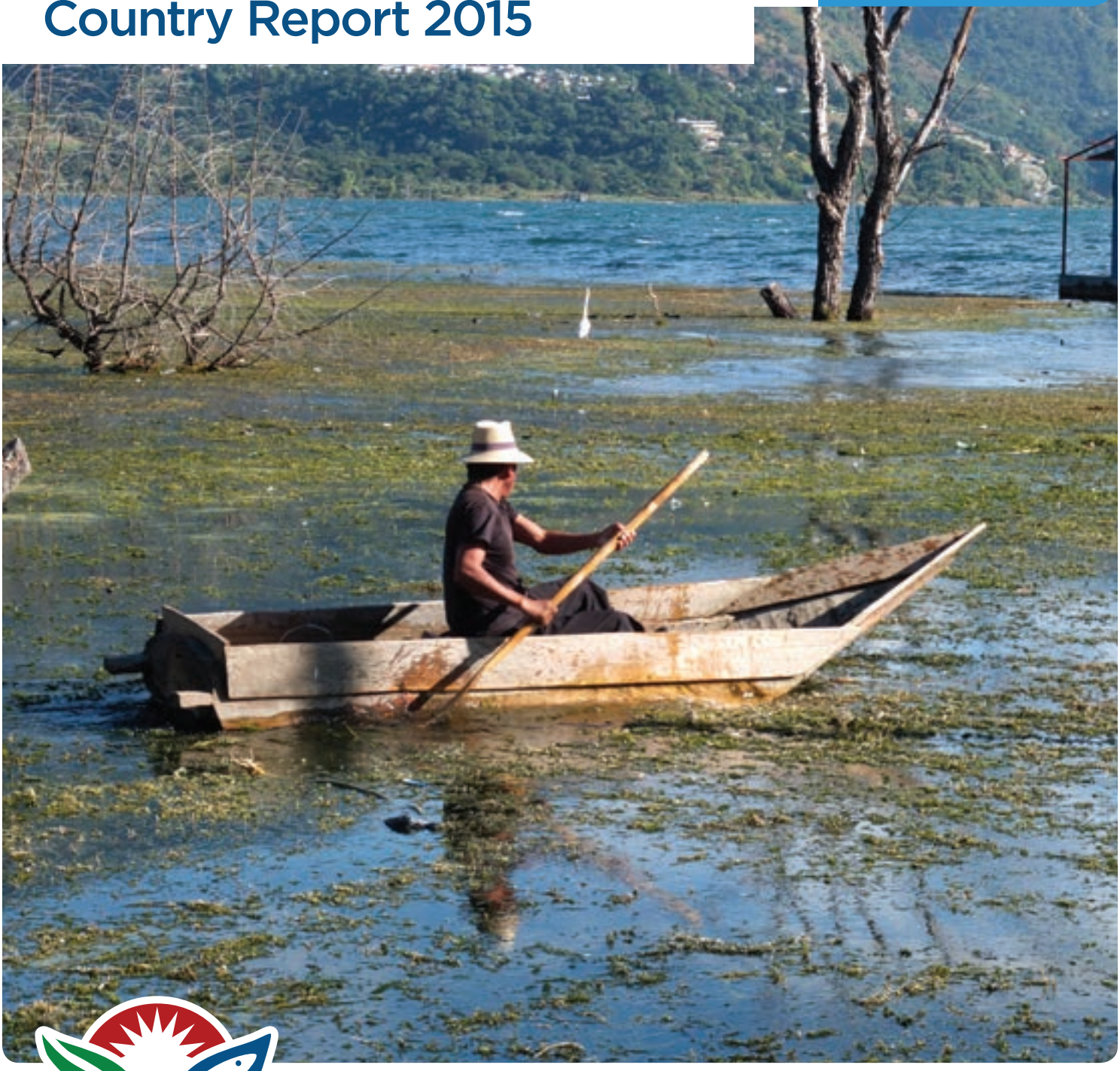
WAVES
Country Report
Guatemala
June 2015

Wealth Accounting and Valuation of Ecosystem Services (WAVES)

Guatemala Country Report 2015



WAVES

www.wavespartnership.org
Wealth Accounting and the
Valuation of Ecosystem Services

Guatemala
Country Report 2015

WAVES – Global Partnership for Wealth Accounting and Valuation of Ecosystem Services

Wealth Accounting and Valuation of Ecosystem Services (WAVES) is a global partnership led by the World Bank that aims to promote sustainable development by mainstreaming natural capital in development planning and national economic accounting systems, based on the System of Environmental-Economic Accounting (SEEA).

The WAVES global partnership (www.wavespartnership.org) brings together a broad coalition of governments, UN agencies, nongovernment organizations and academics for this purpose. WAVES core implementing countries include developing countries—Botswana, Colombia, Costa Rica, Guatemala, Indonesia, Madagascar, the Philippines and Rwanda—all working to establish natural capital accounts. WAVES also partners with UN agencies—UNEP, UNDP, and the UN Statistical Commission—that are helping to implement natural capital accounting. WAVES is funded by a multi-donor trust fund and is overseen by a steering committee. WAVES donors include—Denmark, the European Commission, France, Germany, Japan, The Netherlands, Norway, Switzerland, and the United Kingdom.

Contents

Summary

Guatemala is one of the eight WAVES Core Implementing Countries. Despite significant progress on compiling accounts in the past, the need to institutionalize and align them to policy demands still exists. WAVES Guatemala will focus on supporting the construction of priority accounts, institutional strengthening of key agencies especially on the use of information for policy-relevant decision making.

The Preparation Phase (Aug2013–Dec2014) was completed and all milestones were met, during which time a scoping report and global work plan were prepared and submitted to the WAVES National Steering Committee (NSC), chaired by SEGEPLAN (Planning Secretariat) and integrated also by BANGUAT (Central Bank), MARN (Ministry of Environment), MINFIN (Ministry of Finance) and INE (Office of National Statistics). Building on previous efforts, the work plan addresses four key policy priorities that define the accounts to be built or updated:

- At the sectoral level: To understand better the impact of the economy in the environment and contribution of the environment to the economy, to identify opportunities for innovation and promote activities that could lead to inclusive green growth.

  To foster this, WAVES seeks to update the *flow and assets accounts of SEEA Central Framework* that were developed in previous years, prioritizing the issues of energy and emissions, water, forest, subsoil assets and waste. These accounts will help inform the national development plan and the competitiveness strategies which are part of the current discussions in the country. By working on policy analysis using modeling tools, the accounts will also provide the basis for the redefinition of policy instruments such as those related to protected areas, forest sector incentives and energy subsidies.

- At the national level: To inform issues on food security and drivers of growth, as these are critical for future development and poverty reduction and are a primary concern of the National Development Plan.

  Current scenarios of climate change are potentially going to undermine the country's capacity for food production. There is a need for clear understanding of the relationship between agricultural activities and the ecosystems that support these activities to take better decisions on alternative uses of land and the need to guarantee a sufficient provision of ecosystem services that can allow for an efficient agricultural production, mainly food. *Agriculture-environment accounts* can provide more elements for strategic decisions on these issues of food security and sovereignty.

  There is need to deepen the analysis of strategic natural capital to meet priorities of economic and social policy response to climate change threats and enhance tourism potential as a growth sector in the country. The potential reduction of ecosystems services, including protection against the threats caused by climate change may adversely affect the potential for future economic growth. *Ecosystem accounts* in selected areas could inform decisions at both the macro level, and the specific areas of study. Such accounts would give greater certainty about the strategic ecosystems in the country according to social, economic, environmental and strategic relevance.

- From a macroeconomic perspective: To send the right signals to decision makers to reduce the negative externalities and promote green growth.

  By building *macroeconomic indicators* of wealth policy makers could have proxy indicators of the sustainability of the current trends of growth in the nation.

The implementation phase began in January 2015 with three key objectives to achieve: (i) Implement and update accounts that inform policy by assigning resources to respond to key policy issues, (ii) Integrate NCA into policy dialogue and the policy decision making process (i.e. policy cycle), (iii) Promote and contribute to the institutionalization of NCA through enhanced outreach efforts. Progress can be reported in all components, especially in terms of systematizing all the existing information and producing the first policy notes to inform dialogue at the national level.

1| WAVES in Guatemala

Wealth Accounting and the Valuation of Ecosystem Services (WAVES) is a global partnership funded by the Multi-donor Trust Fund (MDTF). The partnership aims to promote sustainable development by ensuring that natural resources are mainstreamed in development planning and national economic accounts. Different actors at global, national and subnational levels, work towards accomplishing WAVES four objectives: (i) Help countries adopt and implement accounts that are relevant for policies and compile a body of experience; (ii) Develop approaches to ecosystem accounting methodology; (iii) Establish a global platform for training and knowledge sharing; and (iv) Build international consensus around Natural Capital Accounting (NCA).

The three major engagement categories within the WAVES Global Partnership are: (i) Core Implementing Countries (CICs): Countries that receive substantial technical support to implement NCA; (ii) Contributing Donor Partners: Countries or organizations contributing financially to the MDTF; (iii) Participating Partners: International organizations; Civil society representatives including foundations, NGO's, academic and research institutions, and local governments that have an interest in and are able to contribute to the promotion of NCA; Countries that have signed the Communiqué on Natural Capital Accounting.

Guatemala is one of the eight CICs. WAVES is assisting the Government of Guatemala (GoG) to consolidate the ongoing institutional efforts to ensure the medium/long term sustainability of NCA, as well as to update the accounts that have already been compiled for the period 2001–2010 using the UN System of Environmental-Economic Accounts (SEEA). Despite significant efforts, there are still major gaps to improve the compilation and institutionalization of NCA, aligning it to policy demands. WAVES Guatemala will focus on supporting the production of information for prioritized accounts, institutional strengthening of key institutions and, in particular, aiming to use the accounts and related indicators for policy relevant decision-making.

The Preparation Phase (Aug2013–Dec2014) has been completed. During this time, a scoping report and global work plan (FY2015–FY20198) were prepared and submitted to the WAVES National Steering Committee (NSC). The process was chaired by SEGEPLAN (Planning Secretariat) and also joined by BANGUAT (Central Bank), MARN (Ministry of Environment), MINFIN (Ministry of Finance) and INE (Office of National Statistics).

This document integrates details of the work plan and presents the progress up to date. Box 1 shows some of the key aspects for WAVES Guatemala that are described in more detail in the following sections. Policy priorities are grouped in broad thematic areas, which are further explained in Section 3. Sections 4 and 5 explain the accounts to be developed and how they will respond to the broad thematic areas. Finally, Section 6 presents the progress up to date.

Box 1. WAVES Guatemala at a glance

4 Policy priorities:

- Inclusive green growth and poverty reduction
- Food Security
- Climate change, risk and economic growth
- Economic and environmental sustainability

3 Specific objectives

8 Expected results

10 Specific actions or components

4 Types of accounts:

- Physical, hybrid and monetary flow accounts
- Ecosystem accounts
- Agriculture and environmental accounts
- Wealth accounts

1 Single goal: Promote Sustainable Development, which has an implicit goal of reducing poverty.

Multiple policy uses by different institutions, decision groups, users, and in general throughout different stages of the policy cycle

2| Background

2.1| The development context

In Guatemala, 53% of the population lives in poverty (INE, 2011) and is one of the most unequal countries in the American continent (CEDLAS & World Bank, 2014). Living conditions of the poor in rural indigenous areas are below than those of non-indigenous people living in rural areas and far below than the ones of non-indigenous living in urban areas. The Human Development Index (HDI) for Guatemala is 0.628, one of the lowest in the continent. This situation is reflected in the high chronic malnutrition rates and low education levels (the typical worker has not completed more than four years of school).

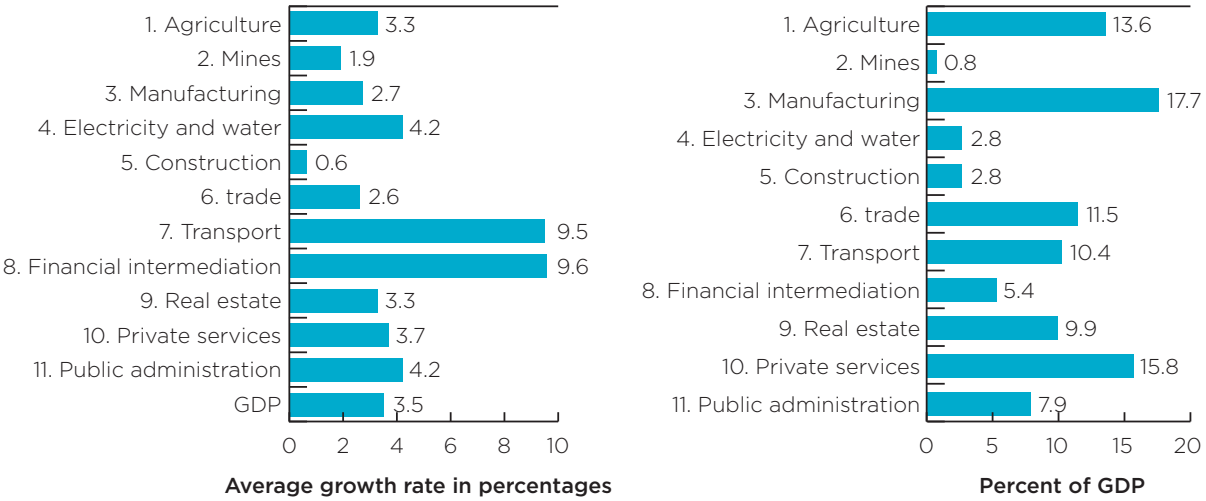
Guatemala's economy reports a modest, but sustained economic growth since the 1980's with an average growth rate of 3.6% between 2001 and 2013 (Figure 1). This positions the country in the Low-middle Income category according to World Bank country groupings. The relative stability during the last years was only affected by the 2008–09 global financial crisis but the country has recovered at a modest but consistent pace since then. Real GDP grew by 4.0 percent in 2014.

The modest growth rate and the high population growth means low per capita growth rates, close to 1% in average during the last 15 years. While Guatemala's GDP per capita increased 30% between 1990 and 2011, countries like Panama and Chile reported an increase close to 120% in the same period.

Since the 1980s, the structure of the economy has undergone significant changes. One of the most notable is the decline in the GDP share of agriculture, hunting, forestry and fishing, from 25% in 1980 to 13.6 % in 2013. By contrast, services have increased from 58% to 66% in the same period. Meanwhile, the industry increased its stake from 17% to 19% of the total value added. Although manufacturing and services are at the top of the current economic structure, the primary sector continues to be very important (Figure 1).

Sectors related to natural resources, such as agriculture, livestock and forestry, and mining and quarrying grew below the pace of the overall economy. Of these sectors, only mining and quarrying increased its share in the economy relative to the one observed in 2001, from 0.7 to 1.1% of GDP. Meanwhile, non-traditional agriculture and livestock suffered strong contractions, as

Figure 1. (a) Average growth rates (2001–2013); (b) Structure of the economy (percentage of GDP, 2013)



Source: BANGUAT.

both reduced its stake by more than 1.3% of GDP. Finally, traditional crops shrank from 3.1% to 2.6% of GDP.

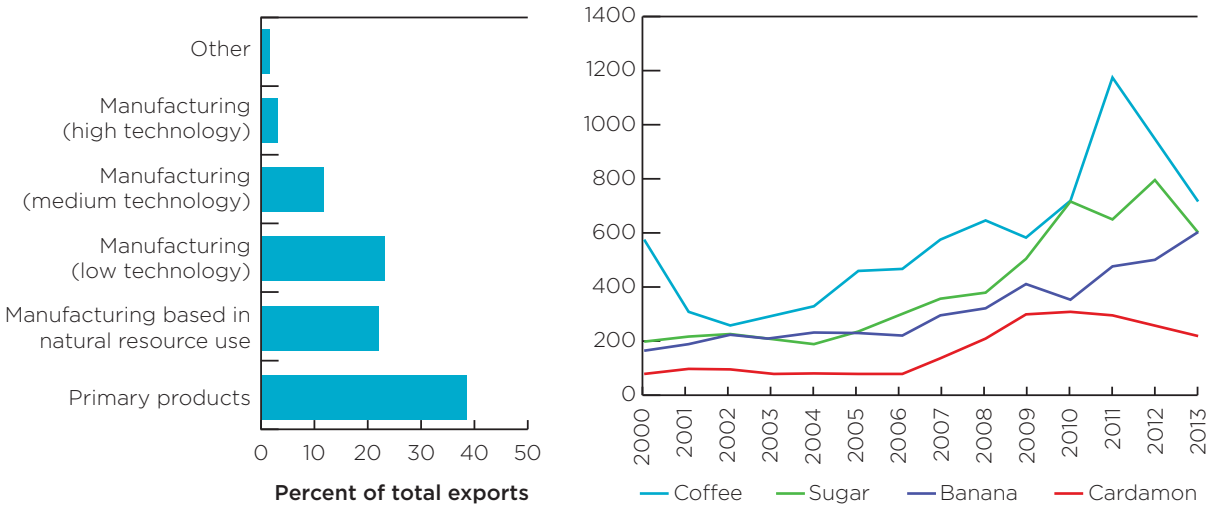
Although the share of agriculture in the national value added declined in recent years, it is still the economic sector that employs more workers. According to INE (2013), based on data from the National Survey of Employment and Income, 31.3% of Guatemalan workers were employed in agriculture, hunting and related activities.

There has recently been a significant increase in foreign direct investment in the natural resources sector. According to BANGUAT, during 2010 and 2013, 30.8% of the total foreign investments went into agriculture, mining and quarrying and 20% into electricity during 2010 and 2013. Additionally, ECLAC (2013) points out that although the majority of foreign investments have historically targeted mining, such investments in the agricultural sector have increased significantly (African palm and sugar, in particular) and generated land use changes with serious environmental impacts.

While diversified non-traditional exports were the fastest growing category, coffee and sugar remain the main export products, thanks to improvements in international prices since 2006. Agriculture and the rural economy in general continue to be a critical factor for poverty alleviation. For example, while coffee industry accounts for only 1.6% of Guatemala's GDP, the effect of the coffee industry on poverty and household consumption is important as it generates 500,000 jobs, employing almost 9% of the active labor force. The majority of coffee producers are smallholders in rural areas. Seven out of ten households in coffee producing regions live in poverty, and two out of ten live in extreme poverty. A similar situation is found for the sugar cane and banana primary economic activities.

The fiscal situation of the country has been very unstable since 2009, as tax revenues fell and the deficit increased. The public accounts were affected by the increased frequency of natural disasters, which demanded additional fiscal resources. According to scenarios developed by ECLAC, this could worsen, due to possible changes in the average temperatures by 2020 (between 0.7 and 1.7 degrees Celsius) and in rainfall (between –1% and –13.5%), plus an increase in

Figure 2. (a) Exports composition (2013). (b) Traditional exports 2000–2013 (million USD)

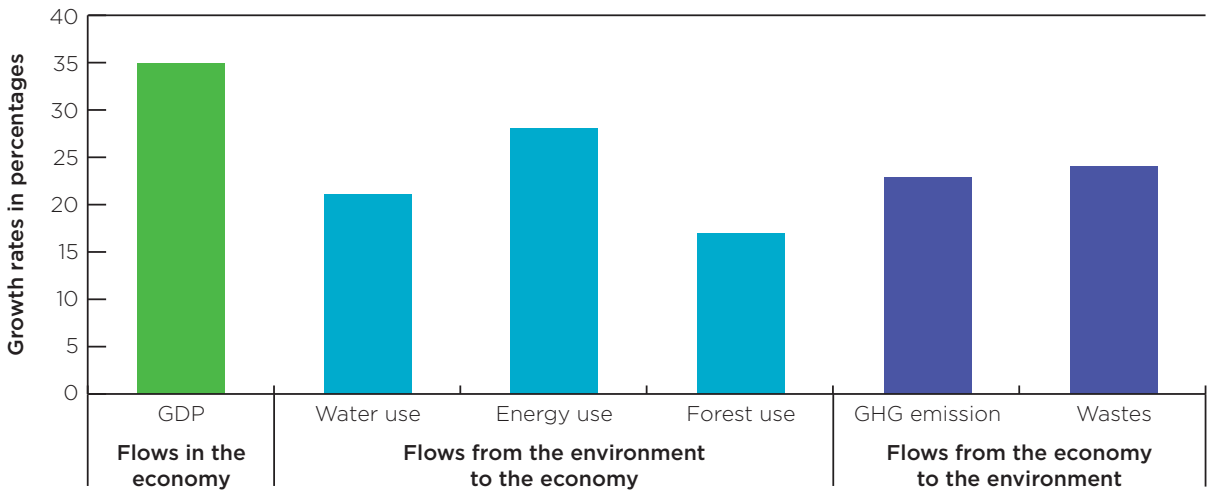


Source: BANGUAT.

hurricane intensity (between 2.1% and 3.5%). This could translate into economic costs accrued as a reduction in GDP. A reduction of at least 1.5% of the Central American GDP is expected for 2020, and could rise to 2.4% by 2030.

Although the economy has grown at a moderate pace, it has generated significant demands from the natural capital base (Figure 3). Primary activities and the economy as a whole are highly dependent on natural capital and in the last decade it has not shown a trend towards a real decoupling. This means that GDP growth rates are almost equivalent as the use natural capital. Likewise, the unwanted by-products of economic growth (emissions and waste generation), have also grown at a similar pace as GDP.

Figure 3. GDP and flows from/to the environment growth rates (2001–2010)



Source: SEEA Guatemala.

The continuous pressures to the environment are affecting the country's natural resource base. Although Guatemala is one of the most ecologically diverse nations on the planet, with 14 different eco-regions and great biological and cultural diversity, it faces threats related to habitat loss, deforestation, over-exploitation of natural resources, and environmental contamination. The continuous pressures to the environment are affecting the country's natural resource base. Although Guatemala is one of the most ecologically diverse nations on the planet, with 14 different eco-regions and great biological and cultural diversity, it faces threats related to habitat loss, deforestation, over-exploitation of natural resources, and environmental contamination.

Many of the country's poor environmental conditions are associated to challenges in enforcement and compliance with existing environmental laws. This jeopardizes the future of small and medium-scale rural producers that depend on the management and protection of biodiversity and natural resources for their economic livelihoods. In addition to these threats, Guatemala is one of the most vulnerable countries to the impacts of climate change, which disproportionately affect rural indigenous farmers and exacerbate poor land management practices.

The environmental situation appears to be more serious than the economic and social situation, which seems to be influenced by the weakness of the state and legal uncertainty of the institutional systems. Environmenatal problems include: accelerated deforestation levels (including in protected areas), dispersion of public policies regarding water (which favors their anarchic use), overuse of soils, and deterioration of coastal and marine areas. In addition, an increased incidence of natural disasters, which carry human and infrastructure losses, were observed. This is linked to the low spending level on environmental protection and management, which is less than 1% of GDP, even though natural capital constitutes about 40% of the country's wealth and that Guatemala participates in 30% of the natural wealth of the Central American region (World Bank, 2012).

For the reasons mentioned above, there is an imperative need to assess and valuate natural capital and mainstream NCA into economic growth policy planning and evaluation.

2.2| The SEEA process in Guatemala and WAVES

WAVES is a strategic partner aiming to institutionalize NCA in development planning and dialogue.

Guatemala has a long history of developing the SEEA physical flow accounts. The Guatemalan SEEA process can be defined as a public-academic partnership. The idea came in late 2005 and implemented from the academy under the leadership of the Institute of Agriculture, Natural Resources and Environment (IARNA), a research center with significant experience in environmental-economic analysis. IARNA belongs to a Jesuit University called Rafael Landivar University (URL).

Since its inception, the SEEA implementation process was designed to ensure its institutionalization, aiming for a strong institutional platform and operating strategies. Today the process has been endorsed by the National Statistics Institute (INE) and categorized as part of the "official statistics" of the country. Its sustainability rests on the institutional platform that has been developed in the past. However, this platform is still fragile and requires continuous support. Furthermore, given that the initial efforts focused on the compilation of the accounts, there is a strong need to link the production of the accounts to its use in policy analysis and dialogue.

To implement and monitor the SEEA, a steering committee (SC) and technical committees (TCs) has already been established, but those were not completely operational before WAVES. The TCs for each of the thematic accounts (water, energy and emissions, forest, land and ecosystems, fisheries and aquaculture, subsoil resources, waste, and environmental expenditures and transactions) were functional for a while, but the activities dwindled as the demand for the information derived by the SEEA is still incipient.

The Guatemalan case shows that the gradual formalization and institutionalization of the process is indeed the goal; however, the starting point not necessarily is the public sphere. Bringing together technical and financial capabilities from non-public entities can enrich the process and give it more credibility at the national level, especially when it is intended that the findings may influence the public policy cycle.

In the past, the accounts have contributed to the policy dialogue in different ways. Some of these contributions are the following:

- **Forest accounts.** The real contribution of forests to the economy is 2.5% of GDP versus the current 1% that is recorded in the national accounts. The forest stock is declining at a rate greater than 1.5%, with 96% of timber extractions uncontrolled. These results have been used as a key input in the new forest management strategy and in efforts to curb uncontrolled logging.
- **Energy accounts.** Most energy consumed in the country comes from burning wood for fuel, leading to increased carbon emissions. These results have been instrumental in opening a dialogue to include emission controls for greenhouse gases in climate change policies and developing strategies (efficient use of fuel wood while maintaining forest productivity and other environmental and community services that forests provide).
- **Water accounts.** The accounts revealed the situation at the national level and inspired analysis for specific regions. For the metropolitan area of Guatemala City the account provided the elements to create the model for accounting for household water use.
- **Land accounts.** The accounts provided information about the relationship between land use, land cover and agricultural production, and informed the 'Initiative for the Integrated Rural Development Act'. This is considered one of the most important bills to achieve sustainable development over the next decade. Unfortunately the bill didn't pass in Congress.
- **Public expenditure accounts.** These accounts showed big variations on expenditures over the period 2006–2010, ranging from US$176.5 million to US$256.5 million. Expenditures were mostly related with natural resources management and not with environmental protection.

2.3| Available information and gaps

As explained above, Guatemala has some experience in developing accounts. Table 1 shows the extent of the work developed until now. Although work seems extensive, there are still gaps to be filled, including the following:

- Most of the work developed until now provides information in physical or hybrid measures. Very few aspects of the accounts can be found in monetary terms. Thus valuation of assets and flows of non-market ecosystem services are still to be developed.
- Ecosystem accounts were never fully developed. With the guidance of the SEEA-EEA there is an opportunity to test an ecosystem accounting framework that is fully compatible.
- Some of the basic information on the accounts was estimated using the best available data at the time, however the new advancements in remote sensing and in the basic economic statistics can be useful in getting better measures. When updating the accounts the past estimations can be enhanced.

Table 1. NCA in Guatemala (2001–2010)

Accounts classified by accounting component	Accounts classified by theme							
	Forest	Water	Subsoil assets	Energy and emissions	Ecosystems	Fisheries and acuaculture	Wastes	Expenditures and other transactions
Asset accounts								
Natural resources	A	B	A			A		A
Ecosystems					B			A
Land and surface water	B	B			B			A
Flow accounts								
Natural resources	B	B	B			B		A
Ecosystem inputs				B	B			A
Products	A	A	A	A		A	B	A
Wastes and emissions	B	B	B	B		B	B	A
Expenditure and other transactions								
Environmental protection expenditure	C	C	C	C	C	C	C	
Natural resource management expenditures	C	C	C	C	C	C		
Aggregates								
Depletion	C		C					
Intensity Indicators	A	A	A	A	A	A	A	C

A = Physical and monetary measures, B = Physical measures, C = Monetary measures.

- Valuation of ecosystem assets was never been done and thus the WAVES program provides an opportunity to start developing these methodologies in Guatemala.

3| Policy framework and policy priorities

3.1| The overarching policy framework: NDP K'atun 2032

NCA is a key instrument to be used in the implementation of the National Development Plan (NDP K'atun 2032) within the public policy cycle, from the design of policies, to monitoring and evaluation of their performance.

In Guatemala it has been unusual to have long-term development plans. Therefore, it is an important milestone that since 2014 the "National Development Plan K'atun: our Guatemala 2032" was endorsed in the government. This plan outlines the broad guidelines of the country, the vision, public policy and programs necessary for development. The K'atun agenda is a process of consensus building on the strategic vision of development of the country, to transform reality and achieve a better future. It takes the form of a series of actions for dialogue and technical analysis and articulates public policies, programs and projects and it's closely linked to the SDGs agenda.[1]

The NDP proposed as main pillars the renewal of the Guatemalan State, welfare for the people, wealth for everyone, natural resources for today and the future. Strengthening the institutional framework stands as a cornerstone for achieving the objectives. Then, attention to social backwardness of the country as a primary objective, the generation of wealth in an inclusive way and attention to sustainable development.

Within the axis of natural resources for today and for the future, it is emphasized that it is crucial to build environmental agreements, greater integration of policies, institutional strengthening, greater relevance of environmental issues on the public agenda, promote environmental awareness, better management of water resources and marine coastal, areas adaptation to climate change and stabilization of carbon emissions, reduction of forest loss (linking it to sustainable management of plantations), effective management of protected areas and biodiversity. Additionally, the importance of implementing land use plans, soil conservation plans, management of energy resources (wood, biofuels and renewable energy) and the integral management of solid waste is highlighted. It also includes the hub of wealth for everyone as a result to be achieved, the link between the economy and the environment.

3.2| NCA and the public policy process

Formally, the public policy process in Guatemala has four phases: Diagnostic (of the policy issue), Formulation and implementation, Monitoring, and Evaluation. Depending on the type of policy (general, sectoral or territorial), there may be different instances and scopes of discussion. In general, monitoring public policies' implementation, as well as their evaluation, tend to be very

[1] One K'atun symbolizes 20 years of the Mayan calendar. K'atun represents the connection between the past, present and future of the indigenous people. Each new set of K'atunes is a new era, a new opportunity for society and human advancement. See details on the NDP K'atun 2032 in http://www.segeplan.gob.gt/2.0/index.php?option=com_content&view=article&id=1359&Itemid=372 and the links to the SDGs agenda in http://www.segeplan.gob.gt/2.0/index.php?option=com_content&view=article&id=1388&Itemid=373.

weak given the deficient formulation processes and corresponding lack of clear objectives and effective means to check progress.

According to the actors interviewed in the scoping study, there are opportunities to incorporate information from SEEA in the public policy cycle in two areas:

- Formulation of sectoral or regional policies by the government, in which practically all sectors intervene (government, private sector and civil society), since measures affecting natural resources will also impact their interests.
- Inform policy debates, which sometimes take the form of roundtable discussions (water, fuel, climate change, etc.), and may lead to the approval or rejection of laws related to the environment and natural resources (such as climate change law that was recently approved). Inform budgetary discussions and decisions throughout the public policy cycle (formulation and approval of funds to finance programs and projects related to specific policies). Strengthen the country's limited planning experience at the national and local level.

The use of indicators is possible to the extent that the cycle of public policy is consistent, that is if objectives are clearly established, effective indicators to measure progress determined, and respective means of verification included. The SEEA can help improve the periodic policy monitoring when indicators are associated to different SEEA lines. Given the national dimension of SEEA it can be complex to track regional plans or policies, but can be used to monitor sectoral policies, the implementation of laws related to environment and natural resources (such as the recently adopted climate change law), the execution of the Public Budget; and the implementation of National Development Plan K'atun itself.

The SEEA can serve as the basis to develop methodological and analytical tools to facilitate the assessment of public projects and programs related to natural resources and the environment. There is still a lack of knowledge of SEEA and its virtues, so it has not been the main source of information during the public policy cycle. It has marginally been used as a source of additional indicators for policy formulation, but no uses for their monitoring and evaluation have been identified so far.

4| Prioritizing the program intervention

4.1| The entry points

To achieve the inclusion of NCA, it is necessary that the information that derives from it contributes to existing processes and initiatives that have strong support from state actors, or to contribute to solve economic problems key.

The scoping study developed three alternative ways to identify policy questions for which NCA can contribute (Annex 3):

- Taking a closer look to the National Development Plan. This initiative is a very relevant milestone in the country's planning system, since is the first effort to build a national consensus based on the system of local development councils established in the 1990s.
- Examining national legislation related to natural resource use, with a special focus on water, forests and energy.
- By developing semi-structured interviews conducted as part of the scoping study. This effort collected perceptions of stakeholders that are or could be involved in using or producing accounts.

Based on the results on these three types of prioritization and on other discussion during a long stakeholder involvement, WAVES Guatemala identified policy priorities that were grouped in four broad thematic areas: (i) Inclusive green growth and poverty reduction, (ii) Food Security, (iii) Climate change, risk and economic growth, and, (iv) Economic and environmental sustainability. These areas are related to the overarching country's national development plan, K'atun: Our Guatemala 2032.

a. **Inclusive green growth and poverty reduction**

To understand better the impact of the economy in the environment and contribution of the environment to the economy, to identify opportunities for innovation and promote activities that could lead to inclusive green growth. To foster this, WAVES seeks to update the **flow and assets accounts** of SEEA Central Framework that were developed in previous years, prioritizing the issues of energy and emissions, water, forest, subsoil assets and waste. These accounts will help inform the national development plan and the competitiveness strategies which are part of the current discussions in the country. By exploiting the analytical potential of these accounts through modeling tools, the accounts will also provide the basis for the redefinition of policy instruments such as those related to protected areas, forest sector incentives and energy subsidies.

b. **Food security**

At the national level, to inform issues on food security and food sovereignty as these are critical for future development and poverty reduction and are a primary concern of the National Development Plan. Current scenarios of climate change are potentially going to undermine the country's capacity for food production and thus there is a need of a clear understanding of the relationship between agriculture activities and the ecosystems that support these activities to take better decisions on alternative uses of land and the need to guarantee a sufficient provision of ecosystem services that can allow for an efficient agricultural production, mainly food. **Agriculture-environment accounts** can provide more elements for strategic decisions on these issues of food security and sovereignty.

c. **Climate change, risk and growth**

To deepen the analysis of strategic natural capital to meet priorities of economic and social policy response to climate change threats and enhance tourism potential as a growth sector in the country. The potential reduction of ecosystems services, including protection against the threats caused by climate change may adversely affect the potential for future economic growth. **Ecosystem accounts** in selected areas could inform decisions at both the macro level, and the specific areas of study. Such accounts would give greater certainty about the strategic ecosystems in the country according to social, economic, environmental and strategic relevance.

d. **Economic and environmental sustainability**

From a macroeconomic perspective, to send the right signals to decision makers to reduce the negative externalities and promote green growth. By building macroeconomic **indicators of wealth** policy makers could have proxy indicators of the sustainability of the current trends of growth in the nation.

4.2| What accounts, with what methods and for what policy priorities

The scoping study provided an interesting insight. There are multiple connections and links between problems and accounts. Individualizing problems and a specific account to tackle them is quite difficult and in some ways limits the potential of the accounts to be used as an integrated framework. In an effort to understand the links, but at the same time make the WAVES program

in Guatemala operational, a matrix that links priorities, methods and accounts was constructed (Table 2).

Table 2. Linking priorities, methods and accounts

Overarching policy priority (as described in section 3)	Specific areas in which accounts will contribute to policy dialogue	Specific policy instruments to be informed through analytical work using the accounts	Method to be used	Accounts
Inclusive green growth and poverty reduction	Water resource management	Water fund being developed by the metropolitan municipalties	System of Environmental and Economic Accounts (SEEA) Central Framework (UN et al, 2012)	Water flow accounts at national level
	Forest resource management	Modifications to the current forest incentives and REDD+ activities		Forest (land) asset and flow accounts at national level
	Health and Climate change issues	Inform the new climate change law in terms of policy instruments for adaptation		Emission flow accounts at national level
	Energy security	Instruments being discussed to foster legality within the illegal logging strategy previously informed by the accounts		Energy flow accounts at national level
	Green fiscal policy	Ministry of finance is developing analysis to assess the potential of obtaining double dividends on new fiscal instruments		Public environmental expenditure and income accounts at national level
	Waste management	New waste law under discussion		Waste accounts at national level
Climate change, risk and growth	Adaptation discussions	Instruments for adaptation incorporated in the new Climate change law	System of Environmental and Economic Accounting (SEEA) Experimental Ecosystem Accounts (UN et al, 2012)	Case 1 (Dry corridor) TBC
				Case 2 (South mangrove ecosystem) TBC
				Case 3 (Northern strip) TBC

(*continued on next page*)

Table 2. Linking priorities, methods and accounts *(continued)*

Overarching policy priority (as described in section 3)	Specific areas in which accounts will contribute to policy dialogue	Specific policy instruments to be informed through analytical work using the accounts	Method to be used	Accounts
Food security	Land use policies	Instruments being desinged within the food secutrity legal framework recently developed.	System of Environmental and Economic Accounting (SEEA) Agriculture, forest and fisheries draft manual (FAO)	Agriculture, Forest and fisheries flow accounts at national level.
Economic and environmental sustainability	Environmentallly asound macroecnomic policy decision making	Incorporating integrated economic-environmental policy analysis to the decision making process of the economic cabinet	Wealth Accounts (World Bank)	Key resources incoporated in the balance sheet
				Natural capital account in monetary terms

5| Work plan

5.1| Program objectives

The overall objective of WAVES Guatemala is to promote sustainable development by integrating natural capital in development planning and policy dialogue by prioritizing key policy priorities or entry points were the accounts can achieve policy impacts in less time.

WAVES will build upon a decade of work on Natural Capital Accounting (NCA) in Guatemala.

The WAVES initiative in Guatemala will help the government take NCA to the next level by mainstreaming and integrating the data from NCA into development planning and environment, economic and social policies. The specific objectives of WAVES Guatemala are to:

- **Ob1.** Implement and update accounts that inform policy by assigning resources to respond to key policy issues.
- **Ob2.** Integrate NCA into policy dialogue and the policy decision making process (i.e. policy cycle).
- **Ob3.** Promote and contribute to the institutionalization of NCA through enhanced outreach efforts.

5.2| Expected results and components

Ob1. *Implement and update accounts that inform policy by assigning resources to answer key policy questions.*

Expected results	Actions/Components	Lead agency and institutions directly involved
R1. Guatemala has indicators and accounts for natural capital assets and flows.	01. Update of the SEEA central framework accounts already developed and enhancing the old accounts were there is the option to do so.	INE (lead agency) BANGUAT, INAB, MARN, MEM, MINFIN
R2. Guatemala has indicators and accounts for key ecosystems	02. Ecosystem accounts compilation.	CONAP (lead agency) INAB
R3. Guatemala has indicators and accounts for agricultural land assets and flows	03. Environmental-agricultural accounts compilation	MAGA
R4. Guatemala has indicators derived from the wealth accounts	04. Macroeconomic indicators compilation	BANGUAT

Ob2. *Integrate NCA into policy dialogue and the policy decision making process.*

Expected results	Actions/Components	Lead agency and institutions directly involved
R5. Guatemala has and uses analytical work based on the Natural Capital Accounts	Natural capital policy analysis for long term planning and other public policy instruments	SEGEPLAN
	Capacity building to incorporate NCA as a cross-cutting analytical tool in all aspects related to MARN's role.	MARN
	Strengthening analytical capacities of the Ministry of Finance related to monetary and fiscal policy issues.	MINFIN
R6. Guatemala has the capacity to maintain the effort to use and produce NCA through the institutions linked to the National Statistical System	Stablishing coordination and publication mechanisms.	INE

Ob3. *Promote and contribute to the institutionalization of NCA through enhanced outreach efforts.*

Expected results	Actions/Components	Lead agency and institutions directly involved
R7. Gautemala effectively communicates NCA findings	09. Communication strategy designed and implemented	SEGEPLAN
R8. Gautemala has the capacity to use NCA in policy dialogue	10. Capacity building strategy in place	INE

5.3| Governance and institutional arrangements

As described in Section 2, WAVES builds on the previous SEEA platform and strengthens it. Needless to say that this platform is still weak and needs much effort to consolidate. There are three dimensions in this platform that allows to achieve governance of the SEEA process: the strategic dimension, the advisory dimension and the operational dimension.

The strategic dimension will be covered by the "Environmental Accounting Committee" integrated by SEGEPLAN (Chair), INE (Technical Secretariat), BANGUAT, MARN. Its basic functions are:

- Provide guidance on the type of products to generate and results and impacts
- Providing information, meetings and political support for the process
- Support for viable resource management and sustainability to the process
- Monitor and evaluate the process to ensure the right direction
- Communicate and disseminate findings of the process
- Promote joint findings in public policy

The operational dimension will be covered by the "Environmental Accounting Technical Committee" composed of INE (Chair), BANGUAT (responsible for SNA), the instance Technical advice and support in driving the process, and each of the technical bodies of the executive branch to take responsibility to update the "Thematic Accounts' under its mandate (eg INAB, CONAP, MEM, MARN, MAGA, others). Its basic functions are:

- Update SEEA
- Train staff involved
- Assign human, physical and financial resources for the institutionalization of the process in each agency of the executive branch to take the process (thematic accounts).
- Communicate findings
- Provide feedback within the policy cycle of policies under discussion.

The advisory dimension will provide technical advice and support to the process. Technical Assistance and support in driving the process promotes communication between both dimensions (strategic and operational)

The three dimensions will allow to:

- Consolidate interagency coordination for continued institutionalization and update of SEEA in Guatemala
- Develop a formal updating mechanism based on SEEA institutional capacities in public institutions with mandates in the different themes of SEEA (For example, forests, ecosystems, water, energy, agriculture, etc.)
- Provide direct and proactive feedback to public dialogue and policies on economic and environmental matters.
- Provide a space for continued integration of different stakeholders, including academic and public institutions
- Promote the recurrent use of satellite accounts as part of the National Statistical System

5.4| Outputs and timeline

R1. Guatemala has indicators and accounts for natural capital assets and flows.	
Assesment of current accounts (2001–2010)	FY16
Water accounts update (assessment of current data, enhancement, updating and publication of findings)	FY16–FY19
Energy and emission accounts update (assessment of current data, enhancement, updating and publication of findings)	FY16–FY19
Waste accounts update (assessment of current data, enhancement, updating and publication of findings)	FY16–FY19
Forest accounts update (assessment of current data, enhancement, updating and publication of findings)	FY16–FY19
Integrated economic-environmental accounts compilation (assessment of current data, enhancement, updating and publication of findings)	FY16–FY19
R2. Guatemala has indicators and accounts for key ecosystems	
2.1. Methodology development	FY16
2.2. National ecosystem services map	FY16
2.3. Case study selection	FY16
2.4. Physical accounts compilation	FY17
2.5. Monetary accounts compilation	FY18
2.6. Integration and scalability	FY19
R3. Guatemala has indicators and accounts for agricultural land assets and flows	
3.1. Agriculture statistics assessment	FY16
3.2. Pilot excercise	FY16

(*continued on next page*)

(*continued*)

3.3. Compilation and incoporation to SEEA digital platform	FY17–FY19
R4. Guatemala has indicators derived from the wealth accounts	
4.1. Balance sheet including natural resources	FY17–FY19
4.2. Wealth and savings indicators	FY17–FY19
4.3. Green growth indicators	FY17–FY19
R5. Guatemala has and uses analytical work based on the Natural Capital Accounts	
5.1. NCA strategy for linking production and use of accounts in the long-term (post waves)	FY16
5.2. Including NCA variables in all planning reports (ODM, PDSP, Inf. Presidencial, Inf. CC, etc.)	FY16–FY19
5.3. Training module for planners	FY16–FY19
5.4. Policy notes and snapshots	FY16–FY19
R6. Guatemala has the capacity to maintain the effort to use and produce NCA through the institutions linked to the National Statistical System	
6.1. Regular publication strategy	FY16
6.2. Inter-institutional agreeements for NCA statistical coordination	FY16–FY19
R7. Guatemala comunica los objetivos y hallazgos de la CCN de forma efectiva	
7.1. Communication strategy desgined	FY16
7.2. Communication strategy implemented	FY16–FY19
R8. Guatemala tiene la capacidad de usar la CCN en el dialogo de politica publica	
8.1. Training and capacity building strategy designed	FY16
8.2. Training and capacity building strategy implemented	FY16–FY19

5.5| Linking the Global M&E to the WAVES Guatemala objectives

WAVES Guatemala objectives	WAVES global M&E project development objectives
Ob1. Implement and update accounts that inform policy by assigning resources to respond to key policy issues.	PDO1. Implement natural capital accounting in partner developing and developed countries
Ob2. Integrate NCA into policy dialogue and the policy decision making process (i.e. policy cycle).	PDO2. Incorporate natural capital accounting in policy analysis and development planning in core implementing countries
Ob3. Promote and contribute to the institutionalization of NCA through enhanced outreach efforts.	

6| Progress up to date

6.1| The preparation phase was finalized

Milestones for the preparation phase were fulfilled:

- *National Steering Committee established*
- *Resources from WB/WAVES mobilized*
- *Scoping study developed*
- *Work plan approved by the NSC and presented to the WB*

Guatemala joined WAVES as a core implementing country in 2013, and an official ceremony to launch the project was held in March 2014 that was attended by key stakeholders, including the Secretary of Planning and Programming of the Presidency (SEGEPLAN for its Spanish acronym).[2]

A scoping study has been shared with stakeholders and the NSC. It revealed the general understanding of natural capital accounting in the country and lays out the work plan for Guatemala. In 2014, WAVES also hired a local communication consultant to help build awareness and engagement around the topic.

In March 18, 2014, the WAVES program in Guatemala received an official kick-off at a ceremony in Guatemala City amid Government officials, researchers, public planners, academics, international organizations and donors. At the March 18 ceremony, the National Institute of Statistics (INE) also presented the System of Environmental and Economic Accounts (SCAE 2001–2010) that were constructed for forests, water, energy and emissions, groundwater resources, fisheries, land and ecosystems, and environmental spending. The University of Rafael Landivar had initiated the public-private-academic partnership funded by the Dutch Government within the context of the United Nation's SEEA.

The WAVES initiative will help the Government take NCA to the next level by mainstreaming the data from the natural capital accounts into development planning and environment, economic and social policies.

January 2015 marks the beginning of the implementation phase.

6.2| Implementation phase progress

Most progress for the implementation phase has concentrated for now in working on the technical side of the accounts and this is yet on the initial stages given that implementation started in January 2015.

Most of progress has been made in the communication realm. In September 2014, the WAVES Guatemala team received a World Bank mission. Among the objectives of the visit, was to evaluate the level of awareness of NCA among different local stakeholders. The interviews and the results of the scoping study fed into the first draft of the communication and engagement strategy.

In November 2014, WAVES Guatemala hired a communication consultant and the local team began producing a basic stock of materials to support the communication strategy.

[2] See Launching event in: https://www.wavespartnership.org/en/waves-guatemala-moves-forward-amid-strong-support.

Chronology of events for preparation phase (summary)		
2013	August 21	Expression of Interest from the Government (SEGEPLAN) to adhere to the WAVES initiative and Natural Capital Communique
	October 30	Formal constitution of the National Steering Committee (BANGUAT, INE, MARN, MINFIN, SEGEPLAN)
2014	January	National coordinator for preparation phase was hired and participated in all WAVES national and international activities.
	March 18	WAVES Launching event (https://www.wavespartnership.org/en/waves-guatemala-moves-forward-amid-strong-support)
	May 25	Scoping study presented to the NSC (Link)
	August 1	Natural Capital Policy notes presented to the NSC (Link)
	September	Communication mission
	October 24	SEGEPLAN send the work plan to the World Bank
	November	Startup of the communication work by hiring a communication consultant to work closely with IIED
	December 2	World Bank responds to formalize the acceptance of the Work Plan and explains the terms for funds execution
	December 31	End of preparation phase and final delivery of: (i) scoping study, (ii) work plan, (iii) policy notes, (iv) other intermediate products.

One of the first activities was to visit the communication directors of every institution of the Steering Committee to introduce them to the project and to NCA. Everyone welcomed the initiative and offered institutional support as well as their communication resources to amplify the messages about NCA. The Central Bank, for example, immediately generated a natural capital accounts space on their website and posted a document showing the results of natural capital accounts in Guatemala as part of its macroeconomic work.

Throughout 2015 the communication team developed more documents to build up a complete communication package: general power points presentation on NCA (English and Spanish), a policy brief about forest accounts, frequently asked questions, and a directory of the audiences outlined in the strategy.

In April 2015, WAVES Guatemala presented the communication and engagement strategy to the Steering Committee. They gave their endorsement and committed to support it from their institutions. After that, the Planning Secretariat began the publishing online information about NCA in Guatemala and how accounts are being used.

Because Guatemala is in the midst of an electoral year, WAVES Guatemala will focus its efforts on the training program, the updating of the ecosystem accounts and in the update and of accounts, and will prepare communication materials to address its audiences in 2016 when a new government is in place.

7| Annexes

Annex 1. Results-Based Monitoring Matrix (Global M&E)
Global Results-Based Monitoring Matrix – PDO 1

Objectives & outcome (results) indicators	Base-Line (Jul2013)	Preparation (Aug2013–Dec2014) Implementation initial steps (Jan2015–Jun2015) (FY2014-FY2015)	Jul2015–Jun2016 (FY2016)	Jul2016–Jun2017 (FY2017)	Jul2017–Jun2018 (FY2018)	Jul2018–Jun2019 (FY2019)
Outcome Indicators:						
a. Country has committed to institutionalize natural capital accounting based on lessons learned from the WAVES program	None	**Target:** Institutional arrangements developed **Achieved:** The Steering Committee is active and operating.	**Target:** • National Institute of Forests will produce forest accounts. • Ministry of Finance will "tag" budget items according to NCA. • Long term strategy for NCA endorsed by all participant agencies.	**Target:** • Environmental expenditures will be generated automatically from the SICOIN public Central Government budget system. • National Institute of Forests and National Protected Areas Council will submit NCA production of forest ecosystems accounts to their boards for institutionalization.	**Target:** • Staff commitments in the participant agencies • Agreement on regular reporting by the Institute of Statistics.	**Target:** • Additional staff commitments in at least one of the agencies • Funding for the long term strategy secured.

(*continued on next page*)

Annex 1. Results-Based Monitoring Matrix (Global M&E)
Global Results-Based Monitoring Matrix – PDO 1 (*continued*)

Objectives & outcome (results) indicators	Base-Line (Jul2013)	Preparation (Aug2013–Dec2014) Implementation initial steps (Jan2015–Jun2015) (FY2014-FY2015)	Jul2015–Jun2016 (FY2016)	Jul2016–Jun2017 (FY2017)	Jul2017–Jun2018 (FY2018)	Jul2018–Jun2019 (FY2019)
Intermediate outcome indicators:						
1.1 Country has completed the milestones for the WAVES Preparation Phase*	None	**Target:** • Steering committee established • Resources from WB/ WAVES mobilized • Scoping study developed • Work plan approved **Achieved:** All completed.				
1.2 Country has asset accounts for selected natural assets	Selected asset accounts produced for 2001–2010	**Target:** Asset Accounts produced for 2001–2010 have been systematized in 6 "policy notes". **Achieved:** 6 policy notes in Spanish were developed. Pending translation.	**Target:** • Asset accounts produced for SEEA Central Framework and Agriculture, fisheries, and food (SEEA AFF) • Digital platform and guidelines to build the asset accounts that will allow ease of update.	**Target:** Asset accounts updated.	**Target:** Asset accounts updated.	**Target:** Asset accounts updated.

(*continued on next page*)

Annex 1. Results-Based Monitoring Matrix (Global M&E)
Global Results-Based Monitoring Matrix – PDO 1 (*continued*)

Objectives & outcome (results) indicators	Base-Line (Jul2013)	Preparation (Aug2013–Dec2014) Implementation initial steps (Jan2015–Jun2015) (FY2014-FY2015)	Jul2015–Jun2016 (FY2016)	Jul2016–Jun2017 (FY2017)	Jul2017–Jun2018 (FY2018)	Jul2018–Jun2019 (FY2019)
1.3 Country has flow accounts for selected natural resources	Selected asset accounts produced for 2001–2010	**Target:** Flow Accounts produced for 2001–2010 have been systematized in 6 "policy notes". **Achieved:** 6 policy notes in Spanish were developed. Pending translation.	**Target:** • Flow accounts will be produced for SEEA Central Framework and Agriculture, fisheries, and food (SEEA AFF) • Digital platform and guidelines to build the flow accounts that will allow ease of update.	**Target:** Flow accounts updated.	**Target:** Flow accounts updated.	**Target:** Flow accounts updated.
1.4 Country has experimental ecosystem accounts	None	**Target:** Scoping mission, preliminary ideas and roadmap developed. **Achieved:** A draft document and presentations was prepared. Pending peer reviewing.	**Target:** Experimental ecosystem accounts will be produced for selected site 1.	**Target:** Experimental ecosystem accounts will be produced for selected site 2.	**Target:** Experimental ecosystem accounts will be produced for selected site 3.	**Target:** Experimental ecosystem accounts implemented at country level.

(*continued on next page*)

Annex 1. Results-Based Monitoring Matrix (Global M&E)
Global Results-Based Monitoring Matrix – PDO 1 (*continued*)

Objectives & outcome (results) indicators	Base-Line (Jul2013)	Preparation (Aug2013–Dec2014) Implementation initial steps (Jan2015–Jun2015) (FY2014-FY2015)	Jul2015–Jun2016 (FY2016)	Jul2016–Jun2017 (FY2017)	Jul2017–Jun2018 (FY2018)	Jul2018–Jun2019 (FY2019)
1.5 Country has macro-economic indicators derived from the SEEA accounts (if intended in country work-plan)	None	None	**Target:** Adjusted Net Savings estimates will be developed for the Central Bank.	**Target:** • Adjusted Net Savings estimates will be improved by Central Bank. • Balance sheet in SNA will include Natural Capital. • Green growth indicators will be produced.	**Target:** Updated environmental-macroeconomic indicators to inform green economy and sustainable development	**Target:** Updated environmental-macroeconomic indicators to inform green economy and sustainable development

(*continued on next page*)

Annex 1. Results-Based Monitoring Matrix (Global M&E)
Global Results-Based Monitoring Matrix – PDO 1 (*continued*)

Objectives & outcome (results) indicators	Base-Line (Jul2013)	Preparation (Aug2013–Dec2014) Implementation initial steps (Jan2015–Jun2015) (FY2014-FY2015)	Jul2015–Jun2016 (FY2016)	Jul2016–Jun2017 (FY2017)	Jul2017–Jun2018 (FY2018)	Jul2018–Jun2019 (FY2019)
1.6 Country has capacity for maintaining NCA (evidenced by dedicated government staff for NCA and regular reporting mechanism for production of natural capital accounts)	None	None	**Target:** Ministry of Finance will dedicate one staff to develop matrix to track environmental expenditure in budget. • Institute of Statistics will develop an institutionalization plan. • National Forestry Institute (INAB) will dedicate one person to forest accounts, with access to help from outside consultants. • National protected areas council will dedicate at least one person to forest accounts and ecosystem accounts consultations.	**Target:** Ministry of Finance, National Forestry Institute, and Protected Areas Council will continue dedicating at least one technician to NCA.	**Target:** Participating agencies will dedicate an additional technician to NCA.	**Target:** Participating agencies will dedicate an additional technician to NCA.

(*continued on next page*)

Annex 1. Results-Based Monitoring Matrix (Global M&E)
Country Results-Based Monitoring Matrix – PDO 2

Objectives & outcome (results) indicators	Base-Line (Jul2013)	Preparation (Aug2013–Dec2014) Implementation initial steps (Jan2015–Jun2015) (FY2014-FY2015)	Jul2015–Jun2016 (FY2016)	Jul2016–Jun2017 (FY2017)	Jul2017–Jun2018 (FY2018)	Jul2018–Jun2019 (FY2019)
a. NCA informs policy dialogue on growth, environment and poverty reduction, evidenced by citing NCA or using NCA indicators and data in, development plans, sector strategies and plans, executive orders, legislative documents, and the broader policy analysis literature (may include World Bank ESW, AAA and project formulation documents)	Institutional arrangements previously used.	**Target:** National Development Plan K'atun with 20 year horizon has been published citing directly NCA. **Achieved:** Completed.	**Target:** • Detailed Wealth accounting will be produced. • Ministry of Environment will publish its report on the state of the environment under a NCA perspective.	**Target:** • Report on the state of the environment will continue to be produced using NCA. • Wealth accounting will continue to be produced for the Central Bank. • Report from the President's Affairs, Report of the Climate Change Law, and Report of the Policy of Social Development will deliberately use inputs from NCA.	**Target:** • Report on the state of the environment will continue to be produced using NCA. • Wealth accounting will continue to be produced for the Central Bank. • Report from the President's Affairs, Report of the Climate Change Law, and Report of the Policy of Social Development will deliberately use inputs from NCA.	**Target:** • Report on the state of the environment will continue to be produced using NCA. • Wealth accounting will continue to be produced for the Central Bank. • Report from the President's Affairs, Report of the Climate Change Law, and Report of the Policy of Social Development will deliberately use inputs from NCA.

(*continued on next page*)

Annex 1. Results-Based Monitoring Matrix (Global M&E)
Country Results-Based Monitoring Matrix – PDO 2 (*continued*)

Objectives & outcome (results) indicators	Base-Line (Jul2013)	Preparation (Aug2013–Dec2014) Implementation initial steps (Jan2015–Jun2015) (FY2014-FY2015)	Jul2015–Jun2016 (FY2016)	Jul2016–Jun2017 (FY2017)	Jul2017–Jun2018 (FY2018)	Jul2018–Jun2019 (FY2019)
2.1 Country has policy notes and analytical work based on NCA.	SEEA technical reports.	**Target:** Accounts produced for 2001–2010 have been systematized in 6 "policy notes". **Achieved:** 6 policy notes in Spanish were developed. Pending translation.	Policy notes on environmental expenditures, state of the environment, and net adjusted savings will be produced.	Content of Policy notes for the year TBD.	Content of Policy notes for the year TBD.	Content of Policy notes for the year TBD.
2.2 Country has capacity for using NCA in policy dialogue (evidenced by government staff trained in using NCA)		**Target:** Communications strategy developed and work started. **Achieved:** Comms strategy developed and worked started with help from IIED.	**Target:** • The communications strategy will feature a reach out strategy for various groups, including government staff. • Ministry of Environment and other participating agencies will train its various departments in NCA perspective.	**Target:** Training is expected to permeate other agencies and organizations besides the participating agencies.	**Target:** Training is expected to permeate other agencies and organizations besides the participating agencies.	**Target:** Training is expected to permeate other agencies and organizations besides the participating agencies.

(*continued on next page*)

Annex 2. Policy instruments, questions and accounts detailed analysis

Table A2.1. Policy questions extracted from the narrative of the K'atun National Development Plan

Relevant text on the National Development Plan	Policy question	NC relevant accounts
[In 2032 Guatemala] The State will have the necessary resources for planning and land use planning ensuring environmental sustainability, and people's social and economic rights in their territories.	What are Guatemala's natural resources and how can they be used in sustainable development planning?	Nuclear Accounts. Policy Analysis.
Material and social conditions will be improved to guarantee access to land and other productive assets, in order to ensure sustainable livelihoods. Resources of the Central American biological corridor will be sustainably used, strengthening the country's management and natural resources conservation strategy.	How to optimize different categories of land use to ensure sustainable development? What resources are in the Central American Biological Corridor and how can sustainable use and conservation efforts co-exist?	Agriculture Experimental Accounts (SEEA-Agri).
2032 Guatemala is part of a sustainable development logic that seeks balance between economic growth, gaps and social inequalities reduction, and sustainable rural and urban development, to improve livelihood and environmental and natural resources protection.	What resources require investment to balance economic growth, inequality reduction, sustainable development, living conditions improvement and environmental protection?	Environmental Expenditure and Transactions Accounts.
2032 Guatemala will increase its productive performance through investment in social and productive infrastructure; it counts on natural resources for the development of socio-productive systems and the delivery of environmental services that can benefit all the inhabitants of the country.	What infrastructure is needed to optimize the productive use of natural resources in a sustainable way?	Environmental Expenditures and Transactions Accounts. Experimental ecosystem services Accounts Agriculture Experimental Accounts (SEEA-Agri).
The triptych Forest, Water and Energy is central to the sustainability of national development in 20 years. The forests will have recovered and will be managed sustainably, ensuring the protection of water sources. The availability and quality of water resources will have improved and sustainable clean power generation processes, water for irrigation and consumption, will be adequate and accessible to all.	Which are the forest, water and energy assets available in Guatemala> What is their quality and levels of use?	SEEA Central Framework Accounts.

(*continued on next page*)

Table A2.1. Policy questions extracted from the narrative of the K'atun National Development... (*continued*)

Relevant text on the National Development Plan	Policy question	NC relevant accounts
The energy matrix will have changed and the country will be implementing new forms of geothermal, solar, wind and biomass-generation. In this sense, the share of renewable energy in the energy matrix will be extended to 80% by 2032, thus achieving energy sovereignty, universal access to energy resources, security, continuity and quality to energy access for the entire population.	What is the share of renewable energy in the country? What are the possibilities to use biomass in the country?	Energy Accounts.
By 2032, the food security programs will have exceeded the welfare approach and will have as center of action the availability, access, use and acceptability of food, as well as their biological utilization.	With which assets does Guatemala count to ensure food security? What are the flow levels of resources to ensure food supplies for the Guatemalan population?	SEEA-Agri, Land and Ecosystems Accounts.

Source: Based on the K'atun National Development Plan: Our Guatemala, 2032. (SEGEPLAN, to be published).

Table A2.2. Policy questions based on the strategies and results outlined in the K'atun National Development Plan

Result	Strategy	Policy question	NC relevant accounts
1. The country has a national environmental agreement.	A national agreement to define the maximum tolerated limits to use of natural resources should be promote and achieved. This will allow the definition of strategies for the protection and conservation, restoration, and sustainable management of natural resources (forests, biodiversity, land and water).	What are the levels of use of natural resources that Guatemala can tolerate, so that long-term sustainability is ensured?	Forest Accounts, Water Accounts, Agriculture Experimental Accounts, Energy Accounts.
2. There are policy and instruments frameworks that complement each other and work systematically towards the achievement of sustainable development.	Promote the integrity of public policy, rectifying overlaps, eliminating gaps and avoiding the creation of perverse incentives towards the environment and natural resources.	How can Guatemala ensure that perverse incentives that have environmental impacts are taken into account in public policy	Macroeconomic indicators.
3. There are strengthened public institutions that regulate and ensure the sustainable use of natural resources.	Management and strengthening of the public institution arrangement focused on improving governance and ensuring sustainable development. This public institution arrangement should include a strengthened governing entity that has operational capabilities throughout the territories, according to their management needs.	How can Guatemala ensure that the institutions responsible for the environment have the appropriate skills and resources to carry out its mandate?	Environmental Expenditures and Transactions Accounts.
4. There are institutionalized policies and mechanisms to ensure sustainable use of natural resources and risks reduction.	Create mechanisms and define and implement institutional processes for environmental and risk management: position the environmental and resiliency capacity building agenda so that public institutions' actions will contribute to sustainable development.	What institutional mechanisms and processes should be created so institutions incorporate sustainable use and risk reduction by default?	Policy analysis.
5. Environmental and risk issues are positioned on the public agenda as a national priority for sustainability and development.	Implement comprehensive advocacy strategies to highlight the importance of the environment and natural resources for economic and social development and the achievement of sustainable development.	What strategies are most effective to position relevant environmental issues on the political agenda?	Policy analysis.

(*continued on next page*)

Table A2.2. Policy questions based on the strategies and results outlined in the K'atun National Development Plan (*continued*)

Result	Strategy	Policy question	NC relevant accounts
6. A comprehensive plan of environmental education that raises awareness about the importance of water, forests, biodiversity and land and climate change issues and risks, is implemented.	Promote environmental awareness: The State must take responsibility to stimulate a culture of respect of forests and biodiversity, recognition of the intrinsic value of diversity regardless of its use value, and to practice of the Precautionary Principle.	What information provided by the SEEA is most relevant to understand the environmental needs of economic and social development?	Policy analysis.
7. Realize a sustainable management of water resources through an innovative update of the legal, institutional and public policy frameworks.	The construction of water infrastructure to increase water storage levels and lead it to sites with water shortages, is required. These actions should be performed within a focus of integrated management of water resources and considering the watershed as the basic planning unit.	What investments are necessary to ensure water for all its competing uses in all locations? Which watersheds are the priority?	Water Accounts.
8. The deterioration of coastal marine areas has stopped and its restoration promoted.	Control of marine coastal areas must be regained in order to stop environmental deterioration, solve the security problems and, most importantly, improve the socioeconomic conditions of the inhabitants. Work on conservation, sustainable tourism, recreation and cultural purposes should be encouraged in these areas.	What are the levels of coastal marine areas deterioration and what resources are required to stop and reverse this trend?	All the accounts.
9. Society has adapted to the impacts of climate change.	Improve resilience and climate change adaptation at the sector level: Human health, coastal and marine areas, agriculture, livestock and food security, forestry, infrastructure, water resources and watersheds.	What are the key indicators that the SEEA can provide in terms of strategies on climate change adaptation? On what elements should an adaptation strategy concentrate to be more effective?	Policy analysis. All the accounts.

(*continued on next page*)

Table A2.2. Policy questions based on the strategies and results outlined in the K'atun National Development Plan (*continued*)

Result	Strategy	Policy question	NC relevant accounts
10. The country has stabilized CO_2 per capita emissions and implemented greenhouse gases mitigation projects.	Reduce greenhouse gases emissions from the following sectors: Land use change and forestry, energy, industrial processes, agriculture, transportation, waste.	What energy indicators can be used as business intelligence indicators in projects to mitigate Greenhouse Gases impacts?	Energy Accounts and Air Emissions Accounts.
11. The loss of natural forests has been reduced and sustainable management of forest increased.	Promote the conservation, protection and sustainable management of natural forests and establish forest plantations for production purposes.	Which are the main sources of deforestation? Which are the geographical areas in which reforestation efforts should be concentrated?	Forest Accounts.
12. The effectiveness of protected areas management has improved and the country's biological diversity is stored, handled and restored.	Comprehensive land use plans are implemented at the municipal and/or basin level (watershed approach).	What resources are required to ensure the effective management of protected areas in the country? Given the limited resources, what combination of areas and strategies will provide better results in terms of sustainable development? What is the loss coverage that must be replaced to ensure biological connectivity?	Land and Ecosystems Accounts. Forest Accounts. Environmental Expenditures and Transactions Accounts. Experimental Ecosystems Accounts. Policy analysis.
13. Manage and regulate land use in accordance with its capabilities and restore degraded soils.	Management of land use is improved according to its capacity and degraded soil is recuperated. Promote conservation, protection and sustainable management of biodiversity in the country.	What land use change issues need to be addressed by public policy and democratic consensus?	Land and ecosystems Accounts. Forest Accounts. Experimental Agriculture Accounts.

(*continued on next page*)

Table A2.2. Policy questions based on the strategies and results outlined in the K'atun National Development Plan (*continued*)

Result	Strategy	Policy question	NC relevant accounts
14. Reduction and efficient use of firewood.	Implement a national strategy for firewood consumption reduction and efficient use.	What is the actual consumption rate of firewood and what alternatives can proposed through public policy?	Energy Accounts. Forest Accounts. Policy analysis.
15. Renewable energy for power generation increased.	Expand the share of renewable energy in the energy matrix.	What is the potential use of renewable energy in Guatemala? What investments are required to use renewable energy sources¿?	Energy Accounts. Environmental Expenditures and Transactions Accounts. Policy analysis.
16. Participation of biofuels increased, to reduce petroleum products.	Implement actions at the national level to increase the share of biofuels and reduce petroleum products.	What is the potential for the biofuels production in Guatemala? What investments are necessary to improve the demand? What are the tradeoffs between biofuel production and food production, and the impact on food security?	Energy Accounts. Environmental Expenditures and Transactions Accounts. Policy analysis.
17. The municipalities performing a comprehensive management of solid waste.	Promote solid waste integrated management.	What are the waste generation levels from economic agents in Guatemala? What are the levels of private expenditure needed to integrate solid waste management?	Waste Accounts. Environmental Expenditures and Transactions Accounts. Policy analysis.

Source: Based on the K'atun National Development Plan: Our Guatemala, 2032. (SEGEPLAN, to be published).

Table A2.3. Policy questions based on the National Forest Law (Decree 101-96)

Law objectives	Policy questions	NC relevant accounts
a) Reduce land deforestation for forestry and agricultural frontier expansion through the increased use of the land according to their vocation, soil characteristics, topography and climate.	What is the deforestation rate? Where is the expansion of the agricultural frontier a major threat to the areas with forest cover? What is the potential of the land in Guatemala?	Forest Accounts.
b) Promote reforestation of forest areas currently without forest to provide the country with required forest products.	Where is reforestation a priority in terms of forest products to improve the people's livelihood?	Forest Accounts. Ecosystems Services Experimental Component.
c) Increase the productivity of existing forests by managing them in a more sound and sustained way according to their biological and economic potential, and encouraging the use of systems and equipment that can achieve the highest value-added forest products.	What is the forests economic potential and the current technical capacity to use it? What are the competing uses of land with forest capacity and what trade-offs are involved in reforestation, protection or production?	Forest Accounts. Policy analysis (input-output).
d) Support, promote and encourage public and private investment in forestry activities to incentivize production, commercialization, diversification, industrialization and conservation of forest resources.	What incentives exist to promote investment in the forest sector and what are the costs associated?	Environmental Expenditures and Transactions Accounts.
e) Conserve the country's forest ecosystems through the development of programs and strategies that promote compliance with the relevant legislation.	What resources are needed to enforce the forest law?	Environmental Expenditures and Transactions Accounts.
f) Promote the improvement of living standards of communities by increasing the supply of goods and services from the forest to meet their needs in terms of firewood, housing, rural infrastructure and food.	What are the products and services of forest ecosystems for specific populations?	Forest Accounts. Ecosystems Services Experimental Component.

Source: CDN, with information from the Forest Law (Decree 101-96).

Table A2.4. Policy questions based on Protected Areas Law (Decree 4-89)

Law objectives	Policy questions	NC relevant accounts
a) Ensure the optimal performance of essential ecological processes and crucial natural systems for the benefit of all Guatemalans.	What are the minimum levels required to sustain ecological processes and life in the natural systems of Guatemala?	Ecosystems Services Experimental Component.
b) Ensure the conservation of biological diversity in the country.	What is the stock of biological species in the country and what is the degree of control?	Ecosystems Services Experimental Component.
c) Achieve the ability to sustainably use species and ecosystems across the national territory.	What level of use of species would ensure their sustainability?	Ecosystems Services Experimental Component.
d) Defend and preserve the natural heritage of the nation.	What is What is the natural heritage of the nation and what resources are necessary for its defense and preservation?	Ecosystems Services Experimental Component. Environmental Expenditures and Transactions Accounts.
e) Establish the protected areas required in the country as a matter of public utility and social interest.	What is the integrity of the protected areas and what threats do they face?	Forest Accounts. Ecosystems Services Experimental Component.

Source: CDN, based on the Protected Areas Law (Decree 4-89).

Table A2.5. Policy questions based on the Climate Change Law (Decree 7-2013)

Relevant text on the law	Policy question	NC relevant accounts
Article 1. Objective. The of this law is to establish the necessary regulations to prevent, plan for and respond to impacts of climate change on the country, in an urgent, coordinated and sustained way.	What are the threats of climate change and what are the challenges of regulation in that sense? How can investments in natural resources improve the provision of ecosystem services to mitigate the negative effects of climate change?	Environmental Expenditures and Transactions Accounts. Ecosystems Services Experimental Component.
Article 2. The purpose of this law is that that the State of Guatemala, through its Central Government, decentralized and autonomous entities, municipalities, civil society organizations and the general public, adopt practices that enhance conditions to reduce vulnerability, improve adaptability and allow the development of proposals to mitigate the effects of climate change product [sic] of greenhouse gases emissions.	What are the threats and consequences of climate change in the absence of ecosystem services to mitigate them?	Ecosystems Services Experimental Component.

Source: CDN, based on the Climate Change Law (Decree 7-2013).

Wealth Accounting and the Valuation of Ecosystem Services

Wealth Accounting and the Valuation of Ecosystem Services (WAVES) is a global partnership led by the World Bank that aims to promote sustainable development by ensuring that natural resources are mainstreamed in development planning and national economic accounts.

www.wavespartnership.org