

The logo for Environment for Development (EFD) features the letters 'EFD' in a bold, green, sans-serif font. The letters are stacked vertically, with 'E' on top, 'F' in the middle, and 'D' on the bottom. The letters are contained within a white rectangular box that has a thin black border.

Environment for Development

The logo for CATIE (Center for Agricultural Technology and Rural Innovation) features the word 'CATIE' in a bold, blue, sans-serif font. To the right of the text is a stylized green and blue graphic element that resembles a leaf or a wave.

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EFD INITIATIVE CENTER REPORT

CENTRAL AMERICA 2013/14

The EFD-CA Center, at the Research Program in Economics and Environment for Development in CATIE, aims to contribute to the design and evaluation of public policies and local institutional arrangements that affect environmental protection, sustainable natural resources management and poverty alleviation by strengthening the understanding of the causes and consequences of human decisions as key inputs into policy making, and by increasing the interaction between academia and policy makers in Central America.

Cover: Turrialba Volcano, Turrialba, Cartago, Costa Rica

THIS REPORT

This report presents the EfD Central America Center, at the Research Program in Economics and Environment for Development (IDEA) in CATIE, the Tropical Agricultural Research and Higher Education Center, its members and their work during 2013/14. The Central American node of the Environment for Development Initiative is based at:

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CONTENTS

P.5

Message from our
center directors

P.6

EfD Annual Meeting
2013, South Africa

P.8

Research policy
interaction

P.12

Research

P.18

Academic Capacity
Building

P.20

Spreading the word

P.22

The Central American
node in the EfD
network

P.26

The EfD Initiative in
brief

P.27

EfD Centers





“There is worldwide interest in decentralizing decision-making and empowering local communities. These neighborhood water systems have been operating that way for a long time, and can provide valuable lessons in what works well in community-based governance.” [Read more about Community-Based Drinking Water Organizations on page 8](#)



María A. Naranjo, Deputy Director, and Francisco Alpizar, Director

MESSAGE FROM OUR CENTER DIRECTORS

2013 has been exciting and challenging. We have managed to establish a think tank that is a compulsory reference for high quality scientific and policy relevant research in Central America, and more broadly, in Latin America. Our main achievement has been the consolidation of a dynamic research team, which was successful in terms of publications and research funding, and which has received strong international recognition for our research and capacity building efforts in the region. In 2013, we have partnered with the International Development Research Centre (IRDC) in the implementation of a large multi-country research project on community based rural water provision, and with Conservation International and the International Climate Initiative of the German government in a research project looking at ecosystem-based adaptation to climate change in Guatemala, Honduras and Costa Rica. This large, multi-year, multi-country research project is a great complement to our smaller, more focused research projects.

Our work revolves around issues of socioeconomic analysis of conservation policies; socioeconomic dimensions of climate change; and management and valuation of environmental goods and services. We concluded important projects on Payments for Ecosystem Services (PES) in Costa Rica in support of FONAFIFO, the national authority in charge of payments. This proactive and highly constructive interaction with national policy makers will likely result in additional interesting research projects in the future. We collaborated with important stakeholder and environmental organizations, such as Marviva, Forever Costa Rica, and

the National Institute of Biodiversity (INBio), on sustainable management of national parks and marine protected areas. At the same time, we started an exciting group of projects on the topic of climate change. Climate change is perceived by policy makers as a real threat to human well-being in Central America. Increased drought is affecting household and irrigation water supply systems in dry areas, and the adverse consequences of higher temperatures and extreme precipitation have challenged national governments' capacity to better manage risk.

The major component of our capacity building efforts focused on the training of students in CATIE's Master's Program. In 2013, the focus of this master's program changed to Economics, Development and Climate Change. Our dedication to capacity building goes beyond CATIE's walls, as there is high demand for our staff to teach at other academic institutions such as the University of Costa Rica. In addition, we collaborate with other partner programs, such as the Latin American and Caribbean Environmental Economics Program (LACEEP), in their efforts to build capacity for people from academic and non-academic organizations.

There is still much to be done. Our strategy for the future is to continue to grow in terms of research projects, in order to provide a suitable landing platform for the capacity we have helped create.

Francisco Alpizar
Director

María A. Naranjo
Deputy Director



The 7th Annual Meeting of the Environment for Development (Efd) Initiative at Noordhoek, South Africa.

THE EFD ANNUAL MEETING 2013 IN SOUTH AFRICA

DECISIONS AND DISCUSSIONS ON RESEARCH

A wide representation of research organizations attended the academic part of the 7th Efd Annual Meeting in Cape Town, South Africa, October 24-27, 2013. Apart from a strong presence from all six Efd centers and a selection of their associated researchers, all Efd partner organizations were present: the Research Nucleus on Environmental and Resource Economics (NENRE) of the University of Concepción, Chile; Resources for the Future from Washington, DC; and the Environmental Economics Unit of the University of Gothenburg. Also present were other organizations with which Efd collaborates, such as the World Bank, Environmental Defense Fund (EDF), International Development Research Center (IDRC), Swedish Environmental Protection Agency, Beijer Institute of Ecological Economics and Stockholm Resilience Center.

The meeting opened with an enthusiastic welcome by Gunnar Köhlin, followed by welcoming remarks by Anthony Leiman, director of Efd South Africa (EPRU), based at the University of Cape Town. During the four-day meeting, there were four keynote speeches and three other special sessions with invited speakers taking place in a plenary setting. The first keynote speech was by Peter Berck, Professor of Agricultural and Resource Economics, University of California, Berkeley on **Identification: the problem that just won't die**, discussing the problem of untangling cause and effect in complicated interactions. The second, about **Systematic Conservation**, was given by Juha Siikamäki, Associate Research Director and Fellow, Resources for the Future (RFF).

The third keynote on **Modeling Land Use** was given by Jo Albers, Professor of Applied Economics, Oregon State University. The fourth keynote speech about **Accounting for Ecosystem Services**, should have been presented by Urvashi Narain, Senior Environmental Economist, World Bank, but since she was delayed, Dr Francisco Alpízar substituted and gave the speech in her absence. "Accounting for Ecosystem Services" is a process of assigning values to the services provided by natural resources – for example, the services that natural water sources provide to farmers – which, until very recently, have been ignored in calculations of national income.

The special sessions in the program had a focus on leading the way for Efd to partner in new collaborative research projects.

First out was a session about **REDD** (Reducing emissions from deforestation and forest degradation), where Randall Bluffstone, Professor of Economics, Portland State University, presented **World Bank supported REDD projects**. REDD is a program to pay people in developing

countries to avoid cutting or damaging forests so that forests can continue to sequester carbon. This was followed by a presentation of Environmental Defense Fund's (EDF's) REDD projects, where opportunities for potential new collaborations between EDF and Efd were elaborated on. Presentations were made by Richie Ahuja, Regional Director, Asia, EDF and Ferdinand Vieder, Social Science Research Center, Berlin. Another focus was **Accounting for Ecosystem Services**, and contributions to the discussion were made by Jeff Vincent, Professor of Forest Economics and Management, Duke University and Jessica Alvsilver, Swedish Environmental Protection Agency (Naturvårdsverket), who made a proposal to Efd centers to collaborate on a number of case studies to be carried out from 2015 and beyond.

Finally, Michael Toman, Research Manager, Development Research Group, World Bank, talked about **The World Bank's Environmental Research Priorities**, a fruitful discussion to reflect on what is already on the Efd center's research agendas in light of World Bank needs.



Jane Turpie, Deputy Director, Efd South Africa, Randall Bluffstone, Professor of Economics, Portland State University, Sue Snyman, Efd South Africa Research Fellow, Yonas Alem, Efd Research Coordinator and Efd Ethiopia Research Fellow, and Razack Lokina, Director, Efd Tanzania



Thomas Sterner, Visiting Chief Economist EDF and Efd Sweden Research Fellow, Randall Bluffstone, Professor of Economics, Portland State University, Ferdinand Vieder, Social Science Research Center, Berlin and Richie Ahuja, Regional Director, Asia, EDF

In addition, 66 presentations were made during the parallel sessions. These covered the following themes: **Land Use, Energy, REDD, Agriculture, Parks and Wildlife, Forestry, Climate Change, Fisheries, Ecosystem Services and Water, Bioenergy, Environmental Policy Instruments, Experiments, Transport and Health.**

The next EfD Annual Meeting will be held in Tanzania in October 2014.

POLICY DAY

Since 2010, EfD has hosted a separate Policy Day as a starting point for the annual meeting. The aim of the Policy Day is to make EfD research available for primarily local policy makers and also to get policy makers and other stakeholders' input into the ongoing research.

The policy day in Cape Town on October 23, 2013, hosted by EfD South Africa (EPRU), brought together policy makers from various governmental levels, practitioners, NGOs and international and national researchers. The purpose of the day was twofold: first, to identify South African policy makers' research priorities as inputs to EPRU's work; second, to highlight examples from EPRU's research and capacities. The policy day included three distinct sessions focusing on fishery economics, biodiversity and conservation, and climate change.

Fisheries

In the first session, Kim Prochazka, Department of Agriculture, Forestry and Fisheries, presented a range of research questions where economics can provide valuable contributions. These included various efficiency and distributional implications of when to fish or not, who should be given the right to fish and how, how to monitor compliance, etc. Tony Leiman, EPRU center director, gave an overview of research questions that EPRU has worked on in recent years, acknowledging that economics can only be complementary to natural sci-

ences research. The discussion that followed allowed all participants to propose topics and ask questions. There was broad agreement that a particularly important research topic is to evaluate an upcoming reform related to communal rights for inshore fishing in South Africa. What are the impacts of reform on fisheries and fishers who previously had fishing rights, and how are benefits shared? Fisheries reform involves the well-known "tragedy of the commons" problem: if anyone can use a resource, no one has the incentive to conserve it. One solution has been to "devolve" responsibility for a resource to a group of users who can then cooperate to manage it. However, a number of participants from South Africa pointed out that experiences from devolution of other forms of communal rights for agriculture had performed poorly. Another strong message from policy makers to researchers was a call for more multidisciplinary work involving natural sciences, economics and possibly other social sciences. At least, researchers should be well informed of each other's work and make sure that case studies are made in the same area.

Biodiversity and conservation

Jane Turpie of EPRU gave an overview of the toolbox of environmental economics and how it can be applied to a number of research questions of relevance for biodiversity and conservation. Mandy Driver from the South African National Biodiversity Institute (SANBI) presented its work and gave an overview of economic related research needs. She also pointed to the important role of intermediaries in bringing research findings to policymakers. Research topics included: what proportion of the wildlife industry is linked to biodiversity? What is the importance of South Africa's biodiversity assets to jobs and livelihoods? What are the returns from investing in ecological infrastructure?

Climate change

The third session focused on climate change. Thomas Sterner, University of Gothenburg and

Visiting Chief Economist, Environmental Defense Fund, is lead author on the policy instruments chapter for the upcoming IPCC report. He discussed scientific background to the topic and the importance of taking action now despite the political challenges involved. He used Germany as a good example of political and technological leadership, not least through use of feed in tariffs, a policy to encourage investment in renewable energy, which has helped drive down the costs of solar and wind power. Martine Visser highlighted parts of EPRU's work, including the use of experimental economics to increase understanding of how vulnerable groups adapt to flood risk and how farmers respond to climate variability and change. Helen Davies, from the Western Cape provincial government, and Sarah Ward, from the City of Cape Town, gave their views of important research needs. Provincial examples ranged from the costs of not addressing climate change, to more analysis of the economics of the food-water-energy nexus, to efficient use of land, to provincial impacts of a carbon tax at the national level. Examples from the city of Cape Town included how to stimulate behavioural change for greater energy efficiency, economic impacts of green procurement and efficient revenue models for resource taxes to avoid perverse incentives (unintended effects that cause people not to save energy). Questions were asked to the panel, not least related to how provincial and city policies are aligned with decisions at the national level and how the government's agenda for growth and jobs is aligned with sustainable development. Participants appreciated the discussions and stressed the need to continue the dialogue at a more detailed level to narrow down the agenda.

Mare Sarr concluded the policy day by thanking the participants for valuable inputs to EPRU's research agenda and acknowledged EPRU's responsibility for and interest in continuing the dialogue to identify common grounds for research.



Wilfred Nyangena, EfD Kenya Senior Research Fellow, Jane Kabubo-Mariara, Coordinator, EfD Kenya and Senior Research Fellow, and Richard Mulwa, EfD Kenya Senior Research Fellow



Min Wang, EfD China Research Fellow, Marcela Jaime, PhD student at University of Gothenburg and Róger Madrigal, Senior Research Fellow EfD Central America



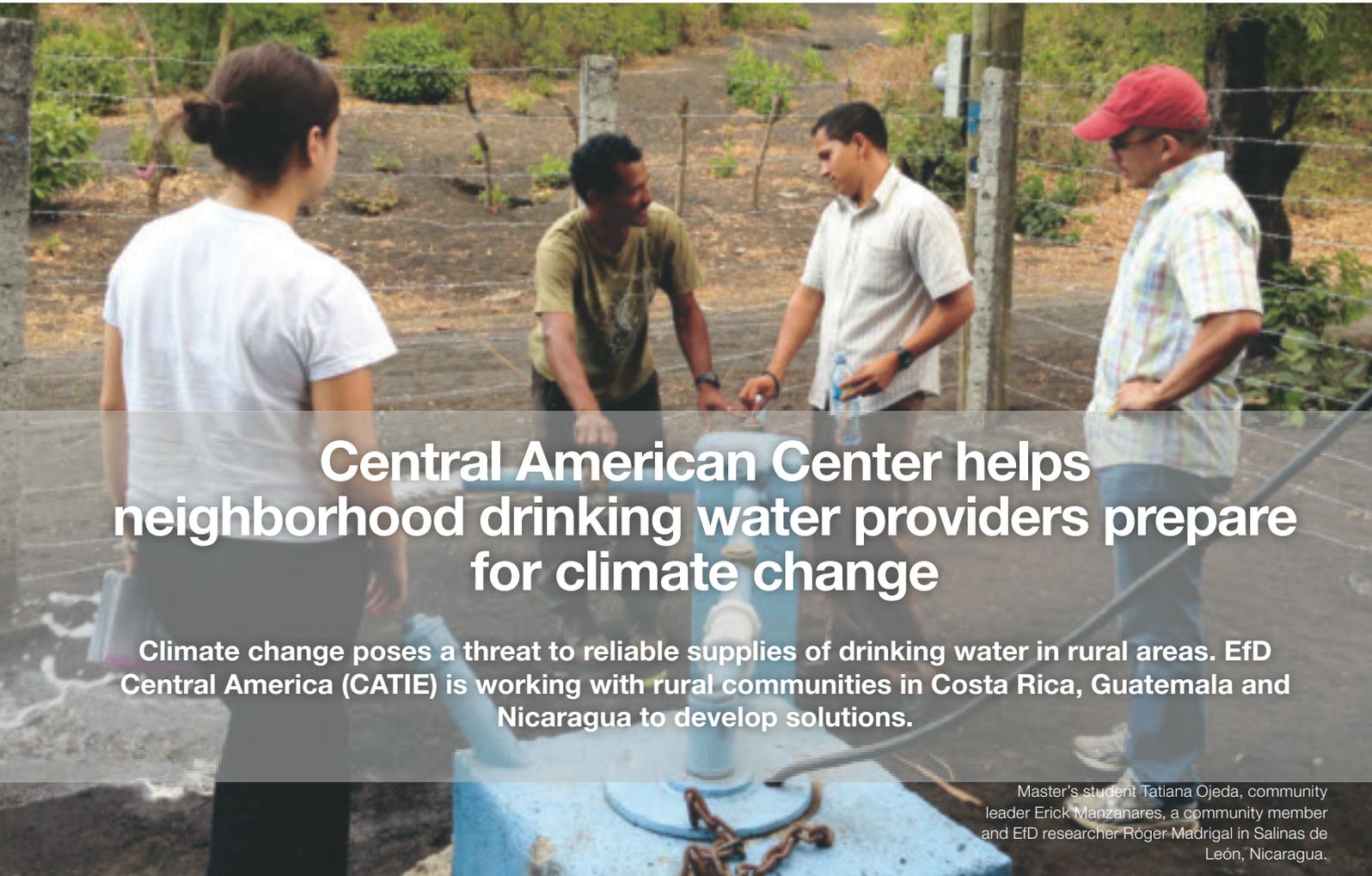
A delegate from the Climate and Development Knowledge Network poses a question to the panel on Policy Day

RESEARCH POLICY INTERACTION

The EfD initiative is built on the premise that, if relevant applied research is introduced in policy making processes, it will result in improved policies, leading to sustainable development, including poverty reduction. The EfD-CA Center is designed with the clear purpose of providing proactive science-based advice on available policy options and a critical analysis of existing initiatives that affect environmental protection, sustainable natural resource management and poverty alleviation. It is founded on the construction of a research agenda that prioritizes problems and policy processes in close interaction with stakeholders at all levels.

We have worked at all scales—from local managers and leaders to national-level decision makers in different countries of Central America—which is particularly important for several reasons. First, governmental institutions, as well as local governments in the region, are frequently characterized by low in-house capacity, resulting in little if any analysis of available policy options and no ex post evaluation of

the impact of alternative policies. Second, policy makers and decision makers tend to rely on generalized solutions, sometimes even on solutions designed for other contexts. Hence, a local research center that involves policy makers in the research agenda from the outset is fundamental for increasing acceptance and adapting the design of public policies to local conditions.



Central American Center helps neighborhood drinking water providers prepare for climate change

Climate change poses a threat to reliable supplies of drinking water in rural areas. EfD Central America (CATIE) is working with rural communities in Costa Rica, Guatemala and Nicaragua to develop solutions.

Master's student Tatiana Ojeda, community leader Erick Manzanares, a community member and EfD researcher Róger Madrigal in Salinas de León, Nicaragua.



POLICY INTERACTIONS

Impact evaluation of the Arenal Tempisque irrigation project

As a direct contribution to policy interactions between researchers and policymakers, EfD research fellows Juan Robalino, Róger Madrigal, and Catalina Sandoval have been conducting a research project to estimate the impacts of the implementation of the Arenal Tempisque Irrigation Project (DRAT by its Spanish acronym). Their assessment focuses on impacts on employment, income, education, deforestation, poverty, population density, and area under sugarcane and rice production. The project is funded through a collaboration between the Costa Rican government and German Agency for International Cooperation (GIZ).

Some historical background will help the reader understand why this evaluation is important for EfD-CA. During much of the 1980s, the Costa Rican government played a central role in the development of the country

This type of tractor is used by farmers in the wet-rice fields in the Arenal

“UNLIKE URBAN RESIDENTS, who usually get their drinking water from private or state-owned enterprises, neighborhoods on the edge of cities and in rural towns have created their own water delivery systems,” explained Dr. Francisco Alpizar, Director of the Economics and Environment for Development Program at CATIE, which is based in Costa Rica. These are called Community-Based Drinking Water Organizations (CBDWOs). EfD is helping them prepare for extreme weather events that are expected to become more common with rising global temperatures.

“CBDWOs are local institutions created by neighborhood-based groups,” explained Dr. Róger Madrigal, one of the lead researchers on this project. There are about 24,000 of these groups in Central America. In Costa Rica, for example, they provide drinking water to around 60% of the population in rural areas.

“These organizations have sufficient autonomy to make decisions and, in many cases, operate successfully without funding from the central government or other

outside assistance,” continued Dr. Madrigal. The question of what makes a CBDWO successful is one of the questions that EfD researchers are studying as part of a three-year research project. “There is worldwide interest in decentralizing decision-making and empowering local communities. These neighborhood water systems have been operating that way for a long time, and can provide valuable lessons in what works well in community-based governance.”

Global interest in this research is reflected in international participation: a Canadian research center is funding the work, and the president of the Latin American Confederation of CBDWOs participated in a 2013 workshop in Panama, “Climate Adaptation in the Water Sector: How Can Research Best Meet the Needs of Decision Makers?” The workshop brought together experts from Latin America and the Caribbean to talk about practical problems such as wastewater treatment and re-use; using water to produce electricity; and disaster response in case of floods. More information about the workshop is available at www.wateradaptationlac.com.

“The ability of local institutions to adapt to changing conditions will be critical in adapting to climate change,” continued Dr. Alpizar. “As well as coping with more frequent and intense droughts and floods, CBDWOs will have to respond flexibly to population growth and competing demands to use water for agricultural and electricity generation.”

The research will look at both factors in nature – different climate scenarios, for example – and the human and political factors that allow a CBDWO to perform well in meeting households’ needs for safe and reliable drinking water. “We are asking these questions at a very local level,” added Dr. Madrigal. To make sure that local experiences are shared throughout the region, the research results will be shared with policy makers to become part of national strategies to adapt to climate change. “We also will share findings of best practices and recommendations for improvement with the CBDWOs themselves,” concluded Dr. Alpizar.

by providing many of the production activities and public and social services through public institutions. Many of these activities were funded by borrowing, which led to an increase in both the external and internal debt. Consequently, the country experienced high inflation rates and other macroeconomic problems. The annual inflation rate in December of 1980 reached close to 18% and a year later it ramped up to about 65%; later on, it returned to more typical annual levels at around 10% and 20%.

After a period of economic stagnation, Costa Rica's development model changed into an export-led growth scheme. With this change came a series of interventions in the form of credit and infrastructure to help increase production by the private sector. One of the major programs in place at that time was a land irrigation development plan for the lower part of the Tempisque River watershed in the province of Guanacaste.

Why the DRAT in Guanacaste?

The province of Guanacaste is the driest in the country, with the longest annual period without rain during the dry season. In terms of area, its size is about 20% of the country. The major economic activities that take place there are in the agriculture sector. Among the most important products are rice, sugarcane, watermelon, cantaloupe, and livestock. Water availability for these and other activities is essential to increase productivity of the land, but compared to the rest of the country, water in Guanacaste is extremely scarce.

The irrigation plan included a total of 87,000 hectares suitable for irrigation. With only about 12% of the land with an irrigation system in place, the plan included a stepwise approach with a series of projects to cover the entire area in about 20 years. The first phase initiated construction in 1981 with what is known today as the "Proyecto de Riego Arenal Tempisque" (the Arenal Tempisque Irrigation Project). Other phases followed to constitute today's DRAT, with multiple sources of funding for its construction, from state funding to public-private partnerships.

With this evaluation, the research team will estimate what would have happened in the area in the absence of this government intervention. The central question in this study is what would have happened in the lower part of the Tempisque River watershed and Guanacaste if the DRAT had not been implemented. This question will be addressed with a counterfactual thinking approach relying on the use of qualitative and quantitative data, and implementing socioeconomic methods together with GIS tools for the analysis. The use of science-based information for decision making is at the heart of the research agenda for the EfD-CA Center. In line with this is policy and program evaluation that can be used to provide feedback to policy makers in improving programs and reducing uncertainty. The results of this study will contribute to policy decision making based on sound scientific research. It is a great example of the interaction between research and policy.

IN SERVICE TRAINING

EfD-CA Research Fellow lectures about payments for ecosystem services, REDD+, and negotiation strategies

Granada, the beautiful colonial city in Nicaragua, was selected by the Sustainable Management of Natural Resources Project (GESOREN) as the site of a five day workshop on the Economics of REDD+



EfD-CA fellow Carlos Muñoz lecturing at the training course on the economics of REDD+ that took place in Nicaragua

(Reducing Emissions from Deforestation and Forest Degradation, plus conservation, a United Nations program that pays developing countries for the sustainable management of forests and enhancement of forest carbon stocks), conducted in conjunction with the German Agency for International Cooperation (GIZ). One of the core components of this project focuses on advising government institutions and non-governmental actors on developing a coherent institutional and legal framework for REDD+.

To this end, more than 35 people from the Dominican Republic, Guatemala, Honduras, Nicaragua, Costa Rica, Panama, and Ecuador participated in the workshop, which took place between the 1st and 5th of July, 2013. Participants included representatives of indigenous communities, civil servants from various government agencies, NGOs, private consultants, and policymakers. These are people who are actively involved in REDD+ processes, forestry, and conservation in their countries.

EfD-CA fellow Carlos L. Muñoz Brenes was invited to lecture on the economics of payments for ecosystem services (PES) and practical applications of PES agreements. He also collaborated in conducting a simulation of a negotiation of a REDD+ agreement. Carlos has extensive theoretical and practical experience in both topics, which are subjects of his research work at EfD-CA.

In addition to PES and negotiations, the program of the workshop included a series of lectures that were developed by other instructors and guest lecturers. Some of the topics focused on benefit sharing and training aspects of REDD+; the importance of REDD+ for Central America and the Caribbean; and issues around the economics of REDD+, such as



This trawler uses a typical trawl net to catch shrimp from the seafloor.

- INE—Mexico National Institute of Ecology
- University of North Carolina at Chapel Hill
- The Sanford School of Public Policy at Duke University
- IDB—Inter-American Development Bank
- Inter-American Institute for Global Change Research
- GIZ—German Agency for International Cooperation
- The Tinker Foundation
- IDRC—International Development Research Centre Climate Change and Water Program
- The School of Business, Economics and Law at the University of Gothenburg
- RFF—Resources for the Future
- Regional REDD Program
- Focali—Forest, Climate and Livelihood Research Network
- Water Diplomacy Program

POLICY SEMINARS, WORKSHOPS AND CONFERENCES

Economics of Agricultural Adaptation to Climate Change

Scientists, government officials, and policy makers from all over Latin America met in Chile, at the ECLA (the Economic Commission for Latin America, or the CEPAL, using the Spanish acronym) as part of the fourth regional seminar on agriculture and climate change economics and modeling. The event, supported by the French International Cooperation, had a packed agenda to be completed in two days on November 13 and 14, 2013. The organizers included the United Nations Food and Agriculture Organization (FAO) Latin America, CGIAR research program on Climate Change, Agriculture and Food Security (CCAFS), the International Center for Tropical Agriculture (CIAT), and CATIE.

This year's seminar concentrated on economic modelling in relation to climate change and agriculture, and Efd-CA Research Fellow Milagro Saborio was there to lecture on "Economics of agricultural adaptation to climate change: where we stand and the challenges ahead." Her presentation was followed with commentaries by Walter Oyhanthabal from the Agriculture and Livestock Climate Change Unit from Uruguay; Oscar Mello from Pontifical Catholic University of Chile; and Luis Rubén Zavaleta, Vice Minister of Agriculture and Irrigation from Peru.

"We met to talk about a timely issue, that is, the convergence of agriculture and climate change," said Saborio. In an optimistic tone of voice, she added "I think this event was a great opportunity to show the kind of work we are prepared to do at Efd-CA and CATIE to a very interesting audience." The linkage between agriculture and climate change has only recently started to appear on the agenda of climate change negotiations, and it is likely to become a central issue in the near future.

In Efd-CA, Milagro's expertise and research interests focus on international trade, regional economic and structural change in rural Latin America, and adaptation to climate change. She is currently coordinator for CATIE in the CASCADE project (Ecosystem-based Adaptation for Smallholder Subsistence and Coffee Farming Communities in Central America); find out more about the project at the Efd website.

cost-benefit analysis and opportunity costs. All of these issues were put in practice in the negotiations simulation game that took place the last day of the workshop.

For Rhena Hoffman (GIZ-GESOREN) "understanding the foundations of economics, and environmental economics in particular, is central to REDD+ and its development." In addition, "we are glad to be able to contribute to building capacity in Latin America on this important issue by promoting activities like this workshop and providing a place where people who are interested in these topics can interact," said Hoffman.

POLICY LINKS

- CATIE—Tropical Agricultural Research and Higher Education Center
- LACEEP—Latin American and Caribbean Environmental Economics Program
- MINAET—Costa Rica Ministerio de Ambiente Energía y Telecomunicaciones
- SINAC—Costa Rica National System of Protected Areas
- FONAFIFO—Costa Rica National Forestry Financing Fund
- CNE—National Commission for the Prevention of Risks and Management of Emergencies (Comisión Nacional de Prevención de Riesgos y Atención de Emergencias)
- AyA—Costa Rican Institute of Aqueducts and Sewers (Instituto Costarricense de Acueductos y Alcantarillados)
- Costa Rican Water Authority (Dirección de Agua)
- FCRA—Forever Costa Rica Association
- TNC—The Nature Conservancy
- CEDE—Center for Economic Development Studies, Universidad de Los Andes, Colombia

RESEARCH

Our purpose is to contribute to the design and evaluation of public policies and local institutional arrangements that affect environmental protection, sustainable natural resource management and poverty alleviation. We do this by strengthening understanding of the causes and consequences of human decisions. This understanding is a key input for policy making and increases the interaction between academia and policymakers in Central America.

Central America, as well as the rest of the Latin American and Caribbean region, relies heavily on its natural resources. Therefore, the EfD-CA focus is on developing the following key thematic research areas:

Socioeconomic analysis of conservation policies

- Evaluation of conservation policies
- Pricing and financing of protected areas
- Prosocial behavior in conservation initiatives

Socioeconomic dimensions of climate change

- Adaptation strategies and policies
- Climate change and water linkages and their impact on rural livelihoods

- Risk, productivity change, and socioeconomic resilience in agriculture

Management and valuation of environmental goods and services

- Community-based management of common pool resources
- Institutions and public policies for water provision and sanitation
- Economic valuation of public policies for the provision of ecosystem services
- Gender and income equity



Forest remnants in the mountains of Costa Rica. Connecting these forest remnants into habitat corridors enables the movement of species from one patch to another; conserving them is important for species inhabiting these areas.

PUBLICATIONS 2013

Peer reviewed

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Alpízar, F., and P. Martinsson. 2013. Does It Matter if You Are Observed by Others? Evidence from Donations in the Field. *The Scandinavian Journal of Economics* 115: 74-83.

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Alpízar, F., J. Robalino, C. Sandoval, y L. Villalobos. 2013. Impacto Socioeconómico del Programa de Pagos por Servicios Ambientales en Costa Rica. EfD Policy Brief. Turrialba, Costa Rica: Environment for Development Central America.



Picture taken during a field study for the EfD Collaborative Fisheries Project. Manzanillo, Limón, Costa Rica



Collaborative Marine Research Project between South Africa, Tanzania and Costa Rica. Efd research fellows Jo Albers, Stephen Kirama, Jane Turpie, Francisco Alpizar, and Róger Madrigal.

PROJECTS 2013

CENTER RESEARCH

Analyzing the Effects of Extreme Weather Events in Guatemala

Theme: Climate Change
PI: Juan Robalino

Over the last decades, extreme climatic events have significantly affected Central America and specifically Guatemala. The project “Analyzing the Effects of Extreme Weather Events in Guatemala” tests whether social aid programs in Guatemala reduced the negative impacts of Tropical Storm Stan, which struck in 2005. We estimate the effect of the storm on whether a household that received aid from a social program reports being poorer in 2006 relative to 2000 and compare this with the effect of the storm in households that did not receive aid. First, we find that households that were affected by Stan were significantly more likely to report being poorer. Second, we find that the negative effects of Stan are lower for households that

received aid than for households that did not. Results were robust for different age groups, households headed by women, households headed by individuals with low levels of education, and households in the urban area.

Household Adaptation to Seasonal Droughts in Rural Drinking Water Systems

Theme: Climate Change
PI: Róger Madrigal

The ongoing project “**Household Adaptation to Seasonal Drought in Rural Drinking Water Systems**” aims to contribute to reducing vulnerability to climate change and to promoting the development of adaptation strategies that guarantee the human right to water for poor villagers in rural areas. Water resources are a key input for the effective policy design needed to minimize the expected negative impacts of climate change, especially for the most vulnerable groups in society.

COLLABORATIVE RESEARCH

Marine Protected Areas and Small-scale Fishing Behavior: A Comparative Analysis between South Africa, Tanzania and Costa Rica

Theme: Marine and Coastal Conservation
Program/Project leader: Jo Albers
Efd-Central America project partners: Róger Madrigal, Francisco Alpizar

Climate Change and the Role of Risk on Adaptation in South Africa and Costa Rica

Theme: Agriculture and Climate Change
Program/Project leaders: Salvatore Di Falco and Peter Martinsson

Efd-Central America project partners: Francisco Alpizar and María A. Naranjo

We continued working in collaboration with other EfD Centers. The EfD collaborative project **“Marine Protected Areas and Small-scale Fishing Behavior: A Comparative Analysis between South Africa, Tanzania and Costa Rica”** focuses on improving policies to promote coastal conservation through

marine protected areas (MPAs) and related management tools. The project not only highlights the policy interactions taking place within each country in helping shape policy options, it also illustrates the importance of international collaboration for sharing knowledge on the management of the global commons that are

marine resources. In addition, the collaborative project **“Climate Change and the Role of Risk on Adaptation in South Africa and Costa Rica”** aims to provide an analysis of the behavioral dimension of climate change by investigating how risk preferences and adaptation to climate change are related.

PROJECTS 2014

Experiments to Test a Bargaining Game for Reducing Pollution

Theme: Policy Design
PI: Milagro Saborío

Exploring the Role of Index Insurance on Farmers' Adaptation to Climate Change Strategies: A Field Experiment with Costa Rican Coffee Farmers

Theme: Climate Change

PI: María A. Naranjo and Francisco Alpízar
Overview: Two new EfD research projects are starting in 2014. First, water pollution is an important problem in several places in the world, and Central America is not an exception. In the region, we do not have recent and historic information about water quality, but there is clear evidence of water pollution being a relevant environmental problem. The goal of the project **“Experiments to Test a Bargaining Game for Reducing Pollution”** is to test the Pollution Bargaining Game (PBG) in laboratory experiments. The bargaining game is an innovative approach to analyzing agreements dealing with pollution; in this approach, the parties negotiate the terms of the agreement among themselves. We believe this project contributes not only to knowledge about the applicability of the bargaining game, but also to the practical and policy driven discussion about regulation of water pollution.

Second, **“Exploring the Role of Index Insurance on Farmers' Adaptation to Climate Change Strategies: A Field Experiment with Costa Rican Coffee Farmers”** aims to explore the role of area yield index insurance compared to traditional insurance on farmers' strategies to adapt to climate change. This project is an in-depth evaluation of whether different insurance schemes potentially crowd out private adaptation under systemic risk. We will compare traditional

insurance versus an area yield index insurance that compensates the insured farmer when the measured yield for a given region falls below a critical threshold. This study will be an input into the design of local and national policies to mitigate the adverse effects of climate change in Costa Rica and Central America, and as such will include a strong dissemination effort in partnership with local institutions.

OTHER PROJECTS

Analysis of the Potential and Challenges of Property Tax in Latin American Countries

Theme: Policy Design
PI: Juan Robalino

Overview: The objective of this project is to determine what drives land property tax collection in Costa Rican local governments. This project is funded by the Inter-American Development Bank.

Analyzing Land Use Change (1992 - 2008) and Formulating Future Scenarios of Deforestation and Degradation of Forests in Panama

Theme: Policy Design
PI: Juan Robalino

Overview: This project is a UN-REDD Program in Panama and is funded by the UNEP (United Nations Environment Program). The objective of this project is to formulate future scenarios of deforestation and forest degradation in Panama.

Strengthening Research Capacity in Environmental Economics to Study the Links between Water and Climate Change in Latin America and the Caribbean

Theme: Climate Change
PI: Juan Robalino and Róger Madrigal
Overview: This project is funded by IDRC's Climate Change and Water program (CCW). This project has a dual purpose of promoting

research and capacity building the environmental economics of climate change adaptation and water in Latin American and the Caribbean (LAC). This project aims to strengthen research capacities and produce innovative scientific knowledge to assess the social and economic links among climate change, water and adaptation strategies in LAC.

Water for Human Consumption, Communities and Climate Change: Expected Impacts and Adaptation in Central America (AC3)

Theme: Climate Change
PI: Róger Madrigal and Francisco Alpízar
Overview: Community organizations responsible for providing water for domestic consumption in Central America have to make decisions about investment in the design of plans and policies for adaptation to climate change. The objective of this project is to improve their decision-making process. Research will be conducted in Guatemala, Nicaragua, and Costa Rica. This project is funded by the IDRC's Climate Change and Water program.

Ecosystem-based Adaptation for Smallholder Subsistence and Coffee Farming Communities in Central America (CASCADE)

Theme: Agriculture and Climate Change
PI: Milagro Saborío
Overview: The objective of this project is to identify climate vulnerabilities; document strategies useful in dealing with climatic variation; assess effectiveness of household and community-level Ecosystem-based Adaptation (EbA) interventions; assess institutional support for EbA; build capacity to assess and support implementation of EbAs through agricultural extension systems; and disseminate project results at multiple levels to achieve impacts at both the policy and field implementation scale. This project is funded by

the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) through its International Climate Initiative (ICI).

Impact Evaluation of the Arenal Tempisque Irrigation Project

Theme: Agriculture, Climate Change and Policy Design

PI: Juan Robalino

Overview: This research project aims at estimating the impacts of the implementation of the Arenal Tempisque Irrigation Project (DRAT by its Spanish acronym). This assessment focuses on impacts on employment, income, education, deforestation, poverty, population density, and area under sugarcane and rice production. The project is funded through a collaboration between the Costa Rican government and the German Agency for International Cooperation (GIZ).

For more information on each project, please see the EfD website.



Rich soil loaded with nutrients from organic composting ready to be used in farming; the raw materials include livestock feeds leftover (grasses, sugarcane, and others), and manure. This is one of the alternative measures subsistence farmers are implementing to increase land productivity.

RESEARCH PRESENTATIONS

Academic conferences

Agriculture and Climate Change: Economics and Modeling

Milagro Saborío-Rodríguez: Economics of agricultural adaptation to climate change: where we stand and the challenges ahead.

EAERE 2013, 20th Annual Conference of the European Association of Environmental and Resource Economists

- Milagro Saborío-Rodríguez: Political Bargaining of a Transboundary Environmental Agreement
- Juan Robalino: The Effects of Hydro-meteorological Emergencies on Migration
- Francisco Alpízar: Unintended Consequences of Targeting Forest Conservation Payments: Behavioral Insights into Payment Design

International Congress for Conservation Biology

Juan Robalino: Explaining Variation in Forest Spillovers and Welfare Effects of Protected Areas

EfD Seventh Annual Meeting, South Africa 2013

- Róger Madrigal: Small Scale Fisheries and MPAs in Costa Rica
- Milagro Saborío-Rodríguez: Political Bargaining of a Transboundary Environmental Agreement

- Francisco Alpízar: Local Effects of Payments for Environmental Services on Poverty

Wallace-CATIE Conference

Francisco Alpízar: Financial Instruments to Encourage Climate-smart Actions at Multiple Scales

Congress on Community-based Management and Sanitation, Granada, Nicaragua

Róger Madrigal: Climate Change Adaptation and Community-based Management of Water Resources in Nicaragua, Guatemala and Costa Rica

Academic seminars and EfD-CA seminar series

IV Seminario Agricultura y Cambio Climático, Organizado Conjuntamente con la Oficina Regional de la FAO, con la Colaboración del CATIE y del CIAT

Milagro Saborío-Rodríguez: Political Bargaining of a Transboundary Environmental Agreement and Experiments to Test a Bargaining Game for Reducing Pollution

University of Gothenburg, Department of Economics Research Seminars

María A. Naranjo: Does Tourism Eco-Certification Pay? Costa Rica's Blue Flag Program

EfD seminar series

Piera Waibel: Putting the Poor First: How Companies Can Learn from Development Approaches - Examples from Latin America

Kelly Wendland: Institutions, People and the Environment: An Empirical Evaluation of Governance and Land Use Outcomes in Russia and Future Research on Conservation Approaches and Land Use Outcomes in the Mesoamerican Biological Corridor

Manuel Guerrero: Determining the Effect of Land Use on the Quality of Water Supply Sources in the Río Sarapiquí Watershed

Irene Shaver: Identifying Connections between Agricultural Policies, Family Welfare and Rural Economy in the San Juan-La Selva Biological Corridor

Anna Snider: The Role of Cooperatives in the Promotion of Sustainable Coffee Certification: Preliminary Research Results

Soazic Dhorne: Environment and Agroforestry Systems Strategies Used by Key Actors in the Coffee Region of Llano Bonito, Los Santos, Costa Rica



Farmers in Guatemala benefit from better farming practices and know-how. This family takes advantage of leftover fertilizer to grow corn in the same plant holes where they once had tomatoes planted.

Milagro Saborío-Rodríguez: Economía de la Adaptación de la Agricultura al Cambio Climático: Dónde Estamos y Retos Pendientes

Róger Madrigal, Milagro Saborío-Rodríguez and Francisco Alpizar: Regional Workshop on Climate Change Adaptation in the Water Sector: How Can Research Best Meet the Demand of Decision-Makers? Panama City, Panama.

Training courses in which Efd Fellows participated in 2013

IV J-Pal Course on Randomized Evaluations, Abdul Latif Jameel Poverty Action Lab, November 2013, Cape Town, South Africa

María A. Naranjo and Milagro Saborío

Executive Course on Impact Assessment of Social Programs

Catalina Sandoval

XV Biannual Short Course: Advances in Evaluating the Environmental and Social Impacts of Environmental Programs. April 12 - 14.

Tabaré Capitán

VII Environmental and Resource Economics Training Course: Experimental Economics with Applications to the Environment. June 3 - 14.

Tabaré Capitán



EfD fellow Peter Martinsson teaching on experimental economics in the LACEEP XV Workshop, Costa Rica 2013

ACADEMIC CAPACITY BUILDING

The EfD academic capacity building component is designed to correct the shortage of trained environmental economists in developing countries by supporting undergraduate and postgraduate studies in environmental economics and by building the capacity of local public universities, through teaching support, research grants, books and other support. Linking policy research with academia is one of the unique features of EfD.

One of the priorities of EfD at CATIE is educational support at different levels. In particular, our objective is to increase the local capacity of people at academic and nonacademic organizations (NGOs, public institutes and civil society organizations) to conduct, critically evaluate, interpret, and apply research on environmental and natural resource economics and policy. Our support for education is built on three pillars: (1) strengthening the quality and reach of CATIE's MSc Program in Economics, Development, and Climate Change (EDCC), (2) educating people from nonacademic organizations, and (3) mentoring bright young researchers.

Educational support to academic institutions is conducted mainly through the different courses taught at CATIE by EfD-CA scholars, as well as the tutoring of students on their dissertations. The plan is to continue EfD-CA's strong support to the EDCC master's program by offering high-quality courses updated with recent research results and methodologies. The presentations given by EfD-CA researchers, many based on research results, have been very useful as a didactic tool as well as a mechanism to disseminate our work. Complementary to this objective, the supervision of MSc and PhD students will continue to be a priority, especially because some of the students are critical in developing many of our research projects.

In relation to education of people from non-academic organizations, our main contribution will be offering capacity-building courses adapted to the target audience and updated with the most recent findings in policy design and evaluation in the region. Since its creation, researchers at EfD-CA have trained more than 150 people from all over Latin America in environmental economics and policy issues. The participants in these courses have included students, government policy makers at different levels, technical staff of NGO's, and local leaders, among others.

COURSES TAUGHT BY EFD CENTRAL AMERICA

Undergraduate courses

Environmental Economics, University of Costa Rica
 Economic Growth, University of Costa Rica
 Political Economy, University of Costa Rica
 Public Economics, University of Costa Rica

Graduate courses

Economics of Adaptation to Climate Change, CATIE
 Quantitative Methods, CATIE
 Environmental and Natural Resource Economics, CATIE
 Economic Valuation, CATIE
 Environmental Policies in a Changing World, CATIE

In-service training courses for civil servants

Economic valuation of ecosystem services, CATIE
 Advances in Evaluating the Environmental and Social Impacts of Environmental Programs/LACEEP
 Experimental Methods for Environmental and Resource Economics/LACEEP
 REDD+ Economics and Negotiations, Granada, Nicaragua
 Financial Mechanisms for Protected Areas and Biodiversity Conservation. International Course on Protected Areas and Biological Corridors: Instruments for Adaptation and Mitigation to Climate Change, CATIE

MSc Theses

Extreme weather events of precipitation and their effects on internal migration in Guatemala.
 Deicy Carolina Lozano Sivisaca

 Community-based adaptation to climate change of water systems in Nicaragua. MSc dissertation, CATIE, Turrialba, Costa Rica.
 Tatiana Lizbeth Ojeda Luna



Tree in the botanical gardens, CATIE campus, Turrialba.

SPREADING THE WORD

News about research and policy interaction

Read more on the website www.efdinitiative.org/central-america/news



Group participants in the Economics of REDD+

IN THE MEDIA

2013-04-23

Field Visits Kickoff for AC3 Project on Water and Climate Change Adaptation

EfD-CA Center research fellows Róger Madrigal and Eugenia León conducted the first field visits in rural communities in Nicaragua for the project.

EfD-CA Center research fellows Róger Madrigal and Eugenia León conducted the first field visits in Nicaragua in late March, as part of the AC3 Project “Water for Human Consumption, Communities and Climate Change: Expected Impacts and Adaptation in Central America.” During the field visits, they were accompanied by Tatiana Ojeda, who is a student in the socioeconomics master’s program at CATIE.

This visit was the first fieldwork of the AC3 research project. The project’s main objective is to “Improve decision-making about investment in the design of plans and policies for adaptation to climate change of community organizations responsible for providing water for domestic consumption in Central America.” The countries in which research will be con-

ducted are Guatemala, Nicaragua, and Costa Rica. The research team used this opportunity to visit rural communities located along the dry corridor near León, Nicaragua.

For Eugenia, this was “an amazing chance to see a glimpse of how rural communities deal with water provision, their economic conditions, and the role of community-based drinking water organizations” (CBDWOs). “We had the chance to talk with seven community leaders and members of CBDWOs from local political administrative divisions called ‘comarcas’ such as Salinas Grandes and Lecheguajo,” she added. The research fellow in charge of completing this ambitious project is Róger Madrigal. “During this visit, we found very interesting information which marks a great starting point for the next three years of exciting research,” he said.

This project seeks to obtain primary data from a representative sample of CBDWOs in the selected countries, located in areas where major negative changes in the availability of water are expected due to climate change, in addition to other non-climatic disturbances. Research techniques include modeling of climate sce-

narios at local, regional and national levels, qualitative and quantitative analysis of information on adaptation strategies of CBDWOs, and economic analysis. The AC3 is a collaborative research project between the EfD Research Program and the Climate Change and Watershed Program in CATIE and other partners. AC3 is financially supported by IDRC’s Climate Change and Water program.

2013-02-01

International Expert Meeting on Financial Architecture for Sustainable Forest Management

The activity consisted of presentations and analysis of multiple forest financing schemes, with the goal of identifying alternative financing sources for sustainable forestry.

The development of effective financing strategies and instruments to promote sustainable forest management (SFM) has been a primary policy issue for international agencies within and outside the United Nations (UN) system. Over the past years, the UN Food and Agriculture Organization (FAO), along with other members of the Collaborative Partnership on Forests (CPF) and development partners such as the German

Agency for International Cooperation (GIZ), have been assisting many countries with forest financing strategies. Now, with increased recognition of the benefits provided by ecosystem services from forests, many countries are taking actions to support SFM.

In continuing this work, FAO and GIZ, in collaboration with the Tropical Agricultural Research and Higher Education Center (CATIE), organized the expert meeting “Towards a Sound Financial Architecture for Sustainable Forest Management (SFM): The Role of National Forest Funds (NFFs).” This meeting was conceived as a “key capacity building effort” that helped participants identify and assess the effectiveness of multiple financing options to support SFM.

The meeting took place between the 28th and 30th of January 2013 at CATIE in Turrialba,

Costa Rica. The program included a field trip to the Sarapiquí region on the first day. The trip, organized by the Foundation for the Development of the Central Volcanic Cordillera (FUNDECOR), let participants witness firsthand “the reality on the ground” of forestry and financial mechanisms in Costa Rica. On the second day, there was a series of presentations by the experts, which revolved around the challenges and opportunities involved in establishing and successfully managing national forest funds or similar funding mechanisms. On the last day, the participants focused on identifying policy, institutional, and other measures needed to introduce an enabling environment for the effective implementation of strategies and models; these ideas were based on the cases presented in the second day.

This was truly an international meeting: the participants came from Canada, Guatemala, Nicaragua, Costa Rica, Trinidad and Tobago, Ecuador, Colombia, Peru, Brazil, Argentina, Chile, Germany, Lebanon, Morocco, Turkey, Indonesia, and India. “We are sure this meeting will help countries develop effective strategies for financing sustainable forest management and forest conservation. We are working hard to publish the outcomes from this meeting in a book,” said Ronnie de Camino, CATIE’s Deputy Director and organizer of the event.

At the meeting, EfD research fellow Carlos Muñoz presented a case of an innovative financial arrangement of an ecosystem service contract between a conservation organization, which owns a private reserve in Monteverde, Costa Rica, and two hydroelectric companies, in a model of a private-private partnership.



EfD Research Fellows Jo Albers, Jane Turpie and Róger Madrigal on a field study

THE CENTRAL AMERICAN NODE IN THE EFD NETWORK

Our center is a core component of the Research Program in Economics and Environment for Development (IDEA) at the Tropical Agricultural Research and Higher Education Center (CATIE). Although the center's primary region of work is Central America, EFD-CA extends its work well beyond the boundaries of Costa Rica into other countries that are part of CATIE's regional influence. EFD researchers, fellows and associates conduct studies in Guatemala, Honduras, Nicaragua, Panama, Colombia, Mexico, and Brazil. As such, the center is uniquely positioned to bring together the experiences of experts in other parts of the developing world, such as Africa and China, with those of European and North American collaborators.

OUR OBJECTIVES

- To continue developing the administrative capacity and infrastructure that enable the program to conduct high quality research on a broader set of topics, increase the number of local and visiting scholars, expand the number of international and national collaborators, and provide the tools and means for interacting with policy makers in the region.
- To provide proactive, science-based advice on available policy options and critical analysis of existing initiatives that affect environmental protection, sustainable natural resources management and poverty alleviation, based on the construction of a research agenda that prioritizes problems and policy processes in close interaction with stakeholders at all levels.
- To increase the center's capacity to conduct high-quality academic, policy-relevant research on poverty issues and environmental and natural resource economics in the Central American context.
- To increase the local capacity of people in academic and non-academic organizations (NGOs public institutes and civil society)

to conduct, critically evaluate and interpret research on environmental and natural resource economics and policy.

- To communicate our research results in an effective way given the variety of backgrounds, interests and technical capacities of our target audience, with the aim of not only affecting policy making but also receiving feedback on our research results and agendas.

EFD CENTRAL AMERICA CENTER STAFF

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More details about each person are available on the EfD website, in the “Centers” section, under Central America and People: www.efdinitiative.org/central-america/people



Juan Robalino, Jose Jiménez, María Angélica Naranjo, Róger Madrigal, Leida Mercado. Back row: Carlos Muñoz, Tabaré Capitán, Catalina Sandoval, Anna Nordén, Francisco Alpizar, Alberto Vargas, Lizette Delgado.



Top: Efd-CA staff Liz Delgado and Research Fellow Catalina Sandoval
 Bottom: Efd-CA staff Alberto Vargas on hanging bridge near the Arenal Volcano National Park



Rio Celeste waterfall in the northern plains of Costa Rica

NETWORKS

Efd-CA, together with other initiatives within the Research Program in Economics and Environment for Development in Central America at CATIE, has an extended list of national and international partners, which provide a wide range of network support to projects and initiatives around the core issues in research, policy advice, and training. This network has been built up throughout the years that the center has been in operation. Our goal is to solidify our current alliances and to broaden our network in order to achieve greater impact in Central America.

Efd-CA staff will continue to collaborate with the Latin American and Caribbean Environmental Economics Program (LACEEP) in capacity building and training. Our collaboration with the International Development Research Centre (IDRC) in Canada is unfolding and there are two strong ongoing projects related to climate change, communities and water; this collaboration extends to research partner Paul Ferraro from Georgia State University.

We are continuously engaging with government agencies and universities. Some Efd-CA researchers teach at the University of

Costa Rica and are invited as lecturers at conferences around the world. We continue our work on research and advising, for example, with Costa Rica's National Forestry Financing Fund (FONAFIFO) on ecosystem services and payments schemes; the newly created office of the Vice-Minister for Water and Seas on marine habitat protection; and the Ministry of Planning on impact evaluation of irrigation projects on poverty. Our network extends to other Central American countries, with agencies and NGOs that are working on water issues, coffee production, and small subsistence farming in the region.

DONORS AND FUNDING

Our Center offers an attractive opportunity for institutions providing financial support for research and partners interested in our activities and innovative agenda.



Pineapple plantations in northern Costa Rica. The growth in the number of plantations is becoming a central policy issue, both for their economic importance and environmental impacts.

We are grateful for the trust and support provided by donors and partners during 2013:

Number of donors	5
List of donors	Funding by donor during 2013
1) LACEEP (IDRC and BID)	17.9%
2) CASCADA (CI)	11.7%
3) Water and climate change project (IDRC)	0.60%
4) AC3 (IDRC)	14.7%
5) Other via Efd	17.2%
Sida/Efd funding as share of total center budget (incl. univ. salaries)	37.9%

List of donors Efd Central America

CONTACT US

To find out more about our work and the Efd Initiative, please visit www.efdinitiative.org/central-america

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Coffee pickers in rural Guatemala.

THE EFD INITIATIVE IN BRIEF

Our vision is a green economy with sustainable economic growth founded on efficient management of ecosystems, natural resources and climate change impacts.

The concept of the Environment for Development Initiative is simple – we believe that natural resources and the environment should be seen as the basis for, not the constraint on, sustainable growth in developing countries. But for that to happen, we need to apply our best analytical tools to how to manage these resources. And that is what we do in the Environment for Development Initiative!

Our mission is to contribute to poverty alleviation and sustainable development through increased use of environmental economics capacity in policy design and policy-making processes pertaining to management of ecosystems, natural resources and climate change impacts. We use environmental economics tools both to identify the roots of environmental problems in modern economies, and to find what social and economic mechanisms can be used to solve them.

Institutionally, Efd is now well underway to become a global network of environmental economics centers. The original six Efd centers in China, Costa Rica (for Central America), Ethiopia, Kenya, South Africa

and Tanzania have now been formally joined by three more centers: Resources for the Future (RFF), Washington DC, USA; the Research Nucleus on Environmental and Natural Resource Economics (NENRE) at the University of Concepción in Chile; and the Environmental Economics Unit, University of Gothenburg in Sweden. This is the first step in forming an independent international organization in support of high quality, policy-relevant research on development and the environment, as well as academic capacity building and in-depth policy interaction.

There have also been productive interactions with other partners, such as the United Nations Environment Programme, the African Development Bank, the Global Green Growth Institute and the Climate and Development Knowledge Platform. We are also happy that our unique way of stimulating policy-relevant research through our Efd Research Fund has attracted funding from the World Bank, in addition to our generous core funding from the Swedish International Development Cooperation Agency (Sida).

EFD CENTERS

There are nine Efd centers hosted by academic institutions. For more information on each center, please contact the Center Director or Coordinator:

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UNIVERSITY OF GOTHENBURG SCHOOL OF BUSINESS, ECONOMICS AND LAW

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Sida

The Swedish International Development Cooperation Agency, Sida, provides core funding for the Efd Initiative.



Environment for Development



To find out more about our work and the EFD Initiative:

Please visit www.efdinitiative.org/central-america

You are most welcome to contact us:

EfD Central America

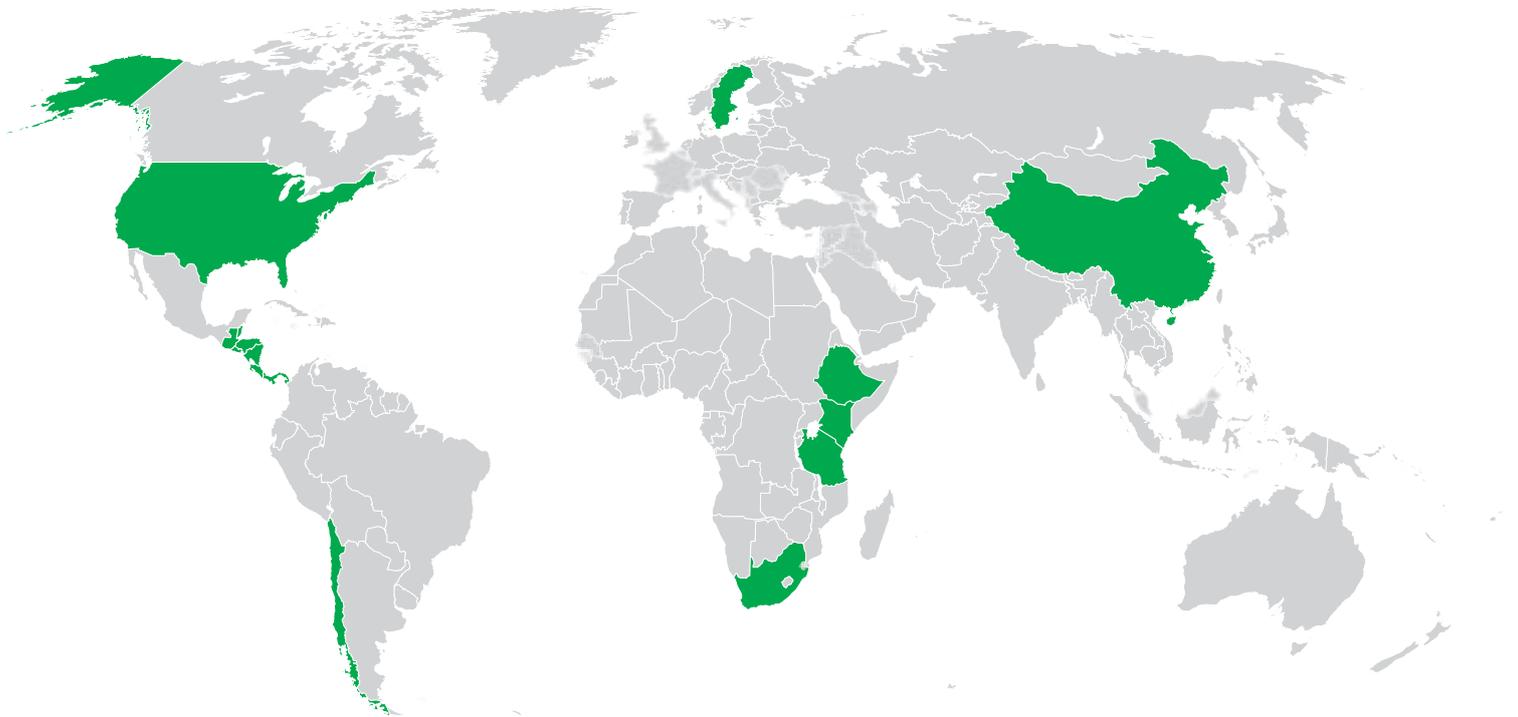
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