

The Economics of Ecosystems and Biodiversity for Agriculture and Food (TEEBAgriFood) Asia Regional Symposium

China, India, Indonesia, Malaysia and Thailand

24-26th March 2021, Virtual Platform

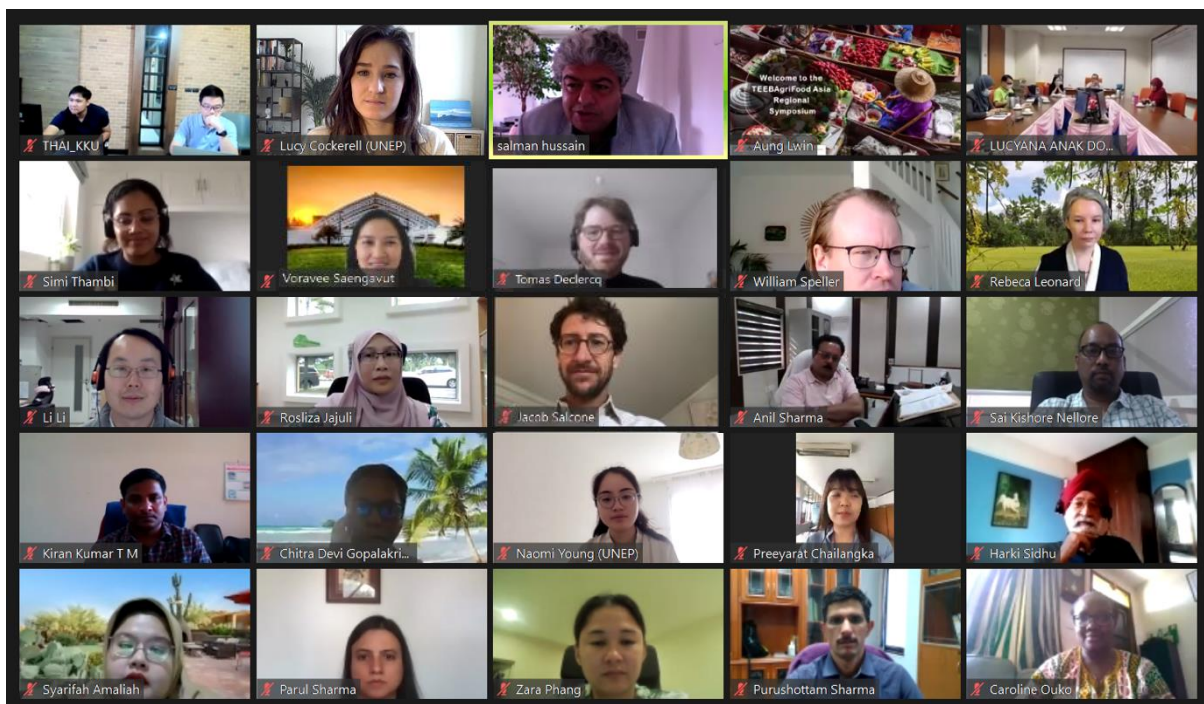


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Day One (24th): Policy Focus & High-Level Panel Discussions

Welcoming Remarks

1. **Dr Salman Hussain** (Coordinator, UNEP-TEEB) formally launched the Symposium, welcoming over 130 participants and highlighting that the Asia Regional Symposium was the largest of the three Regional TEEB Symposia taking place. This was made possible by the funding granted by the German International Climate Initiative (IKI) and the European Union Foreign Partnership Instrument (EU-PI), to support TEEBAgriFood across 10 countries, with Thailand hosting projects from both IKI and EU-PI.
2. The Economics of Ecosystems and Biodiversity (TEEB) initiative was firstly introduced, hosted by the United Nations Environment Programme (UNEP) with colleagues and staff from around the world. TEEB for Agriculture and Food (TEEBAgriFood) shifted the TEEB concept from theory to application by addressing the impacts and dependencies food systems have on nature, all of which have tangible impacts on our welfare and yet are routinely absent in our decision-making. This has been recently addressed in [“The Economics of Biodiversity: the Dasgupta Review”](#), which supports and extends arguments made a decade prior by TEEB.
3. The eco-agri-food systems were also expressed as a key dimension to achieve the global goals tackling the [triple planetary crises](#) – nature, climate, and pollution. These priorities are underscored and further evidenced by the complementary agendas and priorities set by the Convention on Biological Diversity (CBD), the UN Framework Convention on Climate Change (UNFCCC), the UN Convention to Combat Desertification (UNCCD), and the upcoming [UN Food Systems Summit](#) in September 2021. TEEB is actively involved in championing and showcasing the work aligned with the Food Systems Summit (FSS), through the fixing of food metrics, changing the way we measure our progress, and in giving indicators to decision-makers as to why we should change our agri-food behaviours. Dr Hussain also spoke of the role of national governments, sub-national governments, businesses and the private sector, and civil society to collaborate with and drive this change alongside TEEB.
4. The structure and agenda for the three days was introduced, noting the interactive elements and workshops taking place to facilitate the dialogue concerning the implementation of TEEBAgriFood country projects (see Appendix 1 for the full agenda). Finally, Dr Hussain expressed his thanks for the participation of the high-level speakers and panellists, and introduced the keynote speakers, **Dr Dechen Tsering** (UNEP Regional Director for Asia and the Pacific) and **Mr Alexander Müller** (Study Lead for TEEBAgriFood, Managing Director of ThinkTank for Sustainability), for their speeches and presentations.

Keynote Opening Remarks

5. Keynote speaker **Dr Dechen Tsering** (UNEP Regional Director for Asia and the Pacific) opened the Symposium by once again expressing appreciation to the EU and IKI funders for supporting the TEEB country projects being implemented in the Asia-Pacific region, and thanking the participants for taking part in the event. Echoing the assertion by António Guterres, Secretary-General of the UN, Dr Tsering highlighted that transforming the food system is crucial to delivering on the 2030 Agenda for Sustainable Development and achieving the Sustainable Development Goals (SDGs). As such, the objective of TEEB

aligns strongly as it aims to support decision-makers to recognise, demonstrate, and capture the values of biodiversity and ecosystems. For over a decade, the TEEB initiative has supported the economic solutions for food systems transformations and thereby the triple planetary crises, by highlighting the accounting for all visible and invisible costs in agri-food ecosystems and assets.

6. Dr Tsering also noted the complementary UNEP activities transforming the Asia-Pacific food systems, with specific note of the Sustainable Rice Platform (SRP) aiming to transform the global rice sector by promoting climate-smart sustainable farm practices. As convened by UNEP, the SRP is a global, multi-stakeholder alliance supported by the International Rice Research Institute, GIZ, and involving over 100 different institutional members. The SRP has launched the first sustainability standard for rice linked with indicators aligned with the SDGs, and has also launched a new assurance scheme in September 2020 to de-risk private sector value chains and empower consumers to choose sustainable rice. Other initiatives have been developed in parallel with a strong focus on transforming the food system and the sustainable management of food production landscapes. These include the development of land use finance, deforestation-free commodity chains, and the restoration of degraded land and improvement of small-holder farmer livelihoods.
7. In leading up to the Food Systems Summit and delivering the SDGs, Dr Tsering recognised the support from UNEP to undertake national, regional, and local-level preparatory dialogues and processes in the Asia-Pacific region. Scientific consensus was noted as providing evidence for the critical role of food systems transformations in changing the current course of environmental use and management, where we are not on track to achieve the SDGs with less than 10 years remaining to do so. With the Food Systems Summit, bold new actions, and innovative solutions and strategies will aim to leverage these sustainable shifts to deliver progress upon the global goals and build back better from the global COVID19 health pandemic. She concluded by saying that with the TEEBAgriFood projects working in tandem with other UNEP initiatives in the Region, positive economic and livelihood transformations are possible and will substantively support and work towards our shared global ambitions.

TEEBAgriFood: Lessons Learned and Opportunities for Impact

8. **Mr Alexander Müller** (Study Lead for TEEBAgriFood, Managing Director of ThinkTank for Sustainability) made a presentation introducing and contextualising the TEEB for Agriculture and Food Programme's Evaluation Framework for "Lessons Learned and Opportunities for Impact", with reference to both Build Back Better from COVID19 and the UN Food Systems Summit. The presentation highlighted the importance of valuing the complex and holistic relationship of all forms of capital within eco-agri-food systems; produced, natural, social, and human capital concurrently. In addition, it was indicated that the food production industry had the highest environmental externalities and costs footprint– totalling \$200 billion and 224% of the total profits; the most detrimental industry of all surveyed by [KPMG](#). As a result, the UN Food Systems Summit plays a pivotal role in finding solutions to produce more food with less environmental impacts and social damage for future generations.
9. The presentation also highlighted the impetus to Build Back Better in response to the global COVID19 health crisis in line with addressing the environmental externalities, where there is a gap in fiscal stimulus targeting the green economy or investment in natural capital. Going forward, investment in all forms of

capital must be ensured to achieve the Agenda 2030 Sustainable Development Goals and the UNFCCC Paris Climate Agreement.

Transforming Food Systems through Making Nature's Values Visible: High-Level Panel

10. Moderated by **Mr Alexander Müller** (Study Lead for TEEBAgriFood, Managing Director of ThinkTank for Sustainability), the segment aimed to provide a platform for countries to illustrate national perspectives upon the transformation of food systems to achieve food and nutritional security, and especially link these to the impacts of the global COVID19 health pandemic. This is further contextualised by the UN Food Systems Summit, aiming to transform food systems to meet the challenges of nature conservation, mitigating climate change, and reducing pollution.
11. In providing an overview, **Dr Salman Hussain** (UNEP-TEEB) acknowledged that there is already considerable national progress being made on food systems transformations, as demonstrated by the high-level presentations giving examples such as the improvement of farmers welfare and the transition towards sustainable livelihoods. The UN FSS thereby aims to support the existing national agri-food agendas and accelerate the transformations through game-changing solutions, bringing together a common vision.

Thailand

12. **Dr Rawewan Bhuridej** (Secretary General, Office of Natural Resources and Environmental Policy and Planning, Ministry of Natural Resources and Environment) highlighted the relationship between implementing biodiversity conservation into the economic and social recovery from the global COVID19 health crisis, and noted that this relationship was fundamental to agricultural and food security. Increased production efficiency and the promotion of sustainable and adaptive management practices were noted as key techniques which could be employed, and this applies to rice production in Thailand (which is a major exporter) to drive food security both nationally and globally. With the cooperation of the Ministry of Natural Resources and Environmental Policy and Planning, and the Ministry of Agriculture, Thailand acknowledged the TEEBAgriFood initiative which aims to protect biodiversity by ensuring sustainable agricultural and food security, with a specific focus on investigating the entire production value chain for rice in the country.
13. In parallel to the TEEBAgriFood investigation surrounding rice production and value chains, Thailand has also launched the Bio-Circular-Green Economy Model (BCG) as a new economic model for inclusive and sustainable growth. The BCG model supports the harmonious co-benefits of the Thai people with nature, with linkages established between agricultural systems and health, culture, economy, and ecosystems. To operationalise this economic shift, cooperation with partners and stakeholders such as TEEB are key to transforming national policies on biodiversity, agriculture, and scientific research. Dr Bhuridej highlighted that this has a wider intersection upon Thailand's contributions to achieving the SDGs, their UNFCCC (UN Framework Convention on Climate Change) Nationally Determined Contributions (NDCs), and the post-2020 biodiversity framework which will be adopted at the Convention on Biological Diversity (CBD) 15th Conference of Parties (COP15).

China

14. **Ms Zhang Yanping** (Head, Office of International Programs, Ministry of Agriculture and Rural Affairs) introduced the wider context for transforming agri-food systems for human well-being globally, whereby technological and institutional innovations have heavily accelerated the building of sustainable food systems. To this end, she noted that China has led significant achievements and transformations to feed 22% of the world's population on only 9% of the world's arable land, with the aid of high yields. The Ministry of Agriculture and Rural Affairs (MARA) has led the accelerated transformation of agricultural green development "*Clean waters and green mountains are invaluable assets*", by tackling rural pollution, promoting agricultural adaptation and mitigation to climate change, and developing climate-smart agricultural production alternatives.
15. China is implementing the 14th Five-Year Development Plan thereby ensuring the fair production and distribution of food and agriculture, promoting the green development of agricultural production, improving the quality of arable land, strengthening the recycling of agricultural wastes, and ensuring the quality and safety of agricultural products. Stakeholders across society are mobilised, with an emphasis upon women's empowerment and capacity building to build in food security, protect farmland landscapes, and promote nature-based agricultural solutions in a participatory process. Ms Yanping emphasized that Ministry of Agriculture and Rural Affairs (MARA) is key to participate and boost the development of sustainable food systems in China, and welcomes collaboration with other parties to contribute to the Agenda 2030 Sustainable Development Goals.

India

16. **Dr Alka Bhargava** (Additional Secretary, Ministry of Agriculture and Farmers Welfare) firstly established the strong link between the TEEBAgriFood Evaluation Framework and how it aligned with the agri-food programmatic approach led by India for addressing the positive and negative impacts and externalities across the complete agri-food value chain. As reinforced by the global COVID19 health pandemic, the national agricultural and environmental policy has employed cross-sectoral planning and implementation approaches, bringing together relevant ministries, state governments, civil society, and industry. Landscape-level approaches are being particularly adopted widely to address development and conservation concurrently, with the target to address the aspiration to achieve self-sufficiency in food production; strengthening rural agricultural infrastructure for post-harvest management; reduction of food losses and waste; operationalising transparent markets for farmers; and addressing externalities within the complete agricultural value chain.
17. Reflecting upon the COVID19 impacts in India, the country was placed under lockdown on the 23rd March and the food and agricultural industries were given top priority through government support and progressive adaptive policies. These include integrated nutrient and pest management tools which were provided to 140 million farmers, a scale unprecedented by comparison to other countries. The farming operations and agricultural sector proceeded to operate with strength and resilience throughout 2020, with the agricultural sector grew by 3.4% during the period. Dr Bhargava also highlighted the national mission to ensure an agricultural self-reliance in India, as supported by a US\$13 billion agricultural infrastructure fund to strengthen primary processing activities and rural agricultural infrastructure. In

parallel, international exports contributing to the global food basket grew by 49% during Q2 to Q4 of 2020, through India's commitment to international priorities for global health and agri-food systems.

18. Dr Bhargava also noted India's commitment to the five Action Tracks to the UN Food Systems Summit, aligning strongly with India's agri-food trajectory backed by a large network of research spearheaded by the Indian Council for Agricultural Research (ICAR). The current transformation of national food systems is coordinated across ministries, including the Ministry of Agriculture and Farmers Welfare, the Ministry of Health and Family Welfare, and the Ministry of Women and Child Development, amongst others. Together, the ministries have worked in tandem to combat heavy consumption patterns and have specifically targeted the transformation of industries supporting fruits, vegetables, organic foods, and dairy production. To transform national food systems, Dr Bhargava noted the implementation of programmatic interventions, such as: soil health cards; crop insurance; national electronic agricultural markets; increasing water use efficiencies through direct interventions such as micro-irrigation; crop diversification; and adapting cropping patterns to match the climatic zones throughout India.

Indonesia

19. **Dr Jarot Indarto** (Deputy Director, Food and Agricultural Department, Ministry of National Development Planning) firstly introduced Indonesia's strong commitment to the UN Food System Summit, of which they have planned discussions with national, local, and independent dialogues to align stakeholders with a national food systems transformation. The current framing of food systems in Indonesian policy was also highlighted, with explicit framing in the Food Law 18/2012 "Governing Food Security in Indonesia", through the inclusion of agroforestry and agri-food systems in Indonesia's Mid-Term Development Plan (2020-2024), and within the 2020 Presidential Decree #18. The following national priorities were highlighted for food systems in Indonesia: the quality and safety of food consumption; sustainability of food supply; the productivity and sustainability of human resources in agriculture; the productivity and sustainability of agricultural resources; and the governance of food systems.
20. Existing issues were highlighted in light of the global COVID19 health pandemic in Indonesia, with Dr Indarto's indication of the nation-wide reformulation of food systems into sustainable and resilient ones. The transformation will tackle issues such as: maintaining and increasing domestic food capacity; improving food distribution and transformation; improving food access, especially amongst low income groups; improving the access to biofortified foods; transforming farmers associations to become more akin to business entities with greater institutional capacity and welfare considerations; localizing food systems in recognition of varying biodiversity amongst the different regions; and targeting attention towards combatting food loss and wastage.

Linking TEEBAgriFood Projects to In-Country Policy Priorities: Panel Discussion

21. Moderated by **Dr Salman Hussain** (UNEP-TEEB), this segment aimed to consider the economic assessment of countries in general, bringing together Ministerial focal points for the five in-country TEEBAgriFood applications. The five country TEEBAgriFood studies and presentations will reflect upon the specific evidence generated to contribute towards transforming agricultural and food policies.

Malaysia

22. **Mr Syed Abdul Bari bin Syed Othman** (Principal Assistant Director, Policy and Strategic Planning Department, Ministry of Agriculture and Food Industries) expressed gratitude for UNEP and TEEB for choosing Malaysia to undertake a study, to which they are now in the early stages of project development. With completion of the inception workshop in December 2020, they are looking to finalise a location for the project to apply the “Malaysia Good Agricultural Practices (MyGAP)”. Mr Othman outlined that MyGAP is a voluntary basis certification scheme to identify farmers and breeders who comply with the best standard practices for crop, fisheries, and livestock sectors. With the scheme in place, the agricultural sector and farms will be evaluated upon criteria concerning environmentally friendly practices for people and the environment. Criteria include: systematic farm management; environmentally friendly waste management; minimal fertilizer and pesticide use; and safety of agricultural labourers. The TEEBAgriFood study will thereby act as a valuable stepping stone to make MyGAP compulsory in Malaysia, and to better support the national agenda towards the SDGs.
23. Dr Hussain (UNEP-TEEB) remarked that there are already certain states where MyGAP is compulsory, and that the project outputs will eventually support the shift towards organic agricultural development uptake in Malaysia. Furthermore, there must be a clear estimate on what the benefits and costs of implementation are, alongside the enforcement and propagation towards MyGAP certification.

India

24. **Ms Chavi Jha** (Joint Secretary, Natural Resources Management, Ministry of Agriculture and Farmers Welfare) introduced the ongoing project development in India, with a focus on organic farming and agroforestry in the Ganga basin, states of Uttar Pradesh and Uttarakhand. Contextually, the study will be of two types: (1) proof of the concept and field demonstration using field data to assess the impact of organic farming and agroforestry over time, and (2) scenario analysis using biophysical modelling to assess alternative future scenarios of upscaling organic farming and agroforestry. Ms Jha identified the respective technical institutions which have been selected and contracted to undertake the study - the ICAR Indian Institute of Farming Systems Research, Uttar Pradesh, and the G.B. Pant University of Science and Technology, Uttarakhand.
25. Dr Hussain (UNEP-TEEB) noted that the scale to which the Indian project is taking place is large, with a high projected outcome in the two states as there is a large population which relies upon the Ganga basin. Furthermore, the TEEBAgriFood study will add value by contributing to the existing body of studies concerning the efficacy of organic farming and sustainable agriculture, thereby providing an evidence base for the wider uptake of this food systems transformation in India.

Thailand

26. **Dr Benchamaporn Wattanatongchai** (Biodiversity Management Division, Ministry of Natural Resources and Environment) noted the scoping of the TEEBAgriFood projects taking place in Thailand, firstly indicating the IKI-funded organic rice production project, and secondly indicating the EUPI-funded project focusing upon the Sustainable Rice Platform. It was recognised that Thailand contributes to significant rice production both domestically and internationally, as an important crop for food and nutritional security.

27. Dr Hussain (UNEP-TEEB) acknowledged the importance of creating the enabling conditions for organic rice value chains and to overcome network externalities and conventional rice production lock-in effects. Dr Wattanatongchai stated that there was a great importance in considering the full value chain in rice systems, paying close attention to reduce negative externalities within the system (e.g. externalities from the use of pesticides) while ensuring rice production for domestic consumption as well as for export. In addition, Dr Hussain remarked that there may be valuable opportunities for sharing knowledge and fostering collaboration beyond research between India and Thailand, across the TEEBAgriFood projects.

China

28. **Dr Linxiu Zhang** (Director, UNEP-IEMP) firstly noted that the TEEBAgriFood core values align strongly with China's development concept in recognising their natural assets, termed "*Clean waters and green mountains are invaluable assets*". 2021 is highlighted as the first year in the 14th Five-Year Development Plan, having eliminated absolute poverty in China and where the nation is now transitioning from poverty alleviation to rural revitalisation. The development of the TEEBAgriFood project is timely, in contributing to the wider food systems transformation process, in line with the national targets and solutions set concerning CO₂ emissions, carbon neutrality, water resource depletion, agricultural pollution, and land degradation.
29. Tengchong City in the Yunnan province was selected as a case study, in part due to its selection by China as a national practice and innovation base for the green development concept. Dr Zhang described the region as a mountainous area with crop and livestock production as the major industries. There are significant study links to the creation of a green food base through pollution control, a circular economy, and the targeted focus on improving the value chains for medicinal herbs and beef cattle industries. The TEEB study's objective is to contribute to policy making across local, provincial, and national levels, to which end the project is presently beginning to develop the scenarios for analysis following a series of stakeholder consultation workshops and Steering Committee meetings. Furthermore, there are strong links to the UN Food Systems Summit in the transformation of the regional crop and livestock industries, as well as links to the CBD COP taking place in Kunming, the capital of Yunnan province.
30. Dr Hussain (UNEP-TEEB) stated that it is valuable to assess the TEEBAgriFood China study as an integrated place-based assessment at a landscape level, with the merits in considering different facets of agricultural production in a mixed system. Therefore, a study scoped as such is beneficial to cast a wider research net beyond a single commodity, or a single diet.

Indonesia

31. **Dr Jarot Indarto** (Deputy Director, Food and Agricultural Department, Ministry of National Development Planning) highlighted the importance of cacao agroforestry production in Indonesia and the South Sulawesi region, which has been addressed in the five-year National Medium-Term Development Plan 2020 – 2024, as influenced by the TEEBAgriFood Indonesia project. Dr Jarot highlighted the importance of applying a sustainable jurisdictional approach, to go beyond a narrow commodity focus and allow for local governments to sustainably manage and plan for agriculture production.

Closing Remarks

32. **Dr Salman Hussain** (UNEP-TEEB) closed the first day of the Asia Regional Symposium, with thanks to all high-level panellists, presenters, and attendees for their participation, in representation of the community leading the charge for transforming food systems in the region. He particularly remarked on the representation of >130 participants from the politically diverse and mega-populous countries, representing especially large agri-food systems globally.
33. In light of the presentations made on the first day, Dr Hussain highlighted three observations across the five TEEBAgriFood projects. Firstly, agroforestry emerges as a cross-cutting solution to the triple planetary crisis, and features explicitly in the Indonesian and Indian TEEBAgriFood studies, and may well be integrated in the other projects. The detailed work being conducted here will be disseminated across researchers and policy-makers involved with TEEB for greater impact. Secondly, organic agricultural production requires the further development of the body of evidence, especially upon the key transition period between cropping systems, to which TEEB may contribute here. Thirdly, Payment for Ecosystem Services (PES) is noted to broadly undercut all TEEB studies and works in parallel to other economic solutions including fiscal reforms, greater access to microfinance, and stimulating changes in land tenure agreements. TEEB aims to coordinate and gather the biophysical and economic evidence, and obtain support from the private sector, prior to applying the economic case for food system transformations.

Day Two (25th): Policy Focus & In-Country TEEBAgriFood Project Discussions

Welcoming Remarks

34. **Dr Salman Hussain** (Coordinator, UNEP-TEEB) opened Day 2 of the Symposium and welcomed participants, reiterating that the first day involved Alexander Müller's TEEBAgriFood presentation, as well as the high-level panel sessions on what countries are doing/intend to do with respect to food systems transformations, and the specific interventions that they are/will analyse in the scenario analysis. It was emphasised that the contextual understanding of scenario changes leading to policy-relevant and positive impacts on livelihoods and biodiversity outcomes would be key to address the triple planetary crisis concerning biodiversity, pollution and climate change. Dr Hussain highlighted that a strong commonality of purpose, interest, intention, and action was apparent across the countries in scope.
 35. Dr Hussain remarked upon the immense implications of COVID19 upon the planet, planetary health, well-being, livelihoods, and critically, agri-food systems. As such, Day 2 of the Asia Regional Symposium would be opened with a presentation on COVID19, the environment and food systems, followed by country-specific breakout rooms to discuss the extent to which countries have been impacted by the pandemic. With relevance to the TEEBAgriFood projects, the following questions were posed: (1) What scenarios are relevant, or have become more/less relevant, and (2) how to develop the responses to COVID19 in response to these scenarios. Dr Hussain highlighted that all feedback and guidance is welcomed on data and methodologies, which may be used to provide answers and strengthen the policy relevance of the TEEBAgriFood in-country work.
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COVID19, the Environment, and Food Systems: Contain, Cope, and Rebuild Better

36. The presentation on COVID19, Environment and Food systems: Contain, Cope, and Rebuild Better was presented by **Mr Jacob Salcone** (UNEP-TEEB). The TEEB Secretariat assisted in developing a report on the impacts of the pandemic on food systems in December 2020, providing recommendations for how countries and international agencies should respond, while also tapping into the link between the environment, humans, human health, and the economy (report and further information available [here](#)). Mr Salcone's presentation covered the wide-ranging impacts of the crises that has impacted millions of people worldwide in terms of job losses and health impacts, as well as food security and environmental degradation which has led to an upsurge in extreme poverty and acute hunger, amongst other cross-sectoral impacts.
37. Mr Salcone highlighted that the cracks in the food system are widening - there is an excessive focus on maximizing yield at the lowest cost, thus ignoring environmental externalities and threats to social justice. However, the opportunity exists to take a wider food systems approach and build back better by addressing the fundamental weaknesses of the food system and implementing sustainable and resilient policies and initiatives. These initiatives must decouple livelihood and economic growth from biodiversity loss and carbon emissions, i.e. separate agricultural production and food systems from environmental damage, while investing in all four capitals (natural, social, human and produced). The report concludes

with action needed in the short, medium, and long term, as well as a list of key priorities. Mr Salcone pointed out that the fiscal response has continued since the report was published, and that the central issue to be addressed in 2021 is that the heightened income loss coincides with a drastic increase in food prices, which in turn exacerbates hunger.

38. **Dr Karachepone Ninan** (Indian Centre for Economics, Environment, and Society) posed a question concerning how to decouple food systems from environmental externalities, Mr Salcone replied that maximizing profit and producing food at the lowest cost will not create the best outcomes in the long run, that there is no “one method fits all” but rather situation specific solutions, and the best outcomes involve separating agricultural production and food systems from environmental damage. There are many ways to grow food and raise livestock while protecting soil, reducing water usage and soil erosion, as well as ways of addressing food waste and taking advantage of opportunities to use agricultural systems to capture carbon to tackle climate change. Mr Salcone concluded by emphasizing that a first step towards finding the solution is by conducting the detailed analysis.
39. **Dr Salman Hussain** (UNEP-TEEB) commented that in the light of the shock to the system that COVID19 has instigated, the food systems that have shown the strongest resilience have been those with not only environmental resilience but also social resilience. Regenerative agricultural systems have remained resilient due to their diversification, social networks and social capital. Dr Hussain suggested that the best way forward for farmers, cooperatives or countries, may not be to maximize yields, but instead to focus on yield variability and to what extent livelihoods can be sustained, linking also to food security.
40. When asked how to best address challenges such as knowledge and technology gaps faced by developing countries, Mr Salcone explained that COVID19 presents an opportunity in that individuals (irrespective of their location and provided they have broadband connection) can form relationships in a virtual format with researchers, experts and institutions, to expand knowledge. On the other hand, technology also requires capital investment. Due to COVID19, countries and investors are rethinking their budgets and are more risk averse and therefore reluctant to invest in new ideas.
41. **Dr Yunli Bai** (Chinese Academy of Sciences) asked which link encountered the biggest challenge in each region during COVID19 (e.g. production, pricing, transportation or low consumption) due to low incomes, to which Mr Salcone explained that there are wide regional variances, specifically in relation to how people generate income which results in differences in income losses to families in different parts of the world. Mr Salcone exemplified this by mentioning travel hurdles in terms of farmers crossing country borders, resulting in the loss of certain food crops in Germany, whilst in India people have been moving from densely populated cities to the countryside, where rural communities and their food systems have not been prepared due to a lack of time to adapt rapidly. As such, each region has had different responses. Notably, the first impact witnessed was the reduction in incomes globally, and consequential impacts have included the weaknesses in buying power and the inflation of prices due to disruptions in market availability of products.

42. Moderated by **Dr Salman Hussain** (UNEP-TEEB), the following segment was designed to facilitate the interactive and discussion-orientated feedback upon the achievements and project development plans within the TEEBAgriFood project countries. The guiding question posed was: “How does the research become policy relevant to include a post-COVID19 response, and what are we doing?”

China

43. Led by **Dr Li Li** (UNEP-International Ecosystem Management Partnership (IEMP)), an overview of Tengchong as a project site was detailed, illustrating that the plantations (staple grains, rapeseed oil, Chinese medicinal herbs, vegetables, fruits, and tea), as well as livestock breeding (beef cattle) is a hallmark of the county’s agricultural system. As the Yunnan province has established itself as a green food base, it aims to reduce chemical usage, develop its circular economy, develop its industries to focus on the plantation and livestock production, and stabilise its grain yields.
44. Upon reflection of its scenario analysis methods, Dr Li remarked that consideration of deforestation in the pessimistic scenario setting must be omitted. This is due to the appropriation of forest into pasturelands which goes against the current legal guidelines in China.
45. In response to the global COVID19 pandemic, it was found that the local agriculture sector was not drastically impacted upon and no cases were reported in Tengchong. While national measures against the pandemic were enacted, there were none in Tengchong and the targeted focus upon food security continued to proceed as set out by the 14th Five Year Plan. This targeted focus entails analysing the primary, secondary and tertiary sectors together.
46. Local authorities participating in the discussions acknowledged the value of TEEBAgriFood assessments and have requested that the project implementation team provide pragmatic suggestions on measures to improve the current agricultural development plan and future environmental assessments. In tandem, a positive impetus to biodiversity conservation, local eco-tourism, food systems transformations and associated policy drivers has been galvanised by the upcoming CBD COP15 being hosted by Yunnan province in October 2021.

Indonesia

47. Led by **Dr Suria Tarigan** (IPB University), a number of key points were highlighted concerning the farm-level and landscape-level policies, and the COVID19 response in agri-food systems in Indonesia. Firstly, it was acknowledged that cacao production in Indonesia is dominated by smallholder farmers (approx. 95 percent). Agroforestry practices thereby encounter a barrier in adoption, with its current sparse uptake and voluntary adoption, as cacao monocultural cultivation practices obtain higher yields. Participants have highlighted that there must be positive incentives and policy support to encourage farmers to adopt agroforestry practices, such as innovative financing, land tenure through certification, premium prices, extensions, and the strengthening of farmers institutions. In addition, the hidden values and externalities of cacao production and its associated ecosystem services must be emphasised at the local-level for smallholder farmers. Here, cost-benefit analysis exercises may be undertaken, with consideration of local ecosystem services such as water quality, water quantity, and pollination (i.e. beyond ecosystem services with global benefits such as carbon).
48. Secondly, at the landscape-level, agroforestry has now been introduced into Indonesia’s development plan (RPJM), however it remains to be translated into regulations at subnational scales as well as into

sectoral ministry regulations. Furthermore, agroforestry has also now been promoted for uptake in non-forested areas within the PP23/2021 regulation, which is important for the wider agroforestry promotion in Indonesia and the TEEBAgriFood project.

49. Thirdly, with regard to the post-COVID19 response in Indonesia, the government has promoted numerous fiscal tools (e.g. extension services, capacity building, inputs) to support national production. This includes trade facilitation and green finance to support the promotion of agroforestry benefits, and quality assurance to drive consumer demand.

India

50. Led by **Mr William Speller** (UNEP-TEEB), a number of key points emerged from the discussions and were reflected back to the plenary. Firstly, consideration must be given to the scalability of solutions and applicability of results from one spatial setting to another, especially upon the context of organic farming where suitable approaches depend on agro-climatic and soil conditions. While there is an emerging body of knowledge in India (e.g. in Andhra Pradesh), applications must be tailored to the conditions to support the economic evidence base used in the TEEBAgriFood study. To this regard, plans to reinforce scenario analysis with demonstration plots in Uttarakhand will improve the relevance of results.
51. Secondly, all the management practices/conditions pertaining to organic farming must be included to make the full economic case for organic farming, considering that agriculture remains essential to the provision of livelihoods in India. The policy objective of doubling farmers' incomes must be borne in mind, together with consideration of gender dimensions, migrant workers, food and nutritional security, Payment for Ecosystem Services, certification schemes and development of cooperatives, market access, consumer preferences, the distribution of landholdings, and other social and human capital impacts of agriculture.
52. Thirdly, following the Symposium, the next steps will include contracting of technical agencies to commence the research work in the following months. The TEEB Secretariat will continue to engage with the larger stakeholder group who have become an integral part of the wider TEEBAgriFood community in India.

Malaysia

53. **Dr Salman Hussain** (UNEP-TEEB) firstly explained that the Malaysia scope of work has not yet been officially finalized, and that therefore the discussion evolved around COVID19 and the MyGAP certification system. Dr Hussain highlighted that MyGAP has continued to be important despite COVID19, with much government support for the certification and the benefits it brings about. Dr Hussain mentioned that there has been a price increase in rubber (due to increased usage of plastic gloves etc. currently being used globally), despite quantities decreasing, and the same applies to other commodities such as palm oil.
54. **Dr Rosliza Jajuli** (The Malaysian Agricultural Research and Development Institute (MARDI)) continued by explaining that discussions have been held with Malaysian stakeholders and research options have been shortlisted. The Cameron Highlands has been shortlisted as one of the potential locations for the study as it is an important area in terms of its vast vegetable production. The area's agricultural activities currently rely heavily on chemical inputs which has a massive effect on social and human aspects in terms of health impacts due to pollutants and pesticides. In addition, there is also an increased occurrence of landslides

and soil erosion, as well as biodiversity loss and rising temperatures. By introducing initiatives such as MyGAP (Good Agricultural Practices) to farmers, natural-, human-, and social capital can be improved. COVID19 impacted the farmers in the Cameron Highlands in the initial stages of the pandemic in terms of transporting produce, but the government has resolved these short-term hurdles through marketing support as well as e-commerce opportunities, and as such, there has not been a large impact on the vegetable prices.

55. **Mr Ziyu Chan** (Carbon Xchange (Sarawak) Sdn. Bhd. Malaysia Aquaculture Development Association (MADA)) explained that with regards to the aquaculture industry from the private sector, MADA has been exploring sustainability issues for many years and COVID19 has reaffirmed their position that they are on the right track to protecting the environment to ensure sustainability for their industry. Mr Chan pointed out that when export orders for fish products were cancelled due to COVID19, the fish had to be slaughtered as there was not enough cold storage. With combined efforts, the community invested in the downstream industry to assist in prolonging the shelf life for the produce. They have already invested in two factories in their industry, one pilot factory and one medium scale processing factory. The aquaculture sector is a bio-circular economy. As all their feed is imported this has implications for food security in Malaysia. MADA has therefore expanded their private investment into the area of protein development in a bio-circular economy, whereby they reuse much of their waste resources to produce insect farming for protein, as well as agroforestry for substrate to the planting of bamboo. In order to engage future aquaculture farmers i.e. the younger generation, they have invested in working very closely with local academic institutions and universities to finance research related to environmental impact and sustainability. In addition, the state government in Sarawak has been promoting agriculture and requiring an increased level of transparency. Finally, Mr Chan explained that COVID19 has highlighted the need to be responsible for the environment and our natural assets, otherwise natural assets will become a burden and a failure especially in aquaculture where water is a necessity for our survival.

Thailand

56. Led by **Dr Jakkapan Suksawat** (Khon Kaen University), a brief overview was first provided, outlining the comparison of rice production practices between conventional and organic cultivation methods. It was noted that the preliminary analysis includes different scenarios of increased uptake of organic farming. With regards to the policy intervention options, Dr Suksawat highlighted that this will largely depend upon the results generated from the TEEBAgriFood study concerning the different factors assessed, such as yield, biodiversity, air and water pollution, soil quality, health, and community benefits.
57. Concerning the responses to COVID19, Dr Suksawat remarked that both the conventional and organic rice sectors were impacted as a result of the international export market disruption. In particular, organic rice exports to Western regions of the world, such as Europe, were affected.

Zoom Poll: Overview on Policy-Focused Symposium Events

58. To conclude upon the policy-focused Symposium events, taking place on Day 1 (24th) and Day 2 (25th), several questions were posed to the participants to gain feedback on the knowledge sharing opportunities, delivery, and structure of the event. It was found that 91% of participants gained a deeper understanding of the TEEBAgriFood initiatives in their countries, and their approaches to generating changes in policy.

Overall, all participants found the event useful and relevant to some degree, while 64% of participants found it “very useful and relevant”.

59. In poll questions that asked respondents to reflect on the event, it became apparent that a variety of knowledge and opportunities were gained from participating in the Symposium. 82% of participants obtained a greater understanding of TEEBAgriFood initiatives in other countries in the region, while 73% of participants obtained a greater understanding of the initiatives taking place in their own country. 36% of participants also reported to have obtained a greater understanding of the UN Food Systems Summit and COVID19 responses, and in parallel, being provided with the opportunity for introductions to relevant stakeholders in the region for future collaboration between countries.
60. Upon reflection of the Symposium participants’ own countries, it was noted that 51% of participants perceived that their countries were implementing a post-COVID green and inclusive recovery, while taking into account eco-agri-food systems. On the other hand, 45% of participants disagreed with the statement.
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Closing Remarks

61. **Dr Salman Hussain** (UNEP-TEEB) closed the second day of the Asia Regional Symposium, remarking that while much evidence had been presented to outline the policy interventions and objectives of the TEEBAgriFood projects through the breakout room discussions, more detailed discussions concerning the technical methodologies will take place on the final day of the event. He thanked all the country groups and participants who took place in the dedicated country discussions, acknowledged the preparatory work that had been put in, and encouraged participants to join for the final technical day. Dr Hussain finally expressed his thanks for the sponsors IKI and the EU for funding the country studies being discussed at the Symposium, and for taking forward the work in complement to the UN Food System Summit vision.

Day Three (26th): Technical Focus & Methodological Approaches

Welcoming Remarks

62. **Dr Salman Hussain** (Coordinator, UNEP-TEEB) welcomed participants to the third and final day of the TEEBAgriFood Asia Regional Symposium. While the first two policy days had revealed a commonality of purpose and intent in the work being done in transforming agri-food systems, the third day was focused upon the technical analysis required to provide the evidence to change behaviours and enable transformations, specifically through environmental valuation and biophysical scenario analysis. Dr Hussain noted that while there is novelty in the research being done by TEEB and the in-country research institutions concerning agri-food systems, novelty also emerges through the research concerning the integration of the four capitals and their interactions amongst one another. Through the application of interdisciplinary methodological approaches, the TEEBAgriFood theory of change may be applied and the national policy agendas may be taken forward.
63. The segment on that day concerned the methods and approaches used in the five in-country TEEBAgriFood projects, the presentations have been guided by the following questions: (1) what methods will you be using to make the economic case for change via the TEEBAgriFood framework, (2) how would you define success for your country study, (3) how will you translate these results so that there is policy uptake, and (4) what challenges do you see in mainstreaming results.
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Methods and Approaches, TEEBAgriFood Thailand

64. **Ms Rebeca Leonard** (UNEP-TEEB) introduced **Dr Phumsith Mahasuweerachai** (Khon Kaen University), giving a presentation on “Integrating the Value of Ecosystems and Biodiversity in Rice Systems in Thailand”. The presentation was prefaced by highlighting the intrinsic importance of rice to the country, through the support for farmers and local citizens, the local consumption of rice as a main food for Thai citizens, the health impacts from chemical uses and air pollution, and the way rice promotes cultural and societal relations. Dr Mahasuweerachai noted the objective of the study, to compare the net benefits between conventional and organic rice cultivation practices, with reference to the consideration of economics, biodiversity, air and water pollution, soil quality, health, and community benefits.
65. Four scenarios were detailed: (1) Organic rice expansion in a business-as-usual scenario, (2) accelerated organic rice promotion, (3) enhanced organic rice promotion, and (4) transformational change towards sustainability. The study will firstly assess the land use changes under these scenarios, then calculate what would be the impact on biodiversity, ecosystem services, health, livelihood of farmers of practicing organic and conventional rice farming in each scenario. **Dr Warong Suksavate** (Kasetsart University) outlined the biophysical assessment components of the study, and the modelling methods utilised. Such include: the measurement of crop cultivation conditions and soil chemistry; water yield modelling using TERRSET, predictive modelling for analysis of biodiversity richness; the DeNitrification-DeComposition (DNDC) model for biogeochemistry in agro-ecosystems for the measurement of greenhouse gas emissions; and secondary data analysis on air pollution from rice residue open burning.

66. Finally, Dr Mahasuweerachai outlined the wider qualitative and quantitative methods used to assess rice production behaviours in Thailand, thereby generating monetary values for the two rice production practices and assessing for the positive and negative externalities in the system. Such included: using the DNDC and InVEST models to predict environmental changes; using household surveys and the DNDC models to assess various dimensions of rice farming household economy; using choice experiments and exposure risk functions to assess the social perception of health impacts of rice production systems. . Social networks and trust among the different groups of farmers applying different rice practices will be assessed and reported qualitatively, based on data from household surveys. Finally, the study will conduct lab-in-the-field experiments to identify factors that can encourage farmers to switch from conventional to organic practices, including: cost/income subsidy concerns; social learning; and risk diversification.
67. **Dr Salman Hussain** (UNEP-TEEB) posed a question to Dr Mahasuweerachai concerning whether preliminary results indicate a significant difference between conventional and organic rice production practices. Dr Mahasuweerachai indicated that while some factors have not indicated a significant difference yet, other factors have indicated a significant difference between conventional and organic practices, such as air pollution, greenhouse gas emissions, and consequential health impacts. Notably initial results indicate that there is not much difference in yields between organic and conventional practices.
68. **Dr Rosliza Jajui** (The Malaysian Agricultural Research and Development Institute (MARDI)) asked about the differences between the scenarios posed, and what costs may be encountered from switching from conventional rice cultivation practices to organic ones. It was specifically from discussions with farmers in Malaysia, that a cultivation yield decrease was experienced by 50-80% in the first three years of switching from conventional to organic practices. Dr Hussain replied by suggesting that increased labour inputs may be valuable, while Dr Mahasuweerachai indicated that the costs of production will be different dependent upon labour, however no conclusions can be drawn from their data at present.
69. Dr Hussain also posed a question from the participants, concerning the consideration of governmental aid within the modelling, two of the scenarios are dependent upon this factor. Dr Hussain first gave his view, indicating that governmental aid in conventional economics is deemed a transfer payment, and so what is considered instead is the resulting distortions in the economy. Dr Mahasuweerachai gave his reply, indicating that consideration of governmental aid is technically integrated within the scenario modelling, employing both AI machine learning with the addition of specific assumptions and the modelling based off previous governmental data available for predictions. Therefore, there is a mixed approach to the ways governmental aid is assessed.

Methods and Approaches, TEEBAgriFood India

70. **Mr William Speller** (UNEP-TEEB) introduced the TEEBAgriFood India project, as implemented under the Ministry of Agriculture and Farmers Welfare, and the Ministry of Environment, Forests and Climate Change. A long process of stakeholder engagement has already taken place, involving an inception workshop, a webinar and Steering Committee meetings, to refine the policy options – the assessment of agriculture and agroforestry in Uttar Pradesh and Uttarakhand. Given the early stage of the project development, the presentations that would follow were to illustrate the background and potential scope of the projects, as opposed to the presentation of results which will come later in the year. Mr Speller also

acknowledged Dr Kirit Parikh, Former Member of the Indian Planning Commission and recipient of India's third highest civilian honour "Padma Bhushan", who took the time to join for the session and presentations for India.

71. Firstly, **Dr A. S. Panwar** (ICAR – Indian Institute of Farming Systems Research) presented upon the background and scoping of the project in Uttar Pradesh state, highlighting the significance of organic produce exports valuing US\$14 million. While compelling benefits can be attributed to both organic farming and agroforestry in Uttar Pradesh state, adaptive capacity challenges were raised, including: the lack of availability for organic inputs; a reduction in yield during the conversion period; establishment of infrastructure and mechanisms for certification and marketing; lack of trained human resources for organic cultivation methods; and the lack of proper marketing channels for organic produce. The TEEBAgriFood study may therefore contribute through the identification of area and crops for organic production and agroforestry using modelling, innovative and holistic approaches to organic production; evaluating the ecosystem services in the system and its valuation for extending benefits to all beneficiaries, and policy intervention opportunities.
72. The following districts were highlighted for study scoping: Bulandsahar, Aligarh, Mirzapur, Kannauj, and Bundelkhand, with the benchmarking of 120 farming households in each district to support the scenario analysis. The methods that will be employed include the identification of ecosystem services, scenario modelling, data collection for rhizospheric changes in soil health under various cropping systems, econometric changes to ecosystem services, and the impact analysis on livelihoods and ecosystems. The CROPWAT, APSIM, and InVEST modelling methods were particularly highlighted for use in the study. In parallel, Dr Panwar outlined that risks may arise in the project implementation, specific to the precise data availability for secondary data and satellite imagery, and the COVID19 travel and contact restrictions towards data collection.
73. Secondly, **Dr A. K. Sharma** (GB Pant University of Agriculture and Technology) presented the background and scoping of the project in Uttarakhand state, with an overview that most fruit and vegetable production being produced in the state is already cultivated organically, totalling almost 1 million tonnes in production. The climatic zones, agroecological zones, and land use patterns were presented for the state, with the emphasis of female participation in agriculture making up 70% of cultivators and agri-labourers. Furthermore, climate-resilient farming practices have already been employed in alley cropping patterns, as applied to "baranaja" grains, lentils, vegetables, root vegetables, and the growing interest in chia and quinoa cultivation.
74. Dr Sharma outlined the wide benefits of organic farming and agroforestry in Uttarakhand, while indicating that agroforestry is not gaining momentum in Uttarakhand as a result of weak capacity of farmers knowledge in agroforestry, a lack of R&D in agroforestry, and complex buyback arrangements between farmers and industries. The TEEBAgriFood study may thus contribute through identifying drivers of change, increasing the technical capacity of farmers for cultivation methods, improving soil ecosystem conservation, increasing ecological and soil data capacities, and impact evaluations of organic farming and agroforestry on ecosystem services.
75. The proposed districts for project implementation in Uttarakhand include Udham Singh Nagar (rice and wheat production), Tehri Garwhal, and Nainital, of which the latter two will target the production of millets, pulses, vegetables, and fruits. Using both optimistic and pessimistic scenarios, the project will apply models such as InVEST ecosystem service models. The economic evaluation undertaken may also

employ the assessment of market values, cost-based methods, and revealed or stated preferences of behaviour choices and sustainable practices.

Methods and Approaches, TEEBAgriFood Indonesia

76. **Mr Tomas Declercq** (UNEP-TEEB) introduced the TEEBAgriFood Indonesia project, highlighting that the preliminary cacao agroforestry projection scenarios have already influenced national policy making and resulted in the consideration of agroforestry within the five-year National Medium-Term Development Plan. While the National Development Planning Ministry (BAPPENAS) acts as a convenor and political lead of the TEEBAgriFood Initiative in Indonesia, IPB University will provide scientific evidence to (BAPPENAS) in terms of different policy intervention options linked to agroforestry and cacao.
77. **Dr Ir. Nunung Nuryartono** (IPB University, Bogor) firstly contextualised cacao production in Indonesia in his presentation, highlighting that Sulawesi accounts for up 60% of all production. Cacao productivity is noted to have decreased over the past 20 years. While the government restricted export of raw materials, the national downstream cacao industry was able to expand, leading to an increase in exports of cacao paste and cacao butter.
78. The study objectives and policy questions were outlined by Dr Nunung, revolving around the comparison of farm level management practices, landscape assessments and land-use planning, and value-chain assessments. The methods used operate in relation to scenario analyses forecasted to 2050, with use of Land Use Land Cover (LULC) and Markov-CA modelling methods. Evaluation methodologies will also be used to assess farm level management practices, including cost-benefit analyses, cost-effectiveness analyses, and multi-criteria analyses. To assess the cacao value chain in South Sulawesi and Indonesia, the methods employed will include interviews, focus group discussions, and data analyses to simulate policy interventions and drivers of the value chain.
79. Dr Nunung finally detailed the forecasting of COVID19 impacts upon agri-food in Indonesia, with use of computable general equilibrium (GCE) models. Three simulations have been applied: (1) COVID19 impact scenario, (2) the combined COVID19, climate change, and labour migration scenario, and (3) the combined COVID19, climate change, labour migration and cacao agroforestry scenario. Results thus far have indicated a strong case for cacao agroforestry in terms of i) offsetting climate change impacts, ii) having a positive impact on real GDP and other macroeconomic indicators in the wake of the COVID19 pandemic, and iii) improving farmer income and food security, illustrating a 27% increase in agri-food outputs with the application of agroforestry practices.
80. **Dr Salman Hussain** (UNEP-TEEB) remarked upon Dr Nunung's presentation, expressing that the existing progress with CGE models shows powerful results, delivering a strong case for interventions to promote an environmentally sustainable alternative in agroforestry in parallel to the post-COVID19 dimensions of building back better.
81. Dr Hussain added that, with use of Multi-Criteria Analysis (MCA) methods, it is useful to consider how results will be mainstreamed and used, especially in consideration of monetary or non-monetary approaches to displaying results and the consideration of trade-offs. Practically, building such considerations into the framework or results generation is useful for the wider understanding of the

findings, and to deal with incommensurability. It is valuable to see that Indonesia has already built in such considerations in their work.

Methods and Approaches, TEEBAgriFood China

82. **Mr William Speller** (UNEP-TEEB) briefly introduced TEEBAgriFood China, the project overview and modelling process to be presented by Dr Li, and remarked upon the close collaboration with the UNEP International Ecosystem Management Partnership (UNEP-IEMP) and the collaborative research centre, the Chinese Academy of Sciences.
 83. **Dr Li Li** (UNEP-IEMP) firstly gave an overview of the agri-food system globally and nationally in China, before outlining the existing meetings and activities that had already taken place upon selection of Tengchong as the TEEBAgriFood project study site. With contextualisation of the national agenda for biodiversity conservation and the reduction and efficiency of fertiliser and chemical use, Dr Li highlighted that locally, Tengchong would benefit greatly from a food systems transformation to assert its medicinal herbs and beef cattle breeding industries, promote the county as a healthy living destination, and to support a strong biodiversity conservation base.
 84. Dr Li outlined the socio-economic scoping of its driving forces, and greenhouse gas emissions scenarios (RCP4.5 and RCP8.5) used to determine the project scenario settings and the timescale applied to contextualise the TEEBAgriFood project and anticipated results. Its objectives target the four capitals, and a number of methods have been proposed for analysis of green agricultural development in Tengchong. Namely, these include Land Use Land Change (LULC) modelling, and InVEST modelling based upon the preceding LULC modelling. The methods will address the historical change in land cover, the development potential of the landscape, the policy and geographic restrictions in place to a food systems transformation, and the development need by application of future scenarios.
 85. **Dr Salman Hussain** (UNEP-TEEB) posed a question to Dr Li Li concerning the evidence required to trigger sustainable behavioural changes in Tengchong, and whether economic and LULC modelling evidence would be enough to substantiate the case put forward by TEEB. In reply, Dr Li expressed that household survey methods would be conducted to assess the local capacity of behavioural changes, however economic incentives have already been identified as a strong driver of behavioural change in Tengchong towards sustainable practices. Furthermore, the LULC modelling taking place is already strongly aligned with the short-term future predictions for agricultural development by the local authorities, and especially for herbal medicines cultivation and beef cattle breeding. The market for the two industries is immense, and it is predicted that the potential income revenue to farmers will drive them to adopt sustainable behaviour changes.
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Methods and Approaches, TEEBAgriFood Malaysia

86. **Ms Rebeca Leonard** (UNEP-TEEB) introduced the project, reiterating that TEEBAgriFood Malaysia is still in its early stage of development, following the inception workshop taking place in December 2020. They

are in the process of finalising the scope and geographical location of the assessment, and are planning to launch the study with local research groups later in the year.

87. **Dr Rosliza Jajuli** (Malaysia Agriculture Research and Development Institute (MARDI)) firstly gave an overview on the agricultural industry and policy development history in Malaysia, highlighting the main crop industries of rice, palm oil, and rubber. A number of agricultural challenges were also put forward, as having limited Malaysia in its development, including tenancy challenges in most fruit and vegetable farms, limited access to R&D and infrastructure, and inadequate institutional support from cooperatives due to a lack of entrepreneurship.
88. Dr Jajuli gave an overview of existing ecosystems services research in agriculture by MARDI, including: the use of biological control agents such as pollen and nectar sources; ecoengineering in fruit, vegetables, and rice ecosystems; and the valuation of ecosystem services. With adaptation in crop production cycles such as rice, modelling research methods have been able to enhance sustainable agriculture in line with the conservation of natural resources, with consideration of water management, environmental quality, greenhouse gas emissions reductions, and the estimation of monetary benefits from alternative crop production and management applications.
89. Dr Jajuli concluded by emphasising that the agroecosystems should be treated as an important asset in the economy, to which we must understand the economics and ecology in assessing ecosystem services and their values and implications in wealth accounting frameworks to widely achieve the SDGs.
90. **Dr Salman Hussain** (UNEP-TEEB) posed questions to Dr Jajuli from the participants, the first concerning the diversity of flower cultivation amongst livestock to ensure local biodiversity and pollination. Dr Jajuli expressed that candidate flowers have been selected for introduction, with the aim to attract specific beneficial insects and to control the attraction of pests to the cultivation areas. Flower strips have been utilised amongst cultivation areas.
91. Secondly, Dr Hussain posed a question concerning the possibility of crop exportation by Malaysian farmers without MyGAP certification. Dr Jajuli indicated that while MyGAP is currently a voluntary scheme, farmers can still export crops without it. However, Dr Jajuli recommended that while MyGAP certification is currently free for all farmers in Malaysia, it would be a beneficial mechanism for farmers to opt in, apply, and benefit from to expand into the export market and increase the incomes of rural communities.

Zoom Polling: Overview of TEEBAgriFood Countries and Agri-Food Systems, and Communication Methods.

92. To wrap-up the technical day of the Asia Symposium, several questions were posed to the participants to gain perspectives upon the eco-agri-food system within the participants' respective countries, to gain feedback on specific country presentations, and the types of communication methods that may be employed.
93. Specific to India, it was found that all 24 poll respondents agreed that better markets, more research, and greater policy support would be beneficial to enhance the sustainability of organic and agroforestry systems locally. Specific to China, it was found that all 20 poll respondents were familiar of the following

Chinese policy initiatives: eco-compensation (45%); key ecological function zones (40%); Grain for Green (35%); gross ecosystem product (25%); ecological redlines (25%), and clean plates (20%).

94. The participants were asked to indicate where the work of the TEEBAgriFood Evaluation Framework would be the most useful to their respective countries, to which the mainstreaming of valuation in decision-making was given the greatest indication (70% of 20 respondents). To follow, 55% of participants indicated for the understanding of the implicit trade-offs in decision making, and the generation of targeted discussion amongst stakeholders, each. 25% of respondents indicated that the TEEBAgriFood studies would have the greatest use in producing more scientific studies.
95. To follow on the valuation of nature, the participants were asked why have nature's values largely remained invisible in their respective countries. It was found that of 20 respondents, 50% noted the lack of data, whilst 25% noted for the lack of awareness of nature's values. On the other hand, 15% of respondents cited that nature's values were not recognised as a development priority.
96. With consideration of communication methods, it was found that of 20 poll respondents, all suggested methods would be employed, including audio-visual (70%), social media (65%), and interactive online platforms (55%). In parallel, the respondents indicated great support for the following methods of stakeholder engagement to further develop TEEBAgriFood progress in the respective project countries, in light of COVID19 restrictions: focus groups and discussions (85%), meetings and workshops (80%) and training and capacity building events (80%).
97. When asked to consider eco-agri-food systems in their respective countries represented in the Asia symposium, the following questions were asked:
- *What part of the agri-food value chain has adversely impacted upon biodiversity and ecosystem services the most in your country?*
Of 24 poll respondents, 62% cited agricultural production as having adversely impacted the most upon their national biodiversity and ecosystem services, followed by the distribution, marketing, and retail sectors (29%). Only 8% of respondents cited manufacturing and processing being the most adversely impacted, whilst no respondents cited household consumption as the leading impact.
 - *What do you perceive as the main threat to biodiversity and ecosystems in your country?*
58% of 24 poll respondents cited that soil erosion was the main threat, while 25% cited for pollution (air, land, and water), and 16% cited for habitat encroachment. Anthropogenic climate change was the only option that was not selected as a main threat by any poll respondents.
 - *What do you perceive as the main threat to food security in your country?*
54% of 24 poll respondents cited ecological degradation as the main threat to food security in their country, followed by production practices (33%). Financial incentives and market systems (8%) and manufacturing (4%) was found to be the main threat to some, meanwhile no respondents indicated for the distribution of produce as the main threat.

Closing Remarks

98. **Dr Salman Hussain** (Coordinator, UNEP-TEEB) expressed that the third technical day was a valuable session, highlighting the deep understanding of the methodological and research forecasting, especially as only one research entity has been formally contracted so far. In addition, the presentations showed evidence of a good commonality for the progress in the TEEBAgriFood project countries by purpose and methodologies, as supported by the sequential progress of research execution such as the INVEST modelling and other techniques. Furthermore, the spatial scope of the TEEBAgriFood projects within the populous and mega-diverse project countries shows an immense potential for impact upon livelihoods and biodiversity, upon the delivery of research findings and political integration.
99. Going forward, the team will create a mechanism for researchers to continue to interact with others in the region, and with the wider TEEB community globally. This will be key to disseminate methods, best practices, lessons learnt, resources, and findings between countries and the research communities in the TEEBAgriFood project countries.
100. The final TEEBAgriFood Regional Symposium was expressly indicated, hosting Brazil, Colombia and Mexico for the Latin America and Caribbean (LAC) region. The final LAC Regional Symposium event takes place during the 20-22nd of April as a means to further develop the exchange of case studies, methodologies, and lessons learnt between TEEBAgriFood project countries. Participants are welcome to join and partake in these two upcoming events.
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Related Links and Resources

Symposium Resources

- Recordings (Youtube): [Day 1](#) - [Day 2](#) - [Day 3](#)
- Presentations: [Access Link](#)

Related Links

- TEEBAgriFood Regional Symposia for Africa & Georgia, and TEEBAgriFood Latin America and the Caribbean Regional Symposium. (Agenda, Presentations, Recordings and Summaries): [Access Link](#)
- COVID19, the Environment and Food Systems: Contain, Cope, and Rebuild Better [Report](#)
- The Economics of Ecosystem and Biodiversity (TEEB) [Website](#)
- UN Food Systems Summit 2021 [Website](#)

Communications and Outreach Coverage

- Dia Mirza, UN SDG Ambassador (3.3mil followers): [Tweet Link](#)

Appendices

Appendix 1: Asia Regional Symposium Agenda

The Economics of Ecosystems and Biodiversity (TEEB)



TEEBAGRIFOOD REGIONAL SYMPOSIUM ASIA PACIFIC AGENDA 24-26 March		
Bangkok Time	DAY 1 Agenda	Wednesday 24th March 2021
HIGH-LEVEL POLICY SEGMENT		
15:00 - 15:10	Welcome	Dr. Salman Hussain , Coordinator UNEP-TEEB
15:10 - 15:20	Opening remarks	Dr. Dechen Tsering , UNEP - UN Environment Programme
15:20 - 15:35	<p>TEEBAgriFood - Lessons Learned and Opportunities for Impact</p> <p>The TEEBAgriFood Framework was launched in 2018. The Study Leads reflect on if and how TEEBAgriFood is relevant in the context of the COVID-19 pandemic.</p>	Mr. Alexander Müller , Study Leader of TEEBAgriFood, and Managing Director of TMG – ThinkTank for Sustainability
15:35 - 16:15	<p>High-level Panel - Transforming Food Systems through Making Nature's Values Visible</p> <p>The UN Food Systems Summit aims to transform food systems to meet the challenges of nature conservation, mitigating climate change and reducing pollution. This session explores the need in general to make the economic case for food systems transformation.</p>	<p>Ms. Zhang Yanping, Head, Office of International Programs, Division for International Cooperation and Exchanges, Rural Energy and Environment Agency, Ministry of Agriculture and Rural Affairs, China</p> <p>Dr. Alka Bhargava, Additional Secretary, Ministry of Agriculture and Farmers Welfare, India</p> <p>Ir. R. Anang Noegroho Setyo Moeljono, Director, Food and Agricultural Development, Ministry of National Development Planning (BAPPENAS), Indonesia</p> <p>Dr. Raweewan Bhuridej, Secretary General, Office of Natural Resources and Environmental Policy and Planning (ONEP), Ministry of Natural Resources and Environment, Thailand</p> <p>Highlevel speaker from Malaysia - TBO</p> <p>Moderator: Mr. Alexander Müller, Study Leader of TEEBAgriFood, and Managing Director of TMG – ThinkTank for Sustainability</p>
16:15 - 16:55	<p>Panel Discussion - Linking TEEBAgri-Food Projects to In-Country Policy Priorities</p> <p>Whereas the previous session considers economic assessment in general, this session brings together Ministerial focal points for the five in-country TEEBAgriFood applications to reflect on how the specific evidence from the TEEBAgriFood studies might contribute to transforming policies.</p>	<p>Dr. Linxiu Zhang, Director, UNEP-IEMP, China</p> <p>Ms. Chhavi Jha, Joint Secretary (Natural Resource Management), Ministry of Agriculture and Farmers Welfare, India</p> <p>Ir. R. Anang Noegroho Setyo Moeljono, Director, Food and Agricultural Development, Ministry of National Development Planning (BAPPENAS), Indonesia</p> <p>Mr. Syed Abdul Bari bin Syed Othman, Principal Assistant Director, Policy and Strategic Planning Division Ministry of Agriculture and Food Industries, Malaysia</p> <p>Dr. Benchamaporn Wattanatongchai, Biodiversity Management Division, ONEP, Ministry of Natural Resources and Environment, Thailand</p> <p>Moderator: Dr. Salman Hussain, Coordinator UNEP-TEEB</p>
16:55 - 17:00	Closing remarks	Dr. Salman Hussain , Coordinator UNEP-TEEB

Bangkok Time	DAY 2 Agenda Thursday 25th March 2021	
	POLICY SEGMENT	
15:00 - 15:10	<p>Welcome</p>	<p>Dr. Salman Hussain, Coordinator UNEP-TEEB</p>
15:10 - 15:30	<p>COVID-19, the Environment, and Food Systems: Contain, Cope and Rebuild Better. UNEP launched a global report on COVID-19 and Food Systems, and the impacts on three intertwined crises – nature, climate and pollution. Report highlights are to be presented in this session. (Report accessible here).</p>	<p>Mr. Jacob Salcone, UNEP-TEEB</p>
15:30 - 16:55	<p>TEEBAgriFood Project Policy Scope, Achievements & COVID-19 Responses Five Breakout Rooms. This session explores for each of the five TEEBAgriFood countries (i) how the policy question was formulated and (ii) the development of a Theory of Change so that the evidence to be generated contributes to concrete policy transformation.</p>	<p>Five breakout rooms facilitated by UNEP-TEEB team</p>
16:55 - 17:00	<p>Closing remarks</p>	<p>Dr. Salman Hussain, Coordinator UNEP-TEEB</p>

Bangkok Time	DAY 3 Agenda Friday 26th March 2021	
	TECHNICAL WORKSHOP ON METHODS AND APPROACHES	
14:00 - 14:10	<p style="text-align: center;">Welcome</p> <p>Whereas Days 1 and 2 were policy-focused, the aim of Day 3 is to provide an opportunity for each research institute to present the methods and data that have been/will be used to generate the evidence to support policy change. As such, Day 3 is a technical workshop, but open to policy makers also.</p>	<p>Dr. Salman Hussain, Coordinator UNEP-TEEB</p>
14:10 - 14:40	<p style="text-align: center;">TEEBAgriFood Thailand</p> <p style="text-align: center;">Q&A</p>	<p>Dr. Phumsith Mahasuweerachai, Faculty of Economics, Khon Kaen University (KKU), Thailand</p>
14:40 - 15:10	<p style="text-align: center;">TEEBAgriFood India</p> <p style="text-align: center;">Q&A</p>	<p>Dr. A.S Panwar, ICAR- Indian Institute of Farming Systems Research Dr. A.K Sharma, GB Pant University of Agriculture and Technology</p>
15:10 - 15:20	BREAK / ZOOM POLL / QUIZ	
15:20 - 15:50	<p style="text-align: center;">TEEBAgriFood Indonesia</p> <p style="text-align: center;">Q&A</p>	<p>IPB University, Bogor</p>
15:50 - 16:20	<p style="text-align: center;">TEEBAgriFood China</p> <p style="text-align: center;">Q&A</p>	<p>Dr. Li Li, International Ecosystem Management Partnership (IEMP)</p>
16:20 - 16:30	BREAK / ZOOM POLL / QUIZ	
16:30 - 16:50	<p style="text-align: center;">TEEBAgriFood Malaysia</p> <p style="text-align: center;">Q&A</p>	<p>Dr. Rosliza Jajuli, Agrobiodiversity Resources Utilization and Conservation Programme, Agrobiodiversity and Environment Research Centre, MARDI</p>
16:50 - 17:00	<p style="text-align: center;">Final Closing remarks</p>	<p>Dr. Salman Hussain, Coordinator UNEP-TEEB</p>

HIGH LEVEL POLICY SEGMENT

POLICY SEGMENT

TECHNICAL WORKSHOP

BREAK / QUIZ ZOOM POLL

Appendix 2: Asia Regional Symposium Participants

#	Name	Affiliation	Affiliated Country
1.	N/A	Ministry of Agriculture and Rural Affairs (MARA)	China
2.	A. K. Handa	Indian Council of Agricultural Research (ICAR)	India
3.	A. K. Upadhyay	Government	India
4.	Aakanksha Sharma Juneja	National Institute for Transforming India (NITI Aayog)	India
5.	Abimanyu Jhahria	Indian Council of Agricultural Research (ICAR)	India
6.	Ai Gaik Lim	Department of Fisheries	Malaysia
7.	Alexander Müller	Think Tank for Sustainability (TMG)	Germany
8.	Alka Bhargava	Department of Agriculture, Cooperation, and Farmers Welfare (ACFW)	India
9.	Amierah Amer	World Wildlife Fund (WWF) Malaysia	Malaysia
10.	Amrish Tyagi	Indian Council of Agricultural Research (ICAR)	India
11.	Ana Saleh	Netherlands Embassy in Jakarta	Indonesia
12.	Anand Singh	Indian Council of Agricultural Research (ICAR)	India
13.	Ananya M	UN Food and Agricultural Organisation	India
14.	Angarika Datta	UN Development Programme	United States
15.	Anggi Nurqonita	UN Environment Programme, Indonesia	Indonesia
16.	Anil Sharma	G.B. Pant University of Agriculture & Technology	India
17.	Anita Chaudhary	Indian Council of Agricultural Research (ICAR)	India
18.	Anjani Kumar	International Food Policy Research Institute (IFPRI)	India
19.	Anwesha Sarma	UN Development Programme	United States
20.	Areej Taufik	Malaysian Palm Oil Council	Malaysia
21.	Arun	G.B. Pant University of Agriculture & Technology	India
22.	Arup Mahapatra	Sustainable India Finance Facility	India
23.	As Panwar Iifsr	Indian Council of Agricultural Research (ICAR)	United Kingdom
24.	Ashok Patra	Indian Council of Agricultural Research (ICAR)	India
25.	Asi Guha	World Resources Institute, India	India
26.	Astha Chandra	UN Development Programme	India
27.	Atul Bagai	UN Environment Programme	India
28.	Avinash Jain	Scientist	India
29.	Ayushi Pal	UN Development Programme	India
30.	Ayyanadar Arunachalam	Indian Council of Agricultural Research (ICAR)	India
31.	Barlev Marhehe	UN Environment Programme	Indonesia
32.	Beau Damen	UN Food and Agricultural Organisation	N/A
33.	Benchamaporn Wattanatongchai	Office of Natural Resources and Environmental Policy and Planning	Thailand
34.	Bhanumati P.	National Statistical Office	India
35.	Bryan Citrasena	Indonesia Business Council for Sustainable Development (IBCSD)	Indonesia
36.	Bryce Bray	GAN	Brazil
37.	Caroline Ouko	Environmental Incentives	Kenya
38.	Charlotte Hicks	UN Environment Programme, World Conservation Monitoring Centre	United Kingdom

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39.	Charu Tiwari	Freelancer	India
40.	Chengfang 刘承芳	Peking University	China
41.	Chhavi Jha	Department of Agriculture and Cooperation	India
42.	Chitra Devi Gopalakrishnan	World Wildlife Fund (WWF), Malaysia	Malaysia
43.	Colm Kennedy	UN Environment Programme	United States
44.	Damayanti Buchori	IPB University	Indonesia
45.	Dawisa Paiboonsiri	National Bureau of Agricultural Commodity and Food Standards	Thailand
46.	Dechen Tsering	UN Environment Programme	Thailand
47.	Dewi Fatmaningrum	UN Food and Agricultural Programme	Indonesia
48.	Diksha Shetty	Save Indian Family Foundation (SIFF)	India
49.	Divya Datt	UN Environment Programme	India
50.	Diwen Tan	UN Environment Programme, International Ecosystem Management Partnership (UNEP-IEMP)	China
51.	Dongqing Li	Chinese Academy of Agricultural Sciences (CAAS)	China
52.	Dr Naushad Khan	C. S. A. University of Agriculture and Technology, Kanpur	India
53.	Dr A.K. Misra	Indian Council of Agricultural Research (ICAR)	India
54.	Dr. Paiboon Eamkum	Ministry of Public Health	Thailand
55.	Dr. Tania Bhattacharya	The Celestial Earth	India
56.	Eliet Amanca	University National Agraria la Molina	Peru
57.	Elphin Joe	World Resources Institute	India
58.	Emelia Fantoza Saraih	Ministry of Plantation Industries and Commodities (MPIC)	Malaysia
59.	Federica Pesce	UN Environment Programme	United Kingdom
60.	Feng Wu	Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences	China
61.	Gabriel Diaz-Padilla	National Institute of Research for Forestry, Agriculture and Livestock (INIFAP)	Mexico
62.	Gayatri Krishnamurthy	UN Food and Agricultural Organisations	India
63.	Geoffrey Onyango	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)	N/A
64.	Giorgia Cherubini	UN Environment Programme	Italy
65.	Gitika Goswami	Development Alternatives	India
66.	H Y	N/A	India
67.	Haniza Khalid	UN Development Programme	N/A
68.	Hareesh Chandra	UN Development Programme	N/A
69.	Harki Sidhu	Rainforest Alliance	India
70.	Hemalatha Raja Sekaran	Department of Fisheries	Malaysia
71.	Huajun Yu	PhD	China
72.	Ifan Martino	Ministry of National Development Planning (Bappenas)	Indonesia
73.	lifsr_ N. Ravisankar	Indian Council of Agricultural Research (ICAR)	United States
74.	Ira Widya Zahara	Ministry of National Development Planning (Bappenas)	Indonesia
75.	Ivan Cossio Cortez	International Fund for Agricultural Development (IFAD)	Indonesia
76.	Jacques-Chai Chomthongdi	Oxfam	Thailand
77.	Jai Rana	Bioversity International	India
78.	Jai Mishra	Indian Council of Agricultural Research (ICAR)	India
79.	Jakrapun Suksawat	Khon Kaen University	Thailand

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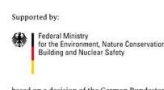
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80.	Jarot Indarto	Ministry of National Development Planning (Bappenas)	Indonesia
81.	Jean-Claude Kabore	Ministry of Environnement, Green Economy and Climate Change	Burkino Faso
82.	Jialin He	UN Environment Programme, International Ecosystem Management Partnership (UNEP-IEMP)	China
83.	Jing Zhao	UN Environment Programme, International Ecosystem Management Partnership (UNEP-IEMP)	China
84.	Jingpeng	Central South University	China
85.	Johan Kieft	UN Environment Programme	Indonesia
86.	Ka Han Lee	UN Development Programme, Malaysia Country Office	Malaysia
87.	Karachepone Ninan	Centre for Economics, Environment and Society	India
88.	Karishma Shelar	Ashoka Trust for Research in Ecology and the Environment (A TREE)	India
89.	Kiran Kumar T M	Indian Council of Agricultural Research (ICAR)	India
90.	Kirit Parikh	iRADe	India
91.	Kusum Arunachalam	Doon University	India
92.	Lailatul Jumaiyah Saleh Huddin	Department of Agriculture	Malaysia
93.	Lalida Sirisao	Department of Agricultural Extension	Thailand
94.	Lerong Yu	China Agricultural University	China
95.	Li Li	UN Environment Programme, International Ecosystem Management Partnership (UNEP-IEMP)	China
96.	Lillian Chua	Forest Research Institute Malaysia	Malaysia
97.	Lin Sun	Academia/Research	China
98.	Linxiu Zhang	UN Environment Programme, International Ecosystem Management Partnership (UNEP-IEMP)	China
99.	Liu Jingchun	UN Environment Programme, International Ecosystem Management Partnership (UNEP-IEMP)	China
100.	Louise Amand	Capitals Coalition	United Kingdom
101.	Lucyana Anak Dominic Ritay	Department of Agriculture	Malaysia
102.	Luke Brander	Brander Environmental Economics	Hong Kong SAR
103.	Lutfi Izhar	Jambia Assessment Institute for Agricultural Technology, Indonesian Agency for Agricultural Research (IAARD-AIAT)	Indonesia
104.	Madhu Verma	World Resources Institute	India
105.	Madhuri Nanda	Rainforest Alliance	India
106.	Mahayani Rahardjo	UN Office for Project Services	Indonesia
107.	Mahesh Pradhan	UN Environment Programme	United States
108.	Makiko Yashiro	UN Environment Programme	United States
109.	Margaux Verhaeghe	European Union	Brussels
110.	Marianis Din	Ministry of Agriculture and Food Industry	Malaysia
111.	Marieta Sakalian	UN Environment Programme	Italy
112.	Marie-Yon Struecker	UN Environment Programme	Thailand
113.	Martine Van Weelden	Capitals Coalition	United Kingdom
114.	Max Zieren	UN Environment Programme	Thailand

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115.	Meraj Alam Ansari	ICAR - Indian Institute of Farming Systems Research Modipuram	India
116.	Michael Padmanaba	Civil Society - Yayasan Inobu	N/A
117.	Michael Bucki	European Union	India
118.	Milcah Ndegwa	UN Environment Programme	United States
119.	Mingxing Sun	Chinese Academy of Sciences	China
120.	Miss Kanyarat Karnasuta	Ministry of Public Health	Thailand
121.	Miss Weeraya Kaewklom	Ministry of Public Health	Thailand
122.	Mohammad Shamim_lifsr_India	ICAR - Indian Institute of Farming Systems Research Modipuram	India
123.	Mohd Desa Hassim	Agriculture Officer	Malaysia
124.	Monalisa Sen	Civil Society	N/A
125.	Muhamad Dinie	Economic Planning Unit, Prime Minister's Department	Malaysia
126.	Muhamad Amin Rifai	IPB University	Indonesia
127.	Nachiketa Das	Green Indian States Trust (GIST)	India
128.	Natia Kobakhidze	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)	Georgia
129.	Neelam Patel	National Institute for Transforming India (NITI Aayog)	India
130.	Nik Aznizan Nik Ibrahim	Malaysian Palm Oil Board (MPOB)	Malaysia
131.	Noor Abidah Mohd Dawi	Ministry of Agriculture and Food Industries	Malaysia
132.	Norashikin Daliyana	Department of Fisheries	Malaysia
133.	Nunung Nuryartono	Faculty of Economics and Management. IPB University	Indonesia
134.	Nurul Hapsari	University of Pembangunan Nasional Veteran, East Java	Indonesia
135.	Parth Joshi	UN Development Programme	India
136.	Parul Sharma	World Resources Institute - India	United States
137.	Pek Chuan Gan	UN Development Programme	N/A
138.	Phumsith Mahasuweerachai	Faculty of Economics, Khon Kaen University	Thailand
139.	Phuong Nguyen	Regional Country Office, Vietnam	Vietnam
140.	Phuttatida Rattana	Office of Natural Resources and Environmental Policy and Planning	Thailand
141.	Pia Sethi	Centre for Ecology Development Research (CEDAR)	India
142.	Pini Wijayanti	IPB University	Indonesia
143.	Prasad J	Indian Council of Agricultural Research (ICAR)	India
144.	Pratap Birthal	National Institute of Agricultural Economics and Policy Research	India
145.	Preeyarat Chailangka	Land Development Department	Thailand
146.	Purushottam Sharma	ICAR - National Institute of Agricultural Economics and Policy Research	India
147.	Qinghe Qu	UN Environment Programme, International Ecosystem Management Partnership (UNEP-IEMP)	China
148.	Rafael Souza	Georaf	United States
149.	Rafizah Mazlan	Malaysian Palm Oil Board (MPOB)	Malaysia
150.	Raghuram Nandula	International Nitrogen Initiative, Sustainable India Trust and GGS Indraprastha University	India
151.	Ravindra Singh	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)	India
152.	Redy Prasetyo	Coordinating Ministry for Economic Affairs	Indonesia

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153.	Renfu Luo	Peking University	China
154.	Reuben Gergan	UN Environment Programme, India	India
155.	Rhoda Wachira	UN Environment Programme	Kenya
156.	Robert Manson	Instituto de Ecología (INECOL)	Mexico
157.	Rosliza Jajuli	Malaysian Agricultural Research and Development Institute (MARDI)	Malaysia
158.	Rospidah Ghazali	Universiti Kebangsaan Malaysia	Malaysia
159.	Rosyid Amrulloh	Centre for Transdisciplinary and Sustainability Sciences, IPB University	Indonesia
160.	Rozita Osman	Malaysian Cocoa Board	Malaysia
161.	Sahara Sahara	IPB University	Indonesia
162.	Sahith Goverdhanam	World Resources Institute, India	India
163.	Sai Kishore Nellore	Sustainable India Finance Facility	India
164.	Sarida Khananusit	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)	Thailand
165.	Saroj Barik	National Botanical Research Institute, Council of Scientific and Industrial Research (CSIR-NBRI)	India
166.	Satabdi Datta	Civil Society DA	N/A
167.	Satyanarayana Masabathula	Independent Consultant	India
168.	Sayan Deb	Consolidated Energy Consultants Ltd. (CECL)	India
169.	Shiv Kumar	ICAR - New Delhi	India
170.	Shuzhi Hou	Tongji University	China
171.	Silfi Iriyani	Centre for Transdisciplinary and Sustainability Sciences, IPB University	Indonesia
172.	Sirikarn Phuchada	Economics	Thailand
173.	Siti Mahramah Hamidon	Department of Agriculture Malaysia	Malaysia
174.	Stella George	Development Alternatives	India
175.	Subhadeep Samanta	Tech Mahindra	India
176.	Sudepta Ghosh	Government of India	India
177.	Suresh Pal	Director, ICAR-NIAP	India
178.	Suria Tarigan	Academia/Research	Indonesia
179.	Suttiwat Saengthaitaweepon	Foreign Relations Officer/UNFSS Coordinator	Thailand
180.	Syamsul Pasaribu	IPB University	Indonesia
181.	Syarifah Amaliah	IPB University	Indonesia
182.	Syed Abdul Bari Syed Othman	Ministry of Agriculture and Food Industries	Malaysia
183.	Taita Terer	National Museums of Kenya	Kenya
184.	Tanapipat Walalite	Maharakham University	Thailand
185.	Tanu Sethi	National Institute for Transforming India (NITI Aayog)	India
186.	Tarinee Suravoranon	International Organization	N/A
187.	Tatirose Vijiapan	UN Environment Programme, International Ecosystem Management Partnership (UNEP-IEMP)	China
188.	Tee Yei Kheng	Malaysian Cocoa Board	Malaysia
189.	Trapruaksa Tanyakaset	Department of Agricultural Extension	Thailand
190.	Try Hutomo	PT Sanghiang Perkasa	Indonesia
191.	Urjaswi Sondhi	UN Development Programme	India

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192.	Vanida Khumnirdpetch	Office of Permanent Secretary, Ministry of Agriculture and Cooperatives	Thailand
193.	Veronika Forstmeier	World Wildlife Fund (WWF), Malaysia	Malaysia
194.	Vinod Mathur	Chairperson, National Biodiversity Authority	India
195.	Vishaish Uppal	World Wildlife Fund (WWF), India	India
196.	Vivek Saxena	International Union for the Conservation of Nature	N/A
197.	Voravee Saengavut	Khon Kaen University	Thailand
198.	Wachira Petcho	Department of Agricultural Extension	Thailand
199.	Wang Hua	EU Delegation to China	China
200.	Warong Suksavate	Kasetsart University	United States
201.	Wei	Fudan University	China
202.	Xiyue Zhai	Rural Energy and Environment Agency, Chinese Ministry of Agriculture and Rural Affairs (MARA-REEA)	China
203.	Y	Yunnan Ecology and Environment Academy	China
204.	Yanping Zhang	Ministry of Agriculture and Rural Affairs	China
205.	Ying Wang	Ministry of Ecology and Environment, China	China
206.	Yuan Xiang Yeoh	Ministry of Agriculture and Food Industries	Malaysia
207.	Yunli Bai	Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences	China
208.	Zakiyyah Jasni	Department of Agriculture Malaysia	Malaysia
209.	Zara Phang	World Wildlife Fund (WWF), Malaysia	Malaysia
210.	Zeenat Niazi	Development Alternatives	India
211.	Zhihong Han	UN Environment Programme, International Ecosystem Management Partnership (UNEP-IEMP)	China
212.	Ziyu Chan	Carbon Xchange (Sarawak) Sdn. Bhd.	Malaysia
213.	Nuttapon Chaiyawannakarn	Department of Agriculture Extension	Thailand
214.	乐山杜	Chinese Research Academy of Environmental Sciences	China
215.	坚万	International Organization	RSPO
216.	琇梅朱	Bureau of Baoshan Ecological Environment	China
217.	琳孙	Academia/Research	FuDan
218.	白钰	Minzu University of China	United States
219.	腾冲	Tengchong Branch of Baoshan Ecology and Environment Bureau	China

Appendix 3: Asia Regional Symposium Participants, from UNEP-TEEB

#	Name
220.	Aung Lwin
221.	Camille Thoumyre
222.	Jacob Salcone
223.	Khushboo Ugandamal
224.	Lucy Cockerell
225.	Monica Lopez
226.	Naomi Young
227.	Rebeca Leonard
228.	Salman Hussain
229.	Sarah Cheroben
230.	Simi Thambi
231.	Tomas Declercq
232.	William Speller