Working document:
Exploring scope and modality options for support to TEEBAgriFood application on SRP in Thailand

The Economics of Ecosystems and Biodiversity: Promoting a sustainable agriculture and food sector

The Economics of Ecosystems and Biodiversity (TEEB) initiative, hosted by UN Environment Programme (UNEP)

Global project scope:

This project aims to protect biodiversity and contribute to a more sustainable agriculture and food sector in seven countries (Brazil, China, India, Indonesia, Malaysia, Mexico and Thailand). 'The Economics of Ecosystems and Biodiversity' (TEEB) initiative, hosted by UN Environment, has developed an Evaluation Framework that provides a comprehensive and universal approach to capture all the positive and negative impacts and externalities across the entire agri-food value chain. It is a frame of reference that can enable us to answer the question "what should we value, and why?" For this project, it will be used to test interventions that have already been applied or are proposed to stimulate positive livelihood and biodiversity benefits, and assess whether and to what extent they produce hidden or unaccounted for outcomes on natural, human, social and manmade capitals. Importantly, the focus of the project is on biodiversity and ecosystems, which underpin the delivery of the Sustainable Development Goals. The project will bring together governments, business and other key actors from civil society to implement activities with a view to influencing decisions and behaviors.

Thailand project scope:

Steering Committee Co- Chairs: Ministry of Environment and Natural Resources - ONEP and Ministry of Agriculture and Cooperatives – Rice Department

Research scope being taken forward:

1. TEEBAgriFood assessment of commercial rice sector, directly engaging the agri-business sector in Thailand who are receptive to looking at dependencies and impacts on biodiversity and ecosystem services (and influencing Key Performance Indicators). This work would focus on the production practices that adhere to the Sustainable Rice Platform (SRP) Standard.
2. Geographical scope of research is to be decided, but location will be in areas where SRP is being piloted.
3. Mainstream the findings of both TEEBAgriFood studies on rice in Thailand into the training activities and materials of the government's agricultural extension services.

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UNEP seeks to engage a consortia to undertake a comprehensive TEEBAgriFood process and analysis of the commercial rice sector in Thailand.

The project is aimed at integrating the economic, social, cultural, and ecological values of biodiversity and ecosystem services into decision making and planning of key public and private sector actors in the rice sector in Thailand.

The TEEBAgriFood Framework[1] will be used to capture and demonstrate the value of ecosystems services, protecting biodiversity and promoting well-functioning ecosystems. The scope will also include employment, food security, human health to the extent that these ultimately affect biodiversity and ecosystem functions in agricultural landscapes.

Background and process:

Rice production is essential to the food security and livelihoods of millions of Thai small-scale farming households and provides a range of ecosystem services beyond food production alone[2]. Rice production practices have been linked to a range of different environmental impacts such as high GHG emissions, air and water pollution, as well as an increase in water consumption, and declines in soil fertility and agrobiodiversity. Policy makers need to make decisions on how to manage and mitigate these impacts while providing affordable, nutritious, equitably accessible and safe food for a growing global population.

In 2017, an international consortium including FAO, IRRI, TruCost, Bioversity International and UNEP applied the TEEB approach to the rice farming sector in five countries to identify the types of farm management practices or systems that reduce trade-offs and allow for maximization of benefits for society, environment and wellbeing of the farmer.[3] The current project differs at various levels:

- The research goes beyond comparing different rice production practices or systems, to include an analysis of the comparative impact of concrete policy instruments, frameworks and pathways at the national and subnational level. These different scenarios will be analyzed in terms of changes in stocks and flows of natural, social and human capital. Policy recommendations will put forward initiatives to achieve greater gains for sustainability of rice systems. As such, the TEEBAgriFood Steering Committee requested that the project present an economic analysis of trade offs between costs and benefits of adopting the SRP Standard as currently defined, and a potential future enhanced Standard promoting more ambitious conservation of biodiversity and ecosystem services in rice agroecosystems, towards achievement of sustainable development goals.

- Forward-looking scenario analysis (predictive modeling): scenarios allow the presentation of information on the comparative change of ecosystem services under the application of different policy initiatives, instruments or programmes. This would allow decision-makers (regulators, agri-businesses and farmers) to see explicitly the trade-offs that arise through the application of different policy measures, as compared with Business-As-Usual (BAU).

[1] TEEBAgriFood (2018) Scientific and Economic Foundations Report. Available at: http://teebweb.org/agrifood/scientific-and-economic-foundations-report/ Synthesis for Policy Makers available at: http://teebweb.org/agrifood/measuring-what-matters-in-agriculture-and-food-systems/

[2] An FAO study (Garbach, K., et al (2014) "The Multiple Goods and Services of Asian Rice Production Systems") has highlighted thirteen ecosystem services as key outcomes of multi-functional, rice-based agricultural systems: diet diversity; carbon sequestration; cultural services; energy provision; genetic diversity; mitigation of greenhouse gases; pest control; resilience to climate disturbance; soil structure, fertility, erosion control; water quality; water quantity; weed control; and wild biodiversity and habitat provisioning.

[3] http://teebweb.org/agrifood/home/rice/

- Spatial analysis at the landscape level: Spatial models generate results at a local/regional scale (eg. watershed level) and present them on a map; Analysis at this landscape level (beyond farm-level or narrow crop focus) takes into account landscape configuration (for example habitat fragmentation) and context (for example proximity to landscape features such as watercourses), as these are key factors in determining impacts on many ecosystem services and biodiversity. Quantitative scenario forecasting tools that could be adopted include land-use models (eg. Marxan), ecosystem service models (eg. InVEST), soil and water models (eg. SWAT, CROPWAT), and nested and integrated models (system dynamics models).

- Linking science and policy processes at an early stage: TEEB Country Studies are social processes - co-creation process by policy-makers, the scientific community and other stakeholders forms an important part of the achievement. It will be important not only to engage the Rice Department, Ministry of Agriculture and Cooperatives, and the Office of Natural Resources and Environmental Policy and Planning (ONEP), Ministry of Environment and Natural Resources, but also to reach out to relevant stakeholders from other Ministries, private sector and civil society groups.

In carrying out the TEEB evaluation assessment, the first phase will be to identify and validate the study scope and set the framework in local context. This should describe in detail the rice production systems and policies to be analysed through forward-looking scenarios. The entire value chain should be mapped from production to consumption, identifying the impacts and dependencies on nature and livelihoods at various stages[4]. A scoping exercise will identify policy entry points for the TEEBAgriFood analysis. This may include a policy objective or target that the country has set in terms of commercial rice management systems, as well as alternative policy options that could address agricultural, food safety, health, environmental and economic policy concerns relevant to the development of commercial rice management systems and practices. These scenarios should be developed for comparison with a Business as Usual scenario. This allows for an ex-ante analysis of the impacts of current policies. A primary objective of the analysis will be to inform the application of Sustainable Rice Platform Standard and Indicators in Thai rice landscapes.

The second phase concerns measuring and valuing. The availability of biophysical data and monetary valuation data is determined to identify any gaps in the data required to complete the assessment of relevant costs and benefits related to rice production, following the four capitals approach for all stages of the value chain[5]. Once supplementary data has been sourced and collected, biophysical models will be developed of the impacts caused by changing physical conditions, identifying factors such as the endpoint of nutrient run-off, which may be adjacent freshwater ecosystems for example, and quantifying the changes in the biophysical indicators that are to be valued, such as the changes arising from different management practices in the quality of human or ecosystems health. This is followed by economic valuation. Using valuation methods, where possible monetary values should be attributed to the costs and benefits identified. This includes the identification of the final recipient of the impact, such as the local populations who experience the negative effects of rice production practices. An appropriate valuation technique should be selected to monetize the change in biophysical conditions. Where a monetized valuation is inappropriate or insufficient, impacts may be quantified or described. This will illuminate the positive and negative externalities of rice production in relevant contexts, which are not well captured by standard monetary valuations methods. The costs or benefits of the impacts on ecosystems should be

[4] IDEEA group (draft) TEEBAgrifood Evaluation Framework – Guidelines for Implementation

[5] ibid

quantified in terms of the change in ecosystem functioning, and then valued in terms of the change in the monetary value of the ecosystem services provided.

The third phase is scenario analysis. After the biophysical relationships are quantified and valued, comparisons will be made between different, credible future scenarios. The study shall quantify trade-offs between these scenarios and include policy recommendations to sustainably maximize benefits and mitigate the most significant trade-offs. The objective is to analyze the future effects of possible policy interventions, as well as consider the feasibility of such policy intervention.

Stakeholder engagement. Because of its multidisciplinary and multidimensional nature, the research process should involve consultations with diverse stakeholders regularly during the project implementation. The stakeholders would include small and large scale farmers, farmers associations, local government authorities, private sector groups, sustainable rice platform, and various government agencies.

Deliverables:

1. A review of policy, initiatives and management practices for sustainable rice production in Thailand focusing on different rice production systems in the irrigated commercial rice areas (including both smallholder and large commercial producers). This will :

    a. Describe the baseline stocks of natural capital in selected research areas, identify the capital inputs and ecosystem service flows, quantify the produced outputs and positive and negative outcomes for the four capitals, including a measurement of the waste, pollution and emissions generated

    b. Map the irrigated and rainfed commercial rice sector in Thailand, including landscape interlinkages, describe the value chains from farm to fork, identifying actors and outline impacts and dependencies on ecosystem services.

    c. Recommend policies that directly target the sector across the value chain as well as governance/institutional arrangements that determine the scope, adoption, implementation, financing and (if appropriate) monitoring and enforcement of policies

    d. Develop scenarios against which to estimate the potential scale of costs and benefits of different policy options over subsequent decades. A time horizon should be developed for scenario analysis to illustrate how the potential benefits of different initiatives may change over time.

2. A mapping of the work of private sector companies in the rice sector, assessing the extent to which agri-businesses are receptive to looking at dependencies and impacts on biodiversity and ecosystem services and making commitments to reducing agrochemical pollution. This work should be carried out in collaboration with the Sustainable Rice Platform. The research team will engage with one or more private sector companies who are promoting sustainable rice through the adoption of SRP principles.

3. A detailed assessment of the availability of biophysical data and data that has yet to be sourced to carry out a full assessment of rice production systems. This should be accompanied by an outline of the methods to be adopted for supplementary data collection, biophysical modelling and economic valuation of ecosystem services.

4. Activities to collect data, and process data through biophysical systems modelling, including economic valuation of ecosystem services, and scenario modelling to estimate the potential scale of costs and benefits of different policy options over subsequent decades.

5. Preparation and facilitation of a participatory workshop for reporting, validation of results and scenarios presented and develop recommendations to steer a final round of supplementary analysis. This activity will include capacity building for local research institutes in ecosystem modelling and economic valuation approaches.

6. Supplementary data collection where requested, biophysical modelling and economic valuation activities to complete the TEEB assessment to make visible the impacts and dependencies of current rice production systems on ecosystem services and biodiversity, assess trade-offs between different strategies, and prepare policy recommendations to maximise the benefits and mitigate the most significant trade-offs.

7. Publication of final report and launch of awareness raising activities to general public, to develop recommendations to public-private partnership agreements for reducing agro-chemical pollution, and introduce findings into training courses of extension services of the Ministry of Agriculture and the Sustainable Rice Platform training programme. Dissemination of results and process at international and local forums and meetings.

Consortium Responsibilities[6]:

- National research institute: deliverables listed above
- National policy institute: (in case not fully covered by national research entity). Ensuring a bridge between science and policy development at the national level. Ensuring quality of deliverable 1 including relevance at national level. Ensuring quality of reports to be prepared at 5 and 6. Take a lead role in 7 at national level .
- International research institute: Technical steer of national research actors, including targeted capacity building where required, Dissemination at regional level (SRP platform and international processes), Strengthening the biodiversity components of SRP Standard
- Private sector: including national SRP members (no funding is provided to private sector actors)
    - Data collaboration
    - Seek interest and collaboration in conducting a 'Land-Use Change Enhanced' LCA (https://www.nature.com/articles/ncomms15065)

[6] Terms of reference to be discussed

UNEP TEEB Agrifood programme provides overall project implementation support for the National Steering Committee and ensures the analysis adheres to the TEEBAgriFood Evaluation Framework

Expected timeframe:

Contracting July 2020

Policy analysis 1 month

Engagement with agribusiness 1 month

Biophysical and valuation data gaps analysis and methodologies report 1 month

Data collection 1-2 months

Workshop preparation and outcomes document 1 month

Supplementary data collection 1 month

Publication launch activities 1 month.

Requirements

We invite notes of interest in taking part in a consortium as outlined above. Proposals will be presented to the Steering Committee. These should outline the organisation or organisations involved, including the personnel available to carry out this assessment, and their relevant skills and experience. Skills should relate to expertise in rice agronomy and economics, environmental sciences, finance and marketing, social capital, consumer and environmental health, climate science, GIS and systems modelling, and environmental economics. Please provide abridged cvs of no more than 2 pages per person. Please indicate relevant publications on the topics outlined (draft or published) authored by members of your institution. Please highlight the areas in Thailand where your institution has field research experience.

Please outline the additional skills and experience that would need to be brought in from experts outside your team.

Please outline a proposed budget for your identified responsibility within the consortia:

Deadline for proposals __ **2020.**
Proposals may be discussed with the TEEB team prior to submission.

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