Proyecto de Resiliencia Natural y Ordenamiento territorial del Agua
PRO-AGUA

Newsletter
Summer Fall 2018

PRO-AGUA

Natural Resilience in the Amazon: Growing Urban Centers and Water Management

Image from Global Environment Facility

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EDITORIAL

Adrian Vogl, PhD

PRO-Agua Project Lead & Senior Scientist @ NatCap

The Amazon is an area of incredible wealth - unparalleled biodiversity, natural resources, and human capacity. It also faces some serious challenges as its people work to improve livelihoods and well-being, ensure that both city dwellers and rural - often indigenous - communities have enough food and clean, flowing water, and that risks from changing climate, severe droughts and floods are minimized and addressed quickly to preserve the lives and dignity of its peoples.

As director of the PRO-Agua project, I am very happy partner with local organizations such as Cincia (Peru) and Herencia (Bolivia) to share the tools that The Natural Capital Project has developed in over 100 projects on 5 continents across the world. In the coming months, we will apply our tools to map and assess how wetlands, forests, and riverine vegetation reduce flood and drought risks, as well as how they provide other benefits such as maintaining biodiversity, supporting tourism and reducing habitat for disease-carrying mosquitoes.

Just as it is a hotspot of biological diversity, we also know that the southwest Amazon contains an incredible diversity of communities that come from varied backgrounds and face different challenges in how they will grow and develop. NatCap's tools are built around the idea that different uses of natural capital come with distinct benefits and trade-offs, so the maps and results that come out of PRO-Agua will help to show a pathway that can balance these competing interests. We will share our findings through a series of community workshops so that, armed with this information, local leaders can identify and act upon opportunities to implement integrated land use planning to achieve the best possible outcomes for both people and nature.

We also know that one of the region's greatest resources is its people. PRO-Agua is a collaborative project, and this spirit of collaboration came through very clearly in our first workshop in Puerto Maldonado, Peru, in June this year. This edition of our newsletter features people and institutions who joined us for that event, and reports some of the progress that we have made since then.

We hope to count you as a partner in PRO-Agua!

¡Esperamos contar contigo como socio en PRO-Agua!

KICK-OFF WORKSHOP PUERTO MALDONADO

On June 19th, about 50 participants gathered in the Puerto Amazonico Hotel in the city of Puerto Maldonado to kick-off the Peruvian part of the trinational PRO-Agua project. The objectives of the workshop were to:

- ◊ Introduce participants to the objectives, geography, and preliminary results of the project.
- ◊ Familiarize participants with methods of mapping, valuing and prioritizing areas for ecosystem services.
- ◊ Discuss activities, objectives and experiences with integrated watershed management for programs already underway in the region.
- ◊ Solicit feedback from stakeholders on priority ecosystem services, data sources, methods and lessons learned from prior projects.

The organizing partners, NatCap and Cincia, introduced themselves and the project, and as a group we brainstormed expectations and wishes for this project. Furthermore, NatCap presented briefly their suite of tools to quantify ecosystem services and support informed decision-making for sustainable development (InVEST) – as well as preliminary results of a few InVEST models (Sediments, Carbon, and Recreation & Tourism) for the area.

We also heard about local experiences in watershed and resources management in the Peruvian Amazon. Loyola Escamilo presented WCS's work on watershed management in Tambopata, Armando Muñante (SUNASS) and Pablo Santín Ruiz (ANA) presented on water resources. The work of SENAMHI on the Acre river and SERNANP on sustainable territorial development work in the Tambopata National Reserve was also showcased. Mercedes Perales (MAP-SENAMHI) discussed the collaboration in the Madre de Dios – Acre – Pando región, and Vladimir Ramírez (RNTAMB) presented on the Strategy for Development and Conservation in the Buffer Zone of the Tambopata National Reserve. Finally, Jonathan Ovalle y Jose Carlos Navarro (IDE) shared their current work and future vision for the extremely useful Spatial Data Infrastructure.

Group discussions: A vision for development in Madre de Dios

The relevance of this collaborative approach was underlined by many participants, as well as a strong interest in collaborative work and enthusiasm for capacity building.

The second day, June 20th was devoted to more technical discussions. GIS experts of the partner institutions gathered as NatCap shared more details on the InVEST models and the ecosystem services modeling approach. The enthusiasm for integration of tools locally was tangible, as well as for capacity building between the foreign teams and the local experts.

The afternoon was devoted to collaborative work in smaller groups on 4 themes identified as priority from the previous discussions:

Led by Jose Carlos Navarro (IDE), Charlotte Weil (NatCap) and Jorge Caballero (Cincia), the group working on the Project Database (*Banco de Datos*) laid a plan for a collaborative data sharing platform, open to all partners.

The second working group focused on Social and Water Data, they assessed the available and soon-to-be available datasets and agreed on an ambitious objective to compile the selected ones in the following 3 months (before the end of September). They are now active through a Whatsapp group.

The third group discussed Opportunities to Influence Decision-making. They concluded that decision-makers must understand that it is more cost-efficient to invest in water conservation than to invest in gray infrastructure. They also underscored the political change that will come with the next regional elections in January 2019.

Finally, the group that worked on the Land Use/Land Cover Map undertook to compile and validate detailed cartographic information of the Madre de Dios River Basin and the Tambopata National Reserve and its buffer zone, with their respective metadata, and to send this information to the project database.

The institutions represented in the workshop were:
IDE, ACCA, SENAMHI, ANA, SUNASS, Cofopri MDD, GOREMAD, IDE, MINAM, INDECI, RNTAMB, SERNANP, and WCS.

[Charlotte Weil & Marcelo Guevara, NatCap]

CINCIA (The Center for Amazonian Scientific Innovation/el Centro de Innovación Científica Amazónica) is a research center established by Wake Forest University in the Amazonian province of Madre de Dios, Peru that conducts scientific research on the most pressing environmental problems in the Peruvian Amazon.

Though one of the most biodiverse regions in the world, Madre de Dios in undergoing rapid environmental degradation because of a decade-long gold rush which is threatening the viability of the regions' rainforest ecosystems, and the health of its people. Artisanal gold mining and illegal logging is driving high rates of deforestation and biodiversity loss, and is causing widespread mercury contamination of rivers, wildlife and human communities. CINCIA scientists are conducting cutting edge research on the use of native species for reforestation of degraded lands, the dynamics and impacts of mercury contamination, the use of biochar for soil restoration, the use drones for improving deforestation threat detection, and landscape change analysis using machine learning and neural nets. CINCIA is also promoting greater future societal awareness and understanding of environmental health threats -- and their solutions -- by working to include environmental education into local K-12 public schools - a rarity in a remote province such as Madre de Dios.

[Luis Fernandez, Executive director, Cincia]

CENTRO DE INNOVACIÓN CIENTÍFICA AMAZÓNICA

TRADE-OFF!

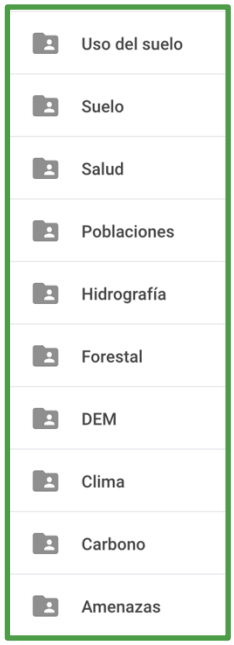
Tradeoff! is a series of mapping games developed by the Natural Capital Project that introduces concepts related to nature's benefits to people, while mirroring our analytical approach with InVEST. The process of preparing spatial data, running software tools, and appropriately interpreting results can be challenging; Tradeoff! represents a more effective means to convey our approach to a broader audience, especially those who are not computer savvy or experienced scientific modelers. Currently, we offer four versions of Tradeoff!: 1) Best Coast Belize (coastal zone management), 2) Tradeoff! Agriculture Edition (terrestrial/freshwater services), 3) Northland: Arctic Choices (arctic development), and 4) Roads to a Resilient Future (linear infrastructure development). The first Tradeoff! game in Spanish happened at the kick-off workshop, and participants demonstrated impressive enthusiasm and strategy.

Read more about sustainability games beyond language barriers here !

[Henry Borrebach, Training Lead @ NatCap]

BANCO DE DATOS

The collaborative *Banco de Datos* (Database) of the PRO-Agua project, coordinated by NatCap/Stanford University and Cincia, based on the Spatial Data Infrastructure-IDE in Puerto Maldonado and supported by all the institutions participating in the project, seeks to provide the capacities for the storage, documentation, evaluation, editing and distribution of geographic data managed within the geographical area of the project, as well as to allow the distribution of the same and its derived products to all users, including central, regional and local government institutions, NGOs, universities, research centers, etc.



To this end, we are compiling geographic data that meet national and international standards (ISO International Standard), to meet the following objectives:

- ◊ To collect spatial information relevant to the project, organize and stored it in a location accessible to all project partners (a shared Google drive folder)
- ◊ To standardize the data used in the project, integrated in a unified and well-documented database, considering that it is a tri-national project and that each country has its own cartographic parameters based on its national cartographic laws
- ◊ To define the basic principles and standards to be applied in the processes involving digital cartographic information, both in the generation of new products and in their update/modification;

All of the cartographic information available in the Banco de Datos of the PRO-Agua project will be available to all institutions that require these data, and the process will be coordinated with IDE.

MODELING CORNER

Water: Sediments & Seasonal Water Yield

The InVEST sediment delivery model (SDR) helps assess the service of sediment retention in a catchment, while the seasonal water yield model (SWY) provides estimates of monthly water yields, baseflow contribution and local recharge.

Preliminary runs were performed and are in the process of being refined. More in the next newsletter!

Recreation & Tourism

Tourism is a very important component of the local economies of the MAP area. For example, the Amazonian rainforest in Madre de Dios is visited by about 40 000 people each year, attracted by this paradise of biodiversity.

Nature contributes in innumerable ways to quality of life, sense of place, social connection, physical wellbeing, learning, and other intangibles. The InVEST recreation model predicts the spread of person-days of recreation, based on the locations of natural habitats and other features that factor into people' s decisions about where to visit.

Carbon

The InVEST Forest Carbon Edge Effect model is used to quantify carbon stored in the landscape. Estimates from the InVEST model will be improved thanks to carbon maps calculated from satellite imagery and ground measurement, such as Asner (2010), Baccini (2012), Avitabile (2016) and Englund (2017).

Health

The health team from Stanford, Universidad Peruana Cayetano Heredia and CINCIA are finalizing the study design for disease vector sampling (mosquitoes and sand flies) in Madre de Dios to inform the development and validation of vector habitat models. We expect the field surveys to be completed by the end of the calendar year.

Flood

Rafael Schmitt (NatCap) will be working on water and sediment budgets of rivers in the MAP region. Deforestation and land-use change impact the hydrologic cycle in the basin and sediment delivery to rivers. This can increase the frequency of floods and droughts, trigger geomorphic hazards (such as bank erosion or channel migration), and reduce the quality of freshwater for drinking and fishing. The objectives of Rafael' s work is to understand these links and to then inform where restoration and conservation activities will be most effective to improve nature' s contribution to make sure that rivers remain the lifeline of the MAP region. For his analysis, Rafael will rely on remote sensing and ground data and use models for water and sediment yield from NatCap' s InVEST toolbox, as well as geomorphic assessments of river sediment connectivity and sediment yield from mining activities.

INTERVIEWS

Why are you interested in participating in the PRO-Agua Project? What attracts you to this initiative?
To gain skills and acquire knowledge about new technological tools that will allow me to obtain spatial information in order to analyze population growth and how it influences the management of water resources.

What role would you like to play in this project?
As a researcher to generate, process and analyze the information obtained through technological tools, as well as provide information to higher management so they can make better decisions.

How do you think it can contribute?
Madre de Dios is the capital of Peru's biodiversity, due to its great variety of flora and fauna, and it is the duty of all of us to preserve it. The PRO-Auga project is an opportunity to obtain information on the status of watersheds, population growth, and also on land use planning, which will allow the authorities to be informed so that they can take pertinent actions.

If this project could only realistically change one thing, what would it be or what would you like to see changed?
Strengthen the commitments of government institutions to provide the necessary support to the PRO-Agua project so that they feel involved, and build the capacity of local actors regarding the use of technological tools.

Let's dream big: if this project had the means to make a big change, what would you change?
A big problem that Madre de Dios is facing is illegal mining, which has caused great environmental and social damage. It has caused environmental damage through deforestation and contamination of the environment, and it has caused human trafficking, delinquency and deaths. What many of the inhabitants of Madre de Dios want is to eradicate illegal mining, but it is also necessary to formalize responsible mining with clean technologies.

[Jose Carlos Navarro, IDE]

A big problem that Madre de Dios is facing is illegal mining, which has caused great environmental and social damage.

My hopes for PRO-Agua? That through coordinated work and joint effort among governmental institutions, they try to develop a better management of the territory by providing timely information for decision making.

The photo was taken in the Plaza Grau in the city of Madre de Dios, has a panoramic view of the third largest bridge in Peru called Billingurts bridge and the Madre de Dios river.

The valuation of ecosystem services is a fundamental piece to overthrow social paradigms, regarding the close link that exists between sustainable development and conservation. This is the place from which our society – in which I include local authorities, regional, national organizations and individuals – must start when we talk about the welfare of people, their development and peace.

Ecosystem services valuation is fundamental [...] for development and for peace.

Taking into account this assessment, we should begin with every act of planning to maintain and guarantee these ecosystem services. Focusing mainly on the water resources provided by nature, to guarantee their quantity and quality, which in our case are directly linked to our natural protected areas, the Alto Purus National Park (PNAP) and the surrounding forests.

These aspects may or may not have been known by everyone, ignored by some, ignored by others who live in our Amazon and in the world. However, in my experience in the Amazon region of Madre de Dios and Purús, I believe these will never be ignored again when they are endorsed by science – a science that is put into practice – which is for me the only true science.

For this we should not expect the world to change, we should start by changing the world from our spaces, as we are doing in the triple frontier of Madre de Dios - Peru, Acre - Brazil and Pando – Bolivia: the MAP region. Where our contribution is for the benefit of our tri-border societies and our way of life, articulating our institutions in search of efficiency in public management, strengthening ties of brotherhood, education and, where the weakness of one is the strength of the other, to jointly advance in the difficult task that our humanity is subjecting us to. "To adapt to climate change", to take greater account of the risks implied by these endogenous changes that are altering our lives, confronting them with new challenges for the management of risks of natural disasters, the loss of water, the loss of our food production and, in many cases, the irreversible damage to our Amazon cultures, to our forests and our nature, which form the basis for life in rural, urban and global localities.

For this reason, I believe that the greatest contribution of the Natural Capital Project of Stanford University to the governance process is the generation of data, which in a quantitative and qualitative way will provide elements for improvement, in decision making; as people, as organizations, as authorities; as the only ones responsible for our natural resources, especially those linked to forests and water resources. This being the contribution of NatCap: the social tool where the values of ecosystem services are correctly considered in all contexts, and mainly in all development processes both in the region in Madre de Dios and in my country Peru. Amazonian-Andean country.

[Leonor Mercedes Perales Yabar, President of the Alto Purús National Park Management Committee. Madre de Drios - Ucayali]

NEWS

SIWI WORLD WATER WEEK

Stockholm, Sweden

Panel with Lucia Ruiz from the Peruvian Ministry of Environment, Ivan Lucich from SUNASS and Walter Obando, Chief of National Water Authority.

A common vision for Peru : Natural Infrastructure for Water Security

In this dynamic and well-attended panel, representatives of the Peruvian Government and USAID talked about the extraordinary policy advances on natural infrastructure that have taken place in Peru in recent years, and the importance of having a strategy aligned across agencies to drive lasting change.

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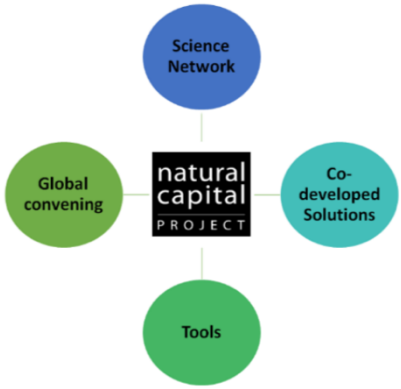

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natural capital PROJECT

At The Natural Capital Project we are developing practical tools and approaches to account for nature's contributions to society, so that leaders of countries, companies, communities, and organizations worldwide can make smarter decisions for a more sustainable future.

Newsletter assembled by Charlotte Weil.
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