

WAVES

2016

ANNUAL REPORT

WEALTH ACCOUNTING
AND THE VALUATION OF
ECOSYSTEM SERVICES

WAVES
Annual
Report
2016

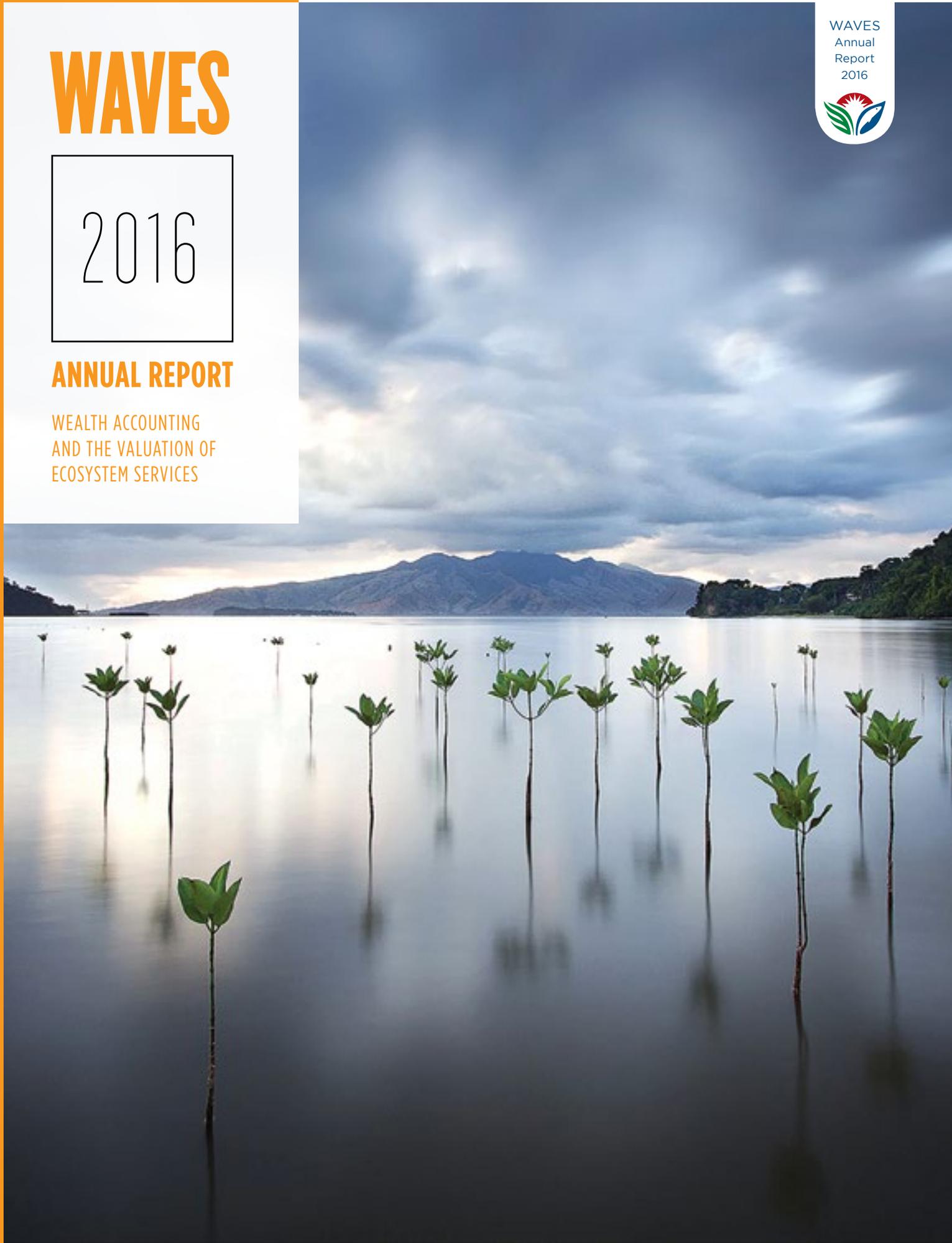


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Photo: Flore de Preneuf/World Bank



EXECUTIVE SUMMARY



The year 2016 marks the culmination of our work with the first five (First 5) core implementing countries. We have come a long way from initial conversations explaining Natural Capital Accounting (NCA) to our stakeholders, to countries establishing multiple sets of accounts and then committing to maintain resources and staff to update and continue work on NCA year after year.

Building on the momentum from the initial set of countries, the next phase of the Wealth Accounting and the Valuation of Ecosystem Services (WAVES) global partnership – known as WAVES+ – will run from 2016 to 2020. This expanded version of the program aims to engage more countries, emphasize policy applications, support more south-south knowledge exchange, and integrate NCA more effectively into World Bank operations.

To inform WAVES+, we embarked on a systematic assessment exercise to capture our experience—both achievements and challenges. We believe this assessment is valuable, not just to WAVES, but also to the multiple programs around the world that share the agenda of building accounts for better management of natural capital. While the assessment report is still being finalized, this annual report presents a few emerging lessons.

Countries have made good progress in many areas. These include: (1) building high-level national steering committees, technical working groups, and strong country ownership needed for institutionalization; (2) building active country communications programs; (3) the tremendous benefits of south-south learning enabled by the partnership approach; and (4) intensive capacity building of technical staff.

One of the main challenges is to ensure that accounts are translated into an analysis that is relevant for policy makers in a timely manner. The WAVES secretariat has already incorporated some of the suggestions emerging from the assessment into the design of WAVES+.

Some highlights of the WAVES partnership program this past year are featured here:

Countries making significant strides: The First 5 countries have consolidated their technical work. The three new countries are in the midst of their implementation phase. The most encouraging development is that the countries have taken ownership of NCA implementation. Work in all eight WAVES countries is guided by high-level national steering committees, which include representatives from ministries of finance,

development and other line ministries. In the First 5 countries, governments have established dedicated units in key agencies with staff committed to implementing NCA. In addition, NCA is now included in the national development plans or national strategies on climate change in Botswana, Colombia, Indonesia, Madagascar, and the Philippines. Several countries now use sector accounts to inform policy. For example, in Botswana, water accounts are identified as a key tool for water sector reforms, and mineral accounts contribute to the development of fiscal rules on management of mineral revenues. In Colombia, forest accounts help calculate the economic losses incurred as a result of forest fires.

Emerging global opportunities: Over the past year, NCA has surfaced as a critical component in pivotal events and conversations, particularly with respect to how countries should pursue sustainable development. In September 2015, the United Nations (UN) released the Sustainable Development Goals (SDGs). In December, the UN Climate Change Conference (COP21) held in Paris recognized that investing in natural capital goes hand in hand with mitigating climate change. Along with partners such as the UN Statistics Division (UNSD), WAVES has been invited to share its NCA experience at several events. Going forward, WAVES expects to help countries with indicators linked to SDGs on water, land, and climate change, as well as sustainable production and consumption.

The fifth WAVES Annual Partnership Meeting in June 2015 was attended by nearly 100 participants, including representatives from partner countries, UN agencies, international organizations and NGOs.



A larger regional program: WAVES took first steps toward establishing a regional cooperation program in Latin America and the Caribbean. In March 2016, WAVES co-organized an interactive workshop attended by 15 countries to share and discuss their experiences with NCA as well as how to begin collaborating. A scoping study has been done for the East Asia and Pacific region to inform the design of a regional cooperation program. WAVES is co-hosting a regional workshop on NCA with the Gaborone Declaration for Sustainability in Africa (GDSA) and Conservation International, to be held in Nairobi in June.

Helping move the methodology on ecosystem accounts: WAVES is a core member of the statistical community, with a particular emphasis on strengthening the Experimental Ecosystem Accounting component of SEEA (SEEA-EEA). As a part of the process this year, WAVES initiated studies on ecosystem accounts methodology with several partners. The *Managing Coasts with Natural Solutions* report, co-authored by WAVES and The Nature Conservancy (TNC), provides guidance on how to value the coastal protection services provided by reefs and mangroves. This is the first publication of its kind, and the guidelines are already being implemented in several parts of the world. WAVES is contributing to SEEA-EEA especially in the area of valuation. For example, the *Valuing Ecosystem Services in the System of National Accounts* (SNA) paper considers conceptual and methodological issues that arise when attempting to value ecosystem services in the SNA. In addition, WAVES is leading an iterative process of field testing ecosystem accounting, clarifying key conceptual issues, and providing guidance for implementation.

Effective and targeted communications: In partnership with the International Institute for Environment and Development (IIED), WAVES has used communications as a strategic tool to advance NCA globally as well as in individual countries. The highlight of the past year has been the success of its concerted efforts to build stronger ties among the institutions, organizations, and stakeholders that are key to embedding NCA in development plans and policy. All core implementing countries have dedicated communications staff and strategies that are tailored to the political economy of their respective country. The WAVES Knowledge Center was launched this year to be a repository of information on NCA. A suite of products ensures that technical work on NCA is more accessible to an expanded audience—from statisticians and policy makers to the general reader. The WAVES website and newsletter have been redesigned to respond to the growing demand for information on NCA.

Leveraging partners: The success of our work partly depends on collaboration with partners such as the UN Statistical Commission and the UN Committee on Environmental and Economic Accounts (UNCEEAA), which convene the statistical community; international organizations like the United Nations Environment Programme (UNEP), the United Nations Development Programme (UNDP), and the Food and Agriculture Organization (FAO) on advancing NCA globally; other partners such as the Australian Bureau of Statistics (ABS) and Statistics Netherlands (CBS), which provide vital technical assistance to country implementation; as well as non-governmental organizations like Conservation International (CI), which provides the secretariat for the Gaborone Declaration, and TNC on developing methodology for ecosystem accounting. In the private and financial sectors, WAVES collaborates with the Natural Capital Coalition (NCC), the Natural Capital Declaration (NCD), and the European Commission Business@Biodiversity Platform.

The first phase of WAVES was intended to provide a proof of concept. We are now moving forward with the second phase, which will build on the growing momentum for NCA. The goal is to reach a critical mass of developing countries to make NCA a "game-changer." There are about 30 high-income countries producing some components of NCA (European Union member countries, Australia, Canada, New Zealand, Norway, and the Russian Federation) and at least seven middle-income countries with NCA programs (Brazil, Chile, Mauritius, Mexico, Namibia, South Africa, and Turkey). There are also many initiatives by international organizations (such as the UNDP, UNEP, and others) that have adopted the NCA framework.

We plan to build on the range of partners and institutions more effectively. By scaling up, we hope to further reinvigorate global momentum on NCA.



“WAVES has been on the forefront on showing how valuing natural resources and ecosystems is critical to influencing decisions...there is a great richness coming through from the work of the core implementing countries. We are showing it is possible to do accounts in countries that don't have easily accessible data.”

— **Paula Caballero, Senior Director
for the World Bank's Environment
and Natural Resources Global Practice**

01

IMPACT OF WAVES



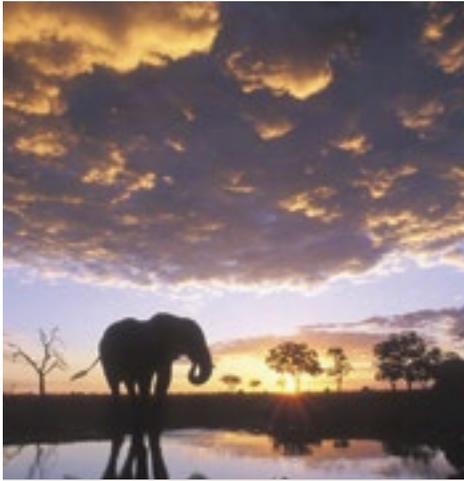


The Wealth Accounting and the Evaluation of Ecosystem Services (WAVES) partnership was designed to support countries on implementing Natural Capital Accounting (NCA) for a period of four years. One of the measures of success was whether the countries continued implementing and using NCA. The first five core implementing countries are nearing the end of their fourth year, and we see they are embracing NCA and plan to continue the work.

In all five countries, the governments are committing resources and people to ensure NCA is coordinated across sectors and becomes part of their routine business for the long term. Dedicated units are being set up in key ministries, or in some countries, a central unit coordinates NCA work across departments.

26% 

of Colombia's water resources are found in the Orinoquia region, where ecosystem services accounts are being developed.



BOTSWANA

Unit: Coordinating Unit

Ministry: Ministry of Finance and Development Planning (MFDP)

Task: Coordinate natural capital accounting efforts across relevant sectors

Team: Three staff

Year: 2014

“ The core duty for MFDP officers is NCA, which facilitates data collection, analysis, and stakeholder engagement across sectors. Centralizing coordination in the MFDP streamlines the process of translating information gleaned from NCA to inform Botswana's national development plans.

The WAVES partnership project in Botswana was introduced at an opportune time, when the country was planning its 11th national development cycle. MFDP's role in coordinating NCA has enabled the ministry to appreciate sector-specific accounts for water, energy, minerals, and, lately, tourism. The ministry will continue to communicate the importance of NCA among the various stakeholders.

Botswana has made tremendous progress in its NCA implementation, as evidenced by the technical reports for three water accounts for the period of 2010/2011 to 2014/2015. The minerals and energy accounting activities are at the first reporting stage, following rigorous capacity-building initiatives in the past year.

Following implementation of sectoral NCA activities the Ministry of Finance and Development Planning has taken the lead in development of macroeconomic indicators for sustainability. Training is ongoing to strengthen the technical capacity of the Macroeconomic Policy Section to compile and apply the indicators to policy issues. ”

– Ndobano Kelapile, Deputy Permanent Secretary, MFDP



10-15%
of water used
in Botswana
is for the
mining sector



The Botswana Ministry of Finance and Development Planning hosted a delegation from WAVES in Rwanda to share experiences on implementing NCA.





COLOMBIA

Unit: The Indicators and Environmental Accounts Unit

Department: National Administrative Department of Statistics (DANE)

Task: Support environmental policy making in the National Council of Economic and Social Policy (CONPES)

Team: Eight staff

Year: Set up in 2010, but started work on NCA in 2014

“ Guided by DANE, which was working with the United Nations, Colombia began its study and implementation of environmental economic accounts, or NCA, in 1992. Today Colombia is a leader in the region and provides training to other countries.

WAVES has been fundamental in bringing various institutions together. It has been possible to understand and communicate the role that environmental accounts can play and identify how each institution fits in, whether in using or producing the accounts.



Members of the Indicators and Environmental Accounts Unit in the National Administrative Department of Statistics (DANE) in Colombia. From left to right: Jenny Rosado, Paola Andrea Acevedo Ramírez, Monica Rodríguez Díaz, Unit Coordinator, Santiago Andrés Velásquez, Alexandra Patricia Barreto, Sandra Milena Casallas, Magda Mallen Sierra. Photo: Maria Elvira Talero

WAVES has enabled different approaches to data collection, particularly when official data are missing, and has provided training on building water, forest, and ecosystem accounts.

We have made progress on measurements, not only at the national level, but also locally, which is important because environmental policy in Colombia is decentralized.

We have already constructed the water accounts, and we are reviewing their consistency with the national economic accounts. We want to create

a time series once we have a well-structured annual exercise. With the forest account, WAVES partnership project experts have supported us in collecting missing information. We hope to finish the year with a complete set of annual accounts.

The next step is to focus on using natural capital accounts. The unit aims to generate indicators to inform the 2014–18 National Development Plan to support Colombia’s bid to join the Organization for Economic Co-operation and Development (OECD), and to implement the Sustainable Development Goals and the national green growth strategy. ”

– **Monica Rodríguez, Unit Coordinator**



COSTA RICA

Department: Macroeconomic Statistics, Board of Directors of the Central Bank of Costa Rica (BCCR)

Task: Compile environmental accounts

Team: Four staff

Year: 2015

“ In August 2015, we submitted a proposal to the BCCR Board of Directors to create a new unit at the Department of Macroeconomic Statistics. Based on the results from the innovative work on NCA, which was developed within WAVES we decided to institutionalize the compilation of environmental accounts, or NCA. We recently finished updating the national accounts. Therefore, we believe it is the right time to move forward on the implementation of SEEA 2012. Before this, we did not compile environmental accounts. Our work with WAVES starting with the forest and water accounts, was an important factor in our decision to continue compiling the accounts.

The BCCR Board of Directors approved our proposal in September 2015. This information (in Spanish) is public and available on BCCR's Web site. We began with four full-time professionals and expect to add staff in the near future. The consultants working on water and energy accounts, hired by the WAVES partnership project will become part of our staff in June 2016.

We collect, systematize, and compile environmental accounts following the SEEA 2012 standard; produce and publish technical reports for the accounts; and conduct research related to environmental accounts. We also promote knowledge sharing with other agencies and countries.

The staff of the NCA unit in the Central Bank of Costa Rica's Department of Macroeconomic Statistics. From left to right: Henry Vargas Campos, Director of Macroeconomic Statistics; and economists working on environmental accounts: Lucrecia Salazar Villalobos, Bridget Soto Méndez and Johnny Aguilar Madrigal.
Photo: Central Bank of Costa Rica.



Over the next few months, we will continue the work we started with WAVES, namely, the compilation of water and forest accounts. After the first publication of results, we will start a process to improve and update both accounts and strengthen our coordination with ministries and government agencies to promote the key findings from accounts in Costa Rica. Further, we will start the compilation of energy accounts and explore ecosystems accounting (in a pilot phase). ”

– **Henry Vargas Campos,**
Director of Macroeconomic
Statistics, Central Bank of
Costa Rica



MADAGASCAR

Unit: Natural Capital Accounting Unit (NCAU)

Department: Ministry of Economy and Planning

Task: Coordinate and implement WAVES Madagascar

Team: Five staff

Year: 2014

“ The WAVES Partnership was designed with a fundamental principle in mind: You can only manage what is measured. Importantly, it was always intended as a form of catalytic support for operationalizing NCA into economic policies, and to pave the way for countries to take ownership of the process.

Madagascar’s Environmental Charter already challenges all sectors to account for natural capital in their sectoral policies by establishing appropriate mechanisms and procedures. Within the Ministry of Economy and Planning, we are developing this link between natural capital and the economy by institutionalizing a natural capital unit.

Of course, it takes time to fully incorporate the information linking natural capital and government operations into a model that leads to sustainable development. The country’s macroeconomic framework needs to be adapted gradually, as we face numerous practical and budgetary challenges in implementing NCA. Despite these constraints, the Government of Madagascar remains deeply committed to creating an administrative unit for implementing WAVES.

Working with WAVES continues to be a significant opportunity to learn from others’ experiences. To take full advantage of these lessons learned, our NCA unit is working towards monitoring ongoing and/or planned WAVES activities in relevant sectors, as well as developing and finalizing macroeconomic accounts. Eventually, we will also take on the production of discussion notes on economic policies, with the help of relevant sectors. ”

– **Mamy Ratolojanahary, Director General for Planning, Ministry of Economy and Planning**

From left to right: The Natural Capital Accounting Unit in Madagascar. Hasina Andrianavalona (mining accounts), Kojaina Miarana Raharison (macro-economic indicators/adjusted net savings and total wealth), Fenolalaina Natacha Randrianasolo (forest accounts); Rija Ranaivoarison, WAVES Madagascar country coordinator; Jeanine Norosoa, Ministry of Economy, (former NCAU Chief); Holinantenaina Rakotobe (water accounts).





PHILIPPINES

Unit: Environment and Natural Resources Accounts Division

Department: The Philippine Statistics Authority (PSA)

Task: Gather and consolidate statistics on environment, disaster, and climate change, including accounts

Team: Nine staff

Year: 2015

“ In recent years, natural disasters and extreme weather events, such as super typhoon Haiyan, have underscored the imperative for a disaster-prone country like the Philippines to include the environment and natural resources in its national planning and development agenda.

The mandate of the division is wider than what we have been doing together on the WAVES partnership project and thus will further build on our capacity to apply ecosystem accounting. Data collection will cover a set of indicators, which, when taken together, can help policy makers and legislators better identify the links between the environment and the economy and thus plan for the sustainable use of natural resources.

The Philippines' experience in constructing NCA and using indicators dates back to the 1990s. With about 20 percent of the Philippines' wealth coming from its natural resources, the country's former National Statistical Coordination Board was one of the first statistical agencies in the world to implement the System of Environment-Economic Accounting (SEEA).

Members of the Environment and Natural Resources Accounts Division of the Philippine Statistics Authority: Reynaldo Fulleros, Madeth Gayosa, Ellen Grace Guiam, Precious Anne Cañete, Michelle Fatima Caranay, Sarah Mae Manuel, Corina Myra Concepcion, Virginia Bathan and Division Chief Edward Eugenio Lopez-Dee. *Photo: Ana Santos*



\$1 BILLION

in GDP is at risk from mangrove loss due to the future impacts of climate change

In 1997, then President Fidel V. Ramos signed into law Executive Order 406, which was intended to institutionalize the Philippine Economic-Environmental and Natural Resources Accounting System (PEENRA) as a set of indicators that would reflect the causal relationship between the natural environment and the economy. However, those initiatives were not sustained due to the lack of human and financial resources.

When the WAVES partnership project started, one of its core objectives was to augment past efforts and support the continuous development of indicators, tools, and methodologies to determine the sustainable use of the country's key natural resources. Thus, from the start, the project appropriated a budget for the hiring and training of national staff to perform the data collection and analysis for the minerals and mangrove accounts.

Our staff provides technical expertise to the other government agencies involved in the WAVES partnership project: the Laguna Lake Development Authority, the Department of Environment and Natural Resources, and the Palawan Council for Sustainable Development. The staff are now full-time PSA employees.

We are increasing the team's capacity, identifying data gaps, and improving data collection. Our ultimate goal is to develop an "environmentally adjusted GDP," wherein national indicators, like gross domestic product (GDP), reflect the usage, depletion, and degradation of our environment and natural resources. ”

– **Edward Eugenio Lopez-Dee,**
Division Chief, Environment and Natural Resources Accounts Division



Accounts Available in WAVES Countries

Botswana



Water
2010/11, 2011/12



Minerals
1994 - 2012



Energy
2010/2011 - 2014/2015



Macroeconomic indicators of sustainable development
In progress



Tourism component of land and ecosystem accounts
In progress

Colombia



Water
2012



Water: Tota Lake Watershed
2012



Ecosystem: Chinchiná River
Between 2010 and 2014 (varies by account)



Ecosystem: Orinoquia
In progress



Forest
1990 - 2012



Land
2000 - 2009

Costa Rica



Forests
2008-2013
(Asset accounts),
2011 (Flow accounts)



Water
2000-2014
(Asset accounts),
2012 (Flow accounts)



Energy
2011-2013



Ecosystem: National
1997-2008-2013



Madagascar



Water

2001 – 2003 In progress



Forest

2005, 2010, 2013

Philippines



Mineral

Gold, copper, nickel and chromite (2001-2012) – in progress



**Ecosystem:
Laguna de Bay**

Between 1997 and 2014 (varies by account)



**Ecosystem:
Southern Palawan**

Between 2001 and 2014 (varies by account)



Mangrove

Planned



“We knew the area (Laguna Lake) was depleted, but it wasn’t until we aggregated the data that we grasped the magnitude and extent of the challenge that we really need to face up to, and the gaps, cracks and deficiencies in policy and institutions.”

– Neric Acosta, Philippine Presidential Adviser for Environmental Protection, and General Manager of the Laguna Lake Development Authority (LLDA)



NCA Mentioned in Development Plans

BOTSWANA

- ▶ **Keynote Policy Paper for National Development Plan 11 (Ministry of Finance and Development Planning, September 2015)**

Para 103. Prudent management of natural resources is desirable to ensure conservation and the equitable realisation of benefits by the majority of the country's population. **Under this strategic area, the focus during NDP 11 will be on the strengthening and/or development of policies, and legislation to address the threat as well as measures to enhance the state of the environment. Specific areas will include land, water, minerals, energy, biodiversity and cultural resources, which are key to economic development.**

In relation to this, issues of indigenous knowledge will be addressed. This is the local knowledge that is unique to a given culture or society which facilitates communication and local-level decision-making in agriculture, health care, food preparation, education, natural-resource management, and a host of other activities in rural communities. **Also, to be captured is the value of these resources and their implication to economic development through a variety of measures including natural capital accounting, with a view to assessing the physical stocks of the natural resources and undertake economic accounts resulting from the utilisation of those resources. (pp. 26)**

Source: http://www.finance.gov.bw/images/NDP-TEN/NDP_11/Keynote_Policy_Paper.pdf



OTHER MENTIONS OF NCA

President's State of the Nation Address

Fiscal rule for mineral revenues

Framework for National Strategy for Sustainable Development

Gaborone Declaration for Sustainability in Africa

“We were right (to decide to work in the Orinoquia region) because it is where we can best conduct a pilot project to provide results for regional decision making.”

– Nelson Omar Vargas, hydrology subdirector of the Institute of Hydrology, Meteorology and Environmental Studies (IDEAM)

COLOMBIA

► **Colombia National Development Plan for Green Growth (2014-2018): All For a New Country – Peace, Equity, Education**

Objective 2: To protect and assure the sustainable use of natural capital, and strengthen environmental quality and governance.

[Including through] the use of economic instruments and valuation of biodiversity to promote conservation and sustainable production. This will move forward through: 1) the extension of beneficiaries from Payment for Ecosystem Services (PES) through the National PSA Program for strategic ecosystems, as a tool for the conservation and restoration of ecosystem services; 2) existing economic and financial instruments will be reviewed and new instruments will be developed; **3) the consolidation of national environmental accounts, starting with the creation of a National Committee of Environmental Accounts and the development and adoption of environmental economic accounts for forests as well as water accounts, and the development of natural capital accounts;** and 4) relevant studies will be conducted regarding the valuation of ecosystem services from coasts, oceans and land. (pp. 569-571)

Source: <https://colaboracion.dnp.gov.co/CDT/Prensa/PND%202014-2018%20Bases%20Final.pdf>

OTHER MENTIONS OF NCA

Environmental Dividends of Peace (forest account)

Value of lost ecosystem services due to forest fires (forest accounts)

Analysis of water fee change

CONPES 3801 (policy instrument for integrated management of Tota Lake watershed)

Road map for Colombian integration into the OECD (accounts use)

Green Growth National Strategy (NCA indicators)

Colombia Sustainability Leadership Programme

COSTA RICA

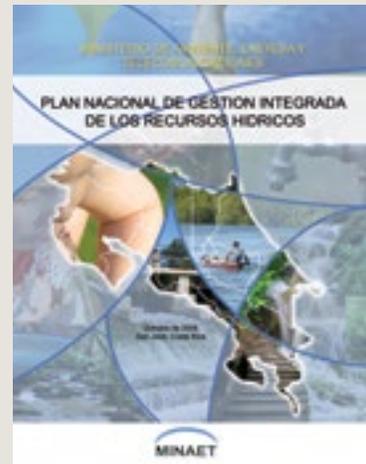
▶ National Plan for Integrated Management of Water Resources NCA Strategy (PNGIRH)

Principle VI: Water has an economic and social value that needs to be recognized in order for it to be managed. (pp. 18)

Source: <http://www.da.go.cr/textos/balance/plan.pdf>

▶ Law for Integrated Water Resources Management (currently under discussion in Congress)

Chapter II sets out the necessary planning tools to ensure the integrated management of water resources. **To this end, it calls for the creation of important instruments that currently do not exist, such as the National Water Plan, the National Water Balance, and the water plans and the water balance for the Water Units, which aim for decisions to be taken based on the best scientific information available and in accordance with previously developed plans.** It also establishes the creation of other tools, such as the national classification of bodies of surface water, aquifer recharge areas, and springs in the country, as well as a national program to monitor the quality and quantity of surface water and underground resources, which will allow for better planning because good management requires first knowing the quantity and quality of those assets (pp. 3, para. 2).



► **National Plan for Forest Development (PNDF) 2011-2020**

The contributions of forests are not reflected in the national economy; without clear and definite accounts it cannot be shown to be an activity with potential for economic development. Most activities tend to encourage the preservation of natural resources, and exclude sustainable forest management activities that contribute to national goals of economic and social development. **Forest accounts will inform the Plan as part of the National Forest Monitoring System (under development), and ecosystem accounts will inform policy decision-making related to forests ecosystems.** (pp. 19, para. 3)

Table 01: **Impact indicators and impacts expected from the implementation of forest policies – includes the valuation of forests stocks, estimation of forests’ contribution to the economy, and the valuation of wood and wood products value chain, among others.** (pp. 12-15)

Source: <http://www.sirefor.go.cr/images/stories/pdf/plannacionafinalweb.pdf>



PHILIPPINES

▶ **Philippine Development Plan (2011-2016) Mid-term Update with Revalidated Results Matrices**

Under crosscutting strategies: **Integrate ecological values into national accounts through the Wealth Accounting and the Valuation of Ecosystem Services (WAVES)**. This effort will address demand for Environment and Natural Resource (ENR) indicators, tools and methodologies that will help determine sustainable use of ENR, correlate sustainable use of ENR with economic growth, and make informed development planning and policy analysis. (pp. 230, para. 6)

Source: <http://www.neda.gov.ph/wp-content/uploads/2014/08/NEDA-PDP-2011-2016-Midterm-Update+Errata2.pdf>

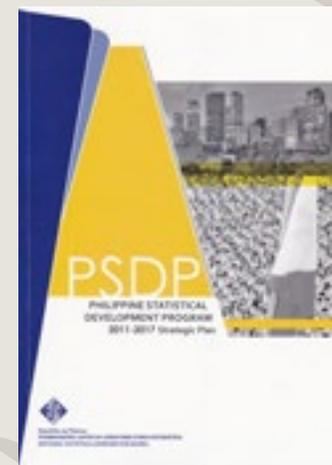


▶ **Philippine Statistical Development Program 2011-2017**

Includes calls for:

- **Compilation of the energy accounts:** Enhancement of the EBT compilation and compilation of the System of Environmental-Economic Accounts (SEEA) for energy (pp. 79, item 4)
- Adoption/adaptation of international principles, frameworks and declarations in the compilation and dissemination of energy statistics: **Adoption of the UN SEEA/IEA frameworks and standards in the compilation of the environment accounts.** (pp. 80, item 18)
- Adaptation of updated/new international ENR statistical frameworks, standards and classification systems: **Revised SEEA, green economy and wealth accounts;** Classification of Environmental Activities (CEA); and Standard ENR concepts and definitions (pp. 118, item 11).

Source: http://www.psa.gov.ph/sites/default/files/PSDP2011-2017_Vol_1.pdf



▶ **Executive Order No. 79, series 2012: Institutionalizing and Implementing Reforms in the Philippine Mining Sector, Providing Policies and Guidelines to Ensure Environmental Protection and Responsible Mining in the Utilization of Mineral Resources**

Section 15. Creation of a Centralized Database for the Mining Industry. The Department of Environment and Natural Resources (DENR) is hereby directed to create a centralized database of all mining-related information. The database shall initially include all available data on the industry from all government agencies and instrumentalities. The database shall be publicly accessible, transparent, complete, and comprehensive. The database shall be created within six (6) months from the effectivity of this Order.

Information and data gathered from the conduct of Resource Accounting or Full-Cost Benefit Analysis Studies, in line with the Wealth Accounting and Valuation of Ecosystem Services (WAVES) and the National Climate Change Action Plan (NCCAP), shall also be made part of the centralized database.

Source: <http://denr.gov.ph/news-and-features/latest-news/831-executive-order-79-s-2012.html>

ADDITIONAL PHILIPPINES DEVELOPMENT PLANS

Integrated water resource management in Laguna Lake Basin (ecosystem accounts), currently being used to update the Laguna Lake Master Plan



02

**WAVES
ON THE
GLOBAL
STAGE**





Over the past year, Natural Capital Accounting (NCA) has surfaced as a critical component in pivotal events and conversations, particularly with respect to how countries should pursue sustainable development.

In September 2015, the United Nations (UN) released the Sustainable Development Goals (SDGs) that are set to shape the post-2015 development agenda. In December, the UN Climate Change Conference (COP21) was held in Paris, where it was recognized that investing in natural capital goes hand in hand with slowing climate change.

In addition to the many events that WAVES participated in along with UN partners such as the UN Statistics Division (UNSD) and the UN Environment Programme (UNEP), WAVES was also invited to share its NCA experience at other occasions. The topics ranged from how to link biodiversity and the economy, to how NCA can be used as a tool to monitor water challenges in Colombia.

WAVES also took first steps toward establishing a regional cooperation program—specifically in Latin America and the Caribbean. In 2016, WAVES co-organized an interactive workshop with the UN Economic Commission for Latin America and the Caribbean (ECLAC) and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ). Representatives from 15 countries attended to discuss their experiences with NCA as well as how to continue collaborating.



On the first day of the 2015 WAVES Partnership Meeting, countries presented the "View from the Field." Day two focused on NCA tools and partnerships.



World Resources Institute President Andrew Steer spoke at the gathering, stating that the stage is now set to scale up NCA as a result of strong leadership and political pressure. His advice to WAVES countries: "Stick with it and figure out the relevance of it. Your importance is far greater than simply your own country. You will influence others."

WAVES 2015 PARTNERSHIP MEETING: COUNTRIES DELIVERING RESULTS AND MAKING AN IMPACT

The WAVES core implementing countries shared key findings emerging from their work on NCA at the fifth WAVES Annual Partnership Meeting held at the World Bank headquarters in Washington, DC, June 1–2, 2015. It was attended by nearly 100 participants, including representatives from WAVES' eight core implementing countries, donors, UN agencies, international organizations, civil society, and nongovernmental organizations.

Over the course of the two-day meeting, all eight WAVES core implementing countries presented on how NCA is informing policy and delivering results, on their institutional and data challenges, and on how to move forward. Participants also heard from representatives from the private and financial sectors, from WAVES partners, including several UN agencies, and about other NCA initiatives, such as that of the German International Cooperation implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), which is supporting NCA in Brazil, India, Kyrgyzstan, Namibia, and Peru.



Photos from left to right: Paula Caballero, Senior Director, World Bank Environment and Natural Resources Global Practice; Olivia Rakotomalala, WAVES-Madagascar, and Kelapile Ndobano, Deputy Secretary of Macro-Economic Policy for the Botswana Ministry of Finance and Development Planning and Chair of the WAVES-Botswana Steering Committee; Emmanuel Esguerra, Director General of the Philippines' National Economic and Development Authority and Rafael Monge, Policy Adviser to the Ministry of Environment and Energy, Costa Rica.



The LAC Regional Workshop on Environmental Accounting for Policy Analysis was held in Bogotá, Colombia in March 2016. From left to right: Birgit Altmann, ECLAC; Mario Emmanuel Villalba, Technical Secretariat for Socioeconomic and Development Planning, Paraguay; Alcides Nunes Gonzalez, General Directorate of Statistics, Surveys and Censuses, Paraguay; Fabián Antonio Perales Vilar, National Institute of Statistics, Bolivia and Hector Antonio Tuy, Institute of Agriculture, Natural Resources and Environment, Guatemala.

WORKING WITH THE INTERNATIONAL COMMUNITY TO ADVANCE NCA

“The tide is turning, countries are acknowledging (NCA’s) importance. At no point of time in the last 40-50 years has there been so much talk of accounting for nature. There is support coming from all corners.”

– Pushpam Kumar, Chief, Ecosystem Services Economics, UNEP

WAVES is part of the statistical community that is informing the development of the System of Environmental-Economic Accounting (SEEA), the standards that guide work on NCA. This community includes several groups, such as the London Group on Environmental Accounting; the UN Committee of Experts on Environmental-Economic Accounting (UNCEE); the Forum of Experts on Ecosystem Accounting, a technical expert group formed by the UNCEE to advance the framework for Ecosystem Accounts; and the Technical Committee for the SEEA Central Framework.

WAVES’ work on valuation, policy, and the practical application of NCA in developing countries has been well received by these.

Some examples of WAVES collaborations with this community over the past year include:

► **The Annual Meeting of the UN Committee of Experts on Environmental-Economic Accounting, New York, United States, June 24–26, 2015**

WAVES led a discussion on partnerships at the annual meeting that provides high-level guidance on the development and implementation of SEEA.



The London Group on Environmental Accounting is one of the groups that provides technical input into the SEEA, and representatives from WAVES joined over 40 participants in The Hague, Netherlands for the group's 21st annual meeting in November 2015.



“The policy makers recognize the value of the findings because the research process is grounded in the local context and it addresses local issues while using methodologies that are accepted worldwide.”

– Pierre Bertrand, senior program associate, the Global Development Network

► **The First Annual Meeting of the Forum of Experts in SEEA Experimental Ecosystem Accounting, New York, United States, April 28–29, 2015**

WAVES joined the discussion on the progress of the testing of the SEEA Experimental Ecosystem Accounting and how to advance the research agenda. The work of the group will lead to a large international conference that brings together the many stakeholders and communities.

► **The London Group on Environmental Accounting, The Hague, Netherlands, November 2–4, 2015**

Representatives from WAVES joined over 40 technical experts at the group's 21st annual meeting. The London Group is one of the groups providing technical input into SEEA. A recurring theme at this year's meeting was how to demonstrate the usefulness and policy relevance of the accounts.

WAVES presented on three different aspects of its work. Global experts, who are part of a network of WAVES practitioners, convened and were able to facilitate work in countries and advance the SEEA research agenda. The three areas included bridging policy and accounts, working with partners to develop methodologies in areas of strong policy demand, and applying ecosystem accounts in WAVES countries.

Going forward, WAVES agreed to work with the London Group on developing methodology for ecosystem accounts and will have a role in the newly established Friends of the Chair of the London Group.



Botswana President Ian Khama speaking to world leaders at the COP21 in Paris. He pointed to the “importance of natural capital accounting as a tool for incorporating the value of natural resources and ecosystems into [Botswana’s] national development plans and economic decision-making.”

► **The United Nations Climate Change Conference (COP21), Paris, France, November 30–December 11, 2015**

The role of NCA was highlighted at COP 21 by Botswana's President Ian Khama, who spoke about the effects of heat and drought on Botswana's economy. President Khama's address reinforced the ambition of the Gaborone Declaration for Sustainability in Africa (GDSA) initiative, which commits its signatory countries to implement NCA as a tool to improve their sustainable development efforts. The GDSA initiative is a regional policy framework initiated in 2012 by the government of Botswana and agreed to by nine additional African countries to encourage sustainable development in the region.

WAVES was also invited to attend and share results from its work at many other international events throughout the year:

- WAVES participated in the “Managing Water Resources for Green Growth and Equity” session at the **2015 World Water Week in Stockholm** in August. Results from Botswana and Guatemala were presented, highlighting the policy issues emerging from the accounts and how they can be used to develop policy responses.
- Participation in the **Regional Forum on Green Economy for Latin America** under the auspices of the United Nations System and the Global Initiative Partnership for Action on Green Economy (PAGE) in Cartagena, Colombia, November 2015.
- Results from the Global Development Network's one-year project on natural resource management and wealth accounting in Madagascar, Mauritius, and Morocco were presented at a **policy roundtable at the Agence Française de Développement** (French Development Agency, AFD) in December 2015.



Research teams from Madagascar, Mauritius and Morocco came together in Paris in November 2015 to present findings from the Global Development Network's one-year project on natural resource management and wealth accounting.

WAVES Senior Environmental Economist Sofia Ahlroth joined officials from those countries and from the French Ministry of Foreign Affairs and International Development in a discussion on lessons learned, how to link the work with other initiatives, and how to bridge the gap between researchers and policy makers.

- In Brussels, progress on WAVES was presented to the **African Caribbean Pacific-European Union (ACP-EU) Economic Committee** in December 2015. The committee included about 30 members of parliament from Europe, Africa, and the Caribbean.
- WAVES team members presented case studies on how NCA is being used to inform policy and management and address the food-energy-water nexus at a symposium at the **National Conference and Global Forum on Science, Policy, and the Environment** outside of Washington, DC, in January 2016.
- Developing methods to link biodiversity and the economy took center stage at a workshop hosted by the **UN Environmental Programme's World Conservation Monitoring Centre (UNEP-WCMC)** in Cambridge,



Portia Segomelo, advisor for WAVES Botswana, speaking at the second World Forum on Natural Capital Accounting in Edinburgh, Scotland.

UK, in February 2016, which was attended by WAVES. Recommendations from the workshop will be tested as countries like Uganda, Costa Rica, Colombia, and the Netherlands begin to build their first biodiversity accounts.

- WAVES was one of many international and domestic groups focused on natural capital approaches at the **Natural Capital Symposium**, which was hosted by the Natural Capital Project (NatCap) at Stanford University in March 2016. The event brought together this community of practice with the aim of including ecosystem services in policy and decision making by building capacity, sharing success stories and lessons learned.
- WAVES presented on its progress and plans going forward at a **UNEP-hosted workshop on "Mainstreaming ecosystem services into countries' sectoral and macroeconomic policies and programmes"**, held in February 2016 in Geneva, Switzerland. Participants included key government representatives from Kazakhstan and Morocco, as well as NCA and other sustainable development stakeholders. Discussion centered on lessons learned, challenges in policy uptake, and strategies for scaling up in the context of the SDGs.
- With support from the National Aeronautics and Space Association (NASA), UNESCO and the U.S. Geological Survey (USGS), **several workshops were organized in Colombia** with different stakeholders to share methodologies and approaches to filling data gaps.

“In the context of a changing climate and prevalence of poverty... it is more important than ever to know the value of natural assets and the contribution that natural resources make to the economy.”

– Portia Segomelo, advisor for WAVES Botswana



ADVANCING A REGIONAL COOPERATION PROGRAM IN LATIN AMERICA AND THE CARIBBEAN

Latin America and the Caribbean Regional Workshop on Environmental Accounting for Policy Analysis

March 16–17, Bogotá, Colombia

This workshop was the largest regional gathering on NCA to date and brought together participants from 15 countries in Latin America and the Caribbean, including the three WAVES countries in the region: Colombia, Costa Rica, and Guatemala. It was organized by WAVES, the Statistics Division of the UN Economic Division for Latin America and the Caribbean (ECLAC), and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ).

Two participants from each of the countries represented both the user side (Ministry of Environment, Planning Department, and so forth) and the producer side (national statistics offices, central banks, and others) of the accounts. Working in hands-on interactive sessions, small groups shared their experiences on implementing and institutionalizing NCA using SEEA, overcoming challenges, and applying lessons learned and NCA in policy making. The workshop also provided the opportunity to discuss a roadmap for a forthcoming regional collaboration program.

“It is important to create collective knowledge to help each other shorten our paths (to NCA). Together we can achieve even more.”

– Kristina Taboulchanas, Environmental Affairs Officer, UN Economic Commission for Latin America and the Caribbean (ECLAC)





“The regional experience and knowledge of organizations such as WAVES and ECLAC on strategic implementation and inter-institutional (collaboration) has been very helpful for our work...I will readjust the strategy when I go back to Uruguay.”

– Mariela Buonomo, Economist, Uruguay Ministry of Livestock, Agriculture and Fisheries



Over 50%
of Costa Rica is
covered by forest.
NCA could improve
understanding
of how forests
contribute to the
country's economy.

This workshop was a follow-up of two regional events developed by ECLAC, GIZ, and WAVES. One was a training event on the SEEA framework, with a focus on the technical aspects of compiling NCAs, organized by UNSD, ECLAC, and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ), and conducted in July 2015 in Santiago de Chile as a follow-up and final step of an eight-week online course. Sessions on SEEA implementation revealed that two of the main challenges were the institutional setup and communication with the users of the accounts for policy application. Similar conclusions were reached at the regional workshop on water accounting, which was hosted by Costa Rica in 2014 and developed under the WAVES initiative.

Forty participants from 15 countries in Latin America and the Caribbean attended the workshop on NCA and policy in Bogotá, Colombia.



WORKING WITH THE PRIVATE SECTOR

Natural capital is a critical asset for businesses, especially those operating in developing countries, where it makes up a significant share of total wealth. Companies are increasingly integrating natural capital values into their business models.

The International Finance Corporation (IFC) in partnership with the Natural Capital Coalition (NCC) is working on **The Natural Capital Protocol**, a standardized framework for business to measure and value its impacts and dependencies on natural capital. It is being developed through a unique collaborative process involving 40 of the world's leading organizations who have come together to promote global knowledge and sharing of lessons. The Protocol has completed an open consultation which received over 3,200 contributions and has been piloted by over 50 companies. It will be published in July 2016 and accompanied by two sector guides on Apparel and Food & Beverage, and supporting work from some of the other 200 NCC members.

In late 2015, IFC launched the first **Natural Capital country pilot** in Colombia, which seeks to understand the enabling environment in a developing country context for adoption of NCA as part of corporate decision-making. The work will explore how WAVES work with the government of Colombia, can complement and build on corporate level work and vice versa. The pilot also focuses on understanding the linkages between a global deep dive pilot methodology currently being implemented by the NCC in Colombia and how this translates into the country's coffee supply chain.

The work in Colombia is also seeking to building synergies with efforts in the public sector and financial sector initiatives such as the **Natural Capital Declaration (NCD)**. The latter seeks to integrate natural capital considerations into financial products and services, and is launching a pilot in Colombia's financial sector. The Colombia pilot is also developing and refining an evaluation framework that can be used in future natural capital pilot countries to enable cross country analysis and learning. IFC expects to launch two additional country pilots—one in Asia and one in Africa – end of FY16.

► **The 2015 World Forum on Natural Capital, November 23–24, 2015, Edinburgh, Scotland**

Over 600 people from 45 countries attended the Second World Forum on Natural Capital, which brought together business leaders, policy makers, environmental experts, and academics to discuss how and why nations should make a long-term investment in natural capital. Bill Rahill, Director of the World Bank Group's Environment and Natural Resource Global Practice, moderated a session on "Mapping the Policy Landscape."

• **U.S. Department of Commerce Natural Capital Summit, February 2, 2015, The World Bank, Washington, DC, United States**

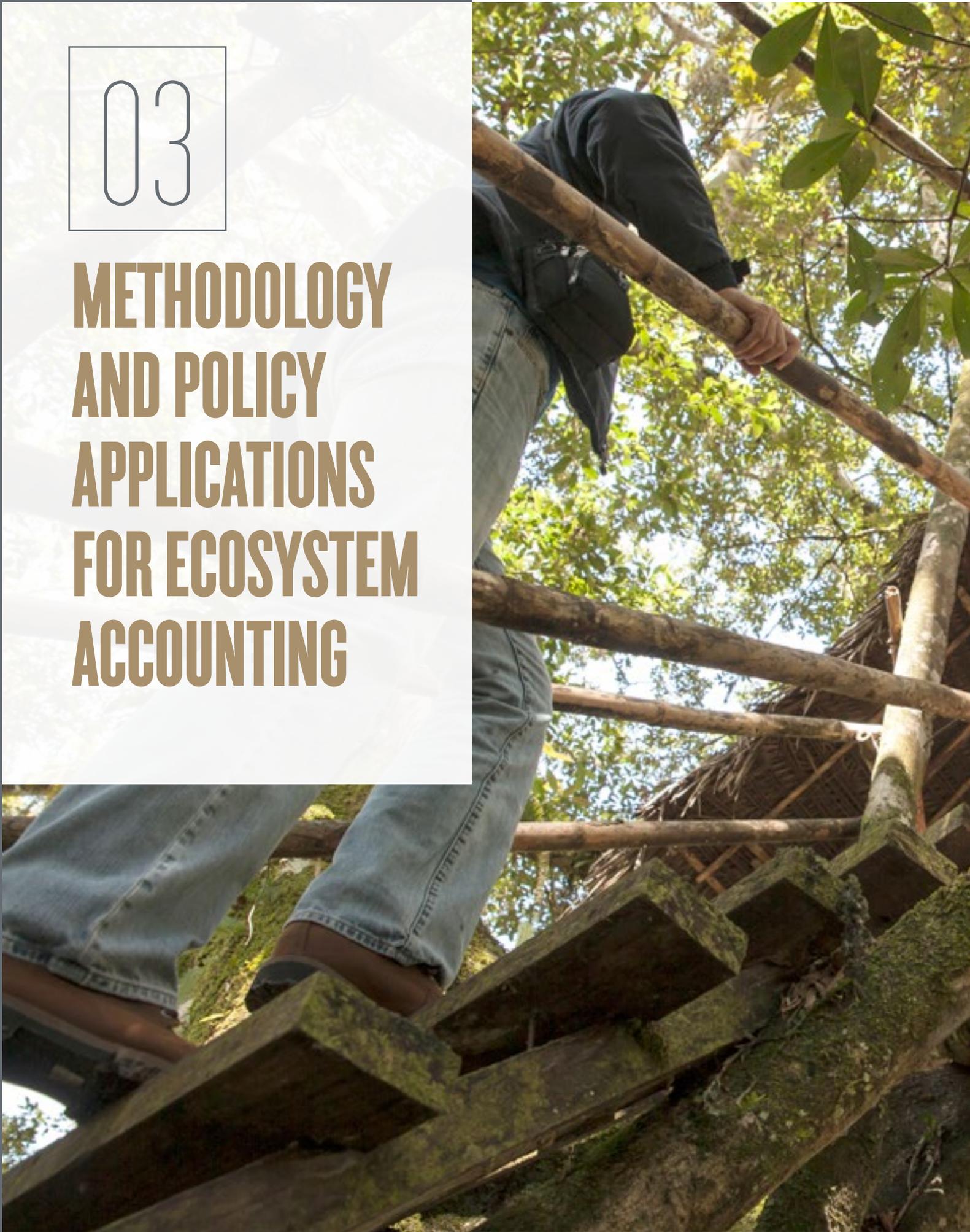
The U.S. Department of Commerce Natural Capital Summit, hosted by the World Bank Group, was the culminating event of a series of regional business roundtables on the topic of natural capital and how companies are integrating natural capital values into their business models. Senior Director of the World Bank's Environment and Natural Resources Global Practice, Paula Caballero, provided opening remarks, and Glenn-Marie Lange presented at a session on "What Will It Take to Integrate Natural Capital into Global Value Chains?"

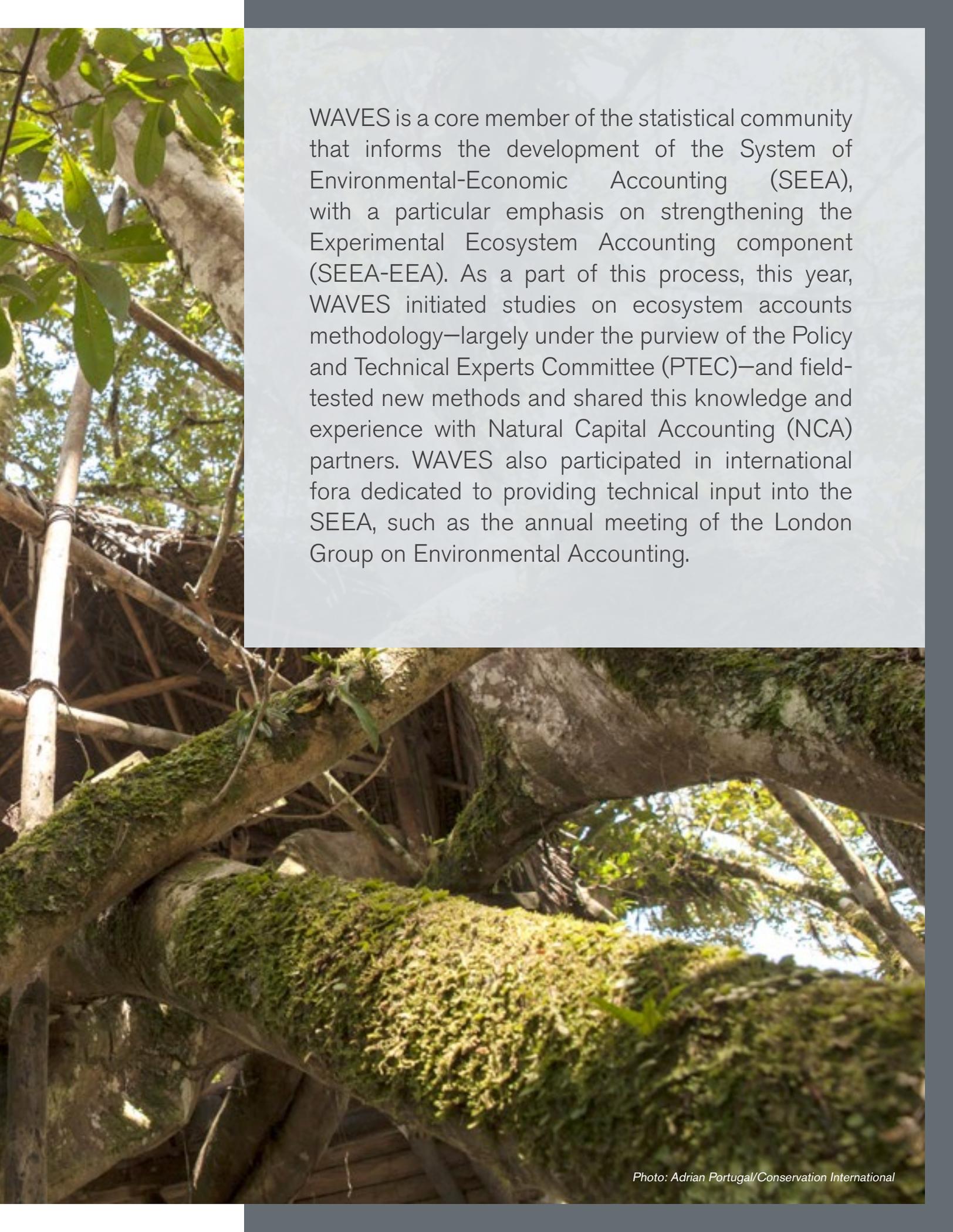


Participants from the forum sent a clear message to world leaders attending the COP21: "The climate crisis cannot be solved without halting the rapid erosion and loss of natural capital." Photo: World Forum on Natural Capital

03

**METHODOLOGY
AND POLICY
APPLICATIONS
FOR ECOSYSTEM
ACCOUNTING**





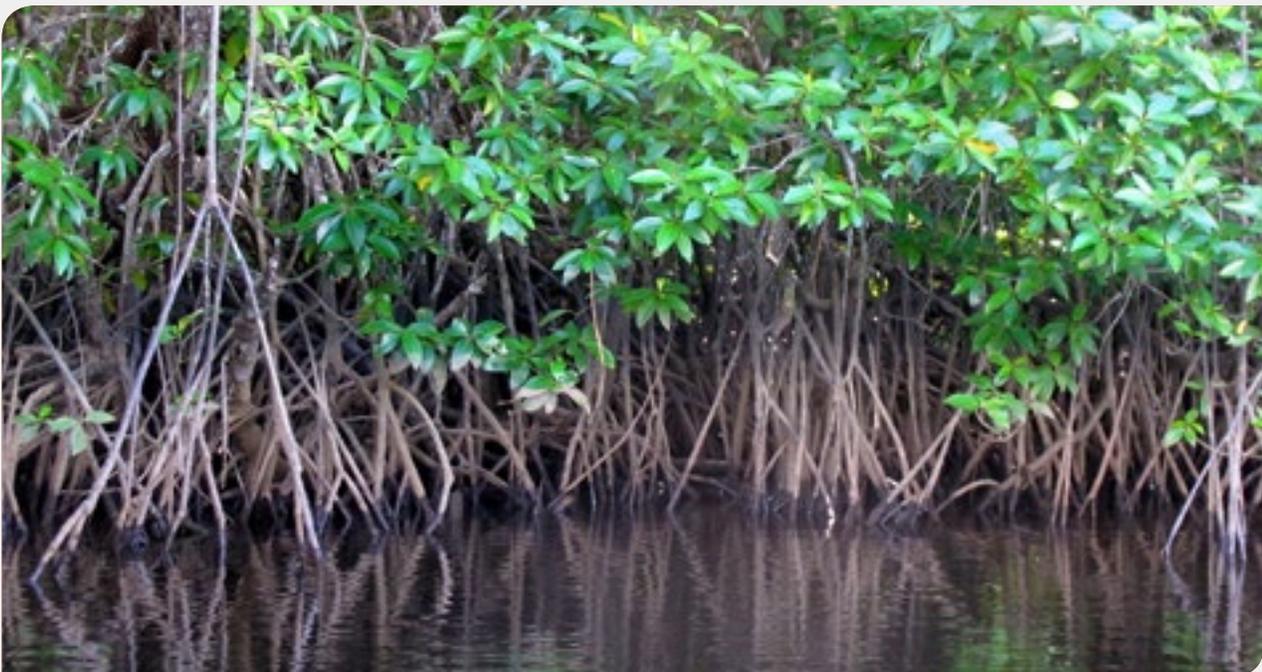
WAVES is a core member of the statistical community that informs the development of the System of Environmental-Economic Accounting (SEEA), with a particular emphasis on strengthening the Experimental Ecosystem Accounting component (SEEA-EEA). As a part of this process, this year, WAVES initiated studies on ecosystem accounts methodology—largely under the purview of the Policy and Technical Experts Committee (PTEC)—and field-tested new methods and shared this knowledge and experience with Natural Capital Accounting (NCA) partners. WAVES also participated in international fora dedicated to providing technical input into the SEEA, such as the annual meeting of the London Group on Environmental Accounting.

Valuing Ecosystem Services

Of the many studies on valuing ecosystem services, few are linked to the national accounting framework. This is an important issue because the estimated values for nonmarket goods and services need to be consistent with the prices that marketed goods and services receive under the System of National Accounts (SNA). However, valuation is only briefly described in the SEEA-EEA manual. To support practitioners looking for guidance, WAVES commissioned two papers on this issue for possible inclusion in the next version of the SEEA-EEA.

The first paper, ***Valuing Ecosystem Services in the SNA***, by Jeffrey R. Vincent (Duke University), considers conceptual and methodological issues that arise when attempting to value ecosystem services in the SNA. The paper explores the relationships among concepts of marginal value in several stylized economies and evaluates the consistency of the exchange value concept relative to different methods for valuing production externalities and environmental public goods.

The second paper, ***Defining Exchange Values for Non-Market Transactions Using Environmental Economics***, by Carl Obst (University of Melbourne) and Giles Atkinson (London School of Economics), asks whether commonly used valuation techniques in environmental economics can be used to estimate exchange values for ecosystem services. Building on the first paper, this research develops a series of stylized scenarios based on different externalities and public goods to glean common lessons. It includes accounting tables with a worked-through example to show how to include ecosystem flows and stocks in NCA, in both physical and monetary units. The paper also discusses different valuation methods, their suitability in the accounting context, and the conditions under which they may be used.



“

“What we hope is that in addition to their intrinsic value, by showing decision-makers how important mangroves and reefs are as a first line of defense, we can really inspire more action, not just from conservationists, but from disaster risk managers, from development planners, and from ministries of finance and development.”

– Mike Beck, Lead Marine Scientist
at The Nature Conservancy

Valuing Coastal Protection Services

In 2014, WAVES partnered with The Nature Conservancy (TNC) to begin working on guidelines for coastal and marine ecosystem accounting. This year, the report ***Managing Coasts with Natural Solutions: Guidelines for Measuring and Valuing the Coastal Protection Services of Mangroves and Coral Reefs*** was finalized and launched, and has received significant interest: it was downloaded 385 times in just two months.

Co-edited by TNC Lead Marine Scientist Michael Beck and WAVES Technical Advisor Glenn-Marie Lange, the report adopts an innovative approach to measuring the benefits of coral reef and mangrove ecosystems and valuing them in a manner consistent with national economic accounts. By applying assessment techniques commonly used in the engineering and insurance sectors and reviewing a number of case studies, the report submits that mangroves and reefs can substantially mitigate coastal risks such as flooding, erosion and severe weather, and offer sustainable and cost-effective alternatives to traditional “gray infrastructure” such as sea walls.

Biodiversity Accounts

Unlike the recent progress that has been made in establishing and implementing ecosystem services accounting, biodiversity accounts have remained a challenge. This is due to the uncertain links between biodiversity and ecosystem services; the over-reliance on “willingness to pay” methods for valuing biodiversity; differing concepts and measures of biodiversity at the ecosystem, species, and genetic levels; and data scarcity. Nevertheless, WAVES is committed to helping address the methodological obstacles hindering incorporation of biodiversity values into economic accounts.

New guidance on biodiversity accounts is currently being developed following a February 2016 workshop in Cambridge, U.K., hosted by the United Nations Environmental Programme’s World Conservation Monitoring Centre (UNEP-WCMC). These efforts include tracking trends in species diversity and abundance that directly provide ecosystem services that people value, such as crop pollinators, wildlife viewed by tourists, and wild-caught fish and game. WAVES’ valuation work will play a significant role in assessing the biophysical and monetary values of these species. Accounts will allow for tracing any declines or improvements in the species’ populations and the relevant impacts this may have on tourism, agriculture, fisheries, and other economic sectors. These new approaches will soon be tested as countries like Costa Rica, Colombia, the Netherlands, and Uganda start building their first biodiversity accounts.



Methods are being developed to incorporate the value of biodiversity into economic accounts.

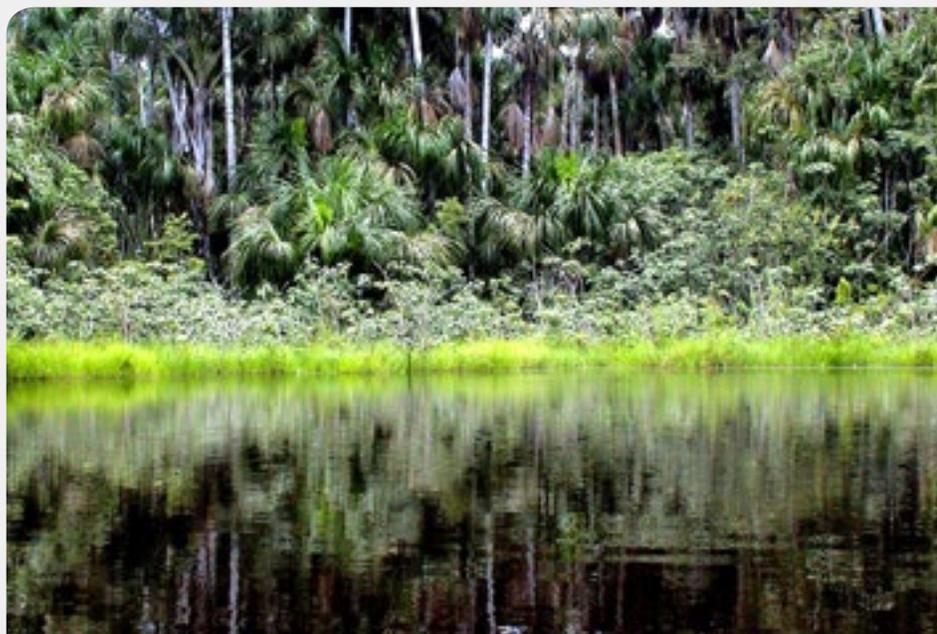
Testing Ecosystem Accounting in Countries



WAVES Environmental Economist Juan-Pablo Castañeda discussing regions working together to implement NCA.

The number of WAVES countries actively developing ecosystem accounts grew substantially in the last year, with each country offering opportunities to test new methods and data sources and improve future SEEA-EEA guidance. In Rwanda, WAVES is testing how accounts are impacted by different ecosystem service models, local versus global data, and data at different spatial resolutions (30 meters versus 300 meters). In Costa Rica, the country's robust tourism data will enable the use of innovative methods to calculate the value of tourism and map its value to communities across the country. Future accounts in Costa Rica and Colombia should facilitate the testing and comparing of different methods for biodiversity accounts, as both are biodiverse nations with rich underlying data.

Under the WAVES+ proposal to set up NCA regional cooperation programs in Latin America, Africa, and elsewhere, this experimental approach may be expanded to answer key questions: for instance, whether each country should use its own data sources and models (generally assumed to be more accurate) or those consistent with other countries (for comparability). Even given the experimental nature of the SEEA-EEA, findings from ecosystem accounts are ready to be applied to policy: both the Orinoquia account in Colombia and the Costa Rica account were designed to inform future World Bank sustainable landscapes projects.



Ecosystem accounts in San Martin showed palm swamps provide the highest provision of benefits on a per hectare basis. Photo: Trond Larsen/Conservation International

Remote Sensing for Ecosystem Accounting

The increasing number of active Earth-observing satellites is providing a greatly improved view of our planet's climate, oceans, and land, including changes in cropland, forests, fires, and land use. This explosion of data is a benefit, but also a challenge to the ecosystem accounting community. New data sources can provide increasingly more accurate inputs to the ecosystem accounts, but the higher resolution and more frequently collected public data are more expensive to process, store, and use. In addition, commercial data also carry acquisition costs.

Working with partners such as Conservation International (CI), the U.S. National Aeronautics and Space Agency (NASA), the U.S. Department of State, the Group on Earth Observations, and the United Nations Statistics Division (UNSD), WAVES convened several meetings in the spring of 2016 to discuss using earth observation data for ecosystem accounts. This working group - Earth Observation for Ecosystem Accounting (EO4EA)- will be submitted to the Global Group on Earth Observations for consideration as a formal initiative in the Fall of 2016.



Photo: Florent Mechain for TravelMag.com

Applying Accounts to Policy

WAVES has long recognized that implementing NCA requires both establishing the systems to produce environmental accounts and statistics and fostering the conditions to use this information in policy making. Given that the Netherlands has successfully been implementing NCA for almost 50 years, WAVES commissioned a historical country overview to shed light on the interaction between environmental statistics and its application to policy. The report yielded three main findings, with valuable lessons learned for countries at earlier stages of constructing NCA:

- ▶ Coordination and cooperation among organizations, including nongovernmental organizations, are crucial to efficiently collect data, foster shared interests, and decide which accounts to develop while balancing short- and long-term policy priorities.
- ▶ Translating environmental statistics into policy-relevant analysis requires expertise, qualities, and instruments that are distinct from the creation of accounts. Knowledge of policy evaluation, modeling, policy instruments, and indicator is essential to reach the policy makers.
- ▶ Multiple channels exist for connecting NCA and policy: public and private organizations dedicated to environmental policy evaluation; digital portals with environmental information, including policy-relevant assessments; and annual reports on environmental accounts (which, in the Netherlands, are legally required by its parliament). Employing all channels increases NCA use and accessibility.

WAVES commissioned a historical country overview in the Netherlands to shed light on the interaction between environmental statistics and its application to policy.





The EVA team at work in San Martín, Peru. Photo: Conservation International

“The Regional Government of San Martín is committed to using the ecosystem accounts... This exercise has demonstrated that unless we care for our natural capital, we will have fewer benefits from nature over time, in terms of quantity, quality, and opportunity for more sustainable development.”

– Mario Rios, Manager of the ARA.

Piloting Experimental Ecosystem Accounts in San Martín, Peru

While ecosystem accounting is considered “experimental” under the System of Environmental-Economic Accounting (SEEA), a WAVES-supported pilot has shown the significance of the framework for integrating the value of natural benefits into official statistics and government decision-making. Over the last three years, the Ecosystem Values and Accounting (EVA) project - undertaken by Conservation International (CI) together with Peru’s Directorate on Evaluation, Valuation and Financing of Natural Heritage of the Ministry of Environment (MINAM), the Institute of Statistics and Informatics, and the San Martín Regional Environmental Authority (ARA), and with support from the Gordon and Betty Moore Foundation - developed eight ecosystem accounts for San Martín, a northern region of Peru.

San Martín is distinguished by varied biomes and rich biodiversity, but also the potential for greater economic investment. The accounts reveal that between 2009 and 2013, natural ecosystem extent declined by 3.56% due in part to agricultural expansion, especially coffee and cacao plantations. The overall condition of natural ecosystems has also declined, with forests becoming increasingly fragmented. In addition, biodiversity in forests decreased by 0.175% per year on average, pointing to greater risk for vertebrates.

At the same time, ecosystems contributed an estimated 191 million Peruvian Sol (about US\$58 million) to the regional economy – compared to other sectors, this would make ecosystems the eight largest in San Martín. The greatest

contributions come from firewood (93%) and timber (less than 6%). The dominant beneficiaries are households, who receive 98% of the ecosystems’ value.

The key to successful implementation has been alignment with critical government goals. This was achieved by gathering information on relevant policies - a critical step towards the design of applicable accounts - and collecting ecological and socio-economic data, such as the class and area of the ecosystems; environmental conditions; species composition and distribution; and economic sectors and beneficiaries, along with their specific dependency on ecosystem services. The project deliberately used existing government data, where available, to ensure that the design of future ecosystem accounting efforts could leverage Peru’s current data collection infrastructure. That proved to be critical in demonstrating the feasibility and utility of accounts.

The EVA project is now concentrating on supporting the development of a legal and institutional framework for ecosystem accounts in Peru. Of particular focus is the use of statistical information generated from ecosystem accounts for developing national and regional development policies. This includes developing indicators for land use planning, identifying critically important ecosystems, and allocating budget and investments. Other analyses will focus on the sustainability of the ecotourism sector; the feasibility of transforming rice paddies into aguaje (a commercially important native swamp palm); and the feasibility of developing infrastructure like hydroelectricity.



04

COMMUNICATING NATURAL CAPITAL ACCOUNTING



Communications has been a strategic tool in advancing Natural Capital Accounting (NCA) both globally as well as in individual countries. The highlight of the past year has been the success of WAVES' concerted effort to build stronger ties among the institutions, organizations, and stakeholders that are identified as key to embedding NCA in development plans and policy.

All core implementing countries have dedicated communications staff and strategies that are tailored to the political economy of the country. Assisted by the International Institute for Environment and Development (IIED), country teams have provided ongoing advice on tactics and approach, produced content that links NCA and policy, and raised the profile of NCA's importance in influential spaces.

Technical work on NCA is now more accessible to an expanded audience—from statisticians and policy makers to the general reader. The suite of products ranges from technical reports to one-page briefs and snapshots of results emerging from individual countries. Several policy notes have been published, including three case studies on the use of natural capital. All countries have updated country briefs, Frequently Asked Questions and annual country reports.

WORKING IN COUNTRIES

Achieving sustained interest in a complex, technical approach such as NCA takes time and effort. Awareness is built up gradually, and information must be presented in a way that is nuanced to the country's political context and aligned with demand: the communication consultants working on WAVES, with the support of IIED, understand this. In their timely activities and carefully crafted strategies, WAVES team members have strived to meet the information needs of their target audiences over the past year.

Building Relationships

The communications consultants have built relationships across government departments. For example, our Botswana consultant held meetings with the Ministry of Tourism in March 2016, and our Rwanda team member met with the Ministry of Agriculture in February 2016. The communications consultants responded to the governments' many questions about NCA, providing useful information. They have worked with the press and research institutes, and at all times they translated the increasing amount of NCA data into formats that are clear and relevant.

The changing political landscape in Guatemala led to renewed government commitment for NCA and opportunities for the communications consultant to meet with staff from the new planning secretariat. In Indonesia, the communications consultant works with colleagues to maintain productive relations with staff in Indonesia's statistics office and planning ministry.

A stakeholder meeting organized by WAVES and IIED in Jakarta, Indonesia as a first step towards building a communications strategy.



Fostering Cross-Country Collaboration

These differences in how individual countries address demand and engagement provide exciting opportunities for cross-country collaborations. Our consultant in Guatemala is working with the Costa Rica NCA team on its plans for communication and engagement, and the communication staff in three Latin American countries are jointly developing a regional following on social media.



Deploying Tools

Over the past year, we have developed a range of tools for engagement and communications work: the communications consultants in Latin America have produced four country-specific three-minute animations about NCA; almost all countries now have a regular monthly newsletter; we have increased the number of followers on social media—Twitter in some countries, Facebook in others—and engaged successfully with high-profile media outlets. In the Philippines, the NCA communications team often uses government social media channels to share news and publications.

Promoting NCA in the Media

The WAVES mission to Colombia in December 2015 was a great opportunity to attract media attention for NCA and highlight the benefits that NCA can bring to the country, with stories appearing in Portafolio, Colombia's main business and economics news outlet, which reaches 75,000 readers in print and many more digitally, and in the nation's oldest newspaper, El Espectador, with a print circulation of around 225,000.



“Can Accounting for Natural Capital Be a Game-Changer for Development?”

This was the question posed via an online World Bank Development Dialogue to which dozens of responses were posted. Moderator Bill Rahill, Director of the World Bank Group’s Environment and Natural Resource Global Practice, started out the discussion saying: “NCA could be a game-changer in how we consider policy-making in a world of competing demands and financial constraint.” Other responses included:

Dr. Michael Vardon, Australian National University, said that “Natural Capital Accounting is already changing the conversations and could in a very short time change the game,” but also added that in order “for this to happen accounting cannot be a one-off exercise...The momentum that has been built up needs to be maintained, with the ultimate goal to change the decision-making processes, with the accounting as key milestone on the way to this.”

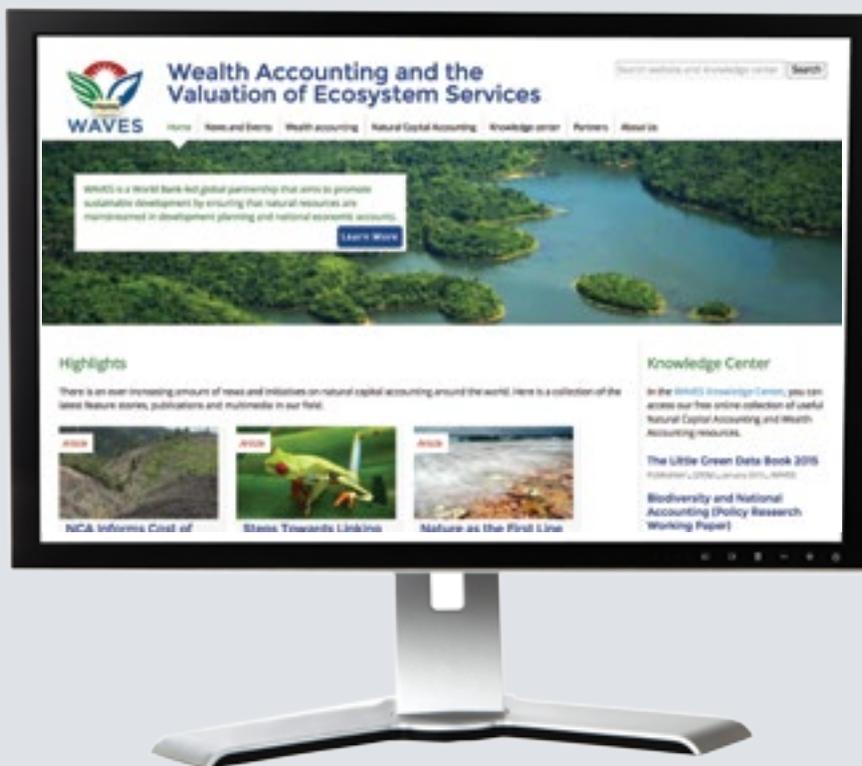
Secretary Neric Acosta, Philippine Presidential Adviser for Environmental Protection, and General Manager of the Laguna Lake Development Authority (LLDA) posted a comment with a view from the field: “In a region like Asia, with galloping growth rates and resource-hungry transitional/modernizing economies (like the Philippines) is the whole argument for NCA not so much that as “game changer” but something that may be in danger of being “sidelined” in a mad rush to drive development more rapidly rather than sustainably?”

Jessica Alvsilver, an environmental economist with the Swedish EPA and the coordinator for the Ecosystem Service Accounting for Development (ESAforD) program, added: “I do think that NCA can contribute to change the game in environmental policy. But I do not think it can do it on its own...NCA is a means, not an end in itself.”



GROWING ONLINE PRESENCE

In 2015, WAVES made significant strides in expanding its online presence, including working with IIED to redesign the website. The new site, which was launched November 11, 2015, features a simple and sleek user interface that is more mobile friendly. The website is complemented by a new WAVES Knowledge Center that is a repository for all knowledge on NCA.



Over the last year, the WAVES website reached 103,733 page views and 27,852 unique visitors, a significant increase from the previous year's results. A comparison of Web traffic from January through March 2016 reveals 30 percent more page views than during the same period the previous year. Analytics reveal that not only are more visitors accessing the WAVES site more often, but they are viewing a greater number of site pages per visit.

The Knowledge Center showcases practical and relevant information for implementing accounts, including information from WAVES, government statistical agencies around the world, academic institutions, the private sector, and other important NCA partners.



The new WAVES Knowledge Center collates hundreds of technical and policy resources on NCA and loads them onto a free and searchable online database.

Over the last year, 9,755 items were downloaded from the WAVES website. The most popular download was a report edited jointly by WAVES and The Nature Conservancy: *Managing Coasts with Natural Solutions: Guidelines for Measuring and Valuing the Coastal Protection Services of Mangroves and Coral Reefs*. This report was downloaded 385 times from the WAVES Knowledge Center.

The WAVES newsletter continues to widen its reach. There are now over 2,200 subscribers, including readers from around the globe and across the stakeholder spectrum, such as policy makers, technical experts, academia, non-governmental organizations, civil society, and the private sector. The newsletter was redesigned in 2015 and now

features a mobile-friendly layout that makes it more accessible for the 30 percent of subscribers who read the newsletter on their mobile devices.

The topic of NCA continues to gain momentum and awareness on social media. WAVES promotes NCA through its Twitter account, @WBG_Environment, which currently has 11,467 followers. The World Bank Environment Twitter account gained an average of five new followers a day in 2015, a 22 percent increase over the previous year. Using the hashtag #NaturalCapital, the WAVES communications team has shared WAVES stories and products, promoted the WAVES newsletter, and publicized the latest NCA developments from around the world.



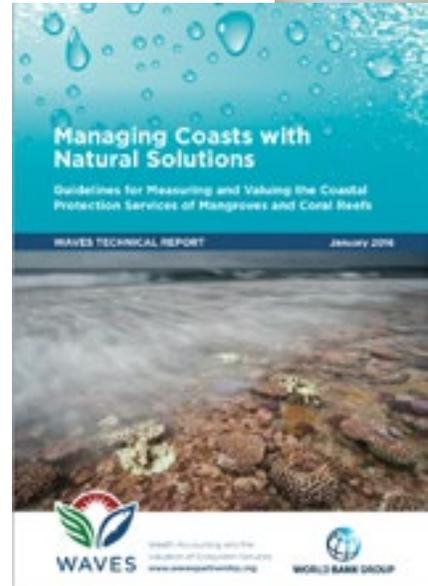
#NaturalCapital

MANAGING COASTS WITH NATURAL SOLUTIONS: WORKING WITH PARTNERS

One of the ways in which the communications team raises the profile of NCA is through collaborative work that taps into World Bank and partner networks. One successful example is the launch of a joint report by WAVES and The Nature Conservancy (TNC), called *Managing Coasts with Natural Solutions: Measuring and Valuing the Coastal Protection Services of Mangroves and Coral Reefs*, edited by TNC Lead Marine scientist Michael Beck and WAVES Technical Advisor Glenn-Marie Lange.

The guidelines received substantial interest, both during the official launch and online. Nearly 40 participants attended the launch presentation, including senior level World Bank representatives and stakeholders from different organizations, and participated in a lively discussion on how NCA can motivate policymakers to invest in green infrastructure that protects ecosystems and reduces risk.

The report was also publicized through a wide range of channels, including on the WAVES homepage and Knowledge Center; as a feature story and Q&A on the World Bank website; in the World Bank Open Knowledge Repository; in the WAVES newsletter; and via an engaging social media package. The World Bank feature story received 2,559 page views, while the Knowledge Center received 903. On Twitter, efforts to promote the report earned a top tweet with 17,800 impressions (the number of times that a tweet is displayed) and a top mention by TNC with 313 engagements (actions taken by others, including re-tweets, mentions, favorites, or becoming a follower).





05

WAVES CORE COUNTRY ASSESSMENT: A SUMMARY





The WAVES partnership program stands out in promoting the global implementation of NCA by collaborating with countries to institutionalize NCA through a program of extensive, long-term technical support. WAVES' innovative approach involves long-term country involvement, as well as emphasis on both constructing accounts and using them for policy analysis. Botswana, Colombia, Costa Rica, Madagascar and the Philippines were the first five Core Implementing Countries ("First 5") to join WAVES. Each country's NCA program was tailored to that country's respective priorities, but an additional goal was to demonstrate the application of NCA so that the First 5 countries could learn from each other and inspire other countries to take up NCA.

The achievements, challenges and lessons from the First 5 countries provide an opportunity for advancing NCA around the world. An assessment of the work done to date was conducted between October 2015 and May 2016, consisting of four parts: (1) a self-assessment questionnaire; (2) a technical review of the accounts produced or in production; (3) a country mission and; (4) follow-up questions and discussion. A detailed report on the assessment is underway. This section outlines some key findings.

Discussions during the WAVES assessment mission in Colombia led by Stig Johansson, WAVES Program Manager.



WAVES criteria for NCA success

To assess progress in each country, broad criteria were identified, in particular:

- ▶ The institutionalization of accounts, as evidenced by relevant government agencies, staffed and resourced to produce accounts and publish them on a regular basis;
- ▶ NCA used in national policy dialogue to inform decision-making, as evidenced by i) inclusion in one or more of national strategic documents (national development plan, sector strategy or master plans, climate change strategies, legislation or executive orders); ii) the use of key indicators derived from NCA to monitor and assess economic progress; and iii) where country capacity exists, the use of NCA in environmental-economic tools for more extensive policy analysis.

Institutionalization and Country Ownership

All countries have successfully established high-level, inter-agency national steering committees to provide strategic guidance and technical working groups to produce the accounts. They meet regularly and include representatives from ministries of finance, development and other line ministries, to ensure coordination across ministries and integration of NCA into broader economic considerations. Inter-agency Technical Working Groups were established to oversee construction of NCA and coordinate inputs from different agencies. Finally, NCA units have been set up, with staff from relevant government agencies assigned to construct the accounts.

Policy focus

The countries identified policy entry points and timelines, and then designed their original work plans around these opportunities. The work plans include NCA for natural resources like timber, water, energy, and minerals, following the System of Environmental and Economic Accounting (SEEA) Central Framework, as well as experimental accounts for ecosystem services in two of the five countries. There has been success in constructing accounts, but the use of NCA for policy analysis has generally lagged behind. This is partly due to the complex task of building NCA in a manner that simultaneously strengthens government capacity and long-term institutionalization—this is a much slower process than simply hiring a consultant to produce accounts. As a result, sometimes opportunities for NCA input into policy were missed. These challenges are also reflected in the lack of international examples of using NCA for policy.

Capacity Building

Countries can be confident that the NCA skills they are learning are grounded in the internationally agreed methodology of the SEEA Central Framework, adopted by the UN Statistical Commission. WAVES generally provides a few formal training courses of 3-5 days, focused on general NCA concepts. But formal training is useful only as a complement to on-the-job professional development dealing with a country's specific data issues. A lesson learned from the past two decades of attempting to institutionalize NCA was the need for sustained, long-term engagement and learning by doing in each country – WAVES provides this ongoing support.

In all countries, the capacity to produce accounts has increased substantially. Many now expect to produce at least some of these accounts on their own, supported by an annual review of updated accounts by an international expert. Ecosystem accounts are more complex and newer – they currently lack an internationally agreed methodology. Thus this component will require continued engagement with national and international experts.

Communications

Each country has an active communications program and extensive stakeholder consultations, which have been critical for building broad understanding and support for NCA in government, civil society, academic institutions and, to a lesser degree, the private sector. As a result of the strong communication program, the importance of NCA for sustainable development has been recognized at high political levels in all countries.

THE WAY FORWARD

Over the past 4-5 years, the First 5 WAVES countries have been successful in: i) building high-level National Steering Committees, technical working groups and strong country ownership; ii) building active country communications programs; iii) south-south learning through the partnership approach; and iv) capacity building (though this is partly constrained by the limited number of experts able to provide in-country support). Key takeaways from these experiences include:

Strengthening NCA Policy Analysis in WAVES Countries

Demonstrating strong policy links to NCA remains a challenge, even though NCA is useful for policy in two ways:

► **Policy indicators derived from NCA**

Some policy applications can be readily implemented without specialized expertise. For example, policy dialogue within government and between government and civil society can be significantly enhanced by using the indicators derived from NCA, such as time trends (national and sectoral), simple productivity assessments at national or industry level, or industry-level environmental-economic profiles.

Standardizing the reporting structure for accounts, technical reports, and basic policy indicators would be helpful to countries and enhance cross-country comparability.

► **Integrating NCA with economic tools for policy analysis**

Beyond basic indicators, many countries are unsure how to use NCA in policy analysis. Statistical offices often compile NCA but have little idea of who uses them, while users may not know they are using NCA.

A set of case studies identifying actual (and potential) policy applications would be very useful in WAVES countries and more generally.

Involving agencies with specialized analytical expertise

Some countries may have limited capacity for policy analysis requiring specialized economic modeling. In such cases, universities or research agencies within the country may be able to carry out this task for governments.

To ensure the policy relevance of the accounts, it is best to involve agencies that will undertake analytical work from early on, and identify entry points to policy and planning to link the production with the use of accounts.

Linking NCA with other activities by the World Bank or international initiatives

There are opportunities for linking NCA to the activities of World Bank country programs, which are targeted to specific policy issues, as well as with ongoing international initiatives (e.g. REDD+, Green Growth, Biofin, PEI, activities of regional UN agencies, MDBs, etc.).

Communicating results

The job of communications will become easier once the structure of reports and basic policy indicators is standardized across WAVES countries. Similarly, a systematic study identifying policy uses for NCA will provide significantly more material for communicating current examples and elucidating new ones that emerge from WAVE countries.

Ensuring timely delivery of NCA and analysis for policy entry points

Missing deadlines for inputs into policy can be prevented by:

- ▶ **Adopting a sequential approach to constructing accounts**

The First 5 countries spent a great deal of time simply constructing accounts, so that little time was left for analysis and opportunities for policy input were sometimes missed. Countries often underestimated the time it would take to construct accounts, in part because there has been no systematic review of the staffing levels and training required.

A more successful route may be to adopt a sequential approach to building NCA, starting with 1-2 targeted accounts that are closely tied to specific policy issues, and demonstrating delivery before adding other accounts.

For countries with established NCA programs, an assessment of required staffing levels and training should be undertaken, as well as examples of inter-agency data-sharing arrangements.

▶ **Guidance/Toolkit for policy analysis**

At the beginning, countries are generally unsure about the role of accounts in the information system and how they could fit into decision-making processes or the policy cycle. Users of accounts, including those outside government, can help by identifying the types of analysis that might support upcoming policy decisions, and by keeping the work on schedule.

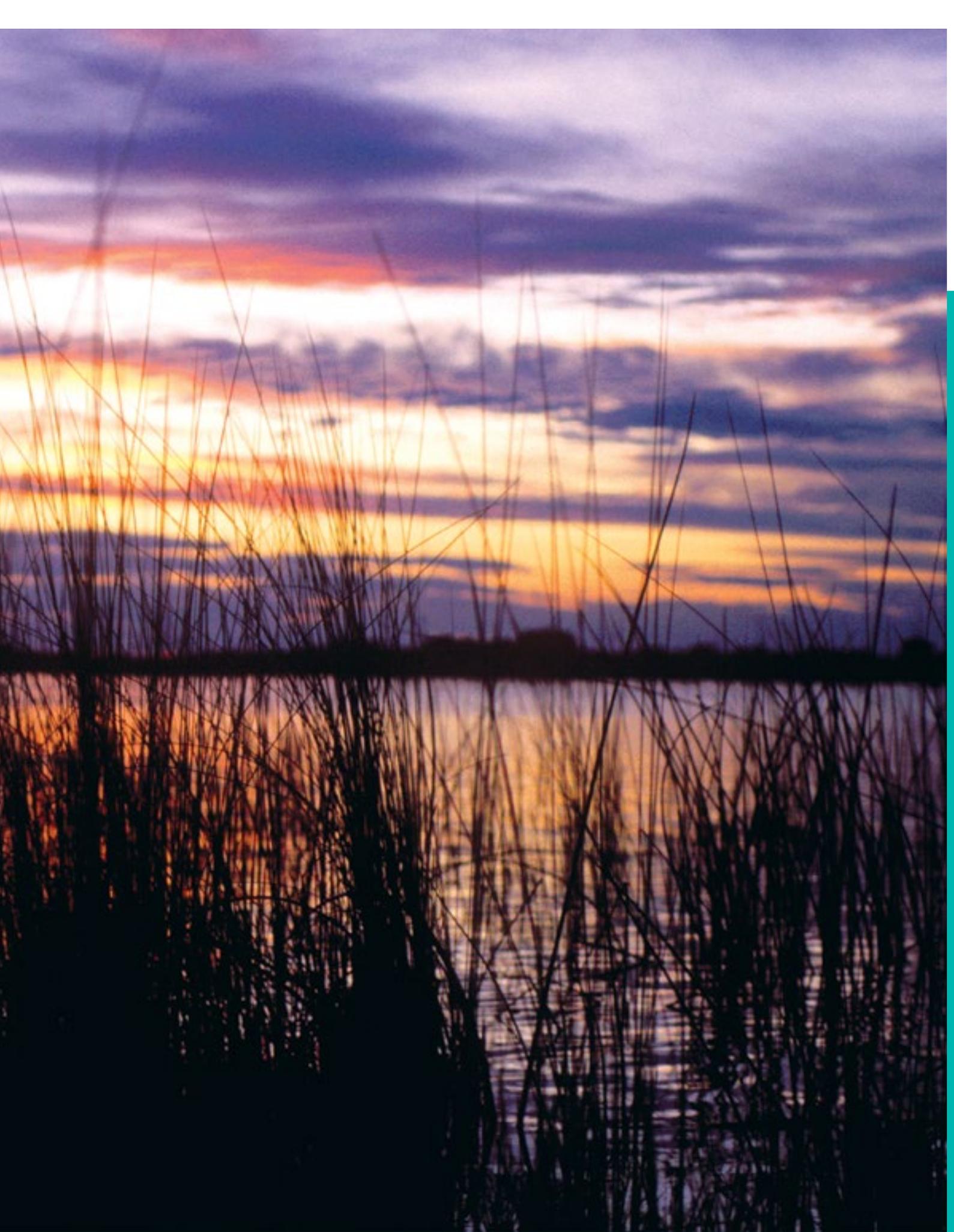
Formal guidance, such as a toolkit to help design a work plan for identifying entry points in the policy cycle and the specific kinds of policy analysis needed, along with a time frame, would help ensure a realistic and timely delivery of policy advice.

The 'exit strategy' for the First 5 countries envisaged a transition from intensive technical support to participation in the regional cooperation programs, based on the long-term roadmaps for NCA ("Beyond WAVES") developed by each country. This transition is now under discussion. Future engagement with the First 5 countries could include i) activities to consolidate progress with building accounts, such as annual Data Quality Assessment missions; ii) leadership in regional communities of practice; and iii) expanding the use of NCA for policy analysis, especially during critical times in the policy cycle, such as the design or implementation of a new National Development Plan.



06

WAVES GOING FORWARD



When WAVES was launched, its objective was to support Natural Capital Accounting (NCA) implementation in an operating environment where NCA was largely unknown or limited to high-income countries. More than five years later, NCA is widely discussed among governments and promoted by major public and private sector agencies. WAVES has demonstrated that it is possible to construct accounts in developing countries and to use them to inform national development plans and policies. Many partner agencies have started new initiatives on NCA, this is due in part because of the World Bank Group's pioneering work and its extensive engagement on the global stage. A number of middle-income countries have now launched their own NCA initiatives, and there is currently broader support for NCA worldwide.

Building on these achievements, the next phase of the WAVES global partnership program—known as WAVES+ and intended to run from fiscal year 2016 to 2020—aims to engage more countries, emphasize policy applications, support greater south-south knowledge exchange, and integrate NCA more effectively into World Bank operations.

WAVES+ is based on the following objectives:

(1) Expand NCA support to countries: Building a critical mass of developing countries implementing NCA and using NCA for policy by expanding the number of core implementing countries (CICs) from 8 to 16.

(2) Advance NCA through regional cooperation: Significantly strengthening regional capacity to understand and apply NCA to policy needs as a means of meeting the demand of a larger number of countries and sustaining their efforts beyond the WAVES global partnership program.

(3) Increase global engagement and communications: Promoting the global adoption of policy-relevant NCA by contributing to the development of methodology, particularly for ecosystem accounting, as well as networking, communications, and collaboration between the WBG and its outside partners in the public, business, and financial sectors.

WHAT'S NEW?

WAVES+ incorporates lessons from the first few years of WAVES implementation, including recommendations from the Mid-Term Review. WAVES is moving from a process-oriented approach to a more output-oriented approach, focusing on the following principles:

Fast-track implementation: More targeted country engagement and implementation that will focus on fewer but economically significant sectors, as well as hands-on technical assistance, training, and support for government staff and institutions working on NCA.

Streamlined macro-indicator reports for all CICs: Work with CICs to improve estimates for natural capital contributions, using country-specific data where possible, for the World Bank's calculations for adjusted wealth and savings.

Strategic learning: Focus on the same menu of accounts (for example, water, forest, and land) or use similar approaches in ecosystem accounting for all CICs to provide comparability, enhance potential for country-to-country and/or regional collaboration, and enhance widespread learning.

Structured policy use of accounts: At the outset, clearly outline the measures required to translate accounts into policy impact. A framework for translating structured statistics into information for decision making will be developed based on experiences from countries with well-developed NCA.

Regional engagement: Consolidate earlier country work and link this knowledge to programs supported by other development partners and to work in countries with their own programs. The aim is to institutionalize through existing regional platforms that have some mandate on the sphere of NCA and development.

Link to WBG operations: The WBG has several operations in the forests and water sector that could be informed and monitored by NCA. Under WAVES+, a strategy will be developed to inform Bank teams how NCA products could be useful.

Increased focus on south-south knowledge exchange: Regional workshops that bring countries together to share their experience on NCA have been successful—for example, The Philippines Knowledge Exchange on ecosystem accounting and the Turkey workshop held in early 2015. As more countries gain experience, a structured regional cooperation component will support further learning.



07

COUNTRY REPORTS

Sustainable Development Goal (SDG) #6 is to “Ensure availability and sustainable management of water and sanitation for all.” But as essential as water is, often little is known about its role in the overall economy. Water accounts are an important first step towards comprehensive management of this valuable resource.



3.1 MILLION 

The number of tons of seafood produced in the Philippines in 2012. However, pollution and habitat destruction are putting fisheries at risk. Ecosystem accounts - like the one WAVES is supporting for Laguna Lake - can shed light on ecosystem conditions and environmental risks.



BOTSWANA

BACKGROUND: For the past 35 years, a high proportion of Botswana's national income has come from non-renewable mineral resources, particularly diamonds, although there have been smaller contributions from base metals (such as copper, nickel and cobalt), coal, soda ash, and gold. Botswana's other significant source of wealth is its rich biodiversity, which is crucial to tourism and rural livelihoods, while its ecosystems provide valuable benefits within fragile areas largely characterized by the vast Kalahari sands and scarce water resources. Within this context of both rich natural resources and other developmental constraints, wealth accounting for water, minerals, energy and ecosystems (including tourism) can be an important input in providing evidence-based macroeconomic planning and decision making for sustainable development.

INSTITUTIONALIZATION

By the end of 2015, Botswana's Natural Capital Accounting (NCA) efforts were not only facilitated by a fully functional National Capital Accounting (NCA) Coordinating Unit in the Ministry of Finance and Development Planning (MFDP), but dedicated technical staff members within the Departments of Water Affairs, Energy Affairs, and Geological Surveys (including the Departments of Mines and Mineral Affairs) were designated as NCA units to undertake the compilation of NCA accounts. Staff members and the NCA Technical Working groups were trained by international experts in

the compilation of accounts using the System of Environmental-Economic Accounting (SEEA) methodology. NCA is recognized as a priority area by the Sustainable Environment Thematic Working Group of National Development Plan 11 (NDP 11), as well as being noted in the Keynote Policy Paper (endorsed by the Cabinet and the Parliament in August 2015) and the Macroeconomic Outline.

Previously, Botswana's Department of Water Affairs (DWA) depended heavily on internal and external support to produce water accounts. However, this year, with little external intervention,

the DWA demonstrated expertise and ownership of the accounting process, as well as the capacity and capability to update and improve the water accounts on an annual basis.

PROGRESS

Results from three sets of water accounts (for the years 2010–11, 2012–13, and 2014–15) have been included in the integrated water resource management recommendations, which are being used to inform projects under NDP 11. Rigorous capacity-building activities were conducted over the last year to help produce mineral and energy accounts. The MFDP is leading the development of macroeconomic indicators for sustainability, and technical training is ongoing to build capacity within the Macroeconomic Policy Section to compile and apply these indicators toward policy solutions.

Water Accounts

Results from the water accounts have yielded four policy briefs on the following topics: (1) findings from the Botswana water accounts; (2) water resources and mining; (3) Botswana's agriculture and water resources; and (4) water resources and irrigation. In addition, a small-scale pilot business project, "Water Supply Uncertainties and Interruptions: Impacts on BMC Operations," was undertaken by the Water Accounting Unit to determine the impact and risks of water scarcity on business enterprises in Botswana.

Mineral Accounts

Botswana's mineral accounts cover physical and monetary accounts for diamonds, copper, nickel, coal, gold, and soda ash. The first mineral accounts technical report has been finalized and is expected to be published before June 2016.

Tourism Accounts

Through technical assistance facilitated by the World Bank, the Department of Tourism (which will host the tourism accounts) has started a scoping exercise that will lead into the compilation of tourism satellite accounts. The exercise, which started in March 2016, will assess data availability and quality, institutional capacity and data management systems, and it will also review the framework underpinning the national tourism policy.

“We plan to sustain the good work going forward. Annual updates of water accounts, expansion of the accounts and studies on experimental accounts will continue to guide policy and development.”

– Deputy Permanent Secretary, Ministry of Minerals, Energy and Water Resources, Dr Obolokile Thoti Obakeng.



The WAVES team waiting to make a presentation on the water accounts at the Botswana Department of Agriculture.

Energy Accounts

Following two successful technical advisory missions by Statistics Netherlands in August and November 2015, the Department of Energy (which hosts the energy accounts) has developed draft energy accounts for 2010–11, 2012–13, and 2014–15. The energy accounts cover electricity and coal, while other components of energy resources, such as liquid fuels, will be included in the future. A draft energy accounts technical report is currently being reviewed by the WAVES National Steering Committee.

Macroeconomic Indicators for Sustainability

The MFDP is currently building the technical capacity to compute and analyze macroeconomic indicators for sustainability. Through World Bank support, a series of training sessions started in March 2016 and will continue until June. The training is expected to build the necessary capacity within the Macroeconomic Policy Section to regularly compute and analyze these macroeconomic indicators to monitor and sustain long-term economic growth. A local consultant has delivered a draft report on “Mineral Revenues and Public Finance,” for MFDP’s consideration.



Edwin Itshekeng, Botswana Ministry of Finance, discusses the WAVES-Botswana program at the country’s Consumer Fair in August 2015.

OUTREACH AND COMMUNICATION INITIATIVES

- ▶ The WAVES team gave presentations on NCA to government ministries, parastatal bodies, and key stakeholders.
- ▶ The WAVES team organized an information stall at Botswana’s Annual Consumer Fair in August 2015.
- ▶ Stakeholders discussed the NCA roadmap beyond WAVES, which states the vision, mission, and objectives for long-term NCA activities during the NDP 11 period (2017–22). The purpose of the roadmap is to strengthen the application of NCA for water, minerals, energy, and ecosystems (including land and tourism), while bolstering capacity for compiling and using accounts within government planning, budgeting, and reporting systems. These activities will be prioritized and costs determined annually within the scope of normal government planning cycles.
- ▶ The WAVES team in Botswana hosted a visiting WAVES delegation from Rwanda to share best practices on NCA implementation.
- ▶ The WAVES team gave presentations on NCA to NDP 11 thematic working groups in March 2016 during the drafting of the National Monitoring and Evaluation Framework for NDP 11.
- ▶ Two conference papers based on Botswana’s water accounts were presented at the WaterNet Symposium in Mauritius on October 28–30, 2015: “Institutionalization of Water Accounts in Botswana: Can This Enhance Management of Available Water Sources?” and “Economic Accounting of Water: The Botswana Experience.”
- ▶ By mid-2016, the MFDP Web site is expected to include a link to the WAVES Web site.

Botswana Water Accounts

As one of ten country partners in the World Bank’s WAVES global partnership on natural capital for water, minerals, land and ecosystems. Advisory Council (SEAC), the WAVES team has put together water accounts to manage this scarce resource better for economic growth, diversification, and poverty reduction.

These highlights from water accounts from 1993–2012 help to understand the quantity of Botswana’s water stocks; what flows come from economy and environment and with what result.

Water supply and use

Groundwater accounts for the largest share of water use. Self-providers, including mines and livestock and irrigated agriculture, use more than half of the total water used in the country.

Botswana’s total water use has increased by one third between 1993 and 2011—a slower rate because of economic and population growth.

Water supply by natural source

Source	Share (%)
Groundwater	60%
Surface water	38%
Other	2%

Long-term trend in water use in Botswana

Water resources and mining in Botswana

Much of Botswana’s economic growth and development has been driven by the mining sector—it contributes 25% of the country’s GDP. And although the government is keen to diversify the economy, the sector remains important for future economic growth. At the same time, it is estimated that the water demands of the mining sector may grow to around 100Mm³ in 2027.

Sector shares in water use, GDP and formal employment 2011/2012

Sector	Water Use (Mm ³)	GDP (Mm)	Formal Employment (000)
Manufacturing	~10	~10	~10
Construction	~5	~5	~5
Trade	~5	~5	~5
Transport	~5	~5	~5
Information and communication	~5	~5	~5
Health	~5	~5	~5
Education	~5	~5	~5
Government	~5	~5	~5
Other	~5	~5	~5
Mining	~100	~100	~100

COLOMBIA

BACKGROUND: Colombia's significant forest, biodiversity, and other natural wealth are under pressure from growing demand for livestock pastures and agricultural land. Climate change is exacerbating the negative environmental impacts of these trends, threatening the sustainability of the national economy and the population's quality of life. In addition, there is huge opportunity for policy planning for natural resources in Colombia's post conflict period to promote sustainable development and avoid costly and harmful environmental degradation. In this context, NCA can play an important role in informing the National Development Plan for 2014–18, "All for a New Country," which includes the implementation of a green growth strategy. NCA can also be effective in helping Colombia establish environmental monitoring indicators—a necessary milestone toward achieving Colombia's goal of joining the Organization for Economic Co-operation and Development (OECD).



INSTITUTIONALIZATION

The development of environmental accounts in Colombia began in the 1990s. The WAVES steering and technical committees are made up of staff from the National Administrative Department of Statistics (DANE); the Ministry of Environment and Sustainable Development (MADS); the Institute of Hydrology, Meteorology, and Environmental Studies (IDEAM); and the National Planning Department (DNP), which coordinates the implementation of WAVES activities. The Comptroller General of the Republic also plays a supplementary role in this process. Information on all natural capital accounts has been officially published on DANE's Web site.

The institutions involved in NCA are defining a roadmap to 2020, which not only remains committed to constructing and consolidating accounts, but also includes short-term strategies for promoting environmental-economic accounts in development planning through the use of macroeconomic indicators and scenario analysis.



PROGRESS

Colombia has developed preliminary natural capital accounts for land assets, forests, and water. At the regional and local levels, ecosystem accounts are being developed for the Orinoquia region, pilot projects are being developed for water, ecosystems, and land accounts for the Chinchiná river basin, and water accounts for the Lake Tota watershed.



Participants at a forum in Colombia organized by the magazine *Semana* and CORPOGUAVIO, a local environmental authority, pointed to natural capital accounting as an important tool to help the country reach its water potential amidst challenges in management and distribution.



“By losing the forest, the country loses ecosystem services such as hydrological regulation, erosion and sediments control, biomass use and carbon sequestration, which are key to citizens’ quality of life and country’s economy.”

– Simón Gaviria, Director of Colombia’s National Planning Department (NPD)

Water Accounts

IDEAM and DANE completed the water account, identifying water assets, water flows to the economy, pollutants discharged to water bodies by economic activities, environmental activities, and environmental protection expenditure accounts. The accounts revealed that groundwater represents a significant source of Colombia’s fresh water, and that most of the water used by economic activities comes from rivers and streams. The accounts also showed that, in 2012, the main surface water users in the Colombian economy were gas and electricity suppliers, agriculture, water supply companies, and industries, while the economic sectors with the highest water intensity measures (cubic meter per value added) were gas, electricity, and agriculture.

National Forest Accounts

The WAVES-Colombia Steering Committee member institutions have been working on national forest accounts since mid-2014. The accounts have shed light on the impacts of forest-based economic activities between 1990 and 2012, including the decline of timber assets due to deforestation and the importance of logs and firewood as primary forest products, with a decline in the supply of non-timber products. Timber asset information was relevant for the DNP’s recent analysis of Environmental Peace Dividends, as well as for calculating the cost of forest fires in 2015.

Land Accounts

Preliminary national land accounts for 2000–2009 show that competition between forest cover and agricultural land use has contributed to approximately 1.75 million more hectares being dedicated to agriculture and a corresponding decline in forests and semi-natural areas.

Watershed Accounts

Water accounts for the Lake Tota watershed, which were supported by the environmental regional authority CORPOBOYACA, have found that water supply companies, as well as the fisheries and agriculture sectors (especially spring onion production), are the main water users. The accounts also identified how certain economic sectors are contributing to high levels of nitrogen and phosphorus emissions, leading to deterioration in the lake’s water quality.

Findings from the Chinchiná River water and land accounts are meant to strengthen action plans that local authorities such as CORPOCALDAS have established for the sustainable development of the watershed. Results from the water accounts highlight that glaciers in the region are already seriously depleted and could continue to disappear more or less rapidly based on differing climate change scenarios. Another stress on the water supply in the watershed is pollution from households, industry, and agriculture, which is directly discharged into the environment due to the lack of wastewater treatment plants in the area.

In terms of forests, more and more areas—including the high-Andean forest ecosystem—are being replaced by agricultural areas, primarily for grasslands, coffee, potato, and citrus fruit crops. Loss of forest and semi natural areas could negatively affect water regulation in the watershed and heighten the risks of landslides and floods.



A workshop on ecosystem accounting co-organized by WAVES in August 2015 brought together 18 participants from various governmental agencies to study methodologies for the construction of ecosystem accounts in the Orinoquia region, which have now begun.

Orinoquia Ecosystem Accounts

The national government is committed to developing the Orinoquia region, which has significant potential for agribusiness. Ecosystem accounts are being planned to inform the decision-making dialogue and land planning in the region and provide insights on the contribution of natural capital to economic activities as well as potential costs. In the larger basin, main ecosystems have been identified: the most extensive are moist forest, seasonal savanna and flooded savanna. Among agro-ecosystems, livestock areas cover the most area, followed by palm plantations.

OUTREACH AND COMMUNICATION INITIATIVES

- ▶ In November 2015, the WAVES Colombia Steering Committee formally endorsed a communication and engagement strategy. Its communications office committed to promoting information on NCA on its official Web sites: the NPD updated the WAVES page, and the environmental information system for Colombia (SIAC) provided a link to the WAVES Web site.
- ▶ Starting in September 2015, a monthly digital newsletter on NCA progress in Colombia was sent to WAVES stakeholders, including government institutions, nongovernmental organizations, research institutes, and academics. There are now 100 direct recipients of this newsletter.
- ▶ Two articles on NCA were published in December 2015. One appeared in the mainstream national *Portafolio*, which is typically read by 75,000 people daily in its print form, and is read online by approximately 1.5 million people. The second article was published by the *El Espectador* newspaper, which has 227,500 print readers and many more online.
- ▶ The WAVES Colombia team also engaged with new stakeholders, including the Colombian Environmental Research Institutes (Humboldt, IIAP, SINCHI); the National University of Colombia; Andes University; the International Finance Corporation arm of the World Bank Group; UNESCO; U.S. Geological Survey; the World Wildlife Fund; Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (German Agency for International Cooperation, GIZ); Economics of Ecosystems and Biodiversity (TEEB); and the Institute for Sustainability Leadership of Cambridge University.
- ▶ The WAVES social media accounts for Latin America (shared by Colombia, Guatemala, and Costa Rica) have started to engage and have an audience on Twitter and Facebook.
- ▶ The WAVES Colombia team, with the support of International Institute for Environment Development (IIED), has written four feature articles on NCA progress in Colombia for the WAVES Global Partnership Web site. In addition, the WAVES National Coordinator participated in national and international events on sustainable water management, green growth in Latin America, and sustainability leadership.

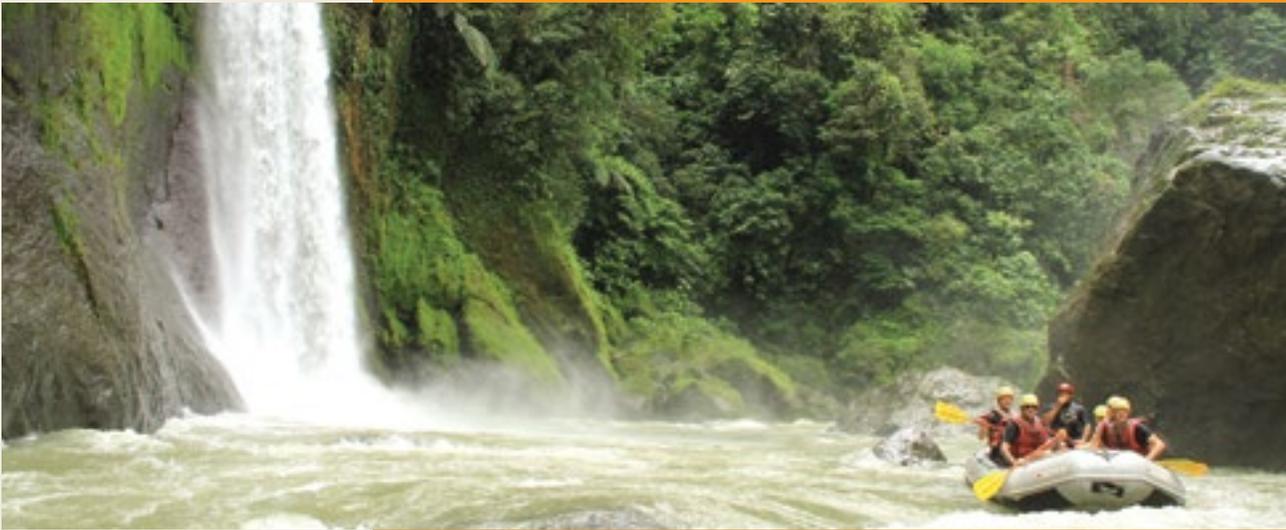


Photo: Ina Porras/IIED

COSTA RICA

BACKGROUND: Costa Rica is well known for its ambitious investments in preserving natural resources, particularly to increase forest cover and limit greenhouse gas emissions. However, greater information is needed to support continued and effective policies that truly reflect the value of natural capital within Costa Rica's economy. Through the WAVES partnership project, Costa Rica has compiled asset accounts for water, forests, energy use, and emissions.

Using NCA, WAVES has contributed to developing better analytical and decision-making tools for sustainable development planning, particularly for Costa Rica's National Plan for Integrated Management of Water Resources and the National Plan for Deforestation Reduction and Forest Development. Results from the energy accounts are expected to inform the National Energy Plan regarding decoupling growth and emissions over the next few decades.



INSTITUTIONALIZATION

The WAVES work plan for 2014–16 was approved by the Steering Committee and successfully implemented. The Central Bank of Costa Rica (BCCR) led the technical work of compiling water, forest and energy accounts, and, based on the results, decided to institutionalize the compilation of environmental accounts by creating a new unit under the Department of Macroeconomic Statistics. The BCCR has already started the process of improving and updating the accounts and strengthening coordination with the Ministry of Environment and Energy (MINAE) and other government agencies.

At the same time, MINAE has put forward a strategy for mainstreaming NCA into government policy priorities and promoting the use of accounting information. The Ministry of Planning (MIDEPLAN) will incorporate NCA into the National Development Plan guidelines. The work on NCA is relevant because environmental legislative bills on water, natural capital, and climate change—with articles on the economic valuation of natural resources and its importance for policy decision-making—are currently under discussion in congress.



“Natural Capital Accounting is particularly relevant for our country, since we depend on natural resources to grow and create new development opportunities. The compilation of environmental accounts by the Central Bank is an important step in the right direction. We need to better understand the interaction between the economy and the environment, and its implication for fiscal and economic policy in general.”

– Helio Fallas, Minister of Finance and Vice President of Costa Rica

On November 17, 2015, Costa Rica's commitment to NCA was reaffirmed during a meeting with the Minister of Finance, the Vice President of Costa Rica, the President and Manager of the BCCR, the Minister of MINAE, and the WAVES program manager and secretariat representatives.

PROGRESS

A new input-output matrix and supply-use tables for 2012 - used to analyze water, forest, and energy statistics as a starting point for developing accounts - have been completed.

Water Accounts

Water accounts were compiled based on water statistics from national accounts, hydrological balances, water-use and pollution databases, and water utilities' financial statements; these accounts are currently being reviewed. Preliminary results show that Costa Rica receives abundant rainfall, but with significant disparity and variation in rainfall patterns across regions and seasons. Other results focus on water demands and trends within the water and sanitation industry and by hydroelectric plants and the agricultural sector.

Forest Accounts

Costa Rica's forest accounts incorporate physical and monetary values. BCCR representatives coordinated with the National System of Conservation Areas (SINAC) and the National Forest Financing Fund (FONAFIFO) to analyze the results of the new

national forest inventory and a carbon dynamics study for a REDD+ strategy. Results for the country's forest cover show that mature forest cover began stabilizing in 1992, although with subsequent reductions, and that new forests are growing. In total, over 52 percent of land is covered by forests, consistent with the creation and implementation of laws and policies for conservation and reforestation.

The forest flow accounts are based on supply and use tables and estimate the value of the forest within the national accounts; this estimate has been significantly improved with the addition of forest-related activities and products. While the forestry industry accounts for less than 0.5 percent of gross domestic product (GDP), extending the accounts to other products that have timber components, resins, or some other material valued by industries, increases the forestry sector share to over 1 percent of GDP. Finally, if economic activities that use forest products—as opposed to simply extracting them—are included, the value of the “extended forest economy” grows to over 2 percent of GDP.

Energy Accounts

Initial energy use and carbon emission accounts for 2013 have been compiled, while similar accounts for 2011 and 2012 are in progress. This work is based on consolidating the information of the country's energy resources and complementing the national energy balances with the compilation of accounts in physical and monetary units.

BOB OUTREACH

- ▶ BCCR environmental accountants participated in the "Training for The Worldwide Implementation of the System of Environmental Economic Accounting 2012 – Central Framework for Latin America and the Caribbean," from July 7–10, 2015, held in Santiago, Chile, and organized by the United Nations, and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ).
- ▶ The WAVES Country Coordinator presented at the Third Latin American ValuES Meeting in San José, Costa Rica, on October 23, 2015. The meeting was organized by GIZ-BMU and focused on the valuation of ecosystem services and its relevance for policy design, including experiences from across the region.
- ▶ Key stakeholders were invited to a strategic communications workshop to assess their knowledge on NCA in September 2015. Similar meetings were held through the year, reaching several groups of key audiences.
- ▶ In coordination with WAVES, the Economic Commission for Latin America and the Caribbean (ECLAC) and the Ministry of Finance (MF) organized a workshop on public expenditure accounting held January 27–29, 2016, for 30 participants from government agencies. ECLAC and MF also agreed to compile a public expenditure account for 2016–17.
- ▶ Ecosystem services accounting workshops were organized for government agencies and academia at BCCR on August 24–25, 2015, and February 9, 2016.
- ▶ On February 15–16, 2016, a workshop was held on energy accounting, supported by the Vice Minister of Energy. Afterward, preliminary versions of energy use and emissions tables were compiled. The BCCR and MINAE agreed to continue compilation of energy accounts every year, starting in 2016.
- ▶ The WAVES Steering Committee met March 2, 2016, to discuss a detailed work plan, identify key policy questions relevant for environmental accounting, and create a timeline for incorporating NCA into policy debate and planning. A roadmap was developed to continue with the NCA institutionalization process through 2019.
- ▶ MINAE, BCCR and the National Institute of Statistics organized a session to present preliminarily results of the water accounts in February 2016.



Photo: Ina Porras/IIED



GUATEMALA

BACKGROUND: Since the 1996 Peace Accords that ended a 36-year civil war, Guatemala has made significant progress in achieving macroeconomic and democratic stability. Despite the global financial crisis and recent natural disasters, the country continues to have huge potential for economic growth. But weak social indicators, unequal distribution of income, and a continuously degrading natural resource base are posing risks to the most vulnerable segments of the population—and these challenges are likely to be exacerbated by the impacts of climate change.

To respond to these pressing issues, WAVES in Guatemala is building upon a decade of NCA work that started with a public-private-academic partnership in 2006 and resulted in the publication of the SEEA accounts for 2001–2010. WAVES is now moving the agenda toward institutionalization by mainstreaming and integrating NCA into development and policy planning.



INSTITUTIONALIZATION

The WAVES Guatemala National Steering Committee is chaired by the Secretariat of Planning (SEGEPLAN) and includes the Ministry of Finance (MINFIN), the Ministry of Environment and Natural Resources (MARN), the Guatemalan Central Bank (BANGUAT), and the National Institute of Statistics (INE).

WAVES Guatemala completed the project preparation phase in 2015, commissioned several briefs, and raised awareness about

NCA among stakeholders. A critical milestone in 2015 was the use of NCA to inform the National Development, Plan K'atun Guatemala 2032, drafted by SEGEPLAN.

Despite these achievements, political unrest slowed progress. In 2015, civil society pressure led to the resignation of both the Guatemalan president and vice president, reducing governance in the country and affecting the WAVES initiative strategic engagement. The steering committee was unable to convene and member participation was intermittent.

After an unstable election period, a new government took office in January 2016. The new administration sees the potential of embedding NCA in its policy agenda and has shown political commitment for incorporating accounts into national planning. The new members of the Steering Committee have started revising the work plan. This is seen by stakeholders, including the World Bank, as a renewed opportunity to move forward with WAVES country objectives.

PROGRESS

- ▶ An assessment of the accounts published in 2014 for the 2001–2010 period identified gaps and limitations. The assessment is going to inform the revision of the work plan and it is expected that discussions will end by mid-2016.
- ▶ Local experts worked to define a preliminary roadmap and to understand the methodological concepts behind ecosystem accounting. These accounts would be useful to better understand the strategic importance of critical ecosystems and how the potential reductions of the services they provide may adversely affect future economic growth under scenarios of increasing risks to climate change and an increasingly vulnerable population.
- ▶ A pilot exercise of Agriculture, Fisheries, and Forestry Accounts (SEEA-AFF) was conducted to define the scope for future implementation. Although the exercise showed the feasibility of constructing these accounts, it also shed light on the obstacles ahead because it enabled participants to understand data gaps and identify data needs and implementation challenges. These accounts are particularly important to inform the food security agenda, which is high among the new government's priorities.
- ▶ A report showing indicators extracted from SEEA and using the wealth accounting conceptual framework informed the State of the Environment Report (SER) that was initiated by the Ministry of Environment. Although the SER was not finished, the new government can still benefit from this work.
- ▶ An interactive and easy-to-access platform was designed and is ready to run that will allow the general public (both English and Spanish speakers) to access the wealth of information of the 2001–2010 SEEA accounts series. WAVES has invested in this platform that will also be useful for the future account updates that will occur in 2016 and 2017.



WAVES Guatemala was invited to speak on the initiative at a National Symposium on Satellite Accounts organized by the National Institute of Statistics (INE).

OUTREACH

- ▶ A team of three government experts participated in the first WAVES Knowledge Exchange Workshop on Ecosystem Accounting in the Philippines, after which World Bank experts on NCA led two follow-up workshops in Guatemala.
- ▶ NCA was highlighted in the National Symposium on Satellite Accounts in July 2015; this symposium was organized by the National Institute of Statistics.
- ▶ WAVES Guatemala produced a country brief as well as a policy brief and snapshot for the forest accounts, each published in both English and Spanish.
- ▶ In early 2016, the communications team created a video describing the relevance of NCA and the WAVES partnership project, both generally and for Guatemala specifically.
- ▶ The social media presence of WAVES Guatemala is growing, with new Facebook and Twitter accounts for sharing information about NCA in Guatemala, Costa Rica, and Colombia. In the first three months of 2016, the Facebook account went from 0 to more than 150 followers, including experts in NCA, economists, and politicians.
- ▶ The communications team in Guatemala is also assisting WAVES Costa Rica in developing its engagement strategy.



INDONESIA

BACKGROUND: Indonesia is richly endowed with natural resources, including abundant supplies of hydrocarbons (coal, oil, and natural gas), minerals (both base and precious metals), agricultural commodities (crude palm oil, rubber), and water (6 percent of global freshwater). Natural resources, including land, have been an important contributor to Indonesia's GDP and national budget. At the same time, land use change in forested and other areas was the source of more than 60 percent of national greenhouse gas emissions. Such challenges highlight the country's vulnerability to the impacts of resource depletion, overpopulation, and climate change.



INSTITUTIONALIZATION

Every year since 1997, Badan Pusat Statistik (BPS), the Indonesian statistical agency, has produced NCA reports based on the Integrated System for Environmental and Economic Account in Indonesia (SISNERLING) using the 1993 SEEA standard. Since 2013, WAVES has supported Indonesia in improving, expanding, and updating SISNERLING to current SEEA standards, with a focus on using NCA for assigning monetary values to natural resources and designing evidence-based policies.

The Ministry of National Development Planning (Bappenas) leads the WAVES partnership project in Indonesia, with strong involvement from BPS, the Ministry of Finance, the Geospatial Information Agency (BIG), the Ministry of Environment and Forestry, and the Ministry of Agrarian and Spatial Affairs. An

informal steering committee is in place and is expected to become official by March 2016. In February 2016, representatives from five ministries met to discuss WAVES progress and achievements over the course of 2015. The forum agreed to accelerate the implementation of WAVES and to proceed with strengthening SISNERLING and development of land accounts and a pilot water account.

Of the nine development priorities identified by the government of Indonesia—known as Nawa Cita—seven are highly supportive of improved natural resource management. Furthermore, the National Medium-Term Development Plan (RPJMN 2015-2019) calls for “promot[ing] development without destroying or spoiling environmental capacity and balance in the ecosystem.” There is significant potential for using NCA to implement these plans.

PROGRESS

National Training

Two technical trainings were conducted in Bandung, from October 12–16, 2015, with the support of experts from the Australia Bureau of Statistics (ABS). Over 40 participants from seven ministries and agencies received training on SEEA and land accounts; training on water accounts is scheduled for April 2016.

International Training

BPS promoted the participation of ministries in a short course, "Introduction to Environmental Accounting," led by the Australia National University (ANU) in December 2015, as well as an internship program with ABS in March 2016. Over the course of two weeks with ABS, three interns will produce a set of "mini" land accounts.

Improving SISNERLING

BPS has started to strengthen SISNERLING. The 2015 version already includes modules that incorporate the latest SEEA methodology, such as applying net present value in the asset accounts module. It also features an example on East Kalimantan that contains additional indicators related to land accounts; this is viewed as an improvement to the earlier SISNERLING reports.

In addition, BPS is laying the foundations for producing land and water accounts by bringing together representatives from different ministries and agencies to form thematic working groups for each account by April 2015. A preliminary process has been conducted to identify the data required to construct the accounts and what data are already available. Using available data, BPS has prepared pilot land accounts for one province, highlighting areas where greater coordination will be needed to establish land accounts. Despite the challenges of cross-agency coordination, there is substantial interest and support for converting all agencies to the same valuation methodology and creating one database for each account.

OUTREACH

- ▶ On October 12–15, 2015, WAVES led a communication mission and stakeholders' consultancy in Jakarta, laying the ground for a comprehensive communication and engagement strategy.
- ▶ Meetings were held with external parties to introduce WAVES initiatives and opportunities for collaboration, including with Switzerland's State Secretariat for Economic Affairs (SECO), as well as academics and economic and environmental activists in Bandung.



A training session on land accounts organized by WAVES in Bandung, Indonesia.



Photo: Flore de Préneuf/World Bank

MADAGASCAR

BACKGROUND: Madagascar's unrivaled biodiversity is undoubtedly its biggest asset. Nearly all of the plant and animal species found on the island are endemic. This rich and unique mix of flora and fauna generates significant foreign exchange earnings and employment: US\$0.6 billion in revenue and 230,000 jobs in 2013, with up to 200,000 tourists visiting the country's 6.9 million hectares of protected areas each year (World Bank, 2015). Other natural resources are also important at the level of the national economy. Fisheries already contribute more than 2 percent of GDP and the growing large-scale mining sector is expected to contribute 15 percent of GDP in coming years.

The country's terrestrial forests and coastal and marine resources also provide a wide range of ecosystem services for Malagasy local communities. These services include timber, food, water, fuel, and construction materials that are essential for the livelihoods of around 16 million people.

It is estimated that natural capital represents roughly half of Madagascar's wealth. But there is no systematic accounting of the economic or biophysical values of the country's natural assets.



INSTITUTIONALIZATION

The five-person Natural Capital Accounting Unit (NCAU) in Madagascar is based in the Ministry of Economy and Planning and coordinates and implements the work program and output of WAVES Madagascar. Madagascar is working on accounts for forests, mining, water, and macroeconomic indicators.

Each account is developed by the "champion" from the relevant ministry. The NCAU coordinates and oversees the work of all champions, and ensures cross-sector coordination and cooperation. The unit is also directly responsible for constructing macro-economic indicators, currently working on total wealth and adjusted net savings calculations with the technical assistance of the National Statistical Institute of Madagascar.

PROGRESS

MINING ACCOUNTS

The structure for the monetary and physical stock accounts for industrial mineral resources has been finalized. A roadmap for developing mining stock accounts was established and an international consultant led a training on this subject. Initial data for use in mining stock accounts has been collected and data gaps identified. In September 2015, sub-soil assets for large mines were estimated. By the end of March 2016, the physical stock accounts will be finalized. At this time, the monetary account has been dropped from the 2016 work plan due to significant data inconsistencies.

MACROECONOMIC INDICATORS

Several macroeconomic indicators for development in Madagascar have been identified, including value of natural wealth, volume index of natural resource depletion, and Adjusted Net Saving. A discussion note on national wealth management and the role of NCA in national development planning has been prepared.

Initial data has been collected and data gaps identified. Technical assistance and training to estimate the Total Wealth and Adjusted Net Savings were provided by the World Bank experts. In February 2016, the estimates for these key indicators were completed for 2005-2014. By the end of June 2016, Madagascar will produce a macro-economic policy note on national wealth management, the role of NCA in national development planning, and macro-economic indicators used for NCA.

WATER ACCOUNTS

In consultation with the government, the structure for flow accounts and renewable water stock accounts at the national level (disaggregated to basin level) has been finalized. Due to lack of observed data, it was agreed to use hydrological modeling to construct the accounts. In March 2014, national-level water stock accounts of renewable water resources were developed. Technical assistance and training on the capacities to develop water stock and flow accounts was provided by an international consultant. In June 2015, a key public policy issue – accounts of water uses within irrigated agriculture – was identified. Water accounts will be prepared not just in physical units, but in various types of monetary units as well, such as the cost of providing



Ankarafantsika Park Rangers, Madagascar. Flore de Préneuf/World Bank

water to each sector, the tariff paid for water use, and the subsidy, if any. For this purpose, a study tour in Mauritius took place in April 2016 to share experiences on water account construction. Data compilation for the stock and flow accounts will be finalized by the end of May 2016 and water policy notes will be published by June 2016.

EXPLOITABLE TIMBER ACCOUNTS

Data collection on forest resources outside of the protected area network is now complete. In March 2015, estimates of Madagascar's timber volume and forest area were carried out by an international firm. Training sessions were held on the methods of estimation. In January 2016, initial timber accounts were compiled by the Technical Working Group, and communications materials on these results have been planned. In April 2016, methodology for calculating the stumpage value of timber was developed and the required data were identified. WAVES Madagascar has hired a firm to collect the information on stumpage price - using this, the monetary account for timber will be constructed by end of June 2016.

NEXT STEPS

In the next few months, a National NCA Roadmap beyond 2016 will be finalized. WAVES Madagascar will publish one policy note on key macro indicators (Total Wealth and Adjusted Net Savings), and another on water accounts.



PHILIPPINES

BACKGROUND: The island nation of the Philippines derives much of its wealth from natural resources, including minerals and agriculture—the latter accounts for 30 percent of employment and 10 percent of GDP. In addition, marine and coastal resources are both a source of livelihoods and leisure. However, the sustainability of these resources and of the country’s long-term economic prosperity are threatened by policies that take a narrow approach to indicators of fast economic growth. Moreover, recent natural disasters, aggravated by rapid urbanization and the effects of climate change, have resulted in severe loss of life and agricultural production. NCA can be an important evidence-based tool for helping the government develop the Philippines’ medium-term development plans and effectively manage the often competing and overlapping claims on the country’s natural resources.



INSTITUTIONALIZATION

The WAVES Steering Committee, which provides project oversight, is made up of lead implementing partner the National Economic and Development Authority (NEDA); the Departments of Budget and Management, Finance, Environment and Natural Resources, and Agriculture; the Philippine Statistics Authority; the Climate Change Commission; the Union of Local Authorities of the Philippines; the Office of the Presidential Advisor for Environmental Protection; and the Laguna Lake Development Authority. The Department of Environment and Natural Resources (DENR) and the Laguna Lake Development Authority (LLDA) are leading the development of the Southern Palawan ecosystem accounts and the Laguna de Bay ecosystem accounts, respectively.

The Philippines Statistics Authority (PSA) recently established the Environment and Disaster Statistics Division under the Macroeconomic Accounts Services of the Sectoral Statistics Office. Additionally, PSA will participate in standardizing environment and ecosystem accounts, starting with harmonizing terms and concepts and designating official environmental statistics.

In March 2015, five technical working groups were set up to support the Interagency Committee on Environment and Natural Resources (IAC-ENRS) in the areas of disaster, energy, land and soil, minerals, and water. The Committee and its working groups may be tapped to support the development and validation of accounts.

PROGRESS

Nine ecosystem accounts for two pilot sites, Southern Palawan and Laguna de Bay, were completed in the second part of 2015. In terms of national accounts, the mineral estimates were validated and the mangroves scoping study was completed. The World Bank is reviewing overall country progress, the long-term NCA roadmap beyond WAVES, and how to best integrate NCA into World Bank country engagement.

Ecosystem Accounts

The Laguna de Bay study includes accounts for land, water, and ecosystem conditions, services supply, and use. The report highlights that urban sprawl and rapid industrial development are reducing forest cover and affecting agriculture production. Moreover, increased soil erosion has changed the contours of the lake, while pollution from domestic, industrial, and agricultural/forest waste is degrading the lake's water quality, threatening fisheries production.

In Southern Palawan, five types of ecosystem accounts were carried out: ecosystem assets, water, coastal, land, and ecosystem services use and supply. These were developed in the Pulot watershed, the municipality of Sofronio Espanola, and across all of Southern Palawan, where feasible. The accounts demonstrate that deforestation has decreased (and possibly reversed) in the area, and that forests remain an important carbon sink. In addition, they show that the Pulot watershed is essential for regulating water flow and supply for crop productions, and that coastal ecosystems (especially coral reefs and mangroves) are rapidly declining.

Mineral Accounts

Following consultations with the Mines and Geoscience Bureau and months of data processing, the PSA finalized preliminary asset accounts (physical and monetary) for gold, copper, nickel, and chromium. This work was based on a preliminary localized version of the 2009 UN Framework Classification for Fossil Energy and Mineral Reserves and Resources. Both agencies were involved in validating the mineral accounts, and dissemination is due to start in the second quarter of 2016.



WAVES Philippines released initial findings from the Laguna Lake Basin and the Southern Palawan experimental ecosystem accounts.

Mangrove Accounts

Based on the results of the scoping study that PSA and NEDA had commissioned, which was completed in September 2015, it was decided that the mangrove account will be carried out on two levels: (i) the national level, looking at extent and hazards; and within pilot sites, with a focus on fish production, biomass and carbon sequestration, and ecotourism. A planning workshop is scheduled for the second quarter of 2016.

Capacity Building

Experts from the World Bank, the Australian Bureau of Statistics and Wageningen University provided technical guidance for building the accounts. Implementing agencies received training on modelling tools, valuation concepts and application, and policy analysis. In April 2015, training on GIS and SedNet was provided for the technical working group in order to estimate sediment discharges and scenario-building in the Pulot Watershed. In July 2015, the LLDA conducted a training on HYMOS 4 Model, a tool for measuring water conditions. Additional training on the valuation of ecosystem services using the Philippines-WAVES data, and policy analysis using the outputs of the ecosystem accounts, was provided in July and December 2015, respectively. In addition, a training on wealth accounts indicators was conducted in April 2015 for the PSA and other agencies.

OUTREACH

- ▶ New WAVES communication materials were prepared and disseminated, including policy briefs on Laguna de Bay and Southern Palawan ecosystem accounts, frequently asked questions (FAQS) on ecosystem accounts in the Philippines, and a glossary of ecosystem accounting terms. Additionally, snapshot reports summarizing the highlights of the policy briefs were published in English and Tagalog.
- ▶ An Integrated Communications Work and Financial Plan has been designed, identifying activities that promote the ecosystem accounts and opportunities for collaboration between WAVES and other World Bank projects.
- ▶ A dissemination forum on the Laguna de Bay ecosystem accounting results was held October 2, 2015 in Quezon City. There was widespread consensus on the need to increase the coverage and depth of the ecosystem accounts to include a biodiversity and water monetary account in order for the Laguna Lake Development Authority (LLDA) to determine an equitable water pricing strategy for lake users.
- ▶ Two public consultations were held on the Southern Palawan ecosystem account results: one in the regional capital Puerto Princesa on October 5, 2015, and the other in Sofronio Espanola on October 6, 2015. Palawan Governor Jose Alvarez was briefed on the results and stakeholder feedback, followed by a discussion about scaling up the accounts to cover other ecosystem services and a greater area.
- ▶ On July 28, 2015, the Philippines WAVES project was presented at the Inception Workshop on Blue Economy Assessment organized by Partnerships in the Environmental Management for the Seas of East Asia (PEMSEA). WAVES frameworks may become valuable inputs for the Blue Economy Assessment.
- ▶ On August 14, 2015, the WAVES team met with the Open Data Initiative team of DBM to discuss possible collaboration.
- ▶ On September 11, 2015, the communications team facilitated a mock presentation to prepare representatives for interacting with stakeholders on NCA.
- ▶ On October 12, 2015, NEDA-DIS and the WAVES team spearheaded a press briefing on the results from the experimental ecosystem accounts. Representatives from various local and international news networks attended, which then generated articles about flood control, urban sprawl, and food security.
- ▶ Three sessions were held to brief PSA subnational offices on NCA concepts and expected outputs; similar briefings will be conducted for other government agencies.
- ▶ In mid-2016, selected members of the press will be invited to Laguna de Bay and Southern Palawan for an on-site briefing and media tour.



Rwanda will develop accounts for land, water and minerals. Photo: The road out of Kigali, Rosalind Goodrich/IIED.

RWANDA

BACKGROUND: A growing population, rapid urbanization, and the need for employment—especially among youth—are some of the key trends pressuring Rwanda’s natural resources. Livelihoods and economic production in Rwanda are highly dependent on the availability and productivity of land. Land fragmentation—characterized by small plots—reduces agricultural productivity, which in turn constrains the country’s ability to achieve food security and boost rural incomes. Moreover, the sustainable development of secondary cities will require additional land as well as policies to limit sprawl and promote zoning for green areas that improve quality of life.

Water is also under increasingly high demand: urban water provision is uncertain, while rural households often rely on less hygienic sources, increasing the probability of disease among residents. The development of both agricultural and urban areas depends on the availability of this fundamental resource, and insufficient supply may limit growth or deter commercial investment.

NCA can assist Rwanda in tackling these complex problems in the context of the country’s Vision 2020, which aims for the country to become a middle-income, knowledge-based economy that is regionally and globally competitive. Rwanda’s second Economic Development and Poverty Reduction Strategy (EDPRS2, 2013–18) focuses on economic transformation, rural development, productivity and youth employment, and accountable governance. EDPRS2 also emphasizes several cross-cutting initiatives where NCA has the potential to add significant value, notably environment and climate change.

PROGRESS

Under the guidance of WAVES Coordinator Dr. Claudine Uwera, a team has been identified to work on NCA alongside their other core duties. All team members received technical training from Statistics Netherlands, which has been central to the accounts development process. In November 2015, Portia Segomelo, until recently the national NCA coordinator for Botswana, visited Rwanda to share her country's experiences in building water and mineral accounts as well as other lessons learned.

Land Accounts

Through the combined efforts of Statistics Netherlands, the Rwanda thematic working group, data analysts, and the WAVES Secretariat, a national land use change matrix has been completed for 2012, 2013, and 2014, including provincial- and district-level change for 2014. Now efforts are being made to link this physical information to economic data to build monetary land accounts and land accounts by industry codes.

Water Accounts

The technical team has used data from the water master plan and the Water Management Information System (Water MIS) to compile supply and use tables for the water accounts, and it has identified sources and methods for collecting the data. The physical supply and use tables provide information on the volume of water exchanged both between the environment and the economy (abstractions and returns) and within the economy (supply and use). By revealing which sector uses the most water and where use is becoming more or less intensive or efficient, water accounts can be used to inform policy.

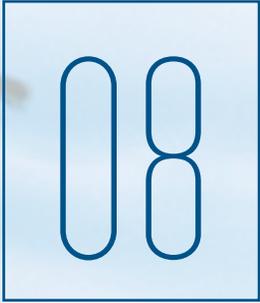
Mineral Accounts

Although land and water accounts have taken priority, construction of mineral accounts has also begun. A study analyzing the environmental and social costs of mining and assessing systems and data issues was begun in March 2016. The expected outcome of the study is an analytical framework and rapid analysis of the main categories of environmental, social, and opportunity costs associated with mineral development and extraction in Rwanda.

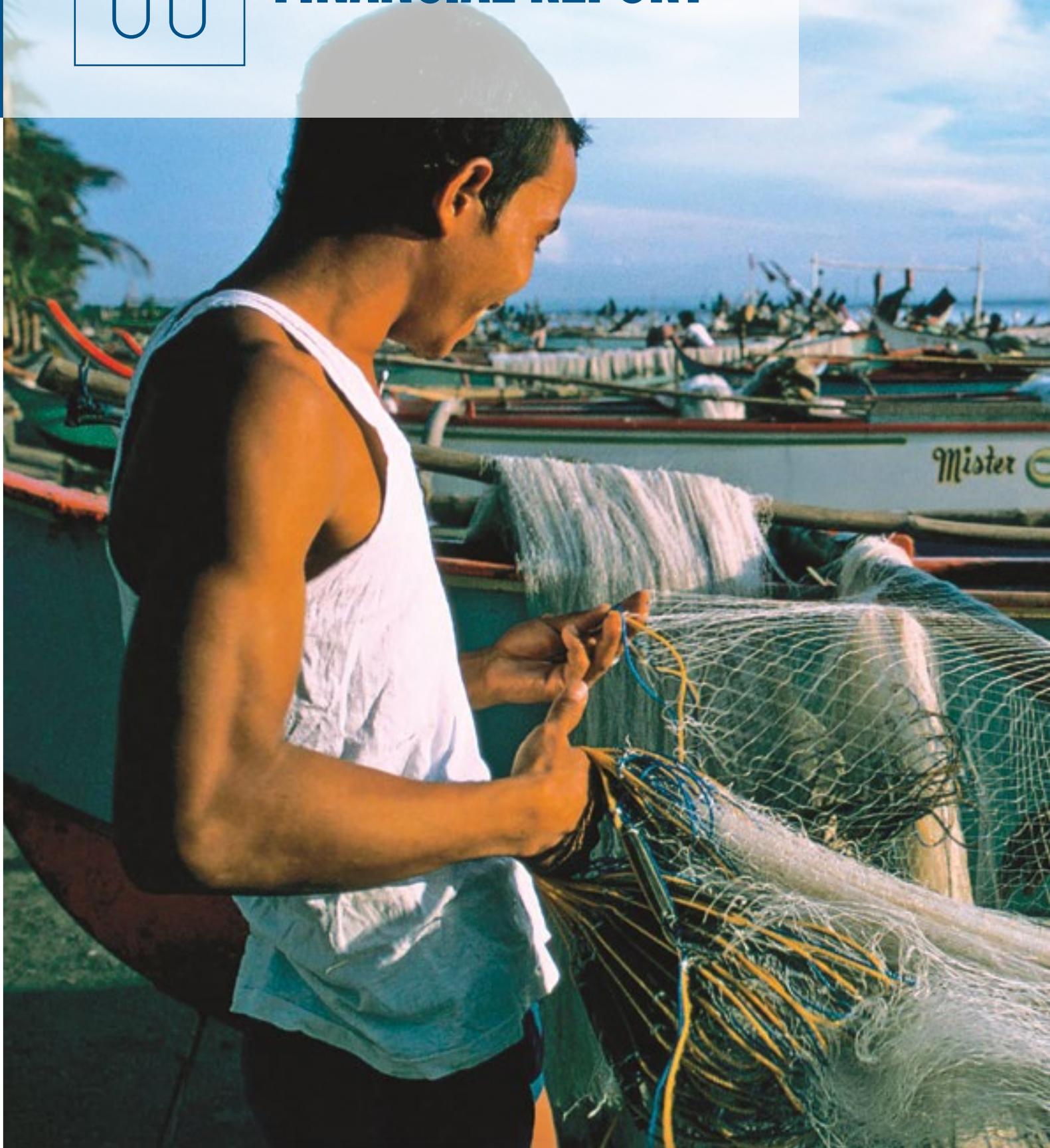
With support of an NCEAS-SNAP working group on natural capital accounting, a team of Rwandan government officials, the Wildlife Conservation Society, and members of the WAVES secretariat began construction of the nation's first ecosystem accounts in September 2015, and had a follow-up meeting in April 2016. Rwanda's first ecosystem accounts are planned for completion in early 2017, and will quantify changes in carbon, water, and sediment regulation in each of 30 districts for the years 1990, 2000, 2010, 2015, and for planned development for the year 2020.

OUTREACH

- ▶ The steering committee approved a communications and engagement strategy, which is currently being implemented. The strategy includes building a stakeholder database of key agencies, institutions, and individuals involved in NCA activities.
- ▶ An electronic newsletter has been developed and is being distributed every three weeks with updates on recent NCA developments. This has facilitated the consistent flow of information on the process of building NCA and eased engagement with the various stakeholders.
- ▶ A Twitter account is being used to communicate with stakeholders, and there are ongoing efforts to build a significant social media audience.
- ▶ Over the course of 2015, frequent meetings were held with relevant officials to further communicate and educate people about NCA and to elicit feedback on the implementation process.
- ▶ Work on NCA in Rwanda was featured in the National Water Week in March 2016. A presentation was made on the approach and possible use of water accounts.



FINANCIAL REPORT





Below are the details regarding the financial status of the WAVES Multi-Donor Trust Fund (MDTF), as of March 31, 2016. Donor Pledges totaled US\$ 23,241,850 from nine donors, of which US\$20,259,595 (87 percent) has been received to date.

Pledge and Contribution Summary								
Donor	Currency	Pledges		Contribution Made		Outstanding Contribution		Paid in %
		Amount in contribution currency	Amount in USD	Paid in contribution currency	Paid in USD (at receipt)	Unpaid in Contribution Currency	Unpaid in USD (at receipt)	
United Kingdom - Department for International Development (DFID)	GBP	2,402,424	3,747,540	2,402,424	3,747,042	-	-	100%
France - Agence Française de Développement	EUR	811,556	1,051,544	811,556	1,051,046	-	-	100%
Norway - Ministry of Foreign Affairs	NOK	20,000,000	3,020,307	15,500,000	2,471,830	4,500,000	549,100	78%
German Federal Ministry for Economic Cooperation and Development (BMZ)	EUR	1,787,000	2,255,640	1,787,000	2,255,142	-	-	100%
Netherlands - Minister of Foreign Affairs	USD	2,857,142	2,857,640	1,925,000	1,925,000	933,263	933,263	67%
Denmark - Royal Ministry of Foreign Affairs	DKK	10,000,000	1,717,980	10,000,000	1,717,482	-	-	100%
EU - Commission of the European Communities	EUR	2,500,000	3,093,534	1,750,000	2,245,386	750,000	848,771	70%
Japan - Ministry of Finance	USD	2,996,667	2,997,165	2,996,667	2,996,667	-	-	100%
Switzerland - Federal Department of Economic Affairs, Education and Research	USD	2,500,000	2,500,501	1,850,000	1,850,000	651,122	651,122	74%
TOTAL in USD	USD		23,241,850		20,259,595		2,982,256	87%

Of the US\$23,241,850 pledged by donors, 87 percent of contributions have been received and 13 percent are still pending. The WAVES Partnership has disbursed US\$13,253,311 from funds received, and has committed US\$2,325,022, meaning that 77 percent of received funds have been disbursed and committed. An additional 2 percent were spent on administrative fees. The current fund balance is US\$4,365,802 (22 percent of received funds).

Financial Summary		
	in USD	in %
Donor Pledges as per signed Agreements	23,241,850	
Donor Unpaid Contributions	2,982,256	13%
Donor Contributions Received (A)	20,259,595	87%
Funds Disbursed	13,253,311	65%
Funds Committed	2,325,021	11%
Disbursements + Commitments made (B)	15,578,332	77%
Administrative Fees (-) (C)	405,192	2%
Investment Income (+) (D)	89,731	
Fund Balance Available (A-B-C+D)	4,365,802	22%

The WAVES MDTF supports both country-level and global activities. Country-specific work is tailored to the requirements of the 8 WAVES country partners, and includes in-country communications and training workshops. Disbursed and committed funds for these activities - as well as for regional workshops and preliminary country-level engagement and communications – came to US\$8,637,650 over the last fiscal year.

At the global level, a total of US\$5,878,313 were disbursed and committed to support a range of activities: knowledge-sharing events and workshops; developing methodology for ecosystem accounting; global communications; engaging with NCA partners at high-level events; and the Changing Wealth of Nations 2016 report, which is a vital resource for wealth accounting and sustainability indicators.

Program administration expenses came to US\$1,062,369. In sum, disbursed and committed funds for the overall WAVES program (country, Global and program Administration) came to US\$15,578,332.

Current Funds Disbursed and Committed for Country and Global Activities
(All figures in US\$. Data until March 31, 2016)

	Disbursed	Committed	Disbursed + Committed (B)	Available Balance (A)-(B)
Country work including in-country communications & training workshops				
Rwanda	513,772	153,719	667,491	82,509
Botswana	1,171,437	427,413	1,598,850	195,150
Colombia	1,194,390	148,609	1,342,999	307,001
Costa Rica	505,636	42,979	548,615	101,385
Guatemala	348,451	60,469	408,920	191,080
Indonesia	362,350	233	362,583	262,417
Madagascar	503,805	248,450	752,256	127,744
Philippines	1,307,662	497,941	1,805,603	384,397
Regional Workshops	503,038	28,668	531,706	68,294
Preliminary Country-Level Engagement	114,464	13,539	128,003	21,997
Preliminary Country Communications Work	477,778	12,846	490,624	219,376
Sub-Total Country Activities	7,002,783	1,634,867	8,637,650	1,961,350
Global Work Program				
WAVES Global Knowledge Sharing (prior to FY15) - including training workshops	1,920,739	-	1,920,739	-
WAVES Methodology Development and Policy applications for Ecosystem Accounting	1,439,013	294,783	1,733,796	216,204
Annual Partnership Forums	564,343	17,669	582,012	67,988
Global Communications Strategy	680,477	352,545	1,033,022	216,978
Engagement with the wider NCA community + high-level events	586,455	7,904	594,359	252,323
Changing Wealth of Nations 2016	14,385	-	14,385	135,615
Sub-total Global Work	5,205,412	672,901	5,878,313	889,108
Program Administration	1,045,115	17,254	1,062,369	38,445
TOTAL	13,253,310	2,325,022	15,578,332	2,888,903

09

MONITORING AND EVALUATION REPORT





The WAVES Secretariat and the Steering Committee agreed to a monitoring and evaluation (M&E) framework in July 2013. The M&E framework has four components, which correspond to the four Project Development Objectives (PDOs) of WAVES:

- PDO 1: Implement natural capital accounting (NCA) at the national or sub-national level in several developing and developed countries
- PDO 2: Incorporate NCA in policy analysis and development planning
- PDO 3: Develop standardized guidelines for ecosystem accounting for global implementation
- PDO 4: Promote the adoption of NCA beyond WAVES partner countries

The first two PDOs are reported at both the global and the country levels. The global-level results are included in this annual report. Country-level results are provided as part of a stand-alone annual country report for each country.

To better capture progress among the eight WAVES countries, the global results incorporate both the original five core implementing countries and the three new countries in PDO 1 and PDO 2.

PDO 1: Implement NCA at the national or sub-national level in several developing countries and developed countries

With regard to institutionalization (PDO 1.a), all countries have made substantial progress toward establishing and staffing dedicated units for NCA. In Botswana, two staff are in place at the Ministry of Finance, five staff in the Department of Water Affairs, four staff in the Department of Energy, five staff in the Ministry of Finance and Development Planning, and five staff in the Department of Geological Surveys. The Philippines Statistics Authority has established an Environment and Natural Resources Accounts Division with nine staff in place. In Madagascar, five staff have been assigned to the new NCA unit in the Ministry of Economy.

The three new countries completed their preparation phase in June 2015, and have steering committee members and technical working groups (TWGs) in place.

Seven countries have met their targets for constructing asset and flow accounts (PDO 1.2 and PDO 1.3). Four core countries and one new country are continuing to work on ecosystem accounts (PDO 1.4). Three core countries and one new country will have at least preliminary macroeconomic indicators of sustainability (PDO 1.5) as of June 2016. Work in Guatemala was interrupted due to a change in government, but will restart in June 2017.

WAVES is committed to being at the forefront of discussion on ecosystem accounting, as shown by its strong participation in the London Group and the United Nations Committee of Experts on Environmental-Economic Accounting (UNCEEA).

Regarding capacity building for compiling accounts (PDO 1.6), strong training programs are continuing in all eight WAVES countries. The institutional basis for the compilation of accounts, in terms of staff commitments, institutional responsibilities, and technical working groups, has been established. Memoranda

of understanding (MOUs) are also in place to ensure that partnerships and accountability are sustained among the different stakeholders involved in developing the accounts. For example, The Netherlands is assisting with work in Rwanda, and the Australian Bureau of Statistics (ABS) is working in Indonesia and the Philippines. In addition, several regional and international training workshops have been held.

PDO 2: Incorporate NCA in policy analysis and development planning

Four core countries are meeting their PDO 2 targets. In Botswana, the Ministry of Finance and Development Planning has committed to mainstreaming NCA in the draft of its NDP 11. In Colombia, NCA informs the National Planning Department and the Ministry of Environment in terms of environmental peace dividends, the cost of forest fires, and green growth policy design. In Madagascar, the World Bank Country Partnership Framework (CPF) - a management tool for reviewing World Bank country programs and their effectiveness - uses NCA. In Costa Rica, proposed bills for water and forest accounts include NCA.

The intermediate indicators, PDO 2.1 and PDO 2.2, are critical to provide the technical background and communicate results to policy makers and achieve PDO 2.a. With the assistance of in-country communications plans and staff, WAVES countries have exceeded the targets regarding production of these reports and policy briefs. In addition, there is formal training through seminars, workshops, and training courses offered, for example, by the Australian National University, and possibly the University of Botswana, and the Rafael Landivar University. Learning from peers through regional and international workshops is also critical, and several workshops have been held. For example, the Philippines hosted trainings on ecosystem accounting and biophysical modeling; Botswana organized a south-south learning week on water accounting; and the Latin America and Caribbean (LAC) Region held trainings for ecosystem accounting, environmental expenditure accounts, forests, energy and water accounts.

PDO 3: Develop standardized guidelines for ecosystem accounting for global implementation

There has been significant work on the intermediate outcome indicators. For PDO 3.1, reports on pilot studies and two reports on ecosystem accounts from the Philippines have been published. Additionally, a report for Botswana on tourism and its links to ecosystems is ongoing. Under PDO 3.2, the working paper on regulating services has been finalized. The working paper on the valuation of ecosystem assets is under evaluation. PDO 3.3 is key for demonstrating effective policy use of accounts from around the world. Although the initial goal was to publish five additional policy briefs, three additional policy briefs were published this year, while one report focusing on policy analysis for using accounts is still being finalized. PDO 3.4 provides key support to core implementing countries and partners by developing training material. Web-based training was a key target; however, this task will be re-evaluated as a result of further discussion with partners.

Collaborative work continues with WAVES strategic partners like the United Nations Development Programme (UNDP); the United Nations Environment Programme (UNEP); the United Nations Statistics Division (UNSD); and inter-agency UN initiatives including Green Economy, The Economics of Ecosystems and Biodiversity (TEEB), the Poverty Environment Initiative, and the Biodiversity Finance Initiative (BIOFIN). This work - described in the main text of this annual report - includes developing training materials, hosting joint regional training workshops, and performing joint work in countries where there is overlap in order to leverage the strengths of each partner. The PTEC has also demonstrated a solid commitment to strengthening its role in quality assurance and knowledge transfer, and is taking a leadership role by serving as a key ambassador for NCA.

PDO 4: Promote the adoption of NCA beyond WAVES partner countries

No new core implementing countries have joined the WAVES program as the secretariat is working on WAVES+, an expanded version of WAVES to be introduced in June 2016. However, PDO 4.b has been successful, and WAVES has played a supporting role in the implementation of NCA programs in several countries by organizing training workshops and facilitating knowledge exchange.

The WAVES Knowledge Center launched this year, integrates hundreds of technical and policy resources into one central database for experts around the world. The database provides easier access to NCA articles, reports, guidance papers, briefs, and publications from both WAVES countries and the broader NCA community.

Compared to last year, the number of page views on the WAVES Web site has increased from 100,205 to 103,733. The number of unique visits - which refers to the total number of distinct individuals who have visited the Web site - was 27,852 at the time of this report. Additionally, traffic on the Web site has increased by 30 percent compared to the same time last year, which demonstrates the growing interest in the WAVES program and NCA. Regarding social media, the World Bank Environment Twitter account currently has 11,467 followers, which is a 22 percent increase over the previous year. The hashtag #NaturalCapital continues to be at the forefront of environmental conversations and is used to disseminate WAVES communications, stories and the newsletter.

Global Results-Based Monitoring Matrix – PDO 1 (WAVES 5 Core Countries + 3 New WAVES Countries)

OBJECTIVES & OUTCOME (RESULTS) INDICATORS	5 Core Baseline June 2011	5 Core-Prep Year June 2012	5 Core Year 1 June 2013	5 Core Year 2 June 2014	5 Core Year 3 June 2015	5 Core Year 4 June 2016
				3 New Baseline June 2014 & Prep Year 2014	3 New Year 1 June 2015	3 New Year 2 June 2016

PDO 1. Implement NCA in partner developing and developed countries

Outcome indicators:

a. Number of core/new implementing countries with a commitment to institutionalize NCA based on lessons learned from the WAVES program	<p>Colombia (Statistics Office, 6 staff)</p> <p>Target: 1 country (Colombia)</p> <p>Achieved: 1</p>	<p>Target: 1 country</p> <p>Achieved: 3</p> <p>Botswana–3 staff in the Department of Water Affairs, for water accounts</p> <p>Colombia–6 staff in Statistics Office</p> <p>Philippines–4 staff in Philippine Statistics Authority (PSA)</p> <p>Baseline 2014</p> <p>Indonesia– (Statistics Office, 4 staff)</p> <p>Prep Year 2014</p> <p>Target: 3</p> <p>Achieved: 3</p> <p>**Guatemala–Preparation phase ended December 2014; Steering Committee established (5 institutions); mobilized resources from WB/WAVES, including hiring consultants; scoping study finalized</p> <p>Indonesia–SC established (4 ministries); technical team established with members from 4 key ministries</p> <p>Rwanda–Mobilized resources from WB/WAVES; including hiring consultants; initiated scoping study</p>	<p>Original Target: 2</p> <p>New Target: 3+ countries</p> <p>Achieved: 5 (Philippines, Colombia)</p> <p>Botswana–2 staff in the Ministry of Finance and Development Planning; 3 staff in the Department of Energy, for energy accounts</p> <p>Costa Rica–2 staff in Central Bank</p> <p>Madagascar–Director for NCA established in the Ministry of Economy with 5 staff; NCA included as a pillar in new 2 year development plan</p> <p>Target: 3</p> <p>Achieved: 1</p> <p>**Guatemala–National Institute of Forests will produce updated forest accounts, national</p> <p>Indonesia–Establishment of environmental accounts unit suggested</p> <p>Rwanda–Institutional arrangements for land and water accounts into national accounts and development planning suggested</p>	<p>Target: 5 countries</p> <p>Achieved: 5</p> <p>Botswana– Agreement on regular reporting for indicators; NCA Coordinating Unit at Ministry of Finance (2 staff); Water Accounting Unit at Department of Water (5 staff); energy accounting at Department of Energy (4 staff); macro indicators at MFDP (5 staff); mineral accounts by Department of Geological Surveys (5 staff)</p> <p>Costa Rica–Central Bank (2 staff)</p> <p>Philippines–Environmental and Natural Resources Accounts Division (9 staff)</p> <p>Colombia–Indicators and Environmental Accounts Unit (8 staff)</p> <p>Madagascar– NCA unit set up in Ministry of Economy (5 staff)</p> <p>Target: 3</p> <p>Achieved: 2</p> <p>Indonesia–Implementation phase begins; pilots on water and land accounts launched; improvements in SISNERLING for water and land accounts started</p> <p>Rwanda–Institutional arrangements set up for land, water, and mineral accounts</p>
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5 Core Baseline June 2011	5 Core-Prep Year June 2012	5 Core Year 1 June 2013	5 Core Year 2 June 2014	5 Core Year 3 June 2015	5 Core Year 4 June 2016
3 New Baseline June 2014 & Prep Year 2014				3 New Year 1 June 2015	3 New Year 2 June 2016

PDO 1. Implement NCA in partner developing and developed countries

Intermediate Outcome Indicators

1.1 Number of core/new implementing countries that have completed the milestones for the WAVES preparation phase	<p>Target: 2 countries Achieved: 2</p> <p>Botswana Madagascar</p>	<p>Target: 5 countries Achieved: 4</p> <p>Philippines Colombia</p>	<p>Target: 5 countries Achieved: All 5</p> <p>Costa Rica Prep Year 2014</p> <p>Target: 2 Achieved: 2</p> <p>**Guatemala, Rwanda, and Indonesia partly achieved</p>	<p>Target: 3 Achieved: 3</p> <p>Indonesia completed (feasibility assessment to be completed June 20)</p>	<p>All achieved</p>
1.2 Number of core/new implementing countries with asset accounts for selected natural assets	<p>Target: 1 country</p> <p>Colombia—Subsoil accounts</p>	<p>Target: 1 country</p> <p>Costa Rica—Prelim forest accounts, national</p> <p>Madagascar—water stock by river basin</p> <p>Prep Year 2014 None</p> <p>**Guatemala—No accounts updated or produced during preparation period</p>	<p>Target: 2 countries complete at least 1 asset account</p> <p>Achieved: All 5 countries started; 4 countries complete at least 1 account</p> <p>Botswana—Surface water stock accounts, subsoil accounts (phase 1)</p> <p>Colombia—Updated subsoil, preliminary forest accounts, national; water accounts or first pilot site</p>	<p>Target: 5 countries complete at least 1 asset account</p> <p>Achieved: 5 have completed, updated, and/or expanded asset accounting</p> <p>Botswana—Subsoil (phase 2); preliminary groundwater water stock accounts</p> <p>Colombia—Forest accounts, national and regional</p> <p>Costa Rica— Forest accounts, national</p> <p>Madagascar—Subsoil for large mines; forest accounts for non-protected areas only; water stock by river basin</p> <p>Philippines—Preliminary subsoil and land accounts</p> <p>Target: 3 Achieved: 3</p> <p>Work started in three countries</p> <p>**Guatemala—Digital platform and guidelines developed for SEEA accounts to have regular updates (forest, land)</p> <p>Indonesia—Data availability for land and water accounts assessed by June</p> <p>Rwanda—Assessment of data availability on land accounts</p>	<p>Target: 5 countries Achieved: 5</p> <p>Botswana—Subsoil updated; total water stock by region.</p> <p>Colombia— Timber, land accounts (Orinoquia); national land and water accounts, water (Chinchiná, Tota)</p> <p>Costa Rica—Forest accounts</p> <p>Madagascar—Physical accounts for large mines; timber accounts</p> <p>Philippines— Subsoil updated; land accounts for ecosystem pilots</p> <p>Target: 3 Achieved: 1</p> <p>Rwanda—Preliminary land accounts consolidated; preparatory work for minerals</p>

OBJECTIVES & OUTCOME (RESULTS) INDICATORS	5 Core Baseline June 2011	5 Core-Prep Year June 2012	5 Core Year 1 June 2013	5 Core Year 2 June 2014	5 Core Year 3 June 2015	5 Core Year 4 June 2016
			3 New Baseline June 2014 & Prep Year 2014		3 New Year 1 June 2015	3 New Year 2 June 2016
PDO 1. Implement NCA in partner developing and developed countries						
1.3 Number of core and new implementing countries with flow accounts for selected natural resources	Colombia- (water, national; energy accounts)	Target: 1 country (Colombia)	Target: 2 countries Achieved: 2	Target: 3 countries Achieved: All countries start, 4 countries have at least 1 account	Target: 5 countries Achieved: 5	Target: 5 countries with completed and/or updated accounts Achieved: 5
			Botswana —Preliminary water accounts	Botswana —Time series of national water accounts	Botswana —Water accounts (updated national accounts, accounts by water management area, new sectoral accounts); phase 1 energy accounts (electricity)	Botswana —Monetary accounts for water; accounts for recycled water; energy accounts for major companies; water accounts for 2014/15; mineral accounts on a time series 1994 to 2014; report on mineral revenues and public finance; energy accounts for 2010/11 to 2014/15
			Colombia —Updated accounts	Colombia —Water accounts at national level and for 1 pilot watershed	Colombia —Updated water and forest accounts	Colombia —Updated water flow accounts, national; updated forest accounts, national; updated water flows, regional (Tota, Chinchiná)
				Costa Rica —Prelim national water and forest product accounts	Costa Rica —National water accounts, forest product accounts; physical accounts	Costa Rica —Water and Forest flow accounts
				Philippines —Prelim water accounts for Laguna Lake	Philippines —Preliminary water accounts for Laguna Lake basin pilot site	Madagascar —National water accounts by river basin
			Prep Year 2014	Madagascar —Water flow accounts for 1 river basin, partially completed	Philippines —Preliminary water accounts for Laguna Lake basin pilot site	Philippines —Water accounts for Laguna Lake pilot site
			Target: 1 Achieved: 1	Target: 3 Achieved: 1	Target: 3 Achieved: 3 partial or completed Work started in 2 countries	Target: 3 Achieved: 2
			**Guatemala —Flow accounts produced by academic sector and systematized in 6 "policy notes"		**Guatemala —Digital platform and guidelines built for SEEA flow accounts (forest, water, waste, energy, emissions) that will ease future updates	Indonesia —Flow accounts for natural resources in existing SEEA/SISNERLING updated to SEEA 2012; preliminary monetary account for land
					Indonesia —Flow accounts for natural resources within existing SEEA/SISNERLING assessed	Rwanda —Draft water accounts
					Rwanda —Assessment of data availability on water accounts	

	5 Core Baseline June 2011	5 Core-Prep Year June 2012	5 Core Year 1 June 2013	5 Core Year 2 June 2014	5 Core Year 3 June 2015	5 Core Year 4 June 2016
OBJECTIVES & OUTCOME (RESULTS) INDICATORS						
PDO 1. Implement NCA in partner developing and developed countries						
1.4 Number of core/new implementing countries with experimental ecosystem accounts	None	Target: 0 countries	Target: 0 countries	Target: 2 countries Achieved: Work started in 2 countries Colombia —Preliminary results for 1 of 2 or 3 pilot sites Philippines —Work started in 2 sites	Target: 3 Achieved: 3 countries with at least preliminary results Colombia — Final results for first pilot site; work started on second site Madagascar —Ecosystem accounts for protected area, ecotourism* Philippines —Preliminary results for 2 pilots	Target: 5 countries New Target: 4 countries Achieved: 3 Botswana —Scoping exercise for tourism accounts ongoing, including a desk review to inform national tourism policy Colombia — Updated accounts (Chinchiná); preliminary ecosystem services accounts, regional (Orinoquia) Philippines —Final results for Southern Palawan and Laguna Lake Costa Rica —Methodology developed and preliminary ecosystem accounts, national
1.5 Number of countries with macroeconomic indicators based on NCA	None	Target: 0 Countries	Target: 0 countries	Target: 1 country Achieved: 1 Botswana —Preliminary estimates	Original Target: 2 countries New Target: 3 countries Achieved: 3 countries Botswana, Madagascar, Philippines (preliminary) Target: 2 Achieved: 2 Work started in 2 countries **Guatemala —Scoping and methodology to develop adjusted net savings estimates for the Central Bank Indonesia —Preliminary macro indicators	Target: 3 countries Achieved: 3 Botswana —Training sessions on macro indicators in March and April 2016 Colombia —DNP proposes a set of Green Growth Indicators for policy monitoring, based mainly in NCA Target: 3 Achieved: 2 Rwanda —WAVES results inform green indicators and national M&E prepared by Rwanda Indonesia —Macro indicators updated in SISNERLING

* Activity canceled

OBJECTIVES & OUTCOME (RESULTS) INDICATORS	5 Core Baseline June 2011	5 Core-Prep Year June 2012	5 Core Year 1 June 2013	5 Core Year 2 June 2014	5 Core Year 3 June 2015	5 Core Year 4 June 2016
	3 New Baseline June 2014 & Prep Year 2014	3 New Year 1 June 2015	3 New Year 2 June 2016	3 New Year 3 June 2015	3 New Year 4 June 2016	3 New Year 5 June 2016
PDO 1. Implement NCA in partner developing and developed countries	1.6 Number of countries with capacity for maintaining NCA (evidenced by dedicated government staff for NCA and regular reporting mechanism for production of natural capital accounts)	Target: 1 (Colombia)	Target: 1 (Colombia)	Target: 1 country Achieved: 5 countries	Original Target: 3 countries New Target: 5 countries Achieved: 5 countries	Target: 5 countries Achieved: 3
		<p>Colombia–Statistics Office, NCA unit (6 staff)</p> <p>Botswana–Water accounts unit in the Department of Water Affairs, (3 staff trained); TWGs for all accounts established and receiving training</p> <p>Colombia–Stats office staff, technical committee for accounts receiving training</p> <p>Costa Rica–2 staff in Central Bank for NCA; TWGs for water, forest accounts established and receiving training</p> <p>Madagascar–TWGs established and trained for all accounts</p> <p>Philippines–Unit in PSA created (4 staff); TWGs established for ecosystem accounts; 10 government staff received training at Australian National Univ. course; training course on ecosystem accounting and SEEA, and other workshops</p> <p>Prep Year 2014</p> <p>Target: 1 Achieved: 1</p> <p>Indonesia–SEEA training by ABS for technical staff of 4 key ministries</p>	<p>Training continues through in-country, regional, and other training workshops and by working with international experts on the accounts (see country reports for detail)</p> <p>Target: 3 Achieved: 3</p> <p>**Guatemala–Institute of Statistics has institutionalization plan; International Forestry Institute (INAB) will have 1 staff dedicated part time to forest accounts plus outside consultants; National Protected Areas Council will have at least 1 staff dedicated to forest and ecosystem accounts plus outside consultants</p> <p>Indonesia–Further SEEA training by ABS</p> <p>Rwanda–NCA coordination and reporting unit established in MINIRENA around National Coordinator, system of monitoring developed; 3-year program of training by Statistics Netherlands</p>	<p>Botswana–MoJ on NCA ready for signing between MoF and University of Botswana</p> <p>Costa Rica–TWG established</p> <p>Colombia–National Administrative Statistics Department (DANE) for NCA (water, forest, energy, environmental activities, solid waste), 9 staff; technical committee for accounts receiving training; NCA construction included in work plan of 1 staff from the Institute of Hydrology, Meteorology and Environmental Studies (IDEAM)</p> <p>Madagascar–Road map beyond WAVES established</p> <p>Target: 3 Achieved: 1</p> <p>Rwanda–Own-budget allocations established; NCA reporting regularized within key institutions; trainings in water, monetary land, and mineral accounts</p>		

*One of the five core implementing countries, the Philippines, will be extended for one additional year.

** In Guatemala, work was interrupted due to a change in government; therefore, work will begin 2016 and continue in 2017.

Global Results-Based Monitoring Matrix – PDO 2 (WAVES 5 Core Countries + 3 New WAVES Countries)

OBJECTIVES & OUTCOME (RESULTS) INDICATORS	5 Core Baseline June 2011	5 Core Prep Year June 2012	5 Core Year 1 June 2013	5 Core Year 2 June 2014	5 Core Year 3 June 2015	5 Core Year 4 June 2016
				3 New Baseline June 2014 & Prep Year 2014	3 New Year 1 June 2015	3 New Year 2 June 2016

PDO 2. Incorporate NCA in policy analysis and development planning

Outcome indicators:

	Target: 0 countries	Target: 2 countries	Target: 2 countries Achieved: 2	Target: 5 countries Achieved: 5	Target: 5 countries Achieved: 5	Target: 5 countries Achieved: 5
a. Number of core/new implementing countries in which 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 Economic and Sector Work (ESW), Analytical and Advisory Assistance (AAA), and project formulation documents).	<p>Botswana– Government hosts Heads of State Summit on African Sustainability, resulting in Gaborone declaration to implement NCA being signed by 10 countries</p>	<p>Botswana– Mid-term review of NDP 10 calls for NCA in NDP 11; President's Botswana Economic Advisory Council includes progress on NCA in briefing pack for biannual meetings</p> <p>Philippines– Executive order on mining for mineral accounts</p>	<p>Botswana– President's State of the Nation address; national water policy; Integrated Water Resource Management policy call for NCA; government policy brief on water management calls for water accounts as management tool; Botswana hosts follow-up to 2012 Gaborone Summit to establish secretariat for NCA; NCA center stage at National Water Pitso (water sector stakeholders consultations)</p> <p>Colombia– The National Council for Economic and Social Policy's (CONPES) Environmental Management Plan (for the first pilot watershed) calls for NCA as a management tool</p> <p>Philippines– NCA included in revised Philippines Development Plan as management tool</p> <p>Prep Year 2014 Target: 2 Achieved: 2</p> <p>**Guatemala– NDP K'atun has been published, directly citing NCA</p> <p>Indonesia– Macroeconomic policy analysis (AAA) produced under Green Development</p>	<p>Botswana– NCA informs World Bank Systematic Country Diagnostic (SCD); NCA in President's State of the Nation address; NCA prominent in Water Pitso (water sector stakeholders consultations)</p> <p>Colombia– NCA included in Green Growth NDP</p> <p>Costa Rica– Proposed bills for water and forest include NCA</p> <p>Madagascar– NCA informs World Bank Poverty Reduction Strategy Paper (PRSP) and Interim Strategy Note (ISN)</p> <p>Philippines– Water pricing discussions for Laguna Lake based on preliminary results from ecosystem accounts; land use planning in South Palawan based on accounts; Secretary of the department of Environment and Natural Resources (DENR) requests inclusion of billion-dollar dike project in Laguna Lake ecosystem account and scaling up accounts to LGU/province level</p> <p>Target: 3 Achieved: 2</p> <p>**Guatemala– Ministry of Environment will publish its report from an NCA perspective</p> <p>Indonesia– Policy input on sustainability indicators in the new National Medium-Term Development Plan</p> <p>Rwanda– Policy studies on land and water planned for Q3–4, 2015</p>	<p>Botswana– MFDPP commits to mainstream NCA in draft of NDP 11; NCA informs new fiscal rule for mineral revenues; NCA in new Long-Term Vision; NCA infused in National Strategy for Sustainable Development (NSSD); NCA mainstreamed into Gaborone Declaration for Sustainability in Africa (GDSA)</p> <p>Colombia– NCA informs DNP and Ministry of Environment and Sustainable Development (MADS) actions</p> <p>Costa Rica– Proposed bills for water and forest include NCA</p> <p>Madagascar– WB CPF uses NCA; Total Wealth and Adjusted Net Savings integrated in SNISE</p> <p>Philippines– Policy dialogue on results of ecosystem accounts and identification of key policy issues to analyze</p> <p>Target: 3 Achieved: 2</p> <p>Indonesia– NCA acknowledged by government as key indicators for monitoring economic sustainability</p> <p>Rwanda– Policy studies and recommendations are aligned with national planning and budgeting; inputs to be provided to Rwanda Economic Update (WB ESW)</p>	

OBJECTIVES & OUTCOME (RESULTS) INDICATORS	5 Core Baseline June 2011		5 Core Prep Year June 2012		5 Core Year 1 June 2013		5 Core Year 2 June 2014		5 Core Year 3 June 2015		5 Core Year 4 June 2016				
	None		Target: 1 country	Target: 1 country	Target: 1 country	Target: 1 country	Target: 5 countries	Target: 5 countries	Target: 5 countries	Target: 5 countries	Target: 5 countries	Target: 5 countries			
2.2 Number of countries with capacity for using NCA in policy dialogue (evidenced by government staff trained in using NCA)	5 Core Baseline June 2011		5 Core Prep Year June 2012		5 Core Year 1 June 2013		5 Core Year 2 June 2014		5 Core Year 3 June 2015		5 Core Year 4 June 2016				
	None		Target: 1 country		Target: 1 country		3 New Baseline June 2014 & Prep Year 2014		3 New Year 1 June 2015		3 New Year 2 June 2016				
PDO 2. Incorporate NCA in policy analysis and development planning															
2.2 Number of countries with capacity for using NCA in policy dialogue (evidenced by government staff trained in using NCA)	None		Target: 1 country		Target: 1 country		Target: 1 country		Target: 5 countries		Target: 5 countries				
	Policy makers' workshop for 35+ people		Regional and national training workshops		Regional and national training workshops										
Philippines-2 training workshops for policy makers and people from user agencies (government, academic, civil society organizations)		Philippines-2 training workshops for policy makers and people from user agencies (government, academic, civil society organizations)		Philippines-2 training workshops for policy makers and people from user agencies (government, academic, civil society organizations)		Philippines-2 training workshops for policy makers and people from user agencies (government, academic, civil society organizations)		Philippines-2 training workshops for policy makers and people from user agencies (government, academic, civil society organizations)		Philippines-2 training workshops for policy makers and people from user agencies (government, academic, civil society organizations)		Philippines-2 training workshops for policy makers and people from user agencies (government, academic, civil society organizations)			
Botswana - Policy makers' workshop for 35+ people		Botswana - Policy makers' workshop for 35+ people		Botswana - Policy makers' workshop for 35+ people		Botswana - Policy makers' workshop for 35+ people		Botswana - Policy makers' workshop for 35+ people		Botswana - Policy makers' workshop for 35+ people		Botswana - Policy makers' workshop for 35+ people			
Botswana - Policy makers' workshop for 35+ people		Botswana - Policy makers' workshop for 35+ people		Botswana - Policy makers' workshop for 35+ people		Botswana - Policy makers' workshop for 35+ people		Botswana - Policy makers' workshop for 35+ people		Botswana - Policy makers' workshop for 35+ people		Botswana - Policy makers' workshop for 35+ people			
Colombia - NCA training workshop for 50+ people		Colombia - NCA training workshop for 50+ people		Colombia - NCA training workshop for 50+ people		Colombia - NCA training workshop for 50+ people		Colombia - NCA training workshop for 50+ people		Colombia - NCA training workshop for 50+ people		Colombia - NCA training workshop for 50+ people			
Costa Rica - Training workshop for 20+ people		Costa Rica - Training workshop for 20+ people		Costa Rica - Training workshop for 20+ people		Costa Rica - Training workshop for 20+ people		Costa Rica - Training workshop for 20+ people		Costa Rica - Training workshop for 20+ people		Costa Rica - Training workshop for 20+ people			
Madagascar - Continued training on use of NCA by international experts		Madagascar - Continued training on use of NCA by international experts		Madagascar - Continued training on use of NCA by international experts		Madagascar - Continued training on use of NCA by international experts		Madagascar - Continued training on use of NCA by international experts		Madagascar - Continued training on use of NCA by international experts		Madagascar - Continued training on use of NCA by international experts			
Philippines - four staff attended NCA course in Australia; one 4-day hands-on training on valuation of ecosystem services; one 4-day training on policy analysis for ecosystem accounts; several hands-on training sessions on biophysical modeling, scenario analysis, and valuation		Philippines - four staff attended NCA course in Australia; one 4-day hands-on training on valuation of ecosystem services; one 4-day training on policy analysis for ecosystem accounts; several hands-on training sessions on biophysical modeling, scenario analysis, and valuation		Philippines - four staff attended NCA course in Australia; one 4-day hands-on training on valuation of ecosystem services; one 4-day training on policy analysis for ecosystem accounts; several hands-on training sessions on biophysical modeling, scenario analysis, and valuation		Philippines - four staff attended NCA course in Australia; one 4-day hands-on training on valuation of ecosystem services; one 4-day training on policy analysis for ecosystem accounts; several hands-on training sessions on biophysical modeling, scenario analysis, and valuation		Philippines - four staff attended NCA course in Australia; one 4-day hands-on training on valuation of ecosystem services; one 4-day training on policy analysis for ecosystem accounts; several hands-on training sessions on biophysical modeling, scenario analysis, and valuation		Philippines - four staff attend NCA course in Australia; two 1-week training courses on ecosystem accounting; 1-week course on SNA/SEEA, one 3-day training on macro indicators, several hands-on training sessions on data management and analysis, GIS, biophysical modeling, and valuation		Philippines - four staff attend NCA course in Australia; two 1-week training courses on ecosystem accounting; 1-week course on SNA/SEEA, one 3-day training on macro indicators, several hands-on training sessions on data management and analysis, GIS, biophysical modeling, and valuation		Philippines - four staff attend NCA course in Australia; two 1-week training courses on ecosystem accounting; 1-week course on SNA/SEEA, one 3-day training on macro indicators, several hands-on training sessions on data management and analysis, GIS, biophysical modeling, and valuation	
Prep Year 2014		Prep Year 2014		Prep Year 2014		Prep Year 2014		Prep Year 2014		Prep Year 2014		Prep Year 2014			
Target: 1		Target: 1		Target: 1		Target: 1		Target: 1		Target: 1		Target: 3			
Achieved: 1		Achieved: 1		Achieved: 1		Achieved: 1		Achieved: 1		Achieved: 1		Achieved: 1			
**Guatemala - Communications strategy work started with help from IIED		**Guatemala - Communications strategy work started with help from IIED		**Guatemala - Communications strategy work started with help from IIED		**Guatemala - Communications strategy work started with help from IIED		**Guatemala - Communications strategy work started with help from IIED		**Guatemala - Communications strategy will feature reach-out strategy for various groups, such as government staff; Ministry of Environment will train its various departments in NCA perspective		**Guatemala - Communications strategy will feature reach-out strategy for various groups, such as government staff; Ministry of Environment will train its various departments in NCA perspective		**Guatemala - Communications strategy will feature reach-out strategy for various groups, such as government staff; Ministry of Environment will train its various departments in NCA perspective	

*One of the five core implementing countries, the Philippines, will be extended for one additional year.

** In Guatemala, work has been interrupted due to a change in government, therefore, work will begin in 2016 and continue in 2017.

Global Results-Based Monitoring Matrix – PDO 3 (PTEC)

OBJECTIVES & OUTCOME (RESULTS) INDICATORS	Baseline June 2011	Prep Year June 2012	Year 1 June 2013	Year 2 June 2014	Year 3 June 2015	Year 4 June 2016
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PDO 3. Develop guidelines for implementing ecosystem accounting for global implementation

Outcome indicators:

	None	Input provided on valuation to Draft SEEA EEA; financial support provided to editing of SEEA EEA	Achieved: SEEA EEA approved by UN Statistical Commission as best practice guidelines	Date for next revision not set	Date for next revision not set; work on valuation for input to revise SEEA-EEA	Date for next revision not set; work on valuation for input to revise SEEA-EEA
a. International guidelines are developed on physical and monetary accounts for ecosystems in the SEEA Experimental Ecosystem Accounts (Vol. 2)	None	Input provided on valuation to Draft SEEA EEA; financial support provided to editing of SEEA EEA	Achieved: SEEA EEA approved by UN Statistical Commission as best practice guidelines	Date for next revision not set	Date for next revision not set; work on valuation for input to revise SEEA-EEA	Date for next revision not set; work on valuation for input to revise SEEA-EEA
Intermediate outcome indicators:						
3.1 Ecosystem Services Accounting (ESA) concepts, data sources, and methods tested	Not started	Target: Identifying partners for pilot studies Achieved: Cooperation agreed with CI, Wageningen University, and WWF/TNC/Stanford University/Minnesota University	Target: Testing methods in externally financed projects Achieved: 3 ecosystem accounting pilot studies initiated (Peru, Indonesia, India)	Target: 3 pilot studies, testing methods for scaling up, and valuation Achieved: 3 pilot studies ongoing	Target: 3 pilot study reports published; 3 workshops on scaling up and valuation held; testing methodology issues in core implementing countries (CICs) work: Philippines, Botswana Achieved: Interim reports published, all projects still ongoing; testing methods ongoing in Philippines and Botswana	Target: Report and papers from workshops published; reports on methodology tests in Philippines and Botswana published Achieved: 2 reports on ecosystem accounts from the Philippines published; report from Botswana on tourism linked to ecosystems drafted; workshops on national scale ecosystem accounts held; report is being prepared
3.2 Guidance Notes for using different methodologies for Ecosystem Services Accounting developed	Initial workshop held	Target: Setting up experts committee Achieved: Policy and Technical Experts Committee (PTEC) formed; first annual meeting held	Target: Workshop on designing pilots; methodology issues identified Achieved: Research agenda established; 2 notes commissioned; workshop providing input to note on designing pilot held	Target: 3 Guidance Notes finalized Achieved: 3 Guidance Notes Finalized: Designing pilots on ESA (overview), scoping studies for pilots, biophysical modeling and mapping; 3 notes commissioned; mapping and valuing coastal and marine ecosystem services (ES), valuation of regulating ES, biophysical modeling of watershed ES	Target: Notes on mapping and valuing coastal and marine ES and on biophysical modeling of watershed ES finalized; note commissioned on integrating ES measures into accounts Achieved: Notes on mapping and valuing coastal and marine ES and on biophysical modeling of watershed ES finalized; note on valuing regulating ES ongoing; note on integrating ES measures into accounts cancelled due to similar work at UNSD	Target: Note on valuation of regulating ES finalized; report on issues and recommendations for ecosystem accounting Achieved: Paper on ecosystem services finalized; guidelines based on the paper started; paper on valuation of ecosystem assets pending; 2 workshops on valuation held
3.3 Policy examples of NCA compiled from existing literature	Not started	Target: Stories on policy uses compiled Achieved: Presentations with policy uses compiled	Target: Survey of user/uses of accounts Achieved: Survey completed	Target: Overview report Achieved: Overview report published	Target: 5 policy briefs published Achieved: 4 policy briefs to be published by May 31; overview of uses of accounts in economic models to be published in June	Target: 5 additional policy briefs published; overview of policy analysis with accounts published, including tools and methods Achieved: 3 additional policy briefs published; report on policy use of accounts finalized
3.4 Training material developed	Not started	Not started	Not started	Target: forest accounting training material Achieved: Forest accounting; draft training material on ecosystem accounting	Target: Water accounting; ESA general training; valuation for ESA; biophysical and GIS modeling for ESA Achieved: All trainings have been developed and tested	Target: Web-based trainings launched Target to be re-evaluated due to further discussions with partners

Global Results-Based Monitoring Matrix – PDO 4 (Communications)

OBJECTIVES & OUTCOME (RESULTS) INDICATORS	Baseline June 2011	Prep Year June 2012	Year 1 June 2013	Year 2 June 2014	Year 3 June 2015	Year 4 June 2016
PDO 4. Promote the adoption of ecosystem and NCA beyond the WAVES partner countries						
Outcome indicators:						
a. Number of countries beyond the original 5 WAVES core implementing countries undertaking NCA, where WAVES has played a significant role in implementation (for example, countries that have received direct technical support from the WAVES Secretariat)	None	Target: 0	Target: 0	Target: 2 Achieved: 3, Indonesia, Rwanda, Guatemala	Original Target: 3 Achieved: 0, pending review of expansion strategy by new WB management	Original Target: 4 New target: TBD Achieved: 1, Turkey
b. Number of countries beyond the original 5 WAVES core implementing countries undertaking NCA, where WAVES has played a supporting role in implementation (for example, through WAVES Secretariat participation in workshops)	None	Target: 0	Target: 0	Target: 3 Achieved: Brazil, Chile, Mexico	Target: 4 Achieved: Brazil, Chile, Ecuador, Mexico, Turkey, Uruguay, and 12 Central Asian countries	Target: 5 Achieved: Chile, Ecuador, India, Mexico, Namibia, Peru, Seychelles, Sri Lanka, Thailand, Uganda, Vietnam
Intermediate outcome indicators:						
4.1 Number of countries beyond the original WAVES core implementing countries participating in knowledge sharing activities (Annual Partnership meetings; international workshops, south-south exchanges)	None	3	Target: 30	Target: 40 Achieved: 60+	Target: 50 Achieved: 50+	Target: 60 Achieved: 60+
4.2 Number of WAVES Web site hits	No Web site	Web site is launched	Target: 20% increase Achieved: 35,725	Target: 20% increase Achieved: 74,740	Target: 20% increase Achieved: 25% increase (100, 205)	Target: 20% increase Achieved: 30% increase (103,733)
4.3 Number of WAVES newsletter views	No newsletter	No newsletter	Target: launch Web site Achieved: 300 subscribers	Target: 20% increment Achieved: 1,100 subscribers	Target: 20% increment Achieved: 90% (2,000 subscribers)	Target: 20% increment Achieved: 20% (2,430)
4.4 Number of social media followers	No social media	No social media	No social media	Target: Launch Achieved: Plans to launch last quarter of 2014	Original target: 20% increase New target: Using WB environment Twitter	Target: 20% increment Achieved: 22% increase 11,467 Twitter followers (WB Environment twitter)

See the Monitoring and Evaluation Framework for definitions of results.

WEALTH ACCOUNTING AND THE VALUATION OF ECOSYSTEM SERVICES
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WORLD BANK GROUP

1818 H Street, NW,
Washington, DC 20433 USA



WAVES