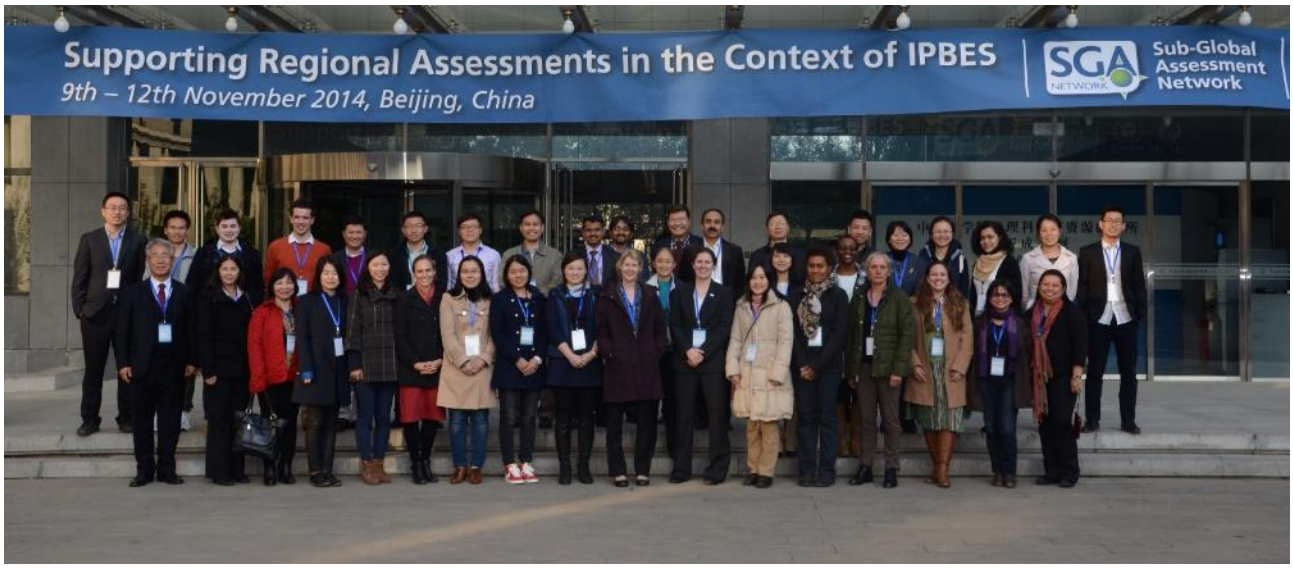
Capacity Building Workshop in the Asia-Pacific Region on Supporting Regional Assessments in the Context of IPBES

Workshop Report

9 – 12th November 2014

Institute of Geographic Sciences and Natural Resources Research, Beijing, China



A Sub-Global Assessment Network workshop convened by UNEP-WCMC, with support from the Norwegian Government, UNEP-IEMP and UNEP-ROAP.

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The United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) is the specialist biodiversity assessment centre of the United Nations Environment Programme (UNEP), the world's foremost intergovernmental environmental organisation. The Centre has been in operation for over 30 years, combining scientific research with practical policy advice.

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Contents

Executive Summary

This report presents proceedings from a capacity building workshop convened for the Asia-Pacific region to provide information, experiences and lessons learned from undertaking ecosystem assessments, as well as an introduction to the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES), its functions and programme of work**.** The four day workshop ran from the 9th to the 12th of November 2014 and was held in Beijing, China. Twenty-nine participants attended from 15 countries across the Asia-Pacific region and from a range of government departments, Ministries of the Environment, regional organisations, universities/research institutes and NGOs.

The workshop was organised by the United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) with support from UNEP International Ecosystem Management Partnership (UNEP-IEMP), the UNEP Regional Office for Asia and the Pacific and funding from the Norwegian Government.

Day One focused on introductions from participants and facilitators, to IPBES and the work of the Sub-Global Assessment (SGA) Network. The workshop was opened by Dr Jian Liu, Director of UNEP-IEMP, and began with a session on self evaluation. The exercise revealed that there was a range of experience amongst the workshop participants in assessing ecosystems and their services at different geographic scales. The aims and activities of the SGA Network, as well as IPBES's history, functions and work programme were covered. Participants who had attended the IPBES scoping meeting on regional and sub-regional assessments gave their reflections on the process. The day concluded with the presentation of the Ecosystem Assessment Framework, which provides a step-by-step guide to undertaking assessments and was the foundation for the rest of the workshop.

Day Two covered the first two stages of the Ecosystem Assessment Framework: the Scoping and Design Stages. The stages were covered through a mixture of presentations (from both facilitators and participants), exercises and discussions. The Scoping Stage covered the importance of defining the scope and context of an assessment, as well as the identification of key questions and design considerations with a particular emphasis throughout on engaging key stakeholders. The Design Stage focused on the importance of conceptual frameworks in assessments and introduced the IPBES Conceptual Framework. The day concluded with a speech by Mr Kaveh Zahedi, the Regional Director of UNEP's Regional Office for Asia and the Pacific, who highlighted the importance of sub-global assessments in informing policy.

Day Three focused on the Implementation Stage and featured more participant presentations. The Implementation Stage covered assessing the status and trends in ecosystems and their services, using scenarios, how to assess different values people place on ecosystems and their services, and how to analyse policy response options. Participant presentations covered experience in national biodiversity monitoring, methods of ecosystem service valuation and the development of ecosystem management frameworks.

Day Four covered an introduction to ecosystem assessment tools, the Communication and Outreach Stage of the framework as well as lessons learned from conducting ecosystem assessments and the identification of capacity building needs and opportunities. In the context of IPBES, the planned catalogue of policy support tools was introduced and the Platform's proposed plans for capacity building. Participants designed communication strategies for target audiences and considered how to communicate key messages and findings, using the proposed IPBES uncertainty language. Participant presentations covered the resilience approach, application of the TESSA toolkit

and payment for ecosystem services schemes, plus lessons learned and follow on work from a sub-national assessment.

1. Background and Rationale for workshop

The findings of the Millennium Ecosystem Assessment (MA) confirmed the increasingly important contributions of ecosystem services to human well-being. Following the release of the MA in 2005 many sub-global assessments (SGAs) have been undertaken using on the MA methodology or an alternative approach, such as The Economics of Ecosystems and Biodiversity (TEEB). Developing individual and institutional capacity is, however, essential for many countries and regions before they are able to carry out their own ecosystem assessments.

Assessments are considered important for achieving the goals of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). In a meeting jointly convened by the Governments of Brazil and Norway in 2011 it was recognised that: i) there was potential to build on work already developing in the follow-up to the MA and TEEB; ii) SGAs have the potential to deliver meaningful results at the appropriate scale to decision-makers; and iii) there is already an SGA network in place that can help support countries and improve access to existing experience and tools.

Under IPBES, capacity building has been highlighted as an important component of the first work plan that was agreed in December 2013. Deliverables 1 (a) *Prioritization of capacity needs and matching with resources*, and 1 (b) *Development of capacities to participate in IPBES*, from the work plan speak particularly strongly to the objectives of this workshop. In addition, it has been recognised that the assessment process itself is just as important as the product, as it offers an opportunity to develop in-country capacity. Therefore, regional assessments have a key role to play in meeting these capacity building goals.

The Asia-Pacific region is a biologically, economically and sociologically diverse region. Policy challenges in the region include rapidly urbanising nations and the need to raise the standard of living and increase access to resources without degrading the diverse ecosystems, which contribute to the well-being of the population, through the delivery of ecosystem services. This workshop offers an opportunity to support assessment capacity building efforts within the region, assisting the region to engage with IPBES as well as to meet its own environmental goals.

1.1 Workshop Objectives and Structure

With support from UNEP International Ecosystem Management Partnership (UNEP-IEMP), the UNEP Regional Office for Asia and the Pacific (UNEP-ROAP) and the Norwegian Government, the UNEP World Conservation Monitoring Centre (UNEP-WCMC) convened a workshop which brought together assessment practitioners from across the Asia-Pacific region.

The objectives of the four day workshop were to:

1. Provide an introduction to the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES), its functions and programme of work.
2. Begin to build capacity on undertaking ecosystem assessments in the context of IPBES.
3. Share experiences and lessons learned from assessing ecosystems and their services at different geographical scales to inform decision-making.

Twenty-nine participants from across the Asia-Pacific region, from a range of government and science institutions attended the workshop. In total, 15 countries were represented: Australia, Cambodia, China, Fiji, India, Japan, Malaysia, Nepal, New Zealand, Pakistan, Philippines, Republic of

Korea, Samoa, Sri Lanka and Viet Nam. Some participants were already directly involved in supporting the work of IPBES. Present were the IPBES Focal Points from Cambodia and Vietnam, plus three nominated experts from the meeting to scope the IPBES regional assessments and one expert from the IPBES Guide for Assessments.

The workshop was run as a series of interactive sessions. The set of work-books and exercises, developed by the SGA Network Secretariat, were used by participants to work through each of the steps involved in the ecosystem assessment process and to understand some of the issues, constraints and challenges that might need to be considered. Guidance from the draft IPBES Guide for Assessments (IPBES deliverable 2(a)) was drawn upon to build countries' capacities to undertake national scale assessments that would be consistent with an IPBES assessment. After working in groups feedback and exchange of experiences were sought in different ways was such as groups reporting back to plenary, group-to-group report back (market place) and plenary discussions.

The agenda for each day focused on the following:

- **Day One** focused on participants' self assessment and expectations from the workshop as well as an introduction to the SGA Network and IPBES. The Ecosystem Assessment Framework was also introduced.
- **Days Two and Three** focused the Ecosystem Assessment Framework and, through exercises, developed participants' skills in completing different steps of the process for conducting an ecosystem assessment.
- **Day Four** focused on policy support tools with the help of case studies, communication of assessment results as well as lessons learned from carrying out SGAs. It concluded with a session on exploring capacity building needs and opportunities in the Asia-Pacific region.

Day 1

2. Opening Session

2.1 *Opening address*

The workshop was officially opened by Dr Jian Liu, Director of UNEP-IEMP. Dr Liu welcomed participants from the Asia-Pacific region to the workshop, as well as PhD students from the Institute of Geographic Sciences and Natural Resources Research (IGSNRR) who had joined to observe the workshop.

Dr Liu delivers the opening address.

Dr Liu explained that the objectives of UNEP-IEMP are to work with China to support the work of other developing countries in the Asia-Pacific region through three initiatives: capacity building, ecosystem assessments and science for policy. He stated that while WCMC had been established for 30 years, IEMP has only been a UNEP collaborative agency since 2011. Dr Liu highlighted that the workshop will utilise UNEP-WCMC's experience in using ecosystem assessments as a basis for ecosystem management and as a tool for informing policy makers. In that respect he wished all the participants a successful workshop.

Opening remarks were given by Lucy Wilson, a member of the SGA Network Secretariat from UNEP-WCMC. An overview of the workshop's objectives were given, which were to cover the various stages of the ecosystem assessment process in the context of IPBES assessments and other aspects of the IPBES work programme.

2.2 *Welcome and introductions*

The opening addresses were followed by a round of introductions from both participants and facilitators, during which participants were asked to name which ecosystem service they would like to be and why. The group represented a range of government departments, Ministries of the Environment, regional organisations, universities/research institutes and NGOs (see Annex 1 for the Participants List).

2.3 *Exercise: Self-assessment*

The workshop participants undertook an interactive self assessment exercise, which aimed to evaluate how they rated their personal understanding of the assessment process, as well as how 'ready' their individual countries, and institutions, were to carry out an ecosystem assessment. By 'voting with their feet', the participants were asked to form a 'human histogram' by positioning themselves along an imagined axis, scaled from low to high, to depict their answers. The questions posed and a summary of the responses can be found in **Table 1**. This exercise was repeated at the end of the workshop. A comparison of the responses at the beginning and end of the workshop can be found in section 14.2 of this report.

Table 1. Summary of self assessment results

Question	Responses
Q1: [Do] I understand what an ecosystem assessment is?	• The majority of participants grouped themselves in the middle of the scale.
Q2: How much information is there available in my country on ecosystem assessments?	• Only two participants considered there to be a lot of information in their respective country. • There was then a spectrum from the middle through to the bottom of the scale.
Q3: How ready is my institution for implementing or contributing to an assessment?	• One participant did not consider her institution to be ready at all. • But most participants were in the top two thirds of the scale.
Q4: How confident am I in taking an assessment forward in my country?	• Most participants placed themselves in the top two thirds of the scale. • Some participants had been directly involved in assessments.

2.4 Exercise: Expectations of the participants

Following an overview of the workshop's agenda and aims, participants were asked to express their expectations of the workshop and what they hoped to achieve by attending. Key themes are summarised in **Table 2**.

Table 2. Overview of what participants expected or wanted to achieve by attending the workshop.

Theme	Expectations
IPBES	To understand: • process, roles and functions of IPBES; • how the Platform informs policy & community practice; • the Platform's relationship with multilateral environmental agreements; • role of institutions in IPBES.
Ecosystem assessments	To learn about: • the assessment process as a whole; • conducting regional assessments; • case studies & good practice; • ecosystem assessment methodologies; • data requirements, mobilisation & how to identify data sources; • what tools (such as models) could be used within an ecosystem assessment; • multi-scale analysis in assessments; • opportunities & challenges in assessments; • challenges facing countries in the Asia-Pacific region. To achieve: • an improved capacity to undertake ecosystem assessments.
Share experiences	• To exchange research experiences.

3. Setting the Scene

3.1 Introduction to the SGA Network

To set the scene Nadine Bowles-Newark, from the SGA Network Secretariat, gave a brief introduction to the SGA Network (www.ecosystemassessments.net). This included the network's history, how it aims to promote and facilitate improved capacity for undertaking and using assessments through its various activities, and how the Platform can to support global processes, such as IPBES.

Questions from participants focused on: the requirements of joining the SGA Network, the commitment associated with membership, the expectations of individual assessments being undertaken by members, the role of regional hubs and what assessment expertise is provided at the country level.

4. IPBES Assessments

4.1 Introduction to IPBES, its functions and work programme

To put the workshop in context, Lucy Wilson gave a presentation on IPBES. This brief introduction to IPBES covered the Platform's history, aims and its 2014-2018 work programme. The four functions of IPBES were introduced as well as how assessments fit into the Platform's work programme.

IPBES provides a mechanism recognized by both the scientific and policy communities to synthesize, review, assess and critically evaluate relevant information and knowledge generated worldwide by governments, academia, scientific organizations, non-governmental organizations and indigenous communities. This involves credible groups of experts conducting assessments of information and knowledge in a transparent way. IPBES is unique in that it will aim to strengthen capacity for the effective use of science in decision-making at all levels.

Questions from participants focused on: the cost and commitment associated with membership of the Platform, the link between IPBES and the IPCC, the relationship between IPBES and CBD SBSTTA, the status of author selection for the assessments and what support is available for lead and coordinating lead authors of the assessments.

4.2 Update on the scoping of IPBES regional assessments

An update on the process for scoping IPBES regional assessments (deliverable 2(b)) was then given[1]. Three participants, who were nominated experts at the scoping meeting for regional/sub-regional assessments on biodiversity and ecosystem services (Paris, August 2014), were invited to say a few words on what they had taken away from this meeting:

Dr Simone Maynard from the Australian National University outlined what, in her view, were the pros and cons of participation in the scoping meeting. In terms of the pros, she highlighted: 1) the excellent facilitation and coordination of the meeting by the IPBES Secretariat, its multidisciplinary expert panel (MEP) and Bureau that filled her with confidence in the IPBES process; 2) the passion of the experts invited to attend and their commitment to a common purpose rather than their own agendas, as well as 3) the atmosphere of excitement and confidence in the meaningfulness of the assessments. In discussing the potential cons, Simone highlighted that: 1) there was a lack of social scientists present, with the majority being natural scientists; 2) generally the natural scientists present had very specialist knowledge rather than at the system-level; 3) the lack of funding for developed country experts is a challenge that risks the best people not being involved; and 4) concern that the assessments may be a missed opportunity to engage people and sectors that are not

[1] http://www.ipbes.net/work-programme/objective-2/45-work-programme/456-deliverable-2b.html

already involved in the environmental agenda, such as business and industry who were not represented at the meeting.

Dr Lillian Chua Swee Lian from the Forest Research Institute Malaysia agreed with Dr Maynard's reflections and focused her thoughts on the practicalities of an Asia-Pacific assessment. She reflected that at the recent CBD Conference of Parties (COP12), the launch of Global Biodiversity Outlook 4 (GBO 4) revealed that nations are struggling to protect ecosystems and biodiversity. However, she highlighted that much of this information appeared to have come from developed country national reports, which the Asia-Pacific region lacks. This is a symptom of a larger data gap in the region which Lillian highlighted as being her major concern for any assessment in the area.

Professor Haripriya Gundimeda from the Indian Institute of Technology agreed with all previous statements, in particular re-emphasising the lack of social scientists and the problem of data availability in the Asia-Pacific region. Haripriya emphasised the role of scale and the importance of the local scale in particular for biodiversity conservation and the challenge of identifying the appropriate scales at the scoping meeting. She also highlighted that in addition to variable data availability in the region, there are also very different environmental problems within sub-regions. Professor Gundimeda finished by emphasising that it is important that everyone is active and involved with IPBES and its assessments in order that the challenges mentioned can be addressed.

4.3 Introduction to the IPBES Guide to Assessments

Next, Nadine introduced another IPBES deliverable, the IPBES Guide to Assessments (deliverable 2(a)). The aims of the guide are to: 1) create a 'roadmap' focusing on key elements for an IPBES assessment; 2) ensure consistency across IPBES assessments; 3) address practical, procedural, conceptual and thematic aspects of assessments; and 4) take into account different visions, approach and knowledge systems in ecosystem assessments. It was emphasised that the guide is not prescriptive and that there is flexibility in its application. The guide is currently under development and will be submitted to IPBES-3 in January 2015, after which there will be open for review in January for IPBES member states and stakeholders.

Other IPBES resources were also referred to including the online IPBES Catalogue of Assessments (http://catalog.ipbes.net/), which is a repository of assessments of ecosystem services and biodiversity from the global to sub-national scales.

4.4 Exercise: What is an ecosystem assessment?

To set the scene for introducing the ecosystem assessment framework, Lucy asked the participants to write down their definition of an ecosystem assessment. The components of an ecosystem assessment that the participants identified during a report back in plenary are summarised in **Table 3**.

Table 3. Overview of participants' responses to defining what is an ecosystem assessment.

Components of an ecosystem assessment

• Identification of:
  o ecosystems & the services provided by ecosystems;
  o the status & trends in ecosystems & biodiversity;
  o drivers of change & impacts on ecosystems & their services;
  o interactions between different components.
• A focus on human well-being and socio-economic linkages.
• Link to policy and decision-makers.
• Valuation of ecosystem services (both monetary and non-monetary).

Following this exercise, background information on the definition and classification of ecosystem services (**Figure 1**) was presented, along with an outline of the major components of an ecosystem assessment and the role of ecosystem assessments in decision-making. An ecosystem assessment is a critical evaluation of knowledge, neither original research nor a literature review, but the findings of science and other knowledge systems brought together on the request of governments and other stakeholders. They involve the analysis, synthesis and critical judgement of information undertaken by experts.

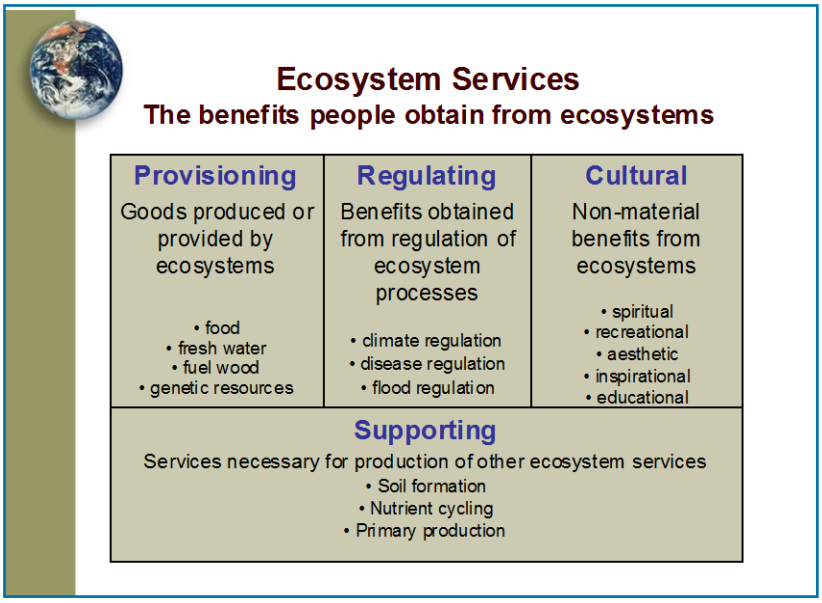

Figure 1. The four categories of ecosystem services identified by the Millennium Ecosystem Assessment (MA).

4.5 What is an IPBES assessment?

After an introduction to ecosystem assessments more generally, assessments in the context of IPBES were outlined. The three basic features of IPBES assessments (credibility, legitimacy and relevance) and that IPBES will conduct assessments at a range of scales: global, regional, thematic and methodological were emphasised.

5. Introduction to the Ecosystem Assessment Framework

Day 1 concluded with an introduction to the Ecosystem Assessment Framework (**Figure 2**). Lucy outlined key stages of the framework that would form the foundation of the workshop. These were the Scoping, Design, Implementation and Communication and Outreach stages, all of which are underpinned by active stakeholder engagement.

The workshop participants were then introduced to their respective fictional country: Panlusia, Samlo, Tandino or Bromova. These countries would serve as the breakout groups for the workshop for the remainder of the week. In these groups the workshop participants were asked to put themselves in the shoes of Sophie Kwon, a fictitious scientific advisor from the Ministry of Environment of their fictional country. Sophie, having recently attended a SGA Network Capacity Building Workshop, believed that undertaking an ecosystem assessment would be a positive step towards addressing many of the environmental, social, political and economic problems facing her country.

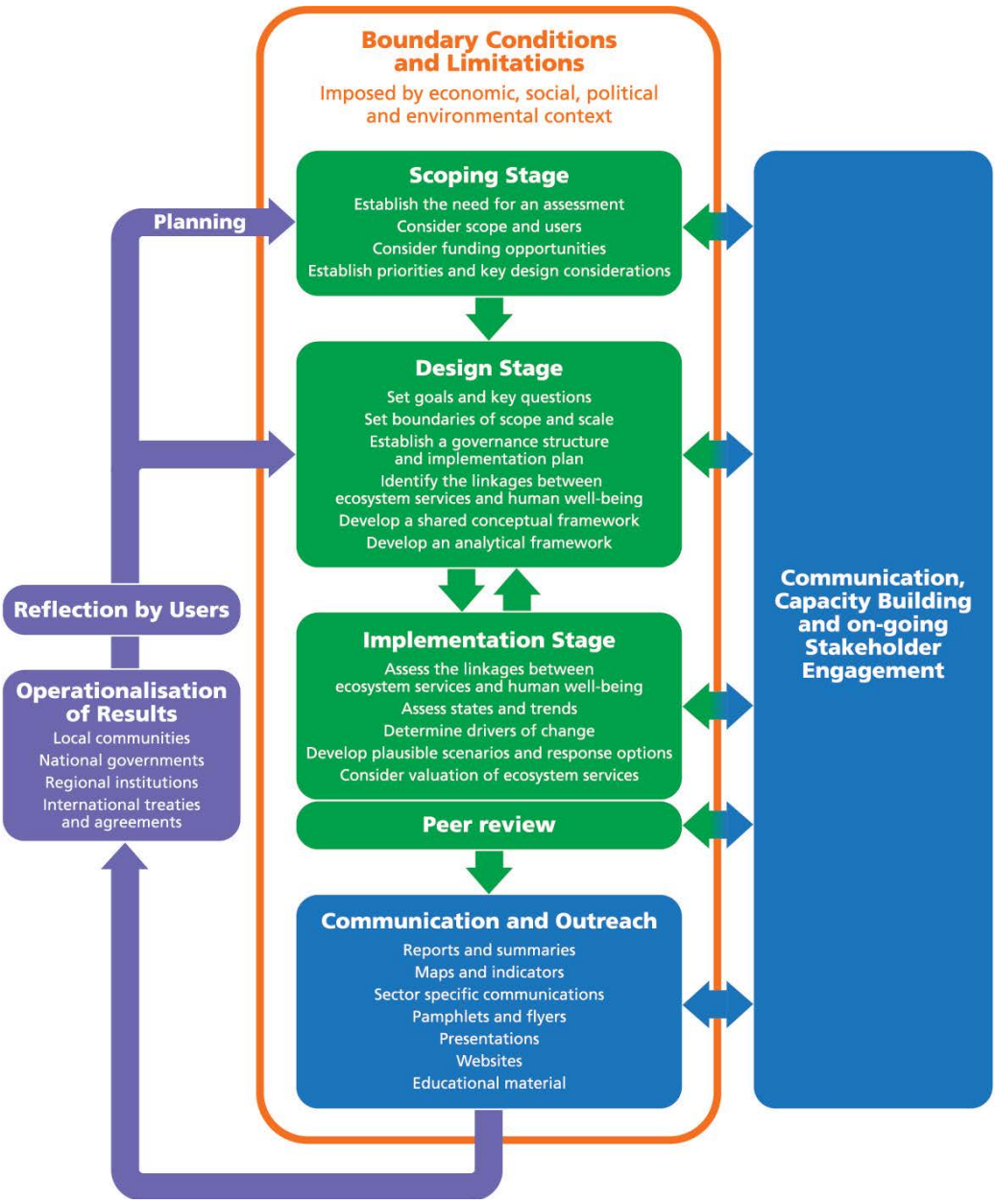

Figure 2. The Ecosystem Assessment Framework.

Day 2

6. The Scoping Stage

Following a recap of Day 1, Lucy introduced the Scoping Stage which explores how and why an ecosystem assessment might be undertaken. The three main components of this stage were outlined:

1. determining the need for an assessment;
2. defining the key questions the assessment will answer; and
3. examining potential design constraints.

6.1 Defining the scope and context of an assessment

The starting point for an assessment is determining the need for an ecosystem assessment as they should be demand driven. Being demand driven ensures the relevance of an ecosystem assessment. It requires an understanding of the current environmental, social, political and economic situation as well as the needs of stakeholders and their priorities. The importance of securing buy-in from stakeholders in order to generate an 'authorising environment' for the assessment was stressed.

6.2 Exercise 1.1: Determining the need for an assessment

Using Workbook 1 participants were then asked to consider the most important circumstances and issues in their fictional country as well as who are affected. Participants were encouraged to consider which stakeholders should be included in the governance structure of a potential ecosystem assessment to represent different groups of people who are affected, as well as how an ecosystem assessment could meet the needs of each of these stakeholders. An overview of the answers provided can be seen in **Table 4**.

Table 4. Selection of results of Exercise 1.1 from across the four fictional countries.

Circumstances & issues	People affected	Stakeholders to include	How an ecosystem assessment could help them
Economic • Declining mineral reserves • Increasing tourism • Increasing aquaculture Political • Insecure land tenure rights • Marginalisation of indigenous groups Social • Immigration • Urbanisation Environmental • Biodiversity loss • Habitat loss • Flooding	• Indigenous communities • Farmers • Fishermen • Extractive industry • Tourism industry	• NGOS • Indigenous groups • Timber companies • Mineral companies • Conservation agency • Planning agency • Ministry of Environment • Ministry of Finance • Farmers Union	• Identify sensitive areas & areas of value to extractive industry • Identify trade-offs between economic growth & biodiversity • Value ecosystem services • Identify multiscale concerns & possible actions • Inform future regulation & policy • Identify fish stock status & impacts of fishing methods • Inform sustainable tourism strategies

6.3 Exercise 1.2: Consulting with stakeholders

The next exercise focused on the intended audiences and users of an ecosystem assessment. Nadine asked the participants to consider what methods could be best used to consult with different stakeholders and which method is most effective with which stakeholder and why. Examples participants suggested included: broad and as well as targeted consultations, one-on-one meetings interviews and surveys, as well as via email and phone.

6.4 Experiences of engaging multiple stakeholders

To complement this session Dr Simone Maynard was invited to share her experience of working with stakeholders on the South East Queensland Ecosystem Services Project. Simone emphasised that an ecosystem assessment was highly stakeholder driven. It was recognised early on in the project that the assessment's conceptual framework had to be useful to all stakeholders and cater to their different needs. In recognition of the differences between stakeholders, the project also utilised different methods to engage with the different stakeholders. Drawing from her personal experience, Simone highlighted a number of important lessons learned, which included: don't assume knowledge of stakeholder needs; let stakeholders know how their input fits into the whole assessment and; the challenge but importance of trying to engage the unengaged e.g. the health industry.

6.5 Defining key questions for the assessment to address

Next Nadine introduced the need to identify clear, policy relevant questions to guide the assessment process. These questions should be agreed in close consultation with stakeholders to ensure that they are questions that the users and audience want to know. Examples of policy relevant questions from the UK National Ecosystem Assessment (UK NEA) were given.

6.6 Exercise 1.3: Developing policy relevant questions

Participants were tasked with identifying three policy relevant questions for an ecosystem assessment in their fictional country. Participants were asked to consider their fictional country's national priorities and key users' needs, distilled from previous exercises, when suggesting possible key questions. An example answer is given in **Table 5**.

Table 5. Samlo's key questions for Exercise 1.3.

Key question	Reason/justification	Key users concerned
What is the status & trends of land use, land use practices & property rights?	Land tenure, competing land uses & property rights are central issues.	• Indigenous & local communities • Conservation agency • Planning office • Timber/mining companies
What are the impacts on local communities, ecosystems & the economy?	Identify the magnitude of the problem & the resources & ecosystem services that are affected, as well as any trade-offs.	
What are the responses of local communities, policies & ecosystems to these impacts?	Information required to develop optimal land use plan.	

6.7 Key design considerations

Finally, to conclude the discussion of the Scoping Stage, the need to carefully plan the design of an ecosystem assessment was emphasised. Five key considerations can help to guide the complex process of designing an ecosystem assessment:

1. the most important ecosystems and services;
2. data requirements and possible sources;
3. key capacities and resources required;

4. temporal scales of interest; and
5. spatial scales of interest and boundaries.

6.8 *Exercise 1.4: Key design considerations*

Participants were asked to choose one of their key questions identified in Exercise 1.3 and think about three of the key considerations, specifically:

- the most important ecosystem services and the ecosystems that deliver these services that will need to be assessed to address the key question;
- the type of data required to assess these ecosystems and services; and
- the key capacities/skills the assessment team would need and what resources will be required to carry out the assessment.

Table 6 shows an example response from one of the fictional countries.

Table 6. The key design considerations identified by participants from Bromova for Exercise 1.4.

Key question: How to mainstream ecosystem services into land use planning and sustainable development plan?	
Design considerations	**Key things to include**

Important ecosystems & services	• Urban
	• Agriculture
	• Forest
	• Mountain
	• Coastal & marine
	  o Food
	  o Fuel
	  o Fresh water
	  o Climate regulation
	  o Carbon sequestration
	  o Soil fertility
	  o Cultural
	  o Tourism
	  o Resilience

Data requirements & possible sources	• Extent of land use & dependents
	• Status & trends in biodiversity
	• Existing sectoral policies
	• National development plans
	• Physical descriptions of land use/cover
	• Monetary & non-monetary values of land uses
	  o Land use plans
	  o National sample/statistics service
	  o National Development plan
	  o State of environment/biodiversity reports
	  o Indigenous & local knowledge

Key capacities/resources required	• GIS specialist
	• Economist
	• Ecologist
	• Natural resources manager
	• Policy developer/analyst
	• Sociologist
	• Communication specialist
	  o Internet facilities
	  o Financial resources

Samlo work through their assessment's key design considerations in Exercise 1.4.

7. The Design Stage

Mr Matthew Dixon, from the SGA Network Secretariat, highlighted the elements that would be considered in the next stage of the Ecosystem Assessment Framework, the Design Stage. These were:

- the governance structure;
- the process for implementing the assessment;
- the conceptual framework and assessment aims; and
- funding and on-going engagement of users.

Various exercises from Workbook 2 were undertaken to explore these aspects of the Design Stage.

7.1 Key considerations: governance structure, work plan, funding

It was emphasised that a thorough design phase, including consideration of funding, design of a detailed work plan and the ongoing engagement of users, is the next key step in ensuring the success of the assessment process. The different governance groups in an ecosystem assessment, their roles and desirable skills were outlined. A brief explanation of the proposed governance of IPBES assessment was also given, which included Coordinating Lead Authors, Review editors and Technical Support Units.

7.2 Exercise: Budgeting for an assessment

Participants were asked to note down two key potential costs when undertaking an ecosystem assessment. In plenary participants made suggestions including: author and secretariat salaries, data costs, stakeholder workshop costs and coasts associated author meetings. Estimating the budget of an assessment depends on a number of considerations such as the spatial scale of the assessment.

7.3 Exercise 2.3: Selling the assessment concept

Participants were encouraged to think of the importance of selling the assessment concept to generate interest and buy-in from stakeholders. With that in mind, participants were asked to prepare a 90 second pitch that would take place in an elevator to persuade the CEO of a chosen business (e.g. mining, forestry, fisheries, tourism etc.) to provide co-funding for their assessment.

A range of arguments were put forward by each of the countries for the importance of the assessment to that particular business including: how the assessment could inform the company's Corporate Social Responsibility (CSR) policies and how it could help inform long-term sustainability of their supply chain and the importance of ecosystem services to their business. The exercise

demonstrated the importance of using communication that is relevant to the target stakeholder, in this case using business language.

Participants deliver their pitches in Exercise 2.3.

7.4 Introduction to conceptual frameworks

Lucy highlighted the importance of framing an ecosystem assessment using a conceptual framework. A conceptual framework provides a logical structure for evaluating a system and should be developed through engagement with stakeholders. Conceptual frameworks are adapted to the needs of a specific assessment, which was demonstrated through showing examples of different conceptual frameworks from previous assessments such as the MA, the UK NEA and a sub-global assessment involving indigenous communities in Peru.

The agreed IPBES conceptual framework, which was the result of an extensive consultative process, was also introduced (**Figure 3**). It was emphasised that as with all conceptual frameworks, it is not intended to capture all relationships in the system just the most important ones, in this case focusing on human actions as well as attempting to embrace different knowledge systems. Guidance proposed in the draft IPBES Guide from Assessments on how to apply the IPBES conceptual framework to different contexts was provided. More information about the IPBES conceptual framework can be found in IPBES/2/17.

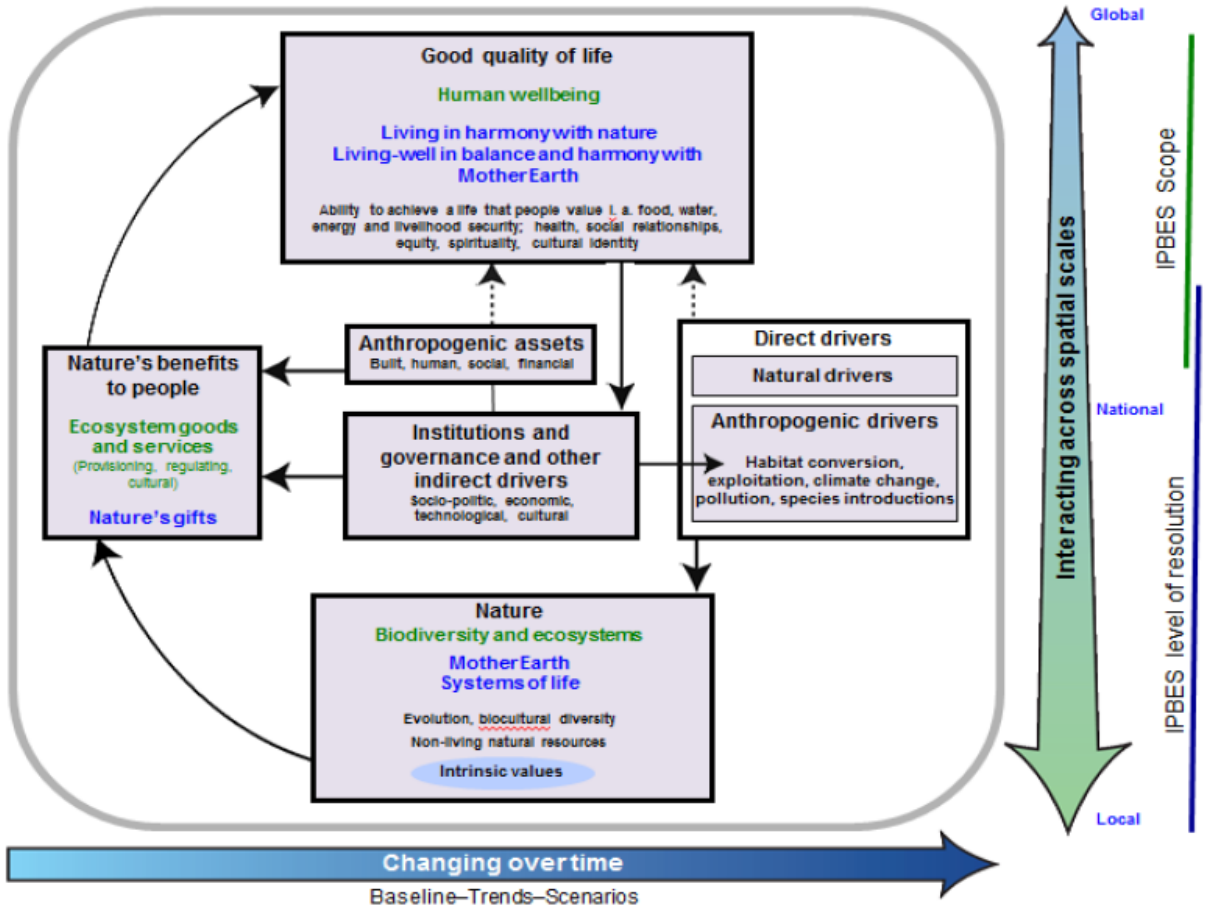

Figure 3. The IPBES Conceptual Framework (IPBES/2/17).

7.5 *Exercise 2.5: Applying the IPBES conceptual framework to a thematic assessment*

Following this brief introduction to the IPBES conceptual framework, the participants were asked to work through some prose extracted from the draft IPBES Guide to Assessments which applied the conceptual framework to global marine fisheries. Countries were allocated different elements (e.g. 'Good quality of life', 'Direct drivers' etc.) and asked to draw out the relevant text from the fisheries example to fit under these elements.

7.6 *IPBES assessments across scales*

Further information was presented on the inclusion of different spatial and temporal scales in assessments. The example of the Southern African SGA was given to illustrate that by including assessments at different spatial scales, it is possible to investigate processes at the scales at which they take place, and to take account of links between scales. IPBES recognises the importance of scale in assessments and helps to catalyse support for sub-regional and national assessments. Guidance proposed in the draft IPBES Guide for Assessments on how to identify the appropriate spatial, temporal and social/institutional scales for an assessment was outlined. Steps that participants could take to support future IPBES assessments include:

- Making sure assessment information is in the Catalogue of Assessments
- Ensuring the most up-to-date IPBES guides are being used
- Promoting assessments to the relevant IPBES national focal point
- Promoting experts via the IPBES nomination process
- Promoting the use of national data sets

7.7 Exercise 2.6: Applying the IPBES conceptual framework to a national assessment

Participants were then asked to put what had been discussed into practice and apply the IPBES conceptual framework to their fictional country's assessment. Participants were asked to keep in consideration the key question (Exercise 1.4), stakeholders (Exercise 1.1) and ecosystem services (Exercise 1.4) they had identified for their assessment. They were also encouraged to consider relevant temporal and spatial scales in their assessment. An example conceptual framework is shown in **Figure 4** below. Participants found applying the conceptual framework challenging but it was emphasised that this process in reality would take much longer than the 40 minutes allocated and would likely involve several iterations following consultation with different stakeholders.

Figure 4.Tandino's application of the IPBES Conceptual Framework.

7.8 Introduction to UNEP-ROAP's work on assessments and current priorities

Mr Kaveh Zahedi, the Regional Director of UNEP-ROAP kindly joined the workshop at the end of Day 2. Mr Zahedi began by thanking the participants for giving their time to attend this workshop as well as showing appreciation to IGSNRR, UNEP-IEMP and the Government of Norway, as well as UNEP-WCMC for being the driving force behind delivery of this workshop.

Mr Zahedi expressed that there is a great interest in the work that is being done by the SGA Network. While global scale reporting gets a lot of media coverage, there is a question as to how much they can shape policy and generate positive environmental impacts. SGAs are a sharper instrument for shaping policy making. State of Environment reporting and the Global Environmental Outlook (GEO) are good exercises in bringing people together. However, the most successful

examples of this are in countries where UNEP are no longer invited to assist with this work. Mr Zahedi gave the example of India, which has adopted the GEO process and made it its own. The outputs of this now feed into parliamentary discussions.

Mr Zahedi explained that SGAs resonate more if the human dimension is more obvious. Discussing the environment in isolation is not enough, we need to tell the more complex story and people are central to this. Using language on natural assets and valuation, for example, appeals to finance and planning departments. The United Nations Development Programme (UNDP) Poverty-Environment Initiative (PEI) has a channel of communication with these other actors and UNEP is happy to promote the SGA message through these channels. Mr Zahedi highlighted that UNEP-ROAP regularly hosts Ministerial fora such as SPREP, ASEAN, and SACEP and that next year will host the inaugural meeting of all Ministers of Environment for the respective Asia-Pacific countries. Mr Zahedi concluded by emphasising that assessments can feed into these fora to shape decisions and actions.

Mr Zahedi delivers his speech on the importance of sub-global assessments.

Day 3

8. The Implementation Stage

Following a recap of Day 2 by Lucy, Matthew introduced the Implementation Stage, which focuses on the actual analysis of the data, information and knowledge and reviewing the findings. Presentations were given and exercises were undertaken from Workbook 3 to help participants understand the different components of an ecosystem assessment such as how to:

- identify data and indicators to assess the status and trends of ecosystems and their services;
- assess different values people place on ecosystems and their services;
- use scenarios to look at future changes in ecosystems and the delivery of services;
- analyse response options.

8.1 Data, information and knowledge

This session explained the differences between data, information and knowledge, briefly introduced the role of the IPBES Task Force on Data and Knowledge and highlighted the importance of identifying gaps and uncertainties during an assessment to inform future research agendas.

8.2 National scale monitoring of biodiversity

To complement this session Dr Elaine Wright from the Department of Conservation presented on her experience of the national scale monitoring programme in New Zealand. Elaine highlighted that the department is responsible for producing outputs rather than outcomes and that reports produced feed into national and international reporting obligations such as the CBD and Aichi Targets. Elaine explained that there are many technical challenges in the implementation of the New Zealand biodiversity strategy. For example, deciding what to measure when developing and implementing a monitoring system. They developed a document to set the scene which removed the random choices in what to measure and also helped to select indicators for State of the Environment reporting.

Elaine explained that following a change in government priorities there may be pressure from some people that they are wasting resources on monitoring rather than 'saving nature'. It was highlighted that due to a time lag in obtaining the results from monitoring the real value of their work won't be evident for a few more years. During this period, national monitoring programmes are most vulnerable to being shut down. Elaine concluded with a few lessons learned relating to establishing, implementing and sustaining national scale monitoring programmes: learn to deal with opposition; embed monitoring systems into organisational structures; ensure you produce relevant information and work closely with other organisations.

8.3 Assessing status and trends of ecosystems and their services

Matthew then explained the different between the terms measure, indicators and indices and gave examples that could be used to assess the status and trends of ecosystems and services. It was emphasised that UNEP-WCMC run whole workshops on developing indicators so this topic would just touched upon in this session. Participants were pointed towards two publications in particular for further guidance: the Biodiversity Indicators Partnership's 'Guidance on National Biodiversity Indicator Development and Use', and the a new publication, 'Measuring Ecosystem Services: Guidance on Developing Ecosystem Service Indicators'.

8.4 Exercise 3.1: Identifying trade-offs between ecosystem services and potential indicators

Participants were asked to refer back to the priority ecosystem services and drivers of change they had identified in their fictional country's conceptual framework (Exercise 2.6) and identify trade-offs

between the supply of ecosystem services and human well-being. The second part of the exercise involved participants discussing possible ecosystem service indicators that could be used to assess components of 'Nature' or 'Nature's benefits to people' as described in the IPBES conceptual framework. An example of the answers given can be seen in **Table 7**.

Table 7. The priority ecosystem services, their drivers of change, trade-offs and potential indicators to assess *Nature* or *Nature's benefits to people* identified by Tandino in Exercise 3.1.

Priority ecosystem services	Spiritual/religious	Food supply from coastal ecosystem	Recreation from coastal ecosystem
Driver of change	Land use change	Overfishing	Pollution & tourism pressure
Trade-off	(+) Benefit from increased land value (-) Decreased cultural identity	(+) Productivity of fishing ground & economic benefit (-) Decreased sustainability of food supply	(+) Economic benefit from tourism (-) Decreased aesthetic value & social relations
Indicator	Area of converted land & change in species abundance	Fish catches (tonnes/year)	• Number of tourists/year • Income from tourism/year • Number of people employed in tourism sector

8.5 Using scenarios

Lucy introduced another component of the Implementation Stage to participants – the use of scenarios to explore plausible changes in drivers, ecosystems and their services, and the impact on human well-being. The different types and various uses of scenarios, for example for policy making and for developing common goals were outlined.

8.6 Exercise 3.2: Identifying the role of scenarios

Participants were asked to consider how scenarios could fit into their fictional country's ecosystem assessment. Each group were asked to come up three focal questions that a stakeholder might have about the future that scenario analyses could answer and consider the relevant drivers of change (direct and indirect) as well as potential impacts and uncertainties. To focus their thoughts, participants were asked to consider these impacts under three headings: desire, fear and fate. **Table 8** provides an example answer from one of the groups.

Table 8. Example answer to Exercise 3.2 on the role that scenarios could play in an ecosystem assessment from Panlusia.

Focal question: How can sustainable forest management be achieved?	
Relevant direct drivers of change	Forest management practices
Relevant indirect drivers of change	Policies of conservation projects Public awareness Total economic valuation
Possibilities	**Desire**: Sustainable forest management with multiple uses for landscape **Fear**: Business as usual & no change in management **Fate**: Loss of natural forest cover

Tandino reports back on the role scenarios could play in their assessments for Exercise 3.2.

8.7 Exercise 3.3: Using scenarios

After outlining the storylines from the scenarios used by the UK NEA, which had contrasting socio-economic aspects, each fictional country was then assigned one of three scenarios: *Rapid Economic Development*, *Environmentally Aware* and *Business as Usual*. Participants were asked to discuss what would be the country-specific characteristics of these storylines in their fictional country. The groups were encouraged to draw graphs to illustrate how the provision of the priority ecosystem services for their fictional country might change over the next 50 years under their allocated scenario and what the impact on human well-being might be. Examples of the graphs produced can be seen in **Figure 5**.

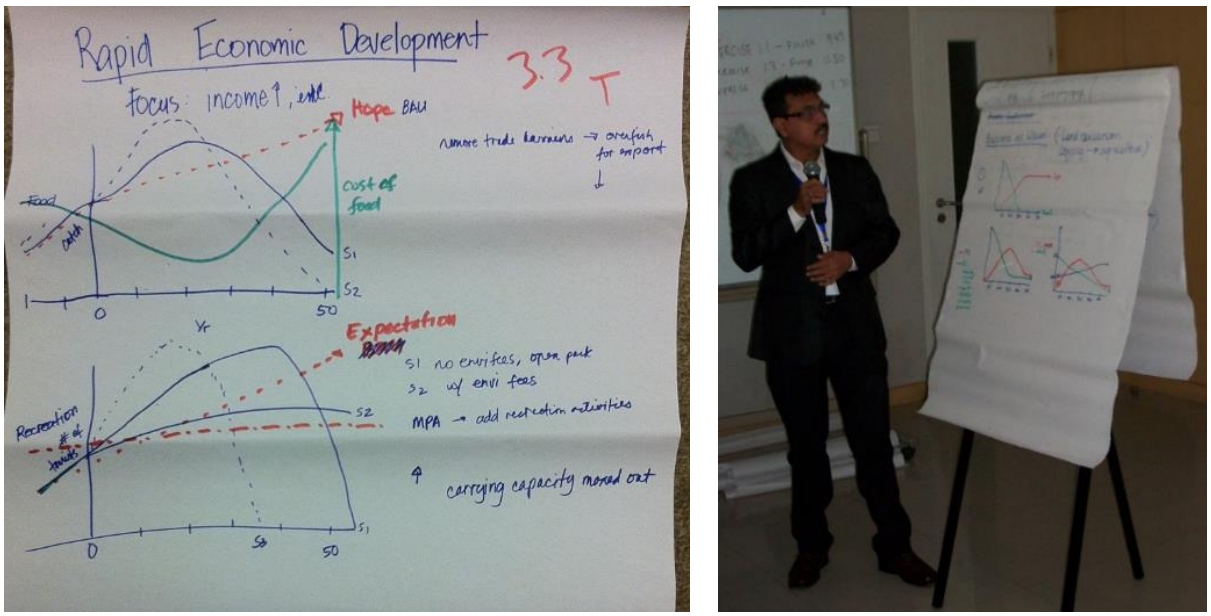

Figure 5. Tandino's graph illustrating the cost of food and catch size under the *Rapid Economic Development* scenario (left) and Mr Weddikkara Kankanamge presents Samlo's storyline under a *Business as Usual* scenario (right).

8.8 Conceptualising multiple values and valuation methods

This session commenced with an introduction from Lucy on conceptualising multiple values (e.g. direct use, indirect use, non-use and option values). It was highlighted that understanding the different values people place on the benefits obtained from ecosystems can help inform decision-making. In light of this, an IPBES Expert Group has been tasked with developing a valuation protocol to guide valuation in IPBES assessments (linked to deliverable 3 d).

Prof. Haripriya Gundimeda led the remainder of this session emphasising the case for why economic valuation should be included as part of an ecosystem assessment. Haripriya explained that valuation helps in understanding of drivers of biodiversity loss by providing information for trade-off analysis. In particular, economic benefits valued in monetary terms have been a powerful tool for raising the attention of policy makers. However, some ecosystem services are harder to value than others, and some non-use values are currently impossible to value (**Figure 6**).

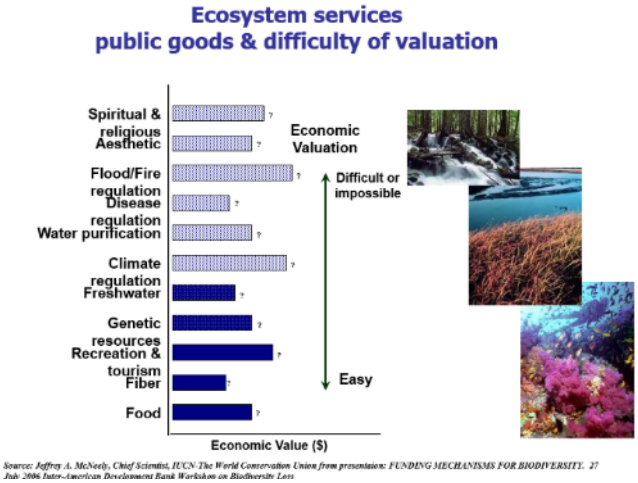

Figure 6. Relative difficulty of valuing different ecosystem services and public goods.

Haripriya stressed that conventional GDP looks at value added across sectors, but economic growth does not cover everything. She gave the example of agricultural fertilisers that increase yield. The

fertilisers will increase value, but why the fertilisers are needed, the loss of natural soil fertility, is not captured in conventional economic measures. In other words, the increase in financial capital has come at the loss of natural capital. This environmental degradation will lead to a loss of disposable income despite increases in GDP (e.g. the need for bottled water due to a lack of freshwater to drink, while growth of bottled water industry further increases GDP).

An introduction to the different monetary and non-monetary valuation methods that could be used to value ecosystem services was also provided and are listed below:

Monetary valuation methods:

- **Direct market values**
    - Cost-based methods
    - Production-based methods
- **Revealed preference methods** (methods that seek to reveal a person's willingness to pay [WTP] for ecosystem services)
    - Travel costs method
    - Hedonic pricing method
- **Stated preference methods** (value derived from people preferences in hypothetical market contexts)
    - Contingent valuation
    - Choice experiments
    - Group valuation
- **Benefit-transfer methods**
    - Unit benefit transfer
    - Adjusted unit transfer
    - Value/demand function transfer methods
    - Meta-analytic function transfer methods

Non-monetary valuation methods:

- **Qualitative assessment**
- **Bio-physical assessment**

Haripriya expressed that while there are many merits to economic valuation, there are still limitations. She emphasised the importance of using multiple valuation methods to measure the benefits of ecosystem services (**Figure 7**). Haripriya shared her experiences of working with The Economics of Ecosystems & Biodiversity (TEEB) initiative, outlining TEEB's approach to valuation and providing lots of case studies of how the methodology had been applied in different countries to demonstrate different values from nature.

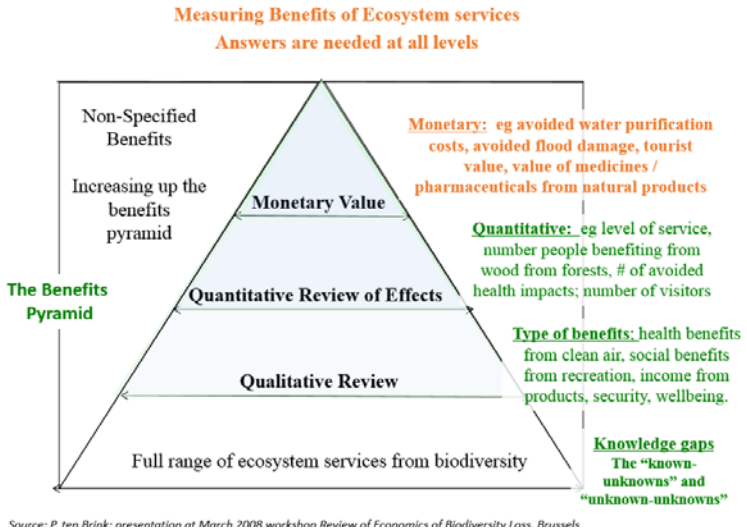

Figure 7. The importance of using multiple valuation methods to measure the benefits of ecosystem services.

8.9 Exercise: Using valuation to answer a policy question

Following her presentation, Haripriya facilitated an exercise on using valuation to answer a policy question. Participants were asked to drawn on lessons learned from their own experiences of using valuation methods to identify how valuation could help answer their fictional country's policy-relevant question and what techniques could be applied to answer the question. An example response is given in **Table 9**.

Table 9. An overview of Samlo's discussion on using ecosystem service valuation in their assessment.

Ecosystem service	Valuation technique	Advantages/disadvantages	Lessons
Direct use: • Timber • Fuel wood • Non-timber forest products	Market based	(+) A market value exists making valuation easy (-) There might be variation in the price of different types of wood & some types may have no market value	Market based valuations fit well with the policy-relevant question
Indirect use: • Water regulation • Carbon regulation • Recreation • Cultural • Soil protection	• Willingness to pay • Travel costs	(-) Recognising ecosystem services can be hard (-)There is a risk of bias (-)Methods are time consuming (-)All methods have underlying assumptions	Indirect use valuation is hard

8.10 Policy and response options

Nadine introduced the response options component of the assessment process, which aims to identify and assess the different 'possible responses' to the deterioration of ecosystem services. Formulating effective responses requires consideration of the complex socio-ecological process taking place and an understanding of the different trade-offs. When developing response options, it is necessary to consider who will be the actor (e.g. national government, businesses, research

organisations etc.) responding, what strategies will they choose and what will be the effects on ecosystems and human well-being?

8.11 Exercise 3.4: Identifying policy and response options

Participants were asked to discuss the most important changes that need to be addressed to prevent the deterioration of one priority ecosystem service from their fictional country, identify why the chosen changes are important, suggest response options to address individual changes and outline which actors would be best placed to implement these response options. **Table 10** summarises the response from one group.

Table 10. Response options identified by Bromova in Exercise 3.4.

Priority ecosystem service: biodiversity			
Change to address	**Reason**	**Response options**	**Actors**
Habitat loss	• Leads to species extinction • Loss of ecosystem quality • Limits ecosystem function • Decrease in local income/well-being	• Biodiversity offsets • Payment for ecosystem services	• Donor organisations • Government • Academia & research institutions • Civil society • Business/private sector • Indigenous & local communities

Panlusia reports back on the response options identified in Exercise 3.4.

8.12 Developing an ecosystem management framework at the landscape scale

The session on response options was complemented by a presentation from Mr Nawraj Pradhan from the International Centre for Integrated Mountain Development (ICIMOD) on the development of a landscape approach to managing ecosystems. Nawraj emphasised ICIMOD's transboundary remit. As a result, the landscapes ICIMOD is concerned with have multiple bio-physical gradients across different transects (e.g. tropical to arid climates). Each landscape also crosses multiple countries, so the regional programmes have multiple transboundary partners to engage.

Nawraj focused on the Kailash Sacred Landscape programme and described the Ecosystem Management Framework that ICIMOD is piloting, which was created in collaboration with partners and experts. Nawraj explained how ICIMOD's aim for the Kailash Sacred Landscape is to gain UNESCO World Heritage status and that it's case may be helped by quantification of the landscape's spiritual value, given the significant religious importance of the mountains. The presentation concluded with a discussion of the issues and challenges that ICIMOD had encountered – these were

related to, for example, data gaps around quantifying indirect benefits and spatial scale considerations. Key learning points highlighted included: the importance of developing a common ecosystem management framework that conforms with larger scales, such as sub regional and global assessments, and identifying who the framework is being developed for.

Day 4

8.13 Peer review

Following a recap on Day 3 by Lucy, Day 4 began with a presentation by Nadine on the importance of defining the peer review process to ensure credible assessment results and buy-in to the assessment process. An overview of the proposed peer review process of IPBES assessments and their outputs was also given.

9. Ecosystem Assessment Tools

This session composed of an introduction by Lucy on IPBES's work on policy support tools and methodologies. This was complemented by presentations from several participants who shared their experiences of using different tools and instruments to inform decision making.

9.1 Introduction to policy support tools and methodologies

The role of IPBES in helping decision-makers to identify relevant tools and methodologies was outlined, including the proposed definition of what is a policy support tool and typology of tools. IPBES propose to develop an online, user-focused catalogue (deliverable 4c) containing information on available policy support tool and methodologies that will enable decision-makers, practitioners and other social groups to adopt a step-wise approach to identify the most relevant tools and methodologies with regards to their individual needs. An overview was also given on the links between assessments and policy support tools. More information can be found in IPBES/3/5.

9.2 Application of the Resilience Approach

Mr Ghulam Qadir Shah from Mangroves for the Future (MFF) Pakistan gave a presentation of MFF's approach to maintaining resilience. Following a brief introduction to MFF, Ghulam explained that due to uncertainty and unpredictability of future environmental conditions, it is important to apply a Resilience Approach to managing social-ecological systems. Presenting the MFF's resilience framework, Ghulam highlighted the importance of stakeholder engagement as it increases legitimacy, ownership and success of interventions. Ghulam explained four principles of social-ecological resilience: learning to live with change and uncertainty; combining different sources of knowledge; creating opportunities for self-organisation; and facilitating renewal and reorganisation.

To conclude Ghulam talked through the steps in applying the Resilience Approach using a mangroves-based case study:

1. Look backward (socio-ecological history);
2. Consider the present and develop a social-ecological model;
3. Look forward (scenario analysis);
4. Look inward to find the set of actions that will maintain or enhance resilience of the desired set of trajectories:
5. Look outwards (funding priorities)

9.3 Reflections on applying the TESSA toolkit

Ms Mere Valu gave a presentation on experiences of using the Toolkit for Ecosystem Service Site based Assessment (TESSA) in Fiji. Mere began by explaining how TESSA differs from other policy support tools as it can be applied to a site-scale assessment, it is accessible to non-experts and provides qualitative results at a relatively low cost.

Mere explained how the toolkit had been tested in three sites in Fiji and the importance of engagement with stakeholders in assessing these sites as 80% of the land is owned by local land

owners. Services and benefits such as carbon storage and income from cultivated crops had been measured and quantified in logged and unlogged forests. A monetary valuation of fuelwood has also been calculated, using simple metrics such as the amount of wood collected on average per household, both in sites that have and have not got a forest management plan. Mere concluded by outlining the future directions of the work and explaining how the TESSA toolkit had provided baseline data to identify areas for more detailed analysis (e.g. areas for REDD+ analysis).

9.4 Implementing a Payment for Ecosystem Services scheme

Dr Nguyen Manh Ha gave a presentation on implementing a Payment for Ecosystem Services scheme in forest ecosystems in Viet Nam. Ha provided an overview of the scheme and explained how the payment of forest ecosystem services (PFES) was piloted between 2008 and 2011 in two watersheds. Three types of ecosystem services were considered: water regulation and supply; soil protection, erosion restriction and reservoir sedimentation prevention; and tourism services. Freshwater payment was only implemented in cities, where there was willingness-to-pay. There was also a lack of water infrastructure in rural areas. Ha revealed that the total payment of the pilot phase was $7.5 million. In 2010 there was governmental institutionalisation of PFES. More payments are received each year as electricity use in particular is increasing. Ha concluded with a reflection on some of the challenges of implementing a national scale scheme. These include the lack of harmonisation of payments across provinces (e.g. some provinces have rivers with multiple dams) and knowledge gaps.

10. Communication and Outreach

The last stage of the Ecosystem Assessment Framework covered was on Communication and Outreach. Exercises in Workbook 4 helped participants to explore who are the target audiences of an ecosystem assessment and how to design communication outputs that will meet their needs. Nadine first introduced the importance of planning external (with stakeholders) and internal (between governance groups) communication through the development of a well thought out Communication Strategy.

10.1 Exercise 4.1: Designing a communication strategy

Participants were asked to identify two target audiences relevant to their key question and discuss:

- **Why** you want to communicate with them.
- **What** you want to communicate to them.
- **How** you will present your information (e.g. in what medium).
- **Which stage(s)** in the assessment process you will communicate with them.
- **Where** you could communicate with them (e.g. specific events).
- Suggest a possible **success criteria.**

An example of these discussions can be seen in **Figure 8** below.

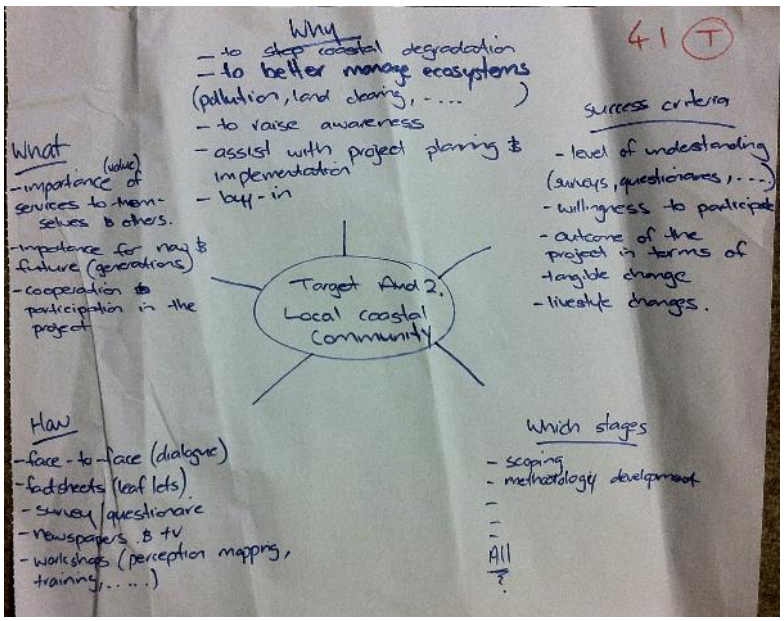

Figure 8. Exploring one of Tandino's target audiences for Exercise 4.1.

Bromova reports back on their target audience for Exercise 4.1

10.2 Exercise 4.2: Writing key messages and findings

Nadine explained the subtle difference between writing key messages and key findings. She also highlighted the importance of clearly communicating uncertainty relating to an assessment's findings to aid communication between the research community and decision-makers. An overview of the proposed uncertainty language for IPBES assessments was given based on the draft Guide for Assessments.

To help participants appreciate the difference between a key message and a finding they were tasked with using the results of the UK NEA (in the form of a key summary graphic, see **Figure 9**) to generate key messages and apply example uncertainty terms to key findings. Examples of the results from this exercise can be seen in **Table 11**.

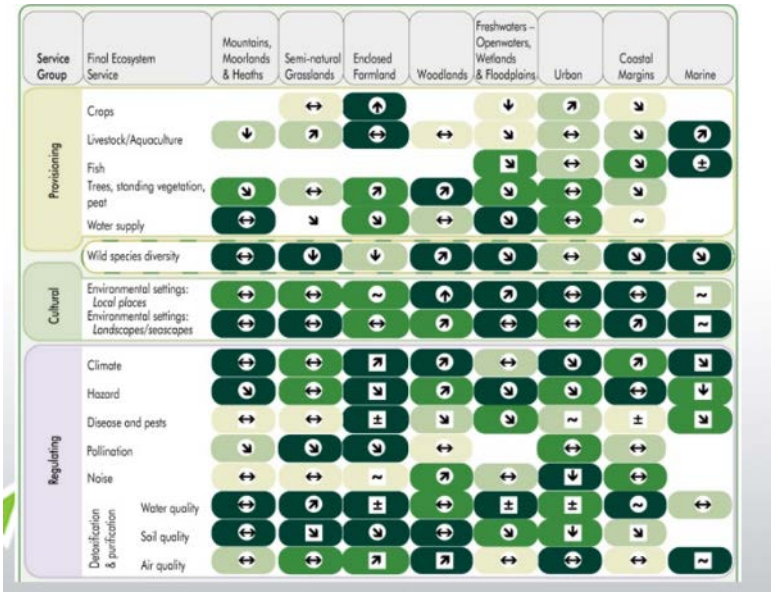

Figure 9. Key graphic from the UK NEA summarising the relative importance of habitat types to delivering ecosystem services and the overall direction of change in service flow.

Table 11. Example key messages reported by participants in Exercise 4.2.

Key messages
Forest ecosystems are being increasingly impacted by climate change and invasive alien species and, hence, require adequate protection from these drivers.
Fish, crops and livestock derived from coastal margins are in decline.
Soil quality is highly important to farmland productivity but is deteriorating.
Key findings
Mountains are critically important in delivering seven out of sixteen ecosystem services.
There is strong evidence to indicate that habitat change increased hazard risk and there is strong evidence to indicate that overexploitation significantly reduced vegetation cover and peat bogs.

10.3 Exercise 4.3: Communicating to target audiences

In the final exercise of the Communication and Outreach stage, participants were asked to design a tailored communication product to communicate their fictional country's assessment findings to a target audience. Matthew introduced the exercise by showing examples of graphics from the UKNEA (such as **Figure 9**) to demonstrate how assessment results can be presented in different ways depending on the audience, in the form of tables, graphs, and maps. Followed by examples of different types of communication products.

A range of products were designed: both Panlusia and Samlo considered face-to-face methods with a guided tour of a sustainable forest site for timber companies and a workshop to engage the NGO community respectively. In contrast, Tandino and Bromova developed more visual products as shown in **Figure 10** below.

Figure 10. Tandino's comic strip aimed at local communities and Bromova's leaflet aimed at national government developed in Exercise 4.3.

11. Lessons Learned from Completed Sub-Global Assessments

As a network of practitioners, the SGA Network has compiled a document on lessons learned from undertaking assessments. These process-based lessons were presented as a recap of the Ecosystem Assessment Framework and were complemented by additional lessons from the UK NEA.

11.1 Lessons learned from a sub-national assessment

Dr Maria Victoria Espaldon then gave a presentation on the MA sub-national assessment of Laguna de Bay in the Philippines. Vicky explained how the assessment was deemed necessary due to the conflicting uses of multiple resources by various stakeholders.

The assessment process involved working together under different governance groups and this was difficult at the start.

Other lessons and challenges from this assessment included:

1. The assessment helped stakeholders towards a holistic understanding of the lake dynamics.
2. It was difficult to reconcile differing data due to the different sampling areas and methodology.
3. There was difficulty reconciling statistics.
4. The assessment helped to identify the gaps in knowledge.

The assessment outputs became an important resource for stakeholders including policy makers, fisherman and NGOs. Some follow up studies addressed the gaps in knowledge, for example health impacts. The outputs were also used to draft the Environment Code of the Province of Laguna. A continuing challenge is in mainstreaming the assessment process into lake basin planning in the context of a changing political climate. Vicky gave an example of how the assessment is now being used to design a more sustainable city and develop ecotourism and concluded with her wish to sell this idea to more municipalities to scale activities up.

11.2 Sub-Global Assessment for Western China follow on

Dr Xiangzheng Deng gave a presentation on follow on work from the Integrated Ecosystem Assessment of Western China. The assessment was finalised in 2005 and the follow on work will be an assessment of landscape diversity and ecosystem services in agricultural ecosystems. Dr Deng emphasised that evidence that landscape diversity can support ecosystem services, such as biological

pest control, and reduce the need for insecticides had been collected in developed nations but limited information was available in developing nations. Dr Deng presented some of the results of research that sought to understand the role of landscape diversity in biocontrol services in crops and in pest control services (in particular, by ladybirds), insecticide use, crop yield and income. Dr Deng concluded with the policy implications and implications on farmers' incomes from the findings of the field studies.

Panlusia act out their guided tour (left) and Samlo explain the agenda of their workshop in Exercise 4.3 (right).

13 Capacity Building

This session composed of an introduction by Lucy on IPBES's work on capacity building and an exercise in which participants considered how their institutions could support the proposed capacity building activities of IPBES. An update was also given by a regional partner on their involvement in supporting IPBES and in assessments more broadly.

13.1 Capacity building under IPBES

An introduction to the work to date by IPBES's Task Force on Capacity Building was provided. It covered the process for identifying and prioritising needs, what are the main needs identified by governments / other stakeholders and the potential sources of support for addressing these needs. Brief details on the proposed programme on, for example, fellowships, exchanges and training were also given. More information can be found in IPBES/3/3.

13.2 Exercise: Exploring capacity building needs and opportunities

Participants were asked to consider what are the needs and opportunities of their institutions in relation to the proposed capacity building programme under IPBES, which mentions secondments, training, fellowships, exchanges, mentoring schemes and learning from experiences of implementing these activities. Avenues of potential engagement include providing technical input, hosting a meeting/workshop and IPBES national focal points could assist in nominating trainers, institutions and trainees. The full set of responses will be fed back to IPBES through different means. However, **Table 12** shows an example of the opportunities and needs noted by participants.

Table 12. Example opportunity and needs reported by participants.

Opportunities	Needs
• Interested in hosting a regional workshop • To increase collaboration between technical experts, particular those who are working in similar biomes • To provide case studies in countries where data on status and trends is currently lacking • To support the communication and outreach of IPBES deliverables within our country • Interested in running a regional hub and engage more practitioners to conduct and/or participate in ecosystem assessments • May be able to provide match funding for IPBES capacity building activities • May be able to organise sub-regional trainings/workshops on IPBES and related topics (e.g. undertaking TEEB assessments) • To support activities that increase awareness of pressures on the environment and the value of nature (specifically of the impacts of climate change and the important role of forests in climate regulation). • Through the exchange programme to share how ecosystem assessment tools for non-experts (such as TESSA) have been applied and learn from other countries of other tools and experiences of TESSA • Willingness to collaborate with other countries • To exchange available information/data • Coordination platforms already exist within my country • A high capacity country that could contribute to fellowship programme, secondments, exchanges, mentoring schemes, training programmes and learning from experience.	• To fully utilise the assessment results • To improve stakeholder engagement in assessment processes • To facilitate exchanges between science/academics and decision makers • To increase awareness of how ecosystem assessments can explore the links between the environment and human well-being, including assessing the current challenges at the local scale • To increase understanding of ecosystem services and how to prioritise which services are most important (and for who) for an assessment • To use tools and methods to conduct an ecosystem assessment • Financial support to undertake ecosystem assessments • To build the capacity of the scientific and policy community to undertake ecosystem assessments to develop a group of experts, who can share their knowledge further • Support to undertake pilot studies • Support to manage databases and the generation of new data • One participant noted that she would benefit from opportunities to learn from other highly respected nations in regards to how to make the case for undertaking assessments at the national scale and insights into using different assessment tools

Participants were also asked to rate what they perceived to be their countries capacity to undertake an ecosystem assessment. Questions asked related to the amount of data available and its availability, the degree of collaboration between institutes, the availability of funding, the level of human capacity and the general understanding by the policy and science communities of the value of undertaking an assessment. These results will help to guide future capacity building activities in the region under the SGA Network.

13.3 ASEAN Centre for Biodiversity and IPBES

Mr Norman Ramirez gave a presentation on the ASEAN Centre for Biodiversity (ACB), which is an intergovernmental regional centre of ASEAN. Norman provided a brief background to ACB, including the main components (which included capacity building) and thematic areas of the centre's work. Recent work on assessments was highlighted, such as the ASEAN Biodiversity Outlook (ABO) launched by ACB at CBD COP 10 and ASEAN TEEB scoping studies. In terms of the ASEAN TEEB studies, there are 182 studies in eight countries focusing on assessing four key ecosystems: mangroves, coral reefs, forests and marine, at different geographical scales. Norman also outlined a flagship programme of the ASEAN, the ASEAN Heritage Parks Programme, which manages a regional network of representative protected areas. Norman emphasised how all this work supports

the objectives of IPBES and concluded with an overview of ACB's representation on various IPBES Expert Groups (on assessments, policy support tools and methodologies) and Task Forces (knowledge and data, capacity building).

14 Workshop Reflections

To conclude the workshop a couple of evaluation exercises were undertaken by the participants to inform future capacity building workshops convened by the SGA Network.

14.1 Exercise: Workshop evaluation

Participants were asked to complete an evaluation form to identify where the workshop succeeded in meeting expectations and where improvements could be made to the structure of the workshop or design of the programme. Participants also rated their level of experience and understanding of ecosystem assessments and IPBES prior to the workshop and following the workshop. Scores and comments from each participant have been carefully evaluated to inform future capacity building workshops for ecosystem assessment practitioners.

14.2 Exercise: Self assessment

Finally, the self assessment exercise was repeated to assess the effectiveness of the workshop. A comparison of the responses for all four questions at the start and end of the workshop is shown in **Figure 11**. The results demonstrate an overall increase in self-confidence in understanding what an ecosystem assessment is and in undertaking one in the future.

Figure 11(a). How participants assessed their understanding of the ecosystem assessment process at the start and end of the workshop.

Figure 12(b). How participants assessed their understanding of the ecosystem assessment process at the start and end of the workshop.

Figure 13(c). How participants assessed their understanding of the ecosystem assessment process at the start and end of the workshop.

Figure 14(d). How participants assessed their understanding of the ecosystem assessment process at the start and end of the workshop.

15 Closing remarks

To wrap up the workshop Lucy began by thanking the host UNEP-IEMP for their excellent support prior to and during the workshop and to IGSNRR for providing a great space to hold the workshop. Lucy thanked the participants for attending the workshop and for their high level of enthusiasm and hard work over the last few days. Lucy gave a few words on her personal experience of being involved in the UK NEA process for the past five years and how an ecosystem assessment has the potential to be a powerful tool to inform decision making. Permission was asked to add participant's contact details to the SGA Network mailing list in order to inform them of future network activities via the quarterly newsletter and occasion emails. Participants were asked to keep the SGA Network Secretariat informed of future assessment activities they are involved in. To close Lucy highlighted a recurring message from workshop that the process (whether it be the entire assessment process, engaging stakeholders, thinking about the multiple values from benefits or developing scenarios through stakeholder consultation) is just as, if not more important than the output.

Annex 1. Participant List

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Annex 2: Workshop Agenda

Day 1 (9th November): Introduction to Ecosystem Assessments

Time	Session	Format
12:30	***Lunch*** and Registration	-
	Opening Session	
13:30	1. Opening address (*Mr. Jian Liu, Director, United Nations Environment Programme International Ecosystem Management Partnership*)	Plenary
13:35	2. Welcome and introductions	Plenary
13:50	3. Self assessment	-
13:55	4. Workshop objectives and overview	Plenary
14:05	*Exercise: Expectations of participants*	Break-out
	Setting the Scene	
14:35	5. Introduction to the Sub-Global Assessment (SGA) Network	Plenary
	IPBES Assessments	
14:55	6. Introduction to IPBES, its functions and work programme	Plenary
15:30	***Tea/Coffee break***	
15:45	7. Update on the scoping of IPBES regional assessments *(Including thoughts from Prof. Haripriya Gundimeda, Dr. Simone Maynard, and Dr. Lillian Chua Swee Lian who attended the IPBES Scoping Meeting on Regional and Sub-regional Assessments)*	Plenary
16:30	8. Introduction to the IPBES Assessment Guide	Plenary
16:45	9. What is an IPBES assessment?	Plenary
	Exercise: What is an ecosystem assessment?	Individual
	Introduction to the Ecosystem Assessment Framework	
17:05	10. Introduction to the ecosystem assessment framework	Plenary
	The Scoping Stage	
17:15	11. Defining the scope and context of an assessment	Plenary
	Exercise: Determining the need for an assessment	Break-out

Time	Session	Format
18:00	***Close***	
18:15	***Dinner on campus at Ao Bei Tian Xiang Restaurant***	

Day 2 (10th November): Ecosystem Assessment Framework – Scoping & Design Stages

Time	Session	Format
09:00	1. ***Workshop commences:*** Recap Day 1 and introduce Day 2	Plenary
	The Scoping Stage (continued)	
09:10	*Exercise: Consulting with stakeholders*	Plenary
	2. Stakeholder engagement (*Dr. Simone Maynard, The Australian National University*)	Plenary
	3. Defining key questions for the assessment to address	Plenary
	Exercise: Developing policy relevant questions	Break-out
11:00	***Tea/coffee break***	
11:15	4. Key design considerations	
	Exercise: Key design considerations	Break-out
	The Design Stage	
12:00	5. Key considerations: governance structure, work plan, funding	
	Exercise: Budgeting for an assessment	Individual
12:30	***Lunch***	
13:30	*Exercise: Selling the assessment concept*	Break-out
14:15	6. Introduction to UNEP-ROAP's work on assessments and current priorities (*Mr. Kaveh Zahedi, Regional Director & Representative for Asia and the Pacific United Nations Environment Programme)*	Plenary
14:30	7. Introduction to conceptual frameworks	Plenary
15:00	*Exercise: Applying the IPBES conceptual framework to a thematic assessment*	Break-out
15:30	***Tea/Coffee break***	

Time	Session	Format
15:45	8. IPBES assessments across scales	Plenary
	Exercise: Applying the IPBES conceptual framework to a national assessment	Break-out
17:30	***Close***	
19:00	***Dinner at the Olympic Village Garden Hotel***	

Day 3 (11th November): Ecosystem Assessment Framework – Implementation Stage

Time	Session	Format
09:00	1. ***Workshop commences:*** Recap of Day 2 and introduce Agenda for Day 3	Plenary
	The Implementation Stage	
09:10	1. Data, information and knowledge *(Presentation from Dr. Elaine Wright, Department of Conservation)*	Plenary
10:00	2. Assessing status and trends of ecosystems and their services	Plenary
10:30	***Tea/Coffee break***	
11:00	*Exercise: Identifying trade-offs between ecosystem services and potential indicators*	Break-out
11:30	3. Using scenarios	Plenary
	Exercise: Identifying the role of scenarios	Break-out
12:30	***Lunch***	
	Exercise: Using scenarios	Break-out
14:30	4. Conceptualising multiple values and Valuation *(Presentations from Prof. Haripriya Gundimeda, Indian Institute of Technology Bombay)*	Plenary
15:30	***Tea/Coffee break***	
	Exercise: Valuation techniques	Break-out
16:15	5. Policy and Response Options *(Presentation from Mr. Nawraj Pradhan, International Centre for Integrated Mountain Development)*	Plenary
	Exercise: Identifying policy and response options	Break-out

Time	Session	Format
17:30	6. Peer review	Plenary
18:00	***Close***	
18:15	***Dinner on campus***	

Day 4 (12th November): Ecosystem Assessment Framework –Tools & Communication

Time	Session	Format
09:00	1. ***Workshop commences:*** Recap Day 3 and introduce Agenda for Day 4	Plenary
	Ecosystem Assessment Tools	
09:10	2. Introduction to policy support tools and methodologies	Plenary
09:25	3. Examples of how tools have been used in assessments of ecosystem and their services *(Presentation from Mr. Ghulam Qadir Shah, Mangroves for the Future Pakistan; Ms. Mere Valu, The NatureFiji-MareqetiViti; Dr Nguyen Manh Ha, Centre for natural Resources and Environmental Studies)*	Plenary
	Communication and Outreach	
10:30	4. The role of communication in an ecosystem assessment and communicating uncertainty	Plenary
11.00	***Tea/Coffee break***	
	Exercise: Designing a communication strategy	Break-out
	Exercise: Writing key messages and findings	Break-out
	Exercise: Communicating to target audiences	Break-out
13:00	***Lunch***	
	Lessons learned from completed sub-global assessments	
14:00	5. Lessons learned from the assessment process and how findings have been used to inform decision-making *(Presentations from Dr. Maria Victoria Espaldon, University of the Philippines, and Dr. Xiangzheng Deng, Institute of Geographic Sciences and Natural Resources)*	Plenary

Time	Session	Format
	Capacity building needs	
15:00	6. Exploring capacity building needs and opportunities *(Presentation from Mr. Norman Ramirez, ASEAN Centre for Biodiversity)*	Plenary
	Exercise: Exploring capacity building needs and opportunities	Break-out
15:30	***Tea/Coffee break***	
	Workshop reflections	
16:00	7. Evaluation	Plenary
	Exercise: Self assessment	Individual
16:20	8. Closing remarks	Plenary
16:30	***Close***	