



TEEB for Agriculture & Food Expert Workshop



Meeting Minutes
Brussels, 8-11 September 2015

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Executive Summary

Over the course of 3.5 days, nearly 100 experts from around the world were convened in Brussels to agree on some of the fundamental first steps towards a 'TEEB for Agriculture & Food' (TEEBAgFood) study. Participants included experts from a wide range of backgrounds, including the traditional TEEB community of environmental economists and ecologists, but also reaching out to new interest groups representing inter alia health, nutrition, food security, agronomy and animal welfare, as well as those involved in outreach and advocacy.

The workshop discussions led to the following outcomes and key messages:

1. Participants identified the role of TEEBAgFood as a science-based assessment of the 'eco-agri-food complex' and their inputs provided the foundation for carrying out the next technical phases of work. They also emphasized the importance of building a **community of practice for change** and, as such, viewed this study not as an end in itself, but as a means to influence **change in the discourse on food systems**.

2. Progress was made on the overarching valuation framework for TEEBAgFood, which will serve as a tool for guiding next steps in research. The framework, akin to a 'lens' through which the eco-agri-food complex can be valued, should be comprehensive so as to encompass the entire value chain, including processing and consumption. The framework must also be sufficiently flexible, as the boundaries of each study will be defined by context-specific policy issues. Several potential uses of the framework were discussed, including policy evaluation, typology comparison and business analysis, with valuation as a tool to make externalities visible.

3. An annotated report structure ("wireframe") for the TEEBAgFood Interim Report was designed through collaborative discussion. The Interim Report will frame key issues with examples from political, business, civil society, and citizens' perspectives. The report will ask strategic questions to spark interest in answers and key messages, which will then be provided in the final reports.

4. The following issues and research areas were identified as crucial gaps in research, and targeted for inclusion in the next phase of work:

- **Including the entire value chain:** TEEBAgFood analysis should include not only the production component of agricultural systems (i.e. within farm gates), but distribution and consumption components as well.
- **Making positive externalities visible:** There is a need to avoid focusing on negative externalities so as to paint a more complete picture of the eco-agri-food complex and help foster buy-in from a broader range of stakeholders, particularly the agricultural community.
- **Health and nutrition:** TEEBAgFood work should more directly address the inter-linkages between food systems, health and nutrition.

- Demonstrate how **smallholder farmers** can be a major part of the solution for the eco-agri-food complex if given the right incentives, i.e. if the economic system stops rewarding the production of negative externalities. However the TEEBAgFood study needs to look at catalysing change across the **full range of farming systems**, from large scale to small scale, from intensive to extensive, and from subsistence to commercial. One reason for doing so is the inter-linkages between farming systems.
- **Telling compelling stories:** The expansion of TEEBAgFood research will focus on identifying and conceptualizing compelling stories that resonate with audiences. A range of positive and negative stories that highlight *real* values, prices and costs of food would guide decision makers across society to make the right choices.
- Given a more finalized framework, suggestions for future work in TEEBAgFood were provided at three levels: i) **extension of existing feeder studies** (e.g. refining policy scope; including additional positive and negative externalities; wider value chain analysis; the addition of more farming systems across different geographies, ecological and socio-economic contexts; business analysis), ii) **additional sectors** (e.g. soy bean) and iii) **cross-sectoral research** (e.g. landscape restoration; health and nutrition; agro-ecology; mixed systems; climate change adaptation and mitigation). This can both include compiling secondary research as well as cutting-edge primary research.

5. Dissemination and outreach for TEEBAgFood will require smart and targeted messaging. In particular, it is important to develop a creative storyline that changes the discourse and makes solutions towards sustainability more accessible, with the Sustainable Development Goals as a possible policy 'hook'. The *Global Landscape Forum* was announced as the launch and discussion platform for the Interim Report, taking place at COP21 in Paris in December 2015. This is one of many proposed dissemination opportunities.



I. WELCOME AND OPENING REMARKS

The objective of this session was to welcome nearly 100 experts to the Brussels workshop and set the stage through a series of opening remarks from high-level TEEB_{AgFood} ambassadors that are actively engaged and supportive of this process.

Workshop participants were welcomed to the city of Brussels amid protests¹ by European farmers over falling milk and meat prices and their inability to cover basic costs of production – an oddly appropriate way to set the tone for the four days of discussions ahead focused on the need for precisely this type of policy change.

The workshop was opened by **Steven Stone**, Chief of UNEP's Economics and Trade Branch, which hosts the TEEB Secretariat among a number of other flagship initiatives including the Partnership for Action on a Green Economy (PAGE), the Green Growth Knowledge Platform (GGKP) and the UNEP Finance Initiative.

Achim Steiner, UNEP Executive Director, delivered a [video statement](#), in his capacity as TEEB Advisory Board member.

His Royal Highness Prince Charles of Wales issued a written speech that was dictated by **Patrick Holden**, Founding Director of the Sustainable Food Trust and one of the TEEB_{AgFood} Steering Committee members.

Pavan Sukhdev, UNEP Goodwill Ambassador and Special Adviser to TEEB, drew upon his experience as Study Leader for the original TEEB reports to explain what 'TEEB' is and what it is not. Sukhdev referred to the four key principles of TEEB – *transparency, quality, inclusion and change* – to guide our work of using economics to effectively communicate nature's values in a way that business and policy makers can understand. Sukhdev addressed the many dangers and challenges facing valuation, and explained how TEEB addresses these and how it can help change the discourse.

Finally, **Alexander Müller**, Study Leader for TEEB_{AgFood}, addressed the three key objectives of this workshop: (i) *balancing transparency and complexity* by drawing upon critical yet constructive feedback to decide how best to reduce complexity while still representing reality; (ii) *creating a platform for research* based on an agreed framework for valuation that will allow comparability and illuminate any major knowledge gaps, all the while supporting the idea that the current economic model is incomplete; (iii) *building a new community of practice* by bringing together actors operating across different 'silos' and developing a unified approach for communications and outreach.

¹ <http://www.theguardian.com/environment/2015/sep/07/farmers-clash-police-brussels-milk-meat-prices-protest>



II. WHY IS TEEBAGFOOD NEEDED?

The objective of this session was to provide a platform for key donors, both new and old, to present their views on why TEEBAGFood is a worthwhile investment, what it means to them, and their general expectations for the months ahead.

Cristiana Pasca Palmer, representing the Directorate General for International Cooperation and Development (DEVCO) at the European Commission, shared insights as one of TEEB's historical donors as to how the knowledge from TEEB has paved the way for important flagship work on biodiversity, human well-being and ecological economics. Regarding TEEBAGFood, she tabled some expectations regarding the effect of rural policies and programmes on natural capital in developing countries, as well as the potential for innovative agricultural practices in climate change mitigation and adaptation.

Stefan Leiner, representing the Directorate General for the Environment at the European Commission, echoed statements on the return of investment from TEEB and its real impact on policy change. A few examples of policy entry points were laid out, including the EU Biodiversity Strategy to 2020 and the State of Nature in the EU report, while also highlighting the links between biodiversity and agriculture (e.g. 80% of funding for biodiversity comes from CAP budget).

Guillermo Castilleja introduced the Global Alliance for the Future of Food as a philanthropic collaborative made up of 22 foundations with a diversity of interests around food systems but a common ambition to focus on externalities as the key element accounting for distortions that characterize our food systems. Castilleja viewed the potential of TEEBAGFood as three-fold: (i) making a case for change, (ii) building an evidence base, and (iii) using a robust approach to account for pros and cons of food systems.

Tone Solhaug from the Norwegian Ministry of Environment, another longtime supporter of TEEB, described Norway's most recent support of TEEB work on '[Advancing Natural Capital Accounting](#)', which allowed TEEB to commission work on several 'externalities-heavy' sectors. Solhaug described one of the biggest challenges and opportunities facing TEEBAGFood is breaking down the walls between environment and agriculture sectors.



III. WORKSHOP AGENDA, PROJECT OVERVIEW AND AN INTRODUCTION TO THE 'FEEDER STUDIES'

The objectives of this session were:

- i. to describe the conceptual development of the project and how it will be operationalized in terms of activities and timelines;
- ii. to introduce the different actors involved in project management and administration;
- iii. to present the rationale and process behind the commissioning of several studies on agricultural sectors and systems; and
- iv. to provide a walkthrough of the workshop agenda and an overview of objectives and expected outcomes.

Alexander Müller and **Salman Hussain** (TEEB Coordinator) delivered a joint PowerPoint presentation, [available here](#).

IV. VALUATION FRAMEWORK FOR LIVESTOCK, RICE AND PALM OIL

The objective of this session was to allow Trucost and True Price, involved in the valuation work for three of the 'feeder studies', to explain how they arrived at a common valuation framework and why different 'bottom-up' and 'top-down' approaches were applied for each study. Challenges and limitations were also identified.

Adrian de Groot Ruiz (True Price) and **Chris Baldock** (Trucost) delivered a joint PowerPoint presentation, [available here](#).

V. FEEDER STUDY PRESENTATIONS

The objective of this session was for study teams to provide a detailed overview of each study, before opening the floor to discussants (who had previously reviewed the study) and then to the wider audience for further feedback or clarification.

If you want to have access to the feeder studies, [click here](#)



LIVESTOCK

Moderated by **Patrick Holden** (Sustainable Food Trust)

Willy Baltussen (Wageningen University) - [PowerPoint](#)

Discussants raised the following points:

- **Malden Charles Nesheim** (Cornell University) focused his comments on the missing aspects of health and nutrition, which trigger additional costs (e.g. obesity and diabetes) that may be tricky to value. He suggested stronger links on the feedback loops between the farmer and the processor and the consumer.
- **Angela Cordeiro** (independent) focused her comments on the field of food security as the context in which natural capital costs should be assessed. Rather than protein and productivity, she suggested incorporating access to diversified and nutritionally balanced diets.

Participants raised the following discussion points:

- *Generalizations and averages need to be explained, contextualized and/or handled with extreme caution*
- *Whose valuation is being considered?*
- *Local knowledge systems should be incorporated*
- *Ecosystem services should be addressed as the 'currency' of natural capital, i.e. where its value is derived from*
- *Biodiversity should be captured as having a role in the provisioning of ecosystem services; this point was debated, arguing that the value of biodiversity should be treated as an additional economic argument, as TEEB has done in the past*
- *On the point of diets and nutrition, it was suggested to link to work by Chris Murray and his team at the Institute for Health Metrics and Evaluation*
- *Livestock is often associated with deforestation although it can provide important benefits in terms of conserving grassland systems*
- *Systems should not be looked at in isolation as this creates problem with aggregation, e.g. in the context of agrosilvopastoral systems*
- *The selection of indicators under the top-down and bottom-up approaches needs clarification*
- *What exactly is included in the methodology for determining carbon externalities?*
- *Desertification and disaster risk reduction should be addressed*
- *How can resilience be captured in the framework?*
- *Time dimension needs to be integrated into the valuation framework*
- *Positive externalities should be included in the analysis, if only qualitatively*
- *Purely intensive systems should be included, as well as water pollution analysis throughout the value chain*

Baltussen responded with the following points:

- *Much more can be done in terms of scope, including geography of case studies and types of systems assessed*
- *Local knowledge was incorporated in bottom-up approach by describing on-farm processes in a detailed description of each case study*
- *On the valuation side, there are many practical limitations to any methodology used in trying to capture whose valuation is being used*
- *Desertification is addressed, but there is insufficient data on disaster risk reduction and water cycling*



RICE

Moderated by **Johan Kuylenstierna** (SEI)

Anne Bogdanski (FAO) - [PowerPoint](#)

Discussants raised the following points:

- **James Vause** (UNEP-WCMC) noted the complexity of the study and questioned what the maximum economic output of rice systems would be. He commented on the need to not only identify that externalities exist, but who they fall upon and the impact that that has. Looking at system boundaries, he wondered whether they should be widened. Noting that not all values can be captured, he referred to the work of Georgina on the need and value of biodiversity increasing over time, a trend strongly linked to the resilience dimension.
- **Heidi Wittmer** (UFZ) praised the heterogeneity and diversity of the study in terms of management practices assessed, and suggested highlighting cross-implications and cross-effects, or the fact that knowledge gaps exist. She suggested making an example of 'win-win' scenarios (avoiding costs and externalities) for the Interim Report. Going beyond the scope of the study, she saw added value in identifying which actors makes a difference in these systems, how and where.

Participants raised the following discussion points:

- Regarding the scale and time dimension of demand for rice, where will the increase come from, who will take advantage, and how will change the analysis of costs and benefits?
- How can this study address the political and business barriers that are based on distorted economics, e.g. rice systems in California

Bogdanski responded with the following points:

- *Rice was identified as an exemplary sector, in that it is not heavily traded internationally and is largely operated by smallholders needing little to no external inputs; in this, there is a strong potential for positive messaging*
- *Large-scale industry will benefit most from increase in demand, though rice is becoming more popular in Africa*
- *Extending the boundaries outside the farm gate to the landscape level could be considered in a second phase of work*
- *Complexity needs to be rebuilt into this work by looking at system dynamics and feedback loops*
- *FAO is working on developing a protocol to work on agro-ecological approaches with farmers*



PALM OIL

Moderated by **Johan Kuylenstierna** (SEI)

Chris Baldock (Trucost) - [PowerPoint](#)

Discussants raised the following points:

- **Ines Freier** (independent) highlighted the need to distinguish between effects (reversible) and impacts (not) over the long term. She asked for a statement on what can be done with this type of knowledge and for whom it is relevant.

Participants raised the following discussion points:

- *In the realm of public health, a useful exercise would be to look at the drivers of demand, e.g. role of technology in solving hydrogenation (trans-fat). Also, what are the public health impacts of palm oil?*
- *'Disturbed' forests need to be clarified in the context of carbon sequestration, but also throughout the entire life cycle analysis*
- *Are fertilizer costs integrated?*
- *Positive externalities should be included in the analysis*
- *Half of all costs are attributed to land conversion, but are conversion types other than primary forest clearing considered, e.g. rubber plantations?*
- *Consider high conservation value options, such as wildlife-friendly palm*
- *Given the role of major consumers in buying from deforestation-free plantations, what are the additional costs of conversion from fallow/disturbed/non-forested land?*
- *The life cycle for palm oil is 25 years – is this accounted for?*
- *For whom are these results produced, and how can evidence be turned into policy change? Commitments and accountability are key, e.g. from 2015 International Conference on Nutrition.*
- *Explain your assumptions in the high costs of Nigeria versus Indonesia*
- *The quantification of negative externalities of palm oil production from farm gate to plate is enormous.*

Baldock responded with the following points:

- *The 25-year life cycle, above and below ground biomass, and the social and natural capital costs of fertilizers, are accounted for*
- *Regarding Nigeria, methods and rates of fertilizer application causes higher intensity*
- *Given the narrower study scope, due to its business focus and natural capital accounting angle, some aspects have been omitted*
- *When looking at conversion scenarios, primary forest conversion was most common*



INLAND FISHERIES

Moderated by **Pavan Sukhdev**

David Lymer (FAO) - [PowerPoint](#)

Discussants raised the following points:

- **Richard Young** (Sustainable Food Trust) listed a number of issues that deserve further attention, including dams and fishing livelihoods in the Lower Mekong, overfishing and eutrophication in Lake Victoria, and the role of salmon in cycling nutrients and in providing fatty acids in Columbia River. He questioned whether the loss of land (natural and managed) when building dams was accounted for. He reflected on a suggestion from Jules Pretty to bring in a case study on peri-urban fisheries and/or rural aquaculture.

Participants raised the following discussion points:

- *Should we be comparing recreational vs local incomes for indigenous populations, given the importance of social/non-monetary values?*
- *Risks and uncertainties need to be better accounted for*
- *Are alternatives to hydro dams taken into account with other energy externalities? Or, instead of alternatives, it can be easier to look at how dams can be built so as not to disrupt fisheries, and the costs involved.*
- *Flood pulses in Zambia are a good example of agricultural systems driven by ecosystem services*
- *From a public health perspective, it would be useful to look at fish advisories issued in the vast majority of public dams due to pollution (mercury, PCBs)*

Lymer responded with the following points:

- *Rural aquaculture would be a valuable addition to the case studies, in light of the differences between capture and aquaculture in terms of nutrition*
- *Loss of land and emissions are not accounted for because they are more closely related to hydropower development than fishery production systems*
- *While flood pulses would make for an interesting extension of work, data is limited*
- *Health issues should be addressed*



AGROFORESTRY

Moderated by **Pavan Sukhdev**

Peter Minang (ICRAF) - [PowerPoint](#)

Discussants raised the following points:

- **Ines Freier** (independent) pointed to missed opportunities to capture the contribution of agroforestry to livelihoods as well as social benefits in rural areas, despite the difficulty in quantifying them. The study is also too carbon/REDD+ focused and would benefit from a wider coverages of ecosystem services and 'GDP of the Poor' perspective.
- **Haripriya Gundimeda** (IIT-Bombay) argued for more information on policy drivers and policy reforms. Clarification is needed on how values are integrated into the TEV approach as well as the values used in the scenario analysis. She suggested focusing more on risks, biophysical and social implications, and the levels of ecosystem services under the different management options. Regarding pollination, it is important to state whether it is an input or an output, for accounting purposes. She argued that a more holistic assessment is needed that assess all costs and benefits, including social ones. She also suggested stronger links to other sectors of the economy, consideration of additionalities and baselines, and clarity on stocks and flows.

Participants raised the following discussion points:

- *Instead of cropping systems, this study looks at management systems, which may provide additional insight*
- *Research on valuation of pest control and pollination in coffee/cacao systems is extensive; e.g. Daniel Karp or Taylor Ricketts*
- *Linking carbon payments is difficult for farmers as it less tangible compared to biodiversity conservation; also a wealth of knowledge on this*
- *Many examples of agro-forestry systems outside of Africa that should be explored*
- *What was the basis for selecting the scenarios versus other potential options? Is there a policy link?*
- *What can we learn from garden systems coming out on top?*
- *In the comparison between low- and high-shade systems, is the productivity of other crops (e.g. trees) also taken into account*
- *Time dimension needs to be integrated into the valuation framework, as well as scenarios that include changes in demand, population and climate*

Minang responded with the following points:

- *Scenarios were selected on the basis of broader regional scenarios in one of the CGIAR programmes on climate change, agriculture and food security for West and East Africa, and further narrowed down by a literature review*
- *There is a policy shift to incentivize full-sun systems because of higher productivity, while neglecting other benefits. Garden systems come out as more beneficial than highland systems because they are more biodiverse and the assessment looked at total ecosystem service provisioning value across not only coffee but other tree species, other tree products and non-timber forest products.*
- *We will put stronger emphasis on benefits other than carbon, including social benefits*
- *While the same ecosystem services were measured in each scenario, the trade-offs between them can vary*
- *Certification is an interesting scenario to investigate*



MAIZE

Gabriel Tamariz (CONABIO) - [PowerPoint](#)

Participants raised the following discussion points:

- *Are gender issues taken into account? e.g. whether producer is man or woman impacts household nutrition*
 - *Are slash-and-burn techniques being considered, particularly in the context of habitat encroachment?*
 - *The relationship between pest control and maize diversity should be further explored, particularly on weeds and the impacts of glyphosate on soil fertility*
 - *The role of maize in human nutrition, as a result of livestock feed or human food, should be further explored*
 - *Maize as biofuel should be further explored*
- More attention should be paid to genetic diversity and the economics of GMOs vs other traditional*

Tamariz responded with the following points:

- *The maize study has only recently begun to carry out work, and is thus far less advanced than other studies being presented*
- *There are studies on whether gender determines level of diversity of maize, which we will explore*
- *Slash-and-burn is being taken into account in Mexico case studies*
- *Pest control and nutrition will be explored within the study scope, while herbicides are included in the pesticide analysis*
- *Maize as ethanol is being addressed in the US case studies*
- *The first phase of work includes an economic valuation of genetic diversity and a system that maintains that diversity. We will also explore the option value for having genetic diversity in an unknown future.*



VI. ROUNDTABLE Q&A AND WRAP-UP

The objective of this session was to hear first impressions from Steering Committee members and make an effort to synthesize the day's discussions into take-away messages for the remainder of the workshop.

- **Ruth Richardson** (Global Alliance for the Future of Food) reflected on the need to agree on where to draw boundaries, whether in terms of food security, nutrition, obesity, livelihoods, safety nets, informal economy, gender, traditional knowledge, etc. She outlined the importance of targeted messaging and smart communications. She noted the strong emphasis on changing discourse, which she referred to as the guiding star toward making solutions accessible. She concluded that there needs to be more attention paid to movement and transition instead of comparing snapshots.
- **Kathleen Merrigan** (George Washington University) explained that this process will not be linear, but iterative as we figure out feedback loops. In order to inform policymakers, she emphasized the immediate need to focus on identifying major data gaps.
- **Alexander Müller** grouped the day's discussion into two types of recommendations: (i) *narrow down the focus* in order to meet deadlines and resource constraints, and (ii) *be more comprehensive* in terms of assessing the full spectrum of ecosystem services and externalities. While seemingly conflicting, he argued that both are necessary in order to support change; we need to paint a global picture that is underpinned by in-depth case studies.
- Both panelists agreed. **Merrigan** advised that the first step is to agree on the visible and invisible externalities that should be in the framework, which is the task of Day 2, and then populating each of the cells with robust evidence where possible. She added that, while the framework is not enough to produce change, it helps to steer conversations and orient policymakers into the right thinking. **Richardson** argued that it is equally important for us to state what we do (which is a lot more than one might think) as well as what we do not know, both with a degree of authority.
- **Müller** asked what needs to be done in order to reach, interact with, and broaden our constituency. **Richardson** proposed a long-tail approach in which communications is a strategy throughout the project aimed at targeting different constituencies at different fora, each time tinkering with the messaging. She advocated for a suite of activities and targeted consultations with key stakeholders.

Participants offered the following final thoughts:

- *Huge diversity of studies, insights and knowledge gaps*
- *The list of possible additions to this work is limitless; we should instead focus on taking the examples we have, and testing the findings and approaches toward the ultimate goal of developing a framework*
- *There is a need to build momentum and suspense by filling major knowledge gaps and bringing together key constituencies toward a common goal*
- *Communications needs to be part of the project DNA*
- *Maize is an opportunity to learn from the experience of other case studies*
- *Agriculture is the biggest opportunity to showcase the plight of small-scale farmers, and their dependence on natural capital*
- *Agriculture is a multidimensional economy and needs to be treated as such*
- *Positive messaging /success stories are powerful*
- *Political economy needs to be taken into account*
- *Policy integration was deemed critical in order to be effective*



I. RECAP AND DAY 2 OBJECTIVES

The objective of this session was to recall the progress made in Day 1 and how it will be applied to the primary objective of Day 2: developing a valuation framework.

Alexander Müller opened Day 2 by underlining the day's objective: to develop an overarching study framework, which will serve as guidance for next steps in the TEEB_{AgFood} process. He recalled that the feeder studies discussed during Day 1 used various existing frameworks and valuation approaches.

II. LINKS TO 'SYSTEM OF ENVIRONMENTAL-ECONOMIC ACCOUNTING' (SEEA)

The objective of this session was to showcase the complementarity between accounting frameworks like SEEA and the goals of the TEEB_{AgFood} study.

Carl Obst (Institute for the Development of Environmental Economic Accounting) delivered a PowerPoint presentation, [video available here](#) (password: teebagfood).

III. THE TEEBAGFOOD VALUATION FRAMEWORK

The objective of this session was to introduce an early version of the valuation framework and how it will help provide a comprehensive look at the impacts and dependencies of agriculture and food systems.

Pavan Sukdev framed the discussion of Day 2 by presenting the draft of a common framework for valuation. He explained that the valuation framework is about what to value and why: it is a 'lens' through which the eco-agri-food complex can be valued. In this context, he considers a "cradle-to-grave" boundary preferable to avoid distorted views. Considering the appropriate policy context is also an important part of the valuation framework, akin to "putting the right amount of light through the lens". Nevertheless, he stressed that the approach to valuation is often more important than the valuation framework itself. Three potential uses of the framework were presented: policy evaluation, typology comparison and business analysis. [View PowerPoint here](#).

Finally, **Pete Myers** provided insight and practical experience into how the human health dimension of agricultural externalities (largely absent from the current set of studies) is being captured by researchers around the world, offering a wealth of knowledge for TEEB_{AgFood} to tap into. [View PowerPoint here](#).



IV. CROSS-CUTTING REVIEW OF STUDY FRAMEWORKS

The objective of this session was for three independent reviewers of the livestock, palm oil, inland fisheries and agro-forestry studies to compare and contrast the different valuation frameworks used in each, identify any gaps or omissions that should be filled, and suggest how these efforts may provide lessons for developing a unifying framework.

Harpinder Sandhu (Flinders University) commented that the feeder studies focus too heavily on production and, in order to address issues such as food security, should also address distribution and consumption issues. With the exception of the inland capture fisheries study, he noted a lack of consistency between each of the frameworks presented and the subsequent analysis. He suggested that the MAE/TEEB/CICES framework for ecosystem services be used. Finally, he highlighted the need for a discussion on the spatial and temporal dimensions of the studies.

Angela Cordeiro (independent) argued that feeder study objectives could be further refined to ensure that the study process has an influence on policymakers. Studies need to provide numbers to open a powerful chain of communication to policymakers and society. She also pointed out the importance of considering rural lifestyles and livelihoods, and as “the farm not just a factory of food, but a place of life.” Finally, she recommended prioritizing climate, water and health externalities.

Richard Young & Stefano Orsini (Sustainable Food Trust) suggested that we expand our mindset when thinking about “agriculture and ecosystems”. They found that an overall systems approach is missing, e.g. feedlot systems must be considered in conjunction with maize and soil, as these systems produce cattle feed. Aside from the Maasai and ngitili case studies, positive externalities in the form of ‘carbon storage and sequestration’ were largely omitted, in addition to soil as a methane sink, gene pool narrowing, fossil fuel impacts, public health costs of over-consumption, and finite natural capital resources (natural gas, phosphate fertilizers, antibiotics, etc.).

Participants raised the following discussion points:

- *The time dimension (to show costs of inaction) should be integrated through system dynamic modelling.*
- *Participants strongly supported the holistic approach of the TEEBAgFood framework, and determined that each study should clearly communicate the boundaries of what is within and what is outside the holistic assessment. The framework should be comprehensive to encompass all relevant points (i.e. the entire value chain) whereas the specific boundaries of each study will be defined by the policy issue at hand, and as such the framework must be flexible.*
- *The framework does include non-food products (e.g. biofuels), wood fuel energy for smallholder farming, and recycling (circular economy).*
- *Participants recommended a greater focus on resilience in all its dimensions, including diversity of income generation and livelihoods.*
- *The framework should also include non-economic rationales and other dimensions (e.g. risk aversion, information asymmetry).*
- *Reference was made to VitalSigns, an open source system which could be used as a test bed for developing and evaluating the framework, in addition to literature review.*
- *Stronger emphasis was recommended on human health as the “sharpest sword to reach the policy maker.”*
- *It was recommended to consider the inclusion of a geo-referencing toolkit in the framework.*



V. REFINING THE VALUATION FRAMEWORK

The objective of this session was to provide clarity and consistency on the valuation framework and for participants to split into three break-out groups and brainstorm different ways of strengthening it into a comprehensive and universal matrix.

BREAK OUT GROUP A **Defining scope and boundaries**

Rapporteur: **Sandy Andelman**
(Conservation International)

Group A clarified that the draft valuation framework is *not* a calculation spreadsheet, but rather a checklist. The Interim Report will provide guidance on how this framework can be used and what it includes. As this framework is not easily communicated, it needs a language appropriate to various audiences. Participants agreed that TEEBAgFood cannot provide a full inventory of world agro-ecosystems, and should rather focus on expanding feeder studies so that they identify and conceptualize compelling stories that resonate with audiences and illustrate a set of issues around making the right choices.

The following issues were identified for improvement:

- *Underline that agriculture is a part of food systems. The entire value chain should be included, not just the production component*
- *Develop an alternative typology for the 'landscape' column (modified landscapes and farming systems)*
- *Develop a framework for capture fisheries*
- *Improve articulation framework, scope, and boundaries, and articulate how the pressure-state-response-impact framework can be incorporated into the framework*
- *Express the framework in a way a layperson can understand (e.g. value chains)*
- *Extract notes on Externalities/Distortions to inform us on these dimensions of assessment of the eco-agri-food systems complex*
- *Include a column of beneficiaries/ affected parties in the valuation spreadsheet. Gender could be included here, but would also need a guiding narrative and examples of valuation work that include gender*
- *Flesh out health externalities of the food system and incorporate them into valuation framework*
- *"Social Values and Risks" are very broad categories and need more granularity, for example incorporating peace and security*
- *Clarify and include the difference between impacts and dependencies*
- *The Project Statement of TEEBAgFood needs to be re-examined and possibly re-drafted. For example, the use of the words 'distortions' and 'externalities' is not fully correct in that all externalities are distortions, but not all distortions are externalities.*



BREAK OUT GROUP B

Identifying a typology of production systems

Rapporteur: **Peter Minang** (ICRAF)

Group B determined that typologies should be developed according to the context of research questions, policy goals and beneficiaries, and should be examined from a dynamic perspective. While the FAO's typology of farming systems is a good starting point for analysis, other typologies should also be considered, particularly those that acknowledge the social benefits of farming systems.

The group presented an example of a multi-level outline that included a broad commodity category and broad policy goals, as well as more detailed management practices and specific policy incentives. It was suggested that such a system could be scaled up or moved from one context to another in order to apply lessons learned to other cases.

The following issues were identified for consideration:

- *Complexity of putting different systems into boxes*
- *Keep in mind the distinction between scale and management practices: a given scale (eg. industrial) does not necessarily imply particular management practices.*
- *Care should be taken with messaging when systems are analysed separately, as there is a need for improvement in all agricultural systems. In some instances, small scale agriculture is connected to industrial production.*
- *The intensity of impacts on ecosystem services is not necessarily related to the size of a production system.*
- *Consider not just types of inputs in different farming typologies, but where those inputs come from (eg. systems that import inputs from across the globe, systems that use waste from other systems as inputs)*

BREAK OUT GROUP C

Identifying the full range of externalities

Rapporteur: **Salman Hussain** (TEEB Office) [PowerPoint](#)

Group C drafted some impressions on the range of externalities addressed in the framework, agreeing that one unifying framework is needed and useful though it can be presented in different ways. They then considered omissions and modifications, for instance the ambiguity of the 'visible/invisible' distinction but its link to TEEB branding, the temporal dimension, cross-cutting themes (e.g. women's empowerment, animal welfare and food security/food safety), cultural and regulating services, options for integrating the recipients of the value addition, and health externalities.

The issue of double counting was debated by participants, and ultimately concluded that, although it is important to avoid double counting in a national accounting context, it is also important to be flexible and pragmatic in the context of collecting data and conceptualizing compelling stories. This is particularly applicable in terms of visualizing supporting services and positive externalities, as well as linking this with resilient ecological systems.



VI. FROM 'WHAT' TO 'HOW'

The objective of this session was to examine how the value of ecosystem services to agriculture can be measured and valued in practice.

Harpinder Sandhu (Flinders University) delivered a PowerPoint presentation on “Ecosystem services valuation methods: appropriate scale and scope in agriculture”, [available here](#).

Participants raised the following discussion points:

- *Despite the drawbacks of working with global aggregates, participants supported maintaining both top-down and bottom-up approaches for analysis.*
- *Participants observed the importance of providing answers and key messages in the right policy context. Therefore, the framework should be tailored to specific policy contexts.*
- *Studies at the farm level can be scaled-up and benefit transfer can be used in case of a lack of national/local data, while being transparent about the assumptions in the modelling exercise. In this context, it was mentioned that it is important to specify timeframe, as current unsustainable ‘cheap food’ production is undermining the potential of future production. TEEBAgFood should showcase that cheap food is very*
- *expensive, affecting vulnerable people and regions first.*
- *It was argued that corporations are currently the policy drivers, leading to situations where it is profitable to produce negative externalities. TEEB needs to create alternative pressure points on corporations by leveraging citizens, consumers, policymakers and investors.*
- *TEEBAgFood will need to intelligently connect emerging evidence on solutions that come from sustainable systems and trying to upscale these findings.*
- *It was recommended not to ‘blindly’ tick boxes within the framework, but to pull together robust evidence, and demonstrate this comprehensive and intelligent way of thinking about the future of food systems.*

VII. TESTING THE VALUATION FRAMEWORK

The objective of this session was to allow study teams to use the advantage of hindsight to reflect on their work in the context of the valuation framework and explore what could have been done differently.

LIVESTOCK

Willy Baltussen (Wageningen University) mentioned four potential improvements. First, the study should still combine top-down and bottom-up approaches, but add additional factors such as externalities, farming systems, and policy questions. Second, the study could add a value chain approach, including distribution and consumption. However, this would be a challenge for the current study model as he showcased with the following examples: research shows that minced meat in Germany contained the DNA of 268 animals, making it technically possible but very difficult to assess impacts. Another example is that milk is sold in over 20 different products. Third, human health aspects, such as the impact of antibiotics, should be further explored. Finally, the study could explore alternative development pathways for the analysed farming systems.



RICE

Anne Bogdanski (FAO) mentioned that it would be very important to look further into nutrition and employment. The rice study is finding it challenging to put economic values on certain ecosystem service benefits, particularly regulating services such as soil fertility and biological control.

INLAND FISHERIES

David Lymer (FAO) argued that the study could benefit from an increased focus on typology characterization. He also mentioned the great amount of literature and evidence base which is not fully included in the study as of yet. The study encountered problems in upscaling the three case studies, as they are too context-specific. Finally, he suggested that the study could look further into nutrition and food security.

PALM OIL

Chris Baldock (Trucost) reiterated the importance of framing the right question at the outset in order to establish credible and useful scenarios which are applicable to the most important stakeholders. He suggested that the study introduce a time dimension into farming system changes, looking at what may be impossible now, as well as what could be possible in the long term. He also observed that the issue of discounting is highly impactful.

AGROFORESTRY

Peter Minang (ICRAF) sees opportunities in broadening the scope of the study to include livelihoods, nutrition and several negative externalities such as pesticides. He mentioned that the study could also address the entire value chain, including distribution and consumption. Finally, he highlighted the need to refine policy scenarios and assumptions.

MAIZE

Gabriel Tamariz (CONABIO) mentioned they would be assessing the use of pesticides (water pollution), but not the human health impacts of pesticides. Also, pest control would be included in the broader assessment, but not in the valuation. Participants mentioned that failing to fully considering health impacts would be a missed opportunity to grasp policy makers' interest. It may also lead to 'bizarre' situations of, for instance, GMOs being certified as sustainable.

Participants raised the following discussion points:

- *TEEBaFood should offer a diversified set of stories that resonate with different audiences. Therefore, it is not necessary for each study to address the same issues. For example, one such story could look at different scenarios of dietary recommendations for meat consumption, and assess the impact of each on ecosystem services and health.*
- *Monetary figures are not always the strongest indicators for communication purposes. For example, the statement from the US climate plan that made the most impact on social media was "this would lead to 90.000 fewer asthma attacks for children".*
- *Participants provided examples of existing research on health costs of conventional agriculture, such as work by Jules Pretty. This research could be used to enhance feeder studies such as the maize study current scope.*
- *The time dimension was viewed as critical when comparing farming systems in which high-input systems may have short term gains, while organic systems that must build ecological infrastructure may lose out in the short term. It is also important to consider the adaptability of assessed systems over time, particularly in regard to climate change.*
- *Diets of the future need to be built into policy. For example, milk subsidies in Sweden no longer make sense, given that 20% of the population is vegan and most young people do not drink milk.*



VIII. DECIDING THE WAY FORWARD

The objective of this session was to synthesize the day's discussions into take-away messages for the remainder of the workshop.

Salman Hussain noted the high level of detail in the feeder studies. He stated that support from the TEEB community would be needed to guide work on *how* to include health in the TEEB_{Ag}Food workstream in a way that drives policy change, as well as *how* to look at the distribution side.

Pavan Sukdev highlighted the importance of the theory of change behind the TEEB_{Ag}Food workstream. It is not about analysing the past, but about how to bring together forward-looking information and evidence in a way that resonates and applies pressure to audiences in order to realize a change in food systems discourse. He considers two time horizons for TEEB_{Ag}Food. The first is to deliver the Interim Report at the Global Landscape Forum (Paris, December 2015) on the margins of UNFCCC COP-21. The Interim Report will be directional in framing the key issues with a few good examples, from a political, business, civil society, and citizens' perspective. A writing team will be created, to which experts who wish to contribute are invited. After Paris, the key issues raised in the Interim Report will be addressed. To clarify how to frame key issues as part of a valuation approach in a post Paris TEEB_{Ag}Food phase, he provided three study examples:

- *Systems approach*: compare sustainable rice intensification with conventional rice farming, with a clearly stated geographical and political context. The outputs of the study would not just be numbers, but also an overall context to the numbers and the valuation exercises.
- *Business approach*: The EU is working on regulations for enterprises to expose their social and environmental impacts as a sort of footprint for products.
- *Policy approach*: A possible policy question could be framed around the world's largest trade in palm oil, which takes place between Indonesia and India. Both would prefer more conversion of CPO (crude palm oil) into RDB (refined, bleached, deodorized) palm oil, which would strengthen manufacturing sectors and their economies. To achieve this, they are competing on a constant basis by adjusting export and import tariffs. The policy question for analysis would be: if this tariff structure were applied to sustainable versus non-sustainable palm oil, how much money would be needed to make palm oil trade between India and Indonesia entirely sustainable?

Alexander Müller identified several issues for discussion:

- He praised some of the excellent outputs of the feeder studies, which he calls the "known knowns" (eg. agriculture is externality-heavy). He argued that TEEB_{Ag}Food should shift its focus to the "known unknowns", such as the linkages with health. Finally, he suggested to keep in mind the complexity of the system, which is full with "unknown unknowns".
- Providing some compelling examples of health impacts, he identified the need for a strategy to link the TEEB_{Ag}Food workstream to health in a more appropriate way.
- Through the workshop, progress was made on the overarching framework for TEEB_{Ag}Food, which will serve as guidance for next steps. He reiterated the need for prioritization, both in terms of global studies and in-depth studies, to showcase that TEEB_{Ag}Food is able to cover interlinkages.



I. RECAP AND DAY 3 OBJECTIVES

The objective of this session was to recall the progress made in Day 2 and how it will be applied to the primary objectives of Day 3: commissioning additional research and drafting a communications plan.

Alexander Müller reflected on the knowledge gaps identified over the past two days, and the retrospective reactions from the research teams, toward putting together a number of concrete proposals for commissioning additional research. Afterwards, the focus would shift to communications and outreach to ensure an effective dissemination strategy.

II. POTENTIAL EXTENSIONS TO EXISTING STUDIES

The objective of this session was to take two feeder studies, livestock and rice, that have developed unique analyses or sketched proposals for potential extensions to their work, and discussing how to achieve optimal impact.

Pietro Galgani (True Price) delivered a presentation on the Maasai case study, [available here](#). One of the unique features of the livestock study is its detailed analysis of Maasai pastoralism and landscape preservation in Tanzania. This analysis quantifies many dependencies on ecosystem services simultaneously and looks at local externalities using a time-explicit model. The in-depth case study is an example of how a detailed bottom-up valuation can show the invisible value of natural capital to the human economy in a given region.

Participants raised the following discussion points:

- *What ecosystem values changed between scenarios?*
- *Was the distinction made between small- and large-scale systems?*
- *How is natural capital defined?*
- *What are the major assumptions being made, for example on discount rates?*
- *Not many ecosystem services come out strongly in the study*
- *How is tourism treated?*
- *The social conflict between pastoralists and settlers is not apparent, and can provide policy context*
- *More is needed on the non-monetary elements, e.g. resilience, adaptation and genetic diversity*

Galgani responded with the following points:

- *Only provisioning services endured significant change between scenarios*
- *In this region, the only data that existed was for low-input and low productivity systems, but it would be interesting to apply this to intensive or ecological systems*
- *Natural capital is defined based on the Inclusive Wealth approach as the sum of ecosystem services every year*
- *A low discount rate (2.5 – 3.0%) was applied*
- *Loss of regulating services needs to be better illustrated*
- *Tourism is treated as constant over time, as there is no projected increase*
- *More depth and color can be added to the narrative in order to come up with more focused policy questions*
- *Fire management and soil fertility were not addressed*



Müller concluded that, with such a study, we can provide evidence that the current development pathway is unsustainable, and there are alternatives based on choices that we can inform. Participants questioned how to determine the most important and impactful policy question when several possibilities exist. **Sukhdev** argued that such a study should be predicated on policy questions identified in consultation with the local government. **Willy Baltussen** agreed, adding that this case study shows what can be done with existing data to make a policy-relevant analysis. **Hussain** concluded with an open-ended question to think about whether we should support more work like this on different sectors and in different locations, or to build on work and go deeper.

Anne Bogdanski (FAO) delivered a presentation on potential extensions to the rice study, [available here](#). She highlighted the potential impact of the study, as 80 million hectares of irrigated lowland rice provides 75% of the world's rice and uses 40% of the world's total irrigation water.

Preliminary results of the study show that, in a third of all cases, yields were not affected when water consumption was reduced. The outcome was strongly related to the type of improved water management that was practiced.

The study also compared conventional practices to the System of Rice Intensification (SRI). SRI is characterized by manual weeding (no pesticides), only manure (no chemical fertilizers) and less water use (although not evidenced in the study). Through a vote-counting analysis, helping to interpret results from multiple contexts, it was shown that in 28 out of 33 cases there was no difference in yields. It was concluded that, among others, the preliminary study results show opportunities and alternatives to current management practices instead of focusing only on costs of production. As such, the study could provide a solid basis for policy advice.

Participants raised the following discussion points:

- *When looking at public and private cost and benefits, make sure to break down cost and benefits for whom (e.g. producer price is a cost for farmers, while emissions are global costs)*
- *How did you account for labour in the different rice systems?*
- *Compare pesticide use and eutrophication/fertilizer impacts for all of the typologies, as well as health effects.*
- *Can the study be expanded by measuring relative impacts on inland fisheries?*

Bogdanski and the rice study team responded with the following:

- *The study will aggregate public and private costs and benefits appropriately depending on different stakeholders*
- *The study will not compare countries to one another, but will be comparing rice systems within each country.*
- *Because SRI is a bundle of practices, it is more difficult to convince farmers for a shift to SRI. The adoption of SRI depends on the support of institutions, NGOs, and extension workers.*
- *The connections between rice and fish are very context-specific and would need to be examined through field studies rather than modelling. There are many data gaps, but, for instance, data on fish in China could allow for a hypothetical transfer to Cambodia.*
- *Assessing health impact is also context-specific, as cultivation practices may have very different consequences for human health depending on the setting (e.g. Senegal vs. Sacramento).*

The rice study focused on actual practices rather than systems, as this makes it possible to follow the transition between different practices. The system approach would need a lot of research in many locations.



III. BRAINSTORMING ADDITIONAL RESEARCH

The objective of this session was to look ahead to what types of research projects might provide an opportunity to showcase new and compelling evidence to demonstrate proof of concept. These could either take the form of extensions to existing studies, new studies with a similar sectoral approach, or new studies with a non-sectoral approach.

Salman Hussain recalled the original request for proposals for today's feeder studies, the selection of which was largely determined through an informed and collaborative yet ad hoc process. This time around, he identified three main areas in which new research could be commissioned ([see PowerPoint](#)).

Participants raised the following general discussion points:

- For any extension put forth, it needs to be intimately linked to study objectives and should follow a basic set of criteria, which could include:
 - Displays movement toward sustainability
 - Externalities-heavy
 - Areas in which people are willing to contribute pro bono, as advocates of TEEB
 - Areas in which consumers can make a difference
 - Level of analysis under 2 hectares to ensure small-scale is covered
- We need to identify policy hooks that we can connect with, e.g. SDGs
- Allies in the corporate sector need to be involved
- Embrace the enemy

EXTENSIONS TO EXISTING STUDIES

Although largely covered in the morning session, participants offered the following additional suggestions:

- Broaden existing studies, particularly palm oil, to include biodiversity
- Broaden existing studies to assess relationships outside the farm gate (including distribution and consumption, but particularly health and nutrition)
- Assess food security and poverty (particularly in the context of agro-forestry), as well as water security and resilience/disaster risk reduction, as cross-cutting issues
- Include more positive externalities across the board
- Intelligently connect existing case studies with other knowledge that may be patchy/nascent
- Perform an in-depth analysis of sustainable systems at all scales

NEW STUDIES – SECTORAL APPROACH

Participants made the following suggestions:

- Commission a feeder study on soy, which has both local and global food system impacts
- Given that red meat, grains and fish are being overproduced, a feeder study on a vegetable/nut/seed could be valuable
- Members questioned the value added of pursuing new sectors when the current ones are still sketchy



NEW STUDIES – NON-SECTORAL APPROACH

Participants made the following suggestions:

- Strengthen the case for agro-ecology
- Commission research on landscape restoration, which will be the single largest land use change over the next twenty years, and demonstrates a way in which landscapes can be managed to generate food and value. It is also strongly linked to UNFCCC and the Global Landscapes Forum, the SDGs (15.3), IPBES and the Economics of Land Degradation
- Commission feeder studies on mixed systems, e.g. soy/maize/livestock feed or palm oil
- Commission cross-sectoral study on climate change adaptation and mitigation

IV. OUTREACH, DISSEMINATION AND DEVELOPING STAKEHOLDER NETWORKS

The objective of this session was to focus solely on a communications and outreach strategy, in terms of identifying our target audience and engaging stakeholders, language and messaging, troubleshooting, topics and key messages, and outreach and dissemination.

Danielle Nierenberg (Food Tank) delivered a PowerPoint presentation, [available here](#).

IDENTIFYING OUR TARGET AUDIENCES AND ENGAGING STAKEHOLDERS

Participants raised the following discussion points:

- *The scientist community must be broader than just valuation experts and must include knowledge providers, synthesizers, user, etc.*
- *Research communities are not only audiences for findings, but for methodologies as different ways of seeing things and conducting research*
- *Policymakers cannot be lumped together; different messaging for different ministries*
- *Donor and funding communities have an important role to play*
- *Where TEEB lacks knowledge (health and nutrition, transport, distribution), it is important to team up with those who possess expert knowledge*
- *Need to link with social movements that have political power*
- *Need to link with social media and youth, which is often low budget, easy to translate and powerful*

LANGUAGE

Participants raised the following discussion points:

- *Content and technical language needs to be adapted to different audiences (and in different languages)*
- *Converting key messages into sound bites*
- *Language and products should be connected, for example in peer reviewed journal articles*
- *References to 'cheap food' should be avoided, both because people are resistant to price increases and because food is not cheap to many people (especially in developing world)*
- *There is no such thing as bad publicity*



TROUBLESHOOTING

Participants raised the following discussion points:

- *Lesson 1 from TEEB is to leave more than one bite to the cherry*
- *Lesson 2 from TEEB is to distil sound bites*
- *Lesson 3 from TEEB is to not forget traditional media, like newspapers*
- *Lesson 4 from TEEB is to maintain momentum by staging events and activities over time*
- *This needs to be treated as a work-in-progress; let's warm people up to the problem before talking about solutions*
- *Partnerships/alliances are key for stemming criticisms*
- *Develop a communications platform for thinktanks and outreach agencies to utilize*

TOPICS AND KEY MESSAGES

Participants raised the following discussion points:

- *There are several different pillars to this stool (eco/agri/health) – balance is key*
- *Try to align messaging with SDGs*
- *Ask questions first to understand what resonates with them, and build messaging around that*
- *Questions that lead to our key messages should be in the Interim Report*
- *Communications should be part of the project DNA*
- *Public versus private distinction is critical*
- *Need for a package of key messages for UNFCCC COP-21 in Paris*
- *Identify the most plausible near-term crises and be prepared with applicable communication materials that are ready to go out when those crisis hit*

OUTREACH AND DISSEMINATION

Participants raised the following discussion points:

- *Food Tank is organizing 4 summits in 2016*
- *Annual EAT Forum*
- *CBD and TEEB are planning for SBSTTAs and CBD COP-13*
- *Raj Patel was suggested as a well-known thought leader*
- *Celebrity chefs were suggested, as well as Pope Francis*
- *New President of African Development Bank should be sought as possible ambassador*
- *Partnering with IPBES is timely and strategic*
- *Webinars are a useful e-learning platform, and easy to set up*
- *Country ambassadors should be recruited to spread the word more locally*

V. BRAINSTORMING KEY MESSAGES

The objective of this session was to break out into groups to begin developing key messages and headlines that can be mainstreamed into reports and communications.

Three groups brainstormed the best way to encapsulated strong key messages for the study, and presented their thoughts in a PowerPoint presentation, [available here](#).



I. RECAP AND DAY 4 OBJECTIVES

The objective of this session was to develop a ‘wireframe’, or an annotated report structure, for the development of an Interim Report.

Alexander Müller opened Day 4 by looking back at the key messages developed at the end of Day 3 and considering how to operationalize them in the development of the Interim Report. The final day’s objective was to develop a wireframe that will serve as a skeleton and storyline for the Interim Report. He emphasized that TEEBAgFood is a platform based on two pillars, ‘research’ and ‘change’. The research pillar entails compiling secondary research, new cutting-edge research, and identifying cross-disciplinary research questions. This research must be highly directional and strategic, as research in TEEBAgFood is not an end in itself, but rather a means to support change.

II. INTERIM REPORT MESSAGING

The objective of this session was to agree on basic objectives and messaging for the Interim Report chapters.

Pavan Sukdev framed the discussion by presenting a loose outline for the Interim Report, divided into four chapters. He clarified that the content needs to be directional, ask the right questions, and provide context and spark interest in answers and key messages, which will then be provided in the final reports.

Participants raised the following suggestions, which were incorporated into [this PowerPoint](#):

CHAPTER 1: The Real Values, Prices and Costs of Food

- Open the report not only with shocking stories that most people haven’t heard, but also with stories of hope
- Capturing positive externalities ‘will keep farmers on board’
- The notion of ‘cheap food’ was removed, as it has the potential to be uncomfortable in messaging from a food security and development perspective

CHAPTER 2: What *really* is our Food System?

- Add nutrition and health, distribution and waste, and smallholder farming in this section
- Include accessible visual aids to help readers grasp the complexity of these issues, particularly since the current TEEBAgFood visual does not encompass the wider eco-agri-food complex

CHAPTER 3: How can we examine and evaluate this complexity?

- Clarify the role of valuation not as a means to correct externalities, but a tool to make externalities visible. In this sense, the focus is not valuation methodologies, but the strong incentives created by policy and our economic system, which make it profitable to produce negative externalities
- Address issues of discounting and non-monetary valuation

CHAPTER 4: From Economic Analysis to Policy, Farming, Business, Consumer Solutions

- Frame TEEBAgFood’s ecosystems and biodiversity-based approach as a critical tool for assessing potential policy directions



III. INTERIM REPORT WIREFRAME

The objective of this session was to break out into groups to further develop the chapters of the Interim report and to begin developing core content into a wireframe.

Group rapporteurs delivered a joint PowerPoint presentation, [available here](#).

Participants provided final recommendations during the report back:

- For Chapter 2, participants cautioned against one-sided messaging regarding smallholder farming, and instead argued that the report should demonstrate how smallholders can be a major part of the solution if given the right incentives, and if the economic system stops rewarding the production of negative externalities. It was recommended that Jules Pretty be involved in this chapter, as his research demonstrates substantial yield increases using a range of eco-friendly smallholder farming practices.
- In Chapter 4, the SDGs should be mentioned, as 13 out of 17 SDGs include targets that mention maintaining the health of natural resources. Chapter 4 could also include proposals for further work on *how* to explore the issues identified in Chapter 1.
- Feeder studies should be presented as examples of works-in-progress, to be complemented by strong examples from existing research.
- A participant noted that the resilience of production systems and their ability to cope with shocks is not sufficiently addressed.
- A discussion on the wealth of existing research led to the suggestion to establish an information repository for research inputs to the reports
- An alternative title (or subtitle) should be chosen for the Interim Report.

IV. CLOSING REMARKS

The objective of this session was to look back on the intensive four days of discussions and how they will feed into the next steps of the project.

Participants voiced the following final thoughts, questions and reflections:

- How will we deal with the argument that organic production systems cannot feed the world's growing population? Could a scenario analysis be conducted to assess the area needed for organic systems to feed the world by 2050? The National Center for Ecological Analysis and Synthesis is exploring different scenarios that would feed 9.6 billion people while incorporating nature conservation.
- Numerous studies exist on downstream health effects that could be incorporated into the Interim Report. These include studies on dietary patterns and their carbon footprint, as well as national dietary guidelines (for example, Brazil's national dietary guidelines contain food typologies based on different levels of processing).
- Concerns were raised regarding the food price issue: increasing sustainability does not necessarily increase food prices, but BAU *will* lead to increased food prices. Taking the ecosystem services approach, it is possible to reduce externalities and increase productivity at the same time.