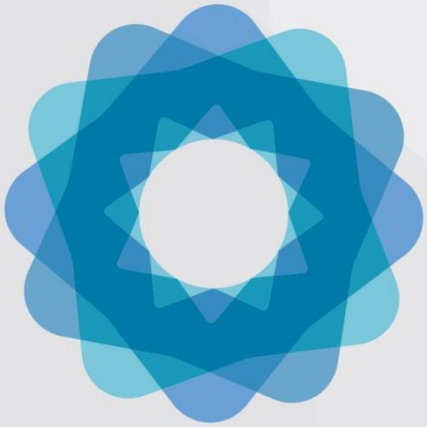

System of Environmental Economic Accounting

United Nations

System of Environmental Economic Accounting

NATIONAL STATISTICS BUREAU

Towards Supporting Evidence-based Decision Making

System of Environmental Economic Accounting

NATIONAL PLAN FOR ADVANCING ENVIRONMENTAL-ECONOMIC ACCOUTING (NP-AEEA) IN BHUTAN

DRAFT

This work was undertaken as part of the project advancing the SEEA Experimental Ecosystem Accounting. The project is led by the United Nations Statistics Division in collaboration with United Nations Environment Programme through its The Economics of Ecosystems and Biodiversity Office, and the Secretariat of the Convention on Biological Diversity. It is funded by the Norwegian Ministry of Foreign Affairs.

[1]*The views and opinions expressed in this report are those of the authors and do not necessarily reflect the official policy or position of the United Nations or the Government of Norway.*

United Nations

UNEP

Convention on Biological Diversity

NORWEGIAN MINISTRY OF FOREIGN AFFAIRS

CONTENTS

1 EXECUTIVE SUMMARY (NOT FINAL)

The purpose of the National Plan for Advancing Environmental Economic Accounting (NP-AEEA) in Bhutan is to link Bhutan's current environmental-economic accounting initiatives and policy requirements with SEEA and other international statistical frameworks. It provides the foundations for initiating statistical development towards improving decisions related to sustainable development and green economy. It is based on the *Assessment Mission 1 Report: Bhutan* that has identified the policy priorities, stakeholders and capacity for Bhutan to engage in such development. It has done so by reviewing the most recent relevant policy documents in collaboration with the Bhutan National Statistical Bureau, the Ministry of Forestry and Agriculture, the Gross National Happiness Commission and other key stakeholders. It positions the work within internationally accepted best practices for statistical development. This document will serve as a basis for engaging stakeholders and developing focussed proposals for supporting the implementation of environmental-economic accounts in Bhutan and more broadly supporting the development of the national statistical system. It does so by:

(a) establishing the rationale for an integrated statistical system for sustainable development information;
(b) summarizing the priorities and opportunities in Bhutan for further improvement of the National Statistical System with a focus on SEEA;
(c) using an Investment Logic Framework (ILF), defining the enabling factors (preconditions for engaging in activities), activities, outputs, impacts and long-term outcomes of engaging in these activities; and by
(d) outlining the foundational activities needed to implement environmental-economic accounting ready for use in fully developed and costed funding proposals.

The lack of coherence among environmental measurement initiatives imposes challenges in answering fundamental questions about natural resources including ecosystems and their contribution to human well-being in Bhutan. For example, what is the degree of dependence of Bhutan's population on ecosystems for water, food, materials and employment? What is the contribution of ecosystems and their services to the economy? How can natural resources and ecosystems be best managed to ensure continued services such as energy, food supply, water supply, flood control and carbon storage? What are the trade-offs between resource exploitation and land allocation with long-term sustainability and equity?

There is increasing international interest in establishing integrated statistical systems for this purpose. The UN System of Environmental Economic Accounting Central Framework (SEEA CF) has been established as an international statistical standard and is recommended as the measurement framework for a variety of related international policy activities. SEEA Experimental Ecosystem Accounting (SEEA EEA) expands the scope of the SEEA Central Framework to link ecosystems to economic and other human activities.

This document is intended to focus the efforts of the National Statistical Office, the more broaded National Statistical System and other stakeholders, including international agencies, to develop a cost-effective, ongoing and effective statistical systems and related institutional mechanisms to inform Bhutan's sustainable development policy objectives.

Bhutan aspires to be a country where development is holistic, inclusive and sustainable. This aspiration comes from the visionary statement "Gross National Happiness is more important than Gross National Product" first enunciated by His Majesty the Fourth King of Bhutan in the early 1970s – long before sustainable development became a global agenda. This very essence of sustainable development philosophy, is based on the principle that true development takes place when material, emotional and spiritual well-being occur side by side to complement and reinforce each other to promote equitable socio-economic development, environmental sustainability, cultural integrity, and good governance.

Bhutan: In Pursuit of Sustainable Development –
National Report for the United National Conference on Sustainable Development, 2012

…our economy is faced with a narrow industrial base, a high dependency on a single sector and imports and is experiencing unprecedented macroeconomic instability despite a prolonged period of robust economic growth. The sustainability of the demand on our health and education sectors due to rising expectations is under stress. Lack of adequate preparation for the inevitable trend of rapid urbanization is giving rise to new social, economic and infrastructure challenges. Environmentally, we are highly vulnerable to natural disaster arising from climate change and geological risks, while human-wildlife conflict brings challenges of balancing our environmental goals with sustaining the livelihood of our rural communities. We have no doubt made good progress in laying a strong foundation for our democratic process. However, much remains to be done in terms of further strengthening it through greater transparency, efficiency and accountability in the political and administrative processes.

Eleventh Five Year Plan Document, Gross National Happiness Commission, 2013

From a policy prospective, key issues shaping the context for SEEA in Bhutan include among others: the high level of policy support for SEEA, the complementarity of the SEEA approach with the gross national happiness indicator, and the fast hydropower development in Bhutan requiring further information on the impacts of hydropower on ecosystems and people's use of ecosystems. On the information dimension, it should be noted that good data are available on land cover (for 2010), forest composition including carbon stocks, and stream flows in several rivers. At the same time, the number of people with expertise in environmental-economic accounting, spatial modelling and environmental economic is limited. Hence, there is a need to start SEEA implementation with an incremental approach, focussing initially on particularly policy-relevant modules of the SEEA for which some information is already available.

The assessment report notes that a key priority in implementing the SEEA in Bhutan is establishing a Steering Committee to guide further work on SEEA-EEA and capacity building. Potential agencies to include in the steering committee are the National Statistics Bureau, National Environment Commission, the Ministry of Forestry and Agriculture, Ministry of Finance and the Gross National Happiness Commission.

The assessment also shows that there is scope to start with the development of Land and Water Accounts as first priorities. Carbon and Biodiversity accounts, as well as regional ecosystem accounts covering multiple ecosystem services would potentially be more suitable once the Land and Water Accounts have been developed. These additional accounts would benefit from the baseline information in the Land and Water Accounts, and from the experience gained in developing these accounts.

The assessment found that there is a particular need for capacity building, which could focus initially on the Land and Water Accounts, where the development of a pilot project and the training activities would go hand-in-hand. However, further SEEA training would need to be planned for subsequent phases of the SEEA Bhutan program.

It is proposed that rather than implementing a complex statistical system at the outset, this be done in stages. This document presents the first stage – a specific set of activities related to the implementation of the SEEA. High level activities and impacts are listed below.

Activities	**Impacts**
Building priority accounts based on policy needs	Provide Ministers and their agencies with empirical evidence linking government policies to sustainable development goals Improved knowledge on natural resources including ecosystems and well-being Better policies, decisions on trade-offs between development and conservation Foundations to build integrated indicators on sustainable development
Capacity building Human resources Infrastructure	The ongoing capability to integrate environmental-economic information into government decision making Training for agency and academic staff to support the ongoing implementation of environmental-economic accounts A civil service and civil society that is informed about environment and development The ongoing cost effective production of environmental-economic accounts that meet the needs of policy in a timely manner Improved statistical collaboration between sectors & agencies

2 INTRODUCTION

There is little doubt that at global, national and local scales, humanity is pushing against a web of environmental boundaries. This message has been growing clearer and clearer through multiple scientific, social and economic studies[1]. At the broadest level, the risks associated with breaching environmental boundaries are at the centre of concerns about sustainable development and, given the inter-connected nature of our economies and societies, environmental concerns are relevant to all people in all countries. It is not surprising that the demands from governments, international agencies and the general public for a response have been growing stronger and stronger. This message was emphasized at the Rio+20 conference and culminated in the Post-2015 Development Agenda.

One barrier in working towards the appropriate responses is the lack of well accepted, broadly based and globally integrated information on the nature of humanity's connection to the environment – our dependence on its services and our impact on its condition and future capacity to generate these services and hence sustain future human wellbeing. An integrated information system concerning national and global economic activity is widely adopted where, via the standard economic accounts and GDP, there is a strong understanding of the economic performance and history. On the social side, while the information is more diverse, relatively standardized approaches exist to assessing changes in population, education and health, among many other variables and a reasonably common understanding of the links between economic and social activity.

However, on the environmental dimension, usually the information set available is far more disparate and a common understanding of the relevant issues is undeveloped. While there is much scientifically based data available, it is often discipline specific, based on observations in specific areas, not scalable to national or global level, measured using different methods and definitions, and most often, not presented in reference to economic or human activity. Given these characteristics, it is not surprising that public and academic discourse on environmental matters has been fractured. The development of integrated environmental information is clearly needed.

Both the SEEA Central Framework and SEEA Experimental Ecosystem Accounting use the accounting concepts, structures, rules and principles of the System of National Accounts. The SEEA Central Framework starts from the perspective of the economy and its economic units and incorporates relevant environmental information concerning natural inputs, residual flows and associated environmental assets. SEEA Experimental Ecosystem Accounting on the other hand starts from the perspective of ecosystems and links ecosystems to economic and other human activity. Together, the approaches

[1] See for example Cardinale, B. J. and others, 2012. Biodiversity loss and its impact on humanity. Nature, 486(7401), pp. 59-67.
MA, 2005. Millennium Ecosystem Assessment. Ecosystems and Human Well-being: A Framework for Assessment: Summary. Washington, DC: Island Press.
Rockstrom, J., and others, 2009. Planetary boundaries: exploring the safe operating space for humanity. Ecology and society, 14(2), pp. 32.
TEEB, 2010. TEEB for Local and Regional Policy Makers. TEEB.

provide the potential to describe in a complete manner the relationship between the environment, and economic and other human activity.

SEEA Experimental Ecosystem Accounting is a synthesis of the current knowledge in this area and can provide a starting point for the development of ecosystem accounting at national or sub-national levels. While the SEEA Experimental Ecosystem Accounting does not give precise instructions on how to compile ecosystem accounts, it represents a strong and clear convergence across the disciplines of ecology, economics and statistics on many core aspects related to the measurement of ecosystems and thus there is a strong base on which further research and development can build.

This report is set out in three parts. **Section 3** provides a global and country rationale for undertaking environmental-economic accounting with an outline of the building blocks and methodologies needed for its implementation. This provides the context and rationale for the NP-AEEA, the high level needs of Bhutan based on the assessment report and finally a summary of the key outcomes that could be achieved for Bhutan by implementing the NP-AEEA.

Sections 4 and 5 present a brief overview of the building blocks and methods needed to implement the NP-AEEA. The aim of these sections is to provide generic guidance on a standardised approach based on current frameworks, system, methods and guidance and training material.

Sections 6, 7 and 8 outline the details of a national program of work following an investment logic framework (ILF). The focus on the ILF is to identify what work is required in order to achieve the objectives and translate them into outcomes for the country. This section is specifically tailored to the needs of Bhutan using the building blocks and methods outlined in sections 4 and 5. The use of an ILF provides detail on the work program participation requirements (institutional needs), enabling factors (resources, systems, processes), the work program (a series of actions described as work phases over time), outputs (a clear set of deliverables), impacts (what will change substantively) and finally the outcomes which are linked to the objectives of the country.

The advantage of providing the three-part approach to developing an NP-AEEA is to identify commonalities across countries to target international research and enable better coordination and collaboration in sharing best practices between countries. The activities and priorities for each country's NP-AEEA identified in part three will be used in the future to focus resources, research and training efforts.

3 ENVIRONMENTAL-ECONOMIC ACCOUNTING RATIONALE

There are a number of global and national drivers which provide the rationale for the development of an environmental-economic accounts program of work.

3.1 Global Perspective

National statistical systems, and in particular national statistical offices, throughout the world are facing increased demands for information and resource constrains. Seizing the opportunities and facing the new challenges requires greater efficiency and integration of the functions of national statistical systems through modernizing the institutional environment and the statistical production processes. The traditional way of organizing and managing the statistical system does not allow for making the transition to a modern integrated national statistical system that can meet the requirements in terms of producing and reporting data for the post-2015 development agenda and providing information for decision-making.

In 2013, the *Report of the High-Level Panel of Eminent Persons on the Post-2015 Development Agenda, A New Global Partnership: Eradicate Poverty and Transform Economies through Sustainable Development*[2] called for a data revolution for sustainable development, with a new international initiative to improve the quality of statistics and information available to citizens. The report states, "*We should actively take advantage of new technology, crowd sourcing, and improved connectivity to empower people with information on the progress towards the targets*".

The report also noted that better data and statistics would help governments track progress and make sure their decisions are evidence-based; they can also strengthen accountability. The Panel further proposed that, in the future – at latest by 2030 – all large businesses should be reporting on their environmental and social impacts, and governments should adopt the UN's System of Environmental-Economic Accounting, with help provided to those who need help to do this.

Also in 2013, the UN published the *Guidelines on Integrated Economic Statistics*[3] highlighting the need to move from the traditional silo approach to a more integrated approach to the production of statistics matched by the reform of the institutional arrangements, including access and use of administrative sources for statistical purposes. It recognised the significance of an integrated approach for increasing the consistency and coherence of economic statistics in order to enhance the quality and analytical value of the information the statistics contain for short-term, annual and benchmark economic statistics and macroeconomic statistics. The guidelines present the integration framework of economic statistics based on current best practices for the entire spectrum of statistical agencies, including countries with centralized and decentralized statistical systems and countries at different stages of economic and statistical development.

Integrated economic statistics are a set of economic statistics that depict a consistent and coherent picture of economic activities for policy, business and other analytical uses. In addition, a number of recent

[2] www.un.org/sg/management/pdf/HLP_P2015_Report.pdf
[3] http://unstats.un.org/unsd/nationalaccount/docs/IES-Guidelines-e.pdf

emerging initiatives on the measurement of sustainability, social progress and well-being have raised the need for integrated and coherent official statistics to shed light on those complex issues, and therefore pose challenges to statistical offices to produce integrated economic, environmental and socio-demographic statistics.

In 2014 the report '*A world that counts – mobilising the data revolution for sustainable development*[4]' published by the Independent Expert Advisory Group on a Data Revolution for Sustainable Development calls for a better coordination of statistical programmes developed by international organisations. The recent "Synthesis Report" published by the UN Secretary General has picked up the IEAG recommendation of considering the "statistical capacity building" dimension as an important part of the new investments for development. Moreover: *"all countries are encouraged to adopt their own national sustainable development financing strategies"*.

Lastly, but most importantly in the international context, in 2015 the United Nations General Assembly adopted the Sustainable Development Goals (SDGs) as part of the ambitious 2030 Agenda for Sustainable Development. The SDGs consist of 17 Goals and 169 associated targets. A key component of the 2030 Agenda is measuring progress towards meeting the SDGs. In this regard, the implementation of an integrated measurement framework can help countries to better meet the information demands arising from the SDGs.

3.2 Country Perspective

Bhutan has a unique approach to respecting nature, environment and social considerations in harmony with economic development. This approach is expressed in the development of the Gross National Happiness Index and a number of high level commitments to nature and environmental conservation. Examples of such commitments include the constitutional obligation to maintain at least 60% of forest cover in the country, and also to enhance the populations of critically-endangered iconic species such as tigers and snow leopards[5]. In 2008, Bhutan's new constitution[6] declared every citizen to be "a trustee of the Kingdom's natural resources and environment", and reaffirmed the 60% minimum for forest cover.

On the policy level, a number of laws and policy documents have been adopted by the Royal Government of Bhutan that aim to sustainably manage the environment while improving well-being. The SEEA as integrated statistical framework that brings together information on the environment and the economy can be a useful tools in providing integrated information for tracking progress towards reaching outcomes envisioned in a number of policy initiatives. Some of these are summarized below.

Bhutan`s Eleventh Five-Year Development Plan (2013-2018)[7] emphasizes the mainstreaming of carbon neutrality, green and climate resilience development, sustainable utilization and management of natural resources, water security and disaster resilience and management. It sets out clear performance indicators and targets by 2017-18 including, among others:

[4] http://www.undatarevolution.org/.
[5] See National Biodiversity Strategies and Action Plan, Bhutan, 2014
[6] http://www.bhutanaudit.gov.bt/About%20Us/Mandates/Constitution%20of%20Bhutan%202008.pdf.
[7] http://www.gnhc.gov.bt/five-year-plan/.

- Sustain or improve ambient air quality and to revise ambient air quality standard to include new parameters: $PM_{2.5}$, Ozone and CO.
- Increase the proportion of forest area under sustainable forest management (from 6.6% to 12%)
- Establish baselines and targets for an Ecological Footprint,
- Improve the population status of umbrella species (Tiger),
- Maintain ambient water quality within national standards,
- Maintain the long term mean annual flow of water of the entire country,
- Enhance sustainable land and biodiversity resource management,
- Energy security enhanced.

The Forest and Nature Conservation Act of 1995[8] aims to strengthen the scientific management of forest resources, restored communities' traditional rights, and provides for private forestry in privately registered lands and for community forests on government forest lands. The resulting Forest and Nature Conservation Rules, promulgated in 2000 and revised in 2003 and 2006, promote a rapid expansion of community forestry, with 16,400 ha in 135 community forests, benefiting more than 6,000 households, by 2009.

Bhutan approved the **National Forest Policy in 2010**[9], which adopts an integrated landscape-level approach to sustainable forest management, and promotes a balance between conservation and poverty reduction. The policy also enables payments for ecosystem services, and recognizes the country's commitments under international treaties such as the Convention on Biological Diversity, the United Nations Convention to Combat Desertification, the United Nations Framework Convention on Climate Change, and the Millennium Development Goals.

The National Environment Protection Act of 2007[10] requires anyone taking natural resources or deriving economic benefits from them to ensure that they are sustainably used and managed. The act also embraces a participatory approach geared to the equitable sharing of costs and benefits among resource users. Furthermore, the act promotes the use of clean energy sources and alternative technologies, which would reduce pressure on forests for firewood.

The Biodiversity Act of 2003[11] provides for conservation and sustainable use of biochemical and genetic resources and for equitable benefit-sharing. The critical priorities identified by the Government are[12]:

- Encouraging sustainable use of resources from the natural ecosystem and improved land use practices;
- Promoting greater participation and capacity development of stakeholders in natural resource management through appropriate institutions;
- Improving rural livelihoods through increased productivity and greater access to social and economic services, resources and opportunities;
- Strengthening environment monitoring mechanisms, enforcement procedures and awareness among the general public and institutions;

[8] http://faolex.fao.org/docs/pdf/bhu7101.pdf.
[9] http://www.gnhc.gov.bt/wp-content/uploads/2011/05/National-Forest-Policy.pdf
[10] http://faolex.fao.org/docs/pdf/bhu78334E.pdf.
[11] http://faolex.fao.org/docs/pdf/bhu69010.pdf
[12] Country Environmental Profile 2009. National Environment Commission, Thimpu.

- Upgrading environmental information management, quality standards and indicators, and developing capacity to collect and analyse baseline data for environmental planning; and
- Promoting use of energy sources that are environmentally friendly, such as hydropower, and energy efficient technology.

Beside the legal and policy documents listed above, Bhutan has also produced a range of policy documents, strategies and assessments that could be informed by and guide priority setting for environmental economic accounting. These include:

- **Forest Inventory**: Since 2012 a Forest Inventory has been ongoing, and currently a detailed Forest Inventory has been prepared for 7 *Dzongkhag*. The forest inventory records timber stocks and use, carbon stock and biodiversity.

- **Gross National Happiness**: The Gross National Happiness Index is a single number index developed from 33 indicators categorized under nine domains. Gross National Happiness implies that sustainable development should take a holistic approach towards progress and give equal importance to non-economic aspects of wellbeing. The concept of GNH has often been explained by its four pillars: good governance, sustainable socio-economic development, cultural preservation, and environmental conservation. Lately the four pillars have been further classified into nine domains in order to create widespread understanding of GNH and to reflect the holistic range of GNH values. The nine domains are: psychological wellbeing, health, education, time use, cultural diversity and resilience, good governance, community vitality, ecological diversity and resilience, and living standards. The domains represents each of the components of wellbeing of the Bhutanese people, and the term 'wellbeing' here refers to fulfilling conditions of a 'good life' as per the values and principles laid down by the concept of Gross National Happiness. The GNH Index is constructed based upon a robust multidimensional methodology known as the Alkire-Foster method. The GNH Index is decomposable by any demographic characteristic and so is designed to create policy incentives for the government, NGOs and businesses of Bhutan to increase GNH. The 33 indicators under the nine domains aim to emphasize different aspects of wellbeing and different ways of meeting these underlying human needs. The 33 indicators are statistically reliable, normatively important, and easily understood by large audiences. The domains are equally weighted. Within each domain, the objective indicators are given higher weights while the subjective and self-reported indicators are assigned lower weights.

- **The 2010 Land Cover Map**: The National Soil Services Centre under the Ministry of Agriculture and Forestry is involved in all aspects related to soils, soil management, soil microbiology and soil fertility. Using its in-house GIS centre, a set of remote sensing data and ground-truth data, the centre has produced a detailed land cover map of the whole country for 2010. The map has around 50 different classes including different types of forest and crops.

- **National Environment Commission pilots on Payments for Ecosystem Services (PES)**: The Commission is the focal point for CBD and counterpart to UNEP. The Commission has the mandate to mainstream environment and development with a focus on poverty, gender, climate change, disaster management. The Commission is carrying out two pilot PES projects, both on

water services. The Commission is facing a lack of data on environmental assets and ecosystem services that could be used to support these policies.

- **The National Environment Commission and Ministry of Finance Public Expenditure Review**: These agencies recently reviewed environmental impacts including externalities of key national policies. NEC is also involved in evaluation and quality assurance of EIAs carried out for development projects using among others screening tools. The Commission now aims to develop an information base at the national level.

- **Integrated Water Resources Management Plan of the National Water Board**: The National Water Board includes the Water Division of the National Environment Commission, representatives of the different relevant institutions such as the Ministry of Economic Affairs (MOEA) and the private sector. The National Water Board oversees the use and protection of water resources, and preparation of this plan has just started.

While the link to policy provides the demand for integrated information, it is important to also consider the development of the national statistical system and the available data. In Bhutan, while there is a need to further collect various data, especially on the environment, those data that are available appear to be of relatively good quality. The most pertinent data include the data on environment, agriculture and forestry in the Statistical Yearbook; the land cover map prepared by the National Soil Survey Centre, and the data that is being collected as part of the Forest Inventory. Another important dataset is the hydrological data available at the Department of Hydrology and Meteorology, covering 28 measuring stations in the main rivers of Bhutan.

There are several specific initiatives aimed at strengthening the National Statistical System and improving information on sustainable development. A number of key institutions within the National Statistical System as well as relevant non-governmental and international agency stakeholders are also listed below.

- **National Statistical Bureau (NSB):** NSB is a non-departmental government institution directly responsible to the prime minister. The NSB publishes the Statistical Yearbook with sections on population, health, education, labour and employment, land use and agriculture, environment, industries, transport and communication, energy, tourism, foreign trade, banking and finance, public finance, plan outlays, national accounts, prices and crime.

- **Ministry of Agriculture and Forests (MAF):** The Ministry of Agriculture and Forests comprises the Agriculture and Forest sectors and is subdivided in several Departments including the Department of Forest and Park Services (DoFPS) and the Department of Agriculture and Marketing Cooperatives (DAMC). DoFPS is responsible for the Forest Inventory and carbon mapping. MAF is the key implementation agency for the National Biodiversity Strategies Assessments and Plans[13] (NBSAPs).

[13] https://www.cbd.int/doc/world/bt/bt-nbsap-v4-en.pdf.

- **The National Soil Services Centre (NSSC)**: The NSSC has the national mandate to analyse soils, soil management, soil microbiology and soil fertility. In 2010, the NSSC produced a detailed land cover map for the country.

- **National Environment Commission (NEC)**: The Commission, chaired by the Prime Minister, is the focal point for CBD and counterpart to UNEP. The NEC would both be a user and a supplier of information to the program. The NEC has produced several reports on the state of the environment (Bhutan Environmental Outlook 2002, 2008[14] and 2012) that bring together key environmental indicators. The NEC has carried out two pilot projects on payments for ecosystem services related to water. The NEC has also carried out a public expenditure review, with the Ministry of Finance, involving a review of environmental impacts including externalities of key national policies.

- **Ministry of Finance**: The Ministry is responsible for management of all public finances. The Ministry has carried out a public expenditure review, with the NEC, involving a review of environmental impacts including externalities of key national policies.

- **The Gross National Happiness Commission (GNHC)**: The GNHC is the central government body for coordinating and spearheading policy formulation and coordinates the development of the Five Year Plans.

- **National Water Board (NWB)**: The NWB includes representatives of the different relevant institutions such as the Ministry of Economic Affairs and the private sector, and responsible for water management including the planning of hydro-electric developments.

- **Land Commission**: The Land Commission is involved in recording ownership of privately owned land. It records data on land ownership, location of houses, slope and soils.

- **The Ministry of Economic Affairs (MEA)**: Includes responsibility for the Department of Hydrology and Meteorological Services, which provides climate and hydrological data.

- **Royal Society for the Protection of Nature (RSPN)**: This Bhutanese NGO focusses on environment, biodiversity conservation, community engagement and research. This is the prime Environmental NGO in Bhutan and has access to field data on biodiversity and ecosystem uses.

- **The World Bank**: The World Bank has collaborated with the Royal Government of Bhutan to produce a Note on Green Growth for Bhutan[15]. This document identifies capacity building for mainstreaming natural capital, including ecosystem services, in Bhutan's national development planning and national income accounts as a key priority. The document refers to the need to provide policymakers with additional information to manage hydrological and forest resources, in particular. This pertains not only to information about the state of forest resources and how it

[14] http://geodata.rrcap.unep.org/envt_outlook_reports/BHUTAN_EO_2008.pdf.
[15] http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2014/09/09/000442464_20140909142702/Rendered/PDF/904130WP0Bhuta00Box385316B00PUBLIC0.pdf.

is changing, but also information on how public polices impact forest resources and ecosystem services.

- **Food and Agriculture Organization (FAO)**: The FAO's Country Office[16] partners with the Royal Government of Bhutan on food and nutrition security, sustainable forest management and trans-boundary diseases such as foot and mouth diseases, bird flu, H7N9, rabies and the renewable natural resources (RNR) sector. The Ministry of Agriculture and Forests is FAO's key technical partner in the implementation of the Country Programming Framework (CPF).

- **The United Nations Development Programme (UNDP)**: In Bhutan, UNDP focuses mainly on creating an enabling environment to alleviate poverty, realize MDGs and support the Government's Five Year Plans through the United National Development Assistance Framework (2013-2018).

Given these policy priorities, stakeholders and current initiatives, Bhutan has conducted an assessment of data, institutional mechanisms and technical capacity for implementing the SEEA. This assessment will guide how these priorities are addressed through the NP-AEEA for developing a cost-effective, ongoing and effective statistical system and related institutional mechanisms. Initial work will focus on further implementation of the SEEA and testing of the SEEA-EEA.

3.3 Bhutan Environmental-Economic accounting needs assessment

Several needs in relation to environmental-economic accounting were identified in the Assessment Report. These are the need for: (a) a comprehensive environmental-economic accounting information system; (b) collecting additional data required to finalise the accounts, for instance using remote sensing information given the remoteness of much of the country; (c) training and capacity building in environmental-economic accounting; (d) enhanced coordination with national initiatives as well as international and donor agencies; (e) immediately beginning work on priority accounts including ecosystem services relevant for regulating water flows. These aspects are elaborated below:

- **A comprehensive environmental-economic accounting information system** to address national policy priorities including Green Economy and reporting on the SDGs. A main benefit of such a system would be the possibility to inform Bhutan of the economic benefits obtained from its sustainable natural resource management policies, and to monitor the state of the country's natural resources. It is necessary, in the first phase, to decide with the key stakeholders which services and which part of the country (or the national scale) would be selected for the project. It needs to be recognized, however, that data availability and spare technical capacity in Bhutan are, at present, limiting factors and that a comprehensive account would be the result of a long process that would start with the development of a limited set of accounts part of the SEEA framework, as discussed below. To accomplish this, there is a clear need for additional expertise related to ecological analysis and spatial modelling at the NSB.

[16] http://www.unct.org.bt/fao/.

- **Collecting additional data required to finalise the accounts, for instance using remote sensing information given the remoteness of much of the country.** Key datasets available in support of NP-AEEA in Bhutan include the detailed 2010 land cover map, data from the forest inventory for part of the country, and data on water flows in selected watersheds. Both forestry and hydrological information are lacking for the more remote parts of the country. There is also information on tourist arrivals, although there is no detailed information on which places are visited by tourists, yet this information could be retrieved from permissions given to foreign visitors to visit specific parts of the country. There is also data on crop production. Missing are data on land cover in other years, vegetation-regulated water flows and other ecosystem processes, carbon sequestration, etc. A first step therefore is to examine if and how remote sensing can be used to analyse selected ecosystem services such as carbon sequestration, erosion control and water regulation. This requires considerable further consideration of the specific geomorphology of Bhutan and the ecological conditions. A key concern is that there is a lack of experience with remote sensing modelling, as discussed in the next point.

- **Training and capacity building in environmental-economic accounting.** There is a need for further training and capacity building both in ecosystem accounting approaches and in modelling and data collection for the analysis of the regulation services to be included in the accounts. There should be an engagement of specialists in professional development through joint activities, staff exchanges and in-depth training on compilation, analysis and valuation. A particular constraint is the scarcity of staff experienced in GIS and remote sensing analysis, in particular at the NSB. It needs to be examined whether a partnership could be developed that would allow structural collaboration with NSB in order to provide the spatial analysis required for ecosystem accounting to NSB, or to develop this expertise in-house at the NSB. Training needs would have to be fine-tuned with the initial set of accounts to be developed in Bhutan, potentially the Water accounts (as discussed below)

- **Enhanced coordination with national initiatives as well as international and donor agencies**: The Assessment Report notes that a high-level steering committee needs to be established for this project. Potential members of the committee include the NSB, the National Environment Commission, the Ministry of Forestry and Agriculture and the Gross National Happiness Commission. Members of the steering committee should be senior officers able to allocate resources and able to commit on behalf of their institutions. There is also a need to further explore the establishment of a regulatory approach to ensure data integrity, inter-institutional coordination and budget provision for such an activity. This would embed the SEEA within the regulatory framework for enhancing the National Statistical System for information on environment-economy linkages.

- **Immediately beginning work on priority accounts**: Land, water, carbon and selected ecosystem services (especially water regulation, erosion control and carbon storage) are required at a national level. Detailed accounts, especially on water, could be piloted at the provincial level, in particular in areas were hydropower activities are planned, to monitor the impacts of such developments on water flows and ecosystem services. This could be supplemented by the assessment of the feasibility of developing Biodiversity Accounts, Ecosystem Condition Accounts and accounts for additional ecosystem services related to tourism and recreation.

To address these needs, the NP-AEEA proposes to work towards developing a comprehensive environmental-economic accounting information system by improving national partnerships, training and capacity building, enhancing coordination and addressing challenges in resourcing, data quality, access, technical capacity and statistical infrastructure. This will result in pilots of priority environmental-economic accounts for sustainability indicators.

4 NP-AEEA – HIGH LEVEL OUTCOMES

It is important to link proposed activities with their ultimate outcomes. This section summarises the key outcomes that could be achieved for Bhutan by adopting and implementing the NP-AEEA:

- A comprehensive environmental-economic accounting information system that responds to the requirements of information on sustainable development and green economy, and that would be complementary to the GDH index;
- Increased training and capacity building in environmental-economic accounting, including in the various technical skills underlying the development of such accounts such as GIS and remote sensing analysis;
- Enhanced institutional coordination within Bhutan for the advancement of SEEA, including ecosystem accounting;
- Enhanced coordination of support from international and donor agencies for assistance with environmental-economic accounting and related accounting and data initiatives;
- Improved resourcing, data quality, access, technical capacity and statistical infrastructure for environmental-economic accounting; and
- A set of priority accounts, namely for land, water, and selected ecosystem services such as flood control, erosion control and carbon storage.

5 PROGRAM OF WORK BUILDING BLOCKS

This section and the following section on There remains some uncertainty in the science and its application in ecosystem accounting within the broad umbrella of environmental-economic accounting. A cost effective approach to determining the best pathway is to experiment on a number of fronts at the same time whilst keeping in mind the long term aim of full integration and publication of accounts at the national level. Testing the SEEA-EEA is part of a global experiment to develop effective ecosystem accounts. In this respect, the experience of all countries will contribute to this experiment. Bhutan would be well-placed to participate in this process, given the high level interest in sustainable development and the need articulated among a range of stakeholders to assess the economic benefits of the sustainability efforts undertaken in Bhutan. This translates into broad support for the SEEA approach in the country.
At the same time, it needs to be recognized that data availability and technical capacities in the country are limited. The data that have been collected to date are of excellent quality, and the process of collecting data by agencies in collecting the data is efficient. However there are still data shortages, with detailed data available on land cover (for one year, 2010) and forest composition and ecosystem services (currently ongoing forest inventory). There are also streamflow data for a range of rivers, and data on tourist entries into the country. More detailed data, on provisioning services (e.g. non-timber forest products or expenditure patterns of tourists) are still missing. These data provide a good starting point for ecosystem accounting, but more data would need to be collected depending upon the selection of the accounts to be included in the program (as discussed below).

A more important constraint pertains to human resources. In particular there is a need to develop expertise in the fields of spatial modelling and environmental economics. Also there is a need to increase the number of staff at the NSO who are working in the area of environmental-economic accounting. Therefore, any SEEA activity in Bhutan needs to be fine-tuned to the data and capacity situation of the country, which in practice means that a gradual, incremental approach would need to be pursued.

Four options for starting with ecosystem accounting are described below.

- **Land Accounts:** Land Accounts demonstrate land cover, land use and land ownership in the form of maps and/or tables that can be produced for either physically-defined boundaries (e.g. a watershed) or institutional boundaries (e.g. a district). The maps are the basis for the tables, with the spatial dataset allowing to aggregate information to different categories. A Land Account, in term of land cover, has already been developed for 2010 by the Soil Services Centre. This map is still relatively recent and can be used as the basis for ecosystem accounting. A question to be considered by the Bhutanese government is how often an update of the land cover map is required; international best practices suggest that detailed land cover maps are produced every 3 to 6 years depending upon local capacity and rate of land use change. From the land cover map, a land use map could be developed for 2010 to develop a full Land Account. Potentially, the information could be combined with the cadastral (ownership) information available in Bhutan from the Land Commission.

- **Water Accounts:** The Water Account would support the Integrated Water Resources Management Plan of Bhutan. A main advantage of developing Water Accounts in Bhutan is that a full framework and international standard are in place, and that there are several examples of

Water Accounts that were developed in other countries. The SEEA-CF approach to water accounting could, over time be extended to an ecosystem accounting approach. A key aspect here is that the SEEA-CF follows a non-spatial approach to analysing stocks and flows of water within and between different compartments of the ecosystem (rivers, lakes, groundwater), and its uses (e.g. for drinking water extraction, hydropower, etc.). This will help advancing SEEA-EEA since the basic information required for the SEEA-CF Water Accounts is also required for the SEEA-EEA approach. However, in addition, the SEEA-EEA approach requires spatially explicit information on water stocks and flows, and how they are distributed in the landscape (e.g. involving the modelling of ecological and hydrological processes per spatial unit, e.g. per pixel). At the same time, the SEEA-CF Water Accounting approach is, because it is non-spatial, somewhat simpler to implement than the SEEA-EEA approach. The development of SEEA-CF Water Accounts provides a suitable experience to build upon for the implementation of SEEA-EEA since it provides meaningful information in themselves relevant for managing water resources, makes data available for SEEA-EEA and provides a learning opportunity.

- **Forest Accounts:** A forest inventory is currently being compiled by the Ministry of Agriculture and Forestry. It comprises detailed data on species of trees, standing timber stock and carbon stock. It is being developed according to the IPCC recommendations for a tier 3 carbon stock measurement approach involving over 4000 samples. It is likely that starting a parallel process to develop a forest account would lead to duplication of ongoing work, and it is therefore not recommended to develop a forest account at this point in time. Once the forest inventory is finalised, by late 2015/mid 2016, it could be considered if and how the forest inventory could be translated into a forest account. At this point in time, it can also be decided whether other ecosystem services, besides timber and carbon, could be included.

- **Species Account:** There is currently a lack of data on many of the endemic and threatened species in Bhutan, although research efforts are being undertaken by a range of organisations including the Ministry of Agriculture and Forestry and the Royal Society for the Protection of Nature. Biodiversity is being affected by hydropower development and land cover change. Given the importance of Bhutan as a centre of species diversity and the interests of the government in green economic growth, the establishment of a Biodiversity Account should be considered. It should be noted that this is likely to require the collection of additional biodiversity data. A question for consideration by the Bhutanese government is how high the priority of the Species Account is vis-a-vis other funding requirements for protecting biodiversity.

Methodologies provide a brief overview of the building blocks and methods needed to implement the NP-AEEA. The aim of this section is to provide generic guidance on a standardised approach based on current frameworks, systems, methods and guidance and training material.

The integrated approach to environmental-economic accounts is supported by three main building blocks: (1) the SEEA CF and SEEA EEA as the conceptual frameworks, (2) supporting institutional arrangements and (3) an integrated statistical production process[17]. The building blocks are interlinked and mutually reinforcing structures for setting up integrated statistical systems.

An important aspect of the building blocks is their link to needs assessment and high-level outcomes sections above. The building blocks are combined with the NP-AEEA – Investment Logic Framework section below. The building blocks of the NP-AEEA are:

1.
2. GSBPM should therefore be seen more as a matrix, through which there are many possible paths. In this way the GSBPM aims to be sufficiently generic to be widely applicable, and to encourage a standard view of the statistical business process, without becoming either too restrictive or too abstract and theoretical.

The building blocks are expanded on below followed by a discussion of methodologies to support their implementation.

3. Mainstream the environmental-economic accounting
4. The fundamental objective of this building block is to communicate with and engage national and international partners for the implementation of environmental-economic accounts. The foundations of the GSBPM are quality management and metadata management frameworks of which the SEEA is one.

This building block aims to mainstream the environmental-economic accounting frameworks, and structure it in stages of advancements that can be implemented and monitored. The framework builds on SNA principles, but is extended based on ecological foundations, and under the umbrella of SEEA-CF and SEEA-EEA. Novel concepts and ideas need to be mainstreamed for the purposes of experimentation and familiarisation across government agencies and academia. It is an umbrella block of work that both guides the development of the others and is necessary for their success.

Building and publishing environmental-economic accounts relies on a number of related processes, all geared towards the advancement of organizational design (institutions), technical (data collection and processing), scientific discovery (generating new data) and ultimately an improved understanding of natural resource and ecosystem values as assets that provide essential services. These processes combine available knowledge from many disciplines and agencies including national statistics and accounting, management of land, water, ecosystems and biodiversity and studies of key ecological processes to name a few. All these require clear communication tailored to their needs so mainstreaming, adaptation and application of the available knowledge can occur.

5. Rationalise and integrate institutional arrangements

[17] The building block approach presented here is an application of the process presented in the Guidelines on Integrated Economic Statistics (IES) (http://unstats.un.org/unsd/nationalaccount/docs/IES-Guidelines-e.pdf).

6. Integrate the data, tools and statistical production process
7. Environmental-economic accounting is a transdisciplinary activity. That is, the concepts and tools require a common language between disciplines. Integrating existing concepts and tools that have been developed for specific purposes will require adaptation to a common framework provided by the SEEA.

This building block links to GSBPM Phases 3, 4, 5 and 6 and addresses the main challenges of data gaps, scientific credibility, comparability and data uncertainties that can be bridged by building on the existing data systems, methods and tools. Building environmental-economic accounts provides new challenges for both economic and environmental data collection and collation. There is a need to harmonise concepts and rationalise the principles of both disciplines to maintain the integrity of both areas. In many instances there will be a need to adjust to a shared conceptual framework to facilitate an integrated outcome.

Many of the tools and infrastructure required already exist. However they operate on different platforms and standards making integration costly in both time and resources. In the medium to long term the aim of the NP-AEEA is to leverage current systems that offer the flexibility needed to support future demands for integration. Key to achieving this will be the review and assessment of current systems and approaches following by the development of a strategic investment plan. This integration will also identify opportunities for further research and experimentation.

8. Ecosystem Accounting Experimentation[18]

Blocks 1-3 are the core and required to achieve the overall aim and Block 4 captures the aim of continuous improvement including research and development, testing and experimentation to adapt the guidelines of the SEEA to the country situation. The building blocks are combined with the Generic Statistical Business Process Model (GSBPM[19]) shown in
The GSBPM should be applied and interpreted flexibly and used to provide guidance. It is not a rigid framework in which all steps must be followed in a strict order; instead it identifies the possible steps in the statistical business process, and the inter-dependencies between them. Although the presentation of the GSBPM follows the logical sequence of steps in most statistical business processes, the elements of the model may occur in different orders in different circumstances. Also, some sub-processes will be revisited a number of times forming iterative loops, particularly within the Process and Analyse phases.

Figure 1 below. The GSBPM describes and defines the set of business processes needed to produce official statistics. It provides a standard framework and harmonised terminology to help statistical organisations to modernise their statistical production processes, as well as to share methods and components. The GSBPM can also be used for integrating data and metadata standards, as a template for process documentation, for harmonizing statistical computing infrastructures, and to provide a framework for process quality assessment and improvement.

[18] Experimentation has been added as an additional building block in support of SEEA EEA and the experimental nature of work needed.
[19] http://www1.unece.org/stat/platform/display/GSBPM/GSBPM+v5.0

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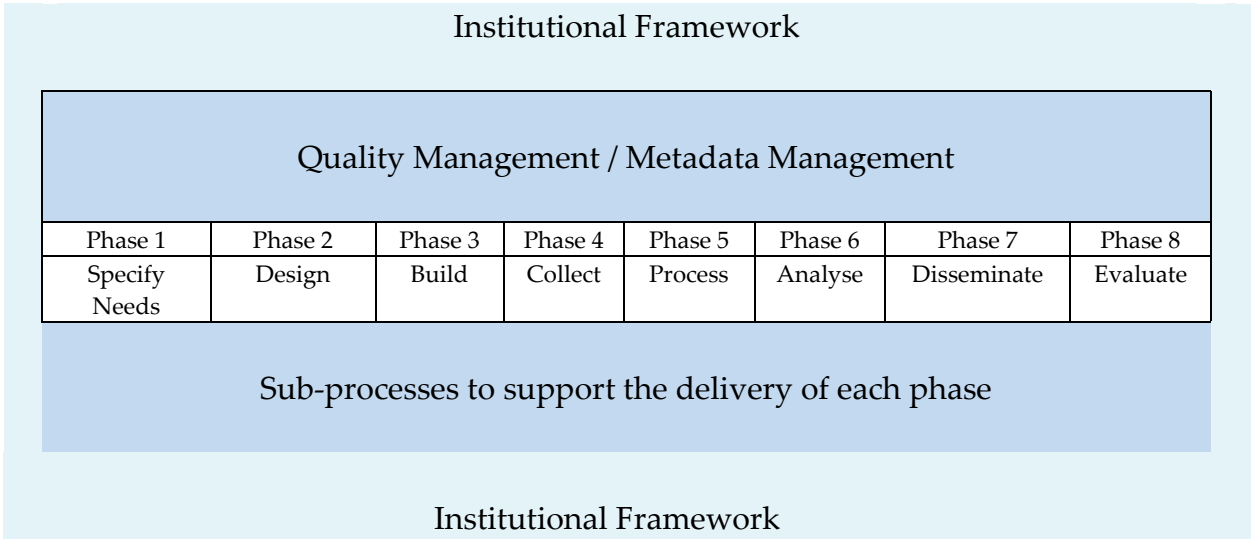
Figure 1 Generic Statistical Business Process Model (GSBPM).



GSBPM should therefore be seen more as a matrix, through which there are many possible paths. In this way the GSBPM aims to be sufficiently generic to be widely applicable, and to encourage a standard view of the statistical business process, without becoming either too restrictive or too abstract and theoretical.

The building blocks are expanded on below followed by a discussion of methodologies to support their implementation.

5.1 Mainstream the environmental-economic accounting

The fundamental objective of this building block is to communicate with and engage national and international partners for the implementation of environmental-economic accounts. The foundations of the GSBPM are quality management and metadata management frameworks of which the SEEA is one.

This building block aims to mainstream the environmental-economic accounting frameworks, and structure it in stages of advancements that can be implemented and monitored. The framework builds on SNA principles, but is extended based on ecological foundations, and under the umbrella of SEEA-CF and SEEA-EEA. Novel concepts and ideas need to be mainstreamed for the purposes of experimentation and familiarisation across government agencies and academia. It is an umbrella block of work that both guides the development of the others and is necessary for their success.

Building and publishing environmental-economic accounts relies on a number of related processes, all geared towards the advancement of organizational design (institutions), technical (data collection and processing), scientific discovery (generating new data) and ultimately an improved understanding of natural resource and ecosystem values as assets that provide essential services. These processes combine available knowledge from many disciplines and agencies including national statistics and accounting, management of land, water, ecosystems and biodiversity and studies of key ecological processes to name a few. All these require clear communication tailored to their needs so mainstreaming, adaptation and application of the available knowledge can occur.

5.2 Rationalise and integrate institutional arrangements

The "One-UN" process recommends that countries move towards one integrated National Statistical System. That is, all agencies should work within the same quality guidelines and seek opportunities for reducing duplication of effort by improving coordination in statistical production.

Clearly for any new system, process or framework that impacts so many agencies to be adopted by government requires very careful assessment of current institutional arrangements and possible impacts on those arrangements. The GSBPM recognises this as a condition to achieving adoption, funding, monitoring and enforcement of any new system. Further, it can be applied to all stages in the process and, at each stage, institutions and agencies will understand clearly their roles and responsibilities.

There are many agencies involved in the collection and publication of data. In many instances, the need has arisen from within individual agencies to meet their reporting and policy requirements. For instance, an environmental agency may focus on the classification and measurement of important ecosystem assets in the landscape whereas an agricultural agency will focus on the landscape for economic reasons. Both approaches are valid in their own right, but the aim of environmental-economic accounting is to build an integrated set of information to support decision making and trade-offs. Further, the movement towards a more integrated and streamlined processes for the collection and publication of data provides opportunities for lowering the overall cost and increasing its use and efficacy.

This does not imply reducing the control that agencies have over their own data collection processes, but it does require a rationalising of the standards used for data collection and strengthening the National Statistical System to share data in real time where appropriate. It is important to recognise that individual agencies have the greatest strength in understanding specific subject areas, but are not necessarily expert in statistical production systems – this is the role of national statistic offices.

5.3 Integrate the data, tools and statistical production process

Environmental-economic accounting is a transdisciplinary activity. That is, the concepts and tools require a common language between disciplines. Integrating existing concepts and tools that have been developed for specific purposes will require adaptation to a common framework provided by the SEEA.

This building block links to GSBPM Phases 3, 4, 5 and 6 and addresses the main challenges of data gaps, scientific credibility, comparability and data uncertainties that can be bridged by building on the existing data systems, methods and tools. Building environmental-economic accounts provides new challenges

for both economic and environmental data collection and collation. There is a need to harmonise concepts and rationalise the principles of both disciplines to maintain the integrity of both areas. In many instances there will be a need to adjust to a shared conceptual framework to facilitate an integrated outcome.

Many of the tools and infrastructure required already exist. However they operate on different platforms and standards making integration costly in both time and resources. In the medium to long term the aim of the NP-AEEA is to leverage current systems that offer the flexibility needed to support future demands for integration. Key to achieving this will be the review and assessment of current systems and approaches following by the development of a strategic investment plan. This integration will also identify opportunities for further research and experimentation.

5.4 Ecosystem Accounting Experimentation in Bhutan

There remains some uncertainty in the science and its application in ecosystem accounting within the broad umbrella of environmental-economic accounting. A cost effective approach to determining the best pathway is to experiment on a number of fronts at the same time whilst keeping in mind the long term aim of full integration and publication of accounts at the national level. Testing the SEEA-EEA is part of a global experiment to develop effective ecosystem accounts. In this respect, the experience of all countries will contribute to this experiment. Bhutan would be well-placed to participate in this process, given the high level interest in sustainable development and the need articulated among a range of stakeholders to assess the economic benefits of the sustainability efforts undertaken in Bhutan. This translates into broad support for the SEEA approach in the country.
At the same time, it needs to be recognized that data availability and technical capacities in the country are limited. The data that have been collected to date are of excellent quality, and the process of collecting data by agencies in collecting the data is efficient. However there are still data shortages, with detailed data available on land cover (for one year, 2010) and forest composition and ecosystem services (currently ongoing forest inventory). There are also streamflow data for a range of rivers, and data on tourist entries into the country. More detailed data, on provisioning services (e.g. non-timber forest products or expenditure patterns of tourists) are still missing. These data provide a good starting point for ecosystem accounting, but more data would need to be collected depending upon the selection of the accounts to be included in the program (as discussed below).

A more important constraint pertains to human resources. In particular there is a need to develop expertise in the fields of spatial modelling and environmental economics. Also there is a need to increase the number of staff at the NSO who are working in the area of environmental-economic accounting. Therefore, any SEEA activity in Bhutan needs to be fine-tuned to the data and capacity situation of the country, which in practice means that a gradual, incremental approach would need to be pursued.

Four options for starting with ecosystem accounting are described below.

- **Land Accounts:** Land Accounts demonstrate land cover, land use and land ownership in the form of maps and/or tables that can be produced for either physically-defined boundaries (e.g. a watershed) or institutional boundaries (e.g. a district). The maps are the basis for the tables, with the spatial dataset allowing to aggregate information to different categories. A Land Account, in term of land cover, has already been developed for 2010 by the Soil Services Centre. This map is

still relatively recent and can be used as the basis for ecosystem accounting. A question to be considered by the Bhutanese government is how often an update of the land cover map is required; international best practices suggest that detailed land cover maps are produced every 3 to 6 years depending upon local capacity and rate of land use change. From the land cover map, a land use map could be developed for 2010 to develop a full Land Account. Potentially, the information could be combined with the cadastral (ownership) information available in Bhutan from the Land Commission.

- **Water Accounts:** The Water Account would support the Integrated Water Resources Management Plan of Bhutan. A main advantage of developing Water Accounts in Bhutan is that a full framework and international standard are in place, and that there are several examples of Water Accounts that were developed in other countries. The SEEA-CF approach to water accounting could, over time be extended to an ecosystem accounting approach. A key aspect here is that the SEEA-CF follows a non-spatial approach to analysing stocks and flows of water within and between different compartments of the ecosystem (rivers, lakes, groundwater), and its uses (e.g. for drinking water extraction, hydropower, etc.). This will help advancing SEEA-EEA since the basic information required for the SEEA-CF Water Accounts is also required for the SEEA-EEA approach. However, in addition, the SEEA-EEA approach requires spatially explicit information on water stocks and flows, and how they are distributed in the landscape (e.g. involving the modelling of ecological and hydrological processes per spatial unit, e.g. per pixel). At the same time, the SEEA-CF Water Accounting approach is, because it is non-spatial, somewhat simpler to implement than the SEEA-EEA approach. The development of SEEA-CF Water Accounts provides a suitable experience to build upon for the implementation of SEEA-EEA since it provides meaningful information in themselves relevant for managing water resources, makes data available for SEEA-EEA and provides a learning opportunity.

- **Forest Accounts:** A forest inventory is currently being compiled by the Ministry of Agriculture and Forestry. It comprises detailed data on species of trees, standing timber stock and carbon stock. It is being developed according to the IPCC recommendations for a tier 3 carbon stock measurement approach involving over 4000 samples. It is likely that starting a parallel process to develop a forest account would lead to duplication of ongoing work, and it is therefore not recommended to develop a forest account at this point in time. Once the forest inventory is finalised, by late 2015/mid 2016, it could be considered if and how the forest inventory could be translated into a forest account. At this point in time, it can also be decided whether other ecosystem services, besides timber and carbon, could be included.

- **Species Account:** There is currently a lack of data on many of the endemic and threatened species in Bhutan, although research efforts are being undertaken by a range of organisations including the Ministry of Agriculture and Forestry and the Royal Society for the Protection of Nature. Biodiversity is being affected by hydropower development and land cover change. Given the importance of Bhutan as a centre of species diversity and the interests of the government in green economic growth, the establishment of a Biodiversity Account should be considered. It should be noted that this is likely to require the collection of additional biodiversity data. A question for consideration by the Bhutanese government is how high the priority of the Species Account is vis-a-vis other funding requirements for protecting biodiversity.

6 METHODOLOGIES

This section on methodology relies heavily on the current and new material being produced that will support the ongoing production of environmental-economic accounts. It provides a brief overview of some of the methodological approaches and options that may be considered when formulating a program of work that delivers on the building blocks and the longer term aims of Bhutan.

In the outset it should be noted that the advantage of having common methodological frameworks is to enable coordinated progress towards advancing environmental-economic accounting.

6.1 Institutional framework

The Institutional framework should facilitate exchange of knowledge, expertise and even experts between the partners. The creation of the integrated systems of statistics should be the shared responsibility of the top management of all agencies involved. When agreement on the more detailed programme, the roadmap and the specific roles and responsibilities has been reached, then periodic high level meetings may be very fruitful to discuss progress, solve bottlenecks, strengthen commitment and ensure the outputs satisfy the needs of the stakeholders.

Designing, developing and implementing an integrated system of statistics is a large programme and requires extra provisions for a good programme management. For the programme and all the sub-programmes, programme boards and programme managers are needed. The programme boards are chaired by the senior manager of the domain involved. If the (sub-) programme goes beyond the borders of organizational units, it is preferable to have a senior manager as chair.

The programme boards and the programme managers may be supported by a small bureau in operational and administrative tasks. The programme boards consist of the chair, the programme managers and directly involved management. All members should seek to have a mandate to make decisions within the scope of the (sub-) programme. Elements that may be adapted to conditions in Bhutan include:

- High level commitment, and engagement of partners; common coordination; data collection/sharing implications
- Advisory committees (IES[20], p. 39)
- Legislation, mandates to coordinate, produce, supply inputs etc.
- Inter-institutional commitments for production of integrated statistics – MoUs (IES, p.41)
- Inter-departmental commitments – Service-Level Agreements – SLAs (IES, p.42)
- Programme governance structure development

6.2 Roles and Responsibilities for Environmental-Economic Accounting

If agencies outside the national statistical office are involved in the compilation and dissemination of official statistics, then for the creation of integrated system of statistics, it is necessary to create partnerships. The first step is to engage all relevant agencies in the discussion of the necessity and the

[20] The Guidelines on Integrated Economic Statistics http://unstats.un.org/unsd/nationalaccount/docs/IES-Guidelines-e.pdf. See above.

mutual gains of such a system. This can only be done at the level of the top management. The next step is agreement on the possible new roles and responsibilities of the agencies in the new systems. These discussions should be steered by the selected pilot accounts.

For instance, in the case of water, information is currently spread over different government agencies monitoring and assessing water flows, hydropower development plans, water quality, and biodiversity. When general agreement on the scope of the integrated systems of statistics has been reached, a detailed design of the whole chain of all processes, inputs, intermediary products, outputs and all interdependencies can be made. The process will be iterative, in that pilot accounts will be built and the design will be revised based on experience of the pilot. Initial design and testing will require attention to:

- Working groups
- Advocacy
- Workshops – policy, awareness-building, etc.
- Demonstrations
- Feasibility
- Proof of concept – experimentation, structural change,
- Training sessions
- Customised communications plans

6.3 Environmental-Economic accounts production process

A part of the GSBPM design phases 3-4 is to understand the mechanics of delivering on a new system. This includes, but is not limited to:

- "Build" and "collect" phases:
- Data collection (or generation – through sampling, inventories/surveys, detailed process-modelling, remote-sensing applications, course-process modelling);
- data harmonization (processing, quality control, imputation);
- accounting inputs;
- accounting outputs estimation; and
- accounts validation

The program of work is an opportunity to adapt these elements to the needs of each country for all the phases of GSBPM.

6.4 Research, development and experimentation

An important step is to carry out extensive experimentation to test whether methods and concepts are appropriate for the nature of the data available. The SEEA-EEA provides a core measurement framework, but has not yet developed to the point where all methodological issues have been resolved and universal compilation guidelines can be provided. Issues that require further experimentation include:

- Accounting classifications[21], with standardised item definitions and measurement methods
- Country specific classification of ecosystem assets
- Units for ecosystem accounting
- Environmental indicators and aggregates
- Upscaling and downscaling
- Valuation
- Validation data and specific quality criteria need to be developed to formally track progress

These methodological issues will be addressed in collaboration with an international community of practice on ecosystem accounting. This can be enhanced by considering the pilot accounts as experiments, in which concepts, classifications and methods are tested and improved in successive iterations. Different options, for example, for classifications or data sources could be applied in parallel and evaluated.

Accounting architecture

It is important to check the timely availability of the micro-data form the primary and secondary sources and the time available for the processing. A part of the experimentation should be a check of the design with the business architecture and the software architecture to get an expert view on the consequences for the IT-environment (GIS capacity, running time, storage etc.). If the experimentation shows bottlenecks, one must make sure that they can be resolved for acceptable costs before the next phase can start. Based upon the adapted design, the experimentation, the estimated costs and benefits, a decision must be made whether the programme is feasible and acceptable for all involved partners.

Information and decision support tools and architecture

Outside of traditional statistical systems there are many systems in place for the collection and collation of data for decision making. These include geographical information systems, biophysical models, agency data based, business and land registers and taxation registers.

Many of these are amenable to producing data that can be used for environmental-economic accounting but may require further work or adaptation. This area of experimentation is important because there are significant opportunities to leverage of current system and save resources.

It is important that experimentation has clear links with policy and decision making in order to demonstrate the benefits of change. Examples may include:

- The specification of ecosystem assets and services used in payments for ecosystem services programs[22]
- Land offset programs for environmental purposes[23]
- Land use change programs for carbon sequestration[24]
- Trade-offs between optional uses of land in land use planning
- Setting priorities for conservation areas

[21] Accounting classification enables the translations between existing classifications.
[22] http://www.depi.vic.gov.au/environment-and-wildlife/environmental-action/innovative-market-approaches/ecomarkets
[23] http://www.trustfornature.org.au/
[24] http://www.un-redd.org/aboutredd/tabid/102614/default.aspx

Moving from experimentation to (national) production

Case studies, specialized national statistical collections, sub-national collections and experimental accounts all offer opportunities for scaling up to national-level GBSPM-compliant statistical processes. Whether or not these have been conducted according to Phases 1 through 7 of the GSBPM, there will still be effort required to ensure that these collections are brought into compliance in terms of quality, consistency in concepts, resourcing and long-term planning. The recommended approach to accomplishing this is for the NSO to conduct an assessment of a candidate data collection with respect to quality and coherence with the SEEA. In the case of well-established collections, the project team will need to decide how the collection may be adapted to the national standard without affecting its original purpose. For example, crosswalks may need to be developed for classifications and more stringent quality guidelines and documentation may need to be developed. At this stage, the project team is in a position to produce a work plan that specifies the timelines, resources required and expected outputs.

This scaling up of existing work should be seen as a national strategic investment, since it will (a) make a new data source available to address national policy priorities at a relatively low cost, (b) improve the consistency and coherence of existing data collection activities and (c) provide new uses and users for existing data.

7 NP-AEEA – INVESTMENT LOGIC FRAMEWORK (ILF)

The Investment Logic Framework (ILF) provides a structured approach to analysing the suite of optional activities that may be undertaken to achieve the desired outcomes (See Figure 2 below). The ILF should not be seen as a series of steps to be followed consecutively but as a key elements that are essential to the effective delivery of outcomes.

Figure 2. Investment Logic Framework

Participation and Enabling Factors – It is important to identify those that need to participate and start engagement early. Participation is central to the mainstreaming of environmental-economic accounting and achieving buy-in and engagement. Often an assessment of participation and enabling factors occur together. Enabling factors generally require some type of change which participants have to undertake and or adopt before statistical development activities commence. It may also require the allocation of resources in order to achieve an enabling factor so it is important for participants to be clear from the outset what their involvement may mean.

Activities and Outputs – The program of work is made up of series of activities that lead to a number of outputs. Activities are elements of work and outputs are visible products of that work. In order for one output to be achieved may require several activities. It is important to ensure that each activity can be linked to an output to ensure the relevance and timing of activities and finally outputs can then be linked to impacts and outcomes.

Impacts and Outcomes - Impact evaluation measures the difference between what happened with the programme and what would have happened without it. It answers the question, "How much (if any) of the change observed occurred because of the programme or activities?" Outcome evaluation measures the programme results or outcomes. These can be both short and long-term outcomes. The rest of this section provides further details of how the ILF can be applied in implementing the NP-AEEA in Bhutan.

7.1 Participation and enabling factors

Several Ministries in Bhutan are involved in providing and using sustainable development information and should be considered stakeholders in implementing the NP-AEEA:

- The National Environmental Commission (NEC) would both be a user and supplier of information to the implementation of the NP-AEEA. It is the focal point for the CBD and has expertise in collecting, integrating and publishing environmental statistics in the form of Environmental Outlook reports.
- The National Statistical Bureau (NSB), given their substantial expertise in national accounting as well as in statistical quality assessment and production systems, would take a lead role in implementing the NP-AEEA. It has experience in the development of the National Accounts as well as in applying statistical quality guidelines and developing statistical production processes.

It collaborates across the government to produce the National Accounts and Statistical Yearbooks.

- The Ministry of Agriculture and Forests (MAF) is an important information provider for land cover and soil data, as well as a potential user of coherent land and water accounts. It is leading the efforts to produce a forest inventory and has experience in payments for ecosystem services.
- The Gross National Happiness Commission is an important supporter and user of coherent environmental-economic information. It responsibilities include the development of the Five Year Plans.
- The Ministry of Finance, given their interest in fiscal responsibility and public expenditures (including environmental impacts of national policies), is an important supporter of implementing the NP-AEEA.
- The National Water Board (NWB) could benefit from the development of a coherent water account for the country as it is in the process of preparing a plan on the use and protection of water resources.
- The Ministry of Economic Affairs (MOEA), which includes the Department of Meteorological and Hydrological Services, is an important information provider and user of integrated environmental-economic accounts.

The Royal Society for the Protection of Nature (RSPN) is an important stakeholder in that they hold data on biodiversity and ecosystems and would benefit from integrating these within a statistical production process. Country offices of the World Bank, FAO, UNEP and UNDP also have an interest in promoting and using the NP-AEEA to further their objectives with respect to sustainable development and green economy in Bhutan.

7.2 Planning and coordination

The NP-AEEA provides a common, cost-effective and sustainable statistical infrastructure for producing statistics to support and integrate the statistical production aspects of these programs into the National Statistical System. To accomplish this, the implementation of the NP-AEEA can leverage on the existing institutional mechanisms, but will also require senior and technical oversight, and governance and funding mechanisms.

Planning and coordinating the implantation of the NP-AEEA will require a high-level SEEA Steering Committee to be established. This would provide a forum for senior representatives of core stakeholders: the NSB, NEC, MAF, and Gross National Happiness Commission and the Ministry of Finance to set priorities and coordinate the work on environmental-economic accounting. The scope of the Steering Committee could be expanded to include other stakeholders to address broader issues of providing supporting information for sustainable development, green economy and climate change. A broader committee could also include: the NWB, MOEA and the RSPN.

The SEEA Steering Committee would be most effective by coordinating closely with other national data integration initiatives such as responding to the SDGs, producing the Environmental Outlook and NBSAPs and aligning the production of indicators for the Five Year Plan.

The Steering Committee would need to regularly, around four (4) times per year initially (for the first 1-2 years) and less frequently after that (2 times per year).

Terms of Reference for the Steering Committee would need to be developed. Key tasks would be to:

- Develop and endorse the NP-AEEA within the government and with relevant international agencies,
- Coordinate with relevant data collection and capacity building activities,
- Ensure the establishment and effective function of Technical Working Groups (described below),
- Ensure that the resources necessary for the production of the accounts are available, and
- Monitor the progress towards the production of priority environmental-economic accounts and related outputs (spatial datasets, collaborative databases, indicators, case studies).

For each priority environmental-economic account and the accounting aggregates a Technical Working Group comprised of technical experts from relevant institutions will need to be established. This would be four groups for:

- Land Accounts (by ecosystem type including forests and agricultural land, land use and ownership) – building upon the 2010 Land Cover map but looking into opportunities to regularly (say every 5 years) update the map and produce an up-to-date Land Account;
- Water Asset Accounts; Water Supply and Use Accounts;
- Carbon Stock Accounts;
- Ecosystem service accounts (especially for flood control, erosion control and carbon sequestration);

In view of the technical capacity and human resources available in Bhutan, there is a need to discuss and decide, in the first phase of the NP-AEEA project, which accounts would be a priority and what would be an appropriate time to start with developing each account.

The composition of each technical working group will need to reflect the particular account being developed, but in general would need to contain representatives from the physical sciences, ecology, economics, accounting and statistics. The group of statisticians can be viewed more generally as ensuring on-going production of data by government. The main government agencies responsible for the collection, management and distribution of data relevant to the account would need to be represented.

Each of the Technical Working Groups would need to meet regularly, and probably in the order of once per month in the first 1-2 years, and probably less frequently after that (3-4 times per year). The focus of the work is the production of pilot accounts, with a view to establishing the technical processes for the regular production and use of accounts within government. This will be accomplished initially by inventorying available data, assessing its quality, identifying gaps, and integrating the data into a common spatial infrastructure. Priority data gaps could then be filled based on the most feasible approach (e.g., new data collection, adaptation of existing data, adaptation of global datasets).

At least once a year, all Technical Working Groups should come together to report progress and share experiences.

7.3 Activities and Outputs

7.3.1 Building priority accounts based on policy needs

The need for a range of environmental and ecosystem accounts was identified after a review of the major policy documents and discussions with a range of stakeholders. The link between policies, accounts and agencies is shown in **Table 1**, below.

Table 1. Overview of policies and accounts relevant to environmental-economic accounting in Bhutan

Type of account or aggregate	Policy or issue	Agencies
Land Account	• Eleventh Five-Year Plan (2013-2018) • Forest and Nature Conservation Act • National Environment Protection Act • National Forest Policy • Biodiversity Act • Aichi Target 2 • SDGs	NSB, NEC, MAF, MEA, RSPN
Water Asset, Supply and Use Account	• Eleventh Five-Year Plan (2013-2018) • Integrated Water Resources Management Plan • Aichi Target 2 • SDGs	NSB, MAF, MOEA, NWB
Carbon Stock, Supply and Use Account	• Eleventh Five-Year Plan (2013-2018) • Green Economy	MAF, NSB, NEC
Ecosystem Services Accounts (flood control, erosion control and carbon sequestration)	• Eleventh Five-Year Plan (2013-2018) • Forest and Nature Conservation Act • National Environment Protection Act • National Forest Policy • Biodiversity Act • Aichi Target 2 • SDGs	NEC, NSB, RSPN, NWB, MAF

There are overlaps between the accounts of the SEEA Central Framework and the SEEA Experimental Ecosystem Accounting and in particular, the water and land cover accounts. In this, the concepts underpinning the accounts and the structure of the accounts are the same, but for the SEEA-EEA they are applied in a spatially explicit manner, using, where appropriate, maps to analyse ecosystem services. Progress on the accounts of the SEEA Central Framework is needed and will be extremely beneficial to the development of ecosystem accounting in Bhutan.

The priorities identified for the development of environmental-economic accounting were:

- Land Accounts (by ecosystem type, especially for forested land and land ownership),
- Water Asset, Supply and Use Accounts,
- Carbon Stock, Supply and Use Accounts,
- Ecosystem Service Accounts (especially for flood control, erosion control and carbon sequestration)

Pilot accounts would be progressively produced and refined from mid-2017. Following the pilot production of each of the four priority accounts, the aim should be to produce each of them again in two more consecutive years (i.e. in 2018 and 2019 or 2019 and 2020) and well as to produce a publication integrating all of the pilot environmental accounts.

Ensuring the use of the accounts in government and other decision-making process will be addressed in a number of ways. Until the production of the first pilot accounts, the primary method will be engagement with policy-makers at different levels via the Steering Committee and Technical Working Groups. It is important that these first pilot accounts are seen as a proof of concept that addresses the specific needs of one or more stakeholders. After the pilot account accounts are produced, discussions on the possible applications of the accounts, including any additions or refinements, will be held directly with key government agencies. In addition, workshops to address each account will also be held.

7.3.2 Capacity building

Both human resources and infrastructure will need to built-up to develop, implement and regularly produce and use environmental-economic accounts in Bhutan. A key part of the capacity building will be learning-by-doing via the production of pilot accounts.

In this, the building of both human resource and statistical infrastructure would occur in the first 1-2 years, with the pilot accounts produced in 2-3 years.

7.3.3 Human resource capacity

There will need to be some general training on environmental-economic accounting as well as more specific training on each of the accounts and the primary data sources used. The general training would occur as soon as possible in 2016, with more specialised training for each of the four types of accounts to follow in the second half of 2016. For example:

- Workshop on water accounting
- Workshop on land accounting
- Workshop on ecosystem service accounting
- Workshop on carbon accounting

Subsequently, additional detailed training and engagement is likely to be needed in 2017 as the production of the pilot accounts and aggregates draws nearer (i.e. from mid-2017).
In addition to in-country training, a range of other capacity building activities should be considered including:

- Government officials and other stakeholders participating in relevant international meetings such as the planned regional workshops on environmental-economic accounting;
- Use of distance or on-line learning; and
- Placement of project staff in countries or international agencies with existing environmental-economic accounting programmes.

7.3.4 Infrastructure

Ensuring that the account developers have the necessary information technology and data to support the development of accounts will also be important. A specific need of the NSB is to augment their expertise and information technology needed to integrate the spatially-referenced environmental information of other agencies with their social and economic information. A geographic information system with sufficiently trained operators and managers is essential to conducting much of this work.

As part of the NP-AEEA, access to remote-sensing data will also be needed. While not infrastructure per se, the data would be a requirement for the development of environmental-economic accounts, in particular for the Land and Ecosystem Service Accounts. It would also be essential for the development of condition and biodiversity accounts. Rather than developing in-house capacity for this, NSB could develop the required data in collaboration with agencies that already have experience in remote sensing (e.g. the Soil Services Centre).

7.4 Impacts and Final outcomes

Link impacts to policies to activities

Whereas activities and outputs are tangible and generally observable, the impacts and outcomes are more difficult to observe. However, the impacts are important because they are the changes you expect as a result of the activities.

The following points are a high-level assessment of the impacts linked to the activities.

Table 2 Linking activities to impacts

Activities	Impacts
Building priority accounts based on policy needs	Providing Ministers and their agencies with empirical evidence of changes resulting from sustainable development policies Improved knowledge on ecosystems and well-being Better policies, decisions on trade-offs between development and conservation Foundations to build integrated indicators on sustainable development
Capacity building Human resources	The ongoing capability to integrate environmental-economic information into government decision making Training for agency and academic staff to support the ongoing implementation of environmental-economic accounts

Infrastructure	A civil service and civil society that is informed about environment and development The ongoing cost effective production of environmental-economic accounts that meet the needs of policy in a timely manner Improved statistical collaboration between sectors and agencies

The outputs are expected to contribute to the needs for a more integrated National Statistical System and a more engaged and better-coordinated body of stakeholders. The contribution of the project to the sustainability of Bhutan's development initiatives depends on many factors, including unforeseen circumstances and events beyond the control of the NP-AEEA. It has been the experience of the international statistical community that a robust and flexible National Statistical System is an important tool in adapting to future uncertainties and future data needs.

8 CONCLUSIONS AND NEXT STEPS

8.1.1 Next steps

The focus of the NP-AEEA is on medium-term (3-5 year) activities that will produce substantial new information to address Bhutan's sustainable development policy priorities. This is the first stage of creating a common, cost-effective and sustainable statistical infrastructure. Maintaining the momentum generated by these medium-term activities by new data collection and continual improvement will require more than specific funding opportunities. It will also require embedding the activities into the functions of government and national development plans.

The NP-AEEA provides the foundations to write proposals that provide full details for each activity and the funding required. The Plan contains many of the elements needed to write a proposal including: the policy priorities, the needs assessment and a set of activities that will advance environmental economic accounting.

Opportunities for funding come from many different sources: national initiatives, international agencies, national development agencies and the refocusing of current work. Such opportunities may be identified by anyone familiar with the plan including senior and technical staff, planning and environmental agencies and the NSO. It is therefore important that all stakeholders are familiar with the plan and bring such opportunities to the attention of the lead agency. To increase these opportunities it is important that the plan is summarized and presented at relevant meetings and made available to all agencies and published on the Internet.

To progress from a plan to specific proposals requires:

- Adaptation of the NP-AEEA to the needs of the sponsor and funding available; and
- Additional detail on participants, implementation, timelines, deliverables and budget.

8.2 Adaptation of the NP-AEEA to the needs of the sponsor

Most sponsors will indicate their interests in funding projects by distributing a Terms of References (TORs) or Requests for Proposals (RFPs). This will be based on the sponsor's vision of what is required.

The interests of sponsors may be less comprehensive and integrated than those covered in the NP-AEEA. Generally, sponsors are looking for proposals that focus on specific aspects of environmental-economic accounting, such as biodiversity, ecosystem services, mapping, agriculture, etc. They may also be interested in specific ecosystem types: oceans, forests, rivers or ecological topics such as desertification, pollution or species loss. They may be looking to support feasibility studies, capacity building or valuation.

The NP-AEEA provides the foundations for most of the above proposal types and presents them as an integrated package. It also emphasizes the importance of a strong statistical infrastructure so that the results of any project will contribute to building technical, institutional and statistical capacity. Although the need to strengthen the National Statistical System may not be mentioned in a sponsors TOR or RFP it is in the country's national interest to emphasize this in proposals.

A TOR or RFP will also suggest a maximum amount of funding for projects. Furthermore, sponsors often require co-funding. That is, a country is expected to contribute a proportion of the costs of the entire project. Co-funding may sometimes be stated in terms of "in-kind" contributions of human and other

resources. How much funding is available and the willingness of national stakeholders to co-fund a project will determine which aspects of the NP-AEEA are included in any given proposal.

8.3 Additional details

The amount and nature of the detail contained in a proposal also depends on the expectations of the sponsor. Ideally, the proposal will link the expectations of the sponsor with the needs of the country.

8.3.1 Participants

The first step in developing a proposal is to assemble the team which may include departments, agencies and other stakeholders who will commit to participating in a project if it is funded. As noted above, this may also imply co-funding.

8.3.2 Implementation

The participants will need to come to an agreement on how a project will be implemented and how funds will be disbursed. For example, who will be the lead agency? What will be the governance structure?

8.3.3 Timelines

TORs or RPFs will usually specify the length of time for a project. If the funding is for one year, this will determine the nature of the activities and provide due dates for deliverables. It is important, not only for the proposal, but for the implementation of the project to divide the project into steps (e.g., preparation, assessment, data collection, analysis, report production, review and evaluation) and to allocate sufficient time to each step. The timelines are also important to coordinate the participation of stakeholders.

8.3.4 Deliverables

Generally, TORs and RFPs require a very clear specification of the deliverables that are expected. They could be very specific such as "an assessment of…", "a report on…", "a database of…", "training on…". Or, they could be less specific such as "improving decision making on…", "integrating…with…". In either case, it is these deliverables upon which the project will be judged. It is important to be very clear on what deliverables the sponsor is expecting.

Sponsors may wish to review progress during stages of the project. Sometimes payments are linked to progress at each stage. In this case, it is important to prepare documents that can be easily reviewed and show progress at each stage. For example, sponsors may wish to review a Table of Contents of a report, then an annotated outline and then a draft. Sponsors may also require structured progress reports as the project progresses. Resources for this planning, evaluation and reporting should be built into the proposal.

8.3.5 Budget

Within the funding limits of the project, it is important to estimate how much work can actually be accomplished. Costs that need to be taken into account are not only the salaries of core participants, but also the "overhead" of administration, capital equipment, data, translation (if necessary), travel, meeting venues, etc.

If this is to be a multi-year project, then a simple project plan (shown below) would help determine who is required at which stage and where other costed inputs are required. This is an opportunity to balance the year-to-year requirements. For example, an activity could be moved from one year to another if the project is expected to have the same cost for each year.

	Year																							
	2015				2016				2017				2018				2019				2020			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Stage	Prep		Short-term								Medium-term													
Work Package	head count																							
1																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								

FTE																								
Salary ($K)																								
Operations ($K)																								
Total ($K)																								
Annual ($K)						-				-				-				-				-		
Outputs																								

9 BHUTAN - NP-AEEA – INVESTMENT LOGIC FRAMEWORK