Making Values Visible

TEEBAgriFood initiative in Thailand focus on organic and sustainable rice

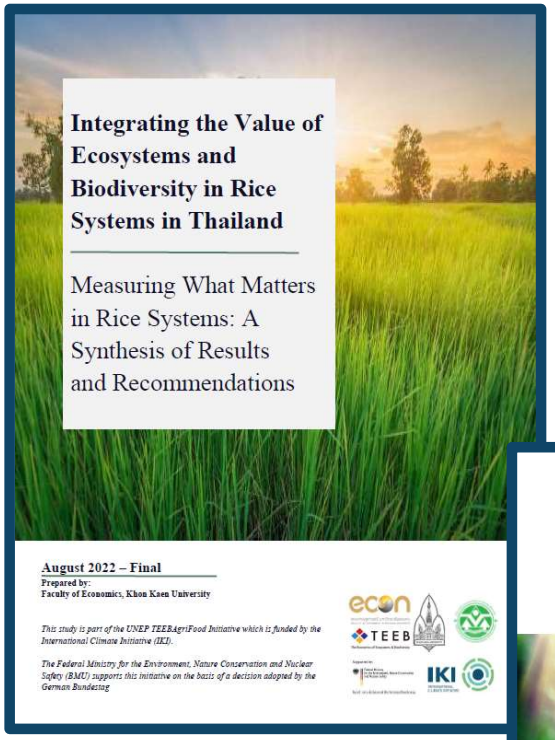
Rebeca Leonard, Consultant, TEEBAgriFood Thailand, UNEP

TEEBAgriFood in Thailand is steered by ONEP, Ministry of Environment and Natural Resources

The Steering Committee engaged four agencies of the Ministry of Environment and Natural Resources: Biodiversity Management Division, Department of National Parks, Wildlife and Plant Conservation, Royal Forest Department, Department of Environmental Quality Promotion

Six agencies of the Ministry of Agriculture and Cooperatives: Department of Agriculture, National Bureau of Agricultural Commodity and Food Standards, Rice Department, Department of Agriculture Extension, Department of Livestock Development, Department of Fisheries

And the Office of the National Economics and Social Development Council NESDC



Supported by:

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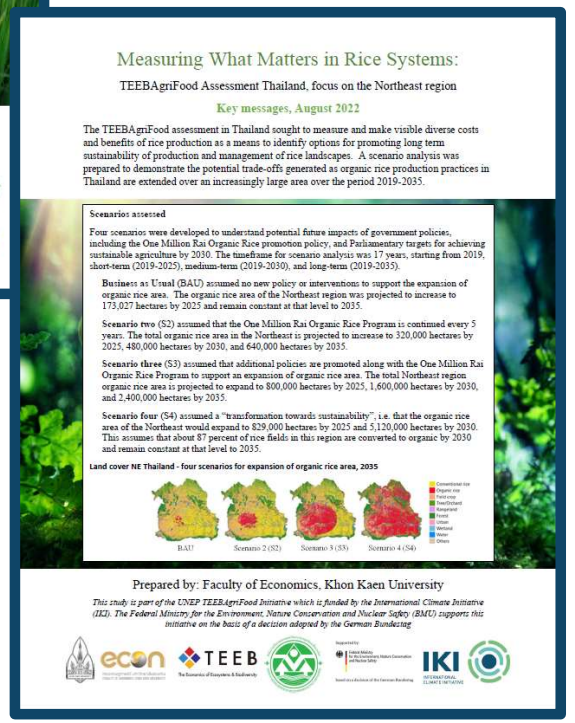

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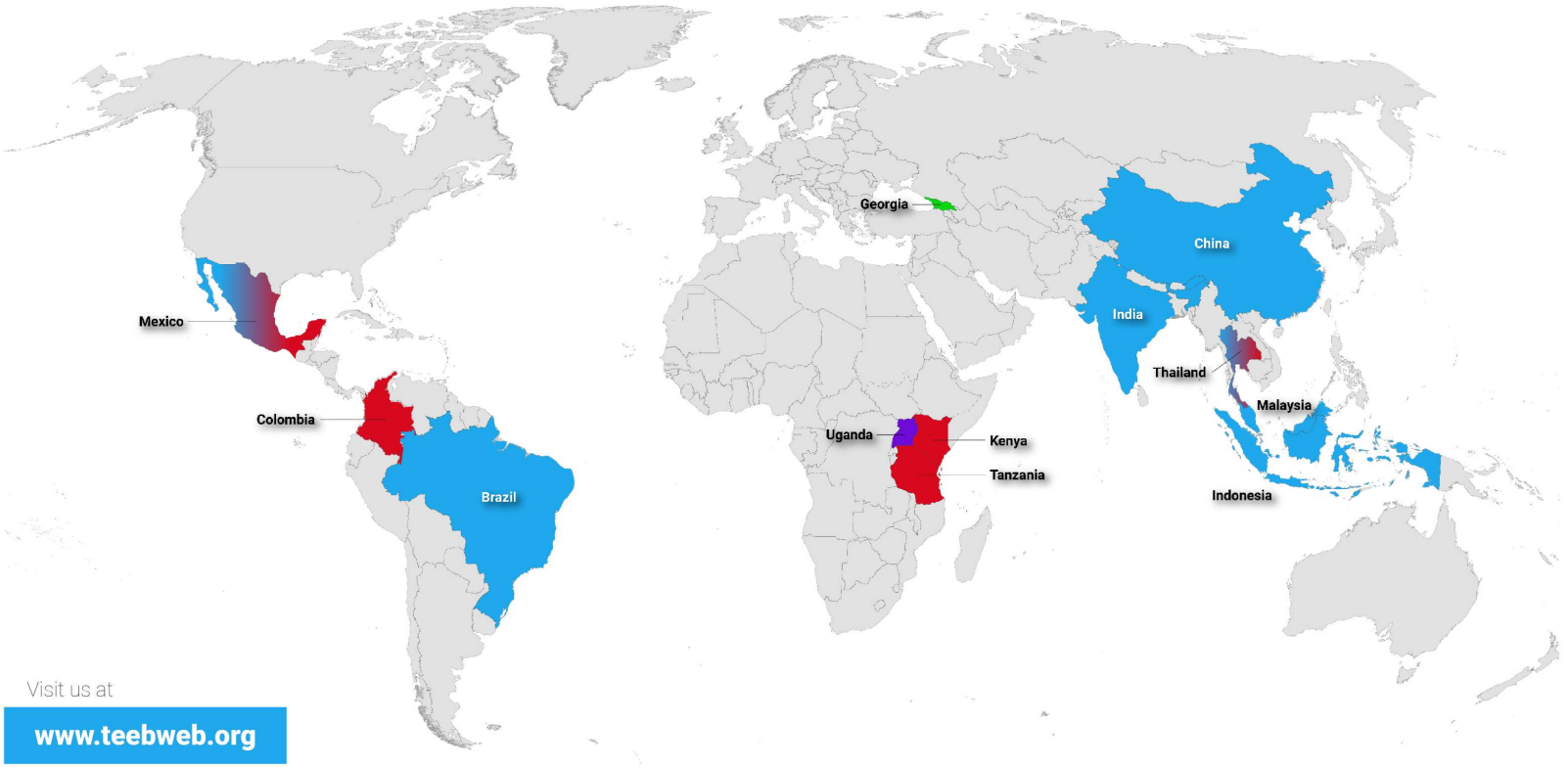
The Economics of Ecosystems & Biodiversity

Piloting TEEBAgriFood around the world



- **EU-PI**
  Brazil i) Degraded Pasture Land Restoration ii) Urban and Periurban Agriculture
  China Green Food Production
  India Organic Farming and Agroforestry
  Indonesia Cacao Agroforestry Production
  Mexico Agroforestry Coffee
  Thailand Sustainable Rice Production
  Malaysia Good Agricultural Practices (MyGAP): sustainable vegetable Farming in the Cameron Highlands
- **IKI**
  Colombia Land-use planning; bioeconomy in the Amazon region
  Kenya Cereals and Medicinal Plants
  Mexico Conventional & Traditional Maize
  Tanzania Land Use Change; Water Quality & Food Security
  Thailand Organic Rice Production
- **GEF**
  Georgia Sustainable Land Management Practices
- **NORAD**
  Uganda Sustainable Urban and Peri-Urban Agriculture for Wetlands Conservation

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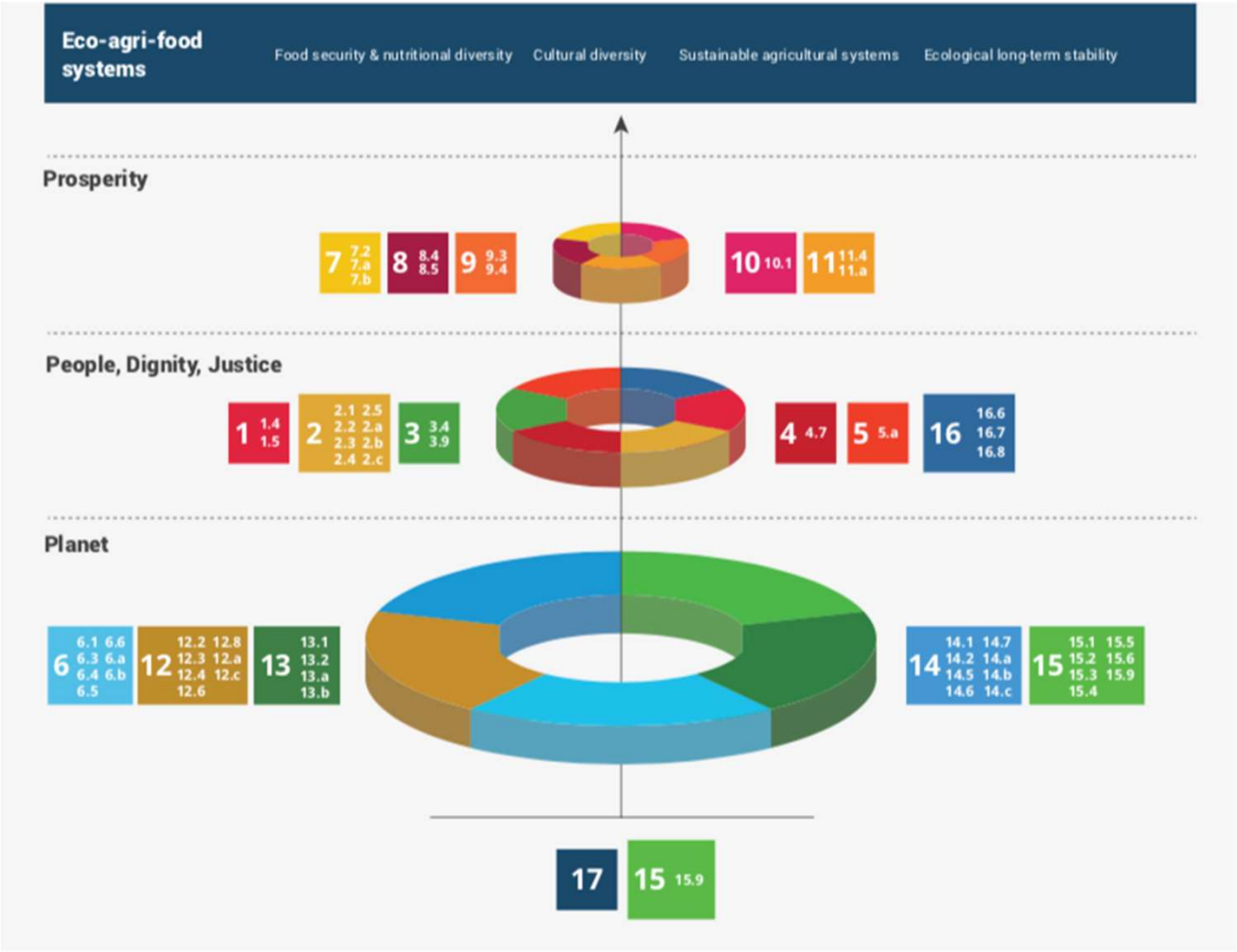
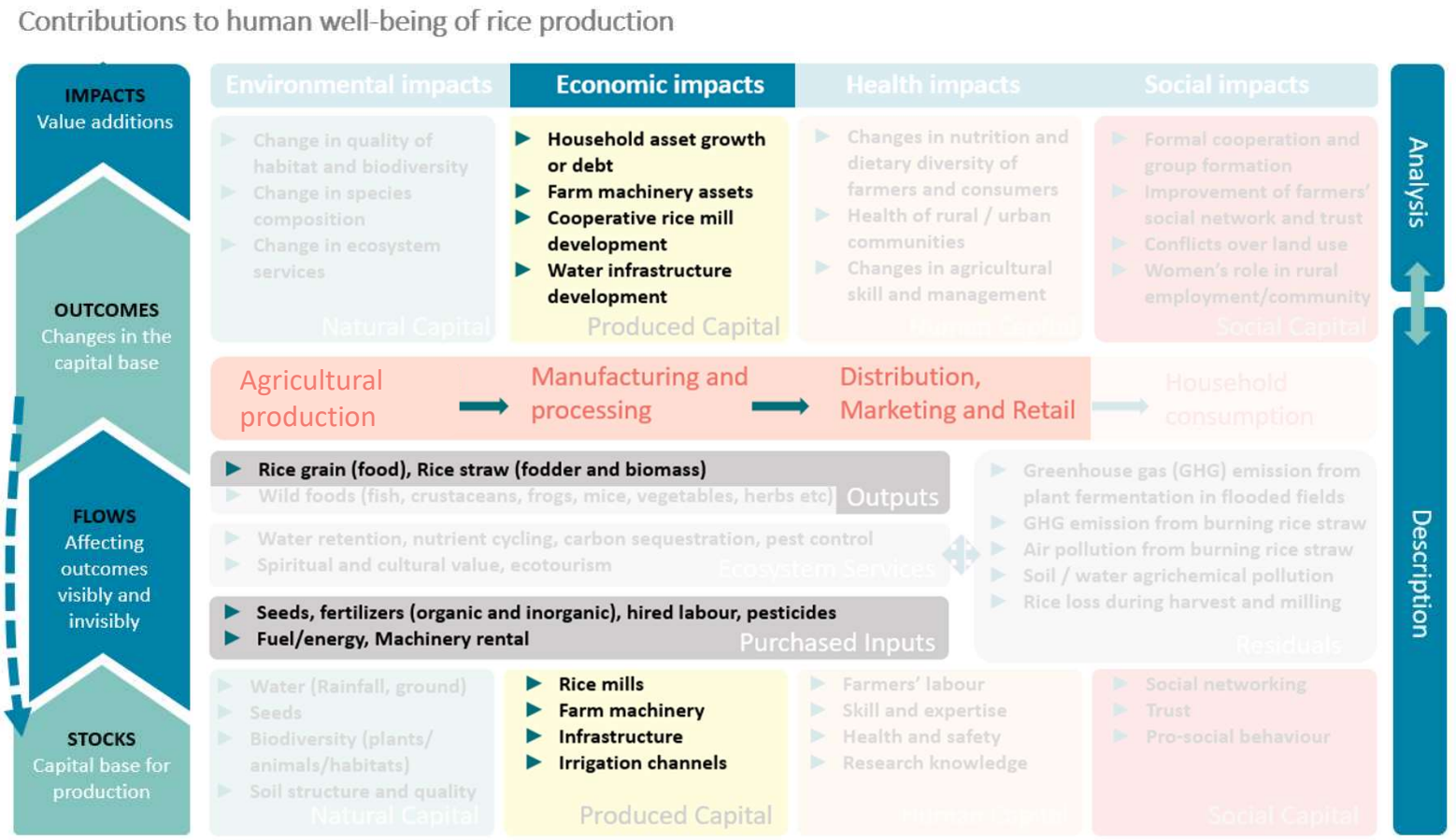


- Principal objective is to **mainstream the values of biodiversity and ecosystem services into decision-making at all levels**.

The metric of 'productivity per hectare' fails to account for these externalities

#FixFoodMetrics

TEEBAgriFood Framework



Adapted from TEEBAgriFood Evaluation Framework (UNEP, 2018)

TEEBAgriFood in Thailand

- **Case study examples**
  - The expansion of organic rice
  - The adoption of sustainable rice practices
- **Concluding remarks on mainstreaming biodiversity in agriculture**

Organic Study

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

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

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Funded by the European Union

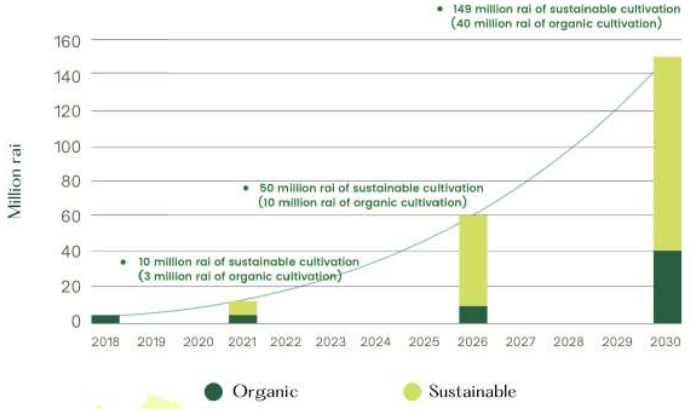
Scenario development

- KKU used scenario analysis and spatial modelling to project the future expansion of organic rice production practices over an increasingly large area of the Northeast Thailand over the period 2019-2035.

- 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).

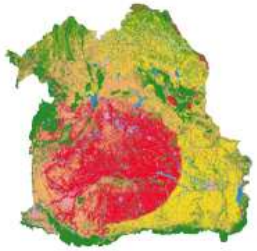
2019/ 0.58 million rai.

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).

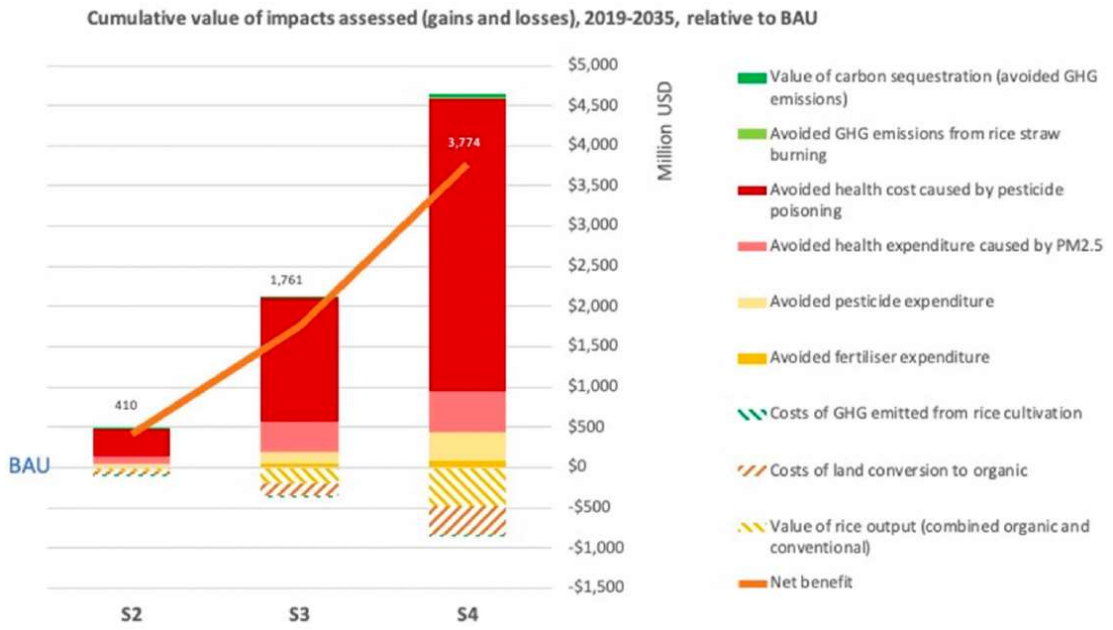
2019/ 0.58 million rai.

2035/ 32 million rai.

Findings :

1. Overall net benefit from a shift to organic

- Taking into account three dimensions (output of rice production, environment and human health), the overall result of the scenario analysis is that the **greater the organic rice area in the Northeast, the higher the net benefit**.
- Scenario 4 projects the highest net benefit of rice production, representing a total of 3,795 million USD of accumulated value generated from 2019 to 2035, relative to BAU.

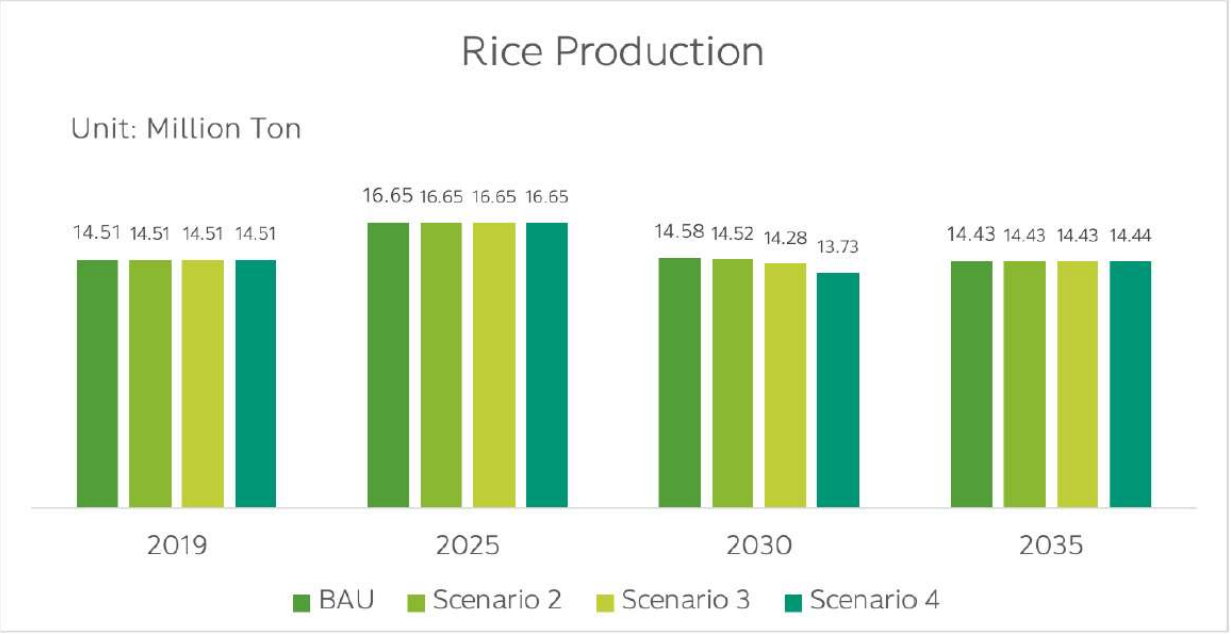


Findings :

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

- It is often assumed that a switch to organic from conventional will result in lower rice yields in the short to medium term.
- However, the findings of this study project relatively minor losses, both in terms of volume output and dollar value.
- The loss of income from the marginally lower yield for organic farmers would be directly offset, as long as farmers can sell their organic rice at a modest premium price.

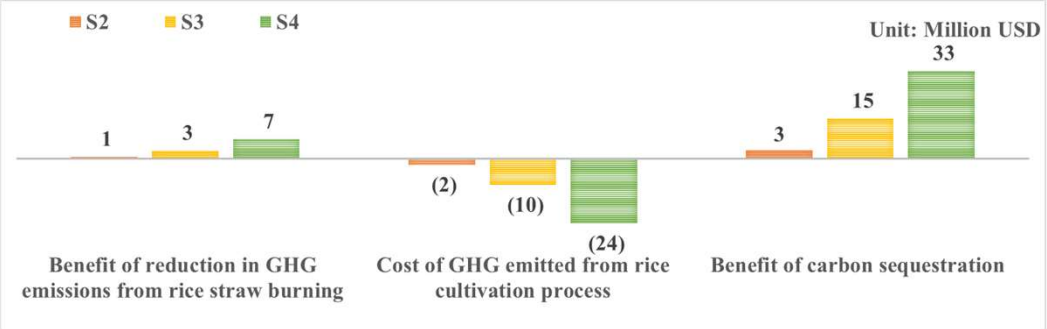
Annual rice production in each scenario from the rice fields in Northeast of Thailand

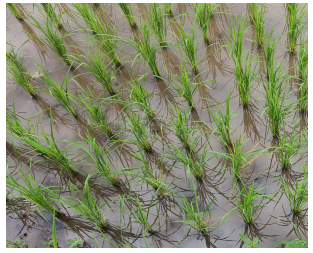


Findings :

3. Lower greenhouse gas emissions

- 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.
- Higher GHG emissions in cultivation process for organic rice production are roughly offset by the elimination of stubble burning and related GHG emissions.
- In addition, soil organic carbon accumulation is higher under organic methods, resulting in lower net emissions from organic rice overall.

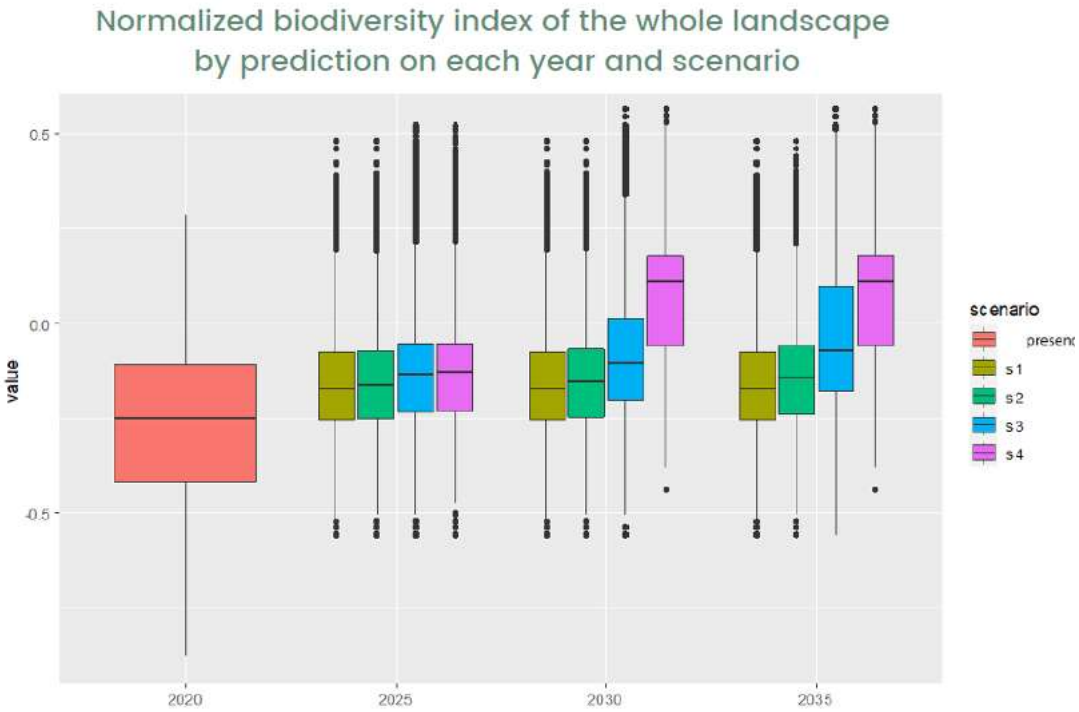




4. Enhanced biodiversity

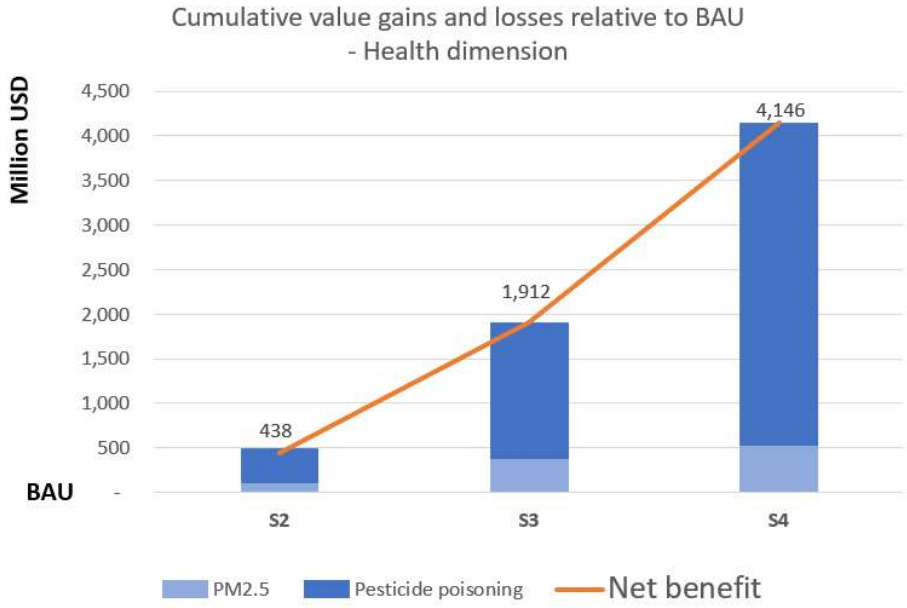
Findings :

- With expansion of organic rice from 2019 to 2035, the study models showed a rise in agro-biodiversity indices.
- A high diversity of insect varieties in rice fields promotes natural pest control.
- It is possible to consider the avoided expenditure on pesticide as a proxy for the benefit of increased biodiversity as a result of organic practice.
- Avoiding expenditure on pesticides was projected to save organic farmers a total of 350 million USD from 2019-2035 in S4 relative to BAU.



Findings :

- A shift to organic rice production would reduce the negative health externalities associated with conventional rice production, through reduced exposure to pesticides and air pollution.
- Monetary estimates of some of the health-related benefits associated with a shift to organic were assessed through data on treatment costs, estimates of the value farmers place on reduced health risks, and estimates of the loss in productivity, measured with reference to gross provincial product.
- Under S4, the cumulative monetary value of health benefits between 2019-2035 was estimated at 4,146 million USD.



6. Distributional impacts

Findings :

- The future value gains and losses, however accrue to different groups.
- Benefits of organic area expansion gained by farmers include lower production costs, and health risk reduction.
- Benefits to the Thai public include higher productivity and lower expenditures associated with improved health outcomes as well as enhanced biodiversity.
- Benefits to the international community include the overall reduction in GHG emissions from the expansion of organic rice area, due to the elimination of stubble burning and higher soil organic carbon accumulation.

Recommendations

- The evidence of our analysis makes a strong economic case for a major expansion of organic rice in the Northeast of Thailand.
- Current public support for farmers focused on reducing financial hardship – reorient these to encourage farmers to adopt more sustainable practices.
- Initiatives such as One Million Rai Program (2017-2021) should be scaled up and enhanced.
- Exporting organic rice to international markets requires different certifications depending on countries. To ensure profitability for farmers, support for certification costs and promote the grouping of farmers.
- Marginally lower yields from organic farming, would mean losses for farmers, but these can be directly offset by modest premium price.
- Organic rice farmers receive not only positive returns from cost reductions and health improvements but also generate positive returns to their local community and wider society.
- Governments should step in to ensure the public benefits from positive externalities (for health and environment) that are generated by organic rice farmers.

TEEBAgriFood Thailand

Measuring what matters in sustainable rice production

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

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IKI International Climate Initiative

econ Faculty of Economics, Khon Kaen University

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Focus on sustainable rice production practices as advocated under the Sustainable Rice Platform (SRP) Standard for Sustainable Rice Cultivation (SRP Standard).

Analyse the impacts over time on natural capital, human capital, social capital, and produced capital following TEEBAgriFood Evaluation Framework.

FARM MANAGEMENT
- Crop calendar
- Record keeping
- Training

PREPLANTING
- Heavy metals
- Soil Salinity
- Land conversion and biodiversity
- Invasive species
- Leveling
- Pure seed quality

WATER USE
- Water management
- Irrigation system at community level
- Inbound water quality
- Groundwater extraction
- Drainage

NUTRIENT MANAGEMENT
- Nutrient management (organic and/or inorganic)
- Organic fertilizer choice
- Inorganic fertilizer choice

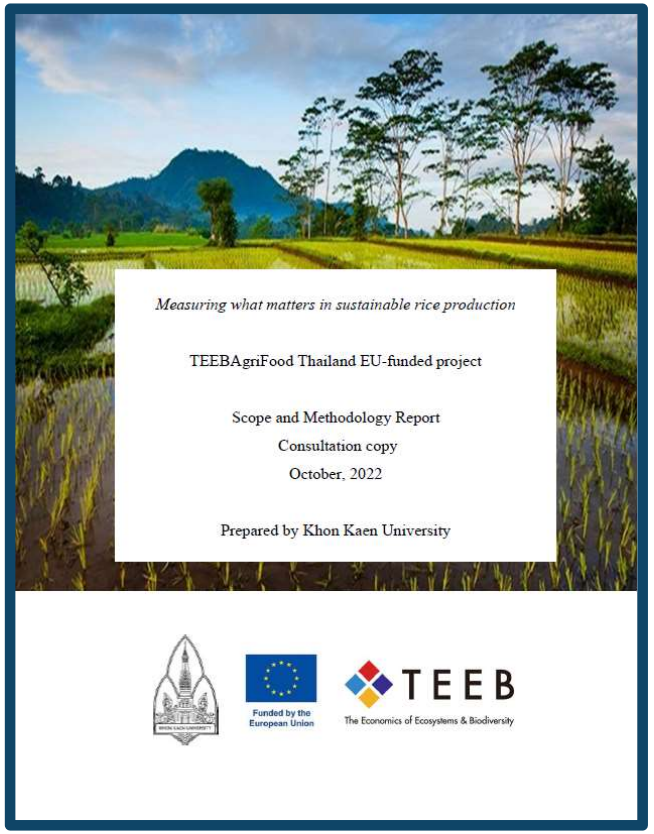
INTEGRATED PEST MANAMENT
- Weeds
- Insects
- Diseases
- Molluscs
- Rodents
- Birds

HARVEST AND POSTHARVEST
- Timing of harvest
- Harvest equipment
- Drying time
- Drying technique
- Rice storage
- Rice stubble
- Rice straw

HEALTH AND SAFETY
- Safety instructions
- Tools and equipment
- Training of pesticide applicators
- Personal protective equipment
- Washing and changing
- Applicator restrictions
- Re-entry time
- Pesticide and chemical storage
- Pesticide disposal

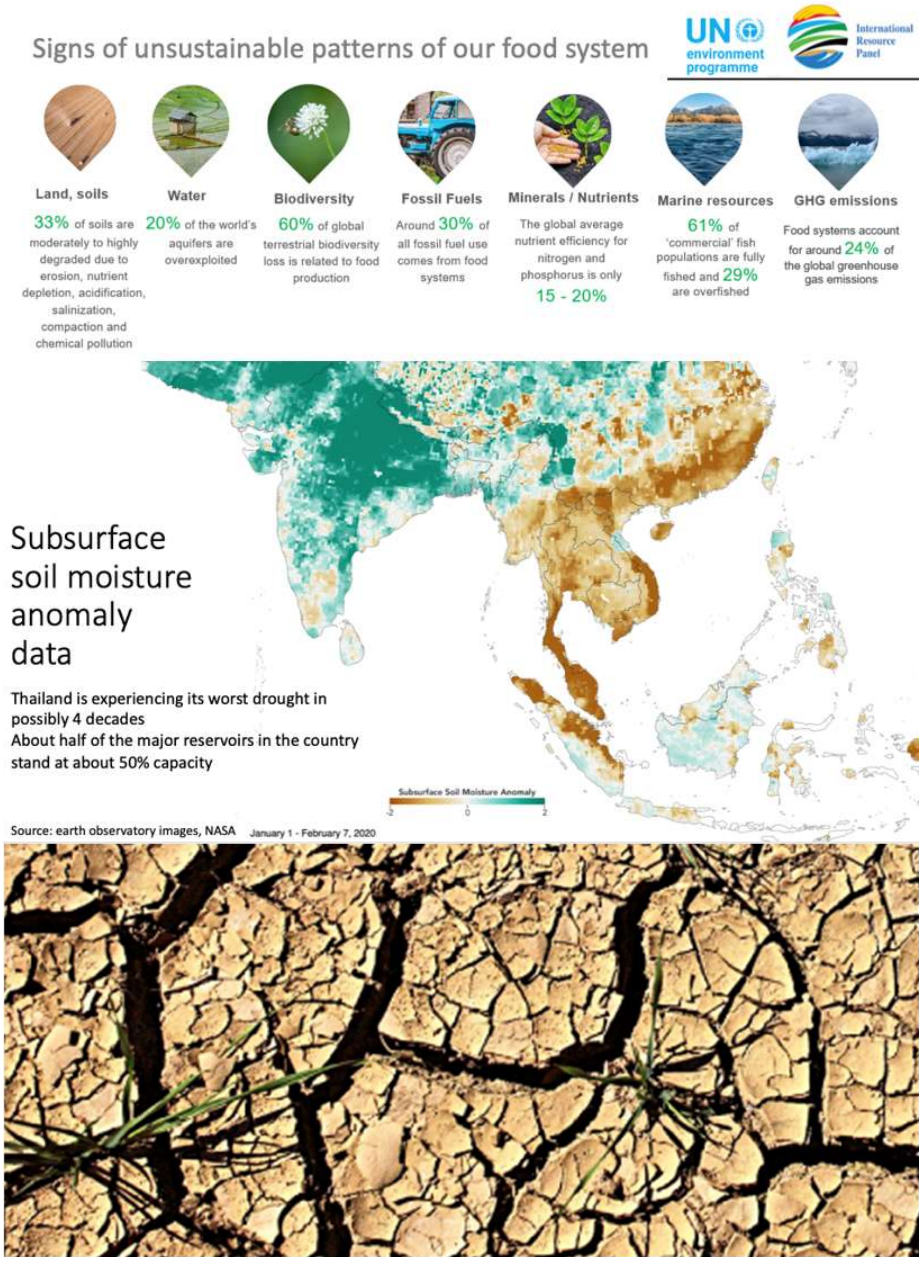
LABOR RIGHTS
- Child labor
- Hazardous work
- Education
- Forced labor
- Discrimination
- Freedom of association
- Wages

Sustainable Rice Platform SRP



Final comments

- The agri-food sector greatly depends on functioning ecosystems
- Yet our natural capital, including biodiversity and ecosystem services, is being lost and degraded at an unprecedented rate, in large part by the agri-food sector itself, causing further problems in terms of human health and wellbeing.



Mainstreaming biodiversity in agriculture

- Promoting biodiversity in the production landscape is not limited to farm fields. Off-farm spaces all harbour important habitats for biodiversity. We need to protect green spaces to maintain habitat connectivity.
- Much can be done to integrate and promote biodiversity within a production landscape. We need to greatly reduce the use of agro-chemicals, and run-off pollution.
- There is an essential link between reversing land degradation, restoring biodiversity in production areas and resilience to climate change.
- Organic, low-external-input and restoration agriculture starts with supporting soil health. In the right environments, with the right crops, reducing or entirely phasing out the use of chemical pesticides does not lead to reduced crop output.
- Upscaling organic or low-external input agriculture can be done if governments reduce perverse incentives, such as subsidies for chemical fertilizers, and instead re-invest in more green practices, sustainable value chains and farmer capacity building at scale.
- National agriculture development policies should always incorporate biodiversity objectives, protection and restoration of key ecosystem services and human health.

Thank You

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