Making Values Visible

TEEBAgriFood initiative in Thailand
focus on organic and sustainable rice

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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.
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
Contributions to human well-being of rice production

**Environmental impacts**
- Change in quality of habitat and biodiversity
- Change in species composition
- Change in ecosystem services

**Economic impacts**
- Household asset growth or debt
- Farm machinery assets
- Cooperative rice mill development
- Water infrastructure development

**Health impacts**
- Changes in nutrition and dietary diversity of farmers and consumers
- Health of rural/urban communities
- Changes in agricultural skill and management

**Social impacts**
- Formal cooperation and group formation
- Improvement of farmers' social network and trust
- Conflicts over land use
- Women's role in rural employment/community

**Natural Capital**
- Agricultural production
- Manufacturing and processing
- Distribution, Marketing and Retail

**Produced Capital**
- Household consumption

**Analysis**
- Description

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

- 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:

- 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.

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

- 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.
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.
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.

6. Distributional impacts
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.
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.
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.