SECTORS

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

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

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The UN Food Systems Summit

Food systems hold the power to realize our shared vision for a better world."

READ, *the Secretary-General's Chair Summary and Statement of Action on the UN Food Systems Summit*

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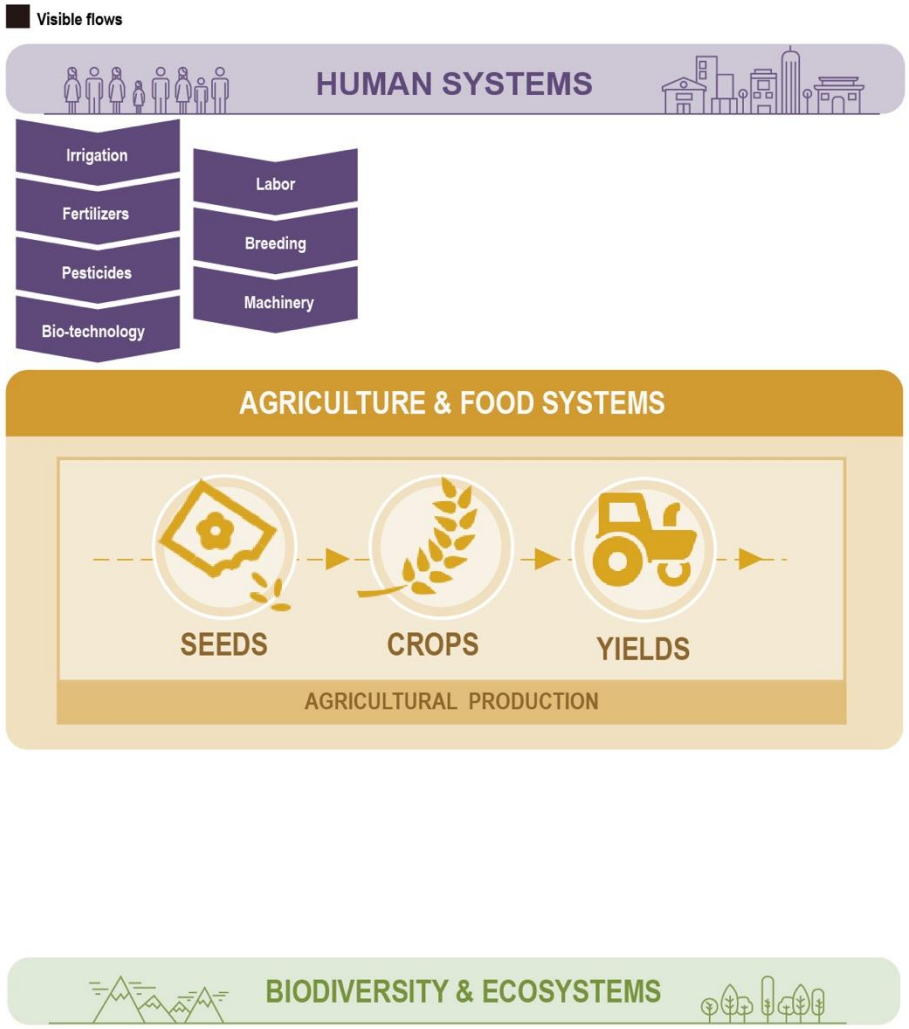
The visible and invisible flows of agricultural production



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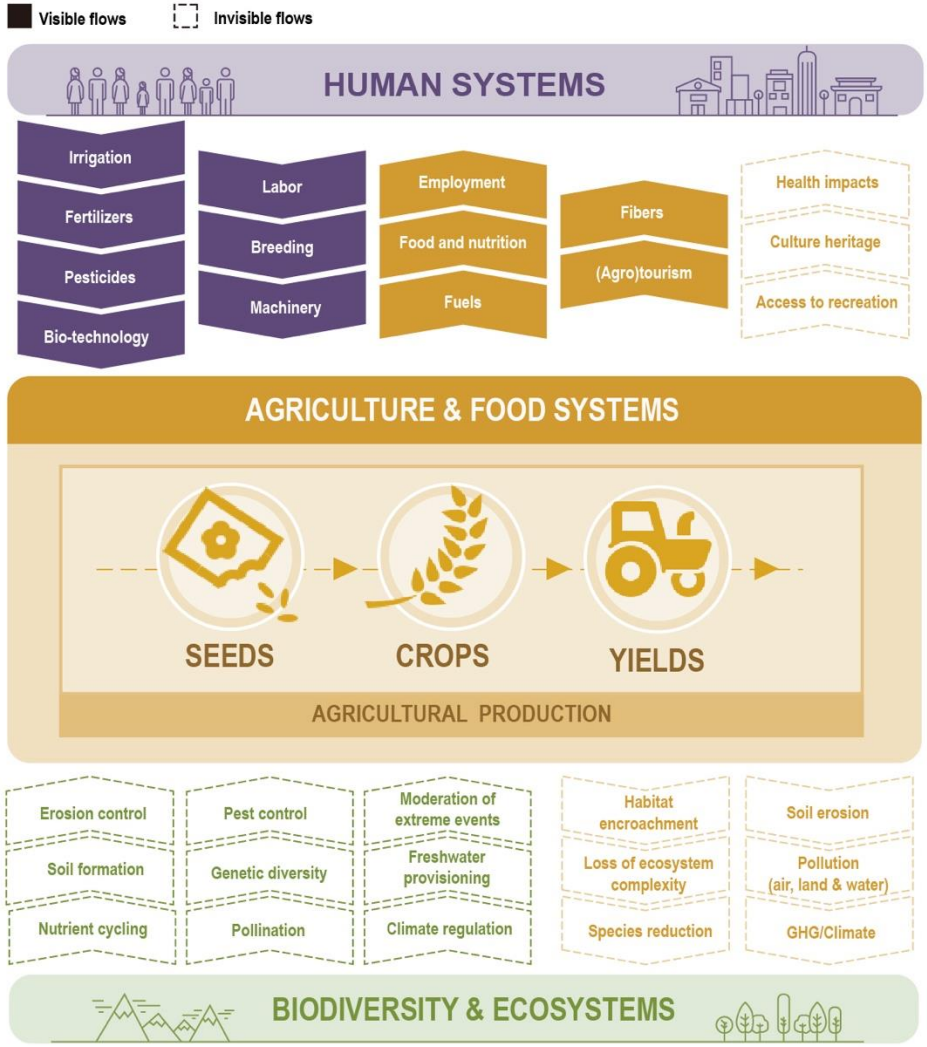
The visible and invisible flows of agricultural production



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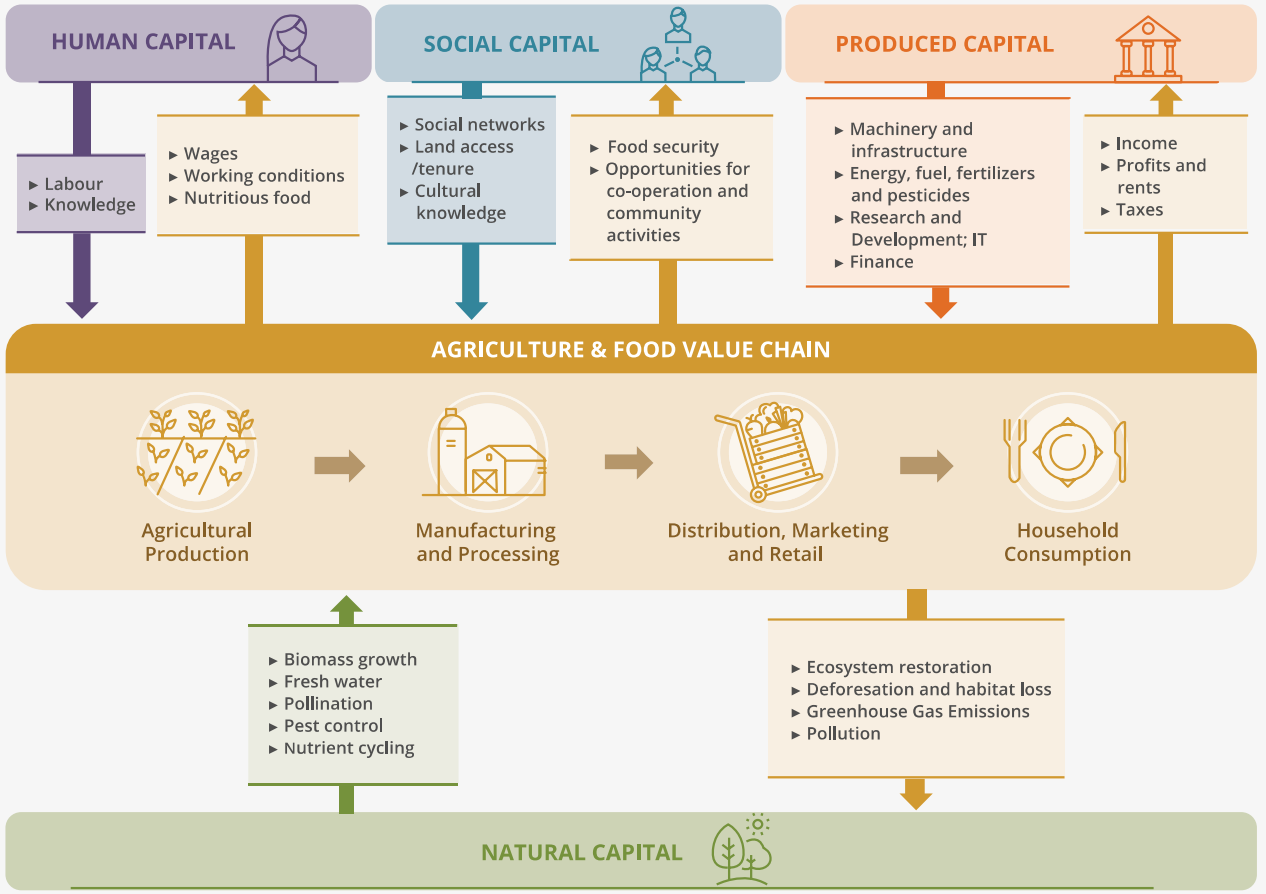
The visible and invisible flows of agricultural production

Figure 2.1 Capital stocks and value flows in eco-agri-food systems (Source: Hussain and Vause 2018)



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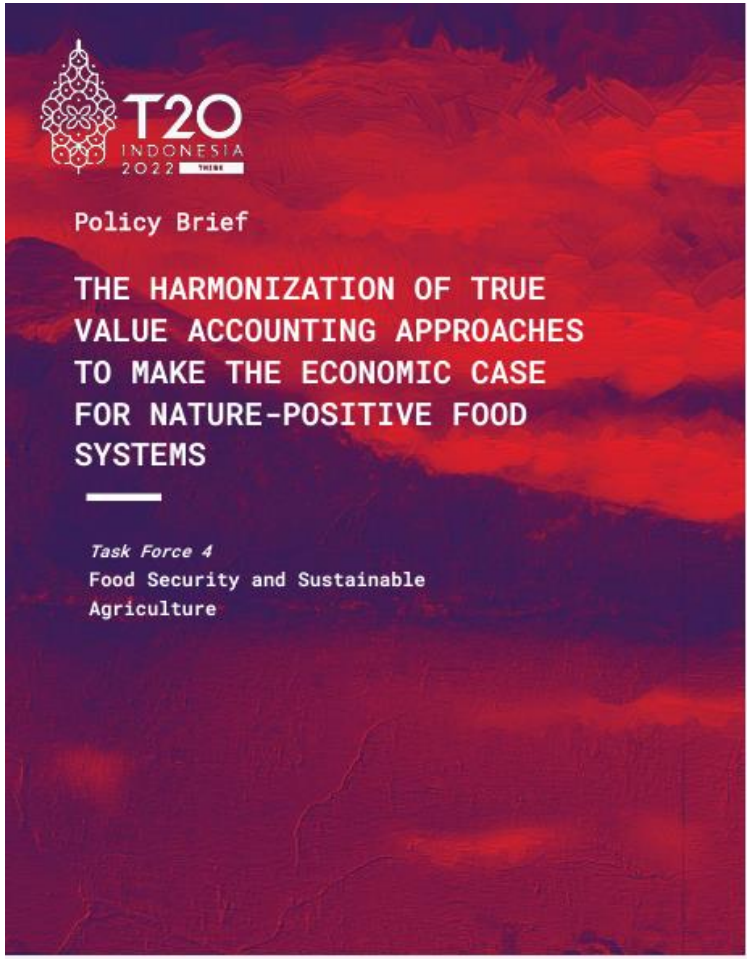

Tomas Declercq (United Nations Environment Programme)
Salman Hussain (United Nations Environment Programme)
Suria Tarigan (IPB Bogor University)
R. Nunung Nuryartono (IPB Bogor University)

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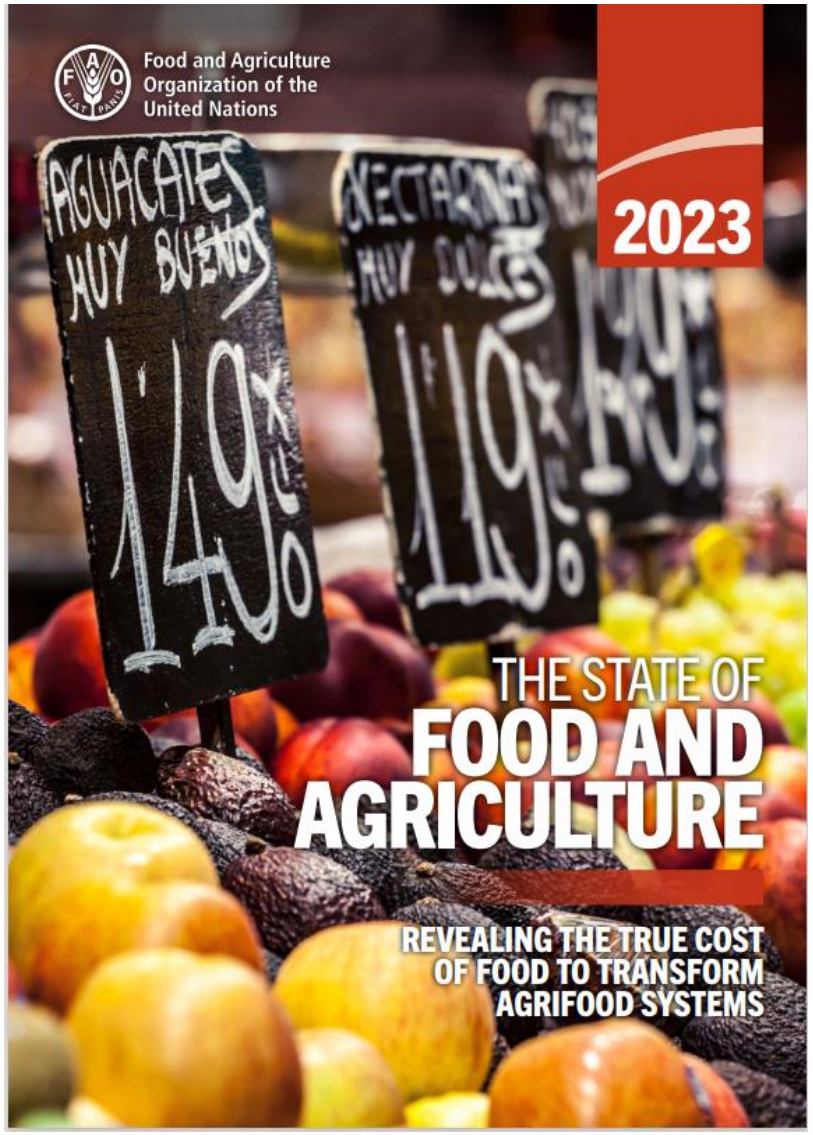

BOX 11 **TEEBAgriFood evaluation of rice production in northeastern Thailand**

The TEEBAgriFood Evaluation Framework was used to identify and measure the diverse costs and benefits of expanding organic rice production in Thailand. The aim was to pinpoint options for promoting the long-term sustainability of production and management of rice landscapes. The analysis was concluded in June 2022 and considered hidden costs across all four capitals: natural (greenhouse gas [GHG] emissions and biodiversity), human (effects of air pollution and pesticides on health, happiness and well-being), social (cooperation, trust and pro-social or voluntary behaviour) and produced (revenues and expenditures of conventional versus organic rice).

Taking into account government policies and targets, as well as the views of local stakeholders – including local agricultural officers, farmers and banks – the analysis proposed four scenarios to demonstrate the potential synergies and trade-offs of different rice practices in Thailand over 2019–2035. One was the baseline business-as-usual (BAU) scenario (S1), while the other three scenarios (S2, S3 and S4) assumed the progressive adoption of organic rice production and other sustainable practices. Each scenario was measured over three time frames: short (2025), medium (2030) and long (2035).

III TEEBAgriFood studies

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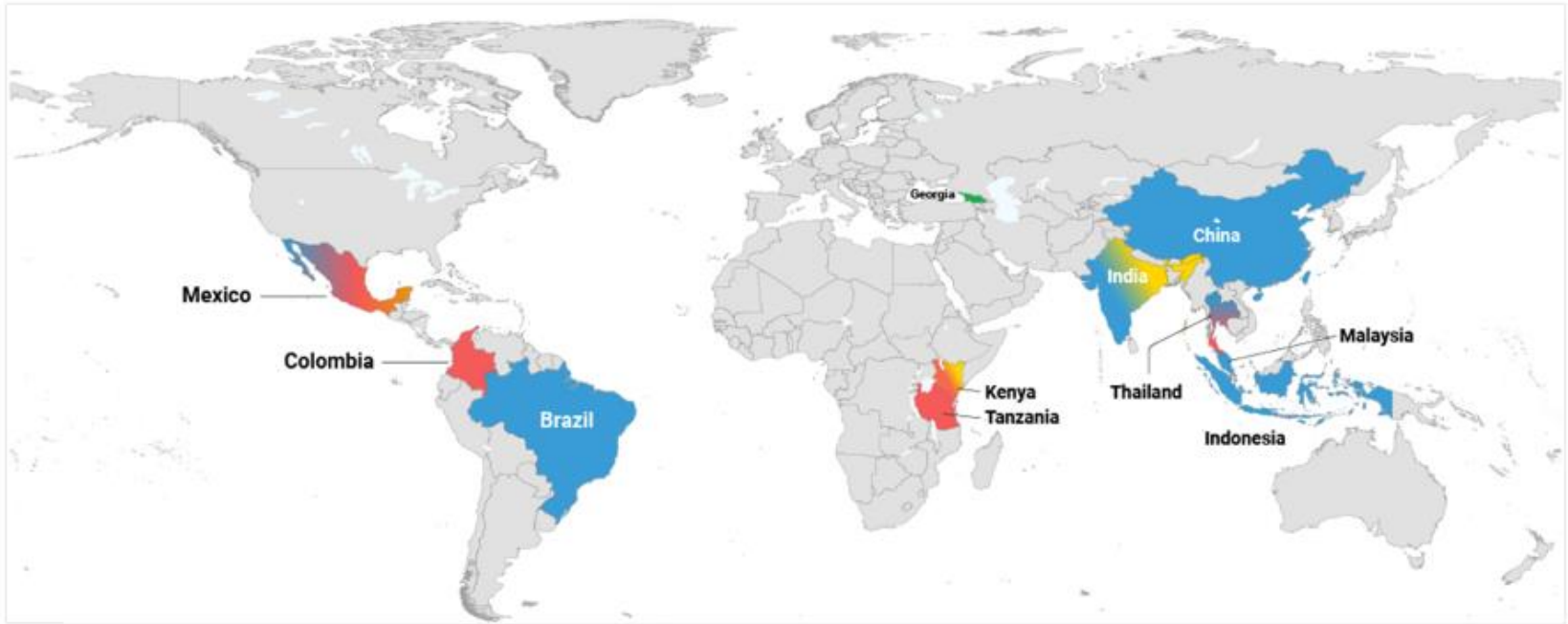
TEEBAgriFood Country Map



The designations employed and the presentation of material including on any map in this work do not imply the expression of any opinion whatsoever on the part of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Teebweb.org

LEGEND

IKEA FOUNDATION

India: Organic Farming and Agroforestry
Kenya: Water towers, carbon sequestration and farming

EU-PI

Brasil: 1) Low carbon agriculture 2) Urban and periurban agriculture
China: "Green is Gold", and Soya production
India: Organinc farming and agroforestry
Indonesia: Coffee and Cacao Agroforestry Systems
Malaysia: Good Agricultural Practices in Vegetable Farming
Mexico: Agroforestry coffee
Thailand: Sustainable Rice Platform

IKI

Colombia: Land Use Change
Kenya: Livelihoods based on reforestation and carbon farming
Mexico: Conventional & Traditional Maize
Tanzania: Land Use Change; Water Quality & Food Security
Thailand: Organic Rice Production

GEF

Georgia: Sustainable Land Management Practices

GIZ

Mexico: Conventional & Traditional Maize

Organics Study

INTEGRATING THE VALUE OF ECOSYSTEMS AND BIODIVERSITY IN RICE SYSTEMS IN THAILAND

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

TEEB The Economics of Ecosystems & Biodiversity

IKI INTERNATIONAL CLIMATE INITIATIVE

econ คณะเศรษฐศาสตร์ มหาวิทยาลัยขอนแก่น FACULTY OF ECONOMICS, KHON KAEN UNIVERSITY

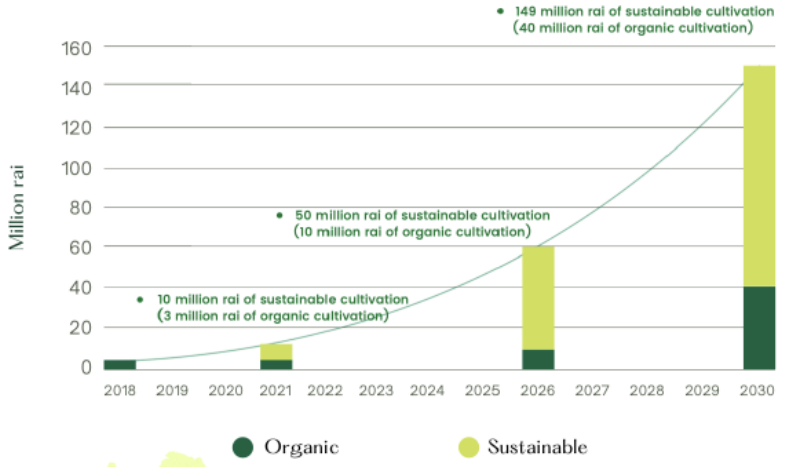
Funded by the European Union

Scenario development

- Scenarios were developed to understand potential future impacts of government policies, including the **One Million Rai Organic Rice** promotion policy,
- **Parliamentary targets for achieving sustainable agriculture by 2030**, and the aims of the **Bio, Circular, and Green Economy model** in Thailand.

- The One Million Rai Organic Rice Farming pilot project.

The extraordinary committee to consider studying the guidelines for controlling the use of chemicals



Scenario 1 : Organic rice expansion in BAU scenario. (One million rai)

Year/ Organic area (Rai).

2019/ 0.58 million rai.

2035/ 1 million rai.

Scenario 2 : Accelerated organic rice promotion. (One million rai every 5 years)

Year/ Organic area (Rai).

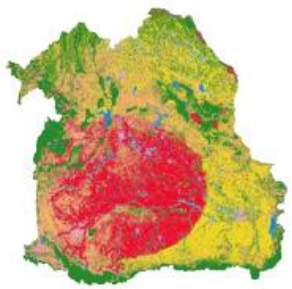
2019/ 0.58 million rai.

2035/ 4 million rai.

Scenario 3 : Enhanced organic rice promotion. (One million rai every year)

Year/ Organic area (Rai).

2019/ 0.58 million rai.

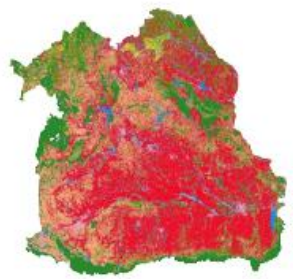


2035/ 15 million rai.

Scenario 4 : Transformational change towards sustainability. (Thai parliamentary)

Year/ Organic area (Rai).

2019/ 0.58 million rai.

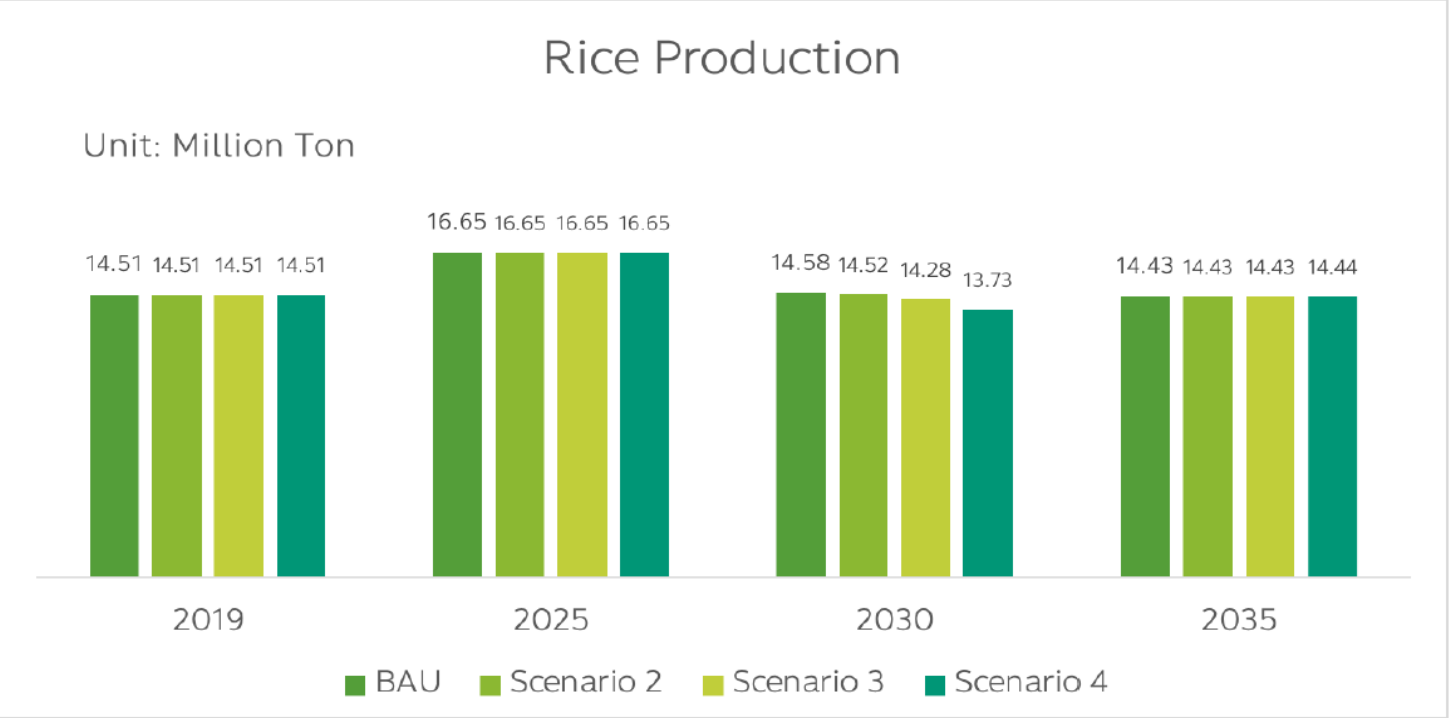


2035/ 32 million rai.

1. Negligible impact on rice production yield can be offset by higher prices.

- Relatively minor losses, both in terms of volume output and dollar value.

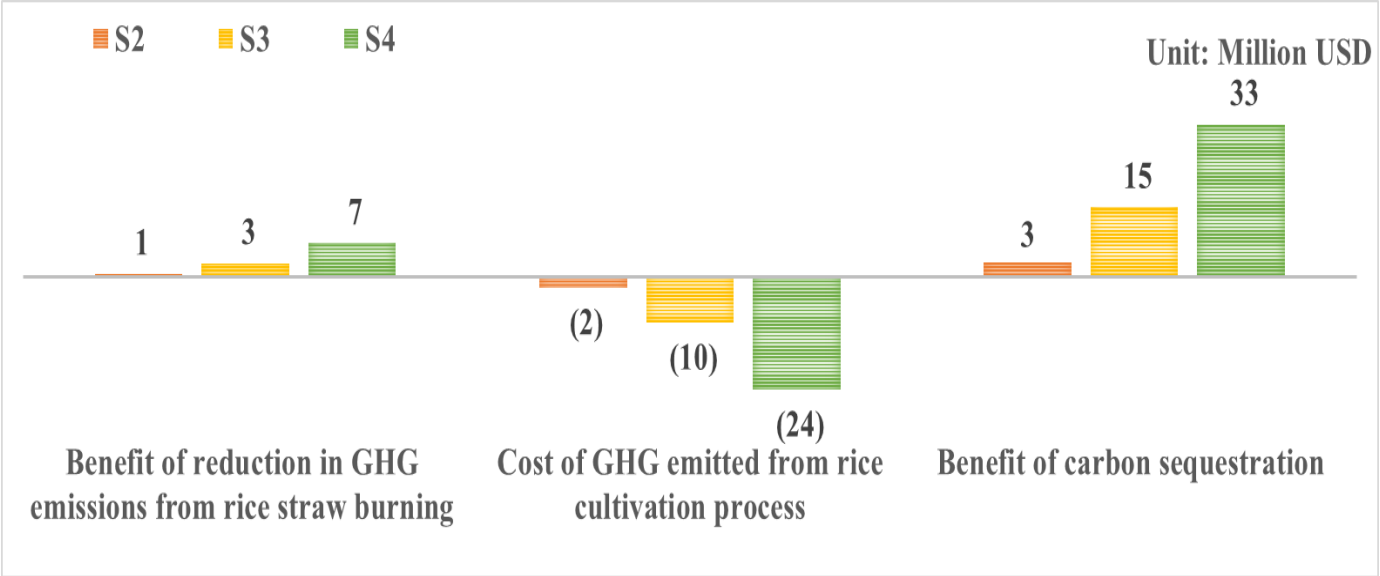
Annual rice production in each scenario from the rice fields in Northeast of Thailand



2. Lower greenhouse gas emissions

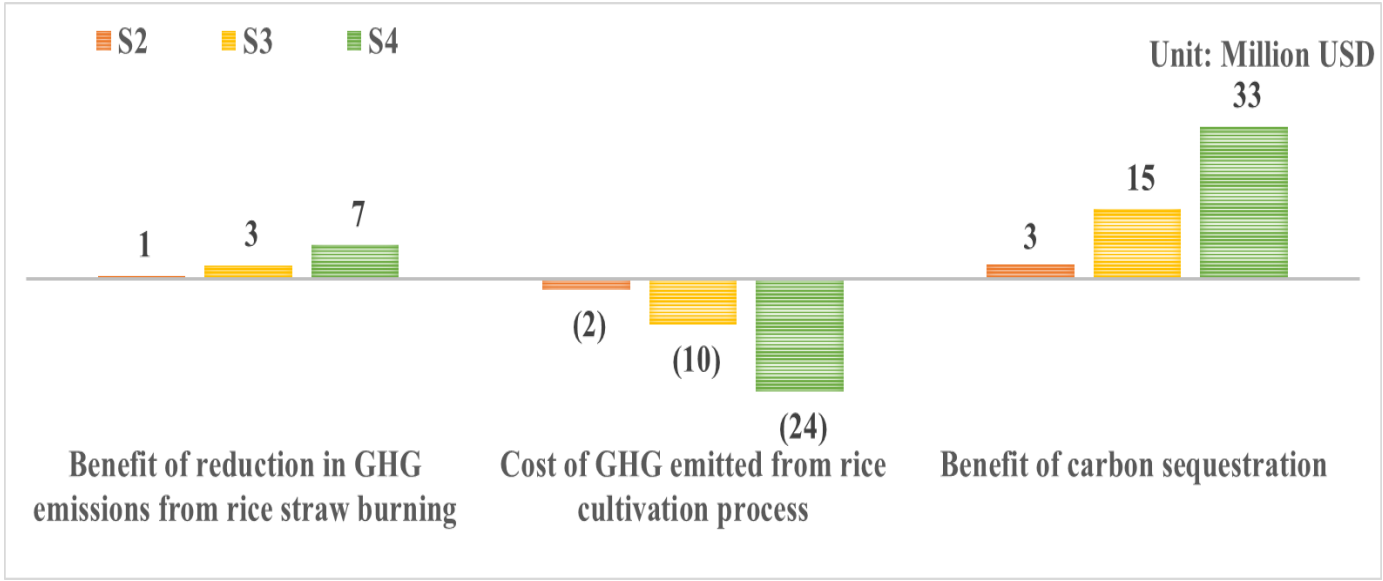
1. The expansion of organic rice area is projected to reduce overall GHG emissions from rice fields, due to prohibition of stubble burning and higher soil carbon accumulation.

- We estimate this as TEEBAgriFood is a full life cycle approach
- A failure to do so means we would miss opportunities and threats



2. Lower greenhouse gas emissions

1. The expansion of organic rice area is projected to reduce overall GHG emissions from rice fields, due to prohibition of stubble burning and higher soil carbon accumulation.
2. Higher GHG emissions in cultivation process for organic rice production are roughly offset by the elimination of stubble burning and related GHG emissions.
   - There will be trade-offs. We present the science and economic evidence



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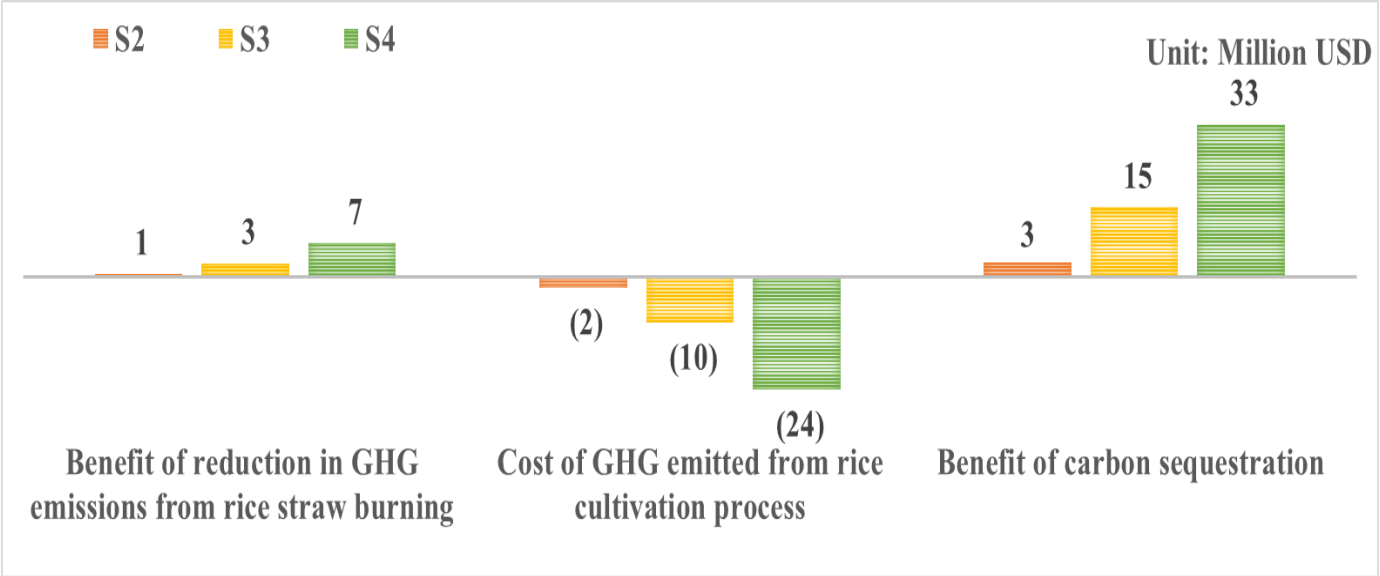
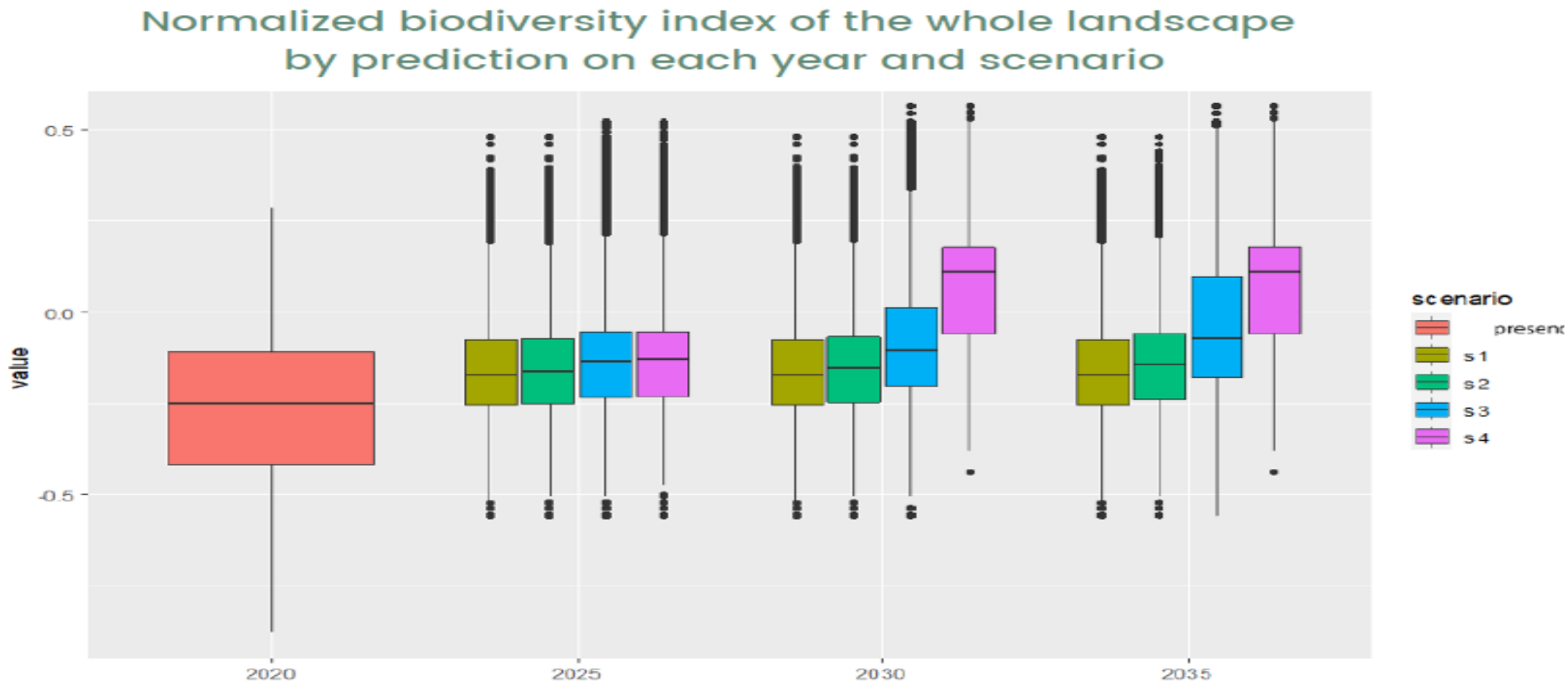
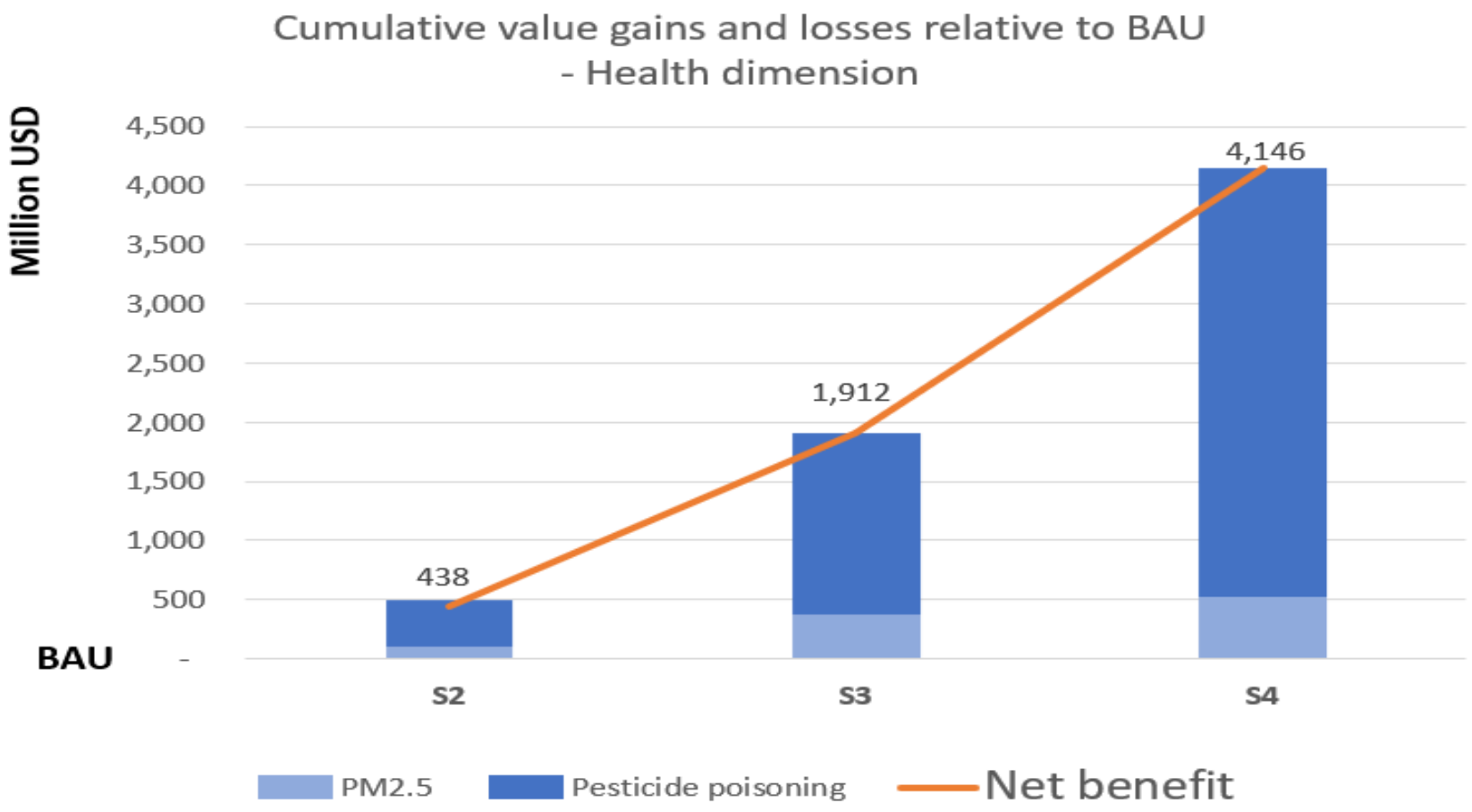
1. The expansion of organic rice area is projected to reduce overall GHG emissions from rice fields, due to prohibition of stubble burning and higher soil carbon accumulation.
2. Higher GHG emissions in cultivation process for organic rice production are roughly offset by the elimination of stubble burning and related GHG emissions.
3. In addition, soil organic carbon accumulation is higher under organic methods, resulting in lower net emissions from organic rice overall.



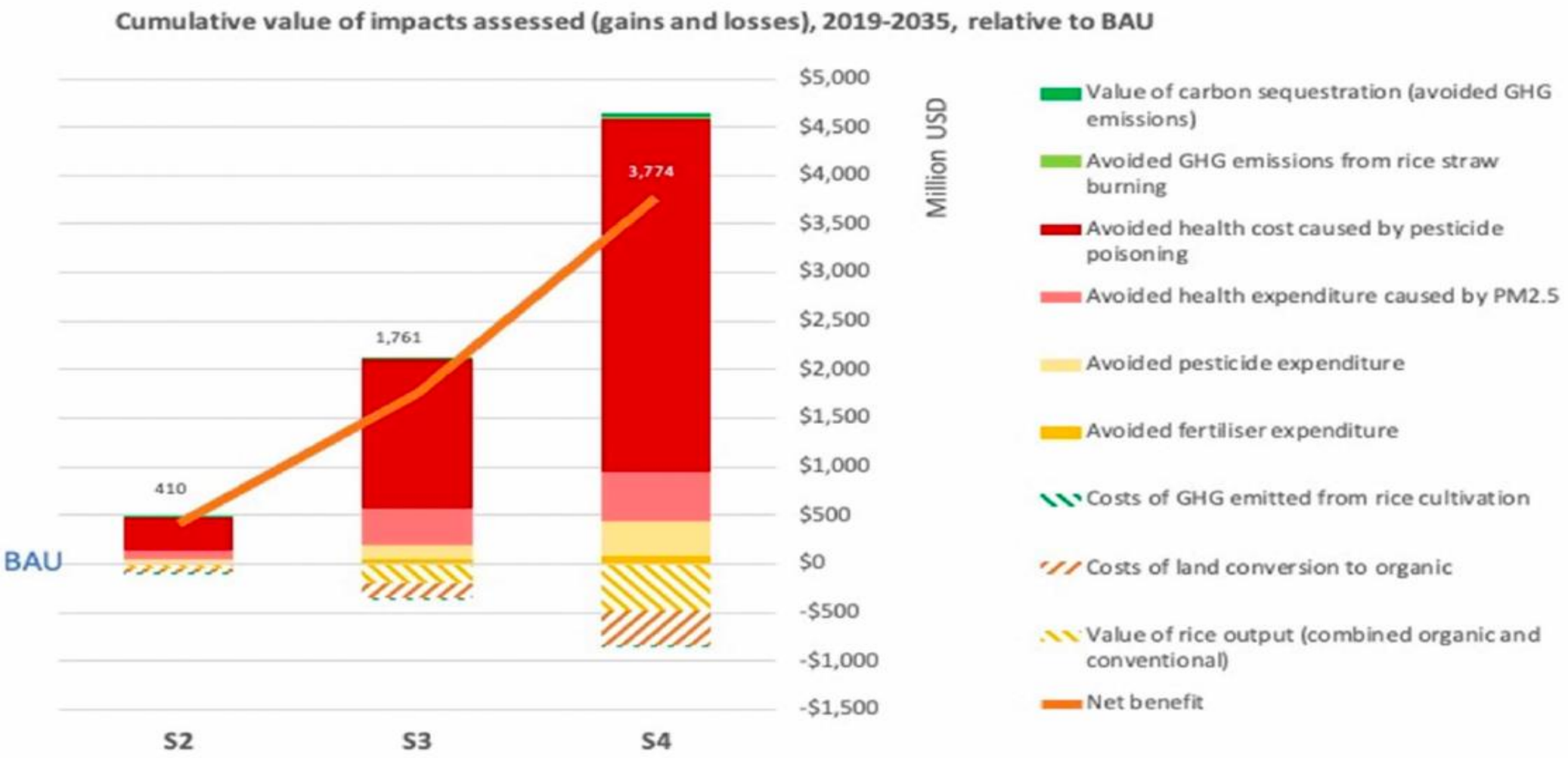
3. Enhanced biodiversity



4. Health Impacts



Overall net benefit from a shift to organic



IV TEEB impact

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I Fostering discussion across thematic & geographical jurisdictions

Presidential Decree no. 11700/2023: the National UPA Programme refers to TEEB´s UPA Guide as the basis for state, district and municipalities to jointly plan and implement actions.

Resource allocation: 3,2 million USD commited.

Presidential Decree no. 11822/2023: the "National Food Security and Nutritional Strategy for Cities" adopted the UPA Guide for implementing actions on healthy and sustainable food productions in cities.

Replication: TEEB´s capacity building on UPA Guide implementation will be replicated by government in 12 metropolitan regions in the next 3 years, reaching over 96 cities.

Legislative process: UNEP convened parlamentarians to support Project Bill no. 182/2017 approved in Congress plenary.

II Communicating scenarios and results

https://alemdosalimentos.escolhas.org/

Agroecological transition in unproductive pastures in the São Paulo metropolitan region could generate the following benefits:

Food Security – approximately 700 hectares of agroecological gardens would be sufficient to end food deserts in the periphery.

Cooling capacity - agroforestry systems could lower temperatures by 0.2 degrees Celsius in some cities.

Flood mitigation – the increase in organic matter in the soil provides better water infiltration, equivalent to three flood control pools, each costing US$ 30M

Erosion regulation – soil conservation practices, such as mulching the soil with straw and level cultivation, would prevent 8.5 tons/hectare/year of soil loss, improving water quality for domestic use.

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III Bigger picture – contributing to impact

Impact: agroforestry included in the Five-Year Midterm Development Plan for Indonesia for the first time, with noted contribution of the TEEBAgriFood study

IV Upscaling/mainstreaming and project sustainability

UNSDCF

- UNEP to train civil servants at the premier Lal Bahadur Shastri National Academy of Administration (LBSNAA)
- TEEBAgriFood Initiative included in Outcome Group on Climate and Environment under UNSDCF 2023-2026 for India

ICAR

- Research Advisory Committee of IIFSR recommended application of TEEBAgriFood framework to assess the impacts of organic farming and agroforestry in other agroecological zones of India via the All-India Network on Organic Farming (AINOF)

Education

- TEEB included in the syllabus of undergraduate program on Natural Farming by Indian Council of Agriculture Research (ICAR)
- Expected to be included in 51 State Agriculture Universities from 2024 onwards

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Thank you

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