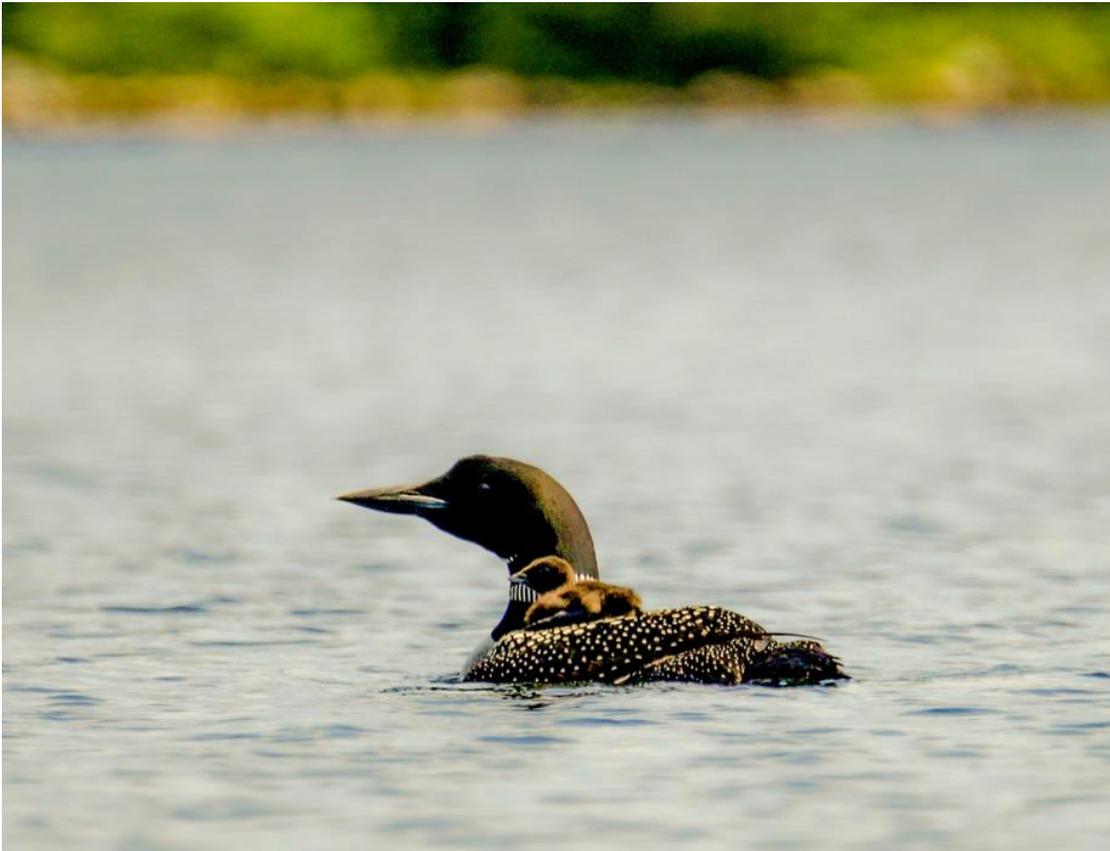


REPORT ON THE



WORKSHOP ON EMERGING INNOVATIONS IN CONSERVATION FINANCE

LAS MAJADAS DE PIRQUE, CHILE
27-29 SEPTEMBER 2016

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TABLE OF CONTENTS

Table of Contents

Introduction	1
Agenda	2
Appendix 1: Workshop Papers	7
<i>Overview</i>	
James Levitt, Manager, Land Conservation Programs, Lincoln Institute of Land Policy and Director, Program on Conservation Innovation, Harvard Forest, Harvard University, Cambridge, Massachusetts, USA.....	8
<i>Field Trip: The PiC Approach to Crowdfunding for Land Conservation</i>	
Pablo Rodriguez, Co-founder, Preserve in Community (PiC), Chile.....	12
<i>Session 1.1: Creating National Parks and Generating Prosperity along the Ruta de los Parques in Patagonia</i>	
Hernán Mladinic, Executive Director, Pumalin Park and Project and Director, Yendegaia Foundation, Tompkins Conservation, Chile.....	15
<i>Session 1.2: A Multi-Sector Initiative to Protect Rio’s Water Supply</i>	
Rodrigo Medeiros, Vice President, Conservation International-Brazil, Rio de Janeiro, Brazil.....	17
<i>Session 2.1: Leveraging Reinsurance Markets to Finance Conservation Investment</i>	
Kathy Baughman McLeod, Director of Climate Risk and Resilience, The Nature Conservancy (TNC), Arlington, Virginia, USA.....	18
<i>Session 2.2: Precision Conservation Designed to Enable Nutrient Trading and Mitigation Programs in the Chesapeake Watershed</i>	
Jeff Allenby, Director of Conservation Technology, Chesapeake Conservancy, Annapolis, Maryland, USA.....	19
<i>Session 3.1 Green Bonds and Land Conservation: The Evolution of a New Financing Tool</i>	
Carolyn duPont, 2016 Graduate of the Joint MBA/MPA Degree Program at the MIT Sloan School and the Harvard Kennedy School.....	22
<i>Session 3.2 Financial Planning for REDD+: Catalyzing a Move from Concessional to Commercial Approaches</i>	
Leslie Durschinger, Founder and Managing Director, Terra Global Capital, San Francisco, California, USA.....	29
<i>Session 4.1 Emerging Mitigation Practices in Chile</i>	
Victoria Alonso, Co-founder, Templado, Santiago, Chile and Henry Tepper, Conservation Consultant, Lincoln, Massachusetts, USA.....	31
<i>Session 4.2 Reforestation and Aquifer Recharging through a Public-Private Partnership</i>	
Efraím Acosta Lugo, Technical Coordinator, ProNatura Mérida, Yucatán, Mexico.....	40
<i>Session 5.1: Success, at Long Last: Enhanced Conservation Tax Provisions in the United States</i>	
Rand Wentworth, President Emeritus, Land Trust Alliance (USA) and Resident Senior Fellow, Harvard Kennedy School Center for Public Leadership, Cambridge, Massachusetts, USA.....	45
<i>Keynote Panel: Land Conservation – the Road Travelled, and the Road Ahead for Chile</i>	50

<i>Session 6.1 Value Capture: The Latin American Toolbox</i>	
Martim Smolka, Senior Fellow and Co-Chair, Department of Latin America and the Caribbean, Lincoln Institute of Land Policy, Cambridge, Massachusetts, USA	53
<i>Session 6.2 The Case of the Thomas van der Hammen Forest Reserve in Bogotá: Value Capture as Leverage for Larger Conservation Efforts in Cities</i>	
Maria Cristina Rojas Eberhard, Urban Planner Advisor, Colombia, and Enrique Silva, Lincoln Institute of Land Policy, Cambridge, Massachusetts, USA.....	56
<i>Session 7.1 Conservation Finance Alliance</i>	
Sylvie Goyet, Director, Climate Change and Environmental Stability, Pacific Community, Noumea, New Caledonia.....	57
<i>Session 7.2 Conservation Finance Network</i>	
Leigh Whelpton, Program Director, Conservation Finance Network, Arlington, Virginia, USA	60
<i>Session 8.1 Energy Infrastructure in Chile and Opportunities for Conservation</i>	
Daniela Martinez, Senior Associate, Quintanilla & Busel Niedmann, Chile.....	61
<i>Session 8.2 The Paris Agreement, Conservation, and Civil Society</i>	
Ken Berlin, President and CEO, The Climate Reality Project, Washington, District of Columbia, USA....	65
<i>Session 8.3 Making Impact Boring: Harnessing the Power of Investment to Solve Global Problems</i>	
David Boghossian, Managing Director, Commonwealth Impact Partners, Cambridge, Massachusetts, USA	72
<i>Session 8.4 The Role and Needs of Capital Markets in Funding Green Infrastructure</i>	
Jared Chase, former Chair, State Street Global Alliance, State Street Bank, Boston, MA.....	77
Appendix 2: Participant Roster	80
Appendix 3: Participant Biographies	82



Photo: ILCN Staff

Introduction

James N. Levitt, Lincoln Institute of Land Policy and Harvard University

It is a particularly important and auspicious time for the land conservation community in Chile, and across the Americas, to consider the distance travelled over the past several decades and the tremendous challenges that they will face over the balance of the twenty-first century. The significance of the momentum in Chile is underscored by two ongoing initiatives:

- The passage by the Chilean Congress of the *Derecho Real de Conservación*, which now allows private landowners to protect their land in perpetuity, and
- A project now being negotiated by the Government of Chile and Tompkins Conservation that may protect as many as 10 million acres as new or expanded National Parks.

Even in the context of these historic initiatives, the challenges facing the land conservation communities in Chile and around the globe are very large and complex. Massive amounts of human and financial capital will be required over the remainder of the twenty-first century to fund land conservation initiatives for a range of purposes, including green and gray infrastructure necessary to address:

- Very rapidly growing demand for renewable energy resources, requiring increased levels of diligence to assure that developers will properly mitigate environmental impacts
- Accelerating sea-level rise and increasingly intense storm activity, and
- Changing quantity and quality of fresh water available to human and natural ecosystems leading to increased demand for desalination and water treatment facilities.

Governments alone will be unlikely to supply the trillions of dollars of capital needed to adequately address these and myriad associated challenges to natural systems. It will take some of the world's best talent, most inventive technologies, and not least, financial ingenuity, coming from the public, private, NGO and academic sectors, to help pass along to future generations the green and biodiverse biosphere now facing ongoing existential threats.

The aim of this workshop is to build on and sharpen concepts that are making, or have the potential to make, a substantial impact on conservation finance in the Western Hemisphere and beyond. These objectives, in turn, serve the larger **mission of the International Land Conservation Network (ILCN)**, which is to connect organizations and people around the world that are accelerating private and civic sector action to protect and steward land and water resources. For more information on the ILCN and its programs, see www.landconservationnetwork.org.

Agenda

WORKSHOP ON EMERGING INNOVATIONS IN CONSERVATION FINANCE

LAS MAJADAS DE PIRQUE, CHILE

Tuesday, September 27, 2016

Field Trip to San Juan de Piche Nature Sanctuary

- 9:30 am **0.1 Jorge Von Marees**, representative of San Juan de Piche, **Andrés Otero**, owner and **Martin Otero**, owner of San Juan de Piche
Introduction to San Juan de Piche Nature Sanctuary and its management partner, Fundación Robles de Cantillana, located at the heart of Altos de Cantillana, coastal mountain range, 65 km south - west of the city of Santiago.
- 9:50 am **0.2 Manuel Moller**, CEO, Preserve in Community and **Pablo Rodriguez**, Operations Manager, Preserve in Community (PiC)
Introduction to the Preserve in Community (PiC) project. PiC is a platform with the ultimate goal of creating natural parks by preserving different ecosystems around the world. PiC's objective is to create the largest community or preserves in the planet by enabling people around the world to take real action to protect our earth. ([Paper available on page 12](#))
- 10:15 am Buses leave Las Majadas de Pirque
- 12:30 pm Buses arrive at San Juan de Piche Nature Sanctuary (www.roblesdecantillana.cl/)
- 1: 00 pm Tour of the nursery at San Juan de Piche
- 1:30 pm Light lunch
- 2:00 pm Walking tour of the property
- 4:00 pm Coffee and group picture
- 4:30 pm Depart property
- 7:00 pm Arrive at Las Majadas de Pirque
- 8:00 pm Dinner

Wednesday, September 28, 2016

- 8:00 am Yoga or morning hike (optional)
- 8:45 am Breakfast (served in the lodge)
- 9:30 am **James Levitt**, Director of the Program on Conservation Innovation at the Harvard Forest, Harvard University; Manager of Land Conservation Programs, Lincoln Institute of Land Policy (Massachusetts, USA). *Workshop Introductions and Objectives.*

9:50 am TOPIC 1: LEVERAGING PHILANTHROPY WITH PUBLIC SECTOR COMMITMENTS

1.1 **Hernán Mladinic**, Executive Director, Pumalín Park, Tompkins Conservation, Puerto Varas, Chile. ***Creating National Parks and Generating Prosperity along the Ruta de los Parques in Patagonia.*** Focus: Douglas and Kristine Tompkins have invested more than US\$250 million to establish vast reserves in Chile and Argentina. Tompkins Conservation is now offering more than one million acres of that land to the Chilean Government as National Parks, and is asking the Chilean Government to also designate more than nine million acres of complementary and contiguous land as National Parks, creating a system that will stretch from Puerto Montt in the north to Tierra del Fuego in the South. The system runs along Chile's Carreterra Austral, creating a Ruta de los Parques (Route of the Parks) that should be a major ecotourism asset to the people of Chile. ([Paper available on page 15](#))

1.2 **Rodrigo Medeiros**, Vice President, Conservation International, Rio de Janeiro, Brazil. ***A multi-sector initiative to protect Rio's water supply.*** Focus: Conservation International is coordinating a pilot project to restore and reforest a portion of the Guandu watershed that is the channel for the majority of Rio's domestic water supply. The pilot project is funded from a variety of sources, including a share of municipal tax revenues, and a share of the receipts from concerts sponsored by "Rock in Rio." The objective of the project is that it be proven effective in enhancing the quality and quantity of Rio's water supply, and that the model be proven to be an effective template for similar efforts in other Latin American countries. ([Paper available on page 17](#))

1.3 **Patrick Coady**, Investment Banker and Former United States Representative to the World Bank, Arlington, Virginia. ***Response and Question Moderation***

11:15 am Coffee break

11:30 am TOPIC 2: INVESTING IN GREEN INFRASTRUCTURE TO REDUCE RISK AND ADDRESS WATER QUALITY/QUANTITY CONSTRAINTS

2.1 **Kathy Baughman McLeod**, Director of Climate Risk and Resilience, The Nature Conservancy (TNC), Arlington, Virginia, USA. ***Leveraging Reinsurance Markets to Finance Conservation Investment.*** Focus: TNC is working with large international reinsurance companies to match them with insured clients that, in exchange for reduced premiums, are willing to invest in conservation projects that can serve to ameliorate ecosystem and financial risk (for example, coral reefs and mangrove swamps that will reduce the ecosystem and financial risks associated with hurricanes and other severe storms). ([Link to paper available on page 18](#))

2.2 **Jeffrey Allenby**, Director of Conservation Technology, Chesapeake Conservancy, Annapolis, Maryland, USA. ***Precision conservation designed to enable nutrient trading and mitigation programs in the Chesapeake Watershed.*** Focus: The Chesapeake Conservancy is developing a novel Geographic Information System (GIS) application to create land cover data and topographic detail across large landscapes at a one-square meter resolution. Enabled by this technology, they are working to facilitate the creation of nutrient trading and mitigation opportunities that can finance such nutrient reductions on a large scale basis. ([Paper available on page 19](#))

2.3 **Terry Vogt**, Terra Global Capital, SF, CA, USA, ***Response and Question Moderation***

1:00 pm Lunch

2:00 pm CONCURRENT SESSIONS: TOPICS 3 AND 4: ADAPTING DEBT FINANCE TOOLS FOR CONSERVATION ACROSS THE AMERICAS

TOPIC 3: GREEN BONDS and SIMILAR FINANCING INSTRUMENTS

3.1 **Carolyn duPont**, 2016 Graduate of the Joint MBA/MPA Degree Program at the MIT Sloan School and the Harvard Kennedy School. ***Green Bonds and Land Conservation: The Evolution of a New Financing Tool***. Focus: *Green Bonds emerged as a new form of environmental financing in 2007. While most investors still view them as a niche product in the overall fixed income market, green bonds have grown rapidly to nearly \$37 billion in issuance in 2014, with issuers ranging from the World Bank to the State of Massachusetts. This presentation examines the current and potential future use of green bonds for financing sustainable land use and conservation projects around the world.* ([Paper available on page 22](#))

3.2 **Leslie Durschinger**, Founder and Managing Director, Terra Global Capital, San Francisco, California, USA. ***Financing Options for REDD+: Catalyzing a Move from Concessional to Commercial Approaches***. Focus: *To date, much of the funding for REDD+ has come from donor sources. To support larger scale operation, project proponents will need to attract significant private sector investment capital. Working with CONAF (National Forest Corporation) in Chile, Terra Global, is developing a financing strategy that identifies the spectrum of financing instruments and potential funders needed to secure the long-term financial viability of Chile's ENCCRV (REDD+) program.* ([Paper available on page 29](#))

3.3 **Lourdes Germán**, Lincoln Institute, Cambridge, MA, USA. ***Response & Question Moderation***

TOPIC 4: COMPENSATORY MITIGATION AND CORPORATE INITIATIVE

4.2 **Victoria Alonso**, Templado, Santiago, Chile and **Henry Tepper**, Conservation Consultant, Lincoln, Massachusetts, USA. ***Emerging Mitigation Practices in Chile***. Focus: *The presenters are working together as members of a small team that is collaborating with industrial companies in Chile to establish significant and measurably effective mitigation practices involving land conservation and sustainable stewardship. These practices are being designed to have an enduring impact over the course of many decades.* ([Paper available on page 31](#))

4.2 **Efraím Acosta Lugo**, Technical Coordinator, ProNatura Mérida, Yucatán, Mexico. ***Reforestation and aquifer recharging through a public-private partnership***. Focus: *Pronatura, in partnership with the Coca-Cola Foundation of Mexico and three agencies of the Mexican federal government (SEMARNAT, Secretariat for the Environment and Natural Resources; CONAFOR, National Forestry Commission of Mexico; and CONANP, National Commission on Protected Natural Areas), has conducted the National Program for Reforestation and Water Harvesting. Started in 2007, the program has, as of 2014 reforested some 58 million hectares, planted 61 million trees, and benefitted more than 774 communities. This presentation will explain how the program was funded, where it goes from here, and the likelihood that it can be replicated in other countries.* ([Paper available on page 40](#))

4.3 **Roberto Peralta**, Peralta, Gutiérrez y Asociados Limitada Abogados. ***Response and Question Moderation***.

3:30 pm Coffee break

4:00 pm TOPIC 5: EMERGING POLICY & FINANCE FOR LAND CONSERVATION IN THE AMERICAS

5.1 **Rand Wentworth**, President Emeritus, Land Trust Alliance (USA) and Resident Fellow, Harvard Kennedy School Center for Public Leadership, Cambridge, Massachusetts, USA. ***Success,***

at Long Last: Enhanced Conservation Tax Provisions in the United States. Focus: The strategy and implementation of a multi-year, ultimately successful campaign in the United States to establish enhanced tax credits for conservation easements. ([Paper available on page 45](#))

5.1 **Pancho Solis**, Consulting Conservationist, Santiago, Chile. **A Work in Progress: the Chilean Derecho Real de Conservación.** *Focus: the multi-year campaign to pass legislation regarding the Derecho Real de Conservación, an inventive legal structure enabling land protection in Chile analogous to conservation easement in the United States and Canada.*

5.3 **Laura Johnson**, Director of the International Land Conservation Network and Chairperson, Land Trust Alliance, Concord and Cambridge, Massachusetts, USA. **Response and Question Moderation.**

5:15 pm Afternoon Wrap-Up session

5:30 pm Afternoon Adjournment

7:30 pm: Evening Reception

8:00 pm: Dinner and Musical Interlude

9:00 pm: **Keynote Panel: Land Conservation - the Road Travelled, and the Road Ahead for Chile**

- **Rafael Asenjo**, Chairman, Environmental Tribunal, Santiago, Chile
- **Jorge Burgos**, Former Minister of the Interior, Government of Chile
- **Alfonso De Urresti**, Senator (Valdivia), Chair of Constitutional Committee, Chile
- **Alejandro Quintana**, Grasty Quintana Majlis & Cia, Abogados, Santiago, Chile
- **James Levitt**, moderator

([Papers available on page 50](#))

Thursday, September 29, 2016

8:00 am Yoga or morning hike (optional)

9:00 am Breakfast in the dining room

9:30 am CONCURRENT: TOPICS 6 AND 7: Private and Civic Sector Conservation Initiatives

TOPIC 6: VALUE CAPTURE

6.1 **Enrique Silva**, Lincoln Institute of Land Policy, Cambridge, Massachusetts, USA. **An Overview of Value Capture.** *Focus: Privately funded improvements by land-owners can increase the value of their land and property. Public actions, such as investments in infrastructure, the provision of public services, and planning and land use regulation, can also affect the value of land and property. Value capture is a means to realize as public revenue some portion of that increase in value through various revenue-raising instruments. Silva, who supervises research that ranges from land-based fiscal instruments, the fiscal and land policy dimensions of large scale urban projects, affordable housing and urban segregation, to planning regimes and climate change adaptation, has helped policy makers across North and South America better understand and effectively use this tool. ([Paper available on page 53](#))*

6.2 **Maria Cristina Rojas Eberhard**, Urban planner advisor, Columbia. *The Municipality of Bogotá, Colombia has been considering using land value capture mechanisms to purchase the van der Hammen urban forest reserve and secure it as a key component of a larger planned green belt or buffer zone for Colombia's capital city. The case highlights the challenges both the private and public sector face in securing large conservation areas in the context of rapid urbanization and high demand for land to accommodate housing. Currently, the Municipality of Bogotá is considering re-zoning the land in and around the reserve to allow development, a move which has also mobilized academic and civic interests to consider other ways to maintain and finance the reserve as part of the city's green cordon.* ([Paper available on page 56](#))

6.3 **Amy Cotter**, Lincoln Institute of Land Policy, Cambridge, Massachusetts, USA. ***Response and Question Moderation.***

TOPIC 7: THE POWER OF CONSERVATION FINANCE NETWORKS

This will be an interactive panel discussion featuring:

- **Sylvie Goyet**, Conservation Finance Alliance, Noumea, New Caledonia ([Paper available on page 57](#))
- **Leigh Whelpton**, Program Director, Conservation Finance Network, Arlington, Virginia, USA ([Paper available on page 60](#))
- **Peter Stein**, Managing Director, Lyme Timber Company and Founder of the Conservation Finance Boot Camp, Hanover, New Hampshire, USA.

11:00 am Coffee Break

11:15 am TOPIC 8: WHERE DO WE GO AFTER PARIS?

This panel will consider how the climate change and land protection communities have an imperative to work together to catalyze public and private investment in the 21st century (e.g., in carbon markets, renewable energy markets, sea-level rise adaptation/storm water control markets and desalination markets, yielding hundreds of billions or trillions per year of green and gray infrastructure investments)

Panelists

- **Daniela Martinez**, Senior Associate, Quintanilla & Busel Niedmann ([Paper available on page 61](#))
- **Ken Berlin**, President and CEO, The Climate Reality Project, Washington, DC, USA ([Paper available on page 65](#))
- **David Boghossian**, Managing Director, Commonwealth Impact Partners, Cambridge, MA ([Paper available on page 72](#))
- **Jared Chase**, former Chair, State Street Global Alliance, State Street Bank, Boston, MA ([Paper available on page 77](#))
- **James Levitt**, Moderator

1:00 pm Lunch

2:00 pm ***Plenary Discussion – Next Steps and Internetworking.*** *Focus: How can we use the networks that are now emerging, as well as the emergence of trillion dollar markets to catalyze the growth of conservation finance?*

3:00 pm Adjournment

Appendix 1: Workshop Papers

The following compilation offers perspective on the presentations given at Las Majadas de Piqué in September 2016. They are organized along the same lines as the agenda, available beginning on page 6 of this report. Collectively, these pieces represent a tremendous amount of preparatory work on the part of the authors, for which the conference organizers are extremely grateful.

Overview

James Levitt, Manager, Land Conservation Programs, Lincoln Institute of Land Policy and Director, Program on Conservation Innovation, Harvard Forest, Harvard University, Cambridge, Massachusetts, USA

The following is an adaptation of an interview with James Levitt by Javier Rodriquez, published in Qué Pasa magazine in Santiago, Chile on September 30, 2016. This adaptation and update is based on the original Spanish language publication, available online at <http://www.quepasa.cl/articulo/ciencia/2016/09/chile-esta-llamado-a-ser-uno-de-los-focos-verdes-mas-importantes-del-planeta.shtml/>. Photographs by Marcelo Segura.

Chile is destined to be one of the most important green focus points on the planet

An interview with James N. Levitt of the Harvard Forest, Harvard University and the Lincoln Institute of Land Policy

James Levitt, Director of the Program on Conservation Innovation at the Harvard Forest, says that Chile, in the short term, can develop an image similar to that of New Zealand, thanks to a new law that allows private landowners to designate their land to the State for conservation in perpetuity. In visiting Chile this September, Levitt also celebrates the initiatives of Douglas and Kristine Tompkins in the south of the country, and says that there is still time to combat global warming.

In the late 1970s, a young American named James Levitt completed his degree in Anthropology from Yale University, and got a job with the United States National Park Service to work on one of the projects which, at the time, was of great interest to President Jimmy Carter: to protect the lands of Alaska in the context of ongoing negotiations to settle native land claims and build the Alaska oil pipeline – a huge system of steel piping, stretching from Alaska's North Slope to the Prince William Sound that eventually enabled the extraction and transportation of oil to customers around the world.

Levitt was hired as the Assistant to the Special Assistant to the Director of the National Park Service. He served as a member of a team that at the time was given the difficult task of providing information to the United States Congress regarding the proposed creation of a network of protected areas in Alaska – a mosaic of protected places that would comprise over 40 million hectares of national parks, forests and wildlife refuges. Thus, Levitt became a privileged witness to the historic achievement that changed the history of land conservation: the creation of, at the time, the largest area of protected land in the world.

This week Levitt was in Chile, as a primary organizer of the workshop on “Emerging Innovations in Conservation Finance,” held at Las Majadas de Pirque. He came in his dual role as Director of the Program on Conservation Innovation at the Harvard Forest, Harvard University and as Manager of Land Conservation Programs at the Lincoln Institute of Land Policy. In these positions, he has closely followed the status of land protection in Chile -- particularly after President Bachelet signed, on the 13th of June, the decree that made official the Derecho Real de Conservación (DRC). The DRC allows private landowners to designate their land for conservation in perpetuity. Such a designation cannot be broken or revised in the future. In addition, of course, he has closely followed the conservation initiatives of the late Douglas Tompkins and his wife, Kristine.

Que Pasa: What did you do to inform policy makers regarding the proposed project in Alaska?”

- Levitt: We built off of the realization that people in the United States saw the Alaska initiative as an important milestone in human history. We believed, as President Lyndon Johnson had said: “If future

generations are to remember us with gratitude rather than contempt, we must leave them more than the miracles of technology. We must leave them a glimpse of the world as it was in the beginning, not just after we got through with it.” Today, particularly in the context of climate change, it is urgent for us to protect the maximum amount of natural capital that we can, because that natural capital is the foundation of life on earth. We have to do this not only for ourselves, but also for generations to come.

How did you negotiate with indigenous people?

- In Alaska, Indian tribes are organized in what are called “Native Corporations” that hold land and property for the benefit of their people. The Native Corporations participated in the conversations about the construction for oil pipelines and establishment of national parks and other protected areas. In general, the majority of native peoples were in agreement with us. The majority of them wanted to protect their lands.

What was the impact of this project on the way in which Americans view the protection of land?

- Americans today see Alaska as part of our shared national heritage. We define ourselves in some ways through this shared identity. It is important to note that the conservation of land in my country has a history that is nearly 400 years old. The United States, as a democratic society, has for many decades protected open spaces, for local community use, as well as in the form of national parks and forests. I believe the effort to protect open spaces in Alaska reflects our national interest in protecting our most beautiful and important places.

Why do they say that land conservation is by necessity a multidisciplinary job? For you, it's very important to include the actions of NGOs, private landowners, the State, academics, and also to include writers and artists, correct?

- Because in the last two centuries, we realized that in order to protect the “fabric of life on earth,” we needed to create grand conservation areas, with corridors that span thousands and thousands of kilometers. And for this to happen, we need to engage all of these sectors, as well as landowners, as protectors of our land. People respond to arguments that are scientific and economic, as well as those that involve the arts, music and religion. We need to use the appropriate language in order to allow conservation to resonate with as many people as possible.

The Uninformed Donald Trump

Do you believe that Chile is a leader in this field?

- Yes, Chile is set to become one of the most important green places on the planet. Indeed, it is already famous at the global level: visitors to Chile are often aware that you can come here if you want to see spectacularly beautiful mountains, snow, and green parks. You know that you will find it all here.

Why do you think that Chile is so strong as a center for conservation?

- For various reasons. Chile has a strong rule of law and a good land title system. You know who owns each parcel of land and if it is or is not protected. It also has a healthy economy, which permits the Chilean people to begin to consider philanthropy. Before these elements were in place, it was much

more difficult. And no less important, it is because Chileans are proud of their country. I've been here six or seven times in the last decade. It is impressive that, in each place that I have visited, the guides want to show and tell me everything. And it is clear that none of these people want to see their place destroyed. All of these factors lead me to believe that Chile has everything to develop a national identity and brand similar to that of New Zealand.

You mentioned climate change. How can we respond to this phenomenon?

- This is one of the greatest challenges of our time. There is a study by the Global Commission on the Economy and Climate that estimates that in the next 15 years, we will have to invest, as a global community, something like 90 trillion dollars in infrastructure in order to continue our economic activities and to respond to climate change -- to combat sea level rise, to respond to the increase of average temperatures, to cope with the increased intensity of storms, and to discover forms of energy production that do not pollute the air and contribute to the effects of climate change. It is urgent that we create appropriate green and gray infrastructures that include the protection of open spaces, coastal zones and coral reefs. We have the scientific knowledge. What we need is the political and cultural will before it is too late.

It's not too late?

- No, technology is advancing by leaps and bounds. When I was in college, the cost of solar cells was above one hundred dollars per kilowatt. Today, bids to build new solar systems are coming in with solar cell costs at less than one dollar. It gives me hope to see that this is, for example, happening in countries like Chile.

In what sense?

- A decade ago, Chile was considering the creation of hydroelectric centers in the south of your country that would have disrupted massive river ecosystems. Much of the power that would have been produced by those dams would have been sent over a massive transmission network to Santiago. Today, those massive hydro projects are no longer being actively considered. This is because, in Chile there exists the political will and the forum to discuss and debate these issues. And Chile is already realizing that wind and solar, in places such as the Atacama Desert, are important sources of energy. That is, Chile has changed its way of looking at how to face the challenges of a country that is undergoing development. It has decided to continue its growth, while protecting natural resources. Chile is trimming its demand for large volumes of fossil fuels that must be imported from a foreign country at a high cost. The nation is seeking ways to replace these fuels with self-sustaining options obtained from within Chile. In this sense, Chile again has the opportunity to become a leader, setting a good example for the rest of the world.

Donald Trump, presidential candidate in your country, has denied the existence of climate change.

- I am in complete disagreement with Trump's current claim that "climate change is a hoax." That point of view is entirely uninformed.

A Pathway for the Parks

One of the first times Jim Levitt visited Chile was 8 years ago, when he helped to organize a conference at Universidad Austral, in Valdivia. He still recalls the grand Alerce trees, whose name he continues to struggle to pronounce. And it was at this venue that Jim also met with Douglas Tompkins' wife and partner in conservation, Kristine.

Levitt celebrates the Tompkins' legacy, particularly at Pumalin Park, and applauds the over 400,000 hectares that their foundation, Tompkins Conservation, is offering to the government, with the commitment that they will become part of a new network of national parks in the south. Together with land dedicated to the National Park system by the State, this would become an historic donation of land by a private landowner to a State. The new group of parks will tentatively be known as *la Ruta de los Parques* (the Route of the Parks).

In June of this year President Bachelet signed the law that formalized the right of a private landowner to donate their land for conservation in perpetuity. Do you think that this method of conservation is a step in the right direction?

- This advance in Chilean law has become one of the most important achievements in conservation worldwide. In fact, I know that many countries are beginning to look to how Chile made this happen and are wondering how they might replicate something similar elsewhere.

For example?

- I would prefer not to say, but they are other governments in South America and Europe.

How can we motivate some of the largest Chilean landowners to donate their lands, similar to Tompkins?

- Well, the case of Doug Tompkins is a special one. He did not need added motivation, in fact he motivated the rest. He and his wife are exceptional examples, recognized worldwide. Now, I believe that for the average homeowner, who has a small farm or a large piece of land, the key is to sit with them in the kitchen and to talk face to face and build confidence. To make the landowner understand that their lands can remain the property of their family and that they will be able to continue to live off of the land, but that they are also securing Chile's natural heritage for the next generation. To help them understand that this is a part of the world that they are giving as a gift to their grandchildren.

Tompkins said that in order for conservation to be effective, it has to be "big, wild, and connected." Do you agree?

- I believe that yes, in many cases, it needs to be big, wild, and connected. But it also, in some cases, conservation needs to include working landscapes. In the United States, we have many protected forests, including some that are also in production. We have to arrive at a level of production where landowners profit, but also protect biodiversity, cultural treasures, and use protected lands for economic purposes beyond tourism. In fact, several of the largest tracts of private land protected with conservation easements in the United States are forests currently in production in places like Maine and California. The landowner families can continue to selectively harvest trees on these properties, but will, at the same time, perpetually safeguard the diversity of life in the forest.

Field Trip: The PiC Approach to Crowdfunding for Land Conservation **Pablo Rodriguez, Co-founder, Preserve in Community (PiC), Chile**

Pablo Rodriguez discusses the Preserve in Community (PiC) model, in which they use green crowdfunding to create and preserve natural parks in Chile. PiC's mission and practice involves the following: promoting the creation of natural parks in order to preserve diverse ecosystems; managing these parks with state of the art tools, theory and technique; promoting ecological preservation and restoration as a tool for social, environmental and economic development; promoting agreements for applied scientific research, dissemination, innovation and participation in ecological preservation; and strengthening the ties between the private, public, academic and civil society involved in ecological preservation. The following paper was written by Pablo Rodriguez in preparation for the Workshop on Emerging Innovations in Conservation Finance, held at Las Majadas, Chile on September 26-28, 2016.

The PiC Approach to Crowdfunding for Land Conservation

We know that we need natural resources for progress, but we also know that this brings serious consequences to our environment. Climate change is now affecting every country on every continent; people are experiencing the significant impact of global warming. Deforestation, extinction (which leads to a loss of biodiversity), lack of clean water, natural resource depletion, changing weather conditions, rising sea levels, more extreme weather events, loss of world heritage, and air pollution—these are some of the world's biggest problems, just to name a few, and they all have one thing in common: they are human-caused. Man is destroying the world one second at a time at outrageous rates: the past 25 years for example, we have lost 129 million hectares of rainforest and extinction is occurring at one hundred times the natural rate. These are world-wide problems that cannot be solved with one invention or one kind of service, but problems that require a collective effort from the entire human population.

This is why it is so important to preserve our environment and different ecosystems around the world, not only because of their enormous beauty, but also because without them, we wouldn't even exist. So, with this in mind, we created PiC.

PiC, Preserve in Community, is a crowdfunding platform with the ultimate goal of creating natural parks and preserving different ecosystems around the world. In an interactive and educational manner, we raise funds to create new parks to be preserved and raise funds also for other organizations with conservation projects. PiC's objective is to become the biggest community of preservationists on the planet, an ecological movement and a real action to protect our environment and make a positive impact. WE MADE IT SIMPLE.... From \$1usd = 1 pic = 1 m², an annual membership.

How?

In the PiC model, each pic park has a number of "pics" to be preserved. One pic represents one square meter of land, which can be preserved for \$1USD. People or companies (for their social corporate responsibility programs or campaigns) can buy pics.

Users or cofounders will have free access to the park and will receive constant information about park implementations and upgrades.

Pricing: Each annual dollar is divided for: \$0.50 cents to buy new PiC Parks, \$0.25 cents to pay for research and preservation management, \$0.15 cents to maintain and build park facilities, such as campsites and trails for

visitors of the park, and \$0.10 cents for the PiC platform and community building, which includes updating servers, new features, and other improvements to the website itself.

On the platform, there will be different PiC Parks to choose from. Each PiC Park is labeled with a colored pin: green, blue, or orange (coming soon). Each one of the pins represents a different kind of preservation. The green pins are parks that PiC has bought in order to preserve that land and create a new park. The blue pins are land trust organizations that have already started preserving land and different ecosystems and need financial support. Through PiC platform, they will raise money to preserve the land they are protecting, as well as financing their conservation project or initiative.

Lastly, the orange pins (coming soon) are world heritage preservations. Working with Universidad Politecnica de Madrid and their PHI Project (Patrimonio Historico-Cultural Iberoamericano), PiC hopes to help the properties that are currently in danger, in addition to funding the individual projects that students at the university are already working on. People can preserve any pic, regardless of the pin's color, in the same way through the platform.

People simply go into the platform, choose which PiC Park they would like to support, and spend \$1 USD to preserve one pic for a year. After paying for their pic, they become a co-founder of the park and on the platform map they can put a picture or selfie and share it, through other social media platforms (i.e. Facebook, Instagram, Twitter, etc.).

Integration; Benefits & Social Corporate Responsibility

The importance of social corporate responsibility (SCR) in marketing conservation activities continues to grow as companies are more and more interested in how their work impacts the environment. People are more willing to buy a product from a company that is conscious of the environment while making business decisions. PiC is offering a revolutionary way to link companies with their clients by relating some of their products with environmental preservation. When a customer buys a product, he gets a specific amount of square meters to preserve in any of the available PiC Parks or PiC Projects.

If the company is willing to join us to preserve a big area of land, then they can sponsor a complete park and name the park after their brand. They can also get some pics to associate with their products. In addition, "The Company" may award or give out discounts to their customers when they buy a pic in "The Company's" park through our platform.

PiC is intended to be a nonprofit, tax-exempt charitable organization under Section 501(c)(3) of the Internal Revenue Code, meaning that donations are tax-deductible as allowed by law. When "The Company" sponsors a complete park, the land that they are preserving is a donation to PiC Foundation, so The Company may get the tax benefit that the law provides.

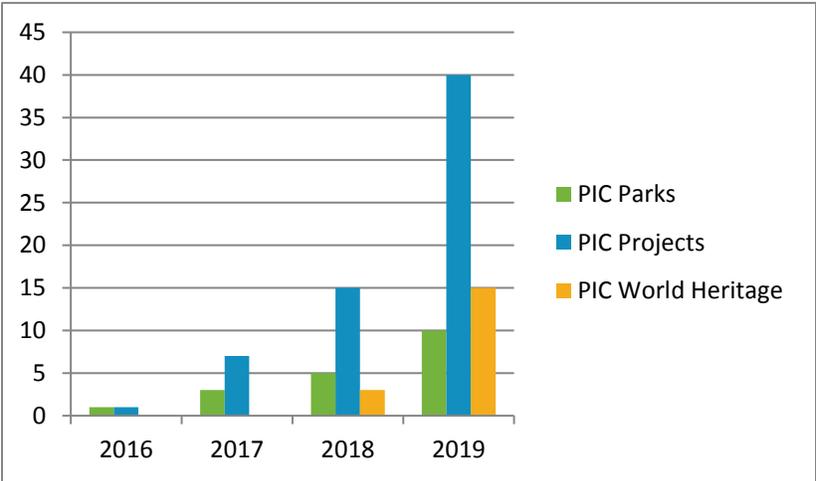
Market

There are more than four thousand land trusts in the world and more than one thousand world heritage sites. The goal is to have, by the end of 2019, 1% of market representation, thus involving people of all ages and race. Our first parks will be settled in Chile, and by December 2016, the objective is to have our first park in the USA or North America, three completed parks in total. By 2019, we aspire to have a total of 65 preservation pins; 10 green pins (new parks), 40 blue pins (crowdfunding for existing parks or land trusts projects) and 15 orange pins (world heritage sites).

Similar existing models of private land conservation include websites that provide statistical information and ask for donations and volunteers to preserve the land they buy and own. However, unlike these other models, PiC created the first green social media and green crowdfunding platform.



PiC PARKS EXPECTED GROWTH



PiC promotes environmental preservation through the use of social media. By preserving the environment, humankind is preserving a source of clean, renewable energy, which prevents natural resource depletion in the preserved lands. Preserved environments filter and clean the air we breathe, thereby reducing air pollution. This action of conserving land also prevents deforestation in the protected lands, thus preventing a great loss of biodiversity and a reduction of global warming. Furthermore, it also provides clean drinking water and prevents a loss of world heritage in the preserved lands. These are only just a few of the benefits that come from preserving the environment, hence highlighting the importance in environmental preservation.

PiC aims to be a milestone in strengthening and coordination of global efforts for conservation.

Session 1.1: Creating National Parks and Generating Prosperity along the Ruta de los Parques in Patagonia

Hernán Mladinic, Executive Director, Pumalin Park and Project and Director, Yendegaia Foundation, Tompkins Conservation, Chile

Following is an excerpt of “What’s Life Like After Doug Tompkins,” (an interview with Kristine Tompkins) originally published in Outside Online, by Stephanie Pearson, on February 8, 2016. The full article, with photography, is available at <https://www.outsideonline.com/2054286/kris-tompkins-remembers-doug-and-shares-her-future-plans>.

What’s Life Like After Doug Tompkins

Stephanie Pearson

February 8, 2016

Last Sunday, the world’s most influential conservationists bid Doug Tompkins farewell at the Herbst Pavilion, a cavernous, light-filled space that extends 500 feet over San Francisco Bay. Tompkins was a co-founder of The North Face and Esprit who went on, with his wife, Kristine, to protect more land than any private individuals in history. He **died on December 8** from hypothermia after a kayaking accident on Lago General Carrera, a large glacial lake that straddles Chile and Argentina in central Patagonia.

Juan Pablo Orrego, a Chilean activist who worked closely with Tompkins in his fight against dams, played “Gracias a la Vida” on his classical guitar; Gary Snyder, the poet laureate of deep ecology, read his piece “For the Children”; and Patagonia founder Yvon Chouinard, who was with Tompkins the day he died and **adventured with him** for almost 60 years, assured the 1,100 mourners, including Earth First! founder Dave Foreman and ecologist Carl Safina, that the Tompkins’ conservation efforts will live on.

“By his actions, Doug became the teacher we all needed, and he still is. I’m here to say for Kris and her team that, with the support of all of you, his work is going to continue,” Chouinard said.

The woman who will bear out Tompkins’ legacy is Kristine McDivitt Tompkins, 65, Doug’s wife of 21 years, who retired from her job as CEO of Patagonia, married Doug in 1994, and moved to Chile the same year to become his partner in their conservation efforts. Over the past quarter-century, their four foundations have invested nearly \$300 million to establish protected areas in Chile and Argentina in regions that Doug began exploring in his teens to ski and, later, to climb with Chouinard.

On the ground, the Tompkins **weren’t always viewed favorably**. Locals labeled them as neocolonialists and a national security risk, and the governments of Chile and Argentina were hesitant to turn the Tompkins’ land into protected parks. Over the years, the Tompkins have slowly earned the trust of locals and government officials and have helped to create five national parks, totaling roughly two million acres. Working closely with them all, Kristine plans to execute six more. In Chile, within two years, the Tompkins’ foundations will donate more than a million acres that, combined with public lands, will create five new national parks and expand three existing parks for a total protected area of 10 million acres. In Argentina, the focus is on donating 333,592 acres to help create **Iberá National Park**, part of a 3.2 million-acre grassland and marsh, where a staff has already begun to rewild the landscape and reintroduce species like the jaguar.

“One of the things I think [Doug] would say today if he could would be that we get out of bed every day and do something fierce for those things that call to us, for those things that we love,” Tompkins said in her tribute to her husband at the service.

The regions where the Tompkins have been working are threatened by massive hydro dams, mines, unsustainable grazing practices, habitat destruction, and aquaculture. But according to her former boss, Yvon Chouinard, Kristine is up to the task.

“Kris worked for me for almost 25 years,” Chouinard told me. “I was the juvenile delinquent entrepreneur. Sometimes I’d have a crazy idea, and if it was crazy, she’d let it go. If it wasn’t, she would make it happen. Nothing’s going to stop without Doug. In fact, he was coming up with too many projects, and he was also a micromanager. We used to joke that he’d even choose the type of toilet paper if he could.”

With the exception of her husband’s memorial service on Sunday, Kristine hasn’t stopped working. She took a brief hiatus from the Tompkins Conservation office in San Francisco on Monday before she returns to her home in Chile to tell us how she plans to move forward.

OUTSIDE: Since Doug’s death, the presidents of both Chile (Michelle Bachelet) and Argentina (Mauricio Macri) have met with you for the first time to show support for your conservation work, and Doug was unanimously voted an honorary citizen by the Chilean National Congress. Do you think his death has created a new sense of urgency?

KRISTINE TOMPKINS: We’ve always felt a sense of urgency. That’s why we have all these proposals in front of the governments. These proposals are not new, but since the accident, it just adds fuel to the fire to get them done. Of course, Doug’s death had a tremendous impact all over the place, and I would say that there’s a tremendous awareness in both governments on both sides of the border that national parks are good for the country and the donations we have before them are worthy projects.

There’s so much at stake. How do you prioritize?

[Iberá National Park](#) in Argentina is a priority. Chile is a very large, complex donation. It’s just over a million acres and involves [Pumalín Park](#), [Patagonia Park](#), and a few other smaller additions. But absolutely the two principals are Pumalín and Patagonia.

It sounds as if the South American conservation community has really stood behind you. Is that true?

Yes, starting with our own team members. We have extraordinary people working in Chile and Argentina. It’s not just the Doug and Kris show. It’s very serious and talented people who have been working with us for up to 23 years...

Did you think of what would happen if Doug died first?

Of course. You would be nuts not to. I don’t know how you would avoid that.

Has your plan changed at all since Doug’s death?

No. On the conservation side, it’s full steam ahead on everything we’ve had going for almost 25 years.

Will you ask anyone else to step in now to help with his role?

No. I have a board and a lot of like-minded conservationists who we partner with. I think people are more than ever at the ready to step up and help in whatever way that manifests itself...

Session 1.2: A Multi-Sector Initiative to Protect Rio's Water Supply

Rodrigo Medeiros, Vice President, Conservation International-Brazil, Rio de Janeiro, Brazil

Following is a blog post that originally appeared in Human Nature, Conservation International's blog, written by Rodrigo Medeiros and published on July 11, 2014. The full article, with photography, is available at <http://blog.conservation.org/2014/07/urban-jungle-restoring-rios-water-supply/>.

Urban Jungle: Restoring Rio's Water Supply

Rodrigo Medeiros

July 11, 2014

Over the last month, **millions of fans from all over the world looked toward Brazil**, as teams from 32 countries and four continents have been battling for the title of 2014 World Cup champions.

This Sunday, the city of **Rio de Janeiro will once again stage the final match**— the first time since 1950. Back then, thousands of spectators reacted in astonishment when Brazil lost to Uruguay in the final match. This week, my generation experienced the same feeling after the seven goals scored by the German team in the semifinals. Sunday's match will therefore be a stage for either the Germans or Argentineans to shine — may the best team win!

The city of **Rio has changed a lot throughout the years**. In the '50s, the city was still the capital of Brazil (it's since been moved to Brasilia) and its population was approximately 2 million. Today, this number has tripled.

During the last World Cup held in Brazil, Rio de Janeiro was in the midst of an urban revolution, with the opening of new avenues and construction of modern buildings downtown. The **lack of water, however, was already a critical problem for the city due to deforestation in urban areas and a poor distribution system**, and even inspired the lyrics of one of the most popular Carnival songs: "Rio de Janeiro / city that seduces us / during the day lacks water / during the night lacks energy."

In response to the city's water scarcity issues, Rio built the Guandu System, a mega project that continues to be the largest complex for water treatment and storage in Brazil. Upon its opening in 1955, the facility seemed to be the long-term solution. Today, however, the system has begun to show signs of exhaustion, and the **city is having trouble providing water in sufficient quality and quantity for its current population**.

For many cities, upstream **forests are vital for maintaining drinking water supply** for their millions of inhabitants. These forests act like a sponge, absorbing rainfall and slowly releasing it into rivers and streams. When these forests are cut down, rain erodes hillsides and rivers become clogged with sediment.

CI has been working with the city of Rio de Janeiro to find innovative solutions to this problem. At a meeting of the Clinton Global Initiative in 2013, we announced the **Water and Cities Initiative**, an undertaking born of the common interest of the cities of Rio de Janeiro, Bogotá and Mexico City to unite their efforts to secure drinking water supply by protecting and restoring the cities' watersheds.

Each city is implementing efforts for conservation, restoration and sustainable production to recover ecosystem services such as water purification, pollination and carbon sequestration, and is developing policies to address biodiversity loss.

CI is supporting this work through specific projects:

- In **Bogotá**, the city's water supply company and local, regional and environmental authorities are conducting studies related to biodiversity, ecosystem services and environmental conflicts in order to formulate and implement projects that will restore and protect ecosystem services in the [Chingaza-Sumapaz-Guerrero Conservation Corridor](#).
- In **Mexico City**, the [Water Forest Initiative](#) seeks to sustainably manage the watersheds that supply water to 23 million people in three cities, including Mexico City.
- And in **Rio de Janeiro**, government agencies and local communities in the Guandu watershed are working together to create and implement public and private protected areas, restore forest and identify priority areas for water production. By now, more than 4,000 hectares (almost 9,900 acres) of forest have been protected; the goal is to restore an additional 3,000 hectares (more than 7,400 acres) of degraded lands.

Mexico and Colombia did surprisingly well during the World Cup this year, delighting the world with their joyful and offensive football. Now, together with Brazil, these three countries have a chance to show to the world that if we cannot be #1 in football this year we are, at least, **walking hand in hand to overcome the challenges of water sustainability** — surely a greater victory.

Session 2.1: Leveraging Reinsurance Markets to Finance Conservation Investment

Kathy Baughman McLeod, Director of Climate Risk and Resilience, The Nature Conservancy (TNC), Arlington, Virginia, USA.

Insurance-driven infrastructure and safety improvements for the good of the public have a long track record. Kathy Baughman McLeod makes the case for insurers to increase municipal resilience while strengthening the health of the environment in her article “Can insurance initiatives help the environment?”, published in Business Insurance on September 27, 2015. The article can be accessed here:
<http://www.businessinsurance.com/article/20150927/ISSUE0401/309279990/1248>.

Session 2.2: Precision Conservation Designed to Enable Nutrient Trading and Mitigation Programs in the Chesapeake Watershed

Jeff Allenby, Director of Conservation Technology, Chesapeake Conservancy, Annapolis, Maryland, USA

Jeff Allenby discusses the potential of cost savings from investing in agricultural best management practices to implement the Chesapeake Bay's Total Maximum Daily Load (TMDL). The following overview was written by Jeff Allenby in preparation for the Workshop on Emerging Innovations in Conservation Finance, held at Las Majadas, Chile on September 26-28, 2016.

Facilitating Nutrient and Sediment Trading in the Chesapeake Bay Watershed

Introduction

Restoration in the Chesapeake Bay watershed has been an ongoing, formalized priority since the signing of the first Chesapeake Bay Watershed Agreement in 1983. Despite over 33 years of work, the health of the Bay and its tributaries has not fully rebounded, and restoration efforts are increasingly focused on high impact management techniques. These efforts are occurring as state and county governments struggle to realize the scale of work required to make the region's rivers and streams swimmable and fishable.

On December 29, 2010, the U.S. Environmental Protection Agency established the Chesapeake Bay Total Maximum Daily Load (TMDL). The TMDL lays out a "pollution diet" to restore clean water in the Chesapeake Bay watershed and identifies a goal of reducing nitrogen levels by 25%, phosphorus levels by 24%, and sediment levels by 20% by 2025. The Chesapeake Bay Program (CBP), a regional partnership composed of federal and state agencies, local governments, non-profit organizations and academic institutions, leads and directs Chesapeake Bay watershed conservation, restoration, and protection efforts, which culminate in the implementation of the TMDL.

In this role, the CBP Partnership has coordinated work to model ecosystems, water quality, nutrient and sediment loading, critical terrestrial and aquatic habitats, and ecological connectivity throughout the region. CBP has established a series of interim goals, and all bay jurisdictions have developed watershed implementation plans (WIPs) to allocate reductions across sectors and to define intentions to meet the TMDL goals. The goals and WIPs have been developed from a suite of models establishing loading and delivery rates for landscapes throughout the watershed. Expert workgroups have also set reduction efficiencies for a suite of best management practices to model the expected water quality benefits that certain actions would provide if they are applied.

Currently, allocations for each sector (i.e. agricultural, wastewater treatment, urban and suburban storm water, etc.) are viewed as independent of each other, and each sector is responsible for achieving its own WIP load reductions. CBP has indicated that cross-sector trading is acceptable, and most Bay states have an established mechanism for nutrient and sediment credit trading. However, to date, there have been few successful trades outside of pilot programs, and trading across states, or even across basins within a state, is still restricted in most jurisdictions.

Limitations of the Current System

There are a variety of reasons that nutrient and sediment credit trading have not been implemented more widely in the Chesapeake Bay. However, many of the underlying issues, which have reduced their appeal as a way to achieve significant water quality improvements at the lowest cost, relate to the inherent uncertainty associated with quantifying non-point source pollution and how that uncertainty translates to the market. Generally, the barriers can be grouped into four categories:

1. Difficulty identifying, evaluating, and comparing potential non-point source restoration opportunities across entire watersheds
2. Accommodating a wide range of variability in the performance of BMPs – both measured or predicted – within reduction efficiencies, leading to very conservative values
3. Dealing with high transaction costs – many small projects are needed to satisfy the demands of large customers
4. Reducing uncertainty is expensive
 - a. Point-nonpoint source trading often requires ratios of 2:1, or greater
 - b. In-person site inspections are required to assess baseline conditions and potential restoration actions that are appropriate for the site
 - c. In-person monitoring of BMP success and water quality over time is required to ensure projects are surviving and credits are being generated

Some of these issues can be attributed to the underlying models and data that are used by CBP to assess load allocations through the WIPs and the variability of the landscape not matching well with a “one-size-fits-all” approach to assigning BMP efficiencies. Other challenges are due to the lack of existing infrastructure to facilitate trading, as any given project is likely to only generate a fraction of the number of credits that most buyers will require. This then necessitates either a large number of individual transactions, each with individual planning and transaction costs, or a regional entity to act as an aggregator.

Of all the barriers, however, the need for a minimum of a 2:1 point-nonpoint ratio for trades provides perhaps the greatest challenge for private partners who would traditionally enter the market as credit aggregators and trade brokers. This safety margin has been put in place to ensure that low-performing projects, which generate fewer water quality benefits, still provide an equal offset. However, this requirement devalues agricultural credits to the point where it is often not cost effective to trade between point and non-point sources.

Overcoming Traditional Barriers

Over the last year, the Chesapeake Conservancy, together with two partner organizations, has processed a one-meter resolution land cover dataset for over 87,000 square miles, comprising all counties that make up the Chesapeake Bay watershed. This dataset, unprecedented in its resolution, size, and coverage in the Chesapeake, has required tremendous effort and coordination between the project partners, the Chesapeake Bay Program, as well as the states and counties for whom the data has been generated. This dataset will be incorporated into CBP’s future modeling efforts, including a 2017 update to the Watershed models, and has opened an entirely new analysis scale for environmental management in the Chesapeake Bay.

As partners throughout the Chesapeake Bay are exposed to the new data, a variety of applications are being explored to improve conservation and restoration decision-making. Ideas include using GIS and remote sensing tools to identify specific management actions, quantify their anticipated benefits, and prioritize limited funding, all while improving environmental outcomes in the Chesapeake Bay.

When combined with LIDAR-based concentrated flow path mapping, the Conservancy can provide a much greater understanding of where projects should be located to intercept surface water, delineate the landscapes that would drain through and be filtered by a proposed project, and evaluate the anticipated nutrient and sediment reductions that could be generated by either a specific project or by all of the potential projects within a watershed.

One of the most important aspects of these new data and analysis techniques is that organizations now have the ability to identify project specific characteristics with much greater detail than was previously possible. Through the use of web-based analysis tools that the Conservancy is building, practitioners can now quickly evaluate alternative site locations and designs without investing significant resources in fieldwork. This allows for projects to be located and designed to maximize the ecosystem benefits that could be generated. With this information, management agencies can also gain confidence in the likelihood that a practice, located in the right place and built to the right scale, will deliver higher reduction efficiencies than the overly conservative average efficiencies that are currently used. Large-scale iterative models are also being developed to identify all potential project locations within a watershed, and are evaluating the benefits of alternative practices for each site, thereby providing all levels of partners with the information they need to make effective decisions about which projects to fund and to understand how to best meet their water quality goals.

In an effort to reduce transaction and implementation costs, the Conservancy is also working with watershed groups and agricultural non-governmental organizations to understand which tools and information will be most helpful in project planning. The Conservancy sees a large role for these organizations to work as regional aggregators because they often have the best relationships with farmers and landowners, are already engaged in a number of restoration projects throughout the landscape, and have a strong understanding of what practices will work best based on site-specific conditions. Additionally, funding is often seen as the largest limiting factor to how many projects can be implemented by these partners in a year; most organizations have a large back-log of projects that could have substantial water quality benefits if there was enough funding to implement them. While this structure admittedly will require a considerable amount of work to setup, creating a single point of contact with which credit buyers can work will reduce transaction costs while also providing these organizations with substantially more funding to hire planning and implementation staff, ultimately accelerating the pace of implementation. As more projects are conducted simultaneously, there is also the potential for economies of scale to provide additional cost savings, either through the implementation of adjacent projects, which can be treated as a single project, through the bulk purchase of materials, or through contracting the construction on multiple properties as a single project.

Recent monitoring technology developments also have the potential to decrease costs traditionally associated with nutrient and sediment trading markets. Advances in satellite and aerial imagery and its collection frequency have dramatically decreased the cost of obtaining data with a resolution that is required to monitor whether or not a project has been installed and whether or not it is surviving over the life of the credit generation, which is typically between five and ten years.

The launch of entire constellations of new micro-satellites, from companies such as Planet Labs, are providing imagery with two to three-meter resolution and daily revisit times. Other higher resolution datasets, better suited to monitoring implementation and success, are being flown using aerial platforms on a yearly or bi-yearly basis. In cases where these platforms do not provide the temporal or spatial resolution needed to evaluate the success of a project, unmanned aerial vehicles, or “drones,” provide a relatively low-cost way to collect extremely high resolution imagery, down to three centimeter resolution, quickly and efficiently. This data not only provides two dimensional imagery, but can also be processed into three dimensional models to assess volumetric change, heights of trees, and other information that is useful for site planning. These datasets can also be quickly

compared over time to identify how much conditions have changed and if the practices are having the intended effect.

Conclusions

Even under current scenarios, safety margins, and with high transaction costs, research has shown that investing in agricultural best management practices has the potential to provide dramatic cost savings for implementing the Chesapeake Bay TMDL. A study conducted by the Chesapeake Bay Commission in 2012 found that allowing trading between point sources and non-point sources could provide up to a 36% reduction under even the most restrictive scenarios and up to a 49% cost savings if watershed-wide trading was allowed; a savings that is estimated to be almost \$189 million per year. If urban stormwater sources are also allowed to trade, the cost savings increase to between 79-82%, or a savings of \$1.47 billion per year, primarily due to the relatively high cost of controlling nutrients from urban stormwater runoff.

As discussed, there are a number of issues beyond just the economic aspects of implementing these projects that must also be addressed before trading becomes widespread. Chesapeake Conservancy believes that the application of new datasets will reduce the need for high safety margins, improve the targeting of practices to where they will generate the greatest number of credits, and decrease the cost of monitoring projects after implementation. These data and tools will also help to reduce the barriers to watershed and agricultural NGOs stepping into the role of regional aggregators. Leveraging their existing relationships with landowners and their knowledge of the landscape has the potential to increase the adoption of this model at the local scale, and will reduce the number of transactions that occur between buyers and sellers.

Additional reading and sources available at:

http://www.chesapeake.org/pubs/315_RIbaudo2013.pdf

<http://www.chesbay.us/Publications/nutrient-trading-2012.pdf>

Session 3.1 Green Bonds and Land Conservation: The Evolution of a New Financing Tool **Carolyn duPont, 2016 Graduate of the Joint MBA/MPA Degree Program at the MIT Sloan School and the Harvard Kennedy School**

Carolyn duPont, who now works in cleantech and water investing in Massachusetts, discusses the current trends and practices of the green bonds market, and the potential that green bonds may have in financing land conservation projects. The following paper was written by Carolyn duPont in preparation for the Workshop on Emerging Innovations in Conservation Finance, held in Las Majadas, Chile on September 26-28, 2016.

Green Bonds and Land Conservation: The Evolution of a New Financing Tool

Introduction

Since the initial World Bank green bond issuance in 2008, green bond issuances have increased rapidly year-over-year: in 2015, \$41.8B in green bonds were issued, with issuers to date ranging from Apple, to the government of China, to the District of Columbia Water and Sewer Authority.

But despite this rapid growth and the associated buzz, questions from both the investor and environmental communities continue to circle around green bonds and what they mean for financing environmental projects around the world. Are these bonds providing additional financing to new projects, or is it just a green label applied to the same issuances that would have already occurred? Are these green bonds providing cheaper financing to environmental organizations and projects? And, perhaps most troubling, is it possible that green bonds are just the latest episode of greenwashing?

In a 2015 study conducted through the Harvard Kennedy School and Lincoln Institute of Land Policy, we set out to answer these questions, looking specifically at the use of green bonds for sustainable land use and conservation.¹ Many conservation organizations working on land issues see huge opportunity with green bonds: the ability to bring new investors and scale to their land conservation efforts. At the same time, though, there is a fair amount of uncertainty around green bonds and how the market will grow and mature over time. There is a general sense of “wait and see” as to whether green bonds will emerge as a meaningful new financing mechanism in the conservation financing toolkit.

Through interviews with green bond issuers, banks, investors, and environmental organizations, our work set out to both identify current key challenges to the growth of green bonds for land conservation, as well as to outline a set of next steps to encourage the growth and utility of green bonds.

The Need for New Conservation Financing

The excitement around green bonds is heightened by an underlying reality in the realm of conservation finance: as conservation needs around the world are increasing with population pressure, consumption, and development, dollars for conservation are plateauing or dwindling.² These investments continue to fall far short of the estimated \$300-400B required annually to meet conservation priorities across the world.^{3,4} Furthermore, traditional governmental sources of conservation financing are in jeopardy – as demonstrated by the US conservation community’s battle to have the Land and Water Conservation Fund temporarily reauthorized in late 2015.⁵

Given that traditional philanthropic grants and government funding will be insufficient for land conservation, there has been an increasing focus on what role private conservation investments could play in addressing the shortfall. Between 2009-2013, private sector conservation investment grew at a rate of 26% annually.⁶ Sustainable food and fiber production, which includes forestry and agriculture and, therefore, ties closely to sustainable land use investment, accounts for two-thirds of such investments.⁷

¹ For the context of our work, “sustainable land use and conservation” encompasses a broad range of activities and investments that help protect natural resources. This could include sustainable resource extraction on “working lands” such as through sustainable forestry or agriculture, restoration of habitat for species and for human benefit (e.g., wetland restoration to protect against coastal flooding), or traditional preservation of land to limit human use.

² “Investing in Conservation,” NatureVest and EKO Asset Management Partners, November 2014: <<http://www.naturevestnc.org/reports>>.

³ New research is examining this \$300-400B estimate and may suggest a lower estimate of required conservation spending. Spencer Meyer, Yale School of Forestry, personal communication, September 4, 2015.

⁴ Credit Suisse, World Wildlife Fund, McKinsey & Company.

⁵ Joby Warrick, ‘Interior Secretary: Hill Funding Divide Could Threaten National Parks’, *The Washington Post*, 23 May 2015 <http://www.washingtonpost.com/national/health-science/threat-to-nations-parks-seen-as-congress-stalls-on-renewing-fund/2015/05/23/3ede32c4-015e-11e5-8b6c-0dcce21e223d_story.html> [accessed 6 July 2015].

⁶ “Investing in Conservation,” NatureVest and EKO Asset Management Partners, November 2014: <<http://www.naturevestnc.org/reports>>.

⁷ Ibid.

Green Bonds & Land Conservation

There is both a need and an opportunity for green bonds to play a role in bridging the conservation financing gap described above and in meeting investor demand for conservation investment vehicles. Reporting challenges and the relatively recent emergence of green bonds makes it difficult to determine exact numbers of investment into sustainable land use and conservation. However, it is safe to conclude that just a small fraction of green bonds has been allocated to land conservation projects to date.^{8,9}

A central question is how can green bonds be used – and in some cases how have they been used – for sustainable land use and conservation finance? Green bonds have the potential to finance a broad range of sustainable land use and conservation efforts, including activities such as those outlined in the table below:

Project Type	Examples Use of Proceeds
Conservation easement purchase	Extinguishment of development rights to increase natural wetland buffering; control of agricultural land use rights in upstream land holdings to increase sustainable practices and reduce run-off
Land purchase	Purchase of land holding to convert into land conservation (e.g., grassland conservation), or to establish more sustainable land use operation (e.g., transition from conventional to sustainable agriculture)
Establishment of a forestry or agricultural production operation	Construction of a timber mill for certified sustainable wood or set up of a plantation of sustainably produced and certified agriculture product (e.g., cocoa) – though equity is more commonly-used than debt to finance forestry investments
Establishment of a recreation or ecotourism operation	Construction of the physical structures and infrastructure required to operate a recreation area or an ecotourism operation
Payments for ecosystem services	Establishment of carbon finance projects to protect standing forests, or establishment of a framework for payment for watershed services
Mitigation banking	Development of biodiversity offsets (e.g., under the EPA Clean Water Act) to compensate for the residual biodiversity impacts of project development ¹⁰

Market Outlook: Green Bonds and Land Conservation

As the market for green bonds and land conservation matures, our interviews with investors, issuers, and conservation practitioners revealed six market insights.

⁸ In considering the multilateral development banks, for instance, a Bloomberg Energy Finance analysis in 2014 showed that of green bond issuances by the European Investment Bank, the World Bank, and the African Development Bank, \$3.6B in proceeds went to renewable energy, while just ~\$0.1B went to forestry projects, which can be seen as a proxy for sustainable land use investments. Bloomberg New Energy Finance.

⁹ The Climate Bonds Initiative also found that only 1% of total bond issuances related to climate change have supported agriculture and forestry projects – an indicator of how sustainable land use and conservation is not as common a project type as others that have used bond financing. Climate Bonds Initiative, *Bonds and Climate Change: The State of the Market in 2014*, July 2014 <<http://www.climatebonds.net/files/post/files/cb-hsbc-15july2014-a3-final.pdf>>.

¹⁰ Personal communication, Fabian Huwyler, 7 May 2015.

1) Articulating cash flows remains the biggest challenge for structuring green bonds for sustainable land use and conservation. It’s relatively easy for investors to understand how a renewable energy project, such as wind development, can generate revenue to repay a bond: physical assets can be used to back the deal, and electricity sold to the grid – especially with a Power Purchase Agreement in place – has a clear price and allows investors to make cash flow projections. It’s much more difficult to understand how a conservation project will generate sustainable revenue.

In the face of this challenge, the table below lays out five possible categories of cash flow types from sustainable land use and conservation projects. While it may be possible to project future prices of commodities and recreation fees, as well as tax revenues, it is much more difficult for investors to have certainty around the value of ecosystem services credits or future avoided costs. As a result, investments that are structured around these types of anticipated revenues tend to be one-off, geographically-specific, and difficult to scale.

Revenue Type	Description	Examples
Sustainable Commodity Production	Commodities produced on the land that have an existing value in the market, such as sustainable forest or agricultural products	Agricultural products, timber, non-timber forest products
Recreation & Ecotourism	Revenue generated from land use by recreational users or tourists, generated by visitor fees or concessions	Recreation fees, ecotourism concession
Tax Revenues	Tax and regulatory frameworks that associate sustainable land use and conservation projects with quantifiable tax benefits	Tax Increment Financing (TIFs), Real Estate Transfer Taxes, Payments in Lieu of Taxes (PILOTs), linkage fees
Credits for Ecosystem Services	Value of environmental services or resources in markets where these services or resources have agreed-upon prices	Water credits, stormwater management credits, carbon credits, river quality credits
Risk Mitigation & Avoided Costs	Projects whose environmental benefits help the borrower to avoid costs that would otherwise be incurred	Municipality or corporation weighing costs of green vs. grey infrastructure investment, e.g., upstream riverside land conservation to reduce the need for downstream water filtration infrastructure investments

2) Investors are not ready for project-revenue backed bonds for land conservation. The difficulty in projecting cash flows around land conservation projects means that those cash flows are viewed as risky – therefore, investors are not ready for green bonds backed only by project cash flows, and that riskiness would translate into a high cost of capital for the borrower. Even in cases where projects clearly generate revenue – such as a timber project – the projected revenue may not be sufficient to cover the full repayment of the bond. As a result, green bonds for sustainable land use and conservation to date have been backed by the full faith and credit of the issuing organization.

3) Currently, concerns about “additionality” are justified. Of the sustainable land use projects that have been funded by green bonds to date, most, if not all, would have been funded regardless by a “traditional” bond. This leads many in the conservation community to be concerned that green bonds are not actually providing any new financing for land conservation, as well as to express skepticism that green bonds are just a convenient marketing tool for issuers.

4) Green bonds do not currently offer a better cost of capital for sustainable land use projects – but that may be changing. The growth of green bonds for land conservation will require both demand from investors, as well as a “supply” of investable projects from the conservation community. The conservation community, in turn, has been waiting for a clear signal that there is a benefit to pursuing green bond financing for their projects, aside from the positive marketing benefits. To date, green bonds are not providing a better cost of capital than traditional bond financing – that is, investors are not yet willing to pay a premium for the green label, and, as a result, borrowers are not receiving a lower cost of capital. At the same time, green bond issuances have been consistently and significantly oversubscribed, and many experts we consulted predicted that such high levels of demand could over time result in an increased willingness to pay a premium for green bonds.¹¹

5) Matching scales is an ongoing challenge. Another “supply” issue in this equation is finding land-related deals that match the scale of green bond issuances. Large investors are seeking large projects to fund, but finding land conservation opportunities at this scale can be challenging. The average bond issuance for forestry and agriculture projects is estimated to be \$106M, which is significantly larger than would be required for many smaller-scale land conservation efforts.¹² Many land conservation initiatives may be too small to appeal to investors, unless multiple projects can be bundled into one issuance.

6) Efforts to define “green” may hinder the growth of the market. Many conservation organizations are skeptical about green bonds because of the lack of an agreed-upon standard definition for what constitutes “green.” Interviews conducted for this paper revealed a spectrum of opinions: some argued that the lack of definition had to be resolved in order for green bonds to become a legitimate environmental finance tool; while others argued that, as long as the criteria for a given bond issuance were clear, it was up to investors to decide whether or not to invest based on their own individual criteria for “green” investments. This conversation is unresolved, but, for the moment, remains a concern for land conservation organizations who do not want to be seen as taking part in perceived “greenwashing” efforts.

The Way Forward

These market insights reveal a consensus in the investor and conservation community: the explosive growth of green bonds is accompanied by some growing pains. However, this doesn’t mean that they won’t turn out to be a useful and reliable conservation finance tool. To take advantage of green bonds and develop their applicability to land conservation, land conservation organizations and investors should work together to promote and capitalize on the momentum in the market by doing the following:

1) Generate and publicize success stories. Many consulted for this project expressed the need for the “proof in the pudding” – examples of green bond issuances that supported land conservation efforts. And further, many are waiting to see proof that investors are willing to pay for the green bonds label – so any data that supports that particular concern may be important for growing the number of issuances related to land.

2) Share best practices. As these issuances increase, investors, issuers, and conservation organizations should work together to share best practices that can accelerate the learning process for land conservation stakeholders across the country and the world. Organizations, like the Climate Bonds Initiative and Ceres, have become hubs

¹¹ In some cases, such as DC Water’s green bond issuance, issuers have observed a slightly lower cost of capital than they would expect with a normal bond issuance, though it is difficult to infer a clear market trend at this point with so few data points. James N. Levitt, Personal interview, May 2015.

¹² Climate Bonds Initiative, *Bonds and Climate Change: The State of the Market in 2014*.

of information-sharing, and the Natural Resources Defense Council and others have released resources like the Green Muni Bond Playbook.¹³

Our research uncovered two investment “sweet spots” for green bonds and land conservation. The first “sweet spot” is state or municipal issuances – a growing area of overall green bond issuances, with \$100M in 2013 up to \$2.5B in 2014.¹⁴ These government issuances work well for land conservation efforts for a number of reasons. First, state-level issuances are at an appropriate scale to fund smaller land conservation projects, from hundreds of thousands of dollars to several million dollars. Second, state issuances necessarily have government buy-in, as the issuer is the state itself, which can translate into political support for the land conservation projects funded by the issuance. Third, green bond issuance at the state level can take advantage of the solid credit rating of the issuing state, providing confidence to potential investors in the bond, while also generating tax advantages for investors who are residents of that state. Finally, state-level issuances can attract place-based investors, such as foundations or family offices, who have a particular interest in community development within a given geography.

The second investment “sweet spot” is not related to issuer type but rather project type: land use or conservation projects with a link to water, stormwater, or watershed management. Land conservation can directly impact water treatment and water supply objectives, through mechanisms such as the protection of wetlands that provide storm damage mitigation, wastewater treatment, and water supply filtration. There are a number of land conservation projects linked to water resources that are attractive candidates for green bond financing. First, water management is increasingly a political priority toward which public attention and dollars are allocated: whether it’s too little water, such as in the American West, or too much water, as coastal cities start to cope with the effects of climate-change-induced precipitation increases and changes in weather patterns. Second, regulation at the federal, state, and local levels around water creates the foundation for the establishment of credit markets and pay-for-performance investment structures. With a price on water conservation or management, a green bond can be structured with cash flows generated from user fees, from the value of tradable permits, or even in some manner leveraging capital sources such as low-interest loans from the State Water State Revolving Funds.¹⁵

Conclusion

These opportunities exist, but it will require collaboration across many stakeholders in order to realize them. Communities around the world are at a crossroads related to whether land will be used in a sustainable manner or stripped of its resources. The next few years will prove critical in determining whether or not green bonds can play a role in helping ensure that critical habitat, wildlands, and open spaces are preserved for future generations.

¹³ Climate Bonds Initiative, CDP, C40 Cities, NRDC, Ceres, As You Sow, ‘How to Issue a Green Muni Bond: The Green Muni Bonds Playbook’ <<https://www.nrdc.org/sites/default/files/greencitybonds-ib.pdf>> [accessed 15 June 2016].

¹⁴ Elizabeth Campbell, ‘Record Green Bond Issuance Bolsters Chicago Sewers: Muni Credit’, *Bloomberg.com* <<http://www.bloomberg.com/news/articles/2015-01-26/record-green-bond-issuance-bolsters-chicago-sewers-muni-credit>> [accessed 31 July 2015].

¹⁵ Matt Zieper and others, *Financing Land Conservation with the Clean Water State Revolving Fund System* (The Trust for Public Land, 2012) <http://morgan-robertson.com/wp-content/uploads/2012/06/TPL_CWSRF_REPORT-11.pdf>.

Experts Consulted

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Charlotte Kaiser	Deputy Managing Director	NatureVest - The Nature Conservancy
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Session 3.2 Financial Planning for REDD+: Catalyzing a Move from Concessional to Commercial Approaches

Leslie Durschinger, Founder and Managing Director, Terra Global Capital, San Francisco, California, USA

The following is the Executive Summary of the report on Financial Planning for National REDD+ Programs published by Terra Global Capital and USAID in August 2016. The full report is available here:

<http://www.terraglobalcapital.com/sites/default/files/National%20REDD%2B%20Financial%20Planning%20-%20English.pdf>.

Financial Planning for National REDD+ Programs

Executive Summary

August 2016

Lead Authors: Leslie Durschinger, Terra Global Capital LLC; Luis Alejandro Mejia, Inter-American Development Bank; Nicole Rossell, Terra Global Capital, LLC

This paper sets out a financial planning framework that government agencies, climate finance experts, international cooperation agencies, multilaterals, national development banks and relevant private sector parties can follow for national REDD+ financial planning. The framework facilitates the development of financial projections and a financing plan covering the implementation of the National REDD+ Programs deploying four levels of financial analysis. Adopting this framework will allow countries to clearly identify the cost, revenue and expected funding requirements for National REDD+ Program implementation as well as assess the financial feasibility of different strategic options for generating emission reductions and financial and social outcomes from sustainable landscape management. It also supports the development of realistic REDD+ Financial projections to allow for building a financial capital structure that can leverage multiple sources of public and private funds.

Given the complexity of national REDD+ program design and implementation, including a mind boggling number of terms and acronyms and a multitude of stakeholder languages, part of this paper focuses on establishing a common language needed to facilitate the REDD+ financial planning process. Coordinated planning and implementation of cross sectoral activities is needed for a country to benefit from the breath of international and domestic funding sources that are linked to agricultural, forestry, and climate change mitigation.

Financial models that accurately capture all costs and revenue, as well as identify the financing resources needed for implementation, are required to build a comprehensive and detailed REDD+ Financial Plan. Building financial models that support the evaluation of different strategic options under a National REDD+ Program requires modeling the different components of the program such that they can be evaluated individually but then combined to represent the full National REDD+ Program Financial Plan. This also facilitates aligning different funding sources with the most appropriate components of the REDD+ Program. For this purpose, the following four levels for REDD+ financial analysis are defined:

Level 1 – REDD+ Administration: These are the incremental budgetary expenditures that the institution(s) responsible for managing the National REDD+ Program implementation will incur to manage and administer the Program.

Level 2 – REDD+ National Laws and Policies: The cost to design, develop, communicate, and implement policies that effectively support the implementation of the National REDD+ Program, such as new national policy, laws, tax exceptions, norms and regulations that do not exist. It includes the costs to develop, discuss, approve and communicate the new legal and policy frameworks. Implementation, at this level, refers to creating new institutions, departments or divisions in government with the staffing and resource to support the new laws and policies required for REDD+ However, the long term operational costs related to government incentives and financing for changing land managers changing their practices would be captured in Level 3 REDD+ Subprograms.

Level 3 – REDD+ Subprograms: The expected costs (and revenue) of implementing the programmatic framework of actions that Governments provide to support land-use related activities. These are not USAID Regional Climate Change Program the development of laws, policies, or administrative actions (Level 2). Rather, they refer to government supported programs that impact directly land-use management, such as training and technical assistance, inputs for improved management, subsidies, government guarantee funds, and other government programs that are directly tied to changing land-use in a spatially defined area. The term “Subprogram” was chosen to avoid confusion with the use of National REDD+ Program, which includes all levels.

Level 4 – REDD+ Activities: The costs and revenues associated with REDD+ related land use activities or actions (REDD+ Activities) implemented by land managers that reduce emissions and/or enhance carbon stocks as well as provide other social, financial and environmental benefits within the strategy of the REDD+ Program.

The importance of developing a detailed REDD+ Implementation Plan, as a precursor to financial planning is discussed and an outline of an implementation plan is presented to support its development. For each of the four levels for REDD+ financial analysis, guidance is provided on financial modeling.

The paper provides assistance in building consolidated financial projections, including integration of multiple funding streams, inclusion of benefit sharing plans, and calculating the cost of an emission reduction. The REDD+ Program’s financial projections are the central tool to, i) securing long-term financial sustainability, ii) attracting and effectively negotiate financial resources, and iii) prioritizing specific Policies, Subprograms and Activities for the REDD+ National program implementation.

This paper explores the avenues by which a country will find new ways to access funding coming from a National REDD+ Program through a multi-tiered analysis identifying possible key roles for financing generated from the monetization of emission reductions and other REDD+ activities. It provides a detailed review of the types of financing instruments that can support REDD+ and evaluates different capital structures. Determining the financial requirements for the implementing a National REDD+ program and the role that climate finance can play in catalyzing/providing new finance is discussed.

By applying the four level approach to prepare the financial analysis, the overall National REDD+ Strategy can be refined because, i) total and marginal costs of emission reduction is calculated, ii) disaggregated financial analyses can be performed at every level to identify efficiencies and unsustainable strategic options, iii) national, subnational, and sectorial policies can be comparatively analyzed based on their efficiency, iv) the REDD+

Activities can be assessed for financial feasibility and v) the aggregated incremental funding required for the National REDD+ Program can be calculated, as well as broken down by REDD+ Subprogram and Activities and/or sectorial approaches. Moreover, REDD+ Activities that require subsidies from Subprograms can be prioritized based on co-benefits and public good/services value as well as their ability to generate income and climate change mitigation benefits.

The financial planning process will also: i) identify and quantify additional funding required for Activities to be financially competitive compared to similar activities and to alternative land uses); ii) identify and guide benefit sharing arrangements that need to be established; iii) profile possible sources of funds for different levels depending on financial performance; and iv) identify the need for financial instruments, such as upfront emission reductions payments, loans and/or other financing instruments. Financial Planning for National REDD+ Programs.

Session 4.1 Emerging Mitigation Practices in Chile

Victoria Alonso, Co-founder, Templado, Santiago, Chile and Henry Tepper, Conservation Consultant, Lincoln, Massachusetts, USA

Victoria Alonso and Henry Tepper have been collaborating on land conservation and environmental mitigation for more than a decade. They were the authors of the presentation offered in Valdivia in January 2009 discussing the Derecho Real de Conservación. The following paper was written in preparation for the Workshop on Emerging Innovations in Conservation Finance, held in Las Majadas, Chile on September 26-28, 2016.

Innovative Strategies to Offset Industrial Environmental Impacts in Chile: A Case Study for the Mining Industry

Introduction

As climate change continues to increase exponentially as a global environmental priority, the Southern Cone of South America, notably Chile, has emerged as a region in urgent need of expanded conservation activity, and as a place where innovative resource protection tools are being developed and tested. Both the public and private sectors are leading the way in demonstrating a new generation of practical projects and strategies, with a particular emphasis on forging ties between meaningful, lasting conservation and economically beneficial, sustainable land uses. Two of the most important tools that are being developed involve private land conservation and conservation offsets.

The need for these creative approaches is evident when considering Chile's magnificent and vulnerable natural beauty, diversity, and productivity. Flanked on the west by more than 6,400 kilometers (about 4,000 miles) of coastline and on the east by nearly as long a border of Andean peaks and volcanoes, Chile boasts stunning fjords, glaciers and icebergs, vast temperate broad-leaf forests, Patagonian grasslands, the driest desert on the planet, incredibly productive farmland, teeming fisheries, and among the richest mineral deposits in the world.

Chile's highly successful, export-dependent economy is driven by four-core landholding, extractive industries—timber, mining, agriculture, including the particularly climate-sensitive wine sector, and fishing. This context often pits the country's economic success and expansion against its ecological importance and biological diversity. The challenge is made more acute by Chile's growing tourism industry, which depends on the country's unspoiled snow-capped and forested mountain landscapes, largely undeveloped coastline, and crystal-clear desert panoramas.

The ecologic and economic stakes for Chile, already very high, have increased dramatically in the era of climate change. Many of the country's most notable resources, from its glaciers, to its vineyards, to its avocado exports (now #1 in the world), are directly threatened by even small fluctuations in temperature. In response to these immense challenges, public and private sector leaders and innovators are developing tools of truly global importance.

Recent attention has focused on developing incentives for private land conservation, which is essential in a country in which almost 90% of the land is under private ownership. In June of 2016, Chile's Congress, after a decade-long bipartisan effort, passed historic land conservation enabling legislation, called the *Derecho Real de Conservación*. This law, which is unprecedented in any other South American country, amends Chile's Civil Code to create an affirmative and perpetual new category of private conservation land ownership. The new law could have profound implications for conservation in Chile and beyond. Creating incentives for private conservation in Chile represents a significant step forward in efforts to safeguard its natural heritage. The rest of this paper focuses on a second major strategy to do the same—developing and implementing tools and strategies to mitigate and offset the residual impacts of industrial activity.

The Need for Mitigation/Offset Pilot Projects in Chile

In Chile, as in countless countries across the world, citizens and their governments have become increasingly aware of and concerned about the ecological, social, public health, and aesthetic impacts of large-scale industrial projects. In response, multiple levels of government have established and implemented regulatory frameworks to hold industries accountable for their actions. Chile has a range of such regulations, including an environmental impact assessment program, mitigation requirements, and relevant sources of funds. However, as a young democracy, the country's environmental mitigation programs and regulations face a range of challenges and growing pains. These regulations are often unevenly applied and suffer from a lack of accountability. They do not comprehensively demand the kind of investments of time, effort, and money necessary to mitigate the most serious and complex environmental damages.

For example, 84% of Chile's approved Environmental Impact Statements (EIS) do not comply with the government's own biodiversity offset guidelines for compensating negative environmental impacts by restoring or replacing lost ecosystems or species. Instead companies often end up compensating communities through unrestricted cash payments and/or new infrastructure projects that are sometimes unrelated to the original environmental damages that the industrial projects have caused. This approach has been widely criticized as being inefficient, ineffective, and unaccountable.

If the public and private sectors can come together in a truly collaborative effort to make Chile's environmental regulations more meaningful and responsive, then the country will be able to realize huge opportunities to increase both conservation funding and action. Chile has less of a need for regulatory *reform*, than improved and more comprehensive *implementation* of existing regulations and increased creativity and vision from both public and private stakeholders.

Towards these ends, some of Chile's leading extractive industries, NGOs, and consultants are taking proactive steps to develop and implement pilot mitigation and offset strategies and tools, which can be deployed as part of regulatory requirements, or as voluntary efforts by industry seeking to "do well by doing good" for Chile's natural resources and biological diversity.

An ambitious and creative project underway in northern Chile, initiated by mining companies in collaboration with NGOs and technical consultants, serves as an instructive case study for a new generation of projects. These projects link mitigation, biodiversity offsets, land conservation, and community revitalization, all at a landscape or ecosystem scale.

The rest of this paper focuses on one such pilot project, which has been initiated and executed by a large, multi-national mining company, in collaboration with the Chilean consulting company Templado. Because the project is currently underway, the mining company has asked to remain anonymous for the purposes of this article. Together, the company and Templado are developing and testing an ambitious effort to offset the negative impacts on an ecologically significant wetland located close to one of the company's mining operations by codifying the wetland's ecological, cultural and economic importance, and then recommending the protection of an equivalent wetland that is located offsite but in proximity to the mine and the damaged wetland. In so doing, the company seeks to "offset" the negative impact to the original wetland by protecting a different but similar landscape so that even greater environmental conservation is achieved. The company's goals extend to channeling substantial private funding and expertise into the creation of a new and multi-faceted public resource that will benefit local communities, and that will be of national significance.

The Site, the Rationale and the Challenge

The pilot project is located in Chile's 1st Region, which is also called Tarapacá. It is the second northernmost region in Chile, and its port capital is Iquique. The region has a desert climate, topography and ecosystems, which also accounts for its sparse population of 336,769. This Region has great mineral wealth and a large number of mines, some of them among the country's biggest. It has several public protected areas but does not attract as many tourists to its desert as the more famous Atacama and La Serena sites in Regions III and IV.

The principal goal of the project is to mitigate the significantly negative impacts of water withdrawal from a high Andes wetland. Again, because the project is underway and at a sensitive stage, this article does not include the name of the wetland. Recognizing that the government's standard mitigation requirements were insufficient, the mining company decided to take additional steps to offset its environmental impact on the wetland.

The company is taking this action as part of its global corporate pledge and mandate to address the negative environmental impacts of its mining projects. The company's global environmental pledge includes reducing greenhouse emissions, taking action to avoid or remediate the company's impacts on areas with high biological diversity and/or with national or international conservation significance, and taking steps to reduce water-related risks, a particularly large challenge in such a water-dependent industry.

The situation at the mine and the wetland represents a particularly instructive case study and site for a pilot project. The project is both complex and precedent-setting because it seeks to address the damage done to an ecologically rare wetland habitat located in a desert, and because it encompasses several of the environmental remediation categories adopted by the mining company as part of its global corporate pledge, listed above.

The wetland is a truly extraordinary and virtually irreplaceable example of a High Andes Plateau ecological resource. It provides habitat to a range of unique and vulnerable species of flora and fauna, including three species of Altiplano birds, two endangered reptiles, and several aquatic plants. In addition, because the wetland

is a freshwater ecosystem located in an otherwise uniformly dry region, it is ecologically significant in and of itself. In short, the wetland is a true oasis in the desert.

The company piped water out of the wetland to assist the mining operation. Although the company obtained the permits required for the water withdrawal, it did not foresee the full ecological and hydrological complexity and sensitivity of the wetland, nor the severe impacts that would be caused by the withdrawals. This caused the company to look for an additional mitigation strategy.

Templado's Assessment and Recommendations

The company retained the consulting firm of Templado to provide it with advice on how to address the negative impact on the wetland. Working closely with the company's staff, Templado conducted an intensive analysis of the wetland, and then developed a set of possible choices facing the company, none of them easy or inexpensive. Here is how they undertook this work.

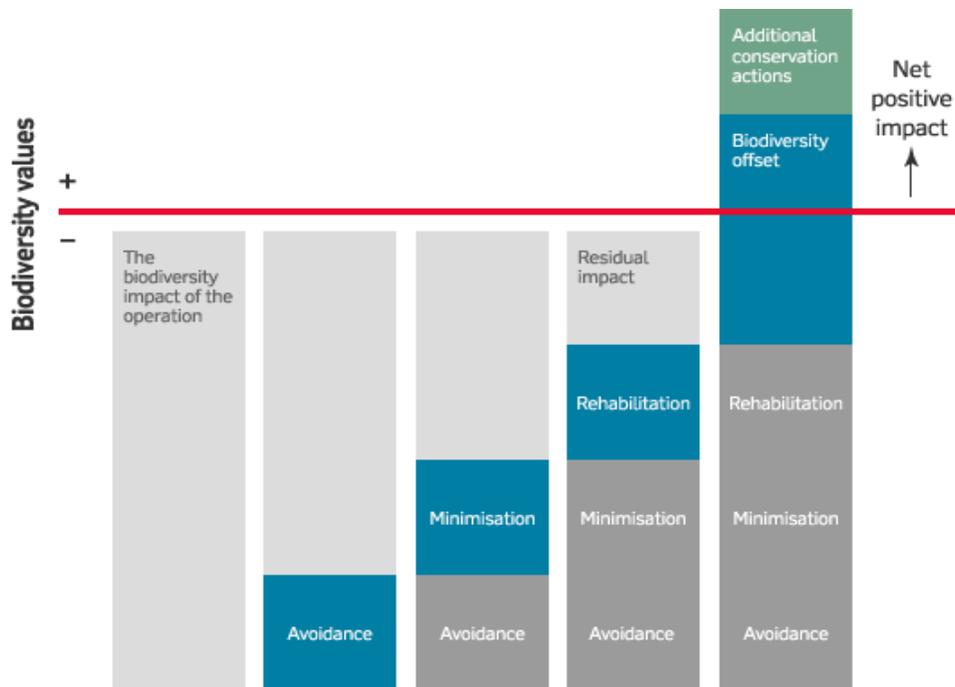
First, it's important to note that the mining company and Templado completed their analysis in the larger context of Chile's environmental regulatory process. A key threshold of the country's regulation of impacts on wetlands is the goal of "No Net Loss," which is self-explanatory; it means that any company responsible for damaging or destroying a wetland must at minimum fully restore or replace that lost habitat. In response to this regulation, Templado and the company were notably committed to going *beyond* No Net Loss; they worked to find a mitigation solution that would restore or replace all of the lost values of the wetland, and then provide additional benefits and relief to the local communities. They were motivated to do this by the company's global corporate pledge.

In Chile, as in many countries, industries are also required to consider in advance the impact of any proposed new or expanded project on the surrounding landscape's ecological, scenic, community, and other resources. In some cases, in order to receive a public permit to proceed with a company's proposed project, the regulatory process requires it to complete a comprehensive environmental impact assessment of the proposed action.

Generally, this assessment considers ways of avoiding actions that have any kind of negative impact on the site's ecological and other resources. If some impact is unavoidable, then the assessment determines how it can be minimized— through mitigation, compensation, or other means.

Again, in Chile, as in many other countries, the company's first priority and often its requirement is to mitigate the impact of its proposed project directly on-site. This is logical; companies need to be held to the standard of returning a damaged site to normal, or even to improving it, as a result of their actions. In order to determine what actions need to be taken to restore a damaged ecosystem, some companies, including the one working on the pilot project discussed here, seek to implement what is called the "mitigation hierarchy" (see Figure 1), which includes efforts to *avoid*, *mitigate*, and *restore* the affected site. These actions often include habitat restoration, through landscaping and re-grading, native seed planting and reforestation, irrigation, and other physical improvements to the damaged area. As a last resort, the mitigation hierarchy recommends that the negative impacts be addressed through what are often called *offsets*, meaning conservation actions taken off-site.

Figure 1. Mitigation Hierarchy



After applying the Mitigation Hierarchy to the high Andean wetland situation, Templado concluded that the Chilean government’s regulatory recommendations would probably not result in the complete restoration and recovery of this ecologically fragile property. Templado and the mining company concluded further that the best and most comprehensive mitigation solution at this site would be to offset the loss of the wetland through the acquisition, permanent protection, and long-term ecological management of a comparable wetland located at another suitable location. Unfortunately, cases like this, in which companies inflict irreparable damage to highly sensitive habitats in the High Andes Altiplano, are not uncommon.

The term *offset* is generally used to describe *off-site* environmental mitigation efforts, and also sometimes, but not always, means replacing carbon or biodiversity lost from a destroyed habitat with carbon that is sequestered in an intact landscape at different location. An example of how this would work is if a company completely destroys a forested landscape, then it would purchase a comparably sized forest, preferably nearby, that sequesters the same or more carbon than the destroyed forest.

It is in this context that Templado and the mining company developed the core of their pilot project. The two entities concluded that the only way to mitigate a negative impact of this scale would be to complete an ambitious off-site, offset conservation project. Templado and the company would need to find another wetland in the region, one that was comparable in size and ecological health to the lost wetland. And lastly, the company would need to make a binding commitment to managing and safeguarding the newly protected wetland in perpetuity.

Working with a team of scientists, Templado began an intensive analysis of the lost wetland. It created a comprehensive matrix that codified the ecological, hydrological, scenic, economic, and community qualities and values that had been contained in the wetland.

The consultants developed new insights and assigned weighted values for seemingly unquantifiable features of the wetland, including not just its ecological importance, but also its deep, historic importance to the indigenous communities who lived nearby and used it for centuries. Templado contemplated the very notion of the wetland's irreplaceability. Templado and the mining company organized this analysis and information into a chart (Table 1) that includes such characteristics of wetland as its ecosystem-scale significance, the species richness of its flora and fauna, as well as its specific cultural and socio-economic values.

Table 1. Key biodiversity components of the wetland (pre-mining)

BIODIVERSITY COMPONENT	Biodiversity Assessment							Justification	
	Intrinsic, "non-use" values					Use Values			
	Significance			Irreplaceability			Socio-economic values		Cultural values
	Global (IUCN)	National	Local	Site endemic	Localized*	Widespread			
Species									
Fauna									
<i>Liolaemus jamesi</i> (Jararanco de James)			Rare		X			Low capacity to move to a new environment	
<i>Liolaemus pantherinus</i> (lagartija pantera)			Rare		X			Low capacity to move to a new environment	
<i>Vicugna vicugna</i> (Vicuña)	LC		Endangered			X	Food/wool	Decimated populations because of hunting and habitat destruction	
<i>Rhea pennata tarapacensis</i> (Suri)	LC		Vulnerable			X		Affected population because of habitat destruction	
<i>Chloephaga melanoptera</i> (Ganso Andino)	LC		Vulnerable		X			Restricted to water bodies only	
Flora									
<i>Azorella compacta</i> (llareta)			Vulnerable		X		Used for energy	Decimated populations because of energetic use and habitat destruction	
Communities/habitats									
129,3 hectares of Vega							Pasture area	Ethnic	Socioeconomic & cultural values; is essential to some species survival. Very low occurrence in Ecoregion. Niche where relevant elements of fauna are expressed. Habitat for plants and species culturally important
Landscape									
130,2 hectares of Vega and lagoon							Landscape	Ethnic	Very low occurrence in the Ecoregion. Niche where relevant elements of fauna are expressed. Habitat for plants and species of cultural importance and it's essential for some species survival

*: Even if the individual species is widespread across geographies, its presence is restricted to water availability, which is scarce in this region. This is why most endangered species are considered localized for this matrix.

The lost resources identified and summarized by Templado and the company are also examples of what are sometimes called “ecosystem services,” meaning that they provide their communities irreplaceable fresh water, food crops, timber, and clean air. They recharge aquifers and are critical to flood control. These benefits have an economic value that needs to be quantified, and, if lost, replaced.

Templado’s resource chart enabled partners to gain a comprehensive understanding of the importance of the wetland. This also led the consultants to initiate the next part of the pilot project, which was to look for a comparable wetland habitat that the company might protect in order to offset its irreversible impact on the original wetland.

The process that the company and Templado used to find a suitable off-site, offset wetland was informed by the company’s global sustainability mandate. The recommendation of the company’s sustainability mandate for an offset project was that it needed to move far beyond the government’s restoration requirement. Not only would the company need to protect an ecologically comparable wetland, but it would also have to find a property that was at least *twice* as large as the impacted one. In addition, the company would have to establish a management endowment that ensures that the new wetland would be ecologically managed and preserved *forever*.

Closely consulting its chart of the original wetland’s ecological and cultural values, Templado undertook an intensive search for a replacement wetland that met all of these criteria. Fortunately, their initial search identified a group of 80 wetlands that might be suitable as off-site offsets. Templado then winnowed this large list to four wetlands that could truly meet its rigorous and detailed requirements.

Eventually, Templado focused on two particularly high quality wetlands. The first is located adjacent to an already existing National Park. The second site is located close to the indigenous community that was most affected by the loss of the original wetland and that has largely equivalent biodiversity values. A third site is less relevant in terms of equivalency but very important for aquatic conservation.

Another notable criterion used by Templado to identify a replacement wetland is *threat*. Interestingly and ironically, some of the replacement wetlands considered by the consultants were themselves targeted for possible future mining activity. This turned out to be the case with the two selected wetlands. The larger landscape within which both of them are located has been designated for mineral exploration by several mining companies, including the company that Templado is working with. This made Templado’s recommendation that either site be permanently protected as an off-site offset by the company even more urgent and compelling.

The company’s decision to proceed with the protection of either of the selected sites, even though they have been targeted for mineral exploration, would result in the company incurring a substantial increase in the cost of the pilot project. This is because the company would need to factor in the loss of possibly significant revenue from the minerals that might be found at the site of the new wetlands that the company would now be protecting. The company might also realize some cost savings, because it would no longer have to invest in mineral exploration at any of the sites.

These issues further underscore the complexity and potential impact of this pilot project, which entailed: 1) determining whether the original wetland could be fully restored within a workable time-frame; 2) codifying the lost resources and ecosystem services from its destruction; 3) finding a suitable off-site wetland; and 4) calculating the total cost of the project, including acquisition of the off-site, offset wetland or wetlands, the potential lost mineral revenue, and the cost of establishing a permanent management endowment for the newly protected wetland.

Lessons Learned and Future Challenges

As Templado moved through this process, at least two different, but quite significant events, occurred that should be noted here. The first was the reaction of key members of the company's staff to the project. As Templado itemized the enormous ecological, cultural, and economic importance of the wetland, and calculated the size and scale of the commitment necessary for the company to adequately compensate for the loss of such an irreplaceable resource, there was a stark recognition on the part of key personnel at the company.

The company's staff was somewhat shocked by the cumulative ecological, cultural, economic, and symbolic significance of the lost wetland. The staff realized belatedly that the project would have been *much* simpler and less expensive if the company had been more careful about not destroying the wetland in the first place. They recognized and acknowledged that the price of replacing something that is essentially irreplaceable is indeed very high.

Templado believes that this moment of recognition might bode well for the company's corporate environmental responsibility when it considers similar water withdrawal projects that anticipate having negative impacts on ecologically fragile wetlands. In the future, the company may institutionalize the recognition that it should take the steps necessary to safeguard these precious natural resources rather than face the enormous financial and human costs associated with mitigating their destruction.

The second situation, which is still to be fully resolved, is the initial response to the offset project from local indigenous communities that were affected by the loss of the wetland and would stand to benefit from the protection of an alternative wetland. When Templado presented the offset project to community leaders, their reaction was not uniformly positive. In summary, the leaders said that they would accept a mitigation plan that called for the protection of another wetland, but that they might have preferred this action to be added to outright financial compensation for the environmental impact caused by the company. While it is important not to over-generalize, this response is likely based on the fact that these communities had become accustomed to more traditional forms of mitigation in Chile, which are often comprised of uncoordinated, ad hoc donations of money, infrastructure, or equipment to affected local communities.

Templado and the mining company believe that it will take some time for communities and their leaders to become better informed and to embrace the kind of land conservation offset and ecosystem service mitigation projects that the company and its consultant are piloting here. And there are still numerous companies that would prefer the traditional "pay to trash" approach to mitigating the environmental damage they cause to local communities.

Conclusions

The mining company and Templado's wetland offset pilot project is ambitious, innovative and is setting potentially important precedents for powerful Chilean industries. The company is committed to taking action to mitigate the negative impacts of its large-scale projects, and to do this in advance of and/or in addition to government environmental regulations and enforcement. The project also has the potential to teach industries the extremely important lesson that it is infinitely simpler and less expensive to do the right thing for the environment in the first place.

In conclusion, there are four important and related issues to consider as these pilot projects move forward and multiply. First, it is essential for industries, government agencies, NGOs, and consultants to solicit community opinions, recommendations, and needs as they craft mitigation projects. Among other actions, Templado recommends: validating the project by securing the informed and active participation of respected community

leaders and institutions; providing stakeholders with detailed information about every phase of the project; securing the industry's binding commitment to the long-term management of the offset land resource; and providing opportunities for the community to use and benefit from the offset land resource, based on input received from stakeholders.

Second, building on the example set by the mining company, industries need to make a country-wide and global commitment to best practices. This means that companies need to do everything in their power to avoid lasting environmental damage to sensitive areas when they implement projects on-the-ground, and if they make mistakes, the industries must then be decisive, proactive, and responsive about taking corrective action.

Third, environmental and cultural mitigation will obviously not be implemented on a voluntary basis by industries acting alone, no matter how committed they are to being proactive. It is critical for Chile's government sector to further develop, refine, and implement a set of accountable and rigorous government environmental regulation and enforcement actions.

Fourth, there is an urgent need for environmental remediation and mitigation penalties to be significantly more accountable. Pilot programs like the mining company and Templado's offset initiative should be studied and emulated in other industrial damages cases. Additionally, regulatory and penalty efforts as diverse as the Chilean Environmental Impact Assessment Program and the Mining Royalty Tax should be made more effective, and need to be linked directly to advancing the country's highest ecological priorities.

The public and private sectors should join together to formulate a process of agreeing on what these ecological priorities are, and then a dedicated portion of mitigation and other levies should be invested in protecting a consensus list of Chile's highest conservation priorities. Even a small percentage of these funds could have a transformational impact on increasing the country's network of public and private protected areas, and ensuring their high quality long-term management. These kinds of reforms could enable Chile to make exciting and vitally important progress in preserving its magnificent ecological, natural, and scenic resources (see Figure 2).



Figure 2. While 17% of Chile is categorized as being under some form of protection status, many areas and ecosystems of the country have minimal protection. The most glaring example of this is Chile's rarest ecosystem, the Mediterranean habitat, which is found in the Central Valley, the area of Chile with the greatest development pressure from unsustainable residential and agricultural development. The Mediterranean is found in only five locations on earth including Chile, and is found nowhere else on the entire South American continent. Yet less than 1% of Chile's Mediterranean ecosystems are under any kind of protected status. Protecting this ecosystem could be a logical target to funds raised through compensatory action.

Session 4.2 Reforestation and Aquifer Recharging through a Public-Private Partnership
Efraím Acosta Lugo, Technical Coordinator, ProNatura Mérida, Yucatán, Mexico

Adolfo Alaniz, Eduardo Cota, and Efraím Acosta Lugo discuss the public-private partnership behind the National Reforestation and Water Harvesting Program in Mexico, which targets land conservation and management in an effort to recharge aquifers and increase dwindling water supplies. The following paper was written in preparation for the Workshop on Emerging Innovations in Conservation Finance, held in Las Majadas, Chile on September 26-28, 2016.

**Reforestation and Aquifer Recharging through a Public-Private Partnership:
The National Reforestation and Water Harvesting Program in Mexico**

Created on the foundation of sustainability and social responsibility, and after just eight years of development, the Mexican National Reforestation and Water Harvesting Program has become the biggest and most important ecological restoration project in the world, as listed by a 2015 study by Natural Solutions at the Monterrey Institute of Technology and Higher Education.

The Program's comprehensive approach to safeguarding the environment, conserving ecological services, and improving the quality of human life was established thanks to the continued work of participating actors, government, private initiatives, and civil society. This cross- sectoral support and recognition was not just due to the reforestation of more than 60,000 hectares with around 68 million trees planted, but also for the project's positive social and environmental effects.

It should be noted that ecological restoration consists of carrying out tasks that lead to the partial or total recovery of ecosystems that have been degraded by non-sustainable human activities and/or the behavior of nature itself. Part of the success of this type of restoration is due to its ability to effectively involve local communities and convincing them of the important role they play as active agents in the functioning of ecosystems. Particularly as the ecosystems, in turn, greatly determine the communities' traditions, culture, dress, diet, economy, and recreation.

Our aim was not just to plant trees, but to also strategically locate our ecological restoration work in key places for recharging aquifers, an essential source of water supply in Mexico. In 2015 alone, the Program managed to plant 3,279,212 trees over an area of 3,326 hectares. In support of reforestation and maintenance, and with the hope to create alternative economies for inhabitants of specific regions, we have also driven the development of productive projects that tie in with the care of reforested areas and support local economies to improve quality of life.

The Program has also pursued projects to raise community awareness and to reinforce that, without trees, there would be no water or rain and, without that, crops and forests could not prosper, which would considerably hinder their ability to provide food and other life-sustaining ecosystem services. Within this context, the Program seeks to find a sustainable balance between using trees and conserving the ecological benefits that they offer over the longer term: water, food, health, climate control, soil enrichment, pollination, recreation, and wellbeing.

In 2015, Coca-Cola Mexico, Pronatura México A.C. (and the Pronatura System), and the Ministry of the Environment and Natural Resources (Semarnat, acting through the National Forestry Commission (CONAFOR) and the National Protected Areas Commission (CONANP)), signed a collaboration agreement in support of the Program. Today, despite the challenges we continue to face, our project moves forward with excellent results towards the ecological restoration of key areas of Mexico.

Reforestation

As mentioned above, the Program's intention to restore forest ecosystems is not only focused on tree planting, but is also centered on ensuring that this is done in the proper location and with native plant species, thereby increasing their chance of survival. In this way, we benefit the generation and conservation of environmental services, mainly by recharging aquifers located nationwide.

Some advantages of groundwater are lower evaporation compared to surface water, limited exposure to pollutants, few direct problems regarding climate change issues, and storage capacity. In contrast, surface sources of drinking water are scarce. According to the National Water Commission, about 4% of the world's water is contained in lakes and rivers; therefore, there is an increasing use of groundwater to meet the growing demand for drinking water. This is the reason for the special value we have placed on replenishing Mexican aquifers.

Moreover, together with the ecological benefit, we make reforestation an attractive and competitive social alternative. We promote the sustainable use of plants and trees among human settlements in the region in order to provide them with income, thus improving their quality of life and allowing sustainable coexistence with the environment.

Maintenance

In the first years of the Program, actions were focused on planting trees and carrying out soil restoration. With the aim of the Program focusing on a greater impact through the recovery of forests, it was decided to start maintenance activities on areas that had previously been reforested. From this focus stemmed the inseparable pairing of reforestation and maintenance, which we believe is an effective means of forest recovery on the path to ecological restoration.

As of 2013, the Program incorporated maintenance activities into the reforestation project, which consists of managing the entire previously reforested area over the course of three years. It should be noted that the types of maintenance activities are subject to the environmental conditions present; however, the treatment generally consists of repositioning trees, making little basins (forming the earth into a small basin or ditch which facilitates water retention), remove grasses, fall branches and logs to prevent fires, corralling, irrigation during drought, pest elimination, and natural fertilization.

Despite the challenges presented by nature in recent years, these activities have been successful in achieving a survival rate of 71.17% of trees planted from 2013 to the present day. As a means to increase the likelihood of the initiative's success, along with encouraging care of their surroundings for shared social benefit, the participants in the maintenance activities receive financial recompense for the work carried out, which adds to their commitment and the conservation of reforested areas.

Soil and water conservation activities

Through the unique characteristics it possesses, soil health often determines the function, maintenance, and productivity of land-based ecosystems. As such, deterioration in soil quality, understood as the loss of quantity and quality of its properties, alters its capacity as a means of ecological support, provider of nutrients, and purifier of water; it also restricts the recharging of aquifers. Along this vein, the Program does not just focus on the conservation and rehabilitation of deforested soils to be able to incorporate them in supporting trees, but also in avoiding greater rates and scales of erosion.

To avoid increased rates of erosion, interception and catchment of rainwater runoffs were modified to reduce the speed at which runoff occurs and to avoid earth being pulled into surface water. At the same time, this encourages water stagnancy in areas that facilitate recharging of aquifers, retain greater humidity for the advantage of vegetation, and reestablish the balance of the hydrological cycle.

These soil conservation activities complement the maintenance of reforested areas and serve as catchments and distributors of surface runoff - primarily in arid areas and areas with low precipitation. They reduce the risk of floods, control erosion, achieve sufficient humidity for vegetation in recently-reforested areas, provide better filtration of rainwater, and contribute to better recharging of aquifers and, in some cases, the formation of springs and streams.

All of these benefits have a positive impact on human life, as their construction generates sources of employment, allows water to be used more effectively for hillside crops, helps with maintenance activities in reforested areas, and avoids floods and landslides, which can seriously damage crops where communities are based.

Forest community nurseries

Certain activities in forested areas that have high financial performance also have dangerous implications for the environment. Some of these dangers include unsustainable logging, overexploitation of soil resources to support exotic species, overuse of land for farming and herding, and indiscriminate use or contamination of water.

The forest community nurseries were created to try and avoid any kind of damage caused by human activity, with the aim of offering a functional alternative to the obvious need for financial development in the majority of areas reforested by the Program. These nurseries have become a source of income for the regions' inhabitants that is totally compatible with their recovering ecosystems.

The nurseries are small businesses run and operated by (mostly female) members of the community. Furthermore, supplying the trees and plants required for the reforestation and tree relocation programs - produced with seeds from CONAFOR - is an excellent opportunity for employment and livelihood for numerous families. In order to establish this community-managed nursery model, we provide the necessary support, training, and the administrative, legal, and technical skills needed for growing, harvesting, packing, and transferring the plants produced.

There are currently 16 forest community nurseries in place. One of these, the Xuwita nursery in Guanajuato state, has a production capacity of 300,000 plants, and it won the 2015 State Prize for Working Merit in the field

of Sustainability and Care for the Environment. Another community nursery in Yucatan State has produced more than 60 tropical species with a total capacity of over 400,000 plants.

Rainwater harvesting ponds

Rainwater harvesting ponds also facilitate the availability of water and drive agricultural, cattle farming, and fish farming activities, as well as the installation of fruit orchards. In order to create a harvesting pond, the ponds first require the excavation of thousands of cubic feet of soil. Then, the excavated site is covered by a geomembrane liner, or plastic covering, and surface water naturally flows into and collects within the liner over time through small slopes or basins.

In some cases, this water is channeled through intake channels (manmade structures that aid runoff), which, in turn, direct it to be captured and stored. As well as creating sources of employment and having a positive impact on the landscape, this type of water capture and storage also serves as a meeting point for social activities in the community.

It should be noted that the economic and social benefits are additional incentives for the communities' commitment to and participation in ecological restoration, as well as that of municipal governments who provide the facilities needed to launch the ponds. The creation of harvesting ponds also promotes social involvement through job generation and promotion of the collateral benefits obtained once the ponds are in operation.

Community cisterns

These manmade water storage containers facilitate irrigation of community orchards and personal, or household, hygiene for people in the community. They are made of hydraulic concrete in just one day, thanks to the use of prefabricated molds. With community guidance, cisterns are built in areas considered important for irrigation and communal use, such as for use by schools, churches, public diners, health centers, or community centers. All of these places allow free access to the water.

These water containers can also be filled through municipal pipes, which keep them sufficiently full to meet the community's requirements. However, they may also be filled with rainwater collected by roof water harvesting systems installed by Program staff.

The municipalities involved have played a fundamental role, by encouraging the active participation of communities in the construction and care of the facilities, managing supporting resources with state governments, and contributing material, financial, and human resources, thereby making them joint participants in these activities.

Rainwater harvesting roofs and backyard orchards

As another alternative source of income for the communities who live in forested areas, the Program started planting backyard orchards or vegetable patches. These small-scale agricultural operations reduce the communities' use of forest resources, such as wood products and protected species of flora and fauna, and even help to improve the practice of cattle farming or uncontrolled agriculture.

Backyard orchards were conceived as small family businesses; they are an effective way of growing fruit and vegetables for family consumption, and contribute to the reduction of family spending on food. Moreover, various beneficiaries earned additional income by selling their excess produce, diversifying their offer through processing their products, or raising animals for human consumption.

Orchards commonly rely on irrigation systems from rooftop rainwater harvesting systems, which are an invaluable support in obtaining better results and reducing maintenance costs. To create a backyard orchard, the Program not only provides training and technical advice to give the owners sufficient knowledge to adequately run and control their orchards, it also provides the infrastructure to store water (roof catchment) and install a drip irrigation system.

Wastewater treatment plant

Coca-Cola Mexico's environmental commitment to sustainability deals with reforestation of hydrological basins where it has a presence, so that communities can actively participate in conserving and protecting these forested areas, by increasing water capture, regulating its consumption, and achieving its reuse. It is from these objectives that the project for installation of wastewater treatment plants was started, oriented towards supporting the use of rainwater or recycled water.

This year (2016), in San Miguel Peras, Oaxaca, the first water treatment plant whose installation was supported by the state government was inaugurated. This support was through the construction of all infrastructure of the municipal drainage.

The water treatment plant is totally oriented towards water sustainability and has alternative energy systems that lead to lower financial costs, thereby making uninterrupted operation viable in the medium and long term. The sanitation scheme used will allow the treated water to be used in productive projects, complementary irrigation of reforested areas and backyard orchards, and community nurseries.

Productive projects

For many communities in Mexico, forests represent the only source of a family's income. Therefore, the ecological benefits that forests contribute to human survival are limited when there is deforestation or when the forests are in a process of recovery.

The people who currently live in deteriorated forested areas and who had previously enjoyed the ecological benefits provided by said forests, know how valuable forests are to human and ecosystem health, and how important it is to conserve and care for them.

Sustainable community development projects - opportunities for local financial development through non-timber forest resources – have had a positive impact on communities' wellbeing and way of life. This is because, while becoming a source of family livelihood, they also support the recovery of the forests, avoid over-exploitation and degradation of the surrounding land, and contribute to our primary objective of recharging water.

The Program's creators participate in launching these projects and work constantly to link the projects with other areas by seeking out channels for commercialization, industrialization, and diversification of products.

Further to the Program strategies, the communities receive technical and administrative support with the aim of consolidating them into true success stories.

In accord with biodiversity and culture, various methods of alternative livelihood have been established that respond to the needs of each region, or even use their fertility for other wild species. It should be noted that under the instruction of these initiatives, viability studies were carried out on projects in each target population, so that crops do not compete for water, sun, or space with reforested plants and trees.

The Mexican marigold flower, in particular, grows wild in some regions and is a flower that represents Mexico. This crop has become a source of income for the inhabitants of the Estanco community in Guanajuato, through sales to other populations and use in the town itself.

Session 5.1: Success, at Long Last: Enhanced Conservation Tax Provisions in the United States.
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This paper describes how the land trust community in the U.S. set out to increase the pace of land conservation by expanding the federal tax incentives for conservation easements. On the way to that destination, land trusts were stopped by a series of obstacles, which served as catalysts for innovation and profound changes in how land trusts do business. This paper was written in preparation for the Workshop on Emerging Innovations in Conservation Finance, held in Las Majadas, Chile on September 26-28th, 2016.

**Success at Long Last:
Enhanced Conservation Tax Provisions in the United States**

Context

Between the years of 1901-09, U.S. President Theodore Roosevelt created five national parks, 51 bird sanctuaries, and 150 national forests – permanently protecting a total of 230 million acres. This extraordinary accomplishment began a century of land conservation by the federal government, which resulted in 609 million acres of federal lands now with some level of conservation protection.

Over the past 20 years, however, there has been growing opposition to the federal government acquisitions. The 1989 recession and budget constraints put a limit on federal funding for conservation. In addition to budget constraints limiting federal conservation efforts, Tea Party conservatives called for an end to federal land acquisitions and advocated for the federal government to transfer conservation lands to the states for mining, oil exploration or development. For example, in May 2016 the House of Representatives approved legislation that would strip away conservation protections of the largest wildlife refuge in the lower 48 states and turn it over to the State of Nevada.

Congress created the Land and Water Conservation Fund (LWCF), the primary funding source for federal land acquisitions, which is authorized at \$900 million annually, but, in recent years, Congress has only appropriated about \$300 million. An average of \$6 million/state is hardly sufficient to meet the need for new land conservation in the U.S.

About 70% of U.S. land is privately held. Even in the west, where the federal government holds a large portion of the land, private landowners often own the valleys and streams that are essential for wildlife habitat and migration.

For all of these reasons, conservation leaders have increasingly turned their attention to using conservation easements to protect private lands. A conservation easement is a voluntary and legally binding agreement between a landowner and a non-profit or government agency, which permanently protects specified natural, scenic, recreational, and historic resources, but also allows the landowner to own and use the land for farming, ranching, timber, and other specified purposes. In 1980, Congress passed Internal Revenue Code 170(h), which provides a charitable deduction for donations of conservation easements that meet certain requirements.

Following the passage of this legislation, the number of land trusts in the U.S. grew from under 400 to approximately 1700 groups. According to the Land Trust Alliance Census, between 2000-2010 there was almost a four-fold increase in land protected by conservation easements held by state and local land trusts. The National Conservation Easement Database estimates that governments and non-profits now hold about 40 million acres in conservation easements.

In spite of this impressive growth, the tax incentives did not motivate most landowners to conserve their property. Originally, most conservation easements were donated, but, in many parts of the U.S., non-profits and governments now have to pay for conservation easements.

Problems with the Original Tax Incentives

The tax code passed in 1980 had structural flaws that made it impossible for moderate-income landowners to receive the same tax benefits as a high-income landowner. It restricted the deduction to 30% of taxable income and allowed the donor to carry forward unused deductions for up to five years.

For example, a landowner with \$2 million in annual income who donated a conservation easement worth \$3 million could deduct the entire the value of their donation ($30\% \times \$2 \text{ million} = \$600,000$ so the deduction is \$600,000 per year for the year of the donation and \$600,000 each for the next five years until the deductions total \$3 million).

In contrast, a farmer with \$80,000 in annual income making the same \$3 million donation could only deduct \$144,000. (30 percent of \$80,000 equals \$24,000, which is the cap on the annual deductions. The farmer can deduct \$24,000 in the year of the donation and for five additional years $6 \times \$24,000 = \$144,000$). This is bad public policy because it is unfair to moderate income people and because it discourages donations from farmers, ranchers and timber owners who own high priority conservation lands.

Proposal to Enhance the Conservation Tax Incentives

On March 10, 1999, two conservation leaders, Rock Ringling and Bill Long, visited a ranching family in Montana to discuss the donation of an easement on their ranch. The family looked at the numbers and decided that the tax incentives were not enough to justify giving up their most valuable asset. On the drive home, the conservation leaders resolved to recruit their senator, Max Baucus, who was the influential Chair of the Senate Finance Committee, to help expand the tax incentives, and they asked the Land Trust Alliance (the Alliance) to take the lead on a national campaign to convince Congress.

The goal was to extend the carry-forward period from 5 years to 15 and to raise the cap on donations from 30% of taxable income to 50%, and, if the landowner earns the majority of their income from agriculture or timber

production on that land, then they could deduct 100% of their income. This change could result in as much as a nine-fold increase in the tax incentives available with a conservation easement, depending on the appraised value of the gift and the landowner's income.

Coming up with a policy proposal was the easy part. Getting a bill through Congress is tough - especially an environmental bill. Of the approximately 5,000 bills that are introduced each year, only about 5% are signed into law, and at the time, Congress had not passed significant environmental legislation in 20 years - largely due to Republican opposition. As if that challenge were not enough, the land trust community also hit a series of obstacles while trying to expand the incentives.

Obstacle #1: Attacks from Congress, the Treasury Department and the IRS

In May 2003, the *Washington Post* ran a series of front-page stories criticizing exaggerated appraisals, lack of conservation purpose, insider dealing, and conflicts of interest by The Nature Conservancy. This resulted in calls from Congress to entirely eliminate the tax incentives that land trusts had hoped to expand. The Senate Finance Committee launched an investigation into a wide range of abuses by land trusts and threatened to impose a set of regulations that would drive many small land trusts out of business. In addition, the Treasury Department and the IRS were skeptical of donations of conservation easements because they were concerned about the difficulty of verifying the appraised value, conservation purpose, and the permanence of an easement donation.

In response to these attacks, the Alliance revised the *Land Trust Standards and Practices* and managed an 18-month consensus-building process to win over land trust support for the reforms. But the Senate Finance Committee was skeptical, arguing that there is a big difference between a group adopting standards and actually implementing them. The Committee requested the President of the Alliance to testify before Congress and offered two choices: Either the Alliance would develop a program of self-regulation or the Senate would direct the IRS Commissioner to regulate land trusts.

Fortunately, the Alliance had already convened a planning team to design a national accreditation program that would encourage and recognize land trusts that effectively implemented the standards. After an extensive public review process, the Alliance created the Land Trust Accreditation Commission, which conducts an independent verification process and recognizes organizations that meet key standards. The Alliance developed a comprehensive core curriculum, model documents, training workshops, and a coaching program to help land trusts prepare for accreditation. Many land trusts initially opposed accreditation, but now, over 75% of conserved land is held by an accredited land trust.

Obstacle #2: Legal Challenges to Conservation Easements

Over the past decade, it became clear that an increasing number of private landowners were violating their easements or challenging them in court. The original landowner almost always honored the easement, but subsequent owners were much more likely to challenge it. Federal law requires the holder of the easement to have the financial resources to defend the easement in court, but many small land trusts lack the funding or expertise to do that. Failing to defend conservation easements could create bad case law that would make hundreds of other easements vulnerable to legal challenge. It could also result in a loss of credibility with land trust donors, landowners, the general public and, ultimately, Congress, which could eliminate the tax incentives for conservation entirely.

To develop a national solution to this problem, the Alliance hired an independent insurance consultant and recruited legal, financial, and insurance advisors. The law firm, Sullivan & Cromwell, offered to provide pro

bono services valued at over \$1 million. Together, this team designed an innovative insurance service, named Terrafirma, which funds the legal costs if a land trust needs to defend conservation lands in court. For about \$50 per year, a land trust can get \$500,000 in legal costs per property after a \$5,000 deductible. Equally important, the land trust receives the benefit of lawyers who are experts at winning conservation cases. Structured as a 501(n) charitable risk pool, the land trust members are the owners of the company, and they contract with the Alliance to manage the governance of the company. The Alliance, in turn, contracts with the international insurance company, Marsh & McLennan, to handle the collection of premiums, payment of claims, and regulatory filings. After three years of operation, 90% of land trust held easements are now protected by Terrafirma or held by an organization capable of self-insurance. To date, Terrafirma has won 100% of the legal challenges covered under its policies.

Obstacle #3: Lack of Political Influence in Congress

After Congress threatened to eliminate the existing tax incentives, the Alliance could have played defense to protect the status quo. Instead, it played offense and pushed to expand those existing tax incentives. However, land trusts had a big impediment: land trusts had traditionally avoided politics and did not have relationships with Congress. Beginning in 2004, the Alliance mobilized a national campaign to build long-term relationships between land trusts and their representatives in Congress. It organized an annual Advocacy Day, which, over the years, resulted in over 700 meetings with members of Congress. The Alliance also hired a media consultant to place editorials and op-eds in targeted congressional districts, and land trusts invited members of Congress to speak at press conferences and ribbon cuttings for conservation.

The Alliance also launched a five-year capital campaign to fund a dramatic increase in the Alliance's policy budget, along with the initial capitalization costs of Terrafirma and the creation of the accreditation program. The goal was \$35 million, and the Alliance raised \$40 million.

Since so few bills are signed into law, the key to success is recruiting congressional champions who have the power to attach a bill to a larger piece of legislation that is moving through Congress. For example, the Grand Traverse Regional Land Conservancy built close relationships with Representative Dave Camp — who later became chair of the House Ways and Means Committee — and with Senator Debbie Stabenow — who became chair of the Senate Agriculture Committee. Both became champions who played pivotal roles in moving the conservation tax incentives through Congress.

To build support with Republicans, the Alliance recruited a coalition of over 70 hunting, fishing and agriculture organizations, hired Republican staff and lobbyists and won endorsements from the Western Governors Association, the Farm Bureau, and the National Cattlemen and Beef Association. The Alliance carefully crafted a message to bridge the values gap between Democrats and Republicans.

To overcome resistance within the Administration, the Alliance held a series of meetings with the IRS and Treasury Department to explain how the Accreditation Commission and Terrafirma would address their concerns. But the Alliance's primary strategy was to recruit champions in the Senate, the Interior Department and the Council on Environmental Policy to persuade the Office of Management and Budget to include funding for the tax incentive in the President's annual budget.

In August 2006, Congress approved the incentives on a temporary basis – but that was just the beginning of the battle to make the tax incentives a permanent part of the tax code. The land trust community convinced President George W. Bush to include making the tax incentives permanent in his 2008 Budget. In 2010, President Barack Obama hosted a White House conference on outdoor recreation and land conservation, and the

Alliance later convinced him to include the expanded tax incentives in his budget. Over the course of eight years, the Alliance persuaded Congress to renew the temporary incentives four times.

In 2013, land trusts recruited an impressive 311 co-sponsors for the bill to make the incentives permanent – a majority of both Democrats and Republicans in the House. This level of bipartisan support is rare, and unheard of for an environmental bill. In 2014, the House approved a tax bill which included making the tax incentives permanent, but the White House threatened to veto the bill because it did not include tax benefits for the working poor.

After this setback, the Alliance had to start all over recruiting co-sponsors when the new Congress convened in 2015. Finally, after 15 years of work costing over \$10 million, Congress approved the additional tax incentives and President Obama signed them into law on December 18, 2015. The Joint Committee on Taxation estimates that every decade this legislation will result in a \$1.2 billion reduction in tax revenues. Assuming a 28% marginal tax rate, this legislation would leverage over \$4.2 billion in conservation land every decade, or an average of \$420 million per year.

Lessons Learned

1. Build relationships with elected officials before you need them.
2. Cultivate champions in Congress who have the power to drive legislation.
3. Build a coalition that will attract bi-partisan support.
4. Create a targeted media campaign with a message that bridges partisan values.
5. Perseverance.

Innovations

1. Using changes to the tax code to accomplish what would have been impossible using annual appropriations.
2. Developing standards, training, and accreditation to transform the quality of conservation practices.
3. Defending lands from legal attack using a member-owned charitable risk pool.

During the 15-year campaign, a series of obstacles sparked innovations that transformed the effectiveness of land trusts accomplishing their mission. Passing this legislation was the result of a strong coalition, congressional champions, generous donors, the engagement of land trust leaders around the country, and countless hours of work by the Alliance staff team.

Now, conservation leaders in the U.S. are looking ahead to new sources of funding in order to accelerate land conservation: reauthorization and full funding of LWCF, expanding the conservation funding in the Farm Bill, expanding the use of local and state ballot measures for conservation, mitigation funds, carbon credits, disaster funding, conservation developments and private capital investments. The creation of accreditation standards, Terrafirma insurance, and a robust network of relationships with Congress will position land trusts for success as they pursue these new opportunities.

Keynote Panel: Land Conservation – the Road Travelled, and the Road Ahead for Chile

Following is an article, written by Alejandro Quintana, that appeared in Latin Lawyer, Volume 15, Issue 6 (pages 37-38) on September 7, 2016. The original may be found at www.LatinLawyer.com.

Taking control of conservation Alejandro Quintana September 7, 2016

In the US, private landowners have been taking conservation of the environment into their own hands for years, with notable success. Alejandro Quintana of Grasty Quintana Majlis & Cia explains how Chile is now following the same path.

Conservation easements are one of the most powerful, effective tools available for the permanent conservation of private lands. In the US, the use of conservation easements has successfully protected millions of acres of wildlife habitat and open space, generating significant public benefits.

The establishment of conservation easements by private persons or non-profit organisations facilitates the financing of the management and protection of conservation areas and biodiversity. The instrument allows private persons to complement the role of the state to make real and longstanding contributions in the protection of natural landscapes and, above all, to fill the gaps where resources are not sufficient to protect under-represented ecosystems, mitigating threats and promoting the territorial and biological connectivity of the already existing protecting areas. By using this instrument, private persons, natural and legal, can also ensure that their conservation vision is not thwarted by future generations and heirs who may have a change of mindset or face new economic or other pressures.

The need to introduce this new legal tool to Chile was evident. A major part of the terrestrial territory in the Chilean central region is private property and in general lacks environmental protection. The extractive activities of natural resources (forestry, agricultural, mining, etc) predominate in Chile and these industries are carried out across important environmental territory.

Costa Rica was the first Latin American country to use this instrument and we are hopeful that Chile's leadership in promulgating this new law can provoke other Latin American countries to take the same step, so we can make a real regional impact.

The road to private conservation in Chile

It all started at the end of 2006, when Henry Tepper, then director of New York Chapter of the Nature Conservancy, an environmental NGO, came to Chile, sponsored by the Chilean American Chamber of Commerce (AMCHAM), with the purpose of establishing an alliance and creating formulas that would allow Chileans to develop conservation projects voluntarily.

The Nature Conservancy and Grasty Quintana Majlis & Cia commenced a process to search for mechanisms and ideas that would incentivise conservation initiatives in the private sector, especially considering the conservation easement method broadly accepted in the United States.

Clear similarities were identified between the environmental and economic situation of Chile and that of the US 30 years ago, when the private conservation movement started to consolidate there. The Chilean economy was strong and stable, with great leadership from the private sector.

At the invitation of the Nature Conservancy and Harvard Forest of Harvard University, a group of lawyers, conservationists, and Chilean house representatives visited the US to learn about conservation easements and land trusts. Jim Levitt, researcher and director of the Harvard Forest's innovation programme in conservation, inspired the group to create a new in rem right in Chile, which was ultimately named the real right of environmental conservation.

This was to be a reliable and efficient instrument to allow private land owners to voluntarily partially or fully assign their property to environmental conservation purposes for a perpetual period without losing the freehold right of ownership and even allow such landowners to continue with productive economic activities on that land, as long as they were compatible with the conservation purpose.

Once the premise was defined, it was decided to work on a legislative proposal to establish the right. A team was created and led by the Nature Conservancy's Chilean coordinator of private lands, Victoria Alonso, and country manager, Francisco Solis. José Manuel Cruz, an associate of Grasty Quintana Majlis & Cia, prepared various drafts that were revised by law professors such as Jorge Baraona, Álvaro Ortúzar, Miguel Luis Amunátegui and Daniel Peñailillo. The latter property law expert provided particular support in the technical aspects.

Other individuals and organisations also actively participated in this project, such as Marcelo Ringeling, director of Parques para Chile (a non-profit organisation), Rafael Asenjo, current president of the environmental court of Santiago and then coordinator of the Global Environment Facility national protected areas project, World Wildlife Fund Chile, AMCHAM, and Roberto Peralta of Peralta Gutiérrez Abogados.

As a next step, a strategy was designed in order to receive parliamentary support from different political parties, which would present the proposal in a united manner. This was how the bill that established the in rem right of conservation (Bulletin No. 5823-07) entered Chilean Congress in April 2008.

Together with diverse organisations, house representatives, academics and interested persons, and external counsel worked for many years to ensure that the law reform bill moved through the different parliamentary steps and processes.

Finally, Chile and Latin America can now reap the benefits of this hard work. On 10 June 2016, President Michelle Bachelet, accompanied by the Minister for the Environment, Pablo Badener, promulgated the law that establishes the conservation easement.

How it works

Chile adapted the model of the conservation easement that exists in other countries, notably the US, and adjusted it to its national situation. The concept is as follows: the conservation easement is a real property right, constituted voluntarily by a property owner, which establishes certain duties to the benefit of environmental conservation of land or certain attributes or functions of it, and whose exercise is delivered to a determined

natural or legal person. It is transferable, cannot be embargoed, and “runs with the land” to bind future owners and generations.

In practical terms, the easement is constituted by a contract that is signed by public deed and registered in the real estate registry, through which the parties may agree upon at least one of the following prohibitions, restrictions or obligations:

- (i) restriction or prohibition to destine the land to real estate, commercial, touristic, industrial, agricultural, forestry or other purposes; or
- (ii) obligation to maintain or contract service to conserve and manage the land, including the possibility to agree upon specific management plans, so that sustainable activities may be carried out on the land.

Grasty Quintana Majlis & Cia as a law firm is now working to assist private persons and NGOs who wish to make use of the law to protect tracts of land and ecosystems, so it can establish precedents that will subsequently motivate others to make use of the tool.

The following is a one-page information sheet developed by Grasty, Quintana, Majlis & Cia and Tierra Austral regarding the newly passed Derecho Real de Conservación.

In Rem Right of Conservation

On 25 June 2016, Law N°20,930 was published, that creates the In Rem Right of Conservation (Derecho Real de Conservación) Chile adapted the model of the conservation easement that exists in other countries, notably the US, and adjusted it to our national reality and Civil Code to promote the participation of the private sector to conserve the environmental value of their properties, or certain natural attributes and features of them.

The concept is as follows: the landowner voluntarily constitutes an In Rem Right of Conservation that is conferred for the benefit of a natural or legal person, whether public or private, and establishes certain conditions or restrictions to the real estate to enhance the conservation of its environmental heritage. It is transferable, cannot be embargoed, indivisible and “runs with the land” to bind future owners and generations. It may be constituted over the entire real estate title or a certain portion thereof, allowing for different activities, compatible with conservation, to take place on different portions of the property. Its duration is indefinite, unless otherwise expressly agreed by the parties. Practically speaking, the In Rem Right of Environmental Conservation is constituted by a contract that is signed by a public deed before a Notary Public and registered in the Mortgages and Encumbrances Registry of the respective Real Estate Registry, date upon which it produces legal effects.

Conversely, the In Rem Right of Conservation allows economic transactions for eco-friendly services that the environment provides to society. In this sense, the In Rem Right of Conservation allows interested parties the opportunity to conserve the environmental heritage of a place, because they have a scientific or pharmaceutical interest in the natural species or resources of that specific area. One can establish an agreement with a landowner in order to commit to protecting their land in exchange for an amount agreed upon by both parties.

In this way, the In Rem Right of Conservation constitutes a substantial change in Chilean legislation, granting a new legal tool for the promotion and protection of the environment.

Finally, as regards the extinguishment or termination of the in rem right of conservation, the Law indicates a general cause and various specific causes of termination:

1. For the general causes of termination of in rem rights (eg. destruction of the thing); and,
2. For causes specific to the *in rem* right of conservation:
 - a. The transfer of the encumbered property, when this transfer arises from the foreclosure of a preferential mortgage and under specific conditions described in the Law;
 - b. The dissolution of the entity that benefits from the in rem right, unless the parties have stipulated otherwise;
 - c. The expropriation by the State of the encumbered property, whether partially (in which case the right remains over that portion of the property that is not expropriated) or fully.

The In Rem Right of Conservation must include at least one of these prohibitions, restrictions or obligations:

- *Restriction or prohibition to allocate the real estate to one or more purposes eg. real estate, commercial, tourism, industrial, agricultural, forestry or other exploitative purposes.*
- *Obligation to take responsibility for or contract services for the maintenance, cleaning, decontamination, repair, protection, administration, and rational use of the real estate.*
- *Obligation to carry out or supervise a management plan in accordance with the constitutive contract, with attention to the natural resources of the real estate, within the framework of sustainable use thereof.*

In addition, the parties may fix limits to monetary amounts in relation to the different obligations that are agreed upon, as well as different terms for the fulfillment of different restrictions or prohibitions.

Session 6.1 Value Capture: The Latin American Toolbox

Martim Smolka, Senior Fellow and Co-Chair, Department of Latin America and the Caribbean, Lincoln Institute of Land Policy, Cambridge, Massachusetts, USA

Conventional fiscal policies largely neglect the fact that the costs of providing urban infrastructure and services are public, but their benefits are private. The notion of value capture is to mobilize, for the benefit of the community at large, some or all of the windfall income that landowners gain from public investments and by changes in administrative norms and regulations that raise the value of their properties. Martim Smolka, discusses the tool of value capture to aid public and municipal finance initiatives. With precedents as early as the 16th century, value capture is becoming increasingly popular in Latin America and beyond as a mechanism for land-based finance.

Value Capture: The Latin American Toolbox

Although precedents of value capture can be found as early as the 16th century and there have been isolated or unsystematic experiences in many jurisdictions since then, discussions about the need for urban policies that would provide for value capture began in some countries in the 1970s. But it was only in the late 1990s that a significant number of nations enacted laws that allow for value capture. Colombia took the lead with passage of Law 388 in 1997, soon followed by Brazil with its Statute of the Cities legislation in 2001. Since then, Uruguay approved value capture provisions in 2008, and Ecuador followed in 2010. Peru is now in the process of sending

its law (SEDATU) to Congress, while Guatemala and Chile are currently conducting high-level national debates on how the legislation should be formulated.

Land –Based Financing Tools

Value capture turns land into a major revenue source for municipalities, improving their ability to meet public expenditures, as well as to manage urban growth and to promote greater social integration. Depending on the legal frameworks within which they operate, local governments have an opportunity to tap this fundamental resource by using a variety of land-based financing tools (LBFTs).

Betterment contributions: These charges or fees are imposed on property owners to defray the cost of a public improvement or service from which they specifically benefit. In the United States, these charges are known as special assessments. The use of betterment contributions recently became common practice in Latin America, with over \$1.7 billion collected in the eight largest cities in 2007–2012. Bogotá alone supported a public works program for 2005–2016 from contributions worth about \$1 billion (Borrero, Durán, Hernández, and Montaña 2011). In Medellín, betterment levies are paying for more than half of the road grid (Garcia Bolivar 2012).

Charges for building rights: Building rights charges recover the land value increment resulting from development rights over and above an established baseline. Over time, the charges have evolved from the more ad hoc manner of exactions into a strategic method in which the fees are calculated according to predefined criteria and apply to all properties in the city or in a well-defined zone based on the master plan. The instrument that regulates charges for additional building rights in Brazil (Outorga Onerosa do Direito de Construir, OODC) is based on the notion that the landowner’s right is limited to a basic floor area ratio (FAR) and imposes a charge for the right to develop land at higher densities. It also applies to other types of changes yielding more profitable land use options, such as conversions from rural to urban uses or the rezoning of areas for renovation or commercial uses. In 2013, São Paulo distributed about US\$130 million in OODC payments to finance projects that included bus terminals, transportation corridors, parks and green areas, slum regularization, historical preservation, and drainage.

Exactions: These are cash or in-kind contributions, and other types of charges, for extraordinary building rights, with compensation negotiated directly with municipal authorities. Under the Law on Fair Access to Habitat, enacted in 2012 in the Province of Buenos Aires, Argentina, the municipality of Trenque Lauquen amassed about 100 hectares of land to urbanize. In combination with the funds collected from 10 percent of the land value increment generated by urban development of more than 5,000 square meters, these exactions are enabling the municipality to address the majority of its annual affordable housing needs.

Windfalls to Landowners from Urbanization

Landowners in Latin America often reap huge increases in unearned income from a variety of public projects or the easing of zoning and other restrictions.

- Consistently in the region as a whole, conversion of rural land to urban use typically raises parcel prices by more than 400 percent (Bouillon 2012).
- In São Paulo’s high-end areas, the value that developers are willing to pay for the right to build at a floor area ratio (FAR) of two or three (rather than the basic FAR of one) is well over US\$500 per square meter (Sandroni 2011).
- In Rio de Janeiro, the markup for developing new land at the low-income urban periphery is huge, with fully serviced land selling for US\$145 per square meter compared with an investment of just \$10–35 per square meter (Vetter et al. 2011).
- Even the expectation of new public investments can boost prices. For example, in Cali, Colombia, the announcement of a future low-income housing project lifted the per-square-meter price of land in the area by a factor of eight within a year and a half (Bonilla and Loaiza 2006).

Land banking and land leasing: Under land banking, the municipality acquires and holds large tracts of land in order to control their use and prevent speculation. Upon sale or lease of banked land, the municipality captures the land value increment resulting from public investments or market forces. In the 1980s and 1990s, the administration of Aguascalientes, Mexico, acquired land through expropriation and other negotiations to provide an alternative to informal settlements while also imposing sanctions on pirate subdivisions (Jiménez Huerta 2013).

Land readjustment: This scheme requires contributions of land by local owners to an entity that then uses (sells) the contributions to finance the cost of infrastructure and services. These investments, in turn, increase the value of all properties in the area. Participants in land readjustment initiatives assume the risk that the increase in land values from urbanization will more than compensate for the reduction in their individual holdings. The Simesa project in Medellín, an area of about 30 hectares, was originally owned by a steel mill and other smaller factories. Using land readjustment, the area was transformed into a fully self-funded residential complex on 13 plots, with 37 percent of the land.

Property taxation: Any tax on land value is a form of value capture insofar as much of that value results from accumulated public actions and investments. It follows that the property tax captures some value increase since it applies to both buildings and land. For example, in 1987, Law 23.514 created a special fund to pay for a new 40-kilometer subway line in Buenos Aires that would double the existing capacity. The fund was financed through a 5 percent increase in property taxes for all city residents, plus another 2.4 percent surcharge for residents living within 400 meters of the subway stations (Cuenya et al. 2003).

Transfers of development rights: Transfers of development rights (TDRs) are in-kind compensation by the municipality to owners for constraints on building rights (e.g., historic preservation or environmental conservation), or when owners surrender some of their land for a public project such as widening a road, creating a park, or rehabilitating a slum. These rights can be sold to third parties or used directly in developments in predefined areas. The city of Porto Alegre, Brazil, used such rights to compensate owners releasing part or all of their property to make room for a new avenue crossing the city.

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Session 6.2 The Case of the Thomas van der Hammen Forest Reserve in Bogotá: Value Capture as Leverage for Larger Conservation Efforts in Cities

Maria Cristina Rojas Eberhard, Urban Planner Advisor, Colombia, and Enrique Silva, Lincoln Institute of Land Policy, Cambridge, Massachusetts, USA

Maria Cristina Rojas Eberhard and Enrique Silva discuss the Hammen Forest Reserve in Bogotá as a case study for using value capture to spur larger conservation efforts in cities. This paper was prepared for the Workshop on Conservation Finance, held at Las Majadas on September 27-28th, 2016.

**The Case of the Thomas van der Hammen Forest Reserve in Bogotá:
Value Capture as Leverage for Larger Conservation Efforts in
Cities (Executive Summary)**

Along the northern edge of the bustling city of Bogotá, Colombia, lies over 1,300 hectares of land that contains the few remaining sections of high altitude Andean flora, fauna, rich soil and pristine water sources. In 2000, Colombian authorities designated 1,395 hectares for conservation and named the area the Thomas van der Hammen Forest Reserve (TvdHFR). Although the TvdHFR has not been officially established as a park or conservation area, the plots comprising the Reserve have resisted full scale formal and informal urbanization because of a combination of local zoning restrictions, and property owners that have either continued to farm or have voluntarily conserved their plots.

Unabated population growth over the past four to five decades, however, has triggered an expansion of Bogotá's urban footprint to the North, South and West of the city. The area in and around the proposed TvdHFR has not escaped the encroachment of the city, and now, under the city's current Administration (Mayor Enrique Peñalosa, 2016-19), the area is slated for zoning changes that would allow these plots to be urbanized and developed for housing. Although the legality of the zoning change is under question, Mayor Peñalosa has tried to gain support for the urbanization of the TvdHFR by arguing three points: i) there is disagreement within the scientific community about the environmental importance of the area; ii) the need for housing is more pressing than the creation of conservation lands, and; iii) there are insufficient sources of funding to establish and manage the proposed Reserve. Because of area-wide housing pressures and the local government's willingness to urbanize the area, rampant land speculation in and around the TvdHFR has elevated land values and clouded the debate around the actual cost of the Reserve. In a move that could seem like a sanction of speculative land transactions in and around the TvdHFR, Mayor Peñalosa has even argued that expropriation costs would be exorbitant because property owners would demand prices for their plots based on the anticipated rise of land values in the area.

The following case study of the history and funding debates of the TvdHFR highlights the challenges that both private and public sectors face in securing large conservation areas, especially under conditions of rapid urban growth, fragmented land ownership, and distorted land markets. Despite these conditions, the TvdHFR case opens the discussion on innovative techniques for financing land conservation by introducing how a value capture tool, such as the Transfer of Development Rights, can act as a strategic lever for correcting distorted land markets, highlighting the regulatory roles and responsibilities of the public sector over land use and conservation, and stimulating private sector funding efforts to hasten the creation of ecological reserves.

Value capture refers to the recovery by the city of the land value increments generated by actions of the public sector. As a set of tools designed to recover public sector assets, value capture mechanisms can either fully or partially finance a series of urban or conservation investments without affecting the public sector's budget. Land value capture, sanctioned by the Colombian Constitution and regulated by National Law 38 established in 1997, has been implemented through different mechanisms in Bogotá. In Bogotá, value capture tools have been used primarily to help fund infrastructure projects, purchase rights of way for road projects, and, most recently, to support affordable housing plans. The battle over the TvdHFR has now inspired citizen groups, legal scholars, and urban planners to propose value capture as a mechanism that could help hasten the establishment of the Reserve. Specifically, advocates of the TvdHFR argue that the City of Bogotá could raise enough funds to begin the purchase of key plots of land within the Reserve by recovering land value increments generated by the proposed Master Plan for the “Zona del Norte” District (the Northern Zonal Plan).

The Northern Zonal Plan will effectively generate a windfall for property owners in its section of Bogotá by simply re-designating lands that once were zoned as rural or agricultural to urban and higher density uses. Land value increments could also be recuperated, if the municipality established a minimum basic development right across the master plan area and established mechanisms for property owners to purchase additional development rights (e.g. higher FAR) to further intensify land uses. For the areas that are slated for conservation within the TvdHFR, advocates of the Reserve propose a Transfer of Development Rights (TDR) mechanism that would not only create a market for development rights, but would also help to apply the principle of equitable distribution of the burdens and costs of urbanization. TDRs are in-kind compensation by the municipality to owners for constraints on building rights (e.g., historic preservation or environmental conservation), or when owners surrender some of their land for a public project, such as widening a road, creating a park, or rehabilitating a slum. These rights can be sold to third parties or used directly in developments in predetermined areas.

The TvdHFR case highlights the challenges that both private and public sectors face in securing large conservation areas in the context of rapid urbanization and high demands for land to accommodate housing in the Bogotá TDRs as an initial financing mechanism.

The working paper associated with this executive summary is divided into seven sections including the conclusion. In the first two sections, we outline the background of the case study. In sections 3,4, and 5, we outline the background of Bogotá's experience on land value capture and explain the TDR proposal for funding the forest reserve. In section 6, we present some insights on land markets and speculation for the area. We conclude with our argument that the case serves as an opportunity to leverage land value capture tools as a first instance in a larger process of public and private attempts to innovatively finance the creation and management of an urban forest reserve. For more information on the paper associated with this chapter, please contact Martim Smolka or Enrique Silva at the Lincoln Institute of Land Policy.

Session 7.1 Conservation Finance Alliance

Sylvie Goyet, Director, Climate Change and Environmental Stability, Pacific Community, Noumea, New Caledonia

Sylvie Goyet attended the Conservation Finance Workshop at Las Majadas on behalf of the Conservation Finance Alliance Global Network, which consists of 600 members representing trust funds, international organizations, NGOs, donors, private companies, and individuals pursuing conservation finance.

Conservation Finance Alliance

About the Conservation Finance Alliance

The Conservation Finance Alliance (CFA) was founded in 2002 as a global and collaborative network of volunteer members committed to addressing the challenges of sustainable financing for biodiversity conservation. Its stated mission is "*to promote sustainable financing for biodiversity conservation worldwide.*" To accomplish this, the CFA facilitates collaboration among organizations involved in the promotion and the implementation of solutions and tools to optimize capabilities for funding conservation around the world, but predominantly in developing countries. The CFA has become a recognized reference and a shared learning platform for its 600 members (which include trust funds, international organizations, NGOs, donors, private companies, and individuals). It is also a catalyst for projects aiming at strengthening capacities and skills, a group capable of processing research questions or conducting assessments, and an active partner in world-wide conservation, in order to provide solutions and innovations in conservation finance.

Structurally, the CFA operates with an Executive Committee making decisions in collaboration with the membership, a Secretariat handling day-to-day operations, and Working Groups that focus on key programmatic content areas. Task forces are formed as needed to address short-term issues and projects. The three primary Working Groups are Environmental Funds, Protected Area Financing, and Innovative Finance Mechanisms. Another Working Group, the African Environmental Funds Committee, evolved into the CAFÉ network of African environmental funds. The Secretariat is currently hosted by the Wildlife Conservation Society (WCS).

CFA as a Knowledge and Reference Platform

Over the last 14 years, the CFA has played a key role in addressing and promoting conservation finance issues:

- **Convening:**
 - In 2002, CFA organized the conference "Sustainable Financing for Conservation in Africa" in Arusha, Tanzania; this event was the first African forum that brought together all environmental funds operating on the continent. It offered opportunities for African funds to learn from conservation finance experts and environmental funds worldwide, as well as from each other.
 - In 2003, CFA led the organization of the Sustainable Finance Stream at the World Parks Congress in Durban, South Africa.
 - In 2014, CFA hosted the Conservation Finance Pavilion at IUCN's World Parks Congress in Sydney, Australia, and CFA members presented in multiple streams during the Congress and at other Pavilions (Business, Protected Planet, Marine, etc.).
 - In 2016, CFA led a number of events at the IUCN World Conservation Congress, in particular co-leading the stream of 'blue economy' at the Ocean Pavilion.
 - At the various CBD COPs and other international meetings, CFA was present and represented, promoting the conservation finance agenda.
- **Knowledge products and reference platform:** CFA published numerous studies and resources that serve as reference guidelines and practices, including: the conservation finance guide (2003), Sustainable Finance for Protected Areas: Tourism-Based User Fees (2004), the Rapid Review of Conservation Trust Funds (2008), the Practice Standards for Conservation Trust Funds (2014), the study on the Comparative Advantages of conservation trust funds and projects for Protected Area Financing (2014), study on Supporting biodiversity

conservation ventures: Assessing the Impact Investing sector for an investment strategy to support environmental entrepreneurship (2014), the study on Pooling Options for Conservation Trust Funds (2015), and the yearly Conservation Trust Fund Investment Survey (CTIS) editions (2006-2015). All can be downloaded from the CFA website (<http://www.conservationfinancealliance.org/>).

- **Capacity building:** Chiefly through Working Groups, specialized webinars, experts' interventions in various meetings, and training events, CFA contributes to building up the capacity of individuals and institutions in conservation finance assessment and solutions. It collaborates closely with such other networks, like RedLac (network of Latin and Central American Trust Funds), CAFÉ (network of African environmental funds), and/or other networks, such as the International Land Conservation Network or the IUCN network of programmes and members.
- Currently, the CFA acts as the Specialist Group on protected area finance for IUCN's World Commission on Protected Areas, a role that should be strengthened in order to be in a position to mainstream conservation finance solutions to the wider WCPA network.

CFA: A Network in Development

In April 2015, the CFA convened a group of committed CFA members and opinion leaders in Gland, Switzerland to explore the long-term plan for the network. The group recommitted to the network's mission and purpose, and identified the need for a new institutional structure that would enable the network to achieve five key strategic components over the subsequent 10 years:

1. Information sharing, website and finance forums
2. Knowledge products, promulgation of best practices, capacity building and training
3. Conservation finance knowledge data base and information
4. Incubator for innovative and scalable finance
5. Integrated large scale landscape finance

CFA is currently undergoing an institutional feasibility assessment to determine the most appropriate institutional arrangements and hosting modalities for facilitating the development of the CFA into a more sustainable, executive, entrepreneurial and powerful alliance serving the growing needs of members.

A Collaborative Platform

CFA has worked in the past as a broker of collaborative efforts. All of its knowledge products have been the outcome of a great mobilization of numerous partners. The best example could be the Practice Standards for Conservation Trust Funds, which had conservation trust funds directors, networks (RedLac, CAFÉ) leaders, donor agency representatives, technical partners, NGO members and individual experts contribute to the work of the consultants to produce a piece of work that gathers best evidence and practices from all involved. A sustained collaborative partnership involving many meetings, various edits and inputs into the chapters, consolidated reviews and peer-reviews, and illustrative examples resulting in a rich and pragmatic document well appreciated by the members.

Another particular trademark of the CFA is that it usually does not carry the implementation responsibility itself, but entrusts it with one of its members, who is best positioned to carry it out. For example, the CTIS study with WCS, the World Parks Congress with FIBA, or the Practice Standards with Funbio -- for these particular

projects, the implementing member gathered a task force of volunteer members to oversee and feed into the work. These arrangements allow for deep engagement of the members and a shared responsibility for the products generated.

Over the next phase, CFA ambitions to develop further the collaborative approach with members, technical partners and ‘sister’ networks. CFA is a partner in the Coalition for Private Investment in Conservation (CPIC), a partnership launched by Cornell University, Credit Suisse, IUCN, and Nature Vest of TNC in September 2016, which strives to deliver a pipeline of natural capital investment opportunities and financial solutions to bring together return-seeking investors with conservation projects. It would develop broad investment blueprints and present illustrative deals on potential areas of opportunities, such as sustainable forestry, fisheries or watershed conservation. CFA would be looking into ways to offer CPIC links to its broad membership on the ground.

CFA will pursue close collaboration with the networks of conservation trust funds (Redlac, CAFÉ and the nascent Asia/pacific network), in particular, as conduit for capacity building and learning events to their own constituency and as platforms to share CFA knowledge products and gather practice evidence.

Finally, CFA is keen to explore further opportunities to partner more closely with networks, such as the International Land Conservation Network or the Long Run, to advance conservation finance over landscape and private land areas, reaching beyond the traditional Protected Areas.

CFA has operated to date as a strong collaborative network involving its broad range of members as much as possible. It will seek to strengthen further this approach in the near future, to reach beyond traditional partners, and explore new modalities such as becoming an incubator of innovative finance.

Session 7.2 Conservation Finance Network

Leigh Whelpton, Program Director, Conservation Finance Network, Arlington, Virginia, USA

Leigh Whelpton Goyet attended the Conservation Finance Workshop at Las Majadas on behalf of the Conservation Finance Network (CFN). By training, convening, and supporting a growing network of public, private, and nonprofit professionals, CFN helps to increase the financial resources deployed for conservation., which advances land and resource conservation by expanding the use of innovative and effective funding and financing strategies.

Conservation Finance Network

The following information on the Conservation Finance Network is excerpted from the network’s website, available at www.conservationfinancenetwork.org.

Conservation Finance Network: Where Conservation Meets Capital

More and more, the conservation community is recognizing that traditional funding models can’t keep pace with the need for conservation capital. At a time of modest public funding and limited philanthropic dollars, innovative funding and financing strategies hold great promise in narrowing the gap between the financial resources that are available and the scale of the conservation need.

About Conservation Finance Network

The Conservation Finance Network (CFN) advances land and resource conservation by expanding the use of innovative and effective funding and financing strategies. We support a growing network of public, private and nonprofit professionals through practitioner convenings, intensive trainings, and information dissemination to increase the financial resources deployed for conservation.

We are a diverse network of individuals and organizations from across the private sector, foundations, public agencies, conservation groups, and academic institutions.

Our web presence is produced in partnership with Yale Center for Business and the Environment. This web presence is a leading resource for practitioners, investors, conservationists, students and others. Our work draws from a start in and focus on the United States and touches on international approaches. We produce original content and curate the work of other organizations. We create news, research, policy, training and convenings related to conservation finance. We cover all the world's ecosystems including forests, agriculture, oceans, cities and rivers.

We welcome your ideas and encourage you to share our articles.

Our Story

CFN is the culmination of years of collaborative effort by leading practitioners in the field. The initiative grew out of a pilot workshop envisioned at Lincoln Institute of Land Policy in 2006 and held at Yale School of Forestry & Environmental Studies in 2007. This initial training course – nicknamed the “Boot Camp” for its intensity – tackled the art and science of raising, borrowing, managing and investing money for land and resource conservation. Its success energized momentum for additional workshops, provided a clear rationale for backbone support in this emerging field, and spurred the eventual creation of CFN at Island Press with seed money from the United States Department of Defense's Readiness and Environmental Protection Integration Program. Today, our operations are based out of The Conservation Fund, a top-ranked organization for efficiency and effectiveness which works to achieve environmental and economic outcomes.

Session 8.1 Energy Infrastructure in Chile and Opportunities for Conservation **Daniela Martinez, Senior Associate, Quintanilla & Busel Niedmann, Chile**

Daniela Martinez, an expert on energy regulation and public policy, discusses the future of energy infrastructure in Chile. The following paper was written in preparation for the Workshop on Emerging Innovations in Conservation Finance, held in Las Majadas, Chile on September 26-28, 2016.

Energy Infrastructure in Chile and Opportunities for Conservation¹⁶

According to one study, Chile will invest from 464¹⁷ MW to 4962¹⁸ MW in generation infrastructure from 2016 to 2025, which implies a growth from 2% to 19% of the current and in construction installed capacity. If we also consider the investment needs of the transmission and distribution sectors, including the investment in transmission lines for the interconnection of the two main systems in Chile, the Big North Interconnected System (“SING”) and the Central Interconnected System (“SIC”), then the total investment in energy-related infrastructure from 2016 to 2025 increases from US\$4.6¹⁹ billion to US\$23.4²⁰ billion, that is, from around 1.5% to 8% of Chile’s GDP.

In terms of land use, the generation investment alone will occupy from 111,197 to 145,792 acres of land in Chile, which roughly represents 64% to 85% of the urbanized area of Greater Santiago²¹. Although we don’t have data regarding the kilometers of lines that will be built, as an example, the two lines that will be built in order to connect the SIC to the SING will have an extension of 153 kilometers and 600 kilometers respectively²².

The level of investment that the construction of energy infrastructure will require, and its level of impact on the environment, present both an opportunity and a challenge for Chile. What innovative policies can be implemented to guide such investment in a way that not only decreases the traditional impact that the construction of power plants and lines has on the environment, but, at the same time, improves the quality of already impacted areas and conserves areas?

Up until now, both the planning and the actual siting of the generation plants and transmission and distribution networks in Chile has been left mainly to private parties’ decision. However, a law recently enacted, and a bill currently being discussed in Congress, gives the State, specifically the Ministry of Energy, a much larger role in planning and locating energy infrastructure. It is in the context of this new framework that opportunities to enable and promote the investment in green infrastructure and conservation could arise.

A New Framework for Transmission: A Larger Planning and Siting Role for the Estate

On July 20th, 2016 a Law that changes the regulation of the transmission sector was published in the official gazette (the “Transmission Law”²³). The Transmission Law changed many aspects of the regulation, however, for our purposes, the “Long Term Energy Planning Process” and the “Path Determination Study” are the most relevant.

¹⁶ Daniela Martínez is a lawyer from Universidad de Chile. She holds a Master in Law (LLM) from Harvard University and Master in Public Administration (MPA) from Harvard University. She is currently Senior Associate at Quintanilla & Busel Niedmann. dmartinez@qbn.cl

¹⁷ Energia by Alexander Galetovic and Cristián Hernández, 2016. Hereinafter Galetovic et al. This considers a GDP of 2% in a scenario without the development of hydro, p. 13.

¹⁸ This considers a GDP of 6% in a scenario with hydro. Galetovic et al., p. 13.

¹⁹ This considers a GDP of 2% in a scenario without the development of hydro. Galetovic et al., p. 15

²⁰ This considers a GDP of 6% in a scenario with hydro. Galetovic et al., p. 16

²¹ Escenarios Energéticos. (2013). Escenarios Energéticos Chile 2030: Visiones y temas clave para la matriz eléctrica.

²² The first group of lines will connect Crucero, located in Tocopilla with Los Changos, in Mejillones. The second line will connect Los Changos in Mejillones with Cardones in the III region. Galetovic et al., p. 14.

²³ Law No. 20,936 that establishes a new electric transmission system and creates a new independent system coordinator of the national electric system.

Long Term Energy Planning Process: According to the Transmission Law, every five years, the Ministry of Energy will carry out a planning process in which it will forecast different scenarios of generation and consumption for at least the next 30 years. Most notably, in this process, the Ministry will determine “Energy Development Poles.” Energy Development Poles, a new concept in Chile, are geographically identifiable areas in the country²⁴ with renewable energy resources that use energy through a single transmission system, which is economically efficient and, therefore, considered of public interest. In the determination of each development pole, the Ministry will have to comply with environmental and territorial planning regulation.

The Ministry will elaborate a technical report for each development pole, identifying specific areas and technologies. Before issuing the report, the Ministry will carry out a strategic environmental assessment process of the same in each of the provinces where the development poles are located.

Up until the enactment of the law, Chile had no long term planning process like the one described, the concept of development poles for generation did not exist, and the Ministry of Energy had no say in the identification of areas for the development of generation. Also, this is the first time that a law mandates the Ministry of Energy to carry out a Strategic Environmental Assessment Process. In the Strategic Environmental Assessment Process of the poles, the Ministry will evaluate the environmental objectives and impacts of the Plan, and will set criteria for the sustainable development of the same. The Strategic Environmental Assessment Process must be carried out in coordination with other Government entities and will be done in a participatory way.

The first Long Term Energy Planning Process will start in October of this year. The Ministry is currently working on the methodology of the process and on its regulation.

Path Determination Study: According to the Transmission Law²⁵, the National Energy Commission (“CNE”) will carry out a process to determine the transmission lines that need to be expanded and the new lines that need to be built. This was also done by the CNE before the enactment of the Transmission Law. Before its enactment, the CNE would carry out tenders for the construction of the lines, and the private parties that won those tenders would determine the specific path the line would follow according to their own criteria. Today, in the case of some new lines²⁶ the Ministry of Energy will conduct a Path Determination Study to assess different alternatives of paths for the construction of a specific transmission line. The specific path of the line will be chosen by a Committee of Ministers (*Consejo de Ministros para la Sustentabilidad*), taking into account technical, economic, environmental, and sustainable development criteria. The Path Determination Study will go through a Strategic Environmental Assessment Process. Once the path is determined, the construction of the line with that specific path will be tendered to private parties. This is the first time the Estate will carry out a participatory process that will first determine alternatives for paths, considering not only economic and technical criteria but also environmental and sustainability criteria. It is also the first time that the Ministry of Energy will have to carry out a Strategic Environmental Assessment Process for the specific location of a transmission line, or for any energy infrastructure for that matter.

In conclusion, the Transmission law mandates the Ministry of Energy, for the first time, to carry out planning and siting processes for energy infrastructure, conduct Strategic Environmental Assessment Processes and

²⁴ These areas must be located in the area of the National Interconnected System, therefore Aysen and Magallanes are not subject to the determination of development poles as of today.

²⁵ Articles 92, 93 and 94 of the Transmission Law.

²⁶ Not all new lines will go through a path determination process. It is at the discretion of the Ministry of Energy to determine which lines will go through this process according to the following criteria, such as the tension level of the line, the purpose of its use, the difficulties of Access to or from development poles, the magnitude of the same and the complexity in its implementation. Article 92 of the Transmission Law.

consider not only, as in the past, technical and economic criteria for the development of energy infrastructure, but also environmental and sustainability criteria.

A New Framework for Territorial Planning? The Discussion of the Regionalization Bill

Currently Chile's land use legislation regulates, in a mandatory way, the development of urban areas through the issuance of inter-municipal plans and municipal plans. Rural areas are practically not regulated by our current system. Although the law indicates that territorial planning will be carried out in four levels, through the issuance of a national plan, regional plans, inter-municipal, and municipal plans, Chile currently has no National Plan, and only a few regions have regional plans. Those regional plans guide the development of inter-municipal and municipal plans, but are not binding for private parties. Energy infrastructure, specifically, is even less regulated when it comes to its siting, as the land use regulation states that regardless of what an inter-municipal or municipal plan indicates, power plants can always be sited in rural areas, and transmission and distribution lines can always be sited in urban and rural areas. The only siting restriction for energy infrastructure is that, in urban areas, power plants can only be sited in areas denominated by the respective plan as "infrastructure" and "industry."

Currently a bill is being discussed in Congress, that aims to give broader power to regional governments ("Regionalization Bill")²⁷. In terms of territorial planning, the bill creates two new instruments. A National Plan, that will be approved by a Committee of Ministers and regional plans that will be created through a participatory process by local governments.

The National Plan will establish the guidelines to which the regional plans must conform. Regional plans will regulate rural areas in a binding manner. Although it is not yet completely clear how the Regionalization Bill will change the current land use regulation for energy infrastructure, the bill seems to indicate that the National Plan can regulate the siting of interregional transmission networks and regional plans can establish "conditions for siting infrastructure" and the "preferable location of the same". Therefore, the Regionalization Bill will potentially change territorial planning and land use regulation in general, and in particular for energy infrastructure in rural areas, as for the first time, the siting of networks and power plants will have to conform to a National plan and regional plans.

Conclusion

According to projections, Chile will invest from 1.5% to 8% of its GDP in energy infrastructure by 2025. It is peremptory to make this investment not only sustainable, but to also leverage the opportunity to invest in green infrastructure and improve the creation of conservation areas.

The newly enacted Transmission Law creates two new processes that give the Ministry of Energy a much greater role than in the past in planning and siting energy infrastructure. Unlike ever before, the law mandates the Ministry of Energy to conduct Strategic Environmental Assessment Processes and to consider not only economic and technical criteria for planning and siting energy infrastructure, but also environmental and sustainability criteria. The Regionalization bill, if enacted, will also create a planning process and binding regional plans, unlike any seen before.

This is the time to think about how to carry out those processes in order to prevent them from becoming a bureaucratic step with no real benefits for the environment. One idea is to use the processes of the Transmission

²⁷ Bill that introduces amendments to the N°19.175, Organic Constitutional Law on Government and Regional Administration, deepening the regionalization of the country (Bulletin 7963-06).

Law and of the Regionalization Bill to potentially implement a plan like California’s Desert Renewable Conservation Plan (“DRECP”)²⁸, a conservation planning effort on 10.8 million acres of public lands that identifies priority areas for renewable energy development while setting aside areas for conservation and outdoor recreation. The DRECP designates development focus areas with high quality solar, wind, and geothermal energy potential and access to transmission, sited in low conflict areas. The applications in these areas will benefit from streamlined permitting processes, predictable survey requirements, and simplified mitigation measures²⁹. The Plan also identifies national conservation lands and designates areas of critical environmental concern. Today we have the opportunity to assess whether a plan such as the DRECP might benefit Chile.

Session 8.2 The Paris Agreement, Conservation, and Civil Society

Ken Berlin, President and CEO, The Climate Reality Project, Washington, District of Columbia, USA

Ken Berlin discusses the impact and implications of the Paris Climate Agreement at COP 21 in 2015, and what effects it may have on conservation initiatives and conservation finance moving forward. This paper was prepared for the Workshop on Conservation Finance, held on September 27-29th, 2016.

The Paris Agreement, Conservation, and Civil Society

Abstract

When 195 United Nations Framework Convention on Climate Change’s (UNFCCC) countries and the European Union agreed to the Paris Agreement at the 21st Conference of the Parties (COP 21) in 2015 (“Agreement”), a new era of climate action began. The Agreement outlines the world’s first universally accepted framework to reduce emissions and address climate change. As an important part of that framework, the Agreement recognizes that countries should “conserve and enhance” forests as greenhouse gas sinks. That recognition has led many countries to commit to specific measures to conserve and enhance forests. In addition, the Agreement further legitimizes the UN-led REDD+ initiative, which aims to preserve forests and reduce deforestation-related emissions.

While all major elements of REDD+ are now formally agreed to at the UNFCCC level, and many countries have made strong commitments to conserve and enhance forests, there is, nevertheless, a long way to go before the program can make a meaningful impact on forest conservation or global emissions. This paper outlines some opportunities for improvements, specifically around reducing investor risk in forest carbon projects and increasing private investment in REDD+. In addition, it outlines some ways that civil society can facilitate these improvements and support the Agreement more broadly.

²⁸ See <https://www.doi.gov/pressreleases/secretary-jewell-state-california-announce-landmark-renewable-energy-conservation-plan>.

²⁹ See <https://www.doi.gov/pressreleases/secretary-jewell-state-california-announce-landmark-renewable-energy-conservation-plan>.

What Happened in Paris and Where Do Forests Fit In?

The Paris Agreement

One-hundred-ninety-five countries came together in Paris, France, at the end of 2015 for the United Nations Framework Convention on Climate Change's (UNFCCC) 21st Conference of the Parties (COP 21). At the time, there was a hopeful attitude among world leaders, representatives, and negotiators that the conference would lead to the first truly global framework for action on climate change, largely due to the more than 180 Intended Nationally Determined Contributions (INDC) that countries had submitted before the event.³⁰ What made these INDCs so important was that they gave each country the chance to set its own greenhouse gas (GHG) emission reduction goal and a strategy to achieve it, creating a bottoms-up, contribute-what-you-can approach that stood in stark contrast to previous UNFCCC mechanisms. Thanks largely to this cooperative approach, 195 countries unanimously adopted what's become known as the Paris Agreement ("Agreement") on December 12, 2015, establishing the world's first framework for addressing climate change on a global scale.

Long-term Goals of the Paris Agreement

One of the most important aspects of the Agreement is that it establishes long-term goals for limiting both global temperature rise and GHG emissions. Specifically, Article 2 aims to strengthen the global response to the threat of climate change by "holding the increase in global average temperature to well below 2 degrees Celsius above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 degrees Celsius."³¹

Further down, Article 4 provides a long-term emissions goal to help achieve the long-term temperature goal outlined in Article 2. Specifically, it "aims to reach global peaking of greenhouse gas emissions as soon as possible...and to undertake rapid reductions thereafter in accordance with the best available science, to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of the century."³² Later in that same article, the Agreement requires every party to submit an updated or new INDC every five years, informed by a "global stocktake," or a review of progress in meeting the above goals.³³ By doing so, the Agreement sets the stage for regular measurement and review of global efforts to reduce emissions with reference to long-term temperature and emissions goals.

Carbon Sinks and Conservation

Article 4 of the Agreement specifically mentions GHG sinks, while Article 5 calls for parties to "conserve and enhance" sinks, including forests.³⁴ It encourages the parties to utilize results-based payments and "policy approaches and positive incentives for activities relating to reducing emissions from deforestation and forest degradation, and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries."³⁵

³⁰ <http://www.worldbank.org/en/news/feature/2015/12/12/paris-agreement-paves-way-for-world-bank-group-helping-countries-deliver-on-climate-commitments>

³¹ http://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf Article 2.1(a)

³² http://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf Article 4.1

³³ http://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf Article 4.9; http://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf Article 14

³⁴ http://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf Article 5.1

³⁵ http://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf Article 5.2

Mexico has also submitted an INDC with strong forestry commitments, and just like Brazil, it has set a zero percent deforestation goal for 2030. Additionally, Mexico acknowledges the diversity of its ecosystems and the environmental services – such as carbon sequestration, water and soil maintenance, habitats, and disaster mitigation – this diversity provides. In order to protect this diversity, Mexico’s INDC emphasizes the importance of ecosystem-based adaptation. This broad term refers to strategies aimed at increasing the resilience of ecosystems in ways that will help human communities adapt better to the effects of climate change. Beyond the deforestation target, Mexico also lists adaptation tactics including: reforesting watersheds, the creation of biological corridors, protecting priority species, and implementing a scheme of conservation and recovery of coastal and marine ecosystems.

It’s one thing to expect these commitments from a country like Brazil, which had an internationally-recognized deforestation crisis, but Mexico has gone above and beyond to include conservation measures – especially for forests – in its INDC, and to provide detailed information on implementation.

REDD+, Climate Change, and Conservation: *REDD+ Definition and A Brief History*

Article 5 of the Agreement specifically mentions “*reducing emissions from deforestation and forest degradation, and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks.*”⁴⁴ This is not an accidental use of terms; it was specifically chosen to reflect a previously-agreed-to UNFCCC climate change mitigation approach known as REDD+. As a voluntary UN-led initiative, REDD+ offers developing countries results-based payments as incentives to contribute to climate change mitigation actions.⁴⁵ REDD+ strategies aim to make forests more valuable standing than they would be cut down by creating a financial value for the carbon stored in trees.⁴⁶

While REDD+ was first formalized in Bali, Indonesia at COP 13 in 2007, it took about 10 years of negotiations before the program was truly ready for implementation.⁴⁷ Progress in setting REDD+ requirements that were consistent, comparable, and in line with the objectives of the UNFCCC was very slow. A significant breakthrough occurred at COP 19 in Warsaw, Poland, in 2013 when negotiators made progress in six key issue areas.⁴⁸ Then, at Bonn Climate Change Conference in 2015, negotiators finally agreed to all major REDD+ elements and provided sufficient guidance for implementation.⁴⁹

Connecting REDD+ to Climate Change and Conservation

According to one estimate, tropical deforestation accounts for an estimated 15 percent of global GHG.⁵⁰ Therefore, addressing forest conservation will be imperative to keeping global emissions in check and meeting the Agreement’s long-term temperature and GHG emission reduction goals. The good news is that many countries have recognized the importance of addressing conservation and forest preservation in their INDCs, as is evident by the large number of countries with INDCs including some mention of LULUCF. While the UNFCCC and the Agreement do not require countries to utilize REDD+ to address forest conservation, some countries are taking advantage of the benefits that these result-based payment systems provide. Moreover,

⁴⁴ http://unfccc.int/files/essential_background/convention/application/pdf/english_pari_agreement.pdf Article 5.2

⁴⁵ <http://www.un-redd.org/how-we-work>

⁴⁶ <http://www.unep.org/forests/Portals/142/docs/UN-REDD%20FAQs%20%5B11.10%5D.pdf>

⁴⁷ <http://blog.cifor.org/29000/the-redd-framework-finally-complete-after-almost-10-years?fnl=en>

⁴⁸ <http://www.wri.org/blog/2013/12/warsaw-climate-meeting-makes-progress-forests-redd>

⁴⁹ <http://forest-trends.org/blog/2015/06/10/surprising-development-at-un-climate-meetings-redd-is-finished/>

⁵⁰ <http://www.wri.org/blog/2015/12/new-platform-rev> <http://forest-trends.org/blog/2015/06/10/surprising-development-at-un-climate-meetings-redd-is-finished/eals-how-much-carbon-locked-tropical-forests-%E2%80%93-and-how-much-was-lost>

REDD+ and similar conservation projects can have a range of co-benefits, including preserving often-high biodiversity forested areas, maintaining ecosystem services, and improving forest governance.⁵¹

Scaling and Improving REDD+ Projects

It is clear that REDD+ is now in a stronger position to address forest preservation, but there are still problems for REDD+ and other forest-based carbon markets, especially when it comes to attracting private investors and reducing risk.

Investments and Payments Issues

To date, REDD+ has largely been a public sector endeavor. Over the last 10 years, most of the money – approximately 90 percent – in 13 key REDD+ countries has come from public sources, such as multilateral and bilateral aid agencies.⁵² Public funds, however, are not unlimited, so in order to scale up REDD+ and other conservation incentive programs to a point where they could actually significantly contribute to a country's mitigation targets and hopefully increase its ambition, more private sector involvement would be extremely helpful. As mentioned before, this is something the Agreement explicitly calls for and recognizes as an important part of implementing INDCs.⁵³

Currently, private entities hoping to invest in forest carbon projects only have a few avenues for obtaining a return on their investment. One option is the combination of carbon offset markets and forest credits, such as verified carbon units.⁵⁴ To date, however, only a limited amount of cap-and-trade programs provide a market for forest offset credits and only a handful of investors receive payment through voluntary carbon markets.⁵⁵ Currently, some major cap-and-trade markets, such as the European Union's,⁵⁶ do not accept REDD+ or forest conservation credits.⁵⁷

Another avenue is through results-based payment programs, as emphasized in the Agreement. One example of a multilateral results-based program is the World Bank's Carbon Fund, which provides payments upon verification of reduced emissions from large-scale REDD+ programs in qualifying countries.⁵⁸ Contributing to deforestation also offers a range of investment returns that are more difficult to quantify, such as reputational benefits for a company committing to eliminating the practice in its supply chains.⁵⁹ All of these avenues for return on investment will need to be strengthened or streamlined in order for REDD+ to meaningfully scale up.

Reducing Investment Risk in REDD+ Projects

In addition to strengthening carbon markets and other return on investment avenues, a key obstacle in scaling up REDD+ and other market-based conservation programs is reducing investment risks. Arguably, the ultimate solution for reducing risks in market-based forest conservation projects is to provide investors with institutional

⁵¹ <http://theredddesk.org/encyclopaedia/co-benefits>

⁵² <http://forest-trends.org/blog/2016/08/15/missing-link-protecting-forests-private-sector>; <http://www.redd-monitor.org/2016/02/04/redd-is-dead-whats-next/>

⁵³ http://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf Article 6.8(b)

⁵⁴ <http://www.v-c-s.org/project/vcs-program/>

⁵⁵ <http://www.redd-monitor.org/2016/02/04/redd-is-dead-whats-next/>

⁵⁶ http://ec.europa.eu/clima/policies/ets/faq_en.htm

⁵⁷ <http://www.redd-monitor.org/2016/02/04/redd-is-dead-whats-next/>

⁵⁸ <http://www.worldbank.org/en/news/press-release/2013/01/10/new-funding-for-climate-forests-protection>

⁵⁹ https://www.researchgate.net/publication/274641006_Making_REDD_pay_Shifting_rationales_and_tactics_of_private_finance_and_the_governance_of_avoided_deforestation_in_Indonesia

and market clarity. The Agreement was a step in the right direction and will give investors some much-needed policy certainty at the highest levels.

The next step is for countries to follow through with implementation of their deforestation commitments and increase policy support at the national level. This will involve resolving ongoing institutional and operational challenges to REDD+ projects, such as lack of implementation capacity in developing countries, land tenure issues, and carbon measurement, reporting, and verification challenges. In addition, REDD+ carbon offset markets, and other forestry credit markets, will need to be strengthened and expanded to increase demand and ensure that these incentives can compete with alternative uses for forests.⁶⁰ One example of where this is happening is in California, where the state's air resources board is considering linking its offset program with Acre, Brazil in order to source REDD+ offsets.⁶¹

While institutional and market clarity could take time to form, other measures could be taken in the near term to reduce investor risks. For example, risks could be spread out through public-private partnerships, benefit-sharing arrangements, or by providing investors access to international finance and incentives for forestry conservation (e.g., international grants or the Green Climate Fund). Risks can also be reduced through other market-based interventions, such as creating loan-loss reserves, risk guarantees, or risk buffers (i.e., setting aside some carbon credits for riskier projects and gradually releasing them for sale as the project proves itself over time).⁶² Ultimately, there will likely be no silver bullet for improving REDD+ and other forest carbon programs, and in all likelihood, REDD+ will continue to grow and evolve as reforms are made and private entities gain more confidence in forest carbon investments.

Conservation, Climate Change, and Civil Society: Linking Conservation and Climate Change

It could be argued that conservation and climate change are now linked more closely than ever thanks in no small part to the Agreement.⁶³ While it has become increasingly clear that those working on climate change must also consider forest preservation and sustainable land management, the conservation sector is also increasingly focusing on climate change. The 2016 International Union for Conservation of Nature (IUCN) World Conservation Congress is a prime example. Not only was climate change a major theme, but the conference was the stage for the release of a major report reviewing ocean warming, climate change adaptation best practice guidelines, and other meetings, sessions, and reports on the numerous intersections between climate change and conservation.⁶⁴

The Role of Civil Society, Specifically Regarding REDD+

Civil society has a long history of partnering with governments and private entities to improve governance outcomes. Many existing activities and programs are working to improve the institutional and investment climate for REDD+ projects. For example, the World Wildlife Fund is providing direct capacity-building support to Colombia, the Democratic Republic of Congo, Indonesia, Nepal, and Peru to help them develop their REDD+ strategies and funding proposals.⁶⁵ Other civil society organizations, such as Forest Trends, have provided a wealth of original research and best practices to support REDD+ and other market-based forest

⁶⁰ <http://forest-trends.org/blog/2016/08/15/missing-link-protecting-forests-private-sector/>

⁶¹ http://www.forest-trends.org/documents/files/doc_5242.pdf

⁶² <http://forest-trends.org/blog/2016/08/15/missing-link-protecting-forests-private-sector/>

⁶³ <https://portals.iucn.org/congress/motion/059>

⁶⁴ <https://portals.iucn.org/library/node/46254>; <http://www.iisd.ca/iucn/congress/2016/4sep.html>

⁶⁵ <http://www.worldwildlife.org/initiatives/saving-forests-with-redd>

conservation programs.⁶⁶ Still others, such as Friends of the Earth, are contributing to the ongoing debate about how best to reduce global deforestation by actively opposing REDD+ and providing alternative proposals.⁶⁷ Regardless of their approach, civil society organizations will almost certainly have a role to play in the global effort to reign in forest-related emissions and enhance conservation outcomes this century.

The Role of The Climate Reality Project

Broadly, The Climate Reality Project works to educate citizens around the world to become champions for climate action and to push their leaders to pursue strong emission reduction policies. One of the ways that Climate Reality has achieved this goal is through the establishment of branch offices in 10 countries whose participation will be essential to a global solution on climate change. Each office has a mandate to support the implementation and raise the ambition of its host country's INDC. In this capacity, Climate Reality advocates for the inclusion and expansion of mitigation and adaptation efforts that range from increased renewable energy proliferation to market-based conservation solutions.

To this end, Climate Reality trains highly capable activists, known as Climate Reality Leaders, who live in hundreds of countries around the world and lead local efforts to advance climate solutions and policies at every level. The organization's chairman, Nobel Laureate and former US Vice President Al Gore, trains all Climate Reality Leaders in the climate science and solutions necessary for this work, while field-leading communicators, executives, and policymakers provide them with the subject knowledge and outreach skills to engage and inspire their communities to take action.

More than 10,000 trained Climate Reality Leaders are playing a key role in raising awareness of climate change on a global scale and taking lead roles in working for solutions. One example is Professor Pierre Gutierrez Medina. After training as a Climate Reality Leader in 2014, Professor Medina, who specializes in industrial and systems engineering, began working with the Association for Research and Integral Development (AIDER) to make an impact on conservation in Peru. AIDER is one of the main organizations behind a cutting-edge REDD+ project that will use the sale of verified carbon units to halt the advance of deforestation in one of the world's most endangered landscapes. The project is expected to conserve more than 38,000 hectares of dry forest, avoid nearly 400,000 metric tons of CO₂-equivalent emissions during the first 10 years, and improve the quality of life of almost 5,000 people.⁶⁸

Conclusion

International market-based conservation solutions have made remarkable progress in recent years. Thanks to the Agreement – and the process leading up to its adoption – REDD+ is arguably stronger than ever, but there is still room for improvement. Should REDD+ realize its full potential, the conservation benefits could be substantial and play an integral role in achieving the long-term goals outlined in the Agreement. Civil society organizations, like The Climate Reality Project, can be key actors in bringing these improvements to fruition and strengthening forest carbon markets in the coming years. The Agreement has set the stage for strong conservation solutions to climate change, but it is up to us to make it a reality.

⁶⁶ <http://www.forest-trends.org/page.php?id=173>

⁶⁷ <http://www.foei.org/wp-content/uploads/2014/09/REDD-FoEI-position-paper.pdf>

⁶⁸ http://database.v-c-s.org/sites/v-c-s.org/files/Summary_PDD_CCB_norte.pdf

Session 8.3 Making Impact Boring: Harnessing the Power of Investment to Solve Global Problems
David Boghossian, Managing Director, Commonwealth Impact Partners, Cambridge, Massachusetts, USA

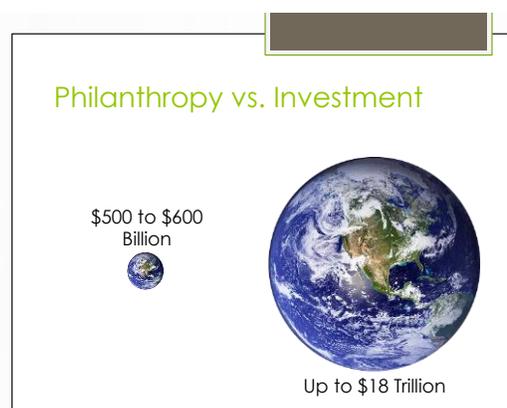
David Boghossian discusses how investment dollars can be used as leverage towards a new paradigm that considers impact investing, particularly investing with a conservation or environmental impact, second nature to the investment world. This paper was prepared for the Workshop on Conservation Finance, in Las Majadas, Chile on September 26-28, 2016

Making Impact Boring: Harnessing the Power of Investment to Solve Global Problems

We have “a few short decades”⁶⁹ to re-invent the global economy.

Two decades? Four decades? There’s no way to know. But in those few decades we need to halt and roll back the impacts of greenhouse gasses, provide food, shelter, and water for 10 billion people, and reverse habitat destruction and species loss, among other things.

Global green and grey infrastructure investment will be an important part of this economic shift. The Global Commission on the Economy and Climate, led by Lord Nicholas Stern, estimates that some \$90 trillion will be invested in infrastructure over the next 15 years, or an average of something like \$6 trillion per year⁷⁰. To put that in perspective, the World Bank estimates that the sum of Gross Domestic Product was about \$73 to \$74 trillion in 2015⁷¹. I’m not going to add much to that conversation, except to note two numbers:



- Global Philanthropy: Approximately \$500 - \$600 Billion (Giving USA, CIP estimates⁷²)
- Global Savings (available for investment): Approximately \$16 - \$18 Trillion (World Bank, OECD⁷³)

⁶⁹ Paul Gilding, *The Great Disruption*, 2011, among others. For a summary, see Thomas Friedman’s oped, “The Earth is Full”, *New York Times*, June 7, 2011. <http://www.nytimes.com/2011/06/08/opinion/08friedman.html>

⁷⁰ Global Commission on the Economy and Climate. *Climate, Economy Technical Note: Infrastructure investment needs of a low-carbon scenario*. November 2014. <http://2014.newclimateeconomy.report/wp-content/uploads/2015/01/Infrastructure-investment-needs-of-a-low-carbon-scenario.pdf>

⁷¹ World Bank Data, <http://data.worldbank.org/indicator/NY.GDP.MKTP.CD>

⁷² Giving USA 2016: The Annual Report on Philanthropy for the Year 2015 puts US charitable contributions at \$373 Billion. CIP estimates a global number at \$500-600B based on global giving patterns.

⁷³ The World Bank and OECD measure global savings rate at 24.3% indicating \$16.8 Billion (<http://data.worldbank.org/indicator/NY.GNS.ICTR.ZS>) available for investment or more is purchasing power parity metrics are used.

This means that investment dollars have the potential to be about 30 times more impactful than philanthropy alone. As a society, we have to learn how to harness this power of investment – the most potent force for change available to us.

This is the power of socially responsible investing (SRI) and impact investing. I am not going to get into the nuances of the differences between the two, except to say that impact investing is actively focused on building solutions to social and environmental problems, whereas SRI is a much broader category of investment that is “aware” of sustainability issues as opposed to be driven by them. Impact investing is not well tracked, but is unlikely to be more than 1-2% of the overall investment market⁷⁴.

Two observations: First, if we could focus the majority of the savings available for investment on social and environmental problems, we could build solutions to those problems up to 30 times faster. Second, for that to happen, these investments have to compete with traditional financial instruments in terms of risk-adjusted returns.

In other words, we have to make impact investing boring and profitable. But how?

Philanthropy vs. Investment

Before we get to that, let’s talk about the relationship between philanthropy and investment. For decades, economists and others considered philanthropy to be equivalent financially to an investment with 100% negative return. You give away your money with no expectation of payback.

At the other end of the spectrum, you maximize your risk-adjusted returns without regard to societal benefit. In this world, strip-mining coal is financially equivalent to installing windmills, assuming they have similar risk and return profiles.

And for years, many of us considered this spectrum a roughly linear trade-off. In order to achieve societal benefit, you normally would be willing (or required) to give up some level of financial return.



Many of us now believe, to the contrary, that this relationship, if it ever existed, has broken down. The problems that impact investing seeks to fix in energy, water, agriculture, economic empowerment, global health and elsewhere are now so pressing, and the costs of not addressing them so abundantly and increasingly clear, that many, many of these businesses have clear, compelling, and current revenue streams and profitable business models.

Look no farther than this room, where there are dozens of organizations that can make their case based on financial returns, cost avoidance, risk reduction, or all three. Look no further than the American West where trillions of dollars will be spent solving water problems in the next decade. Organizations and enterprises with solutions to these problems will be rewarded.

⁷⁴ Global Impact Investing Network, 2016 Impact Investing Survey, published by JP Morgan Chase, <https://thegiin.org/knowledge/publication/annualsurvey2016>

A New Paradigm

In this new environment, it is now useful to regard **Financial Return** and **Social and Environmental Benefit** as independent variables, which is convenient, since that enables us to deploy one of our favorite tools: The 2x2 matrix:

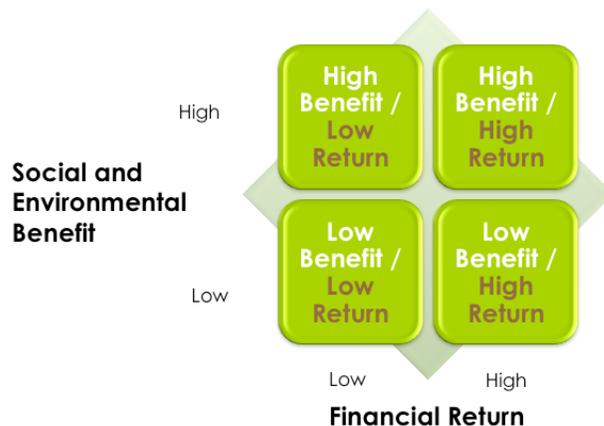
Of course, like all 2x2 matrices, the place to be is in the upper right – High Benefit / High Return. Pretty obvious. But where this construct starts to become valuable is when you think about what kinds of investments and investors reside in each quadrant and, more important, how to move investments **up and to the right** as far as possible.

Let's take each in turn.

High Benefit / High Return: The easy one. These projects should be fundable through mainstream investment vehicles in accordance with their risk profiles. Private investors, return-seeking corporations, and bond investors can often evaluate these projects as financial-only investments and treat the societal benefits as a positive add-on. The challenge is twofold: first, investors on the whole are averse to projects that try to do two things at once – a straight up financial objective simplifies decision-making. And second, the financial return may often be driven by regulatory or other mechanisms that are not purely market driven, which might attenuate over time. In either case, a specific kind of investor is often required who has confidence that the revenue model is durable and will allow the company pursue its mission over the long term.

Everyone's favorite example here is Tesla, where the elements of a (potentially) highly valuable business were generally available and waiting to be assembled in new ways: Consumer excitement and demand for zero emissions and advanced design, highly capable battery and power-train technology, and even the network of charging stations. But, in the end, it required the investment of a visionary individual, not a traditional investor, to put the pieces together. There is a reason that Tesla was created by Elon Musk and not a traditional venture capital investor or an existing auto company. The reliance on monetizing multiple bottom lines to deliver a return (in this case, the price premium and excess demand Tesla realizes as result of its clean technology) is, in many cases, too challenging for traditional investors to tackle.

High Benefit / Low Return: Historically the province of philanthropy, these projects will continue to be funded through grants and government programs with extremely patient capital or traditional philanthropic objectives. Projects in this zone can become attractive impact investments, however, through various mechanisms that monetize and internalize their significant benefits.



This internalization tends to happen in three ways:

- 1) **Discovery of a revenue model:** The trend in philanthropy today is to focus strongly on measuring the results of charitable efforts and to be rigorous about tracking and reporting on their value. A natural corollary to that trend is for these organizations to review their landscape for beneficiaries that may be able and willing to pay for the services offered. Frequently, this may not be possible because beneficiaries have no money or the benefits are too diffuse across a broad range of beneficiaries. But, in some cases, a direct line can be created from a project's benefits to a source of payment. A good example is the social bonds created in Utah to fund early childhood education. The state government was able to measure the future impact on tax revenues, reduced crime, and other benefits from high quality early education and has committed to pay bondholders out of this future benefit for financing education today.

In conservation, we are beginning to see this kind of monetization through flood insurance rebates to enterprises willing to invest the rebates in natural flood control landscapes, or paying landowners for clean water easements to avoid the cost of future water treatment plants. When the choice may be between very expensive water treatment facilities or flood control projects versus the “ecosystem services” provided by conservation land, preserving and restoring natural sources of required benefit can look like a very good investment.

- 2) **Internalization of costs or benefits:** The discovery of a revenue model is a specific case of a more general effect, the internalization of benefits. Frequently, this may be the result of government action – a tax or regulation that exposes the benefits of sustainable projects by highlighting the avoided costs of alternatives. The best-known example of internalization may be the imposition of a carbon tax, or a price on carbon emissions. Charging emitters for their use of the atmosphere can make alternative low carbon solutions more attractive financially. Conservation offsets, land banking, and other mechanisms can be a powerful complement to carbon pricing and other regulations aimed at internalizing costs.

For example, a Boston based impact investment is taking advantage of the high costs of managing rainwater runoff in many cities by enabling customers to avoid wastewater charges by controlling runoff from their flat roofs.

- 3) **Pressure from stakeholders:** The government is not the only entity that can expose the costs and benefits of negative impacts. Customers, employees, communities, and investors themselves can demand that projects take into account and mitigate their negative impacts. Although we tend to think of these as relatively weak and hard to marshal forces, the impact on corporate reputation and brand is becoming a powerful influence on investment decision-making. Examples like Google’s commitment to not “be evil” and Patagonia’s strong affiliation with the preservation of wild places, for all their challenges, are good examples. When combined with economic benefits, these effects can become even more powerful.

Low Benefit / High Return: This is the realm of traditional investing, where the primary, or perhaps only, consideration is whether the project can generate a financial return. And calling them “low” social and environmental benefit is not nearly strong enough – we are all too familiar with projects, such as mountaintop removal mining or development of lands, whose “ecosystem services” are not recognized or valued. Such activity is highly costly in an environmental and social sense, and the focus in this zone is often to mitigate or eliminate those negative impacts.



Here, it is worth remembering that every investment has impact, positive or negative, and that the big game, particularly in this zone, is to internalize the costs imposed so that they are paid by the project itself. In this way, a full and accurate accounting of costs and benefits erodes the apparently high returns from such projects and makes many of them financially less attractive than sustainable projects that achieve the same goals.

The mechanisms tend to be the inverse of the zone above:

- Measurement and reporting of negative impacts, to create awareness of the risks that these projects impose.
- Regulatory or market mechanisms that start to monetize the now hidden costs of the project and impose them on the project itself
- Pressure from consumers, investors, employees, or the community

In conservation, efforts to measure and publicize the costs of deforestation, loss of habitat, and other impacts can help marshal popular and governmental resources to the cause. The availability of a pool of capital – impact investors, like Peter Stein, and conservators, like the International Land Conservation Network – that are willing to take into account these costs and include them in their investment decisions helps catalyze conservation efforts, even in the absence of specific government action.

Low Benefit / Low Return: Not much to say here, but on the face of it, it appears that projects like this should not be done. That would be the end of the story, except for projects that appear to be in this quadrant but actually generate benefits that are so diffuse, so mis-understood, or so far in the future that they require extremely visionary individuals or groups to take them on.



Many conservation efforts may fall into this category. At the time of their founding, America’s national parks were certainly among them. Roosevelt, Pinchot, and others had no econometric studies or environmental data demonstrating the value of preserving these places, only the instinct that it was the right thing to do and would yield benefits far into the future. How right they were and how thankful are we for their instinct.

Similarly, the benefits of today’s large scale conservation efforts, the “ecosystem services” provided by conservation land, such as biodiversity, groundwater replenishment, recreation, or flood control, can be hard to measure, extremely diffuse, or unrecognized. Modern communications make it possible to communicate with

and organize large populations of beneficiaries whose monetary benefits (and contributions) may be small, but critical to taking action on projects in this quadrant.

Conclusion

None of what I have presented here is groundbreaking or even necessarily particularly surprising. But these are the dynamics that drive impact investing, and understanding how they operate is critical to harnessing the power of investors and the private sector. The principles are pretty simple:

- Exposure, measurement, and publication of external impacts to enable consumers, employees, investors, and the community to understand and agitate for more thoughtful investments
- Internalization of those external costs and benefits through regulation, consumer action, and full consideration of natural alternatives to put more sustainable investments on a level playing field with traditional projects
- Where possible, identification and monetization of untapped revenue streams, including crowd funding of conservation efforts, to move sustainable projects up and to the right in the investment universe

If we are to harness a growing share of the \$20 trillion dollars available to save the planet and preserve our home, we will have to learn to use every one of these levers to make social and environmental benefits clear, measured, and valued in public policy and investment decision-making.

We will have to make impact investing boring.

Session 8.4 The Role and Needs of Capital Markets in Funding Green Infrastructure **Jared Chase, former Chair, State Street Global Alliance, State Street Bank, Boston, MA**

Jared Chase discusses the paradigm shift necessary for capital markets to address the \$93 trillion that will be required across the global economy to fund gray and green infrastructure in the next 15 years. Such a paradigm shift will require the simultaneous efforts of all stakeholders in capital markets, from policy makers to corporate boards, in order to make the investments necessary to remain within the 2-degrees Celsius scenario that emerged from COP21 in Paris, 2015. This paper was prepared for the Workshop on Conservation Finance, held in Las Majadas, Chile on September 27-29th, 2016.

The Role and Needs of Capital Markets in Funding Green Infrastructure

To remain within the 2-degrees Celsius scenario coming out of the 2015 COP21 in Paris, the International Energy Agency (IEA) projects that a cumulative investment of \$53 trillion is required by 2035 in the energy sector, alone. New Climate Economy estimates that \$93 trillion will be required across the whole economy by 2030. To put this in some context, today the entire outstanding global bond market is approximately 90-100 trillion. So by some estimates, the green infrastructure needs of the next 15 years represents an amount equal to today's entire debt capital market capacity.

So where are we today? According to the *Bonds and Climate Change: State of the Market in 2016 Report*, prepared by the Climate Bonds Initiative, the total “climate aligned” bond universe today is \$694 billion- up \$96 billion from the previous year. Climate aligned bonds are defined as bonds that are being used to finance low carbon and climate resilient infrastructure. This is made up of approximately 3,590 different bonds issued by 780 different issuers across the following climate themes: transport, energy, buildings & industry, water, waste & pollution control, and agriculture & forestry. Transport is by far the largest segment of the climate-aligned universe, representing 67% of all bonds outstanding today followed by energy at 19%. Together, water, buildings & industry, water & pollution control, and agriculture & forestry make up just 6% of the universe. New sectors in the climate-economy, such as marine, information, communications & technology, and industrial energy efficiency, are expected to be active shortly. To date, the majority of climate aligned bonds (60%) have been issued by a government entity—local governments, multilateral development banks, agencies or state owned entities. Although there is diverse geographical spread by issuer, China dominates with 36% of the current market. The United States is second with 16%.

However, of the \$694 billion climate aligned market, only \$118 billion (17%) are “labeled” Green Bonds, which are defined as bonds where “use of proceeds” are definitively earmarked for green projects, have been labeled “green” by the issuer, and, ideally, verified by a third party. The labeled green market must continue to develop, evolve, and grow to insure that there will be sufficient public and private capital available to fund necessary green infrastructure across all sectors in the future. All capital market participants - issuers, investors, market intermediaries, and, most importantly, policymakers—must play a role in achieving a capital marketplace that reflects the true cost for capital for all participants.

The greatest challenge that needs to be addressed to insure the continued growth, relevancy, and impact of the green bond market is to move towards a regulatory and market environment where all social and environmental costs are reported, verified, and, most importantly, priced into the overall corporate cost of capital. Currently, the corporate cost of capital does not reflect the true sustainability of a firm, and, as a result, unsustainable companies have a lower cost of capital than they should and, so, are more likely to be financed than sustainable ones. Furthermore, investors are not able or motivated to incorporate such costs into their decisions today because they are not reflected in a company’s financial reporting and, therefore, do not get reflected in its profitability. All of this leads to a wide and systematic mispricing and misallocation of capital.

The following are compelling views from the Generation Foundation, a leading ESG investor:

“The inertia that has kept capital allocation decisions anchored in traditional investment frameworks must give way to a new paradigm of capitalism - one which has evolved in parallel with the emerging opportunities and challenges driving the modern global economy.”

“The ongoing transition to a low-carbon economy will continue to leave carbon assets stranded. Regulation targeting carbon, the rapid technological improvements of low-carbon alternatives, the continuing move towards more environmentally conscious and informed consumer choices and intensifying campaigns for change are all combining to make it imperative for investors to apply a meaningful price on carbon in investment analysis across all asset classes.”

What can be done? All capital markets participants have a role to play, but capital market policy makers need to take on the central role in creating and providing the kind of enabling environment necessary for companies,

investors, and others to act. Government has to take the lead in setting a regulatory environment and developing market mechanisms, such as carbon taxes and carbon trading, that reflect the true cost of operating a business.

Fundamental to moving forward toward a more rational and sustainable capital market is around the issue of reporting. According to a Capital Knights Capital Study in 2013, using Bloomberg data of 25,000 companies surveyed, 75% of companies did not report one data point of sustainable information. Encouragingly, an increasing number of companies today are practicing “integrated” reporting—incorporating relevant industry specific ESG factors into their reporting. This welcomed development suggests that the marketplace is beginning to acknowledge the value of integrated reporting. This change has occurred as the range of benefits from integrated reporting has been shown to include a more holistic view of performance and better insight into risk, strategy, the business model, the operating context, and governance. To continue the positive developments in this area, policy makers should develop a global reporting framework that moves the marketplace towards a longer-term focused, integrated reporting model and away from the current, short-term financial performance-only standard of today. A focus only on short-term financial performance systematically erodes incentives for company management and directors to focus and invest in a sustainable strategy that considers environmental and other long-term issues impacting the company.

A logical and critical development as companies move towards providing more ongoing information reflecting their sustainability would be to establish mechanisms that encourage investors and other market participants to maintain an appropriate and proactive oversight role. Corporate boards and management should be required to have a “corporate sustainability plan” that is monitored and reviewed regularly. An important aspect of getting oversight right is to fundamentally change the proxy voting practices that exist today. Investors must take a much more active and transparent position exercising their ownership responsibilities. Asset managers must recognize their responsibility to vote on shareholder ballots. Responsible and engaged ownership is key to sustainable investing. Large asset owners, such as pensions, sovereign wealth funds, and endowments, should be required to regularly disclose their voting records on sustainability issues. Similarly, corporate audit practices should incorporate reviews of compliance to these sustainability plans and rating agencies should reflect adherence in their ratings.

A further critical issue regarding the role of investors and asset owners is around fiduciary duty. Currently, the interpretation of fiduciary duty is limited in scope to a narrow responsibility that excludes sustainability. This must change to reflect the more sensible business and fiduciary case for including sustainability in investment decisions to maximize long-term financial performance. The marketplace needs to move to a place where not only is it permissible for fiduciaries to include sustainable considerations in their capital allocation and investment decisions but may in fact be a breach if they take an active decision to ignore them.

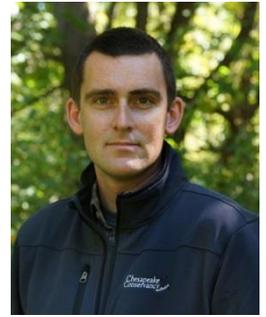
Appendix 2: Participant Roster

	FIRST	LAST	ORGANIZATION
1	Jeff	Allenby	Chesapeake Conservancy
2	Victoria	Alonso	Templado
3	Rafael	Asenjo	Chief Justice, Environmental Court, Santiago, Chile
4	Hari	Balasubramanian	EcoAdvisors
5	Kathy	Barclay	Asesorías KCB Ltda., American-Chilean Chamber of Commerce
6	Javier	Beltran	TNC Argentina
7	Ralph	Benson	Sonoma Land Trust (Emeritus)
8	Ken	Berlin	The Climate Reality Project
9	David	Boghossian	Private Market Impact Fund (PMI)
10	Pablo	Bosch	Las Majadas de Pirque
11	Jorge	Burgos	Former Minister of the Interior and Minister of Defense, Chile
12	Marisel	Cabrera	Las Majadas de Pirque
13	Marta	Castillo	Fundación Ibáñez Atkinson
14	Francisco	Chapela	Estudios Rurales and Asesoría Campesina, A.C. (ERA)
15	Jared	Chase	Massachusetts Audubon
16	Pat	Coady	Seale & Associates
17	Amy	Cotter	Lincoln Institute of Land Policy
18	Alfonso	de Urresti	Senate of Chile
19	Daniela	Del Valle	Fundación Ibáñez Atkinson
20	Laura	Deutsch	The Climate Reality Project
21	Carolyn	duPont	MassCEC
22	Leslie	Durschinger	Terra Global Capital
23	Tomas	Folch	Center of Ecology Landscape and Urbanism at the Design Lab, Universidad Adolfo Ibañez
24	David	Foster	Harvard Forest, Harvard University and Highstead Foundation
25	Gabriela	Franco	Tierra Austral Land Trust
26	Isabella	Gambill	Lincoln Institute of Land Policy, International Land Conservation Network
27	Lourdes	Germán	Lincoln Institute of Land Policy
28	Sylvie	Goyet	The Pacific Community (SPC), Conservation Finance Alliance
29	Michael	Grasty	Grasty Quintana Majlis & Cia.
30	Tony	Hiss	Independent Journalist
31	Madeline	Hurtado	Fundación Mar Adentro
32	Pamela	Hurtado	Fundación Cosmos
33	Laura	Johnson	Lincoln Institute of Land Policy, International Land Conservation Network
34	Marianne	Jorgensen	Lincoln Institute of Land Policy, ALPINE
35	Charlie	Kimber	Arauco
36	Juan	Ladrón de Guevara	Consejo Nacional de Producción Limpia
37	James	Levitt	Lincoln Institute of Land Policy and Harvard Forest, Harvard University

38	Efraim Acosta	Lugo	Pronatura, Yucatan Peninsula
39	Daniela	Martinez	Quintanilla & Busel Niedmann
40	Kathy Baughman	McLeod	Climate Risk and Assessment, The Nature Conservancy (TNC)
41	Rodrigo	Medeiros	Conservation International Brazil
42	Spencer	Meyer	Highstead Foundation
43	Hernán	Mladinic Alonso	Tompkins Conservation
44	Manuel	Moller	Preserve in Community
45	Emily	Myron	Lincoln Institute of Land Policy, International Land Conservation Network
46	Roberto	Peralta	Chilean Attorney and The Catholic University of Chile
47	Alejandro	Quintana	Grasty Quintana Majlis & Cia.
48	Marcela	Renteria	Harvard, David Rockefeller Center for Latin American Studies Regional Office (DRCLAS)
49	Marcelo	Ringeling	Templado
50	Pablo	Rodriguez	Preserve in Community
51	Maria Cristina	Rojas Eberhard	Consultant, City of Bogota
52	Marcelo	Sanchez	Fundación San Carlos de Maipo
53	Enrique	Silva	Lincoln Institute of Land Policy
54	Pancho	Solis	Lawyer and Consultant, Derecho Real de Conservacion
55	Peter	Stein	Lyme Timber Company
56	David	Tecklin	Pew Charitable Trust, Chile
57	Henry	Tepper	Consultant
58	Tomas	Vega	Preserve in Community
59	Terry	Vogt	Terra Global Capital
60	Rand	Wentworth	Harvard Kennedy School, Louis Bacon Fellowship
61	Leigh	Whelpton	Conservation Finance Network
62	Lucy	Young	Grasty Quintana Majlis & Cia

Appendix 3: Participant Biographies

JEFFREY ALLENBY is the Director of Conservation Innovation at the Chesapeake Conservancy. His team explores new ways to improve the effectiveness and efficiency of the Conservancy's projects. He focuses on developing new ways to empower partner organizations by providing them with innovative ways to access geospatial data and analysis tools that will create beneficial management outcomes. Jeff is currently investigating the use of high-resolution imagery and LIDAR elevation data to map land cover at the large landscape scale, and is constructing interactive tools to better target Best Management Practices implementation and riparian conservation and restoration projects.



VICTORIA ALONSO is a partner at Templado, a land planning and policy consulting company in Santiago, Chile. She is also the president of Tierra Austral, one of the first Chilean land trust dedicated to protect private lands conservation in Chile. Victoria previously served as the Private Lands Coordinator for The Nature Conservancy's Southern Andes Office. She was instrumental in launching the Chilean Private Lands Initiative, which has formulated and created enabling legislation for conservation easements in Chile, the Derecho Real de Conservacion. Victoria has also worked for the Chilean Environmental Agency CONAMA, where in 2004 she obtained approval of the Chilean National Biodiversity Strategy. She received her MSc in Environmental Sustainability from the University of Edinburgh, and she lives in Santiago.



RAPHAEL ASENJO, while studying Law, defended environmental causes, during the hard days of the dictatorship. He was one of the first environmental lawyers of CODEFF, one of the first environmental non-governmental organizations in the country. In 1987, he successfully appealed to the regional and national courts, on behalf of the people of Chañaral, ending 50 years of serious coastal pollution by mining tailings from the El Salvador cooper mine. At the return of democracy in 1990, President Aylwin appointed him as the first Executive Secretary of the National Committee on the Environment (CONAMA), the first environmental public institution in Chile, where he served from 1990 to 1994. There he drafted and processed through Congress the Law N° 19.300, Of Environmental Bases, the first properly called "national environmental legislation". From 1995 to 2001, was Executive Coordinator of the Global Environment Facility (GEF) in the United Nations Development Program (UNDP) in New York, preparing and implementing environmental assistance programs in more than 80 developing countries for a total amount of more than US \$600 million of grant resources, mobilizing more than US \$2 billion from third parties. On his return to Chile, (2001-2006) he dedicated his professional time to specialized consultancy in policy, legislation and environmental management to private and public entities, national and international agencies. From 2006 to 2012 served as Executive Director of a GEF-funded project to create a National System of Protected Areas for Chile. In 2012 he was selected as one of the first two lawyers to become Justices of the newly created Environmental Court of Santiago, launching this new autonomous jurisdictional institution. Since December 2014, he continues to hold the position of Chief Justice of the Environmental Court of Santiago, Chile. Throughout his professional career has served as professor of environmental policy and law for post graduate programs in several Chilean universities and is the author of numerous publications and specialized articles on environmental law, management and policy.



HARI BALASUBRAMANIAN has worked for over 15 years in international conservation and development with a core expertise in developing and communicating the business value of sustainability solutions. He is driven by impact and the goals are clear: a healthy planet, stable climate, abundant and diverse wildlife, prosperous communities and flowing, clean fresh water; not as a cost to society, but as an opportunity and under-recognized business value. Hari has deep and expansive field experience at the front-lines of sustainability. Starting with coastal and marine projects in Portugal, Barbados, Malaysia, the Maldives and Cuba he later led the monitoring and evaluation function at Conservation International where he was responsible for the impact of over 150 projects in 45 countries. He is currently the founder of EcoAdvisors, a consulting firm with a specific focus on enduring sustainability solutions through philanthropy and corporate culture change. Since inception in 2012, the firm has built a diverse portfolio of work and network of partners. Hari has a BSc in Biology from McGill University and an MSc in Geography from Oxford University and presents at popular and academic settings worldwide largely about his stumbling into the sustainability field and the interface of business and sustainability.



KATHLEEN BARCLAY is Principal of Asesorías KCB Ltda., and Board Chair of the American Chamber of Commerce in Chile - AmCham Chile. She is a member of the Boards of Directors of Bicecorp, Banco Bice, Geomar S.A., Stars S.A. and Austral Capital, in addition to the board of Banco Caja Social in Bogotá, Colombia. Ms. Barclay is active in cultural and academic affairs including participation as a member of the Advisory Editorial Committee of *El Diario Financiero*, a member of the Board of the Universidad Adolfo Ibáñez, a member of the Advisory Board of the Centro de Estudios Públicos, and a member of the Advisory Board of Endeavor-Chile. She is a member of the Council of the Americas and the US Chamber of Commerce. Additionally, she serves on the Advisory Council to the Wildlife Conservation Society (WCS) for its Karukinka project in Chile. Ms. Barclay is a board member, as well as Treasurer and Member of the Executive Committee, of the Pan-American Development Foundation. Prior to 2001, Ms. Barclay had a 23-year career in J. P. Morgan Chase including assignments in New York, London and Santiago. She ran the Latin American Corporate Credit Area in the early 1980s, was Director of Investment Banking in London covering Latin American multinational advisory and capital markets from 1988-1992. From 1992 through 2000, Ms. Barclay was responsible for the Bank's business in Chile with an emphasis on cross-border transactions and investment banking services. She has a B.S. in Foreign Service from Georgetown University in Washington, D.C with a focus in international economics.



JAVIER BELTRAN is a Conservation Biologist from Argentina, who is passionate about nature (and birds, in particular), and is working actively to harmonize conservation and rural production across fully functional working landscapes. Javier has been engaged in private land conservation since the early 1990's with the firmly held belief that landholders have a key role to play in restoring and preserving natural capital and associated environmental services – and getting concrete benefits from this contribution. In 2008, he accepted his current position at The Nature Conservancy and moved from Buenos Aires to Bariloche (in southern Argentina) with his wife, Claudia, and his daughter, Donna.



RALPH BENSON is recently retired and is working on projects of interest including linking conservationists in Chile and California. Over his career he served as executive director of the Sonoma Land Trust (2003-2015) where he led the organization through a period of exceptional, financially solid growth with major enduring land conservation achievements on the Sonoma Coast, San Pablo Bay and throughout Sonoma County; and as general counsel, executive vice president and chief operating officer of The Trust for Public Land (1979-2003) where he played a leading role in building TPL into one of America's premier land conservation organizations focusing on land for people. Earlier in his career Ralph was a land use attorney in Southern California. He has degrees from Occidental College, UCLA and the Boalt Hall School of Law at the University of California at Berkeley. Ralph lives in Berkeley, California and has daughters and grandkids in Durango, Colorado and Austin, Texas.



KEN BERLIN is the President and CEO of The Climate Reality Project, a twenty-first century communications and advocacy organization with the mission to catalyze a global solution to the climate crisis by making urgent action a necessity across every level of society. As President and CEO, Ken leads teams in Washington, DC, Boulder, Colorado, and 10 branch offices around the world, along with 10,000 Climate Reality Leader activists in over 100 countries working together to confront the greatest challenge humanity has ever faced. Ken has devoted his career to leadership on environment, energy and climate change issues. Prior to joining Climate Reality, Ken chaired the Environmental and Climate Change practices at the globally renowned practice of Skadden, Arps, Slate, Meagher & Flom LLP and served as the Executive Vice-President and General Counsel for the Coalition for Green Capital. In that role, he led efforts to establish green banks at the federal level in the US and in many states. In 2012, Ken served as chair of the Energy and Environment team for President Obama. Ken has served as chairman of the board at the Environmental Law Institute, the Center for International Environmental Law, the American Bird Conservancy, and the Rare Center for Tropical Conservation. He also serves or has served on the boards of the Earth Day Network, Coalition for Green Capital, and Defenders of Wildlife.



DAVID BOGHOSSIAN is a Managing Director of the Private Market Impact Fund (PMI) of Cambridge, MA, which focuses on mission-oriented, socially responsible investing, competitive returns and rationalization of impact markets overall. A serial entrepreneur with over 25 years of expertise in technology, strategy, and entrepreneurship, Mr. Boghossian is focused on efficient use and allocation of resources -- human, capital, and natural -- to address critical business, environmental, and social challenges. In addition to PMI, he is the founder of several successful start-ups including StoryStreet Technology and PowerSteering Software. David has an abiding commitment to social enterprise and the power of businesses and markets to drive true social and environmental progress. He has acted as mentor to numerous mission-driven Harvard and MIT start-ups, taught and mentored entrepreneurs around the globe, including the Mercy Corps accelerator in Ramallah, Palestine and the Root Cause Impact Investment accelerator. Through these efforts, David knows the challenges of impact capital markets firsthand. David holds AB and MPA degrees from Harvard University, where he was a Harvard National Scholar and a nationally ranked oarsman. He also held a year-long appointment as a Lucius Littauer Fellow at Harvard's Kennedy School, focused on business and government cooperation.



JORGE BURGOS is a Chilean politician, member of the Christian Democrats Party. He was a delegate (diputado) for the district of Providencia and Nuñoa between 2002 and 2014. He was Defense Minister (2014-2015) and Interior Minister until (2015-2016) during the second government of Michelle Bachelet. Former Minister Burgos was part of the group of lawyers, conservationists, and Chilean house representatives that visited the US at the invitation of the Nature Conservancy and Harvard Forest of Harvard University, to learn about conservation easements and land trusts. Mr Burgos supported the passage of bill of the now Law on In Rem Right of Environmental Conservation through the Chilean Congress and avidly supports and promotes use of the legal instrument to enhance the conservation of Chile's environmental heritage, as well as having a regional and global perspective looking towards the future.

MARTA CASTILLO is a journalist, employed at the University of Pamplona, Spain, with vast experience in the area of communications, magazine management, communication consulting firms, branding, web presence, and social networks. Since 2014, she has served as the manager of communications at the Ibáñez Atkinson Foundation.



FRANCISCO CHAPELA is a senior advisor at Estudios Rurales and Asesoría Campesina, A.C. (ERA) and a program officer at the Christensen Fund - NW Mexico. Previously, he served as director of the Rainforest Alliance Training, Environment, Enterprises and Sourcing (TREES) program for several Latin American countries and as director of the National Forest Commission/Nacional Financiera Indigenous Communities and Biodiversity Project. He has consulted for The World Bank, the Inter-American Development Bank and the Food and Agriculture Organization. As a contact in Mexico for the Forest Stewardship Council, he promoted sustainable forest management, and coordinated a national working group to draft and propose sustainable forest management standards for México. Chapela holds a PhD in Natural Resources Economics from Universidad Nacional Autónoma de México, a Master's degree in Regional Environment and Development Studies from Universidad Ibero Americana–Puebla, and a Master's in Forest Management from Colegio de Postgraduados and Instituto Tecnológico Agropecuario de Oaxaca. He is an Advanced Studies on Environment and Development Fellow from the El Colegio de México Center for Advanced Studies on Environment and Sustainable Development and Agronomist from Universidad Autónoma Metropolitana-Xochimilco. He is the author of several academic and research publications.



JARED CHASE is a senior international executive with extensive and diversified experience in investment banking, investment management, and Treasury management. Jared has lived in Boston, New York, London, Tokyo, and Singapore. He is actively involved in conservation having joined the Board of Directors of Mass Audubon, the leading conservation organization in New England, in 1998 and currently serves as their Board Chair. His passion and interest is in land protection where Mass Audubon is the largest private land owner in the Commonwealth of Massachusetts. He is also on the Board of the New England Aquarium and the York Maine Land Trust. He and his wife Ann divide their time between Boston and York Maine.



PATRICK COADY has a lifelong career in investment banking. He is currently Senior Director at Seale & Associates, Washington DC. Between 1989 and 1993, Pat was U.S. Executive Director of the World Bank. He has had stints as Chief Financial Officer at such diverse companies as a billion dollar financial services company as well as a start-up rocket development enterprise. Since 2009 he has raised capital for mitigation banking firms and species banks such as sage grouse. In January 2014 he co-organized major conservation finance workshops in San Francisco and New York City bringing together the leaders in the field. Pat contributed to the book From Walden to Wall Street and organized a 2007 Conservation Finance Workshop in New York City. Pat is a senior fellow at Conservation International. In 1994, Pat co-founded and is currently Chairman of the Northern Virginia Conservation Trust.



Pat is a graduate of Massachusetts Institute of Technology and the Harvard Business School. He resides in Washington, DC.

AMY COTTER grew up with a corn field in her backyard and the city in her blood. Several degrees and 20 years later, she works with metropolitan areas to improve both city and country and to help them coexist more harmoniously. She joined the Lincoln Institute in November 2015 in the new position of Manager of Urban Development Programs, working with partners to understand and manage the contribution that urbanized places can and could make to climate change mitigation and adaptation, reducing poverty, and creating more sustainable communities. Previously, Amy spent thirteen years with the Metropolitan Area Planning Council in Boston Massachusetts. There, she was a Director responsible for development and strategic initiatives to implement MetroFuture, the region's plan for a more sustainable and equitable future. Amy has a bachelor's degree from Tufts University and Master's degrees in urban and regional planning, and environmental science, from the University of Michigan.



DANIELA DEL VALLE is a psychologist by profession, who studied at the University of Los Andes and has vast experience in education. Since March 2016, Daniela has served as the General Manager of the Foundation Ibañez Atkinson.

CAROLYN DU PONT recently completed her MBA/MPA at the MIT Sloan School of Management and the Harvard Kennedy School, and is now a member of the investing team at MassCEC making early-stage investments in clean tech and renewable energy companies in Massachusetts. During graduate school, she worked with the Bill & Melinda Gates Foundation and Encourage Capital (formerly EKO Asset Management Partners), and led research projects focused on green bonds and land conservation as well as climate resilience financing in Boston. Prior to graduate school, Carolyn worked in San Francisco as a manager for the geopolitical strategy consulting firm Monitor 360. She has also worked in executive search for environmental organizations. She received her BA in Anthropological Science from Stanford. At the Harvard Kennedy School she was a Zuckerman Fellow with the Center for Public Leadership and program coordinator for the Louis Bacon Environmental Leadership Fellowship. She serves as a member of the board of The Trust for Public Land in Massachusetts.



LESLIE DURSCHINGER Leveraging 20 years of experience and a proven track record in the financial services industry, Ms. Durschinger founded Terra Global Capital in 2006 to promote results-based approaches to community-led forest and land-use emission reductions programs. Ms. Durschinger is recognized as a pioneer and innovator in alignment of development values and financially viable approaches to sustainable landscape management. Terra is now the leader in forest and land-use emission reductions program development, GHG analytics and finance, providing technical expertise and investment capital to their global client base of governments, NGOs, and private companies in a collaborative and participatory manner. Prior to Terra, Ms. Durschinger held senior management positions in the areas of derivatives trading, investment management, algorithmic trading, risk management, and securities lending. She is a member of the Verified Carbon Standard (VCS) AFOLU Steering Committee, REDD+ Social & Environmental Standards Committee, VCS JNR Permanence Work Group, Coalition on Agricultural Greenhouse (C-AGG) Advisory Committee and W+ Standard Advisory Council. Ms. Durschinger and her family make small production olive oil on their farm in Mendocino County. Among her previous employers are JP Morgan, Merrill Lynch, Barclays Global Investors and Charles Schwab.



MARIA CRISTINA ROJAS EBERHARD is an Architect with a specialization in Economy and a Master's degree in Urban Planning and Development. A former JICA (Japan International Cooperation Agency) fellow within the land readjustment program, María Cristina now teaches for one of JICA's training programs held in Colombia for Latin American countries. She acts as an advisor on urban planning and management for the city of Bogota, Colombia, working specifically with the District Secretary of Planning, Secretary of Housing, Water and Sewage Company, Metrovivienda, among others. In recent years she has focused her work in the area of renovation management within Bogota. She was the Director of Partial Plans for the District Secretary of Planning of Bogota while also advising on projects such as the implementation of value capture, partial plans and land readjustment for various Colombian cities. Additionally, María Cristina has worked as a consultant for the United Nations Development Programme (UNDP), CAF Development Bank of Latin America, Inter-American Development Bank (IDB) and as staff for the Ministry of Environment and Housing of Colombia.



TOMAS FOLCH is a Chilean Architect and Landscape Architect from Harvard University. Currently he is a Professor and Co-director of the Center of Ecology Landscape and Urbanism at the Design Lab at the Universidad Adolfo Ibañez in Chile. Through his years of professional experience, his work has ranged through urban renovation, heritage, urban infrastructure, social housing, and landscape architecture. His actual studies and research are focusing on landscapes of extraction, going beyond reclamation to incorporate ecological processes and environmental externalities as values for the equation of production. His professional work has been recognized and presented in the Chilean Biennale of Architecture 2008, the Shanghai Exposition 2010, and the Venice Biennale 2010 among others.



DAVID FOSTER is an ecologist and author of *Thoreau's Country – Journey through a Transformed Landscape*; *Forests in Time – The Environmental Consequences of 1000 years of Change in New England*; and *Hemlock – A Forest Giant on the Edge*. He has been a faculty member in biology at Harvard since 1983 and Director of the Harvard Forest, the University's 4000-acre ecological laboratory and classroom since 1990. David is the Principal Investigator for the Harvard Forest Long Term Ecological Research program, sponsored by the National Science Foundation, which engages more than 100 scientists investigating the dynamics of New England landscape as a consequence of climate change, human activity, and natural processes. David serves on the boards of The Trustees of Reservations, Choate School, and Highstead Foundation. In 2010 he and colleagues advanced *Wildlands and Woodlands – A Vision for the New England Landscape*, which lays out an ambitious plan for the protection and conservation of forest and farmland across the region.



GABRIELA PAZ FRANCO is an Agricultural Engineer from the Universidad Católica de Chile, graduated in 2010 with a major in plant sciences. Currently, she works for the Tierra Austral Land Trust, a non-profit organization focused on natural resources and biodiversity conservation. During her years at Tierra Austral, she has focused her work on land conservation, land planning, monitoring and stewardship. Prior to joining Tierra Austral, she worked as associate researcher in the Department of Agricultural Economics at the Pontificia Universidad Católica de Chile, coordinating and generating water resources and natural resources projects. Gabriela also has a diploma in Geographical Information Systems from the Universidad de Chile and has been actively involved with conservation initiatives in Chile.



ISABELLA GAMBILL is a research and program associate in conservation policy at the Lincoln Institute of Land Policy. Through her work with the International Land Conservation Network as a member of its founding team, Isabella is helping to connect and support practitioners and experts in private land conservation around the world. With the formation and growth of the ILCN, she is helping the team discover how to share best practices, case studies, and private land conservation tools across continents, governmental codes, language barriers, and more. Isabella is also involved in the creation and management of a more local network, Academics for Land Protection in New England (ALPINE), which is a project based out of a partnership between the Harvard Forest, Harvard University and the Lincoln Institute of Land Policy. Through ALPINE, Isabella is also examining the various ways that students, faculty, and academic institutions can engage in large landscape conservation efforts and act as conservation catalysts throughout New England. As a recent graduate of Wellesley College, Isabella is especially drawn to the role that young conservation professionals and students can play in cross-boundary, cross-sectoral, and interdisciplinary conservation efforts. Isabella hopes that with networks like ALPINE and the ILCN, innovative large landscape conservation projects will continue to populate and transfer to new jurisdictions, and become as inclusive and diverse as possible. Isabella holds a B.A. in Environmental Studies, with a focus in Environmental Justice, from Wellesley College.



LOURDES GERMÁN is Director of International & Institute-Wide Initiatives at the Lincoln Institute of Land Policy where she advances the Institute’s global municipal fiscal health campaign and its work as a co-lead organization for the municipal finance policy unit of the United Nations Habitat III effort. An expert in municipal finance, Lourdes began her career as a public finance attorney representing government entities. Following that work, Lourdes co-created the national municipal finance business division at Fidelity Investments, as Vice President of Municipal Finance, and opened and managed Fidelity’s first New York office for public finance. Following Fidelity, Lourdes’ professional experiences included serving as General Counsel and Vice President of a national municipal investment management company; creating and teaching a graduate government finance course at Northeastern University and advising non-profits focused on urban economic growth. Lourdes is also the founder and director of the Civic Innovation Project, an online thought leadership platform that was awarded the 2015 State of Boston Innovation Award for its impact using technology to advance city-to-city learning with respect to challenging issues facing governments. Outside of work, Lourdes serves as Governor Baker’s appointed Chair of the Massachusetts State Finance and Governance Board, is an appointee of the Mayor of Boston to the committee focused on the City’s audit and finance matters, and serves on various non-profit boards.



SYLVIE GOYET is Director, Climate Change Environmental Sustainability Program at SPC – Pacific Community. She has 20 years of experience in directing and managing environmental programmes, special expertise in coastal and marine issues, conservation finance and conservation trust funds, and a general background in management and strategic planning. From 2006 until end of 2014, she was the Director General of FIBA – Fondation Internationale du Banc d’Arguin, a private Swiss foundation working in West Africa on coastal and marine issues. In her previous assignments, she was Regional Coordinator of the UNOPS/UNDP/GEF MedWetCoast project, Programme Manager at WWF International and programme officer at UNDP Black Sea Programme, UNEP Caspian Sea Programme, and UNDP Fiji. Sylvie holds a Master degree in Environmental Management from the University of London, an MBA in Finance from the University of Texas at Austin and a Master in International Business from the Business Management School of Lyon. Sylvie presently serves on the Board of the BioGuine Foundation (Guinee Bissau) and of the Wild Touch Association (France), on the Scientific and Technical Committee of the Prince Albert II of Monaco Foundation and she is an Executive Committee member of the Conservation Finance Alliance (CFA).



MICHAEL GRASTY C. is a principal and founding partner of Grasty Quintana Majlis & Cía., firm, which was involved in the preparation and presentation of the Derecho Real de Conservación legislation. His multinational background has allowed him to develop a professional career in law, advising national and international clients in diverse areas, including conservation and the environment, energy, retail, salmon aquaculture, international arbitration and technology. He has been an active participant and collaborator in the American Chilean Chamber of Commerce (AMCHAM), being director of the same for many years and President during 2005 and 2007. He is member of the Chilean and International Bar Associations, the Rocky Mountain Mineral Law Foundation and the International Academy of Estate and Trust Law. Furthermore, he is member of the Legal Circle of ICARE; Councilor of the Pro Bono Foundation; Councilor of the Chile California Council; Advisor of New Zealand Trade and Enterprise South America Beachheads Programme; Advisor of the High Management Network of Universidad del Desarrollo; Director of Fundación País Digital, BanTattersall, Sparta Deportes, Discovery Air Inc., Leasing Tattersall, Corso Inversiones, Fundación Meri and President of David del Curto.



TONY HISS is an author and consultant on restoring North America's cities and landscapes and the author of 13 books on a number of topics, including "The Experience of Place" and "In Motion: The Experience of Travel." His next book, "50/50," is about a new long-term, multinational pattern for landscape conservation and biodiversity protection in the Western Hemisphere. Hiss was a Staff Writer at The New Yorker for more than 30 years, and is now a Visiting Scholar at New York University.



MADLINE HURTADO Madeline is co-founder and director of Fundación Mar Adentro and has over 15 years of experience in family offices. Her holistic view of ecosystems has led her to lead projects that integrate education, art and nature. Her leadership focuses on creating multidisciplinary teams to develop collaborative and inclusive programs for vulnerable sectors of Chile with an emphasis on implementing projects in the different regions of Chile.



PAMELA HURTADO is the co-founder and director of the Cosmos Foundation. She is also a designer with a Master of Arts in Landscape Design and Planning (MALD) from the Conway School in Massachusetts. Her interest in the development of sustainable cities, permaculture, and conservation prompted her to create the program area of Sustainable Planning within the Foundation. She is a member of ASLA, the American Association of Landscape Architects, ELA, the Ecological Landscape Alliance, and the Chilean Association of Landscape Professionals.



LAURA JOHNSON is a life-long conservationist with more than 30 years experience in non-profit management. She is currently a fellow at the Lincoln Institute of Land Policy, Cambridge MA, and is the director of the International Land Conservation Network. Laura is a past president of Mass Audubon where she spent 14 years leading the oldest and largest independent state Audubon organization in the US. Prior to joining Mass Audubon, she worked for 16 years at The Nature Conservancy working both as a lawyer and in positions including Massachusetts state director and northeast region vice president. Laura is the Chair of the Board of Directors of the Land Trust Alliance. She is also an Overseer of WGBH, on the Board of Advisors of the Appalachian Mountain Club (AMC), on the Board of Visitors of Mount Auburn Cemetery, and a Corporation member of the Woods Hole Oceanographic Institute. Laura served for 8 years as a founding member of the MA Department of Conservation and Recreation's Stewardship Council. Laura received a BA in history from Harvard, and a JD from NYU Law School. From 2013-2014 she was a Bullard Fellow at the Harvard Forest, Harvard University where she completed a study on private land conservation efforts around the world.



MARIANNE JORGENSEN currently serves as the coordinator for Academics for Land preservation in New England (ALPINE), a network that seeks to explore and expand the role that New England academic institutions play in conserving the natural heritage of the region. ALPINE helps academics connect, collaborate, and conserve through knowledge exchange and targeted activities that catalyze the pace and scale of conservation. Prior to her work with ALPINE, Marianne worked for 16 years in the field of international education; from sending undergraduate students from US colleges and universities on study abroad programs to working with the University of the Arctic, a consortium of 120 international colleges and universities across 8 countries to promote study in the Arctic. Marianne has an MBA from Boston University and a B.A. in Botany from Connecticut College.



CHARLIE KIMBER studied Commercial Engineering at the Pontificia Universidad Católica de Chile. He is Senior Vice President Commercial & Corporate Affairs for Arauco, one of the largest forestry companies in Latin America in terms of surface area and yield of its plantations, production of market kraft woodpulp, production of sawntimber and wood panels products. Arauco has investments in Argentina, Brazil, Uruguay, Canada, The United States of America, Europe and South Africa. Mr. Kimber joined Arauco in 1986 and since then, has held several positions within the company, as it grew from sales of US 150 million to over US 6 billion today. Mr. Kimber oversees the areas of Sustainability, Public Affairs, Communications, Marketing and Sales. He is a Member of the Board of AMCHAM, Corma (Chilean Forestry Association), Chile – Argentine Chamber of Commerce, AccionRSE, Santiago Climate Exchange (SCX), The Grange School and of several companies within the Arauco Group.



JUAN M. LADRÓN DE GUEVARA is an agronomist majoring in Agricultural Economics at the University of Chile, with studies including Natural Resource Economics, Finance, Entrepreneurship, Innovation Conflict, and Negotiation. Mr. Ladrón de Guevara has a great deal of experience in the public arena, with management positions in the Ministry of Economy, Development, and Tourism, and the National Environment Commission (CONAMA). Furthermore, he received undergraduate and graduate educations from the University of Chile, and was a consultant to the United Nations Program for Development (UNDP). He has an extensive and distinguished career in matters of public policy, regulatory impact analysis, financing mechanisms, and innovation in the environmental and renewable energy resource sectors.



JAMES N. (“Jim”) LEVITT is the manager of land conservation programs in the Department of Planning and Urban Form at the Lincoln Institute of Land Policy in Cambridge, Massachusetts and director of the program on conservation innovation at the Harvard Forest, Harvard University, in Petersham, Massachusetts. In addition, he holds ongoing fellowships at the Harvard Kennedy School and at Highstead, a non-profit organization advancing land conservation in New England. Levitt focuses on landmark innovations in the field of land and biodiversity conservation (both present-day and historic) that are characterized by five traits: novelty and creativity in conception; strategic significance; measurable effectiveness; international transferability; and the ability to endure. Levitt has written and edited dozens of articles and four books on land and biodiversity conservation. He has lectured widely on the topic in venues ranging from Santiago, Chile, to Beijing, China, and Stockholm, Sweden. He has played an instrumental role in the effort to organize the International Land Conservation Network (ILCN), whose mission is to connect organizations around the world that are accelerating voluntary private and civic sector action to protect and steward land and water resources. Levitt is a graduate of Yale College and the Yale School of Management (Yale SOM). He was recently named a Donaldson Fellow by Yale SOM for career achievements that “exemplify the mission of the School.”



EFRAIM ACOSTA LUGO is the Technical Coordinator at Pronatura Yucatan Peninsula (which includes the 3 states of: Campeche, Quintana Roo and Yucatan), where he has worked for over 20 years. He is a biologist and worked for 5 years in Mexico's federal Ministry for Environment and Natural Resources on planning and environmental policy. Efraim has vast experience on forest fires, ecoregional management, REDD+, among other topics, and has developed sustainable development initiatives in the region in alliance with civil society organizations, national, regional and state governments. Efraim is currently the leading expert from Pronatura YP in the technical restoration committee. Efraim holds a B Sc. in Biology from the Yucatan Autonomous University.



DANIELA MARTINEZ is a Senior Associate at Quintanilla & Busel Niedmann, a law firm that focuses on energy regulation and public policy. She holds a Master of Laws (LL.M) from Harvard Law School and a Master in Public Policy from Harvard Kennedy School. She also holds a Law Degree from University of Chile Law School. She has served as legal and policy advisor to the Minister of Energy of Chile, where she led the elaboration of an energy efficiency bill and was a key advisor on land use and electricity regulation. Daniela also worked at the Natural Resources Defense Council, Washington D.C office, where she was in charge of developing an energy efficiency policy proposal for Chile. As a social activist, Daniela was co-Director of the team that started the Mexican branch of the NGO "Un Techo para mi país", that builds basic housing for the underserved in Latin America. During her time at Harvard, she worked on consensus building projects with Professor Lawrence Susskind. Today she advises leading private actors and NGOs on innovative solutions to problems at the intersection of energy, land use and environmental regulation, social engagement and public policy. Daniela is a member of the Board of the Harvard Club Chile.



KATHY BAUGHMAN MCLEOD is Managing Director of Climate Risk and Investment. She leads a global team of professionals advancing the ability of natural infrastructure, including reefs and wetlands, to protect people and property along coastlines, sequester carbon, improve fisheries and more. Through science, policy and finance, with engagement in the insurance, engineering and investment sectors, The Nature Conservancy (TNC) seeks to make investing in nature a standard practice for healthier, more resilient communities and economies. Prior to coming to TNC, Ms. Baughman McLeod served international clients in mining, energy finance and other natural resource sectors. She was also twice-appointed by the Governor of Florida to the Florida Energy & Climate Commission. Ms. Baughman McLeod served as the Deputy Chief of Staff to Florida's elected Chief Financial Officer where she led policy development and execution related to the State Treasury and Pension Fund (\$150 billion) and the financial risks and impacts of climate change, including Florida's Hurricane Catastrophe Fund (\$26 billion) and Citizens Insurance (1.3 million policies). She worked for The Trust for Public Land in conservation finance for several years on over \$6 billion in conservation funding. She holds an MBA from Duke's Fuqua School of Business, where course work took place in Dubai, Delhi, St. Petersburg, Bangkok, Shanghai and London, an MS in Urban Geography and a BS in International Affairs from Florida State University. She also holds a certificate in Health Impact Assessment from the University of Liverpool in the UK. She is a 2013 Policy Fellow of the French Foreign Ministry and a Fellow of the Forte Foundation for Women in Business.



RODRIGO MEDEIROS is Vice President for Conservation International Brazil (CI-Brasil). Prior he served as Senior Director for Science of Conservation International Americas Field Division from 2013-14. He is Associate Professor at the Federal Rural University of Rio de Janeiro (Department of Environmental Sciences/Institute of Forests) since 2005 with an academic career marked by technical-scientific knowledge production in areas related to protected areas, biodiversity and sustainable development, focusing on policy, governance, management, assessment and social inclusion. At the UFRRJ he created and was the first Dean of the International Center for Sustainable Development Studies (2013), created and was the first coordinator of Master Program in Sustainable Development Practices (2010) – a global international Graduate Program in cooperation with 32 universities - and the undergraduate course in Environmental Management (2009). He is a former member of the Academic Steering Committee of the Global Association of Master’s in Development Practice (2013-15) and Chair of the Brazil’s United Nations Sustainable Development Solutions Network (SDSN Brazil). He has published 10 books (including two novels for children) and several book chapters, scientific papers and technical reports.



SPENCER MEYER is a senior conservationist at Highstead, a foundation that provides conservation leadership in the New England region of the United States. Spencer’s work focuses on developing conservation finance strategies to accelerate the pace of forest conservation in New England. As an interdisciplinary scientist with expertise in landscape ecology, forest management, and conservation finance, Spencer explores how finance and economic incentives can be used to advance conservation of nature and the ecosystem services on which humans depend. Meyer joined Highstead in 2016 after a dual appointment as a NatureNet Fellow at the Yale School of Forestry and The Nature Conservancy. Before that, Spencer spent 12 years in Maine, leading sustainable forestry partnerships between academic, conservation, industry, and public institutions. He earned Ph.D. and M.S. degrees from University of Maine and an A.B. from Dartmouth College. He has served on several boards and advisory committees, including Baxter State Park, The Forest Society of Maine, and the Dartmouth Second College Grant. Spencer lives with his wife and two children in New Haven, CT.



HERNÁN MLADINIC was born in southern Patagonia and is a sociologist from the University of Chile and Master of Arts in Environmental Studies at the University of Toronto. In 1989 started campaigning and organizing international meetings on Southern and Antarctic environmental problems. In 1994 he joined the Ministry of Planning and Cooperation, serving as Regional Secretary of the Aysen Region. After his studies in Canada, was admitted in 2000 to the National Environmental Commission in the areas of interministerial coordination and strategic environmental information. In 2002 worked at the Cleaner Production Centre at INTEC, which later merged with Fundación Chile, becoming researcher at the Sustainable Energy Program. Between 2004 and 2008 he served on the Planning and Management Division of the National Petroleum Company (ENAP) in the areas of Environment, Renewable Energy, Social Responsibility and Business Intelligence. In the same period he taught the “environmental socioeconomics” course of the Masters in Environmental Planning and Management at the University of Chile. Since July 2008 he is Executive Director of the Pumalin Park and Project, and also, since 2009 Director of Yendegaia Foundation, both organizations of the Tompkins Conservation group. He has been the lead negotiator with the Chilean government in the creation and donation of parks. First, between 2011 and 2013, in the creation of Yendegaia National Park in Tierra del Fuego, and is currently spearheading the proposal made to the government to create the "Route of Parks" of Patagonia, a network of 17 national parks across 1,700 miles from Puerto Montt to Cape Horn.



MANUEL MOLLER is architect and founder of PiC, Preserve in Community, an interactive and educational crowdfunding platform to create and protect natural parks and different ecosystems around the world.



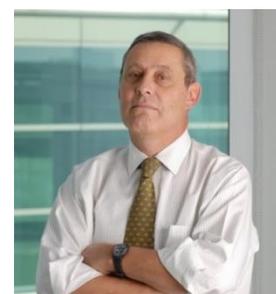
EMILY MYRON is program manager for the International Land Conservation Network, a project of the Lincoln Institute of Land Policy. Her work focuses on connecting and supporting organizations around the world that are accelerating voluntary private and civic sector action to protect and steward land and water resources. Emily is doing this by facilitating communication, sharing case studies and best practices, and organizing in-person workshops, meetings, and staff exchanges to build capacity within the international private land conservation movement. Emily previously worked for the Chesapeake Conservancy managing landscape-scale conservation projects and government relations. Emily holds a Master of Environmental Management degree in Ecosystem Science and Conservation from Duke University's Nicholas School of the Environment and a B.A. in Biology from St. Mary's College of Maryland.



ROBERTO PERALTA is a Chilean born in Paris, France. He studied at the University of Chile, UCLA & Harvard University. Roberto is a Chilean and New York Attorney, based in Chile with his practice focused on non-profits, B Corporations, private conservation, corporate social responsibility, international transactions and business law. Roberto also lectures at The Catholic University of Chile, University of Chile and University Alberto Hurtado. He is a member of the Chilean Presidential Council for Citizenship Participation (Ministry of Government) and of the Social Donations Council (Ministry of Social Development). Roberto is also a member of the public policy committee in of the Social Organizations Community, actively involved in amending all tax legislation dealing with non-profits and in enacting the "Derecho Real de Conservación."



ALEJANDRO QUINTANA is a principal and founding partner of Grasty Quintana Majlis & Cía., firm that was involved in the preparation and presentation of the law that was recently enacted "Derecho Real de Conservación". His practice focuses on counselling Chilean and international companies in different investment projects carried out in Chile. He also has vast experience in corporate and judicial matters related to the insurance industry. In the environmental area, Mr. Quintana has actively worked with TNC and WWF on the creation of incentives to encourage and finance conservation projects in Chile.

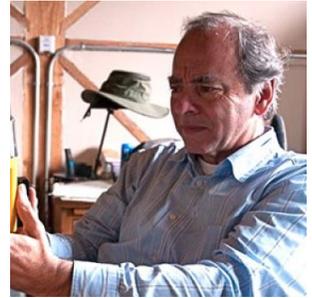


MARCELA RENTERIA is the Executive Director for the Harvard University's David Rockefeller Center for Latin American Studies, Regional Office (RO). Along with Steve Reifenberg, Marcela is one of the co-founders of the Regional Office, Harvard's first-ever, university-wide overseas office, and a model for Harvard international initiatives in other parts of Latin America and in Asia. She is also one of the co-founders and leaders of Harvard's Recupera Chile initiative, an ongoing multidisciplinary, disaster-recovery project working in communities devastated by the earthquake and tsunami of February 2010. Currently, Marcela also serves in the Board of America Solidaria in Chile. Previously, she was part of the Center's staff in Cambridge, working as Conference and Public Events Coordinator, with a particular focus on marketing efforts. A native of Colombia and with a background in advertising, Marcela worked in Bogotá for five years as a creative copywriter in international advertising agencies such as Leo Burnett and Saatchi & Saatchi. Marcela



holds a Master's degree in Intercultural Relations from Lesley University and a B.S. in Mass Communications, with an emphasis in Organizational Communication, from the Pontificia Universidad Javeriana in Bogotá.

MARCELO RINGELING is a businessman and entrepreneur, who graduated with a degree in Industrial Civil Engineering from the University of Chile. Marcelo has founded companies in the field of publications, such as Salo Editores, entered the finance sector, through his work with Bank Constitution, and created multiple companies in the field of Information Technology (1981): ComputerLand, Apple Chile, Microcare, Microsoft Chile, SOFTLAND, Computek, and among others, consolidating the company Quintec. Marcelo has been a leader for 25 years in the development and implementation of IT solutions in Chile and other Latin American countries. Marcelo has also been an active member of the Parks Corporation Chile since its inception (2002), seeking ways to collaborate in the public / private conservation of natural heritage. Since the founding of Templado (2006), a consulting firm specializing in effective actions of nature conservation both in the field of private conservation and public policy, Marcelo has participated in working groups formed to articulate legal and tax mechanisms that drive private conservation in Chile, and has represented in various forums the interests of entrepreneurs who understand that nature conservation is a cornerstone of development. Marcelo has participated in the work of the ILCN since its founding as a member of the Advisory Council, and has also worked as a teacher and then advisor at the San Lorenzo College of Recoleta, which is committed to vocational education in vulnerable sectors.



PABLO RODRIGUEZ is a social and environmental entrepreneur and co-Founder of PiC Preserve in Community, an interactive and educational crowdfunding platform to create and protect natural parks and ecosystems around the world.



MARCELO A. SANCHEZ holds a business degree from Universidad Adolfo Ibáñez. He also holds a master in Marketing and Sales Management, from ESEM in Madrid. He is currently general manager of FOUNDATION SAN CARLOS DE MAIPO, a foundation that works to overcome poverty through support programs for Children, Early Childhood Education, Social Reinsertion through Entrepreneurship, Labor Inclusion and recovery of public spaces. He has been Director of Sercotec and FOSIS on metropolitan region, Commercial Manager Handicrafts Chile, Executive Secretary of the Northern Vicariate of the Archbishopric of Santiago, among other charges, university professor and researcher in Consumer Behavior and Market Research. Marcelo is the Principal Investigator for the Study of Implementation in Chile of United Families Program at the University of Miami, and is also a Board Member of the Loyalty Chile Foundation and Foundation of Chile Handicrafts.



ENRIQUE SILVA is the Senior Research Associate for Latin America and the Caribbean (LAC) program at the Lincoln Institute of Land Policy. He is responsible for overseeing the LAC research portfolio and its relationship with the larger educational and policy initiatives of the LAC program and Institute. Silva supervises research that ranges from land-based fiscal instruments, the fiscal and land policy dimensions of large scale urban projects, affordable housing and urban segregation, to planning regimes and climate change adaptation. Prior to his arrival at LILP, Silva was an Assistant Professor of city planning and urban affairs and the Program Coordinator for the graduate programs in city planning and urban affairs at Boston University. Silva is an expert in comparative urbanization, metropolitan governance, and the institutionalization of planning practices in the Americas. Silva has also been involved in efforts to promote the development of urban growth management and planning institutions in post-earthquake



Haiti. He has published several articles on the political and institutional dimensions of Chile's infrastructure concessions program and is currently writing several pieces on the politics of post-earthquake urban planning in Haiti. Prior to his doctoral studies in city and regional planning, Silva worked as a planner and environmental development consultant in the Greater Boston Area and was the Program Assistant for the Democratic Governance Program for the Ford Foundation's Santiago, Chile Office. Silva holds a PhD in City and Regional Planning from the University of California, Berkeley, a Master's of Science in Planning from the University of Toronto, and a Bachelor of Arts in Political Science from Columbia University.

FRANCISCO (“Pancho”) SOLIS has been working to help protect the biodiversity and natural beauty of his native Chile since 2000. A lawyer by training and conservationist by passion, Francisco is a long-time advocate of conservation in Chile. In 2003, he was awarded a Paul Getty Wildlife Conservation Prize while working as part of the Coastal Range Coalition protecting southern Chile temperate forests. His career also includes helping to create the 147,000-acre Valdivian Coastal Reserve, which protects southern Chile's temperate rainforest. He later became manager of this emblematic project. In 2008, Francisco moved to Santiago to developing and implementing high-leverage conservation strategies, cultivating and maintaining relationships to bridge the private and public sectors, identifying and pursuing conservation opportunities and, above all, contributing to the welfare of Chile's natural heritage. In that capacity, he was instrumental to create the 59,305 acres Alerce Costero National Park. He also works with legislators and partners in Chile on advancing legislation and incentives for private lands conservation in the country. These efforts were crowded in July 2016, by the passage of the Derecho Real de Conservación bill. This law is a major achievement and innovation to make possible long lasting conservation. Currently, he's a consultant --for both national and international non-profit organizations— to advance conservation --both marine and terrestrial-- in places such as Valdivia, Easter Island and Patagonia. His pre-conservationist career includes working as a baker in a nature preserve, chef in a Japanese restaurant, a government legal advisor, a labor law instructor and a mountaineering guide. Francisco is also an avid photographer.



PETER STEIN is the Managing Director of The Lyme Timber Company which has pioneered the use of conservation easements to conserve more than a million acres of high conservation value forestland in the US and Canada. Peter co-directs the annual Conservation Finance Boot Camp hosted by Yale each June and also is a Board member of the National Alliance of Forestland Owners, The Forest History Society and serves as a member of the steering committee of the International Land Conservation Network, a project of the Lincoln Institute of Land Policy. Peter is a former chair of the Land Trust Alliance (US) and has received fellowships from the Harvard Graduate School of Design as well as the Lincoln Institute of Land Policy. Peter has published articles on innovative public private partnerships for conservation of natural resources. He is married to Lisa Cashdan and lives in Norwich, Vermont (US).



DAVID TECKLIN is a Senior Advisor for the Pew Charitable Trusts' initiative in Chilean Patagonia, and works as a Research Associate at the Austral University's Center for Environmental Studies in Valdivia. He established the World Wildlife Fund (WWF) Chile program and directed this from 2000-2007. His work in Chile has centered on temperate rainforests and coastal-marine conservation, including support for the creation and stewardship of public, private, and indigenous protected areas, community-based conservation, and constituency and coalition building, as well as strategies to reduce the environmental impacts of the salmon aquaculture and timber industries. He has contributed to numerous articles, technical reports, and books on conservation issues in Chile. He holds a PhD in Geography from the University of Arizona, an MA from UC Berkeley and a BA from Swarthmore College.



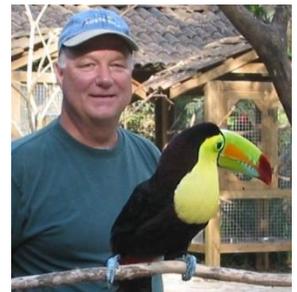
HENRY TEPPER is a consultant who has spent twenty five years as a conservation leader in both the United States and abroad. Among his positions are serving as the President of Mass Audubon, as Chief Conservation Officer and a Partner at Patagonia Sur, LLC, and working for fourteen years at The Nature Conservancy as the State Director in New Hampshire and then in New York State. Henry has worked for the past decade on efforts to advance private lands conservation in Chile. He has also participated in several initiatives at the Land Trust Alliance, including serving as a member of the independent Land Trust Accreditation Commission, and as a member of the National Land Trust Leadership Council. He lives with his family in Lincoln, Massachusetts, outside Boston.



TOMAS VEGA has a Bachelor in Business Administration, with strong language skills (English, German, French and native Spanish). He has 7 years of experience in a multi-national company, working at the group headquarters in Paris, France as well as on South American assignments focused on operations control, market analysis and strategic planning. Tomas now serves as Executive Director of the PIC Foundation, and is working in partnership with the San Juan de Piche foundation to make this project a success.



TERRY VOGT is Managing Director of Terra Global Capital, a company advising and investing in the market for land-based carbon credits, with projects in tropical forests as well as in US forestry and agriculture. Terry began his career at Wells Fargo Bank, after which he started and ran a corporate finance and private equity business with partners in Brazil for over 15 years. Terry then served as Deputy Director General of IICA – Inter-American Institute for Cooperation on Agriculture, a multi-lateral organization focused on agriculture and rural sustainable development. Subsequently he directed a program on conservation finance at The Gordon and Betty Moore Foundation, the world’s largest private funder of conservation projects. He was a founding investor and board member of Brasil Ecodiesel, a major biodiesel producer in Brazil. Vogt has an undergraduate degree in Latin American History from Harvard, and in 1996 was awarded the Order of Rio Branco by President Fernando Henrique Cardoso of Brazil. He also serves on the board of World Affairs, the Global Footprint Network, and Conservation Strategy Fund. He lives with his wife Mary, an accomplished choral singer, in San Francisco, California.



RAND WENTWORTH teaches at the Harvard Kennedy School as the Louis Bacon Environmental Resident Fellow in the Center for Public Leadership. He also serves as president emeritus of the Land Trust Alliance, a national conservation organization based in Washington, DC which serves as the leader and advocate for 1100 land trusts throughout the United States. He served as president from 2002-2016 and is nationally recognized for expanding the pace and quality of land conservation in America. He has testified before Congress three times and built bi-partisan support in Congress to dramatically expand funding and tax incentives to double the annual pace of voluntary land conservation in the United States. He built a virtual university for land conservation which now trains over 5000 staff and board members each year. Under his leadership, the Land Trust Alliance created a national accreditation system and an insurance service that funds the legal costs of defending conserved lands from violation or legal challenge. Before joining the Land Trust Alliance, he served as vice president and founding director of the Atlanta office of the Trust for Public Land where he tripled the size of the national park honoring Martin Luther King, Jr. and completed a \$143 million capital campaign to protect 70 miles along the Chattahoochee River, the primary drinking water supply for the City of Atlanta. Prior to his career in conservation, Wentworth was president of a commercial real estate development company based in Atlanta where he received the Visionary Regional Leadership Award from the Atlanta Regional Commission, the Community Leadership Award from the Urban Land Institute, and the Outstanding Young Atlantan Award. Mr.



Wentworth is a graduate of Yale University and holds an MBA in finance from Cornell University. He served as the Environmentalist in Residence at Middlebury College, was a visiting professor at the Graduate School of Architecture and City Planning at Georgia Tech and has lectured at Yale and Duke.

LEIGH WHELPTON leads the Conservation Finance Network's (CFN) effort to accelerate land and resource conservation, restoration, and stewardship by expanding the use of innovative funding and financing strategies. By training, convening, and supporting a growing network of public, private, and nonprofit professionals, CFN helps to increase the financial resources deployed for conservation. As Program Director, Leigh has developed a range of strategic initiatives and partnerships to help practitioners achieve new or better-leveraged conservation outcomes. Prior to Island Press, Leigh managed professional training programs and applied conservation initiatives for the Cheetah Conservation Fund in Namibia. Leigh holds an M.E.Sc. from the Yale School of Forestry and Environmental Studies and a B.S. (Hons.) from the University of California at Berkeley.



LUCY YOUNG is an Attorney in Grasty Quintana Majlis & Cia., law firm that was involved in the preparation of the Derecho Real de Conservación Law and advises NGOs in environmental law, mainly with a strategic and international perspective.



Photo: [Ekaterina Krasnikova](#), iStock