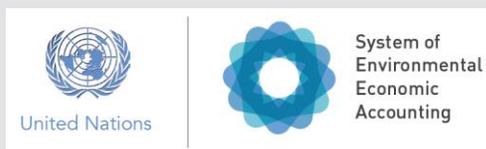
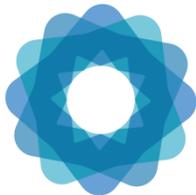


System of Environmental Economic Accounting

NATIONAL PLAN FOR ADVANCING ENVIRONMENTAL-ECONOMIC ACCOUNTING (NP-AEEA) IN MEXICO

DRAFT November 2015





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



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1 EXECUTIVE SUMMARY

The purpose of this document is to link current Mexican environmental-economic accounting initiatives and policy requirements with the UN System of Environmental Economic Accounting (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 *Mexico - Country Assessment Report* that has identified the policy priorities, stakeholders and capacity for Mexico to engage in such development. It has done so by reviewing the most recent documents in collaboration with INEGI, SEMARNAT, CONABIO, CONAFOR, CONAGUA, CONANP, INECC, 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) strengthening the rationale for an integrated statistical system for sustainable development information;
- (b) summarizing the priorities and opportunities in Mexico for further improvement of the National Statistical System (NSS) with a focus on SEEA;
- (c) using an Investment Logic Framework (ILF) to identify 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 Mexico. The degree of dependence of Mexico'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?

Mexico has a unique opportunity to focus national and international efforts on addressing its sustainable development, climate change, biodiversity and green economy goals. Mexico's prosperity must be considered a long-term undertaking, so state policies for conservation and sustainable management of natural heritage must be designed with a trans-six-year approach, multi-sectoral participation and be seen as a key asset to help ensure sustainable development. It is important to emphasize that true sustainable development will only be possible from a perspective of economic, social and cultural rights at all levels of government policies, not only from the environmental sector.

To avoid that the economic development of the country justifies the degradation and loss of biodiversity and ecological integrity and compromise the livelihoods of a large portion of the rural and urban population in Mexico, development policies should have a holistic approach that recognizes biodiversity and natural capital as a key asset of sustainability.

Thus, investing in the efficient use of natural resources, conservation, management and restoration of ecosystems, environmental services and biodiversity in terrestrial, aquatic and marine priority regions, either by the strategic importance of their natural resources or degradation processes in they occur. It must be a national priority.

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

This document is intended to focus the efforts of the National Institute of Statistics and Geography (INEGI) and other stakeholders, including international agencies, to develop a cost-effective, ongoing and effective statistical systems and related institutional mechanisms to inform Mexico's sustainable development policy objectives.

Conserving Mexico's natural heritage is imbedded in the National Development Plan (NDP 2013-18) in terms of promoting and guiding "an inclusive and enabling Green growth that preserves our natural heritage while generating wealth, competitiveness and employment" by linking development policy with sustainability and the costs and benefits of this development to society. It also sets as objectives: implementing sustainable water management, strengthening climate change policy and environmental management in preparation for a transition to a "competitive, sustainable, resilient and low-carbon economy." It sees that protecting the natural heritage is central to achieving these objectives. In addition, it sets the objective of developing productive agriculture and fisheries to ensure food security.

Specific priorities have been identified for integrated land, water and biodiversity management. This is reflected in the focus on low carbon sustainable growth; resilience to impacts of climate change; sustainable management of water, recovering the functionality of watersheds and landscapes, halting air, water and soil pollution; reversing the loss of natural capital and strengthening environmental governance in PROMARNAT. These are consistent with international policy drivers such as the Sustainable Development Goals (SDGs) and Aichi Target 2.

Mexico, through the National System of Statistical and Geographical Information (SNIEG) coordinates a group of government units organized through subsystems, coordinated by the Institute and articulated by the National Information Network for the purpose of producing and disseminating the Information of National Interest. The mission of the SNIEG is to provide timely information to society of national interest through coordination among members of the system and the widespread adoption of national and international standards¹.

To support this, the National Plan for Advancing Environmental-Economic Accounting (NP-AEEA) in Mexico proposes to facilitate a cost-effective, ongoing and effective statistical system and related institutional mechanisms by: (a) strengthening the existing environmental-economic accounting information system; (b) assessing and integrating existing spatial data required to support expanded SEEA-CF accounts and to pilot ecosystem accounts; (c) conducting training and capacity building in environmental-economic accounting including ecosystem accounting; (d) enhancing coordination with national initiatives as well as international and donor agencies; and (e) immediately beginning work on priority ecosystem accounts including Ecosystem Extent Accounts, Biodiversity Accounts, Ecosystem Services Accounts for protected areas and forests, as well as augmenting existing SEEA-CF accounts. To accomplish this will require establishing a high-level Steering Committee, Technical Committee and Technical Working Groups with an

¹ See <http://www.snieg.mx/#top>

appropriate governance structure, engaging stakeholders, implementing quality standards, establishing inter-departmental data sharing and developing new sources of funding.

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

Activities	Impacts
Building priority accounts based on policy needs	Providing Secretaries 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 <div style="text-align: right; padding-right: 20px;">Human resources</div> <div style="text-align: right; padding-right: 20px;">Infrastructure</div>	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 and agencies

2 INTRODUCTION

There is little doubt that at global, national and local scales, humanity is pushing against a web of environmental boundaries. This message has been growing clearer and clearer through multiple scientific, social and economic studies (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. This message was emphasized at the Rio+20 conference and culminated in the Post-2015 Development Agenda. The international community has further recognized that integrated statistics are essential to making informed decisions:

“We recognize the need for broader measures of progress to complement GDP in order to better inform policy decisions, and in this regard, we request the UN Statistical Commission in consultation with relevant UN System entities and other relevant organizations to launch a programme of work in this area building on existing initiatives.” (Paragraph 38, The Future We Want: Outcome document adopted at Rio+20²)

This project is part of the international community’s commitment to develop these broader measures of progress and to integrate them into national statistical systems and decision making.

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 to sustain future human wellbeing. We have much integrated information concerning national and global economic activity where, via the standard economic accounts and Gross Domestic Product (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-CF and SEEA-EEA use the accounting concepts, structures, rules and principles of the System of National Accounts (SNA). The SEEA-CF 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-EEA starts from the perspective of ecosystems and links ecosystems to economic and other human activity. Together,

² See <http://www.un.org/en/sustainablefuture/>.

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

SEEA-EEA 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-EEA 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:

- **Part One** (Section 3) provides a global and country rationale for undertaking environmental-economic accounting with an outline of the building blocks and methodologies needed for its implementation. This provides the context and rationale for the NP-AEEA, the high-level needs of Mexico based on the assessment report and finally a summary of the key outcomes that could be achieved for Mexico by implementing the NP-AEEA.
- **Part Two** (Sections 4 and 5) presents 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, system, methods and guidance and training material.
- **Part Three** (Sections 6, 7 and 8) outlines the details of a national program of work following an Investment Logic Framework (ILF). The focus on the ILF is to identify what work is required in order to achieve the objectives and translate them into outcomes for the country. These sections are specifically tailored to the needs of Mexico 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.

PART ONE

3 ENVIRONMENTAL-ECONOMIC ACCOUNTING RATIONALE

There are a number of global and national drivers that 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. Countries are in various stages of this modernization to enable the production and reporting of data for the Post-2015 Development Agenda and related integrated 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*³ 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 SEEA, with help provided to those who need help to do this.

Also in 2013, the UN published the *Guidelines on Integrated Economic Statistics*⁴ highlighting the need to move from the traditional silo approach to a more integrated approach to the production of statistics matched by the reform of the institutional arrangements, including access and use of administrative sources for statistical purposes. It recognised the significance of an integrated approach for increasing the consistency and coherence of economic statistics to enhance the quality and analytical value of the information the statistics convey for short-term, annual and benchmark economic 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 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.

³ www.un.org/sg/management/pdf/HLP_P2015_Report.pdf

⁴ <http://unstats.un.org/unsd/nationalaccount/docs/IES-Guidelines-e.pdf>

In 2014, the report *A world that counts – mobilising the data revolution for sustainable development*⁵ published by the Secretary General’s Independent Advisory Group (IEAG)⁶ 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”.

The SEEA is proposed as a common measurement framework for several environment, biodiversity and sustainable-development related international initiatives including the Post-2015 Development Agenda Sustainable Development Goals (SDGs), the OECD Green Growth initiative, the World Bank WAVES, IPBES, BIOFIN, Sustainable Consumption and Production, and the CBD Aichi Targets.

Intergovernmental negotiations on the Post 2015 Development Agenda have produced a draft document: *Transforming Our World: The 2030 Agenda for Sustainable Development*⁷. This document sets out 17 Sustainable Development Goals (SDGs) and 169 targets that build on the Millennium Development Goals (MDGs).

Regular reporting on SNA and SEEA accounts will support the production of indicators to monitor at least 12 of the SDG goals:

- Goal 2: End hunger, achieve food security and improved nutrition, and promote sustainable agriculture,
- Goal 6: Availability and sustainable management of water and sanitation,
- Goal 7: Access to affordable, reliable, sustainable, and modern energy,
- Goal 8: Sustainable economic growth,
- Goal 9: Industry, innovation and infrastructure
- Goal 10: Reduced inequalities
- Goal 11: Safe, resilient and sustainable cities,
- Goal 12: Sustainable consumption and production,
- Goal 13: Combat climate change and its impacts,
- Goal 14: Sustainable use of oceans, seas and marine resources,
- Goal 15: Sustainable use of terrestrial ecosystems, especially 15.9 integrating ecosystem and biodiversity values into national and local planning and development processes and poverty reduction strategies and accounts, and
- Goal 17: Enhancing capacity building to increase availability of data.

Therefore, implementing the SEEA addresses not only national development objectives, but serve the purpose of international reporting as well.

⁵ <http://www.undatarevolution.org/>.

⁶ Independent Expert Advisory Group on a Data Revolution for Sustainable Development.

⁷ <https://sustainabledevelopment.un.org/post2015/transformingourworld>.

3.2 Country perspective

There is a strong commitment from the Government of Mexico to improve the information available to support its sustainable development policy priorities. These priorities are embedded in Mexico's National Development Plan (2013-2018)⁸.

The National Development Plan (NDP) prioritizes the conservation of Mexico's natural heritage in terms of encouraging and guiding "inclusive green growth and facilitate the preservation of our natural heritage while generating wealth, competitiveness and employment" by linking development policy to sustainability and the costs and benefits of this development to society. It also establishes the following objectives: the implementation of sustainable water management, strengthening the climate change policy and environmental management in preparation for the transition to a "competitive, sustainable, resilient and low-carbon economy." In addition, the development of sustainable agriculture and fisheries production is required to ensure food security.

The NDP specifies sectoral programs to be further elaborated by government agencies. Sectoral Programs related to environment, sustainable development and environment include:

- The National Environmental and Natural Resources Program (PROMARNAT⁹) sets out specific actions to:
 - Promote and facilitate sustainable low carbon growth that is equitable and socially inclusive;
 - Increase resilience to the impacts of climate change and reduce emissions of pollutants and greenhouse gases;
 - Strengthen the integrated and sustainable water management, ensuring access to water by populations and ecosystems;
 - Recover functionality of watersheds and landscapes through conservation, restoration and sustainable use of natural heritage;
 - Halt and reverse the loss of natural capital and pollution of water, air and soil, and
 - Develop, promote and implement policy instruments, information, research, education, training, participation and human rights to strengthen environmental governance.
- The Agricultural Development, Fisheries and Food Program is based on Objective 4.10 of the NDP to construct a productive agricultural and fishing sector that guarantees the food security of the country. Its objectives are to:
 - Propel the productivity in the agricultural food sector through the investment in the development of physical, human and technological assets that guarantees the nutrition security.
 - Expedite models of association that generate economies of scale and a greater aggregate value in the agricultural sector.
 - Promote a better certainty in the agricultural food activities through risk management mechanisms.
 - Propel the sustainable use of the natural resources of the country.
 - Modernise the normative and institutional frame to initiate a productive and competitive agricultural sector.

⁸ <http://pnd.gob.mx/>

⁹ <http://www.semarnat.gob.mx/archivosanteriores/Documents/PROMARNAT%202013-2018.pdf>

- The National Urban Development Program (PN DU) is based on Objective 2.5 of the NDP to provide an adequate environment for the development of a dignified life. Its objectives are to:
 - Control the expansion of the urban areas and consolidate the cities in order to improve the quality of life of the inhabitants.
 - Consolidate a model for urban development that generates the well-being for the citizens, ensuring the social, economic and environmental sustainability.
 - Design and implement normative, fiscal, administrative and controlling instruments for the land management.
 - Avoid human settlements in hazardous areas and diminish the vulnerability of the urban population in the face of natural disasters.
 - Consolidate the National Policy of Regional Development at the point of vocations and local economic potential.
- The Agrarian, Territorial and Urban Development Program (PS DATU) is also based on Objective 2.5 of the NDP to provide an adequate environment for the development of a dignified life. Its objectives are to:
 - Promote the territorial order and planning as connection to the well-being of people and the efficient land use.
 - Encourage the regulated growth of human settlements and metropolitan zones.
 - Consolidate compact, productive, competitive, inclusive and sustainable cities, which facilitate the mobility and raise the life quality of its habitants.
 - Promote the access to housing by well-located and dignified habitational solutions, which comply with international quality standards.
 - Promote the development of agrarian centres with actions in matters of territorial cohesion, productivity, soil, rural housing and governability.
- The National Forest Program (PRONAFOR) is aligned with Objectives 2.5 (to provide a suitable environment for the development of a decent life), 4.4 (to promote and guide an inclusive and green growth and to facilitate the preservation of our natural heritage while generating wealth, competitiveness and employment.) and 4.10 (to construct a productive agricultural and fishing sector that guarantees the food security of the country) of the NDP. Its objectives are to:
 - Increase sustainable forestry production and productivity.
 - Promote the conservation and restoration of forest ecosystems.
 - Protect forest ecosystems.
 - Promote and reinforce forestry governance and the development of local capacities.
 - Promote and favour a facilitating institutional framework for sustainable forestry development.
- The Sectoral Program on Tourism (PROSECTUR¹⁰) addresses Objective 4.11 of the NDP to harness Mexico's tourism potential to generate greater economic benefit in the country. It's objectives are to:
 - Transform the tourism sector and strengthen cooperation schemes and responsibility to harness the tourism potential
 - Strengthen the competitive advantages of tourism
 - Facilitate financing and public-private investment in projects with tourism potential

¹⁰ http://www.sectur.gob.mx/PDF/PlaneacionTuristica/Prosectur_2013_2018.pdf.

- Enhance tourism to help promote market diversification and the development and growth of the sector
- Promote sustainable development of tourism destinations and extend the social and economic benefits of the host communities

These policy priorities include, among others, generating wealth, achieving sustainable economic growth, poverty reduction, employment creation, a low-carbon economy, food security, water security and climate change adaptation. They propose to accomplish this by implementing sustainable water management, strengthening climate change policy, developing productive agriculture and fisheries, while conserving and managing Mexico's ecosystems and biodiversity.

Specific priorities have been identified for integrated land, water and biodiversity management. This is reflected in the focus on low-carbon sustainable growth; resilience to impacts of climate change; sustainable management of water, recovering the functionality of watersheds and landscapes, halting air, water and soil pollution; reversing the loss of natural capital and strengthening environmental governance in PROMARNAT and other sectoral programs. These are consistent with international policy drivers such as the Sustainable Development Goals (SDGs), Aichi Target 2 and REDD+.

Although these targets and actions are important, it is unclear the extent to which they are truly integrated into the national planning dialogue. This speaks to the need of headline indicators to make it clear that short-term gains in economic output come with social, economic and long-term environmental costs. SEEA is a platform for building these indicators, which integrates information between economic growth and the ability of the natural environment to support that growth.

In addition, implementing the SEEA-EEA would be an opportunity to further expand the list of information of national interest.

There has been a strong commitment from the Government of Mexico to integrating its National Statistical System, in part through the implementation of the SEEA. This is demonstrated by the range of stakeholders and initiatives related to improving information on sustainable development:

- INEGI is Mexico's National Institute of Statistics and Geography:
 - Mexico was one of the first countries to pilot the SEEA Central Framework, beginning in 1988 and publishing its first report in 1991.
 - INEGI's publication on [Environmental and Ecological Accounts](#) includes oil, forest and groundwater depletion and air emissions, solid waste, water pollution, soil degradation and environmental protection expenditures; additionally includes accounts on water, forest (physical and monetary balance sheets), fisheries and material flows (biomass from agriculture, forestry, fishing, and grazing, also includes water, fossil fuels and recently non-metallic minerals). They are currently working with ECLAC¹¹ and Ecuador on Environmental Protection Expenditures, with the OECD on Green Growth Indicators and the Ulaanbaatar Group on mining statistics recommendations.
 - INEGI produces a [Green \(or Ecological\) GDP](#), which sums the economic estimates of the costs of depletion (hydrocarbons, forests and groundwater) and degradation (soil degradation, solid waste management, air and water pollution abatement

¹¹ The UN Economic Commission for Latin America and the Caribbean.

expenditures). This is embedded in the National Environmental and Natural Resources Program ([PROMARNAT](#)) with a target of reducing the loss of natural capital from 5% of GDP in 2011 to 4.5% per year by 2018.

- One of the more important economic surveys for the purposes of this project is the Economic Census. The recently completed Economic Census covers 5.7M business units, excluding agricultural businesses. It contains questions on environmental standards applied (e.g., [ISO 14000 on environmental management](#)), waste separation, expenditures on energy savings, alternative energy, waste reduction, hazardous wastes, waste treatment, environmental protection expenditures, activities for protection of forests, noise, pollutants, air emissions and wastewater. [Preliminary results](#) were released in December 2014.
- As part of the Economic Census 2014, INEGI has included, for large establishments, an environmental module that will collect information on various economic and environmental variables such as current and investment for environmental protection expenditures, number of people and hours devoted to environmental activities, environmental compliance, waste management and wastewater, among others. With these variables information needs for projects such as environmental protection expenditures private, environmental goods and services sector, green jobs, and related indicators of green growth and mining issues.
- INEGI's Directorate General of Geography generates, collects and maintains a wealth of spatially referenced geographic and environmental information. This includes satellite imagery, digital elevation models, topography (hydrography and transportation networks), Census geographies, geology, climate, water, soils, vegetation, and land use. These are integrated into the National System of Statistical and Geographical Information (SNIEG).
- SEMARNAT (Secretary for Environment and Natural Resources), coordinates the national environment and natural resource information system (SNIARN). [SNIARN](#), is a prize-winning web-based presentation of spatial and statistical data that have been standardized and quality assessed. The SNIARN includes among others:
 - a statistical database (BADESNIARN) which contains statistical information on topics related to the environment,
 - maps and query possibilities of the environmental characteristics of the country (Digital Geographic Area System - ESDIG) on topics such as vegetation, land use, water bodies, climate, environmental and social programs, and
 - a National System of Indicators (SNIA) that provides a brief overview of the changes and the current state of the environment and natural resources of the country, as well as the pressures and institutional responses for their conservation, restoration and sustainable use.
 - SEMARNAT is the focal point for the CBD and participates for the Global Environmental Outlook reports (GEO's). It produces regularly a [State of the Environment Report](#).
- CONABIO (National Commission for Knowledge and Use of Biodiversity) manages much information on biodiversity hot spots and conducts ocean monitoring.
- CONAGUA's (National Water Commission) mission is to manage and preserve national waters and their inherent goods in order to achieve sustainable use, with joint responsibility of the three tiers of government (federal, state, and municipalities) and society as a whole.

- CONANP (National Commission of Natural Protected Areas) is in charge of the conservation of the natural heritage of Mexico through establishing and managing protected areas and other forms of preservation.
- CONAFOR (National Commission of Forestry) is oriented towards the strengthening of the sustainable development of natural resources in the forest ecosystems through conservation, protection, restoration, support and production actions, with a long term vision defined in the [Programa Estratégico Forestal para México 2025](#) (PRONAFOR)
- INECC (National Institute of Ecology and Climate Change) coordinates, promotes and develops scientific and technological research related to national policy on biosafety, sustainable development, environmental protection, preservation and restoration of ecological balance and conservation ecosystems and climate change
- PROFEPA (Federal Attorney for Environmental Protection) is responsible for the care and preservation of the environment throughout the country, as well as inspection and enforcement of environmental protection laws:
 - PROFEPA publishes an annual report about its activities, mainly about surveillance in various areas of environmental importance (forests, wildlife and marine resources), actions against illegal trafficking of wildlife, operations against illegal logging and attention to industrial accidents.¹²
- SAGARPA (Secretariat of Agriculture, Livestock, Rural Development, Fisheries and Food) is involved in several national sustainable development programmes. There are also programmes involving the distribution of incentives to the agricultural sector committed to preservation and sustainable use of natural resources, land use change for cultivation of bio energy crops as well as compensations for temporal suspensions of agricultural cultivation and fishing.¹³
 - SAGARPA has published studies about the GDP and economic and productive portions of different branches of the primary sector and its annual changes¹⁴, perspectives of the growth of the agrarian sector from 2011 to 2020¹⁵, agroeconomic indicators of each state of Mexico¹⁶ and others. It collaborates with OECD to extend and maximise productivity in the agrarian sector¹⁷.
- SEDATU (Secretariat of Agricultural, Territorial and Urban Development) is responsible for the promotion of organised urban and rural planning. One particular task is the mapping of natural hazard zones and territorial regulation.
- CENAPRED's (National Centre of Disaster Prevention) mission is to reduce the impact of natural disasters to the population by elaborating public policies, and developing methods to create a self-protective and alert society.

¹² http://www.profepa.gob.mx/innovaportal/v/6285/1/mx/informe_anual_profepa_2013.html.

¹³ <http://www.sagarpa.gob.mx/ProgramasSAGARPA/Paginas/default.aspx#3>

¹⁴ <http://www.sagarpa.gob.mx/agronegocios/Documents/pablo/Documentos/MonitorNacionalMacro.pdf>

¹⁵

http://www.sagarpa.gob.mx/agronegocios/Documents/estudios_economicos/escenariobase/perspectival_p_11-20.pdf

¹⁶ <http://www.sagarpa.gob.mx/agronegocios/Estudios/Paginas/monitoreoestatal.aspx>

¹⁷ <http://sagarpa.gob.mx/asuntosinternacionales/cooperacioninternacional/Documents/4.%20Presentación%20Estudio%20OCDE-McMahon.pdf>

- CENAPRED publishes many reports about geologic, hydrometeorologic and anthropogenic hazards apart from the National Hazard Atlas, for example landslides¹⁸ and droughts¹⁹.
- SECTUR (Secretariat of Tourism) initiates and supports the development of the Mexican tourism infrastructure and its touristic services.
 - SECTUR published a report about the vulnerability of the tourism sector to climate change²⁰
- FONATUR (National Fund for the Development of Tourism) acts under the responsibility of SECTUR and gives technical assistance and juridical security for new businesses in the tourist sector.²¹ One part of this assistance is feasibility studies for businesses in certain touristic locations, which includes evaluating the potential of an area in numbers of tourists and money spent.
- SENER (Secretariat of Energy) executes the national energy policy, plans the extension of the energy infrastructure and pursues the establishment of alternative energy.
 - SENER maintains a database of statistics about amounts, flows and prices of energy resources, like petroleum and carbon stocks.²²
 - SENER also publishes the national energy balance annually, including prices, production and consumption of energy²³, as well as statistics about natural resources for energy use.²⁴
- SEMAR (Secretariat of the Mexican Marine) maintains an extensive geographical database, including meteorology, oceanography, hydrography and direct connections to satellite data.
- IMTA's (Institute of Water Technology) main objectives are research and development of technologies for water management, education for sustainable water use and development of new national water standards.
 - IMTA publishes studies about particular water ecosystems and technical guides about water processing²⁵.
- Secretaría de Hacienda y Crédito Público (Finance) requires more integrated information to link public sector expenditures on biodiversity and environment to benefits, to investigate new taxes and economic instruments, as well as to support integrated social cost-benefit analyses of large infrastructure projects.
- The Ministry of Foreign Affairs (Secretaría de Relaciones Exteriores, or SRE) is the focal point for addressing the Sustainable Development Goals.

Relevant international initiatives include:

- INEGI and SEMARNAT are under the coordination of the President's Office and together with several other agencies are actively involved in defining indicators for the post-2015 development agenda (Sustainable Development Goals or SDGs) as well as in the UN

¹⁸ <http://www.cenapred.gob.mx/es/Publicaciones/archivos/7-FASCICULOINESTABILIDADDELADERAS.PDF>

¹⁹ <http://www.cenapred.gob.mx/es/Publicaciones/archivos/8-FASCCULOSEQUAS.PDF>

²⁰ <http://www.sectur.gob.mx/programas/planeacion-y-politica-turistica/ordenamiento-turistico-sustentable/cambio-climatico/estudio-de-vulnerabilidad-al-cambio-climatico-en-el-sector-turistico/>

²¹ http://www.fonatur.gob.mx/en/quienes_somos/index.asp?modsec=01-MV&sec=2

²² <http://sie.energia.gob.mx/bdiController.do?action=temas>

²³ <http://www.energia.gob.mx/portal/default.aspx?id=1433>

²⁴ <http://www.energia.gob.mx/portal/Default.aspx?id=1432>

²⁵ <https://www.imta.gob.mx/productos/novedadeseditoriale>

Initiative GGIM ([Global Geospatial Information Management](#)). The recent high-level GGIM meeting in Beijing emphasized the importance of geospatial information in addressing the SDGs. Seventeen points of the SDGs refer to environmental targets and many of these require maps to produce. This will require the georeferencing of much new sustainable development information. The SEEA is already recognized as an important component of supporting certain proposed SDGs on water and ecosystems.

- SEMARNAT, through INECC, collaborated with UNEP to produce the first Green Economy study for Mexico. It is expected to be published in early 2015. Understanding the information needs for reporting and monitoring progress towards a green economy is central to the principles of SEEA.
- The Latin American Investment Facility is working on REDD+ implementation with CONAFOR via grants from Spain and France. The SEEA provides a broad environmental-economic measurement framework that is also coherent with the goals of REDD+.
- CONABIO is participating in IPBES through its Directorate General on International Cooperation and Implementation. CONABIO is also working with GIZ on an ecosystem assessment project: [Equitable sharing of benefits arising from the utilization of biological diversity](#) (collaboration between GIZ and among others SEMARNAT, CONABIO, CONANP, CONAFOR). CONABIO is also working on a GEF-funded strategy on invasive species. These are all opportunities to demonstrate the SEEA as (a) a measurement framework for biodiversity and ecosystem linkages with the economy and (b) an integration framework for core data such as land and biodiversity accounts.
- CONABIO coordinates the National Biodiversity Strategy, BioFin and update the [NBSAPs](#). They also generate funding plans for biodiversity activities and coordinate the [National Report to the Convention on Biological Diversity](#).
- INECC is collaborating with SEMARNAT on the Canada-Mexico Green Growth Climate Change Platform. They are also working on valuation of ecosystem services of forests with CONAFOR. This would be an opportunity to link the SEEA-EEA land and condition accounts with work on climate change and to apply the accounting principles to SEEA-EEA to link this work to national economic accounts.
- CONANP is collaborating with GIS, the environment sector and FONATUR, SALUD and SEDESOL on [EcoValor Mx](#), a project to value ecosystem services in federal protected areas. This would also be an opportunity for a SEEA-EEA case study to demonstrate the linkages between biophysical measures and socio-economic impacts of change.
- UNEP, in collaboration with INECC and the Directorate General of Strategic Planning and Financing of SEMARNAT, has recently launched a TEEB country study for Mexico. At its plenary meetings both INEGI and SEMARNAT recently had highlighted the importance of the implementation project SEEA-EEA in Mexico with the aim of develop synergies and avoid duplication of efforts for a main purpose.
- UNSD has been working with the Secretariat of Finance (Hacienda) on the BioFin initiative. This will also be an opportunity to demonstrate the use of the SEEA Central Framework, especially in the application of its classification of environmental protection expenditures. This also provides a useful link to INEGI's Environmental Protection Expenditure Accounts (EPEA).
- Mexico has offered to host the COP-16 in 2016. This could be an opportunity to demonstrate progress in environmental-economic accounting and ecosystem accounting in Mexico.

- Related bilateral initiatives, such as the Canada-Mexico Green Growth Climate Change Platform and ECOASA from the German government, could also benefit from integration at the statistical level with the SEEA.
- Mexico is one of eight countries that are part of the [Forest Investment Program \(FIP\)](#), a targeted program of the [Strategic Climate Fund \(SCF\)](#), which is one of two funds within the framework of the [Climate Investment Funds \(CIF\)](#). The FIP supports developing country efforts to reduce deforestation and forest degradation and promote sustainable forest management that leads to emissions reductions and enhancement of forest carbon stocks ([REDD+](#)). This is coordinated through CONAFOR.

3.3 Mexico environmental-economic accounting needs assessment

Mexico's policy priorities include, among others, generating wealth, achieving sustainable economic growth, poverty reduction, employment creation, a low-carbon economy, food security, water security and climate change adaptation. This will be accomplished by implementing sustainable water management, strengthening climate change policy, developing productive agriculture and fisheries, while conserving and managing Mexico's ecosystems and biodiversity.

Specific priorities have been identified for integrated land, water and biodiversity management. This is reflected in the focus on low carbon sustainable growth; resilience to impacts of climate change; sustainable management of water; recovering the functionality of watersheds and landscapes; halting air, water and soil pollution; reversing the loss of natural capital and strengthening environmental governance in PROMARNAT. These are consistent with international policy drivers such as the Sustainable Development Goals (SDGs), Aichi Target 2 and REDD+.

Government agencies at all levels, non-governmental organizations and international NGOs have established institutional mechanisms, technical capacity, strategies and programs that support these policy priorities. However, the indicators that have been developed to monitor progress towards these priorities are often sectoral and based on available data. This has downplayed the importance of integration across sectors and of new statistical development that could better inform these priorities. Furthermore, there is no government-wide senior institutional mechanism to assess the trade-offs between these sectors and priorities.

Substantial data development, analysis and research have already taken place to build the data and knowledge required to address the policy priorities. INEGI, SEMARNAT, CONAFOR, CONANP, CONAGUA, SAGARPA, INECC and other departments regularly collaborate to produce public reports on environmental-economic accounts, biodiversity and the state of the environment. Universities, NGOs and civil society are engaged in collaboration with the government on many aspects of environmental reporting. While much of this work is progressive, it does not use a common statistical infrastructure. That is, since standards, levels of quality, concepts and classifications vary across initiatives, there is substantial duplication of effort and results are difficult to integrate. Furthermore, some key datasets, such as national land cover and land use are not available. Available data and studies are often based on varying standards, levels of quality, concepts and classifications. This results in a duplication of effort and difficulty in integrating across initiatives.

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 Mexico. The degree dependence of Mexico'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?

At an international level, the Government of Mexico is engaged in reporting on and developing technical capacity for Global Geospatial Information Management (GGIM), the green economy, climate change, food security and the financing of biodiversity. As with national policy priorities, these initiatives are also often sectoral, based on available data and lack coherence in term of a common statistical infrastructure.

The Government of Mexico is also engaged in related statistical development activities, such as the implementation of the SNA 2008 and the promotion of the Mexico Statistical Quality Assessment Framework. These provide excellent guidance on how to create a common statistical infrastructure. However, there would be substantial benefits in improved coherence and efficiency if these standards were implemented across the National Statistical System, especially for sustainable development information.

Enhancing the existing government-wide statistical infrastructure based on an accounting approach, guided in part by expanding the SEEA-CF accounts and testing the SEEA-EEA, would support the streamlining and mainstreaming of several initiatives focussing on addressing sustainable development priorities. Streamlining would reduce costs through improving the efficiency of data collection and interpretation of data by working within a common statistical infrastructure (for example, the UNECE Generic Statistical Business Process Model) and coherent quality guidelines provided by the Quality Assurance Framework. Mainstreaming of these initiatives would be supported by the creation of new data and indicators that could directly report on environment-economy trade-offs.

Given this context, this assessment indicates the need for a 3-5 year work plan focussed on (a) strengthening the existing environmental-economic accounting information system; (b) assessing and integrating existing spatial data required to support expanded SEEA-CF accounts and to pilot ecosystem accounts; (c) conducting training and capacity building in environmental-economic accounting including ecosystem accounting; (d) enhancing coordination with national initiatives as well as international and donor agencies; and (e) immediately beginning work on priority ecosystem accounts including Ecosystem Extent Accounts, Biodiversity Accounts, Ecosystem Services Accounts for protected areas and forests, as well as augmenting existing SEEA-CF accounts. These aspects are elaborated below:

- **Strengthening the existing environmental-economic accounting information system** would build on current accomplishments based on the existing SEEA-CF accounts and further enhance the existing statistical infrastructure with an integrated common spatial data infrastructure, tools and techniques for spatially-detailed and harmonized information on the characterization and use of land, rivers, coastal and marine areas, protected areas and other special ecosystems (such as buffer zones), as well as local area data on the population and the economy;
- **Assessing and integrating existing data required to support expanded SEEA-CF accounts and to pilot ecosystem accounts** would provide coherent data from across the government

to link the SEEA accounts with national and international requirements for sustainable development indicators;

- **Conducting training and capacity building in environmental-economic accounting including ecosystem accounting** across the range of stakeholders would provide a common set of skills across the National Statistical System to support improved statistical process management and data integration;
- **Enhancing coordination with national initiatives, as well as international and donor agencies** would promote the concept of a single National Statistical System and lead to efficiencies in improved data quality and reduction of duplication of effort;
- Immediately beginning work on priority accounts including, Water Accounts, Biodiversity Accounts and Land Accounts, would take advantage of the current momentum to produce:
 - Spatially-detailed pilot **Ecosystem Extent Accounts**, recording ecosystem types (terrestrial, freshwater, coastal, and marine) and their use and ownership, as well as changes over time and the attribution of those changes to natural and socio-economic drivers;
 - Spatially-detailed pilot **Water Accounts**, recording the stock, flow, quality and availability of water as well as changes over time and the attribution of those changes to natural and socio-economic drivers;
 - Spatially-detailed **Biodiversity Accounts** that integrate available information on habitat quality and species into a common statistical infrastructure;
 - Initial Ecosystem Services Supply and Use Accounts that focus on protected areas and forests;
 - SEEA-CF Accounts including Air emissions (which would require more detailed energy and materials accounts), and enhanced environmental expenditure accounts (including disaster relief to compare with expenditures on disaster prevention);
 - These accounts could be supported by case studies that link conditions of these ecosystem assets with **socio-economic benefits of ecosystem services** such as water security, food security and employment;
 - **Feasibility studies** for developing further pilot SEEA-EEA accounts such as: Carbon Accounts that include detail on biocarbon, Ecosystem Condition Accounts that record the biophysical characteristic and quality of ecosystem assets, and comprehensive Ecosystem Services Supply and Use Accounts would provide a basis for planning further work to link ecosystem assets and their capacity to provide services to support the economy and other human activities.

The programme of work would address national priorities by building on the strengths and addressing the constraints. These strengths include a well-coordinated national planning system, excellent technical capacity and collaboration in environmental statistics, availability of some key datasets and broad engagement of several stakeholders on environment-economy related issues.

However, engaging in such a programme of would need to address constraints by:

- Developing sources of funding,
- Building technical capacity through training and collaborative work experience,
- Increasing collaboration and coherence between key stakeholders (national, provincial, local, universities, NGOs, international agencies),
- Developing key datasets (land use, land ownership, spatially-detailed data on water supply and use and economic activities), and

- Building the awareness of stakeholders and civil society of the importance of ecosystems to people and encouraging a culture of measurement.

Such a programme of work would be an opportunity to create a sustainable statistical infrastructure for coherent reporting and monitoring of national policy priorities and programs related to natural resources including ecosystem and their services. Building such an infrastructure would leverage on existing capacities and create new ones through engagement of stakeholders, increased harmonization of the National Statistical System, developing essential new datasets, improving awareness and building technical capacity.

PART TWO

4 NP-AEEA – HIGH-LEVEL OUTCOMES

It is important to link proposed activities with their ultimate outcomes. This section summarises the key outcomes that could be achieved for Mexico 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:

- Strengthening the existing environmental-economic accounting information system;
- Assessing and integrating existing data required to support expanded SEEA-CF accounts and to pilot ecosystem accounts;
- Conducting training and capacity building in environmental-economic accounting including ecosystem accounting;
- Enhancing coordination with national initiatives, as well as international and donor agencies; and
- Immediately beginning work on priority ecosystem accounts including Ecosystem Extent Accounts, Biodiversity Accounts, Ecosystem Services Accounts for protected areas and forests, as well as augmenting existing SEEA-CF accounts, cases studies of human dependence on ecosystems and feasibility studies for Carbon Accounts, Ecosystem Condition Accounts and more comprehensive Ecosystem Services Supply and Use Accounts.

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 Guidelines on Integrated Economic Statistics (IES)²⁶ suggest three main interlinked and mutually reinforcing building blocks for developing integrated statistical systems: conceptual organizing frameworks, institutional arrangements and statistical production processes²⁷. The building blocks are interlinked and mutually reinforcing structures for setting up integrated statistical systems.

Linking these to the needs assessment and high-level outcomes sections above, the building blocks when applied to the NP-AEEA – Investment Logic Framework section below are:

- 1) Mainstream the environmental-economic accounting frameworks
- 2) Rationalise and integrate institutional arrangements
- 3) Integrate the data, tools and statistical production processes

²⁶ <http://unstats.un.org/unsd/nationalaccount/docs/IES-Guidelines-e.pdf>.

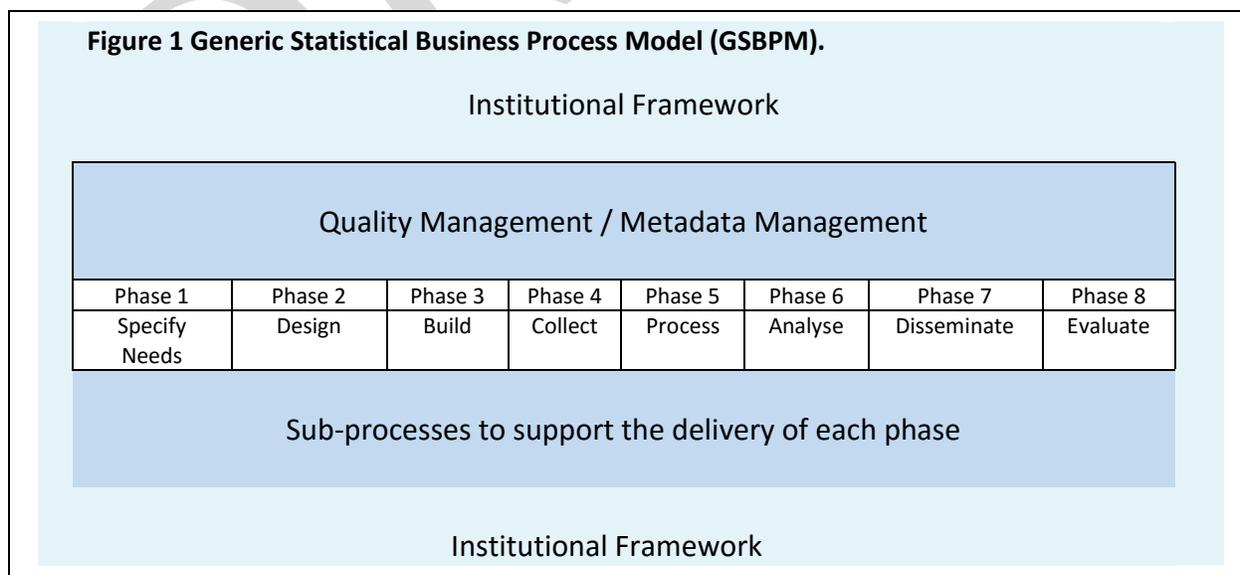
²⁷ The building block approach presented here is an application of the process presented in the Guidelines on Integrated Economic Statistics (IES) (<http://unstats.un.org/unsd/nationalaccount/docs/IES-Guidelines-e.pdf>).

4) Ecosystem accounting experimentation²⁸

Blocks 1-3 are the core and required to achieve the overall aim and Block 4 ensures continuous improvement including research and development, testing and experimentation to adapt the guidelines of the SEEA to the country situation. The building blocks are combined with the Generic Statistical Business Process Model (GSBPM²⁹) shown in **Figure 1**. 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.

The GSBPM should be applied and interpreted flexibly and used to provide guidance. It is not a rigid framework in which all steps must be followed in a strict order. Instead, it identifies the possible steps in the statistical business process, and the inter-dependencies between them. Although the presentation of the GSBPM follows the logical sequence of steps in most statistical business processes, the elements of the model may occur in different orders in different circumstances. In addition, some sub-processes will be revisited a number of times forming iterative loops, particularly within the Process and Analyse phases.

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



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

²⁸ Experimentation has been added as an additional building block in support of SEEA EEA and the experimental nature of work needed.

²⁹ <http://www1.unece.org/stat/platform/display/GSBPM/GSBPM+v5.0>

5.1 Mainstream the environmental-economic accounting frameworks

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 to structure it in stages 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 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 that 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 affects 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 economic benefits of the same landscape. 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 across domains. 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 NSS 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 NSOs.

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 production. 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. This would be followed by the development of a strategic investment plan for their integration.

5.4 Ecosystem accounting experimentation in Mexico

There remains some uncertainty in the science and its application in *ecosystem accounting* within the broad umbrella of environmental-economic accounting. A cost-effective approach to determining the best pathway is to experiment on a number of fronts at the same time whilst keeping in mind the long-term aim of full integration and publication 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.

Mexico would be well-placed to participate in this experimentation, given the high level interest in sustainable development and the need articulated among a range of stakeholders to assess the economic benefits of the sustainability efforts undertaken. This establishes the conditions for broad support for the SEEA approach in the country.

PART THREE

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 the building blocks and the longer term aim of the 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 that 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 broad management strategy. 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 Mexico include:

- High level commitment, and engagement of partners; common coordination; data collection/sharing implications
- Advisory committees (IES³⁰, p. 39)
- Legislation, mandates to coordinate, produce, supply inputs etc.
- Inter-institutional commitments for production of integrated statistics – Memoranda of Understanding (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 NSOs 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

³⁰ The Guidelines on Integrated Economic Statistics <http://unstats.un.org/unsd/nationalaccount/docs/IES-Guidelines-e.pdf>. See above.

first step is to engage all relevant agencies in the discussion of the necessity and the mutual gains of improving integration within the NSS. 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.

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 the experience gained. 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

The GSBPM Phase 3 (Build) and Phase 4 (Collect) are based on the understanding of the mechanics of delivering on a new system developed in Phase 2 (Design). This includes, but is not limited to:

- Data collection (or generation – through sampling, inventories/surveys, detailed process-modelling, spatial and remote-sensing applications);
- Data harmonization (processing, quality control, imputation);
- Determining accounting inputs;
- Accounting outputs estimation;
- 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 and what data can be used or developed. 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 classifications³¹, 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

³¹ Accounting classification enables the translations between existing classifications.

- Validation data and specific quality criteria to formally track progress

These methodological issues will be addressed in collaboration with an international community of practice on environmental-economic and 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

When developing a new account, it is very important to ensure the timely availability of micro-data and the time required for processing. A part of the experimentation should be to test the design for feasibility within the business and software architecture. This will reveal any consequences for the information infrastructure (IT) environment (Geographic Information System (GIS) capacity, running time, storage etc.). If the feasibility tests show bottlenecks, one must make sure that they can be resolved at reasonable cost 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 statistical systems managed by NSOs, 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 adaptation to integrate with other systems. This area of experimentation is very important because there are significant opportunities to leverage the current system to save resources.

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

- The specification of ecosystem assets and services used in payments for ecosystem services programs³²
- Land offset programs for environmental purposes³³
- Land use change programs for carbon sequestration³⁴
- 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 GSBPM-compliant statistical processes. Whether or not these have been conducted according to Phases 1 through 7 of the

³² <http://www.depi.vic.gov.au/environment-and-wildlife/environmental-action/innovative-market-approaches/ecomarkets>

³³ <http://www.trustfornature.org.au/>

³⁴ <http://www.un-redd.org/aboutredd/tabid/102614/default.aspx>

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 assess 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. After integration and assessment, the project team is in a position to produce a work plan that specifies the timelines, resources required to produce the 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 in more detail in **Figure 3** in Section 9). The ILF should not be seen as a series of steps to be followed consecutively, but as key elements that are essential to the effective delivery of outcomes.

Figure 2. Investment Logic Framework



Participation and Enabling Factors – it is important to identify stakeholders that need to participate and to 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 and Outputs – the program of work is made up of series of activities that lead to a number of outputs. Activities are elements of work and outputs are visible products of that work. Achieving one output may require several activities. It is important to ensure that each activity can be linked to an output to ensure its relevance and timing. Finally, outputs can be linked to impacts and outcomes.

Impacts and Outcomes - Impact evaluation measures the difference between what happened with the programme and what would have happened without it. It answers the question, “How much (if any) of the observed change 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 Mexico

Several government institutions in Mexico are involved in providing and using sustainable development information:

- SEMARNAT (Secretary for Environment and Natural Resources), as well as the related national commissions:
 - CONABIO (National Commission for Knowledge and Use of Biodiversity)
 - CONAGUA (National Water Commission)
 - CONANP (National Commission of Natural Protected Areas)
 - CONAFOR (National Commission of Forestry)
 - PROFEPA (Federal Attorney for Environmental Protection)
 - INECC (National Institute of Ecology and Climate Change)
- INEGI (Mexico's National Institute of Statistics and Geography)
- SAGARPA (Secretariat of Agriculture, Livestock, Rural Development, Fisheries and Food)
- Secretariat of Finance and Public Credit (Hacienda)
- SEDATU (Secretariat of Agricultural, Territorial and Urban Development)
- SECTUR (Secretariat of Tourism)
- FONATUR (National Fund for the Development of Tourism)
- SENER (Secretariat of Energy)
- SEMAR (Secretariat of the Mexican Marine)
- SRE (Secretariat of Foreign Affairs)
- SALUD (Secretariat of Health)
- SEDESOL (Secretariat of Social Development)
- CENAPRED (National Commission for Disaster Prevention)
- CONACYT (National Council for Science and Technology)
- IMTA (Institute of Water Technology)

INEGI is the institution that generates statistical information of national interest in Mexico and supplies information related to environmental accounts. In addition, the environmental sector in Mexico is comprised of various units of government headed by SEMARNAT. These units are CONAFOR, CONABIO, CONANP, INECC and CONAGUA.

As with most governments, departments work within their mandates to support sectoral objectives. However, to meet the national objectives of sustainable development, environment and green economy requires sectors to work together more fully.

Government links with international initiatives tend to be sectoral, and often not through the areas that are responsible for compiling statistics. This sectoral approach promotes not only duplication, but also results in conflicting information and competition goals.

Within INEGI, there are opportunities for further integration of geographic information with economic and social information. SEEA-EEA requires spatial information as this is the means to "unbundle" indicators at the national level to understand local conditions that are influencing them.

The SEEA can be seen as a statistical initiative for the environment, but its close link with the economy implies participation across government, including institutions such as SAGARPA and the Ministry of Finance. Advance the implementation of SEEA-EEA provides the opportunity to

create high-level institutional mechanisms to guide inter-institutional working groups in the development of a truly national outcome that addresses national priorities.

7.1.2 Enabling factors

The knowledge base for environmental-economic accounting exists in Mexico. This has grown through several initiatives, such as the development of core SEEA accounts (Environmental and Ecological Accounts at INEGI) and the substantial integration of environmental information in SEMARNAT's SNIARN. 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 Mexico are directly relevant to environmental-economic accounting. Projects and activities identified include:

- INEGI has produced several environmental-economic accounts and relevant environmental information:
 - Mexico was one of the first pilot countries for the implementation of SEEA Central Framework, taking 1988 as the base year and publishing its first report in 1991.
 - The Environmental and Ecological Accounts including oil, forest and groundwater depletion and air emissions, solid waste, water pollution, soil degradation and environmental protection expenditures; water, fisheries and material flows.
 - Green GDP Indicators sums the economic estimates of the costs of depletion (hydrocarbons, forests and groundwater) and degradation (soil degradation, solid waste management, air and water pollution abatement expenditures).
 - The Economic Census and environmental module is one of the largest conducted in the world with a coverage of just over 5.6 million locations;
 - The SNIEG already contains much spatially-referenced geographic and environmental information, including satellite imagery, digital elevation models, topography (hydrography and transportation networks), Census geographies, geology, climate, water, soils, vegetation, and land use;
- SEMARNAT, as part of its SNIARN includes:
 - a statistical database (BADESNIARN) which contains statistical information on topics related to the environment,
 - the Digital Geographic Area System - ESDIG on topics such as vegetation, land use, water bodies, climate, environmental and social programs, and
 - a National System of Indicators (SNIA) on the current state of the environment and natural resources, as well as the pressures and institutional responses for their conservation, restoration and sustainable use.
- INEGI and SEMARNAT together with several other agencies are:
 - developing indicators to address the Post-2015 Development Agenda (Sustainable Development Goals or SDGs)
 - collaborating on the UN Initiative GGIM (Global Geospatial Information Management).
- SEMARNAT, through INECC, collaborated with UNEP
 - has produced a Green Economy Study for Mexico
- CONABIO:
 - manages much information on biodiversity hot spots and conducts ocean monitoring.

- is represented on IPBES (The Intergovernmental Panel on Biodiversity and Ecosystem Services)
- CONANP is collaborating with GIZ on:
 - Valuation of ecosystem services in federal protected areas project.
- UNEP, in collaboration with INECC and the Directorate General of Strategic Planning and Financing of SEMARNAT:
 - Produced a TEEB country study for Mexico
- Secretariat of Finance (Hacienda) and CONABIO in collaboration with UNSD are:
 - Coordinating the BioFin initiative.
- CONAFOR is engaged in:
 - Forest Investment Program (FIP),
 - REDD+ implementation with The Latin American Investment Facility.
- SAGARPA has published studies about the GDP and economic and productive portions of different branches of the primary sector and its annual changes, perspectives of the growth of the agrarian sector from 2011 to 2020, agroeconomic indicators of each state of Mexico and others. It collaborates with OECD to extend and maximise productivity in the agrarian sector.
- CENAPRED publishes many reports about geologic, hydrometeorologic and anthropogenic hazards apart from the National Hazard Atlas, for example landslides and droughts.
- SECTUR published a report about the vulnerability of the tourism sector to climate change
- SENER:
 - maintains a database of statistics about amounts, flows and prices of energy resources, like petroleum and carbon stocks.
 - publishes the national energy balance annually, including prices, production and consumption of energy, as well as statistics about natural resources for energy use.
- IMTA publishes studies about particular water ecosystems and technical guides about water processing.

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

The SNIEG governance structure provides a starting point that can be adapted to address integrated environmental-economic issues. The SNIEG, under the chairmanship of the President of INEGI as chair of the National Advisory Board, draws from four Executive Committees:

- Demographic and social
- Economic
- Geography and environment
- Government, public security and justice administration

Each of the Executive Committees, presided over by a Vice-President of INEGI, is served by specialized Technical Committees.

7.1.3 Planning and coordination

Planning and coordinating the implantation of the NP-AEEA will require a high-level SEEA Steering Committee to be established. This would provide a forum for senior representatives of core stakeholders selected from the Executive Committees of the SNIEG: INEGI, SEMARNAT, CONABIO, Finance, and INECC, with selected representatives from the private sector, academia and civil society, to set priorities and coordinate the work on environmental-economic accounting. The scope of the Steering Committee could be expanded to include other stakeholders to address broader issues of providing supporting information for sustainable development, green economy and climate change policies.

The SEEA Steering Committee would be most effective by coordinating closely with other national data integration initiatives such as responding to the SDGs, addressing requirements for REDD+ and NBSAPS, harmonizing the SNIEG, producing the SNIARN and aligning the production of indicators for the National Development Plan.

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

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

A broader, middle-management Technical Committee would include senior experts from agencies represented on the Steering Committee plus other data providers and users such as the Secretariat of Finance, CONANP, PROFEPA, SAGARPA, CONAFOR, CONAGUA, CENAPRED, SECTUR, SENER, IMTA, SRE, SALUD, SEDESOL and CONACYT. These could be drawn from existing members of the SNIEG Technical Committees. Terms of Reference for the Technical Committee could include responsibilities to:

- Under the guidance of the Senior Steering Committee, coordinate technical aspects of implementing the work plan, by:
 - Establishing Technical Working Groups in keeping with priorities established in the work plan by allocating appropriate staff and necessary resources,
 - Coordinating the work of the Technical Working Groups, by setting priorities, reviewing and revising specific work plans, fostering collaboration and promoting capacity building,
 - Coordinating technical work with related national and international initiatives (such as REDD+, BioFin, Green Economy, SDGs, etc.)
 - Internalizing the activities of the NP-AEEA into planning documents

Reporting on priorities, plans and progress to the Senior Steering Committee 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, Technical Working Groups should be organized into centres of subject-matter and functional specialization.

The subjects of the initial accounts to be developed include Water Accounts, Land Accounts and Biodiversity Accounts. This would result in the establishment of four subject matter Technical Working Groups: an Ecosystem Extent Accounts Working Group, a Water Accounts Working Groups, a Biodiversity Accounts Working Group, and a SEEA-CF Working Group.

Rather than duplicating the capacity to integrate spatial data, classify data and to maintain quality standards, a separate Functional Working Group would be assigned to support all three subject matter groups. This results in four initial working groups, which could be expanded as work becomes more specialized or covers more accounts:

- 1) **Ecosystem Extent Accounts Working Group:** inventory, compile and analyse data on ecosystem assets (terrestrial, freshwater, coastal and marine ecosystems and their condition), produce Ecosystem Extent Accounts and conduct feasibility studies on producing Condition Accounts;
- 2) **Water Accounts Working Group:** inventory, compile and analyse data on water stocks and flows (including water quality and ecosystems as beneficiaries), produce Water Accounts, provide water quality data to Ecosystem Extent Accounts Working Group;
- 3) **Biodiversity Accounts Working Group:** inventory, compile and analyse data on species (ranges, conditions and habitats), produce index of biodiversity for Ecosystem Condition Account;
- 4) **SEEA-CF Working Group:** update existing SEEA-CF accounts and conduct feasibility studies on Air Emissions and enhanced Environmental Protection Expenditure Accounts (to include expenditures on disaster prevention and relief); and
- 5) **Functional Working Group:** design and build spatial information system, develop and maintain data quality standards, provide GIS and data processing support to other Working Groups.

The composition of each Technical Working Group will need to reflect the particular account being developed, but in general, would need to contain representatives from the physical sciences (including ecology and geography), economists, accountants, and statisticians. The role of the statisticians would be to ensure on-going and regular production of data by government. The main government agencies responsible for the collection, management and distribution of data relevant to the account would need to be represented.

Each of the Technical Working Groups would need to meet regularly, on the order of once per month in the first 1-2 years, and less frequently after that (3-4 times per year). The focus of the work is the production of pilot accounts, with a view to establishing the technical processes for the regular production and use of accounts within government.

This will be accomplished initially by inventorying available data, assessing its quality, identifying gaps, and integrating the data into a common spatial infrastructure. Priority data gaps could then be filled based on the most feasible approach (e.g., new data collection, adaptation of existing data, adaptation of global datasets).

As part of the planning and coordination phase, each of the Technical Working Groups would produce a detailed work plan. At least once a year, all Technical Working Groups should come together to report progress, share experiences and revise their work plans.

7.2 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 the needs of the *National Development Plan*, and the SDGs, and a coherent spatial database.

7.2.1 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. Overview³⁵ of policies and accounts relevant to environmental-economic accounting in Mexico

Type of account or aggregate	Policy or issue	Agencies
Ecosystem Extent Accounts	<ul style="list-style-type: none"> • National Development Plan (Conserving natural heritage, food security, prevention of disasters, sustainable urban development, access to culture, inclusive green growth) • PROMARNAT (Sustainable Development) • Agricultural Development, Fisheries and Food Program • PNDU (Urban Development) • PSDATU (Agrarian, Territorial and Urban Development) • PRONAFOR (Forestry) • REDD+ • SDGs 	INEGI, SEMARNAT, CONABIO, Finance, CONANP, INECC, CONAFOR SAGARPA, CENAPRED, SEDATU
Water Accounts	<ul style="list-style-type: none"> • National Development Plan (water security, protecting, marine resources, sustainable water management) • PROMARNAT (Sustainable Development) • Agricultural Development, Fisheries and Food Program • PNDU (Urban Development) • PSDATU (Agrarian, Territorial and Urban Development) • SDGs 	INEGI, SEMARNAT, CONAGUA, SEMAR, IMTA
Biodiversity Accounts	<ul style="list-style-type: none"> • National Development Plan (Conserving natural heritage, protect biodiversity, well-being of indigenous communities, touristic potential) • PROMARNAT (Sustainable Development) • PRONAFOR (Forestry) • PROSECTUR (Tourism) • SDGs 	INEGI, SEMARNAT, CONABIO, SECTUR, FONATUR, CONAFOR, PROFEPA

³⁵ For detailed linkages between policies and accounts, see the Assessment Report.

Ecosystem Services Accounts	<ul style="list-style-type: none"> • National Development Plan (Conserving natural heritage, protect biodiversity, well-being of indigenous communities, touristic potential) • PROMARNAT (Sustainable Development) • PRONAFOR (Forestry) • SDGs 	INEGI, SEMARNAT, CONABIO, CONAFOR, CONANP, INECC
Ecosystem Condition Accounts (Feasibility)	<ul style="list-style-type: none"> • National Development Plan (conserving natural heritage, recovering deteriorated ecosystems, resilience of ecosystems, food security) • PROMARNAT (Sustainable Development) • Agricultural Development, Fisheries and Food Program • PRONAFOR (Forestry) • REDD+ • SDGs 	INEGI, SEMARNAT, CONABIO, INECC, CONAFOR, PROFEPA, SAGARPA
Carbon Accounts (Feasibility)	<ul style="list-style-type: none"> • National Development Plan (low-carbon economy, green economy) • PROMARNAT (Sustainable Development) • PRONAFOR (Forestry) • REDD+ • SDGs 	INEGI, SEMARNAT, CONAFOR, SENER, INECC
Ecosystem Services Supply and Use Accounts (Feasibility)	<ul style="list-style-type: none"> • National Development Plan (sustainable production and consumption of ecosystem services, financing sustainable use of ecosystems) • PROMARNAT (Sustainable Development) • SDGs 	INEGI, SEMARNAT, Finance, CONABIO, CONANP, SAGARPA, CONAFOR
Air Emissions Accounts (Feasibility)	<ul style="list-style-type: none"> • National Development Plan (low-carbon economy, green economy) • PNDU (Urban Development) 	INEGI, SEMARNAT, INECC
Environmental Protection Expenditures to include disaster prevention and relief	<ul style="list-style-type: none"> • National Development Plan (protection from disasters) 	INEGI, SEMARNAT, CONAPRED, Finance

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

- Spatially-detailed pilot **Ecosystem Extent Accounts**, recording ecosystem types (terrestrial, freshwater, coastal, and marine) and their use and ownership, as well as changes over time and the attribution of those changes to natural and socio-economic drivers;
- Spatially-detailed pilot **Water Accounts**, recording the stock, flow, quality and availability of water as well as changes over time and the attribution of those changes to natural and socio-economic drivers;
- Spatially-detailed **Biodiversity Accounts** that integrate available information on habitat quality and species into a common statistical infrastructure;
- Initial **Ecosystem Services Supply and Use Accounts** that focus on protected areas and forests;

- SEEA-CF Accounts including Air emissions (which would require more detailed energy and materials accounts), and enhanced environmental expenditure accounts (including disaster relief to compare with expenditures on disaster prevention);
- These accounts could be supported by case studies that link conditions of these ecosystem assets with **socio-economic benefits of ecosystem services** such as water security, food security and employment;
- **Feasibility studies** for developing further pilot SEEA-EEA accounts such as: Carbon Accounts that include detail on biocarbon, Ecosystem Condition Accounts that record the biophysical characteristic and quality of ecosystem assets, and comprehensive Ecosystem Services Supply and Use Accounts would provide a basis for planning further work to link ecosystem assets and their capacity to provide services to support the economy and other human activities..

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). Ecosystem accounts require greater spatial detail than most existing statistical processes. This 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.

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 Senior Steering Committee, Technical Committee and Technical Working Groups. It is important that these first pilot accounts be 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 communicate the results of each account should be held.

7.2.2 Capacity building

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

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

7.2.2.1 Human resource capacity

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

- Workshop on ecosystem extent accounting (1st half of 2016)

- Workshop on biodiversity accounting (1st half of 2016)
- Workshop on ecosystem service accounting (2nd half of 2016)
- Workshop on water accounting (2nd half of 2016)

Subsequently, additional detailed training and engagement is likely to be needed in 2017 as the production of the pilot accounts draws closer (i.e. from mid-2017).

In addition to in-country training, a range of other capacity building activities should be considered including:

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

7.2.2.2 Infrastructure

Ensuring that the account developers have the necessary information technology and data to support the development of accounts will also be important. This need is already being addressed in a number of current projects, such as the development of the SNIARN.

National experience in (a) ecosystem services valuation, monetary or social and (b) in integrating interdisciplinary information into broad cross-sectoral national assessments will require collaboration with academia and the research institutes. Expanding the SEEA-CF accounts and testing the SEEA-EEA could begin to address this by providing training and collaborative work experience.

This training and work experience would also provide INEGI's General Directorate of Geography and Environment with experience in applying their data to broader national assessments. Further, it would provide INEGI's National Accounts staff with experience and training in analysing ecosystem and spatial data (e.g., land cover and land use classifications, environmental quality indicators, biophysical measures of ecosystem service flows).

7.3 Impacts and final outcomes

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 expected as a result of the activities.

Table 2 provides 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 <div style="text-align: right; padding-right: 20px;">Human resources</div> <div style="text-align: right; padding-right: 20px;">Infrastructure</div>	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 and agencies

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

8 CONCLUSIONS AND NEXT STEPS

8.1 Conclusions

The focus of the NP-AEEA is on medium-term (3-5 year) activities that will produce substantial new information to address Mexico's sustainable development policy priorities. This is the first stage of creating a common, cost-effective and sustainable statistical infrastructure for environmental-economic accounting. 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 planning process.

This NP-AEEA provides the foundations to write proposals that provide full details for each activity and the funding required. It 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 NP-AEEA, including senior and technical staff, planning and 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 NP-AEEA is summarized and presented at relevant meetings and made available to all agencies and published on the Internet.

8.2 Next steps

To progress from a plan to 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.

8.2.1 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-AEEA. 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 NSS may not be mentioned in a sponsor's 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.

8.2.2 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.

8.2.2.1 Participants

The first step in developing a proposal is to assemble the team that 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.

8.2.2.2 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.

8.2.2.3 Timelines

TORs or RFPs 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 also 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.

8.2.2.4 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, the success of the project will be judged on these deliverables. 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.

8.2.2.5 Budget

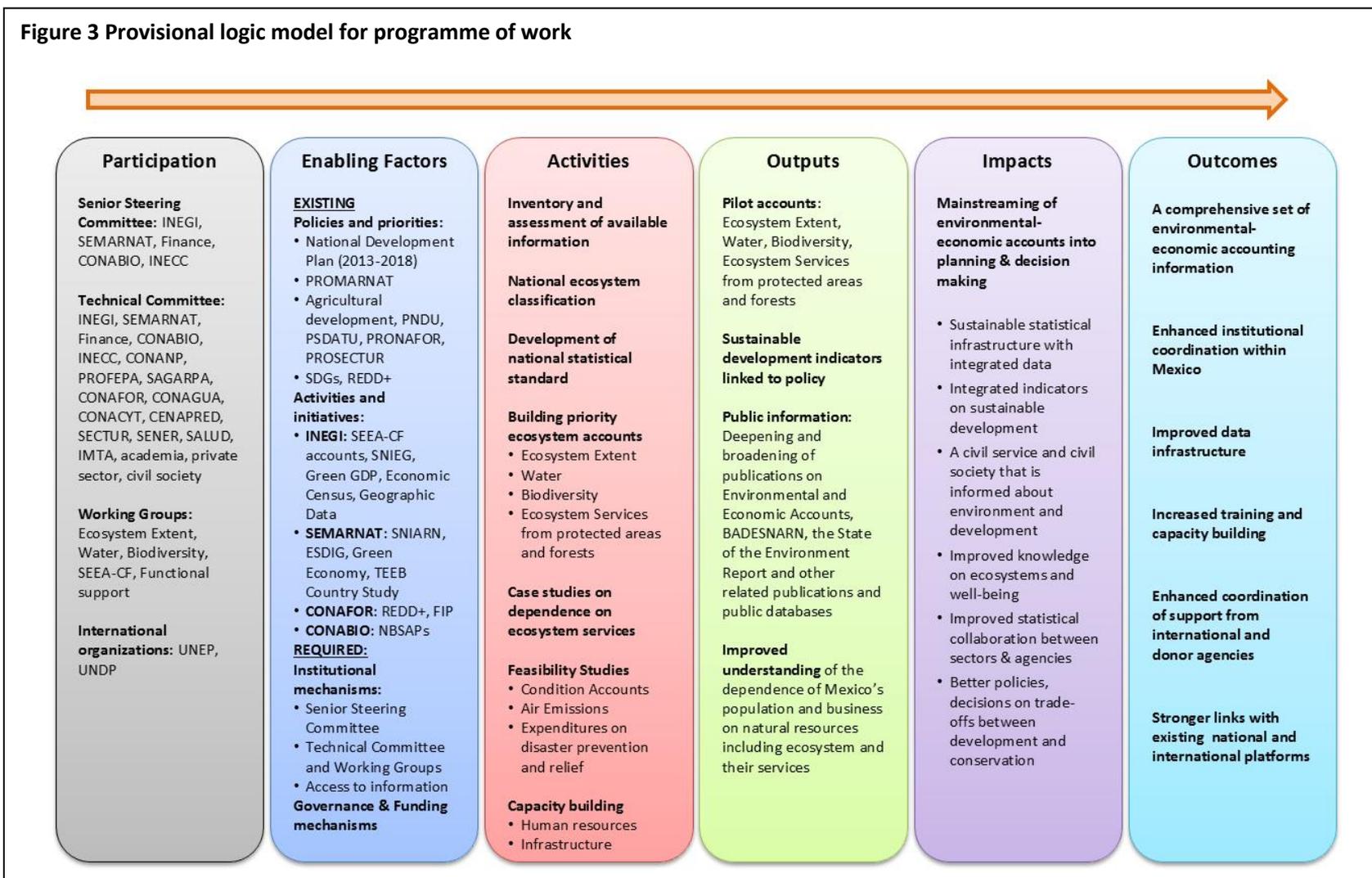
Within the funding limits of the project, it is important to estimate how much work can actually be accomplished. Costs that need to be taken into account are not only the salaries of core participants, but also the “overhead” of administration, capital equipment, data, translation (if necessary), travel,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

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

	Year																							
	2015				2016				2017				2018				2019				2020			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Stage	Prep	Short-term								Medium-term														
Work Package	head count																							
1																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
FTE																								
Salary (\$K)																								
Operations (\$K)																								
Total (\$K)																								
Annual (\$K)																								
Outputs																								

9 MEXICO - NP-AEEA – INVESTMENT LOGIC FRAMEWORK

Figure 3 Provisional logic model for programme of work



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