National Plan for Advancing Environmental-Economic Accounting (NP-AEEA)

-- Indonesia --

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1 Executive Summary

The purpose of this document is to link current Indonesian environmental-economic accounting initiatives and policy requirements with the 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 Report — Indonesia*** that has identified the policy priorities, stakeholders and capacity for Indonesia to engage in such development. It has done so by reviewing the most recent documents in collaboration with BPS (Statistics Indonesia), Bappenas (the Ministry of Planning), the Ministry of Finance, the Ministry of Environment and Forestry 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 support. It does so by:

(a) establishing the rationale for an integrated statistical system for sustainable development information;
(b) summarizing the priorities and opportunities in Indonesia for further improvement of the National Statistical System with a focus on SEEA;
(c) using an Investment Logic Framework (ILF), it identifies 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 Indonesia. The degree dependence of Indonesia's population on ecosystems for water, food, materials and employment is not well known. 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?

Indonesia has a unique opportunity to focus national and international efforts on addressing its sustainable development, climate change, biodiversity and green economy goals. There is increasing international interest in establishing integrated statistical systems for this purpose. The UN System of Environmental Economic Accounting (SEEA) has been recommended as international statistical standard and as the measurement framework for a variety of related international policy activities. The document is intended to focus the efforts of the NSO, the National Statistical System and other stakeholders, including international agencies, to develop a cost-effective, ongoing and effective statistical systems and related institutional mechanisms to address Indonesia's sustainable development policy objectives.

Indonesia's Medium-term Development Plan (RPJNM 2010-2014)[1] sets out eight development missions:

1. Realizing a society that has high morals, ethics, culture, and civilization, on the basis of the Pancasila (the official philosophical foundations of the Indonesian state);
2. Realizing a nation that is competitive;
3. Realizing a democratic society based on the rule of law;

[1] http://bappenas.go.id/files/5113/5022/6066/rpjmn-2010-2014__20121105135059__0.pdf.

4. Realizing an Indonesia that is secure, peaceful, and united;
5. Realizing development that is equitable and just;
6. Realizing an Indonesia that is balanced and sustainable;
7. Realizing an Indonesia as an archipelago nation that is self-reliant, advanced, strong, and that is based on the national interest; and
8. Realizing an Indonesia that has an important role in the international community.

Mission 2, **Realizing a nation that is competitive,** emphasizes the importance of developing quality and competitive human resources, building advanced infrastructure and strengthening domestic economy based on the competitive advantage of each region.

Mission 6, **Realizing an Indonesia that is balanced and sustainable,** further explains that this means "*improving the management of development that can maintain the balance among the utilization, sustainability, availability, and uses of the natural resources and environment, while still preserving the functions, carrying capacity, and comforts of life of today and in the future, through the utilization of space that is harmonious among the use for human settlement, for social economic activities, and for conservation purposes; increasing the economic uses of natural resources and the environment in a sustainable manner; improving the management of natural resources and the environment for supporting the quality of life; providing beauty and comfort of life, and increasing the preservation and utilization of the biodiversity as the basic asset of national development.*"

Mission 7, **Realizing an Indonesia as an archipelago nation that is self-reliant, advanced, strong, and that is based on the national interest,** emphasizes the importance of optimizing the utilization of Indonesia's marine resources in a sustainable manner.

Mission 8, **Realizing an Indonesia that has an important role in the international community,** focuses on "encouraging international, regional, and bilateral cooperation among nations, among groups, and among institutions in various fields".

The general theme of RPJNM (2015-2019) "*is aimed at the greater consolidation of development in a comprehensive manner in all fields by emphasizing attainment of competitiveness of the economy on the basis of competitiveness of natural resources and quality of human resources and in the increasing capability to master science and technology.*"

At the same time, there is an acknowledgement that to achieve these missions, there is a need to improve governance and to strengthen the infrastructure of the National Statistical System. Although this is not explicitly mentioned in the RPJMN, for the purposes of this Work Plan, the National Statistical System should also be considered a strategic component of this infrastructure. Furthermore, ecosystems should be considered critical "ecological infrastructure".

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 UN SEEA.

The first phase would cover a period of 6 to 8 months and would aim to establish the working groups and institutional arrangements required for developing the accounts, as well as a confirmation of currently identified priority accounts. These priority accounts, as identified by BPS in collaboration with other Indonesian stakeholders, are: (i) a national land account; (ii) a national water account; (iii) a national carbon account; and (iv) a pilot comprehensive ecosystem services account for one province.

In a second phase, the actual accounts could be developed with support from the Government of Indonesia and donor agencies as well as enhanced collaboration between the relevant Indonesian agencies and ministries. Depending upon the resources that could be made available the second phase would last between 2 to 3 years.

Capacity building and institutional coordination is a key element in both the first and second phase.

In a third phase, the accounts could be integrated in the national accounts production, depending upon the outcome of the second phase.

High level activities and impacts are listed below.

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 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	The ongoing capability to integrate environmental-economic information into government decision making
Human resources	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
Infrastructure	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
Development of key macro-economic aggregates	Provide Ministers and their agencies with empirical evidence linking government policies to sustainable development goals

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 (MA 2005, Rockström, Steffen et al. 2009, TEEB 2010, Cardinale, Duffy et al. 2012). 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 unsurprising that the demands from governments, international agencies and the general public for a response have been growing stronger and stronger (Rio +20, 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. We have much integrated information concerning national and global economic activity where, via the standard economic accounts and GDP, we have a strong understanding of our combined economic performance and history. On the social side, while the information is more diverse, we have relatively standardized approaches 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, our information set is far more disparate and a common understanding of the relevant issues is undeveloped. While we have much scientifically based data, 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 and lacking momentum. 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 (SNA). 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. In contrast, SEEA Experimental Ecosystem Accounting starts from the perspective of ecosystems and links ecosystems to economic and other human activity. Together, the approaches 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, firstly a global and country rationale for undertaking environmental-economic accounting is provided 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 Indonesia based on the assessment report and finally a summary of the key outcomes that could be achieved for Indonesia by implementing the NP-AEEA.

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

Thirdly, the details of a national program of work are outlined 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 Indonesia using the building blocks and methods outlined in part two. 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

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 is not appropriate 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

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

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 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 IEAG[5] 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".*

3.2 Country Perspective

3.2.1 The Policy Setting

Indonesia has a range of policy and other documents relevant to environmental-economic accounting. The main policy documents include:

- The Long Term Development Plan (RPJPN 2005-2025)[6] and Medium-Term Development Plans (RPJNM 2010-2014, 2015-2019)
- The Green Economy Program[7]
- The Law on Protecting and Managing the Environment (UUPPLH 2009)[8]
- The Spatial Planning Law (UUPR 26/2007)[9]
- OneMap[10] and OneData Programs
- The Indonesia REDD+ Program
- Gazetting forest lands
- The World Bank coordinated WAVES Indonesia project
- Initiatives on decentralization

[4] http://www.undatarevolution.org/.
[5] Independent Expert Advisory Group on a Data Revolution for Sustainable Development.
[6] http://rocana.kemenperin.go.id/index.php/rpjpn/rpjpn-2005-2025.
[7] http://www.unep.org/greeneconomy/AdvisoryServices/Indonesia/tabid/56278/Default.aspx.
[8] http://www.unhas.ac.id/pplh/wp-content/uploads/2012/12/UU_2009_32PPLH_1.pdf.
[9] http://www.bkprn.org/peraturan/the_file/UU_No26_2007.pdf.
[10] http://www.wri.org/blog/2013/05/conversation-nirarta-%E2%80%9Ckoni%E2%80%9D-samadhi-indonesia%E2%80%99s-forests.

The Medium-term Development Plan (2015-2019) emphasizes the importance of economic development through the improvement of food, energy and water security, the development of marine and ocean resources and the maintenance of bio-resources and environmental quality. Related social issues are also highlighted in terms of accelerated poverty reduction, regional and rural development, and disaster management. Given the size and diversity of Indonesia, "*regional development policies are directed at inducing the acceleration of development in the regions of Kalimantan, Sulawesi, Nusa Tenggara, Maluku and Papua, while maintaining the momentum of development in the Java-Bali and Sumatra regions*"[11]. The integrated nature of the objectives linking environment and economy suggests the need for integrated and coherent information, which the NP-AEEA can provide.

The Green Economy Program was launched by the Second United Indonesia Cabinet program as part of its sustainable development plan, which is pro-growth, pro-job, and pro-poor. The program promotes food security through sustainable agriculture, sustainable forestry management, efficiency and renewable energy usage, clean technology support, waste management, efficient and low carbon transportation management and green infrastructure development. Specific policies include reforms of subsidies for electricity industries to reduce greenhouse gas emissions, reforms of fuels subsidies making them more targeted, new policy instruments for the promotion of renewable energy such as geothermal and other clean energies, as well as incentives for industries that promote environmental friendly products. This program highlights the need for the NP-AEEA as a tool for policy makers to monitor progress to green development and as a source of data on land use.

The Law on Protecting and Managing the Environment (UUPPLH 2009) requires an inventory of all natural resources, and conducting Strategic Environmental Analysis (SEA)[12]. It also calls for all departments to develop economic instruments, one of which is environmental-economic accounting.

Indonesia's **Spatial Planning Law** (UUPR 26/2007) requires public participation in land use decisions. However, the lack of clarity in this law leads to confusion and conflict regarding land tenure. NP-AEEA land accounts can help establish a standard classification of land according to land cover, land use and ownership and to reflect these in publicly available maps through OneMap.

The OneMap Program: In Indonesia, there are several different institutes involved in the registration of land cover, land use, legal status of lands and land ownership (e.g. Bappenas, the line Ministries such as Forestry and Agriculture, District level administrators, the cadastre). Unfortunately, the data of these different agencies do not always match. Therefore, the Indonesian Government initiative OneMap aims to develop a generally agreed land cover, use and ownership data system. The One Map program is scheduled to release results in May 2015. The OneMap program is essential for the NP-AEEA project, because it will lead to an accurate map of land cover as a basis for ecosystem accounting.

The Indonesian REDD+ (Reducing Emissions from Deforestation and Forest Degradation) program: Given that the forests and, in particular, peatlands of Indonesia are important carbon storage reservoirs and that Indonesia is currently, after the US and China, the world's largest carbon emitter (in particular due to land use change) there is a high level of interest in REDD+ in the country, as well as within the donor community. Several REDD+ projects have been started now (requiring three

[11] http://bappenas.go.id/files/5113/5022/6066/rpjmn-2010-2014__20121105135059__0.pdf.

[12] This is an approach to environmental impact assessment that engages all stakeholders at the beginning of the project planning process to minimize negative outcomes rather than simply mitigating the negative impacts of planned projects.

permits per project including an ecosystem rehabilitation permit). The Norwegian-funded REDD+ program has identified eleven priority provinces for which basic carbon maps will be produced (together these provinces contain the large majority of forests and carbon stocks). The REDD+ program is relevant for the NP-AEEA project, because it will lead to up-to-date information on forest cover and status and carbon stocks. At the same time, the NP-AEEA project could inform the REDD+ program on co-benefits of REDD+ projects. This is a main issue in the design of REDD+ projects, since it would enhance the economic justification of these projects.

Gazetting forest lands: This is an essential step in land management in Indonesia, since there are different legal requirements for lands classified as forest and land classified for other uses including agriculture (which includes palm oil plantations). BIG (*Badan Informasi Geospasial*: the Geospatial Agency) has developed the spatial standards and is proceeding to mark and gazette 100% of the forest territory. Only 10% is completed so far. What is important is to demarcate the forest use boundary. On Indigenous Peoples' lands (IPs), government claims have been abolished following a judgement of the Supreme Court. This could lead to increased forestry and agriculture concessions on formerly protected lands. The NKB12[13] is an MoU among 12 Ministries to accelerate land reform including managing land use concessions, resolving conflicts and improving law enforcement. The NP-AEEA project can benefit from this program by obtaining information on forest lands and forest uses. It can also contribute coherent land data to support the development of land reform.

The World Bank coordinated WAVES Indonesia project. The Indonesia WAVES program's principal partner agency is Bappenas. The WAVES Steering Committee includes a wider range of stakeholders including, in addition to Bappenas: BPS, the Ministry of Finance and the Ministry for the Environment. WAVES has developed a set of priorities for supporting Indonesia with better recording of environmental assets. Priority actions include: assisting BPS to adopt the SEEA 2013 framework, support for Mineral and Water accounts, and support for further application of the Adjusted Net Savings approach. WAVES will also devote specific attention to the linking of statistical data development and policy use of these data. The NP-AEEA project would collaborate with WAVES through coordinating capacity building activities, and by coordinating through the same Steering Committee.

The overall emphasis in Indonesia on **decentralizing** powers to the province, regency (*kabupaten*) and district (*kecamatan*) level emphasises the need to engage all levels of government and all sectors of civil society in the NP-AEEA. Regulation and monitoring of land management is in the hands of several departments and agencies at the levels of regency, the Province and the National level. Decentralisation, initiated around the year 2000, has strongly affected and reorganised land regulation and land benefit sharing (e.g. tax) mechanisms. Land is a highly political issue in Indonesia, and the economic interests are large. A key item in the ongoing debate on how land can best be regulated, monitored and enforced is providing accurate and up-to-date information on land cover and land ownership.

3.2.2 Relevant Initiatives and Stakeholders

There are several additional specific initiatives aimed at strengthening the National Statistical System and improving information on sustainable development:

[13] Note *Kesepahaman Bersama*: Memorandum of Understanding. See http://dkn.or.id/en/nkb-12-kementerian-daan-lembaga-tentang-percepatan-pengukuhan-kawasan-hutan-indonesia/.

- BPS has published pilot SEEA accounts for minerals and timber (SISNERLING) as well as a general reports on environmental indicators and natural assets. The World Bank, though STATCAP/CERDAS[14] is supporting BPS in statistical capacity building.
- LHK has published a State of the Environment Report. To do so, it has developed some environmental-economic capacity in terms of linking environmental conditions with socio-economic drivers.
- Bappenas, the national planning agency, has specific responsibility for land management including land licenses and maintaining the cadastre (land registry). It is also concerned with monitoring the attainment of the Millennium Development Goals in Indonesia. Bappenas has included food and water security targets in the medium-term development plan (RPJMN) and is also the lead agency for monitoring progress towards green economic development.
- The Ministry of Finance has an interest in environmental-economic accounting to support its requirements to report on the financing of climate change initiatives and asset values of natural resources, especially sub-soil assets, forests and national parks.
- FORDA, the national forest research agency, together with LAPAN, the remote sensing agency, conducts the Indonesia Carbon Accounting System (INCAS) program to analyse carbon emissions based on land cover change. INCAS started in Central Kalimantan province, but is intended to be gradually scaled up to the national scale. It includes only carbon flows and stocks related to forests. INCAS is supported by Japan's Aerospace Exploration Agency (JAXA) to support Indonesia's Carbon Accounting Initiative.
- BPPT, the agency for the assessment and application of technology, conducts resource accounting for mining, forest and land suitability for agriculture.

Under the auspices of the Ministry for the Environment and Forestry and its regional offices, several studies have been done by Indonesia's universities on ecosystem services supply and valuation, focussing on services provided by specific ecosystems in the country, following a TEEB kind of approach.

Additional relevant international stakeholders include:

- UNORCID, the UN office for REDD+ coordination in Indonesia, is coordinating the implementation of REDD+ in Indonesia,
- The European Union is funding several departments on low-emissions capacity building and has suggested developing indicators of "GDP of the poor". Through DevCo, they also support Indonesia on policy development for sustainable production and consumption.
- Individual Green Economy initiatives are funded by development agencies of Australia, Denmark, Germany, Japan, the Netherlands, Norway, Sweden, the UK and the US.
- The Asian Development Bank, World Bank, Global Environmental Fund and UNDP also support several initiatives in the field of natural resource management.

Given the number and diversity of stakeholders, the NP-AEEA will provide a common platform to focus the National Statistical System on providing coherent data to address their reporting and monitoring requirements.

The former President of Indonesia was co-chair[15] of the *High-level Panel of Eminent Persons* to provide guidance and recommendations on the **post-2015 development agenda**[16]. A broad range of

[14] http://www.worldbank.org/projects/P106384/statistical-capacity-building-change-reform-development-statistics-statcap-cerdas?lang=en.

[15] http://www.un.org/sg/management/hlppost2015.shtml

consultations have been undertaken by the Government of Indonesia[17]. A coordinated assessment and response to the information needed to support the monitoring needs of the proposed Sustainable Development Goals has not yet be prepared nor cross-referenced with the information needs of national strategies and targets. Given the number of targets and indicators involved, it is timely to consider such an exercise.

As of June, 2013[18] Indonesia had not signed the National Capital Accounting communiqué that emerged from Rio+20. This document calls on governments, UN agencies, financial institutions and other international organizations to strengthen the implementation of natural capital accounting by implementing the SEEA. In addition, the achievement of Aichi Target 2 under the Convention on Biological Diversity was noted as specifically relevant to the advancement of environmental-economic accounting in Indonesia.

3.2.3 Summary

Given these policy priorities, stakeholders and current initiatives, Indonesia has conducted an assessment of data, institutional mechanism and technical capacity. This assessment will guide how these priorities will be 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 Indonesia Environmental-Economic Accounting Needs Assessment

Past and on-going work in Indonesia has already led to a number of project based institutional arrangements for the development and implementation of environmental accounting. These provide a sound basis for moving forward with further implementation and the regular production of a broader range of environmental-economic accounts.

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) enhanced institutional coordination within Indonesia and between levels of government and initiatives; (c) training and capacity building in environmental-economic accounting; (d) enhanced coordination with international and donor agencies; (e) addressing challenges of resourcing, data quality, access, technical capacity and statistical infrastructure; (f) the development of key macro-economic aggregates; and (g) immediately beginning work on priority accounts. These needs are expanded upon below:

- **A comprehensive environmental-economic accounting information system** to address national policy priorities including Green Economy, REDD+ and reporting on the SDGs. This is required to inform Indonesia's rapid land use change especially in terms of ownership and actual[19] land use. This includes the strengthening of BPS' current system of environmental-economic accounts (SISNERLING) to analyse revenue and investment decisions for key natural resources. The development of a land account would inform land use and planning issues. A water account would address issues of regional water scarcity and flood control.
- **Enhanced institutional coordination within Indonesia and between levels of government and initiatives**: The Assessment Report notes that a high-level steering committee has

[16] http://www.un.org/en/ecosoc/about/mdg.shtml.
[17] http://www.ukp.go.id/informasi-publik/cat_view/35-post-2015-development-agenda
[18] http://www.wavespartnership.org/sites/waves/files/images/NCA%20supporters%20060613.pdf
[19] Land is often not used as designated. Reporting on use is not required for certain areas, such as the IPs.

already been established as an umbrella coordinating mechanism for SEEA, WAVES and SEEA-Agri. The committee includes Deputy Heads of BPS, Bappenas, LHK and the Ministry of Finance. There is a need to expand this committee to include a wider range of stakeholders including the Ministry of Agriculture, the Ministry of Marine Affairs and Fisheries, BPPT, and LAPAN, among others. There is 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.

- **Training and capacity building in environmental-economic accounting** within BPS and policy departments, such as Bappenas, LHK and the Ministry of Finance, Forestry and Public Works. There is a need to provide not only basic understanding of the concepts, but also to engage specialists in professional development through joint activities, staff exchanges and in-depth training on compilation, analysis and valuation.
- **Enhanced coordination with international and donor agencies:** International sustainable development and green economy initiatives tend to engage specific stakeholders. The measurement aspects could be better coordinated through the SEEA Steering Committee in close collaboration with OneMap and OneData.
- **Addressing challenges of resourcing, data quality, access, technical capacity and statistical infrastructure**: There is a need to develop spatial analysis capacity within BPS and to enhance the resources available for environmental-economic accounting in BPS, LHK, the Ministry of Finance, Bappenas and other stakeholders. This includes not only training and capacity development, but also allocating staff time to pilot projects, data acquisition, data sharing, IT infrastructure development (e.g., data warehouses, collaborative spatial platforms), case studies and research.
- **The development of key macro-economic aggregates** such as Adjusted Net Savings for macro-economic sustainability indicators and the economic valuation of natural capital: This will require not only technical capacity development and resourcing, but also collaboration among data providers to obtain the necessary data to produce reliable estimates.
- **Immediately beginning work on priority accounts**: Land, water, carbon and selected services (especially flood control and carbon storage) are required at a national level. More comprehensive accounts could be piloted at the provincial level. Feasibility studies on biodiversity and ecosystem condition accounts could also be initiated.

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 and key aggregate macro-economic statistics for sustainability indicators.

To accomplish this, it will be necessary to engage relevant stakeholders, including data providers, users and supporters including research organizations, academic institutions, international agencies and NGOs. A phased approach is proposed.

3.3.1 First Phase

The first phase would cover a period of 6 to 8 months and would aim to establish the working groups and institutional arrangements required for developing the accounts, as well as a confirmation of currently identified priority accounts. These priority accounts, as identified by BPS in collaboration with other Indonesian stakeholders, are: (i) a national land account; (ii) a national water account; (iii) a national carbon account; and (iv) a pilot comprehensive ecosystem services account for one province.

A first outline of these accounts is provided below, and further details on the exact arrangements and scope of the outcomes would be established during the first phase.

3.3.2 The Land Account

The **Land Account** is the basis for the ecosystem accounting approach. The Land Account needs to be connected to the currently ongoing national OneMap program (embedded in the overarching OneData program). These programs aim to establish a unified spatial information base that can be used for decision making throughout the country, using information from the various relevant line ministries, in recognition of the frequently overlapping and/or sometimes contradictory information on boundaries between land cover and/or administrative units (e.g. district or concession boundaries) found in the various spatial information systems of the different ministries. Note that these data issues differ strongly between the different islands of the archipelago, with relatively more uncertainty on spatial boundaries in for instance Kalimantan and Papua.

The OneMap program is led by the Indonesia Geospatial Unit ("BIG") in collaboration with a number of other ministries including Environment and Forestry, Agriculture and the national cadastre. Whereas BIG has the required mapping and spatial data handling capacity, BPS could add specific expertise in terms of developing the Land Accounts on the basis of these spatial data. In particular, relevant BPS expertise is required to ensure aligning the spatial units of the account with accounting units as identified in the SEEA framework, data quality assurance, statistical data reporting and communication and developing the land accounting tables.

The specific scope of the account (including land cover and/or land use and/or land ownership, spatial (land cover/land use) units to be included) needs to be decided in the first phase. A critical component is also ensuring that land accounts are produced over a number of years (and potentially going back in time) in order to provide information on trends in land cover, use and/or ownership. In addition, the land accounts could provide additional data that can be combined with census data in order to enhance economic production data quality in general. For instance, land accounts also provide information on the amount of hectares on which certain crops are cultivated, which can be compared with the census data.

3.3.3 The Water Account

The **Water Account** has also been selected as potentially relevant by national stakeholders. Water accounts may include both water quantity and water quality aspects. Indonesia has a humid climate with ample water resources in most parts of the country. Yet locally, water shortages occur, in particular in urban areas.

It is important that the water accounts are well aligned with the national environmental information system of the Ministry of Environment and Forestry. This ministry monitors river water quality in around 70 rivers, and involving 21 variables. Five of these are regularly reported in the state of the environment reports (BOD, COD, TSS, E coli, pH).

It needs to be examined if also other relevant parameters (e.g. heavy metal concentrations), which are currently measured but not systematically reported, should be included in the accounts. Water availability varies strongly throughout the archipelago, and water shortages (compared to demand), for specific uses such as drinking water or irrigation water, occur in some areas (including urban areas as Jakarta and the drier parts of the country). It needs to be examined how water availability and use can be recorded, at what level of detail, for the country.

3.3.4 Carbon Accounts

Carbon Accounts are very policy relevant in Indonesia, given major efforts undertaken in the country to reduce greenhouse gas emissions. Emissions emerge from both land use change including peat drainage an industrial and residential emissions, with emissions from peat a significant source. Indonesia is the tropical country with the largest amount of peatlands world-wide.

However, there is still uncertainty on the exact locations of some of the peatlands and the degree to which they are drained (there is a strong relation between drainage level and per hectare CO_2 emissions from peat degradation including from both peat oxidation and fires). Indonesian forests are an important sink for atmospheric carbon.

The carbon account would have to be closely aligned with the recently developed Indonesia Carbon Accounting System (INCAS) that is developed by FORDA as main implementing agency in collaboration with among others LAPAN and focussing on carbon in vegetation biomass (hence not including emissions from peat drainage and industrial and household emissions).

The BPS business register under development could be of major support to this, as well as the BPS specific expertise with data quality assurance and monitoring. Given that the mandate for monitoring carbon emissions and sequestration is with the Ministry for Environment and Forestry there is a need, in the first phase, to discuss the institutional set-up guiding the potential collaborative data collection and reporting efforts. There is also a need to consider data shortages, which may lay, for instance, with a lack of accurate data on specific peat drainage patterns and resulting emissions, and how these could be addressed.

Involvement of BPS in the carbon accounts could focus on bringing together carbon data from different sectors and ministries, as well as supporting data quality assurance and reporting. For instance, a full carbon reporting mechanism would also include carbon emissions from drained peatlands, which are a major source of carbon emissions in Indonesia, forest fires, industrial and residential emissions, and agricultural emissions. Relevant ministries include the Ministry of Environment and Forestry, Public Utilities (DPU, in relation to emissions from peat), and Agriculture (emissions from livestock and croplands), as well as research organisations such as FORDA, BIG and LAPAN.

3.3.5 Ecosystem Services Accounts

In terms of the **Ecosystem Services Accounts**, the size and diversity of the archipelago makes ecosystem accounting including its spatial component a challenging task. The potential feasibility and policy relevance has, nevertheless, been shown with an (academic) case study in Central Kalimantan province (Sumarga, Hein 2014, Sumarga, Hein et al. 2015). This pilot offers specific experience with the spatial mapping of ecosystem services in an accounting-consistent manner, however further work is needed to examine how this and other relevant information from case studies could be integrated in an accounting setting.

As stated by BPS, it is important to follow a realistic and incremental approach. This could involve, as a first step, either the analysis at national scale of a limited set of ecosystem services not requiring extensive spatial modelling, and/or at a provincial or regional scale the analysis of a more comprehensive and/or complete set of services (such as the hydrological service which require spatial hydrological modelling). Note that the INCAS carbon account applies a spatial approach which the ecosystem accounts can build upon. At the national scale, biodiversity and ecotourism could be potential services to be considered. Hydrology (water supply, flood retention) and ecosystem condition accounts could be tested at a provincial or watershed scale.

3.3.6 Second Phase

In a second phase, the actual accounts could be developed with support from the Government of Indonesia and donor agencies as well as enhanced collaboration between the relevant Indonesian agencies and ministries. Depending upon the resources that could be made available the second phase would last between 2 to 3 years.

Capacity building and institutional coordination is a key element in both the first and second phase.

Previous experience has shown that a feasible approach involves bi-annual hands-on training workshops where the selected team (five to ten people, of which at least of which are three full-time) of accountants, economists and (spatial) modellers that would construct the accounts would be trained on the basis of the progress they have made and the specific issues they are experiencing.

3.3.7 Third phase

In a third phase, the accounts could be integrated in the national accounts production, depending upon the outcome of the second phase.

This phase would require that data providers regularly provide updated data to the accounts compilers, that staff are in place to conduct quality assessment and compilation of the accounts, and that the results are regularly published.

4 NP-AEEA – High Level Outcomes

It is important to link the proposed activities with their ultimate outcomes. This section summarises the key outcomes that could be achieved for Indonesia by adopting and implementing the NP-AEEA. In the section 'NP-AEEA – Investment Logic Framework', a program of activities is detailed showing the timelines and steps needed to achieve the outcomes:

- A comprehensive environmental-economic accounting information system that responds to the requirements of information on sustainable development and green economy.
- Enhanced institutional coordination within Indonesia and between national and provincial governments for the advancement of SEEA, including ecosystem accounting.
- Increased training and capacity building in environmental-economic 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
- Key aggregate macro-economic statistics, such as Adjusted Net Savings, and
- A set of priority accounts, namely for land, water, carbon and selected ecosystem services such as, potentially, flood control and ecotourism. As well, feasibility studies for biodiversity and ecosystem condition accounts would be conducted.

5 Program of Work Building Blocks

This section and the following section on 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 statistics is supported by three main building blocks: (1) the SNA, SEEA CF and SEEA EEA as the conceptual frameworks, (2) supporting institutional

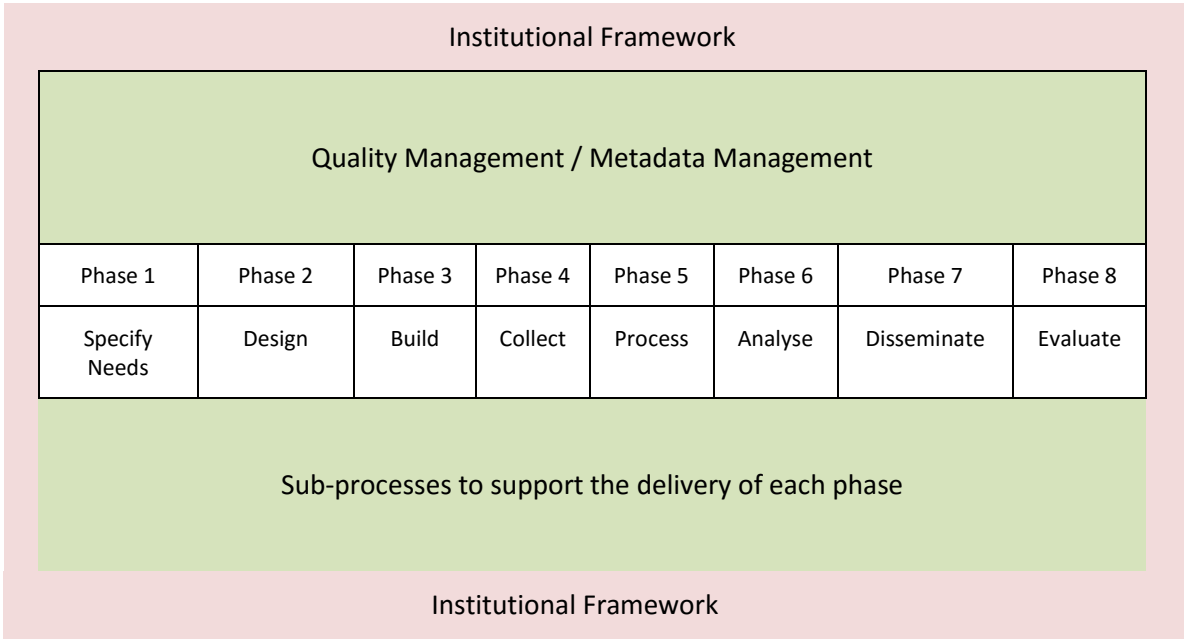
arrangements and (3) an integrated statistical production process[20]. The building blocks are interlinked and mutually reinforcing structures for setting up integrated statistical systems.

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 (high-level outcomes) of the NP-AEEA are:

1) Mainstreaming Environmental-Economic Accounting
2) Rationalise and Integrate Institutional Arrangements
3) Integrate the Data, Tools and Statistical Production Process
4) Ecosystem Accounting Experimentation[21]

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 build on SEEA EEA. The building blocks are combined with the Generic Statistical Business Process Model (GSBPM[22]) shown in **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.

Figure 1 Generic Statistical Business Process Model (GSBPM).



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.

[20] 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).
[21] Experimentation has been added as an additional building block in support of SEEA EEA and the experimental nature of work needed.
[22] http://www1.unece.org/stat/platform/display/GSBPM/GSBPM+v5.0

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. In addition, some sub processes will be revisited a number of times forming iterative loops, particularly within the Process and Analyse phases.

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 upon below followed by a discussion of methodologies to support their implementation.

5.1 Mainstreaming 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 energy, minerals, 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

There is much 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 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.

Experimentation also serves as important vehicle for achieving the mainstreaming of ecosystem accounting. During the experimentation phase agencies less familiar with ecosystem accounting can be involved and grow to understand how demands for data are changing and how the accounts can be tailored to their policy needs.

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. This section provides a brief overview of some of the methodological approaches and options that may be considered when formulating a program of work to that delivers on (achieves) the building blocks and the longer term aim of country.

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[23], 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 institutes 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 mutual gains of improving integration within the National Statistical 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.

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

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 on 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[24], 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

[24] Accounting classification enables the translations between existing classifications.

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.

6.4.1 Accounting architecture

It is very 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 solved (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.

6.4.2 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 databases, 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 very important because there are significant opportunities to leverage on current system and to 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
- Land offset programs for environmental purposes
- Land use change programs for carbon sequestration
- Trade-offs between optional uses of land in land use planning
- Setting priorities for conservation areas

6.4.3 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 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, and **Figure 4** in Section 9 for more detail). 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.

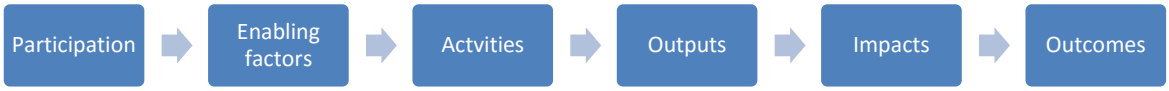


Figure 2. Investment Logic Framework

Participation & 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 may require changes in institutional arrangements before statistical development activities commence. Additional resources may need to be allocated to achieve an enabling factor, so it is important for participants to be very clear from the outset what their involvement may mean.

Activities & 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 be linked to impacts and outcomes.

Impacts & 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.

7.1 Participation and Enabling Factors

7.1.1 Coordination with Development Partners in Indonesia

Several government institutions in Indonesia are involved in the management of the environment:

- The national planning agency (Bappenas)
- Statistics Indonesia (BPS)
- The Ministry of Environment and Forestry (Kemen LHK)
- The Ministry of Finance (DepKeu)
- The Remote Sensing Agency (LAPAN)
- The Agency for the Assessment and Application of Technology (BPPT)
- Ministry of Agriculture (DepTan)
- Ministry of Marine Affairs and Fisheries (KKP)
- The Bureau of Logistics (Bulog)
- Ministry of Home Affairs (KDN)

- Ministry of Foreign Affairs (DepLu)
- Others: Ministry of Culture and Tourism (BudPar), Disaster Management Agency (BNPB), The Ministry of Agrarian Affairs and Spatial Planning (National Land Agency ,BPN), the Bank of Indonesia (BI), The Department of Energy and Minerals (EDSM), The Ministry of Health (DepKes), Public Works (DPU), Spatial Planning and Coordination Agency (BKPRN).

Currently, only Bappenas, BPS, LHK and the Ministry of Finance are engaged in the SEEA Steering Committee. To create appropriate links to priority sustainable development and green economy initiatives, it will be necessary to engage the Ministries of Agriculture, and Marine Affairs and Fisheries (KKP), the technology agencies (LAPAN and BPPT) and the Bureau of Logistics as data providers and key users. To ensure sub-national participation, it is also necessary to engage the Ministry of Home Affairs (KDN). The Ministry of Foreign Affairs (DepLu) could be an important user of the environmental-economic accounts in terms of reporting internationally on progress in Indonesia on the SDGs.

International agencies, such as the World Bank, ORCID, UNEP, UNDP, the EU, the Asian Development Bank, and the GEF, and foreign development agencies are also essential partners to ensure that the NP-AEEA supports their sustainable development initiatives in Indonesia.

Universities and NGOs could provide valuable links with researchers and civil society. Both could collaborate in producing cases studies on the importance of ecosystem resources with respect to food security and poverty alleviation. Both are also important in the communications strategy to mainstream the SEEA.

7.2 Enabling Factors

The knowledge base for environmental-economic accounting exists in Indonesia. This has grown through several initiatives, such as the development of core SEEA accounts (SISNERLING at BPS) and the analytical work on linking environmental conditions with socio-economic drivers at LHK. This section examines the progress on environmental-economic accounting and the data available to enable the development and on-going production of environmental-economic accounts and the related data sources needed for them.

A range of projects already completed or that are in progress in Indonesia are directly relevant to environmental-economic accounting. Projects and activities identified include[25]:

- BPS
    - The System of Environmental Accounts (SISNERLING)[26] including minerals and timber
    - Sustainable Development Indicators[27]
    - Environmental Statistics (*Statistik Lingkungan Hidup*)
    - Marine and Coastal Statistics[28]
    - Survey of Green Behaviour of Households[29]

[25] See the assessment report for a more detailed discussion of each

[26] http://www.bps.go.id/eng/hasil_publikasi/sis_lingkungan_2008_2012/index3.php?pub=Sistem%20Terintegrasi%20Neraca%20Lingkungan%20dan%20Ekonomi%20Indonesia%202008-2012

[27] http://www.bps.go.id/eng/hasil_publikasi/flip_2011/9201003/index11.php?pub=Indikator%20Pembangunan%20Berkelanjutan,%202011

[28] http://www.bps.go.id/int/index.php/publikasi/20130432002

- LHK
  - The State of the Environment Report[30]
  - Producing land cover maps including forest types
- Bappenas
  - With Global Green Growth International: Green Growth Program[31]
- Ministry of Finance
  - Public expenditures on climate change
  - Asset values for natural resources, especially sub-soil assets, forests and national parks
- The Ministry of Agrarian Affairs and Spatial Planning (The National Land Agency, BPN)
  - Assess land ownership
- FORDA in collaboration with LAPAN
  - INCAS program to detail land cover change in collaboration with JAXA and FAO
  - Supports Indonesia's Carbon Accounting initiative
- BPPT
  - Resource accounting for mining, forest and land suitability for agriculture
- Geospatial Information Agency (Badan Informasi Geospasial, BIG)
  - Gazetting forest lands
- Ministry of Agriculture (DepTan)
  - The BBSDLP (Center for Agricultural Land Resources Research and Development) at the Department of Agriculture maps agricultural suitability, based on soil data (at 1:1M scale). The soil data are from ESDM (Department of Energy and Minerals)
- PKSPL (Agricultural University of Bogor - Center for Coastal and Marine Resource Studies)
  - Expertise in marine ecosystem services, drivers of change, and community dependence
- Government-wide
  - OneMap and OneData
- International development initiatives
  - World Bank, WAVES
  - ORCID, The Draft REDD+ Strategy[32]
  - UNDP, indicators for green economic development in Kalimantan

In addition, there are about 60 bilateral Green Economy[33] initiatives focussed on climate change, energy and eco-tourism. These include national and provincial/local initiatives, many of which are funded through bilateral arrangements with donor countries.

[29] http://www.bps.go.id/int/index.php/publikasi/20130432004
[30] http://www.menlh.go.id/status-lingkungan-hidup-indonesia-2012/
[31] http://gggi.org/wp-content/uploads/2013/10/A4-low-Indonesia-oct.pdf
[32] http://www.un-redd.org/Newsletter12/Indonesia_National_REDD_Strategy/tabid/5533/Default.aspx

The NP-AEEA provides a common, cost-effective and sustainable statistical infrastructure for producing statistics to support these programs. As well, these programs can be seen as sources of data.

7.2.1 Planning and Coordination

Planning and coordination of the implementation of the NP-AEEA would be most effective with a 3-level structure consisting of a senior Steering Committee, a middle management Technical Committee and working-level Technical Working Groups.

The existing SEEA Steering Committee would provide a forum for the core stakeholders, Bappenas (Chair), BPS (Secretary), the Ministry of Finance, LHK and BPN to coordinate their work on environmental-economic accounting.

The SEEA Steering Committee would be most effective by coordinating closely with other national data integration initiatives such as OneMap and OneData. This will ensure alignment with the objectives of the RPJPN, 5-year RPJNMs, the Government Work Plan (RKP), Strategic Plans (Renstra) and Work Plans and Budgets of Ministries (RKA-KL).

The Steering Committee would need to meet at least quarterly (four times per year) during the first two phases of the project and less frequently once ongoing accounts production is in place.

Terms of Reference of the Steering Committee would include:

- Give direction to the work of the Technical Committee,
- Ensure alignment with policy priorities (RPJNM, RKP, Renstra, RKA-KL),
- Develop, endorse and advocate the NP-AEEA within the government and with relevant international agencies,
- Ensure that the resources necessary for the production of the accounts are available by coordinating proposals for funding and allocating funding and resources,
- Monitor the progress towards the production of priority environmental-economic accounts and related outputs (spatial datasets, collaborative databases, indicators, case studies) and to ensure their application.

A SEEA Technical Committee (chaired by Bappenas with BPS as Secretary) would include the Ministry of Finance, LHK and BPN as well as DPU, BIG, LIPI (Oceanography), KDN, and KKP. Other government stakeholders, such as Agriculture, Foreign Affairs, BPPT, BMKG (Meteorology, Climate and Geophysics) and BNPB (Disaster Management) and representatives from academia, international organizations and national NGOs could also be considered.

As with the Steering Committee, frequent, regular meetings would occur more often during the initial phases of the project.

The Terms of Reference of the Technical Committee would include:

- Provide technical coordination to the development and implementation of the NP-AEEA,
- Internalize the activities of the NP-AEEA into planning documents
- Approve work plans of Technical Working Groups
- Allocate staff and internal resources to Technical Working Groups
- Internalize outputs of the Technical Working Groups into departmental statistical activities and publications

[33] See the Assessment Report for more detail.

- Coordinate technical work with related national and international initiatives (such as INCAS, REDD+, OneMap, OneData, Green Economy Program, etc.)

The principles of developing statistical production processes suggest that duplication of effort can be minimized by organizing work into centres of specialization. Rather than creating subject-matter groups that each undertake similar functions, Working Groups should be organized into centres of subject-matter and functional specialization.

Priority accounts have been identified as land, water, carbon, ecosystem services and macro-economic aggregates. Designing and producing each account will need the functional expertise of policy analysis, geographic information systems for spatial analysis, accounting expertise, as well as expertise in data analysis, standards and dissemination. The six suggested groups would work in a matrix structure(see **Figure 1** in **Annex 2**), with each Working group providing leaderships and support to other groups, depending on the phase of the project (see **Table 1** in **Annex 2**).

It is suggested that the subject matter be organized into three Working Groups:

- **Working Group 1: Land, Water and Carbon** (co-chaired by BPN, DPU and LHK, with participation by BPS, BIG, Agriculture, Bappenas, BPPT, BKMG, BNPB, and KKP). This would facilitate the integration of the spatial data necessary to produce these accounts. The group's Terms of Reference could include:
  - Lead development of the Land Account (land cover, land use and ownership)
  - Lead development of the Carbon Accounts (stock, emissions and sequestration)
  - Lead development of the Water Accounts (spatially-detailed stock, supply, use and water quality, including developing data on ecosystems as providers and consumers of water and water provision as an ecosystem service),
  - Lead development of information on aquatic biological resources (as in SEEA-CF).
- **Working Group 2: Ecosystem Services** (co-chaired by LHK and BPS, with participation by LIPI, Agriculture, KKP, Bappenas). The group's Terms of Reference could include:
  - Inventory and acquire ecological data (species; water, air and land quality),
  - Lead development of Ecosystem Services Account, and
  - Conduct feasibility studies on Biodiversity and Condition Accounts.
- **Working Group 3: SEEA (SISNERLING)** (co-chaired by BPS and Bappenas, with participation by Finance, LHK, BPN, DPU and the Ministry of Energy and Minerals. The Terms of Reference for this group could include:
  - Lead the further development of the existing SEEA-CF Accounts (minerals, timber),
  - Conduct feasibility studies on developing additional SEEA-CF Accounts (energy, material flows, air emissions, environmental protection expenditures) and linking them to national and international requirements, such as expenditures on biodiversity for BioFin,
  - Develop valuation methodology for all accounts,
  - Provide accounting expertise to Working Groups 1 and 2 and ensure that SEEA standards are applied, and
  - Lead development of macro-economic aggregates, such as Adjusted Net Savings.

Three functional working groups would, in addition to their own priority tasks, would support the subject-matter groups. The proposed Functional Working Groups are:

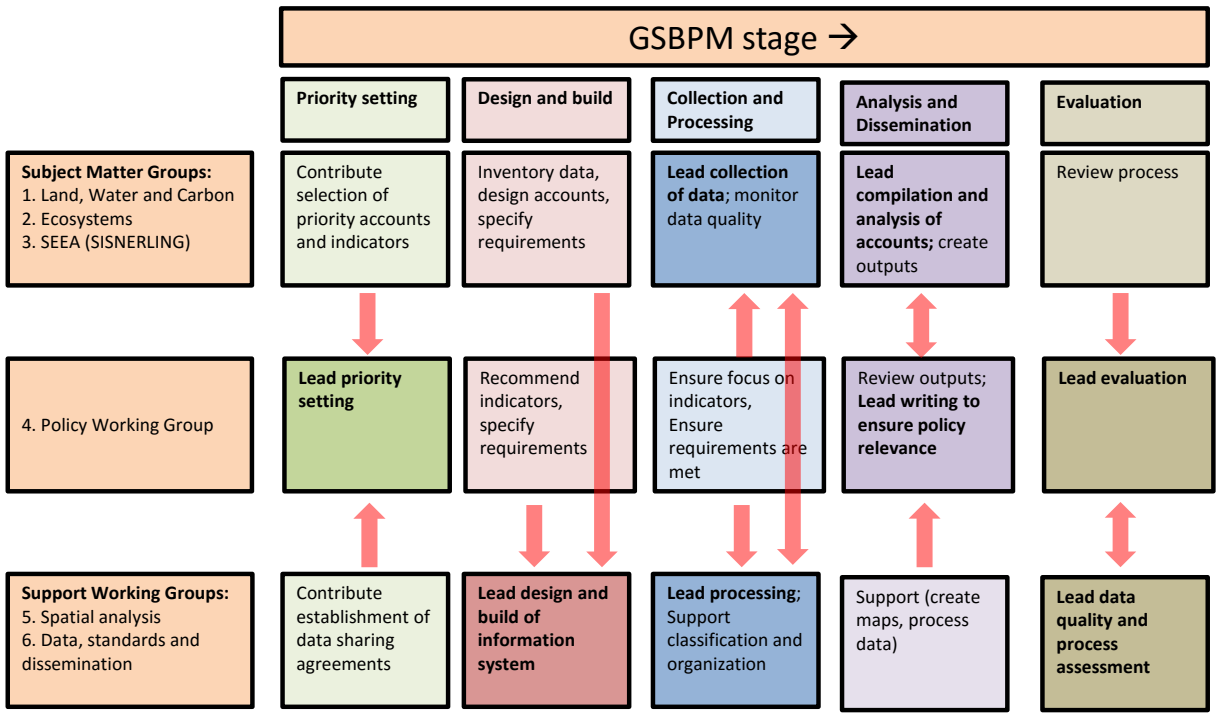
- **Working Group 4: Policy** (co-chaired by Bappenas and Ministry of Finance with participation by BPS, LHK, BPN, DPU, the Ministry of Energy and Minerals). The Terms of Reference for this group could include:

- Lead the work on prioritizing indicators and linking accounts to policy priorities,
- Lead the integration of outputs with policies (RPJNM, RKP, Renstra, RKA-KL),
- Lead communications strategy,
- Lead work on valuation,
- Link to work in provinces and districts,
- Lead work on project valuation

- **Working Group 5: Spatial Analysis** (co-chaired by BIG and BPN). The Terms of Reference for this group could include:
  - Co-lead the design of the overall information system (in collaboration with the Working Group on Data, Standards and Dissemination),
  - Lead spatial analysis and integration of spatial data,
  - Support subject matter Working Groups in spatial data acquisition, standardization, integration and modelling,
  - Maintain collaboration with OneMap
- **Working Group 6: Data, Standards and Dissemination** (Chaired by BPS). The Terms of Reference for this group could include:
  - Co-lead the design of the overall information system (in collaboration with the Working Group on Spatial Analysis),
  - Develop and maintain data standards and classifications,
  - Ensure compliance with the statistical standards,
  - Lead development of statistical dissemination vehicles (print and online publications),
  - Maintain collaboration with OneData.

Figure 3 shows one possible activity flow for collaboration among the Working Groups to implement the NP-AEEA. Note that different groups take the lead (darker colours) depending on the GSPBM

Figure 3: A possible activity flow for the Integrated System of Natural Resource and Environment Accounts



stage.

Each of the Technical Working Groups would need to meet on the order of once per month in the first phase (6-8 months). Working Groups should also hold joint meetings, as required, to ensure the work is coordinated between groups.

Annual work plans would be produced by each of the Working Groups. Such plans would be based on their current assessments of data availability, quality, and gap analyses. The plans would identify specific tasks to be undertaken in the coming year and the resources (including capacity building) required to accomplish them.

At least once a year, all Working Groups should come together to report progress, share experiences and to align their work for the coming 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).

7.3 Activities and Outputs

Over the medium-term, the pilot project will not only produce several pilot accounts, it will also produce prototype integrated indicators that address policy needs, and a coherent spatial database.

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 Indonesia

Type of account or aggregate	Policy or issue	Agencies
Land Accounts (including forest and agricultural land, land cover, land use and ownership)	RPJNM 2015-2019, Gazetting Forest Lands, Spatial Planning Law, Green Economy, REDD+, Aichi Target 2, OneMap	BPS, LHK, Bappenas, Finance, BPN, Agriculture, LAPAN, KDN, BPPT, BIG,
Water Asset Accounts; Water Supply and Use Accounts	RPJNM 2015-2019, Green Economy, Spatial Planning Law	BPS, LHK, Bappenas, Finance, DPU, LAPAN, BPPT, BIG, LIPI, KDN, KKP
Carbon Stock Accounts; Carbon Supply and Use Accounts;	RPJNM 2015-2019, Green Economy, Climate Change, REDD+	BPS, LHK, Bappenas, Finance, FORDA, LAPAN, BMKG
Ecosystem service accounts (especially for water supply and flood control)	RPJNM 2015-2019, Green Economy, Climate Change, valuing natural resource assets	BPS, LHK, Bappenas, Finance, BNPB, DPU, LIPI
Adjusted Net Savings and economic valuation of natural capital	Financing of environmental initiatives, valuing natural resource assets	BPS, Bappenas, Finance, EDSM, DPU, BNP
Optional: Ecosystem Condition and Biodiversity Accounts	RPJNM 2015-2019, Green Economy, REDD+, Aichi Target 2,	BPS, LHK, Bappenas, DPU, KKP, LIPI, Agriculture

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 at the sub-national level. Progress on the accounts of the SEEA Central Framework is needed and will be extremely beneficial to the development of ecosystem accounting in Indonesia.

The implementation of the NP-AEEA is envisaged as being closely coordinated with the implementation of Indonesia WAVES, which has established priorities for SEEA-CF land and water accounts. A preliminary plan for integrating the development of the SEEA-CF and SEEA-EEA land and water accounts in collaboration with Indonesia WAVES is suggested in **Appendix 1**.

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 accounts and supply and use accounts,
- Carbon stock accounts and supply and use accounts,
- Ecosystem service accounts (especially for flood control and carbon storage)

Ecosystem Condition and Biodiversity Accounts could be initially addressed by conducting feasibility studies.

For each of the environmental-economic accounts the scale of the accounting would need to be based on environmental boundaries (e.g. River Basins) and/or administrative boundaries (e.g. provinces). This requirement has significant implications for the primary data sources and information management systems and administrative arrangements needed to generate and access the data to populate the accounts.

Pilot accounts would be progressively produced and refined from mid-2016. 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-economic accounts and aggregate macro-economic statistics.

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, stakeholder workshops to address each account will ensure the accounts are understood and used.

7.3.2 Capacity Building

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

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

7.3.3 Human Resource Capacity

Capacity building will be a critical part of the development of environmental-economic accounts Indonesia. As part of this there will need to be some general training on environmental-economic accounts as well as more specific training on each of the ecosystem accounts and the primary data sources used in the accounts. The general training would occur as soon as possible in 2015, with more specialised training for each of the four types of accounts to follow in the second half of 2015. For example:

- General workshop on environmental-economic accounting (April 2015)
- Workshop on water accounting (2nd half of 2015)
- Workshop on land accounting (2nd half of 2015)
- Workshop on ecosystem service accounting (2nd half of 2015)
- Workshop on carbon accounting (2nd half of 2015)
- Workshop on macro-economic aggregates (1st half of 2016)

Subsequently, additional detailed training and engagement is likely to be needed in 2016 as the production of the pilot accounts and aggregates draws nearer (i.e. from mid-2016).

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;
- Placement of project staff in countries or international agencies with existing environmental-economic accounting programmes; and
- Sponsorship of account producers or user for relevant higher degree studies (e.g. on economics, ecology and accounting) in universities. Local capacity could be augmented by developing course material and establishing courses on environmental-economic accounting for Indonesian universities.

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. This is need is already being addressed in a number of current projects. For example, the development of OneMap and One Data.

A specific need of BPS 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 cover 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, BPS could develop the required data in collaboration with agencies that already have experience in remote sensing (LAPAN, BIG and BPPT).

7.3.5 Development of Key Macro-Economic Aggregates

In addition to the priority accounts, the macro-economic accounting aggregates such as Adjusted Net Savings could be derived from a suite of integrated accounts or the data that would underpin these. The continued production of Adjusted Net Savings would be dependent on the development of supporting environmental-economic accounts.

7.4 Impacts & 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.

Table 2 shows 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 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
Development of key macro-economic aggregates	Provide Ministers and their agencies with empirical evidence linking government policies to sustainable development goals

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 Indonesia'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

The focus of the NP-AEEA is on medium-term (3-5 year) activities that will produce substantial new information to address Indonesia'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 & technical staff, planning & environmental agencies and NSOs. 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 into specific proposals requires:

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

8.1 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. Generally sponsors are looking for proposals that focus on specific aspects of environmental-economic accounting, such as biodiversity, ecosystem services, mapping, poverty alleviation, food security, 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.

8.2 Additional Detail

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.

8.2.1 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.

8.2.2 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? Ideally, multiple projects can be coordinated within the overall governance structure of the NP-AEEA.

8.2.3 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.

8.2.4 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 Budget

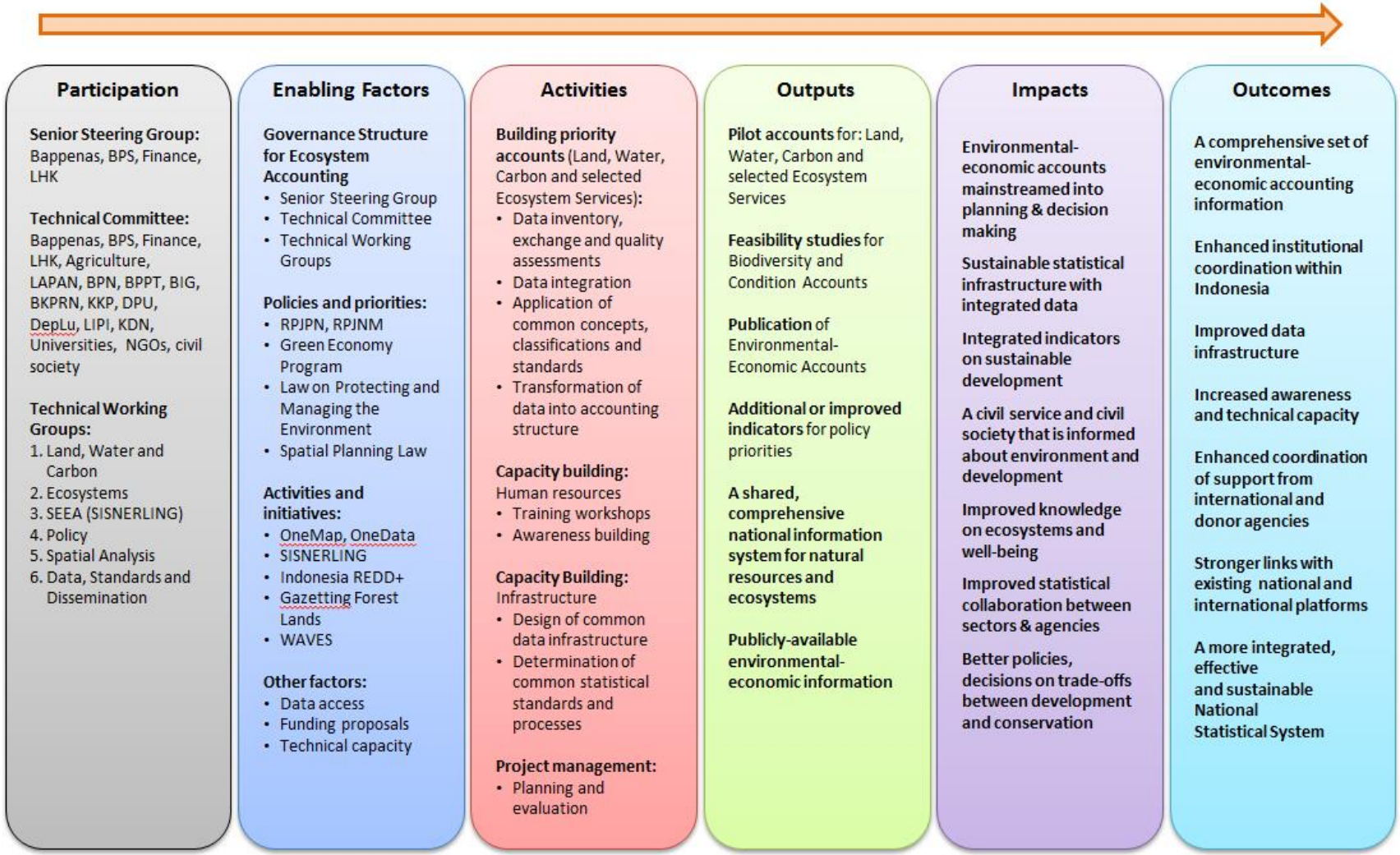
Within the funding limits of the project, it is important to estimate how much work can actually be accomplished. Costs that need to be taken into account are not only the salaries of core participants, but also the “overhead” of administration, capital equipment, data, translation (if necessary), travel, 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 Indonesia - NP-AEEA – Investment Logic Framework

Figure 4. Provisional Investment Logic Framework for the National Plan to Advance Environmental-Economic Accounting in Indonesia



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11 Appendix 1. Preliminary plan of activities for developing Land and Water Accounts

No		Activities	2016											2017											2018											
			Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	ix	Preparation of policy outreach materials to inform land use and management policies																								final output										
III		**Development of Framework for Water Account**																																		
		Preparation: *Scoping exercise, meetings with relevant WB teams, discussions with GoI technical team, selection of*																																		
	i	**Design phase: select accounts, develop institutional arrangements (identify teams and people, select services and indicators, identify data requirements)**																																		
	ii	***Discussion on data sharing and publication arrangements with government stakeholders (in particular PU, BIG, Env &For, etc.)***																																		
	iii	***Identify and make available person at BPS to handle water stocks and flows analysis (1 or 2 fte)***																																		
	iv	***Capacity building workshop with international consultant***																																		
	v	***Set-up of information management structure (GIS) and design of quality assurance procedure***																																		
	vi	***Collection and analysis of data***																																		
	vii	Capacity building workshop with international consultant																																		
	viii	Preparation of the Water account																																		
	ix	Preparation of policy outreach materials to inform land and water use and management policies																								final output										

12 Appendix 2. Suggested Governance Structure

The following is a suggested governance structure for Indonesia's Integrated System of Natural Resource and Environment Accounts. It was developed in collaboration with BPS and based on proposals by Bappenas ("Susunan Tim" dated April 6, 2015).

This document further suggests:

a. Changes to membership and Terms of Reference of the Steering Committee, Technical Committee,
b. A proposed Terms of Reference for Working Groups, and
c. An alternative structure and workflow of the Working Groups. This is based on the GSBPM[34], the General Statistical Business Process Model, which recommends organizing statistical work into common stages and areas of expertise. For example, many NSOs have created centralized geographic, methodological, collection and dissemination services into "business centres", which serve subject matter divisions.

Steering Committee (Echelon 2): Chair: Bappenas; Secretary: BPS; Finance; LHK (SecGen); LHK (spatial planning); BPS (Social); Agrarian Affairs & Spatial Planning[35];

- Note: BPS (Social includes responsibility for Environmental Statistics, SUSENAS & Green Behaviour Survey); This Deputy Directorate General may be better represented at Technical Committee Level, since their expertise and data would be a valuable addition to ecosystem accounting.
- Suggest to include: Home Affairs (Dalam Negeri); Agriculture; Foreign Affairs[36] on the Steering Group
- Existing Terms of Reference: Give direction to the work of the Technical Committee, developing and implementing; Link to policy priorities (RPJNM, RKP[37], Renstra[38], RKA-KL[39]).
- Suggested additions to Terms of Reference: Integration and advocacy of the national work plan with national and international work; coordinating proposals for funding; allocating funding and resources.

Technical Committee (Echelon 3): Chair: Bappenas; Secretariat: BPS; Finance (2); LHK (3); BPS (Social); Agrarian Affairs & Spatial Planning; Public Works; BIG (Geospatial); LIPI (Oceanography); Home Affairs; Oceans and Fisheries; Bappenas (7)[40]

- Note: The Technical Committee could also include BPPT, BMKG (Meteorology, Climate, Geophysics); BNPB[41]; Agriculture[42]; BPS (Social, Methodology)

[34] See http://www1.unece.org/stat/platform/display/metis/The+Generic+Statistical+Business+Process+Model.
[35] Ownership
[36] To facilitate prioritizing and reporting on SDGs, if appropriate.
[37] Government Work Plan
[38] Strategic Plans
[39] Work Plans and Budget of Ministries
[40] Note: A number in brackets after a department name indicates the number of additional members from this department.
[41] Disaster Management

- Existing Terms of Reference: Provide technical coordination to development and implementation of Natural Resource and Environment Data System; internalize activities into planning documents
- Suggested additions to Terms of Reference: Approve work plans of working groups; provide internal resources to working groups; internalize work of working groups (integrate into departmental statistical activities and publications); Coordinate technical work with related national and international initiatives (INCAS, REDD+, OneMap, One Data, Green Development Program, etc.).

Working Groups:

- Note: As a general Terms of Reference, it is suggested that all working groups:
    - Meet regularly (monthly) to coordinate the work of individual members
    - Meet and interact with other working groups, as required, depending on the stage of development
    - Develop work plans;
    - Report to the Technical Committee (on progress and requirements);
    - Hold quarterly plenary meetings to share plans and progress, and to develop common approaches;
- Working groups are divided into two types: Subject Matter Groups and Functional Groups. This is compatible with the GSBPM (General Statistical Business Process Model) for integrated statistical production processes:
    - Subject Matter Groups focus their expertise on the substantive nature of the work.
    - Functional Groups focus their expertise on the technical processes common to all subject matter groups.
    - This will require the type of workflow planning implied in the GBPSM. That is, Subject Matter Groups will develop their requirements for services from the Functional Groups. The Functional Groups will plan their work according to the needs of the Subject Matter Groups.

Subject matter working groups: Suggested membership and Terms of Reference

1. **Land, Water and Carbon**: Co-chairs: Agrarian Affairs and Spatial Planning; DPU; LHK
    a. Members: BIG, LHK, Agriculture, Bappenas, BPPT, BKMG, BNPB, BPS (GIS), DPU (Public Works), Oceans and Fisheries
    b. Terms of Reference: Develop data for land cover, land use and ownership; Lead development of Carbon Accounts (stock, emissions and sequestration); Develop accounts for water stock, supply and demand (detailed spatially; including water quality and ecosystems as providers and consumers of water; water provision as an ecosystem service); Lead on aquatic biological resources (fisheries)
2. **Ecosystems:** Co-chairs: LHK; BPS (Social)
    a. Members: LIPI, Agriculture, Oceans & Fisheries, Bappenas, BPS (Social/Environmental indicators)

[42] Agriculture is already represented at the Working Group level

   b. Terms of Reference: Inventory and acquire ecological data; Lead on development of condition, biodiversity, services generation/use accounts;
3. **SEEA (SISNERLING)**: Co-chair: BPS (Accounts), Bappenas
   a. Members: Finance, BPS (Social), LHK, Bappenas, Agrarian Affairs & Spatial Planning (BPN), Public Works (DPU), Energy and Minerals (EDSM),
   b. Terms of Reference: Lead development of SEEA-CF accounts (e.g., energy, material flows, air emissions, environmental protection expenditures; BioFin); Develops valuation methodology for all accounts; Lead on macroeconomic indicators;

Functional Working Groups:

1. **Policy**: Chair: Bappenas
   a. Members: BPS, Finance, LHK, Agrarian Affairs & Spatial Planning (BPN), Public Works (DPU), Home Affairs (KDN)
   b. Terms of Reference: Lead work on prioritizing indicators and linking accounts to policy priorities; Lead integration of outputs with policies (RPJNM…); Lead communications strategy; Lead work on valuation; Link to work in provinces and districts; Lead work on project evaluation;
2. **Spatial analysis**: Chair: BIG
   a. Members: Bappenas, LHK, BPS (methodology), Agrarian Affairs & Spatial Planning (BPN); BPPT
   b. Terms of Reference: Lead the design of the overall information system (in collaboration with Data, Standards and Dissemination). Lead on spatial analysis and integration of spatial data; Support other Working Groups in spatial data acquisition, standardization, integration and modelling; Maintain collaboration with One Map;
3. **Data, standards and Dissemination**: Chair: BPS (methodology)
   a. Members: Agriculture, Bappenas, BPPT, BKMG, BNPB, BPS (Accounts)
   b. Terms of Reference: Lead the design of the overall information system (in collaboration with Spatial Analysis). Develop and maintain data standards and classifications; Ensure compliance with SEEA and GSBPM; Lead development of statistical dissemination vehicles; Maintain collaboration with One Data.

The Working Groups, then, define the matrix within which the statistical processes are organized (**Figure 1**).

Figure 1: An illustration of the matrix management approach to working groups

	Functional Working Groups		
Subject matter Working groups	4. Policy	5. Spatial Analysis	6. Data, standards and Dissemination
1. Land, Water and Carbon	Land, Water and Carbon policies	Land, Water and Carbon spatial data	Land, Water and Carbon data, standards and dissemination
2. Ecosystems	Ecosystem policies	Ecosystem spatial data	Ecosystem data, standards and dissemination
3. SEEA (SISNERLING)	Natural resource & macroeconomic policies	Natural resource spatial data	Natural resources & macroeconomic data, standards and dissemination

Different groups take the lead at different stages of the statistical processes:

1. **Specify Needs**: This stage is the identification of policy priorities, linkages to policies and selection of priority accounts and designation of indicators.
2. **Design**: This stage is the design of a common, integrated statistical infrastructure for all accounts. This is based on an assessment of available data and the identification of data gaps. Filling priority data gaps can be accomplished through modelling, adding questions to existing surveys, conducting new surveys, enhancing business registers, and acquiring data from other sources (e.g., international, private, academic sources).
3. **Build**: This stage is the development of tools and processes that will be used to populate the statistical infrastructure and accounts.
4. **Collect**: Collection is a group effort. Each subject matter group identifies data sources within their subject. Integrating the detailed data is the responsibility of the Spatial and Data groups.
5. **Process**: While processing is the responsibility of the Spatial and Data groups, the work and outputs will need to be monitored and reviewed by the subject-matter groups.
6. **Analyse**: This is the stage at which the accounts are compiled and analysed.
7. **Disseminate**: This is the stage at which outputs (publications, online releases, contributions to public databases) are created.
8. **Evaluate**: After the Evaluation Stage, the process returns to the Collection stage. On occasion, the process will need to be redesigned to take into account changing requirements and opportunities.

Table 1: A possible activity flow for the Integrated System of Natural Resource and Environment Accounts [43]

	GSBPM Stage							
Working Group	Specify Needs	Design	Build	Collect	Process	Analyse	Disseminate	Evaluate
Subject Matter Working Groups								
1. Land, Water and Carbon	Contribute to priority setting of Land, Water and Carbon policies	Inventory data, lead design of Land, Water and Carbon accounts	Advise Data and Spatial groups on requirements	Lead (Land, Water and Carbon data)	Ensure requirements are met; monitor quality	Compile and analyse Land, Water and Carbon accounts	Create outputs (tables and maps) for Land, Water and Carbon accounts	Review process for Land, Water and Carbon accounts.
2. Ecosystems	Contribute to priority setting for Ecosystem policies	Inventory data; Lead design of Ecosystem accounts	Advise Data and Spatial groups on requirements	Lead (Ecosystem data)	Ensure requirements are met; monitor quality	Compile and analyse Ecosystem accounts	Create outputs (tables and maps) for Ecosystem accounts.	Review process for Ecosystem accounts
3. SEEA (SISNERLING)	Contribute to priority setting for natural resource and macroeconomic policies	Inventory data: Lead design of SEEA-CF accounts	Advise Data and Spatial groups on requirements	Lead (SEEA-CF accounts)	Ensure requirements are met; monitor quality	Compile and analyse SEEA-CF accounts	Create outputs (tables and maps) for SEEA-CF accounts	Review process for SEEA-CF accounts
Functional Working Groups								
4. Policy	Lead with input from subject matter groups	Participate (recommend indicators)	Advise Data and Spatial groups on requirements	Support focussing of indicators	Ensure requirements are met;	Review outputs of subject matter groups; Lead design of outputs.	Lead writing to ensure policy relevance	Lead with input from subject matter
5. Spatial	Contribute to establishment of data sharing agreements	Co-lead with Data	Co-lead with Data	Support spatial data classification, integration, organization	Co-lead with Data	Support subject matter (create maps)	Lead map production	Lead quality assessment of spatial data
6. Data	Contribute to establishment of data sharing agreements	Co-lead with Spatial	Co-lead with Spatial	Support data classification, integration, organization	Co-lead with Spatial	Support subject matter (process data)	Lead indicator and table production	Lead quality assessment of data

[43] Stages where working groups lead are indicated in Green.

This overall process may be more easily visualized in the graphic below, which summarizes the working groups and functions (**Figure 2**).

Figure 2: A possible activity flow for the Integrated System of Natural Resource and Environment Accounts