

EfD

Environment for Development



EFD INITIATIVE CENTER REPORT

SOUTH AFRICA

2012/13

The Environmental economics Policy Research Unit (EPRU) is a collaborative association of academic researchers specializing in environmental and resource issues. EPRU works to promote sustainable development and poverty reduction in Southern Africa.



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THIS REPORT

This report presents Efd South Africa, its members and work during 2011/12.

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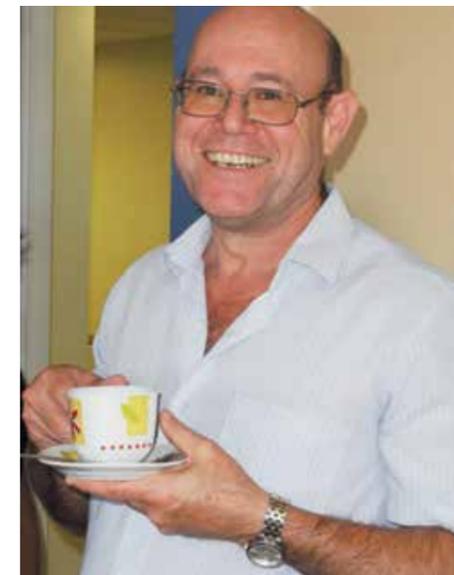
Cover photo: A glimpse over a small South African fishing village. Photo Neil Austen

Park pricing workshop in South Africa. Photo Joep Stevens



“South Africa has very good mining legislation, but making it work has been a problem. Mining can do a lot of environmental damage, not just when it is happening, but once it has finished and the mine is closed” [Read more on page 8](#)

A dragline in action on the site of coal mine dumps in the Mpumalanga province. Photo David Larsen



Anthony Leiman, Director



Jane Turpie Deputy Director

MESSAGE FROM OUR CENTER DIRECTORS

Over the past four years, EPRU has striven to produce policy-relevant research in areas important to South Africa: community-based wildlife conservation and poverty mitigation, climate change, coastal management, fisheries, and sustainable and responsible investment. Our close collaboration with the South African National Biodiversity Institute, the Department of Agriculture, Forestry and Fisheries, the Water Research Commission, and the City of Cape Town are a few illustrations of our commitment.

In 2012, EPRU was again jointly coordinated by the Director (Mare Sarr) and Research Convenor (Jane Turpie). We continued to meet off-campus on a quarterly basis to discuss our research ideas and outputs, thrash out research problems, and discuss policy interaction issues. These interactions have been important in strengthening the group and improving research.

While endeavouring to develop and improve its policy interaction strategy EPRU has also been working hard toward diversifying its funding sources. In particular, the group made great strides during 2012 in becoming actively involved in two multidisciplinary groups that have recently formed at the University of Cape Town: the African Climate Change Development Initiative and Aquad'UCT (dealing with water issues), which will bring many opportunities for collaborative and policy-relevant research.

EPRU is raising its research profile by turning important policy-relevant research into high-quality academic papers. In the course of the year, EPRU fellows have published 14 articles in leading international and local peer-reviewed journals, as well as seven discussion papers. Two of our Senior Research Fellows, Edwin Muchapondwa and Martine Visser, together with their Ph.D. students have been particularly

productive this year and deserve to be commended and emulated. It is also a pleasure for me to congratulate five of our Junior Research Fellows who secured prestigious two-year scholarships funded by the Carnegie Foundation. In January 2012, we welcomed Anthony Black as a new Senior Research Fellow.

Finally, on behalf of all EPRU members, we would like to thank Sida for its continued support. Our thanks extend to the coordination team of the EfD Initiative for helping us build what we hope will soon become a centre of excellence in the area of natural resource management in southern Africa.

Anthony Leiman & Jane Turpie
Director Deputy Director



The 6th Annual Meeting of the Environment for Development (EfD) Initiative took place in La Fortuna, Costa Rica, between October 25 and 29, 2012. More than 70 people participated.

THE EFD ANNUAL MEETING 2012 IN COSTA RICA

The 6th Annual Meeting of the Environment for Development (EfD) Initiative took place in La Fortuna, Costa Rica, between October 25 and 29, 2012. More than 70 people participated at the rendezvous this year, including researchers from all EfD centers around the world and their collaborators, as well as key stakeholders, to discuss and exchange research results from EfD projects, ideas, and proposals.

Decisions and Discussions on Research

The highlight of the meeting this year was the establishment of EfD as an independent legal entity which will be governed by a board with representatives of the EfD centers. The Board will be the highest decision making body and will appoint the Research Committee and the Secretariat. "This is a historic moment!" said Gunnar Köhlin, Director of the Environment for Development (EfD) Initiative, and a professor in the Department of Economics at the University of Gothenburg. "This will enable EfD to become a truly global organization, with the ambition of becoming the largest and most efficient organization to channel funds for research on environmental economics in developing countries."

The meeting opened with an enthusiastic welcome by Gunnar Köhlin, followed by wel-

coming remarks by Francisco Alpizar, director of the EfD Central America Center (EfD-CA), based in Costa Rica. There were three keynote speeches and a panel discussion. The first keynote speech, by Ed Barbier of the University of Wyoming, was on Structural change, dualism and economic development. The second, entitled Measuring the impacts of environmental policies on the environment and the poor: protected areas and ecosystems services, was by Paul Ferraro, from Georgia State University. Lastly, Erin Sills of North Carolina State University gave a presentation on Understanding REDD: What and how can we learn from pilot projects? (REDD stands for Reduced Emissions from Deforestation and Forest Degradation.)

In addition, there were several very informative presentations during the plenary session and the parallel sessions. These covered a series

of issues, including interdisciplinary synthesis research, adaptation to climate change, transportation and congestion, water use and pricing, and fisheries. All of these presentations were given by experts from around the world.

The next EfD Annual meeting will be held in South Africa in 2013.

EfD Policy Day at the Annual Meeting

The Policy Day is becoming a tradition during EfD Annual meetings. This event serves as a stage for researchers, policymakers, and politicians to interact around seminal policy-relevant issues to which EfD researchers can contribute. The 2012 Policy Day kickoff on October 25 brought together more than 55 participants in Santo Domingo de Heredia, Costa Rica. This invited group included both current and

former members of the Costa Rican Congress, ministers of the government of Costa Rica, and representatives from seven government agencies. There were also national and international representatives from eight NGOs, five research institutions or universities, and two private corporations.

The central theme of the Policy Day was research and policy interactions in climate change, water, and conservation of natural resources. Francisco Alpizar, the director of EfD-CA, celebrated the presence of a diverse group of people interested in moving forward research-based policymaking. "We are here to position EfD in the national context, to present developments in research that is relevant for policy design and decision making, to identify key needs for research on issues around the theme of the day, and to facilitate a dialogue between researchers, policy makers, and stakeholders working on defining policies around these subjects," said Alpizar. Most importantly, he added, "we are here because we want to help and to hear from you about the issues on which you need our help; researchers at EfD can provide a small contribution to resolving some of the myriad issues we need to confront."

After Alpizar's opening remarks, Jose Joaquín Campos, the Director General of the Tropical Agriculture and Higher Education Center (CATIE), gave a presentation about climate-smart territories and stressed the opportunities for CATIE and EfD to support human well-being in Latin America and the Caribbean. Campos praised the quality of work and accomplishments of EfD and wished for an even more productive, successful, and consolidated presence of EfD in the region. This presentation was followed by a talk by EfD director Gunnar Köhlin. Köhlin presented on The impact of international cooperation through EfD's research and capacity building. One of his key messages was that, through capacity building, rigorous research, and communica-

tion of issues, EfD's work around the world contributes to well-grounded environmental analysis. This analysis supports key national plans and policies, as he demonstrated with an extended list of examples. Finally, the welcoming session closed with two presentations about cooperation to advance research and capacity building as part of South-South cooperation toward the "green economy." One was by Sergio Musmanni of the German Agency for International Cooperation (GIZ) Office in Costa Rica. The other was by Dr. Yue Zhai, First Secretary for Science and Technology, based at the embassy of the People's Republic of China in Costa Rica, who gave his talk in Spanish.

The Policy Day continued with three plenary sessions. The first brought up the topic of Opportunities for development: from adaptation and mitigation to climate change, starting with a presentation by Thomas Sterner. Sterner is Professor in the Department of Economics at the University of Gothenburg, an EfD Senior Research Fellow, and Visiting Chief Economist at the Environmental Defense Fund (EDF). He spoke about policy options and political feasibility in climate change and other environmental policies. Then, Álvaro Umaña, a Senior Research Fellow at EfD-CA, talked about needed changes in international negotiations on climate change en route to a low carbon economy. He was followed by Celia Harvey, Vice President for Global Change and Ecosystem Services, Conservation International (CI). Celia presented a newly launched collaboration between CATIE and CI called Ecosystem-based Adaptation for Smallholder Subsistence and Coffee Farming Communities in Central America: The CAS-CADE Project.

The second session focused on challenges and opportunities for the green economy and conservation with two presentations. Juan Robalino, another Senior Research Fellow at EfD-CA, presented his work about impacts of conservation policies. After that, Jorge Mario

Rodríguez Zúñiga, Executive Director of The National Forestry Financing Fund (FONAFIFO), talked about the future prospects for REDD+ and other Payment for Environmental Services (PES) schemes in Costa Rica. (The "plus" in REDD+ is for forest conservation, sustainable forest management, and the enhancement of carbon stocks.)

The last session on research and policy interaction on water and climate change consisted of three presentations. First, Róger Madrigal, Research Fellow at EfD-CA, showed the work the center is doing on adaptation to climate change and water governance. Maureen Ballesteros from the Global Water Partnership for Central America and former member of Congress in Costa Rica talked about shaping and advocating for the political agenda on water. Dr. Darner Mora, Director of the Blue Flag Program and the National Water Laboratory, Institute of Aqueducts and Sewage (AyA), ended the session with his presentation about the role of the AyA and its programs in water management.

The Policy Day was a cordial meeting full of exchanges between the speakers and the audience. For a moment, the participants were stranded under the colonial tile roof of the conference venue, which was at a distance from the restaurant where a delicious lunch was being served. The loud sound of the rain falling did not dim the lively discussions and enthusiastic questions between politicians, civil servants, and researchers alike. More than one person suggested that "this type of meeting should take place more often for all to learn and start speaking in the same language".

The media was also present during the day and covered a lot of the issues being discussed. Several EfD researchers and other participants were interviewed by both local and international news reporters. To see the list of media coverage for the Policy Day, visit media coverage EfD in media on www.efdinitiative.org.



Jesper Stage, Research Fellow, Sweden, Stephen Kirama, Research Fellow, Tanzania, Sied Hassen, Ph.D. Student, University of Gothenburg, Moses Ikiara Research Fellow, Kenya



Adolf Mkenda, Research Fellow Tanzania, Thomas Sterner, Research Fellow Sweden and Mintewab Bezabih, Research Associate, Ethiopia



Yonas Alem, Research Fellow EfD-Ethiopia and EfD Research Officer, Sweden; (back) Jonathan Colmer, Ph.D. Student, London School of Economics; Francisco Alpizar, Centre Director and Research Fellow EfD-CA; (back) Miguel Quiroga, Universidad de Concepción; Simon Wagura, Junior Research Fellow EfD-Kenya and Ph.D. Student at the University of Gothenburg



Panel discussion with Dr. Darner Mora, Director of the Blue Flag Program and the National Water Laboratory, Institute of Aqueducts and Sewage (AyA), Maureen Ballesteros, Global Water Partnership for Central America and former member of Congress in Costa Rica, Róger Madrigal, Research Fellow Central America and María A. Naranjo, Deputy Director and Research Fellow, Central America.



Participants in the 6th annual EfD meeting



Jane Mariara and Peter Kimuyu, Research Fellows, Kenya

RESEARCH POLICY INTERACTION

EPRU's main objectives in terms of policy interaction are (1) to be a resource where high quality research and economic opinion on environmental policy issues can be sought by policymakers, and (2) to engage with policymakers in respect to agenda setting and policy design, formulation and implementation. EPRU's work caters to the demands of domestic institutions as well as international organizations.

EPRU research fellows have extensive links with policymakers and practitioners in South Africa and have worked with various government units. EPRU works with a number of local and national policy stakeholders on medium-sized projects, such as the South African National Parks in the wildlife sector, the Department of Water Affairs and Forestry in the water sector, the Department of Environmental Affairs and Tourism on marine and coastal management, and the City of Cape Town on air quality management and energy savings.

POLICY INTERACTIONS

Poverty, resource scarcity and climate variability

The third wave of the University of Witwatersrand's Agincourt survey was completed in June 2012. This project, initiated by Wayne Twine, has

been conducted in an area close to the Kruger National Park. Martine Visser was invited to assist and to contribute questions to the survey. Capturing data from 2011 and 2012 has been an ongoing effort since then. Although the dataset still needs work, the project has already

been presented at an ACCESS conference where various South African policymakers and academics conferred about climate change in October this year.

Behavioral project on climate change

Martine Visser, Grant Smith, and Kerri Brick have been involved in a behavioral economics project on climate change as part of a joint initiative by IDEA42 (a Harvard based Behavioral Economics group) and the Research Unit in Behavioural Economics and Neuroeconomics (RUBEN) at UCT. They have been asked by the Western Cape Provincial Government to work on various interventions aimed at bringing about behavioral change amongst consumers. The pilot phase will be conducted over a two year period. Thereafter, we hope to roll out the intervention and do a full-scale random controlled trial (RCT). Our initial point of focus involves an advanced metering energy savings project which will be coupled with various behavioral interventions aimed at employees of the Western Cape Provincial Government. This is a very exciting project since it involves direct communication with the Premier's office. We have already had a number of joint meetings with staff from the Premier's office, the Environmental Department (Climate Change & Waste Management

Teams) and Public Works. We have recently also met with officials in the City of Cape Town to discuss the extension of the project to include their employees also.

Water Research Commission on water savings and billing practices

Martine Visser and Grant Smith (a UCT graduate student) are involved in a project with the Water Research Commission (WRC) on water savings and billing practices, where various interventions (including social norms) are being used to elicit behavioral change. Setting up this project has involved several meetings with officials in the city of Cape Town. With funding from WRC, a steering committee has been formed, consisting of various stakeholders, policymakers and academics knowledgeable in the area. The team held one workshop with the steering committee in 2012 and will have another in February 2013.

The role of micro financing and insurance amongst informal dwellers

There are very few insurance products accessible to the poor. At the same time, climate change imposes new risks, such as severe weather

South Africa has very good mining legislation, but making it work has been a problem. Mining can do a lot of environmental damage, not just when it is happening, but once it has finished and the mine is closed. In 2011, EFD researcher Anthony Leiman was one of a small team who authored a discussion document entitled Financial Provisions for Rehabilitation and Closure in Mining Projects. The project was initiated by WWF in response to a perceived weakness in the application of the country's mining legislation. The insights obtained from this source document were later used to assess the set-aside fund needed to ensure there would be enough money to mitigate post closure pollution from the Lusthof mine.

According to South Africa's legislation, a trust fund or something similar has to exist before mining can begin. There is still a moratorium on coal mining in the area. The potential economic benefits of the proposed mining are apparent, since coal in this area is of good quality and close to the surface. Sadly, much of it lies under sensitive wetlands.

"The two biggest problems are dust from old dumps, and water that seeps from old work-

ings. The rock has been exposed to air, and minerals in it, such as sulphur and arsenic, oxidise and dissolve in the rising waters. When this acidic and toxic water decants out of the mine, it flows into nearby rivers and poisons them," says Anthony Leiman.

Such problems often worsen over time as old mines flood. Such acid mine drainage is a serious and growing concern. Addressing it is costly, and only once the results are approved can a mine get a closure certificate. One result is that many mines simply don't formally close: though operations cease, the mine is ostensibly open and is registered as such. The group's research into this problem was later extended by Shaun Hewittson, a master's student supervised by Leiman with help from EFD.

Current legislation requires that, before mining can commence at a new site, a fund has to be set up with sufficient money in place for mine closure to be effected. There is always a chance that the mine will prove a failure, so initially funds have to be in bank guarantees. But as mining proceeds and profits start flowing, a growing amount can be located in an interest earning fund.

"The question that our team investigated was whether the rules of thumb widely used to estimate the initial set-aside fund have been underestimating the costs involved. The final document was released to the public a few months ago, and as a result the team leader, my former student Dr. Hugo Van Zyl, and I were asked to give an opinion on the proposed Lusthof colliery," says Leiman.

The proposed mine has a short life expectancy, roughly eight years, and has been heavily opposed by local activists as well as researchers. It also has significant support based on the growing local demand and rising price of good quality coal.

The Chrissiesmeer area in the Mpumalanga Province is known as the Lake District of South Africa. It is a very uncommon habitat in South Africa, a combination of grassland, wetland and lakes, and is a noted breeding site for many rare water birds. Unfortunately, the Mpumalanga Province, which is home to much of SA's coal mining, has a history of serious environmental pollution, affecting both its human and wildlife populations. The proposed mine would provide short term profits, but the ongoing costs of mitigating

70 million ZAR fund needed to address post-closure pollution from proposed mine

Within the unique wetland area Mpumalanga Lake District lies the site of a proposed, and controversial, opencast coal mine, the Lusthof colliery. It will require a preliminary 'set-aside' of about 70 million South African rands (9 million USD) to fund maintenance of water quality in the area's rivers and lakes for a hundred years after closure, EFD research shows. Such set-asides to meet mine closure costs are required by South Africa's mining legislation.

A healthy lake in the Mpumalanga Province. Photo Paul Weinberg



its long term ecological costs needs to be estimated and their present value calculated.

The demand was for a combination of theoretical insights into mine closure costs with the available engineering estimates of the cost of the water treatment needed over the next 100 years to prevent acidic drainage from the mine adversely affecting the Mpumalanga lakes and wetlands. The aim was to give an honest estimate as an input into the impact assessment so that the colliery owners and decision makers could put the short term gains and long term costs into a common context. The most likely scenario is that it will cost 69 426 855 ZAR, or about 9 million US dollars at current exchange rates. (See table.)

“We tried to be completely objective in doing this, and to establish what it would cost to

keep the water quality acceptable for 100 years after the mining was complete. Based on our estimates, we made recommendations concerning the amount of money that the mine would need to set aside before they were allowed to begin mining,” says Anthony Leiman.

The resulting document has been accepted and is now part of the impact assessment decision process currently under way.

See also:

Van Zyl, H.W., Bond-Smith, M., Minter, T., Botha, M. and Leiman, A. 2012. Financial Provisions for Rehabilitation and Closure in South African Mining: Discussion Document on Challenges and Recommended Improvements. Report to the WWF. WWF, Cape Town.

disasters, that could be mitigated by insurance. Martine Visser and Kerri Brick (a UCT Ph.D. student) are engaging insurance companies and the government in an attempt to design new products which would target the low-income market and be attractive to insurance companies. In an ongoing project, Visser and Brick are studying risk preferences and constraints to climate change adaptation, as well as the role of micro financing and insurance amongst informal dwellers in South Africa. This research has also involved extensive interactions with the City of Cape Town Disaster and Risk Management division as well as NGOs and stakeholders involved in disaster management. We have further tried to link up with other researchers at UCT doing this type of research.

ESKOM and consumer understanding of billing practices

ESKOM, the national Energy Service Provider, has contracted with Martine Visser, Grant Smith, and Steven Davies to do research on consumer understanding of billing practices. They initially conducted focus groups in different parts of South Africa with people from various income groups. Subsequently, they have met with policymakers from ESKOM and participated in a workshop organized by ESKOM to give feedback to key stakeholders and policymakers.

Legal Resource Centre and AWARD

Jane Turpie and Martine Visser advised the Legal Resource Centre and AWARD (NGOs working on behalf of the public and especially poor stakeholders such as farm workers), evaluating work done by others on the classification of rivers in the Olifants River Catchment to determine water allocation to the environment versus other uses. This pertained to an ongoing legal suit dealing with the environmental impacts of coal mining in the Olifants River Catchment, Mpumalanga. The report was submitted to the National Department of Water Affairs and widely distributed amongst stakeholders.

African Climate Development Initiative

Martine Visser is part of an interdisciplinary research group at UCT affiliated with the African Climate Development Initiative. The group is currently studying the Berg River District in partnership with the provincial government, the local municipalities and other stakeholders operating within the area. This is part of an initial six-month process that will hopefully evolve into a number of research projects.

Socio-economic impacts of Marine Protected Areas

Senior Research Fellow, Jane Turpie, presented a talk on the potential impacts on commercial fisheries of MPA expansion at the annual meeting of the Marine Protected Area Forum, a meeting of over 70 managers and researchers involved in MPAs in southern Africa. The forum also debated the human dimensions of MPAs in general, and how these should be taken into account in MPA planning, which has hitherto been very much focused on resources alone.

EfD/EPRU study shows how the Khomani San might benefit from ecotourism in Kalahari

In 1994, the Khomani San “bushmen” community successfully reclaimed land inside and outside the Kgalagadi Transfrontier Park. Yet, despite ownership of a portion of land still part of the Kgalagadi Transfrontier Park, the Khomani San community has never directly benefited from tourism revenues from entrance fees. EPRU researchers show how voluntary donations earmarked for the Khomani San community by park visitors above their entrance fees can be the first step to a better distribution of park profits among stakeholders. Furthermore, the researchers show that the Khomani San community does value biodiversity conservation in this area, making it a reliable partner in conservation.



Junior Research Fellow Johane Dikgang doing field work in Kalagadi Park

IN-SERVICE TRAINING

EPRU research fellows are involved in teaching a number of environmental and resource economics courses in the School of Economics and the Department of Zoology at the University of Cape Town.

EPRU members also run short training programs for policy makers and civil servants. Such courses inform decision makers of the relevant environmental economic tools available to improve policymaking and analysis. In 2012, members of EPRU gave lectures to civil engineers and civil servants as part of ongoing training in project appraisal and environmental assessment, and to local government through the City of Cape Town's environmental seminar programme.

POLICY LINKS

The following are the institutions where EPRU is having its greatest impact. The links to these institutions' websites are provided on the EPRU website pages.

- South African National Biodiversity Institute (SANBI)

- Department of Agriculture, Forestry and Fisheries
- Department of Environmental Affairs
- Department of Water Affairs
- South African National Parks
- City of Cape Town

POLICY SEMINARS, WORKSHOPS AND CONFERENCES

Political Economy of Fisheries in Developing Countries

EPRU SRF Mare Sarr attended a policy workshop on the political economy of fisheries in developing countries organised by the World Bank Agriculture and Rural Department (April 12-13, 2012). Five in-depth case studies on the reform of fisheries in Bangladesh, Chile, Indonesia, Sénégal and South Africa were presented. The discussion focused on the issues of use rights and the importance of the political economy and the institutional framework in determining reform outcomes. A number of NGOs took part in the workshop, together with policymakers and analysts from the World Bank.

Teaching Course in the Albertine Rift Valley

EPRU SRF, Jane Turpie, taught a course in economic valuation and environmental policy instruments as part of curriculum on the economic tools for conservation and infrastructure planning in the Albertine Rift. The course was held in Kasese, Uganda, during June 2012, and involved over 40 participants from the region, mostly from government conservation agencies, but also from other government sectors such as mining and infrastructure.

Workshops

Johane Dikgang: 2012 Biodiversity Planning Forum, Kruger National Park, Mpumalanga, South Africa.

Johane Dikgang, Edwin Muchapondwa and Sue Snyman: 3rd Park Pricing Workshop, 19 - 22 September 2012, Kruger National Park, South Africa.

Sue Snyman: International Workshop on Tourism Concessions in Southern Africa (IUCN), Maputo, Mozambique.

Mare Sarr: Workshop on political economy of fisheries in developing countries, the World Bank Agriculture and Rural Department, Washington DC.



Junior Research Fellow Johane Dikgang doing field work in Kalagadi Park



Elephants in connection to the Park Pricing Workshop Kruger National Park

RESEARCH

Applied, policy relevant research is a core activity for the EfD Initiative. Research is a critical input in a long-term strategy to reduce environmental degradation, eradicate poverty and ensure sustainable use of natural resources. A major challenge in developing countries is, however, the lack of comprehensive research on environmental resource management and poverty alleviation which can inform national strategic plans and policies. Policymakers, farmers, donors, and others need research-based information, not only to design policies but also to evaluate their efficiency in reaching their objectives.

Providing Economic Incentives for Biodiversity Conservation in an Emerging Bioregional Context

EPRU SRA Edwin Muchapondwa and co-authors highlighted the importance of incentives in achieving biodiversity protection goals in a paper published during 2012. Many protected areas are not successfully conserving biodiversity, often despite adequate management within their borders. Changes in land use outside protected areas can alter ecological function inside protected areas and result in biodiversity loss, given that protected areas are almost always parts of larger ecosystems. Economic incentives are seen as one of the most promising avenues to influence conservation goals.

- Muchapondwa, Edwin, Harry Biggs, Amanda Driver, Frank Matose, Eric Mungatana, and Kelly Scheepers. 2012. "Using Economic Incentives to Encourage Conservation in Bioregions in South Africa." *Journal of Sustainable Development* 5(11): 118-129.

Collaborative Marine Protected Areas Project Launched

EfD's first collaborative project on marine conservation started with a meeting of the principal in-

vestigators from Costa Rica, Tanzania and South Africa in Costa Rica in May 2012. Jo Albers, Jane Turpie, Francisco Alpizar, and Roger Madrigal visited marine protected areas and interviewed fishers along the Caribbean coast of Costa Rica, spent time in boats and underwater, and spent many hours in fruitful discussions on the project, cementing ideas and drawing models in the sand. The project will kick off with a survey in Costa Rica, and data collection in South Africa will also begin later in the year.

Evaluation of Dry-Lands Ecosystem Services in the Area Surrounding the Kgalagadi Transfrontier Park in South Africa

This project is concerned with identifying, assessing, and valuing ecosystem services found on the section of land belonging to the Khomani San Contractual Park and on their farms.

Ambiguity Aversion in the Uptake of New Farming Practices: Experimental Evidence from South Africa

This project explores the relationship between farmers' aversion to uncertainty and their decisions to (1) adopt new farming practices

and (2) purchase crop insurance. The results of the study strengthen the argument in favour of mechanisms of risk diffusion, such as insurance products for small-scale farmers.

Estimating Optimal Conservation Fees in the Presence of Land Restitution in the Kgalagadi Transfrontier Park between Botswana and South Africa

This project strives to determine how the Kgalagadi Transfrontier Park can promote tourism that generates economic and social benefits to land claimants and as a result maximize the positive spillover effects on the Khomani San people.

Value of Protection and Management of the South African Coast

The objectives of this study are to provide a spatial analysis of the total economic value of the South African coast, focusing on the values generated by different types of protected areas versus other stretches of coast.

PUBLICATIONS 2012

Peer reviewed

Bezabih, Mintewab and Mare Sarr. 2012. "Risk Preferences and Environmental Uncertainty: Implications for Crop Diversification Decisions in Ethiopia." *Environmental and Resource Economics* 53: 483-505.

Brick, Kerri, Martine Visser, and Justine Burns. 2012. "Risk Aversion: Experimental Evidence from South African Fishing Communities." *American Journal of Agricultural Economics* 94(1): 133-152.

Dikgang, Johane and Edwin Muchapondwa. 2012. "The Valuation of Biodiversity Conservation by the South African Khomani San "Bushmen" Community." *Ecological Economics* 84: 7-14.

Dikgang, Johane, Anthony Leiman, and Martine Visser. 2012. "Analysis of the Plastic Bag Levy in South Africa." *Resources, Conservation and Recycling* 66: 59-65.

Dikgang, Johane and Martine Visser. 2012. "Behavioural Response to Plastic Bag Legislation in Botswana." *South African Journal of Economics* 80: 123-133

Hasson, Reviva, Åsa Löfgren and Martine Visser. 2012. "Treatment Effects of Climate Change Risk On Mitigation and Adaptation Behaviour in an Experimental Setting." *South African Journal of Economics* 80(3): 415-430.

Lewis, Sarah, Jane Turpie and Peter Ryan. 2012. "Are African Penguins Worth Saving? The Ecotourism Value of the Boulders Beach Colony." *African Journal of Marine Science* 1-8.

Muchapondwa, Edwin and Thomas Sterner. 2012. "Agricultural-Risk Management Through Community-Based Wildlife Conservation in Zimbabwe." *Journal of Agribusiness in Developing and Emerging Economies* 2(1):41-56

Muchapondwa, Edwin, Harry Biggs, Amanda Driver, Frank Matose, Eric Mungatana, and Kelly Scheepers. 2012. "Using Economic Incentives to Encourage Conservation in Bioregions in South

Africa." *Journal of Sustainable Development* 5(11): 118-129.

Muchapondwa, Edwin and Thomas Sterner (2012). "Agricultural-Risk Management Through Community-Based Wildlife Conservation in Zimbabwe." Forthcoming in *Journal of Agribusiness in Developing & Emerging Economies*.

Sarr, Mare and Tim Swanson. 2012. "Economics of IPR for Genetic Resources: North-South Cooperation in Sequential R&D." *International Journal of Ecological Economics and Statistics* 26(3): 67-82.

Snyman, Sue. 2012. "Ecotourism Joint Ventures Between the Private Sector and Communities: An Updated Analysis of the Torra Conservancy and Damaraland Camp Partnership, Namibia." *Tourism Management Perspectives* 4: 127-135.

Snyman, Sue. 2011. "The Role of Tourism Employment in Poverty Reduction and Community Perceptions of Conservation and Tourism in Southern Africa." *Journal of Sustainable Tourism* 20(3): 395-416

Sterner, Thomas, Marion Damon, Gunnar Kohlin, and Martine Visser. 2012. "Capacity Building to Deal with Climate Challenges Today and in the Future." *Journal of Environment and Development*.

Book Chapters

Sarr, Mare and Tim Swanson. 2012. *Governance of the R&D Sector for Bio-Technology: Intellectual Property Rights and Bio-Prospecting. In Reflexive Governance for Global Public Goods*, edited by Brousseau et al. Cambridge, MA: MIT Press.

EfD Discussion papers

Brick, Kerri, Zoe Van der Hoven, and Martine Visser. 2012. "Cooperation and Climate Change: Can Communication Facilitate the Provision of Public Goods in Heterogeneous Settings?" *EfD Discussion Paper* 12-14. Washington, DC: Resources for the Future and Environment for Development.

Dikgang, Johane and Edwin Muchapondwa. 2012. "The Valuation of Biodiversity Conservation by the South African Khomani San "Bushmen" Community." *EfD Discussion Paper* 12-10. Washington, DC: Resources for the Future and Environment for Development.

Kirchner, Carola, Paul Kainge, and Johannes Kathena. 2012. "Evaluation of the Status of the Namibian Hake Resource (*Merluccius* spp.) Using Statistical Catch-at-Age Analysis." *EfD Discussion Paper* 12-12. Washington, DC: Resources for the Future and Environment for Development.

Muchapondwa, Edwin, Kerri Brick, and Martine Visser. 2012. "Abalone Conservation in the Presence of Drug Use and Corruption Implications for Its Management in South Africa." *EfD Discussion Paper* 12-15. Washington, DC: Resources for the Future and Environment for Development.

Mukanjari, Samson, Edwin Muchapondwa, Precious Zikhali, and Birgit Bednar-Friedl. 2012. "Evaluating the Prospects of Benefit Sharing Schemes in Protecting Mountain Gorillas in Central Africa." *Environment for Development Discussion Paper* 12-6. Washington, DC: Resources for the Future and Environment for Development.

Discussion papers

Brick, Kerri and Martine Visser. 2012. "Heterogeneity and Voting: A Framed Public Good Experiment." *ERSA Working Paper* 298.

Komba, Coretha and Edwin Muchapondwa. 2012. "Adaptation to Climate Change by Smallholder Farmers in Tanzania." *ERSA Working Paper* 299.

Research briefs

Dikgang, Johane and Martine Visser. 2012. "Behavioral Response to plastic bag legislation in Botswana." *Research Brief. South African Journal of Economics*. 80: 123-133.

PROJECTS 2012

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

Assessment of Dry-Lands Ecosystem Services on Khomani San Communal Land and the Possible Implications

Theme: Parks & Wildlife
PI: Edwin Muchapondwa

Spatial Economics of Marine and Coastal Management: the South African Recreational Line Fishery

Theme: Fisheries
PI: Jane Turpie

Poverty, Resource Scarcity, and Climate Variability: Constraints to Adaptation

Theme: Climate change
PI: Martine Visser

Risk and Time Preferences Among Western Cape Fruit Farmers

Theme: Agriculture; Policy design
PI: Mare Sarr

Ambiguity Aversion in the Uptake of New Farming Practices: Experimental Evidence from South Africa

Theme: Responses to Climate Risk
PI: Martine Visser

Estimating Optimal Conservation Fees in the Presence of Land Restitution in the Kgalagadi Transfrontier Park between Botswana and South Africa

Theme: Parks and Wildlife
PI: Edwin Muchapondwa

Value of Protection and Management of the South African Coast

Theme: Parks and Wildlife
PI: Jane Turpie

Evaluation of Dry-lands Ecosystem Services in the Area Surrounding the Kgalagadi Transfrontier Park in South Africa

Theme: Parks and Wildlife
PI: Edwin Muchapondwa

Marine Protected Areas and Small-Scale Fishing Behaviour: A Comparative Analysis Between South Africa, Tanzania and Costa Rica

Theme: Marine and Coastal Conservation
PI (South Africa): Jane Turpie

PROJECTS 2013

Poverty, Resource Scarcity, and Climate Variability: Constraints to Adaptation

Theme: Climate Change
PI: Martine Visser

The Role of Institutions in Wildlife Conservation in South Africa and Zimbabwe: A Social-Ecological Systems Approach

Theme: Parks and Wildlife
PI: Edwin Muchapondwa

The Demand for Recreational Angling in South Africa: Implications of Alternative Management Options for a Depleted Fishery

Theme: Fisheries
PI: Jane Turpie

Marine Protected Areas and Small-Scale Fishing Behaviour: A Comparative Analysis Between South Africa, Tanzania and Costa Rica

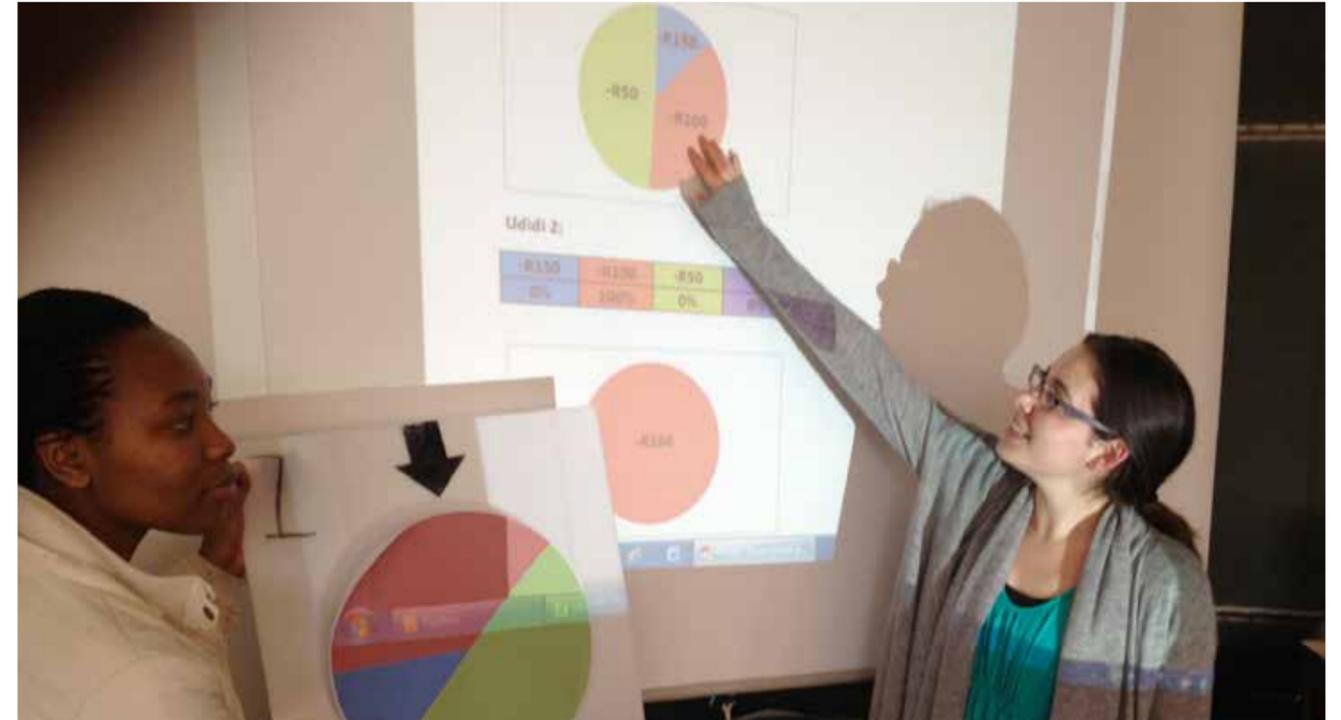
Theme: Marine and Coastal Conservation
PI (South Africa): Jane Turpie

Optimal Pricing of Parks and Wildlife Resources in Eastern and Southern Africa

Theme: Parks and Wildlife
PI (South Africa): Edwin Muchapondwa

The Economic Impact of Climate Change in Sub-Saharan Africa

Theme: Climate Change
PI (South Africa): Martine Visser



A student giving her view at Kerri Bricks field experiment on flood adaption strategies

RESEARCH PRESENTATIONS

Academic conferences

International Society Ecological Economics (ISEE) Conference 2012: "Ecological Economics and Rio+20: Contributions and Challenges for a Green Economy", Rio de Janeiro.

Johane Dikgang: The Effect of the Land Restitution Programme on Poverty Reduction among the Khomani San.

Johane Dikgang: Estimating Optimal Conservation Fees in the Presence of Land Restitution in the Kgalagadi Transfrontier Park between Botswana and South Africa.

19th Annual Conference of the European Association of Environmental and Resource Economists, Prague.

Edwin Muchapondwa: Estimating Optimal Conservation Fees in the Presence of Land Restitution in the Kgalagadi Transfrontier Park between Botswana and South Africa.

XVIIth World Economic History Congress, Stellenbosch.

Johane Dikgang: The Effect of the Land Restitu-

tion Programme on Poverty Reduction among the Khomani San.

2nd Conference: Environment and Natural Resources Management in Developing and Transition Economies, CERDI, Clermont-Ferrand.

Sunday Adewara: Understanding the health penalty of urbanisation in poor households in Nigeria.

Academic seminars

Climate Change and Marine Protected Areas, February 2012 in Cape Town

Jane Turpie: Using economics to support coastal conservation interventions to address climate change

Economic Valuation and Environmental Policy Instruments, June 2012 in the Albertine Rift Valley

Jane Turpie: Economic valuation and environmental policy instruments.

SALDRU Seminar, School of Economics, University of Cape Town, July 25, 2012

Sue Snyman: The socio-economic impact of high-end ecotourism on rural communities in six southern African countries.

Seminar, Department of Economics and Econometrics, University of Johannesburg, September 14, 2012

Johane Dikgang: Estimating Optimal Conservation Fees in the Presence of Land Restitution in the Kgalagadi Transfrontier Park between Botswana and South Africa.

Impacts of Marine Protected Area, November 2012 in East London, South Africa

Jane Turpie: The socio-economic impacts of marine protected areas: case study of Addo MPA.

SALDRU Seminar, School of Economics, University of Cape Town, November 14, 2012

Johane Dikgang: The economic valuation of dryland ecosystem services in the South African Kgalagadi area and implications for PES involving the Khomani San.

ACADEMIC CAPACITY BUILDING

The EfD academic capacity building component is designed to minimize 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 research with academia is one of the unique features of EfD.

EPRU's research fellows are actively involved in the School of Economics, teaching programs in environmental and natural resource economics as well as in the broader university. Our strong involvement in teaching has undoubtedly helped us attract promising Postgraduate students.

In addition, in order to support talented students to undertake research in our fields of interest, EPRU provides grants to Masters and PhD students. Finally, we also award prizes to reward the best Honours and Masters Thesis.

COURSES TAUGHT BY EFD SOUTH AFRICA INCLUDE:

Graduate courses

Environmental economics (Honours courses)
Natural resource economics (Master courses)
Environmental and resource economics module (Master courses)
Natural resource economics (Ph.D. courses)

Theses PhD & MSc

Anthony Dane: "Personal carbon emissions trading: an experimental analysis" was entered into this contest.

Katie Gull: "Water supply in the Eastern Cape: an economic case study of land rehabilitation in the Kromme river catchment"

Shaun Hewitson: "An assessment of the quantum for financial provision of mine closures: A Monte Carlo approach"

Leandri Pretorius: "The economics of animal welfare: an appraisal of welfare issues in the South African poultry industry"



Park Pricing Workshop Kruger National Park

SPREADING THE WORD

News about research and policy interaction

Read more in the website www.efdinitiative.org/centers/south-africa/news-press

2012-11-30

Senior Research Fellow Tony Leiman on the SANRAL toll road

The SANRAL toll road issue has become a public debate recently following the furor over tolling in Johannesburg. When SANRAL announced that it wanted to toll the N1 and N2 highways as they come into Cape Town, the city authorities reacted very negatively. Senior Research Fellow Tony Leiman had done work on the topic in earlier days, and knew the local literature. So, when the legal counsel appointed by the authorities needed an expert opinion, he was approached. He provided a pro-bono evaluation of the economic and welfare dimensions of the tolling proposal.

2012-11-30

Coal mining in the Chrissiesmeer Mpumalanga wetlands

Senior Research Fellow Tony Leiman provided advice on a proposal to begin coal mining in the Chrissiesmeer Mpumalanga wetlands. Having recently finished working on propos-

als for the amendment of national regulations on post-closure mine rehabilitation, he was bought into the process after the mining proposal was met with intense local opposition by communities and NGOs. This required an economic analysis of the costs of meeting the new mining legislation's requirements for site restoration and maintenance of water quality. First, the engineering requirements were identified. Then, the system of bank guarantees and the details of the required restoration fund were determined. Finally, the costs were assessed.

2012-11-26

EPRU provides advice on fisheries management

It has been a matter of concern for some time that much of the institutional memory of fisheries management and policy attempts to conserve the resource has been located in a small number of persons. Many of these are close to retirement or indeed retired, and many

of the younger persons have moved into the private sector or emigrated. EPRU members Mare Sarr, Jane Turpie, and Tony Leiman are among those helping to fill this gap.

2012-11-26

Political Economy of Fisheries in Developing Countries

EPRU Fellow Mare Sarr attended a policy workshop on the political economy of fisheries in developing countries organized by the World Bank Agriculture and Rural Department (April 12-13, 2012). Five in-depth case studies on the reform of fisheries in Bangladesh, Chile, Indonesia, Sénégal and South Africa were presented. The discussion focused on the issue of use rights and the importance of the political economy and the institutional framework in determining reform outcomes. A number of NGOs took part in the workshop together with policy makers and analysts from the World Bank.

2012-09-10

Financing the CBD's Aichi Biodiversity Targets for 2020

In 2010, parties to the Convention on Biological Diversity (CBD) adopted the Strategic Plan for Biodiversity 2011–2020 which comprised an ambitious set of 20 targets for slowing, halting, and reversing biological diversity loss associated with degradation of ecosystems on a global scale.

2012-09-10

Teaching Course in the Albertine Rift Valley

A course in economic valuation and environmental policy instruments was held in Kasese, Uganda in June 2012. Gathering in the Albertine Rift, 40 participants from the surrounding area completed coursework on the economic tools for conservation and infrastructure planning. Participants included those from government conservation agencies and other government sectors such as mining and infrastructure. The course was taught by EPRU Research Fellow Jane Turpie.

2012-09-10

Research Focus Area launched at Rhodes University

This week the Economics Department at Rhodes University celebrated the launch of a Research Focus Area in Resource Economics, having won substantial funding from the university over a three-year period. Headed up by Professors Gavin Fraser and Jen Snowball, the group will focus its efforts on natural resource management problems of the Eastern Cape. EPRU Research Fellow Dr. Jane Turpie was invited to give the guest lecture at the launch, and also spent a couple of hours as guest lecturer for the economics honours class.

2012-06-15

EfD/EPRU study shows how the Khomani San might benefit from ecotourism in Kalahari

Although the Khomani San "bushmen" reclaimed land in and around the Kgalagadi Transfrontier Park in 1994, they have never received any direct gains from tourism revenues coming from entrance fees. EPRU researchers

demonstrate that one way for the Khomani San community to benefit from tourism is for park visitors to earmark donations on their entrance fees, which could promote a better distribution of park profits amongst stakeholders. Additionally, research shows that the Khomani San community values biodiversity and would be a reliable partner in the conservation effort.

2012-05-28

South African Linefish Conference

Jane Turpie attended the National Linefish Conference in Langebaan, which was attended by a range of scientists and managers from around the country. Participants from the Department of Agriculture Forestry and Fisheries (DAFF), Cape Nature and South African National Parks (SANParks) were excited to hear more about the nature of EfD's research on angler behaviour and pledged in-kind support to the EfD-funded project on recreational linefishing by helping to administer questionnaire surveys.

2012-05-28

Climate change impacts on South Africa's rural areas

Jane Turpie and Martine Visser completed a study for the Fiscal and Financial Commission on the impact of climate change on rural agricultural productivity and the relative vulnerability of South Africa's rural municipalities to climate change. The study discussed the adaptation measures required to improve the resilience of rural communities and local government to climate change, and recommended fiscal and financial measures to achieve this. The results and recommendations will be considered in Parliament.

2012-05-28

Climate change and Marine Protected Areas

Jane Turpie was invited to give a presentation on "Using Economics to Support Coastal Conservation Interventions to Address Climate Change" at the Western Indian Ocean Climate Change Workshop for Coastal and Marine Protected Areas, held in Cape Town in February 2012. The workshop was organized by USAID, United States Department of State (DOS), and

the National Oceanic and Atmospheric Administration (NOAA) on behalf of the Adaptation Partnership, with regional assistance provided by the Western Indian Ocean Marine Science Association (WIOMSA).

2012-02-10

Briefing Report: EfD Side-Event to the UN Climate Change Conference in Durban

This Briefing Report about the EfD Side-Event to the UN Climate Change Conference in Durban 2011 is authored by Mark Purdon, University of Toronto/EfD Research Associate. EfD had a noticeable presence at the UN Climate Change negotiations held in Durban last December. On the Thursday of the second week of the talks, EfD hosted an official side-event at the Durban Exhibition Center entitled "Leading by Example—Swedish Leadership in Global Climate Change Policy". The side-event was organized in collaboration with FORES, a leading independent Swedish liberal economic think-tank, drawing attention to Swedish leadership on both domestic and international stages, including its support for EPRU and EfD through Sida.

IN THE MEDIA

2012-01-13

Sterner on CNBC Africa/ABN TV show: "Fuel Taxes on the Poor"

Thomas Sterner was interviewed on a TV show on CNBC Africa/ABN in January 2012. The show, "Beyond Market," was broadcast via cable throughout Africa and also in England. This was in response to demonstrations in Nigeria in response to reductions in fuel subsidies, including strikes that threatened to cripple the country by shutting down gas and oil production. ABN took a comprehensive look at the effect of fuel taxes on the poor with the aid of Thomas Sterner, EfD senior researcher and professor of environmental economics. Dr. Sterner has shown that petrol taxes do not tend to hurt the poor and petrol subsidies do not tend to help them as much as popularly thought, because poor people are less likely to own autos.



EfD South Africa/EPRU's members in February 2012. Standing left to right: Edwin Muchapondwa, Martine Visser, Mare Sarr, Johane Dikgang, Esther Kimani, Byela Tibesigwa, Coretha Komba, Anthony Black, Helanya Fourie, Tony Leiman; Seated left to right: Jane Turpie, Kerri Brick, Stephanie Giamporcuro and Adewara Sunday. (Absent: Reviva Hasson and Letitia Sullivan)

THE EPRU NODE IN THE EFD NETWORK

The Environmental-Economics Policy Research Unit (EPRU) is the South African branch of EfD. EPRU is based at the School of Economics at the University of Cape Town. EPRU is a collaborative association of researchers specializing in environmental and natural resource issues.

The unit was established in 2007 to promote sustainable development and poverty reduction in southern Africa. To achieve these goals, EPRU aims to enhance the effectiveness of environmental policymaking by adopting a threefold strategy of research, teaching and policy consultation.

During the last six years, EPRU has built extensive policy-relevant experience in research pertaining to ecosystems management, biodiversity conservation, air quality and water quality. The center also has previous research capacity and experience relevant to the socioeconomic aspects of agriculture, fisheries and conservation. Specifically, this strain of research has been concerned with farm workers' wages, land use and rural poverty, and inequality among

subsistence fishermen, as well as the role of community-based wildlife conservation in poverty mitigation.

EFD SOUTH AFRICA CENTER STAFF 2012

Local Researchers and Staff

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Jane Turpie
DEPUTY DIRECTOR

Anthony Black
SENIOR RESEARCH FELLOW

Edwin Muchapondwa
SENIOR RESEARCH FELLOW

Mare Sarr
SENIOR RESEARCH FELLOW

Martine Visser
SENIOR RESEARCH FELLOW

Sunday Adewara
JUNIOR RESEARCH FELLOW

Kerri Brick
JUNIOR RESEARCH FELLOW

Johane Dikgang
JUNIOR RESEARCH FELLOW

NETWORKS

EPRU has successfully worked with a number of local and national stakeholders on medium-sized projects, such as the South African National Parks in the wildlife sector, the Department of Water Affairs and Forestry in the water sector, the Department of Environmental Affairs and Tourism on marine and coastal management, and the City of Cape Town on air quality management and energy savings. In the next few years, EPRU plans to bid for larger research projects that will enhance collaboration among EPRU research fellows, with other researchers and, importantly, with key stakeholders.

DONORS AND FUNDING

In 2012, EPRU received funding from the School of Economics (University of Cape Town), the Swedish International Development Cooperation Agency (Sida), the Carnegie Foundation, the Fiscal and Financial Commission, Formas and CEEPA.

Number of funding institutions	6	
List of funding institutions	Funding in ZAR	Share of total funding
UCT School of Economics (University Salaries)	3 141 120.00	45.8%
EfD	2 160 122.00	31.5%
Carnegie Scholarship (UCT School of Economics)	840 000.00	12.3%
Fiscal and Financial Commission	500 000.00	7.3%
Formas	169 835.00	2.5%
6) CEEPA	40 000.00	0.6%
TOTAL	6 851 077.00	100.0%

CONTACT US

You are most welcome to contact EfD South Africa/Environmental-Economics Policy Research Unit (EPRU):

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Wisdom Akpalu
Mintewab Bezabih
Andrea Mannberg

More details about each person are available on the EfD website, in the center section of South Africa. www.efdinitiative.org/centers/south-africa



The coast, close to Cape Town

THE EFD INITIATIVE IN BRIEF

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

The Environment for Development initiative received its name from our conviction that with proper management the environment can be seen as a source of development and not as a constraint.

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 to both identify the roots to environmental problems in modern economies, and to find what social and economic mechanisms can be used to solve them.

The foundation of the Efd initiative is its members, environmental economists in a selection of countries. As research fellows and associates we

work for Efd centers hosted by well-established academic institutions in China, Costa Rica (for Central America), Ethiopia, Kenya, South Africa and Tanzania. Efd have an important partner organization in Resources for the Future (RFF), Washington DC, USA. A new partner to Efd Since 2012 is also Universidad de Concepción in Chile. Our associates are based at RFF and several universities across the world. One of them, University of Gothenburg in Sweden, hosts the Efd secretariat.

The Swedish International Development Cooperation Agency (Sida) is currently a major funder of the Efd research and capacity building program through core administrative support, a research fund, and funds to strengthen academic training and policy interaction.

EFD CENTERS AND PARTNERS

There are six Efd centers, hosted by universities or academic institutions in each respective country.

For more information on each center, please contact the Center Director/Coordinator:

EFD CENTRAL AMERICA

Research Program in Economics and Environment for Development in Central America. Centro Agronómico Tropical de Investigación y Enseñanza (CATIE)
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EFD PARTNERS



UNIVERSITY OF GOTHENBURG
SCHOOL OF BUSINESS, ECONOMICS AND LAW

EEU, Environmental Economics Unit

EEU at University of Gothenburg, Sweden, has initiated the Efd initiative and acts as coordinator and secretariat. For more information please contact:

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Sida

Swedish International Development Cooperation Agency, provides the funding for the Efd initiative.



RFF, Resources for the Future

RFF in Washington DC, US, is an important partner of the Efd initiative. RFF's research fellows will work closely with their counterparts and RFF's communications staff will help to disseminate the new centers' research products. For more information please contact:

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Universidad de Concepción

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Environment for Development



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

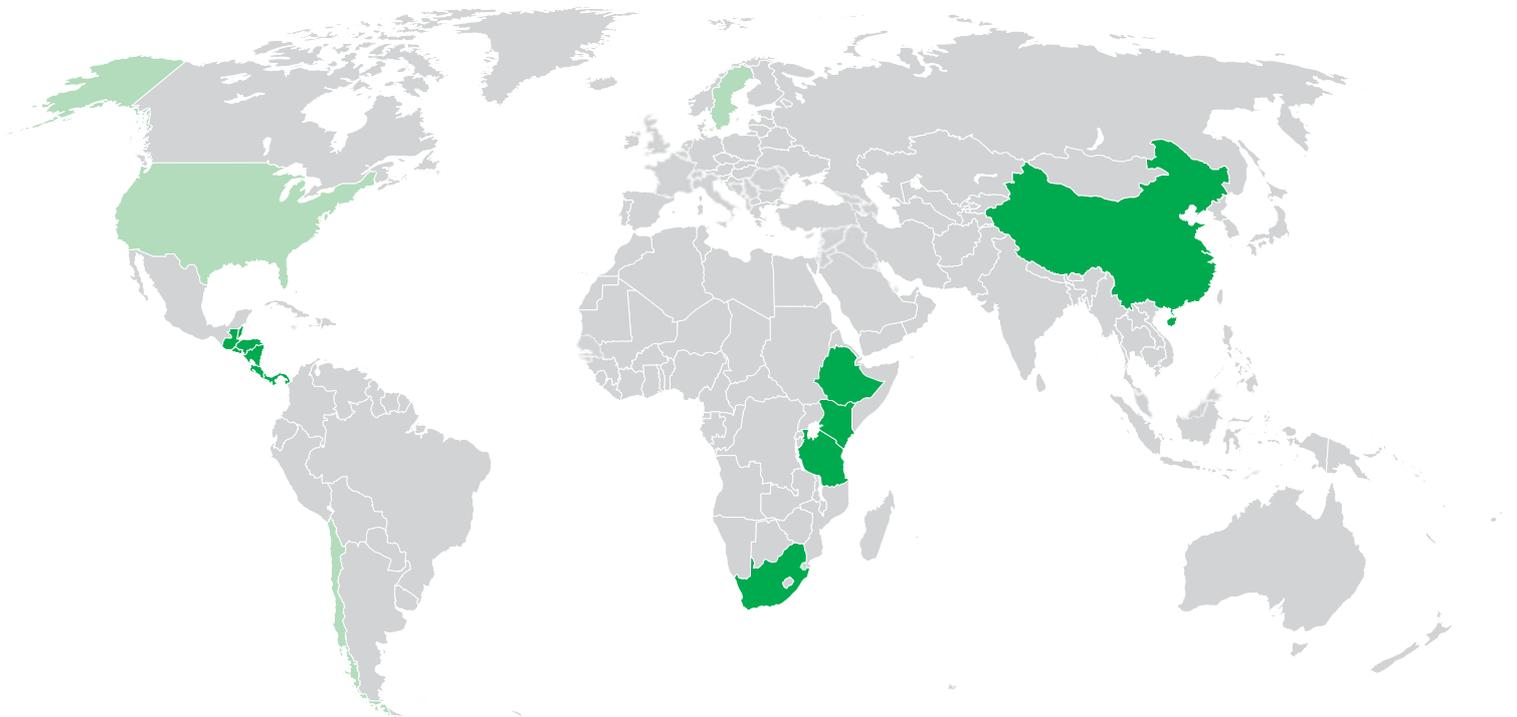
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EfD CENTERS

Central America, China, Ethiopia, Kenya, South Africa, Tanzania

PARTNERS

Sida, University of Gothenburg, RFF

