

LAND USE & LIVELIHOODS

In Their Own Time, on Their Own Terms: Improving development bank project outcomes through community-centered sustainable development partnerships in the Brazilian Amazon



Julie Michelle Klinger, PhD, is the Co-Director of the Land Use and Livelihoods Initiative at the Global Development Policy Center at Boston University. She specializes in development, environment, and security politics in Latin America and China in comparative and global perspectives.

JULIE MICHELLE KLINGER

ABSTRACT

Development banks have a crucial role to play in determining whether the future of the Brazilian Amazon will be one of intensifying deforestation, indigenous expropriation, and mineral extraction, or one of forest restoration, sustainable development, and indigenous livelihood protection. In either case, development banks and their safeguards—or lack thereof—are important arbiters of local development outcomes. The Amazon Fund hosted at Brazil's National Economic and Social Development Bank (BNDES) provides a model for how banks can incorporate non-reimbursable lending into their portfolios in order to support community-led sustainable development projects that may fall outside the traditional parameters of development bank projects, such as an indigenous-run ecotourism enterprise examined herein. Entrusting local actors and community-selected institutional partners to formulate development projects on their own terms and according to their own timetable increases local buy-in, leads to better social and environmental outcomes, and improves the public image of the lending institution.

I. Overview

The development destiny of the northwestern Brazilian Amazon is caught in a bipolar struggle between large-scale industrial extraction and conservation-oriented sustainable development. The first is driven by the desire to cash in on China's evolving mineral, agricultural commodity, and timber resource demands to power Brazil's economic growth. International market pressures intersect with long-standing interests within the Brazilian state and military to use big infrastructure projects to integrate Amazonian resources into domestic and international markets, with a record of violence against indigenous peoples. The second is driven by a realization on the part of environmental and indigenous rights organizations that conservation laws are insufficient to protect indigenous people and Brazil's vital environments from invasion and deforestation. Instead, under the emergent paradigm in the Amazon, if conservation is to work, it must pay, by generating monetary gains for local communities and for the country. Both approaches have their supporters in all levels of government, the private sector, and civil society. More importantly, both agendas have their respective champions within major development banks, which hold the keys to the finance and expertise necessary for either vision to triumph.

Development banks have a crucial role to play in determining whether the future of the Brazilian Amazon will be one of intensifying deforestation, indigenous expropriation, and mineral extraction, or one of forest restoration, sustainable development, and indigenous livelihood protection. In either case, development banks and their safeguards—or lack thereof—are important arbiters of local development outcomes.

This brief examines a case in which a local indigenous community, polarized by the debate between mining and conservation among community members, enlisted the Brazil National Economic and Social Development Bank's (BNDES) Amazon Fund to undertake a government-mandated integrated development planning program. After five years of deliberation, they chose to develop Ecoturismo Yaripo, a community-run for-profit enterprise that provides fully supported tourist and research expeditions to the tallest mountain in Brazil, which is located within their constitutionally demarcated indigenous territory. Extensive adoption of social and environmental safeguards by banks, governments, and civil society organizations has a positive impact on development project formulation and implementation, when these measures are focused on placing Indigenous people at the center of the project design process.

The key finding here is that it is not enough for one organization to have social and environmental safeguards, but that these must be coordinated and supported by international, national, and local policies. Although the ongoing nature of the project means that the ultimate outcomes remain to be seen, they do raise several intriguing possibilities, not least of which is the demonstration that local communities can be entrusted to direct their own development. Early evidence suggests that restructuring project formulation so that Indigenous communities are the drivers of their own development, rather than simply be 'impacted' by it, results in better long-term results, a broader distribution of benefits, and higher overall success rates. The paper discusses the actors, institutions, and practices that generated preliminary positive project outcomes.

II. Context

The Yaripo Ecotourism Development Project in Maturacá village, is a cooperative for-profit Indigenous enterprise to offer tourist expeditions to Pico da Neblina (Yaripo in local language). Pico da Neblina is the tallest mountain in Brazil, a biodiversity hotspot, and a sacred site to the Yanomami. It is located on the Brazil-Venezuela border, on the northwestern edge of their 97,000 square kilometer territory. Yaripo is one outcome of the community-based National Environmental and Indigenous Lands Management Plan (PNGATI - Política Nacional de Gestão Ambiental e Territorial em terras indígenas), mandated by the Brazilian government and financed by BNDES' Amazon Fund. Each of these are explained in Section III: Policies and Institutions.

Approximately 600 indigenous people live in the village of Maturacá, which is located on the western edge of Yanomami Indigenous Territory. The ecotourism project emerged from community dialogues carried out over a multi-year period and facilitated by government and civil society partners of the Amazon Fund. These BNDES partners are not employees of BNDES. Rather, some are members of the technical and orienting committees that now oversee the Amazon Fund, others are veterans of civil society movements that mobilized against various BNDES-funded infrastructure projects, and others are designated facilitators between the Amazon Fund and indigenous communities. The fact that key personnel charged with initial evaluation, project formulation, and implementation were not employees of BNDES gave them greater latitude to act in the interests of the community in developing and implementing the project.

Ecoturismo Yaripo is the result of the sustained participation of representatives of the six communities under AYRCA and Kumirayoma jurisdiction, with an average of 55 participants in each meeting. The majority of participants were under the age of 30. Traditional leaders, directors of community associations, schoolteachers and local healthcare workers also attended the meetings over the course of several years. The deliberations, the plan, and the resulting project had to proceed according to several institutional protocols, including FUNAI (The National Indian Foundation, the federal agency charged with the protection of indigenous lands), ICMBio, the biodiversity conservation unit of the Ministry of the Environment, the Amazon Fund Safeguards, and local community practice. These regulations and safeguards were sometimes discussed collectively, and other times individually among stakeholders depending on the interests and concerns of the community. In 2015 in particular, several day-long meetings were held to discuss local concerns over the potential transformations that could be visited upon traditional Yanomami culture by community implementation of a for-profit enterprise. A point of considerable pride among the Yanomami interviewed and the project personnel involved is the fact that they put in the time needed to allow community members to think through what their concerns might be, to express them, and to discuss each of them collectively. In this case, the process was the point. It was given greater weight than a pre-determined project outcome.

The enterprise only became acceptable to the majority of the community after it was envisioned as a means through which traditional techniques of navigating and knowing the forest could be reclaimed and taught to younger generations. They also identified several strategic purposes. Most broadly, the elders recognized that simply demanding that compliance with the law forbidding unauthorized access of non-indigenous outsiders was ineffective at preventing invasions. The transition to ecotourism came to be seen as a transition from a reactive to a pro-active posture in which the Yanomami invite people into their land on their own terms. By increasing the flow of legitimate traffic, they hope to better manage illegitimate traffic. Profits generated from the enterprise are held in a community account, and expenditures are determined through consensus-based decision-making.

This strategic vision on the part of the Yanomami attracted other supporters. FUNAI, ICMBio, the Brazilian military, the São Gabriel da Cachoeira Tourism Secretariat, and leading Brazilian NGO Instituto Socioambiental came on board after 2014 in order to support this Yanomami-led initiative. Each organization joined because they perceived that the promotion of ecotourism in the region, in a form that is well-regulated and under control of the local community, resonated their respective institutional interests. In this way, the community formulated a plan that served the interests of multiple stakeholders who are often at odds with each other. Indigenous-run ecotourism would allow the military to better securitize the frontier through more routine patrols and provide a politically feasible justification to improve communications infrastructure across Yanomami territory. Further, the initiative would attract tourism revenue to São Gabriel da Cachoeira, the first stop for people visiting the region, where it is necessary to spend the night before embarking on the 1-2 day journey to Maturacá. Indigenous-run ecotourism would support the form of development long advocated by NGOs, environmentalists, and indigenous rights activists. That is, development that is driven by people at the grassroots, governed by principles of equality and environmental conservation, and makes its central priority the provision of environmentally sustainable livelihoods for the present and foreseeable future. Each organization reenvisioned the project according to their own hopes and interests, and provided personnel, in-kind services, and financial support to help bring the project to fruition. None of this is to suggest that this particular confluence of institutions and interests is unproblematic, rather to point out that it proved to be effective in advancing the safeguard-compliant development project in this particular case. Consistent with findings elsewhere, development banks are most likely to engage in safeguarding socially and environmentally sustainable development when a host of national and local policies require and reinforce responsible practices.

III. Policies and Institutions

The multiple actors and institutions involved in Ecoturismo Yaripo suggests that development bank safeguards are more likely to be effectively implemented when multiple actors coordinate in the interest of shared outcomes. In this particular case, the social and environmental safeguards of the Amazon Fund supported the expansion of ongoing government, NGO, and local community initiatives already under way. The early successes of Ecoturismo Yaripo are the result of a confluence of multiple actors and institutions concerned with achieving successful sustainable development in the Amazon region. Although many policies and institutions could be listed, in the interest of brevity this section focuses on the Amazon Fund.

Amazon Fund

Housed at the BNDES headquarters in Rio de Janeiro, Amazon Fund is not a typical development bank fund, but it does offer an instructive model for development financing, particularly between more and lesser-developed countries. The fund was proposed in 2006 by the Brazilian delegation at COP-12 in Nairobi, Kenya. The objective is to incentivize Brazil and other developing countries with tropical forests to voluntarily reduce greenhouse gas emissions resulting from deforestation. The Fund has adapted eight social and environmental safeguards from the REDD+ paradigm. These concern: Legal compliance, Recognition and Guarantee of Rights, Distribution of Benefits, Economic Sustainability and Poverty Reduction, Environmental Conservation and Recovery, Participation, Monitoring and Transparency, and Governance (UNFCCC 2010).

As of October 31, 2017, the fund has disbursed USD\$243 million to 89 projects across six sectors working in the legal Amazon: International, National, State, Municipal, University and Civil Society. The projects supported are diverse, ranging from supporting collaboration in remote sensing data sharing among all nine Amazonian countries, to issuing deeds to land occupied by Amazonian inhabitants, to supporting sustainable fisheries among riverine communities, to funding fire departments in deforested areas vulnerable to wildfire. Supporting projects at all levels of government was a deliberate strategy to ensure policy coherence and to maximize buy-in from multiple stakeholders.

Two committees oversee the fund. The first is the Guidance Committee (COFA: Comitê Orientador do Fundo Amazônia), which is responsible for setting guidelines and monitoring project results. Its guidelines are elaborated according to the goals, commitments, and policies of the Federal Plan for Prevention and Control of Deforestation in the Amazon (PPCDAM), and the guidelines of the Sustainable Amazon Plan (PAS), both of which are federal guidelines directing development in the Amazon. The COFA is composed of representatives from federal ministries, state governments, and civil society organizations. There is equal representation among the three blocs: every member of the committee has full voting and veto power. Many civil society members of COFA have an extensive history of sometimes conflictual engagement with BNDES via the NGO coalition Plataforma BNDES, which dialogued with the bank over social, environmental, labor, and distributional concerns emerging from BNDES-financed projects in the 1990s and 2000s.

The second committee is the Technical Committee (CTFA: Comitê Técnico do Fundo Amazônia). It is responsible for measuring and analyzing annual data on carbon emissions caused by deforestation. The data is gathered and compiled by the Ministry of the Environment and verified by Brazil's National Institute for Space Research. Committee members are high-profile technical and scientific specialists appointed by the Ministry of the Environment for three-year, unpaid terms, following consultations with the Brazilian Forum on Climate Change. Members include Brazilian scientists who have served in the UN, with the IPCC, or have directed successful federally-funded research programs. Based on the average rate of deforestation between 2001-2010, the committee calculates the amount of emissions avoided through reductions in the rate of deforestation.

The combination of mandates, funding structure, and institutional home make the Fund unique in the development finance world. Although BNDES does not have the practice of providing development finance in the form of grants, a central tenet of the Fund is that it cannot be used to generate revenue for BNDES. That means no loans of any sort, and no services provided by the bank can be charged to recipients of Amazon Fund resources.

According to Presidential Decree 6527, a project must contribute directly or indirectly to the reduction of deforestation in the Legal Amazon in order to be eligible for funding. The Legal Amazon is larger than the Amazon biome. The former was designated in 1948 and encompasses all nine Brazilian states that contain the Amazon biome. At over five million square kilometers, this includes 59% of Brazilian territory. Within Brazil, the Amazon biome is about 80% of the size of the Legal Amazon. Up to 20% of Amazon Fund resources can be used to develop monitoring and deforestation control systems in other Brazilian biomes and in other tropical countries. Each project within the legal Amazon must conform to the guidelines and strategies for the Amazon Fund; the Guidelines for the prevention and control of deforestation in the Legal Amazon, and the National REDD+ Strategy. This cross-cutting practice of policy coordination complements policies in multiple sectors.

IV. Preliminary Outcomes

BNDES personnel are not actively involved in proceedings at the local scale. This has not, demonstrably, been the strength of BNDES, illustrated by accounts of bank personnel showing up in starched suits and high heeled shoes to visit a project-affected indigenous community that could only be reached by a rigorous hike through dense forest. Instead, the Amazon Fund provides financial resources to the partner organizations and local associations that are carrying out projects intended to reduce deforestation and generate sustainable economic development in the region. In this case, prominent NGO Instituto Socioambiental has assumed the responsibility for ensuring that the reporting requirements are fulfilled and that the expenditures are reported. Selecting a trusted entity, such as an established NGO or local government office with verified good standing in the community and a healthy accounting record is standard operating procedure for many Amazon Fund projects. At the local scale, project success or failure hinges on the actions of specific individuals occupying key positions of power, so their full empowerment to implement the project according to their best understanding of local conditions is crucial to the success of Amazon Fund projects.

Local government and NGO personnel engaged in several years of trust-building with existing community organizations, patiently and selectively introducing community development methodologies to the local context. When the community decided to focus their collective efforts on developing an ecotourism enterprise, they renamed the process Stonipë loway, which roughly translates as “Straight Path to Ecotourism.” Something so simple as naming the project in local language signaled a greater sense of community ownership, and therefore of greater buy-in. To support this process, personnel from the Ministry of the Environment introduced local indigenous assembly to an analytical framework designed by GIZ for ecotourism initiatives in the Himalayas.

The GIZ methodology identifies complementary value chains for ecotourism destinations. The orientation of the methodology is to draw together all stakeholders in a process of continuous improvement and clarification, through eight steps. These are: (1) Analysis of the local reality; (2) Analysis of the ecotourism value chain and identification of possible points of greater participation and revenue generation; (3) Construction of a shared vision for the future; (4) Definition of strategies for improvements; (5) Development of an operational plan; (6) Construction of agreements about strategy, promotion, and management of the initiative; (7) The implementation of improvement projects; (8) Ongoing monitoring, evaluation, and planning.

The community then held a series of assemblies over a period of eighteen months to adapt this methodology to the local context. One adaptation concerned step #3: Construction of a shared vision for the future. The local associations timed this discussion with the annual Reahu feasts, in which all communities gather to commemorate the relatives that have passed away and to form new alliances. This feast is an important point in the social and political life of these communities. At the end of the second day of the feast, community leaders asked participants to return to their homes and camps to dream about what they would like to accomplish with the ecotourism initiative. The next morning, several members of the community circulated among the guests present and recorded the dreams from the night before. More than a hundred dreams were registered and were aggregated into seven broad themes. These were:

- Employment and income opportunities
- Improvements in the quality of life

- Strengthening education
- Achieving environmental sustainability
- Strengthening Yanomami culture and traditions
- Yanomami protagonism in territorial management
- Strengthening the existing associations
- The constant return to these questions and desires throughout the entire process.

It is remarkable how closely the dreams of the community resonate with sustainable development principles: from the United Nation's 2030 Sustainable Development Goals to the mandates of various government and NGOs programs. This suggests that a constructive step toward achieving sustainable development is first to ask communities what they want, rather than telling them what they need. There are many tools to use to enable this dialogue. In this case, it was the adaptation of GIZ principles to local practices that enabled project personnel to better access Yanomami interests and visions. After more than three years of working on the Visitation Plan and Protocol for the ecotourism initiative, in 2017 the community arrived at the point where technical assessments and logistical improvements needed to be made in order to prepare the initiative for commercialization. Amidst great fanfare and celebration, the first technical expedition was conducted in July 2017 to assess the environmental impact of the proposed enterprise and to identify possible problem areas from a multidimensional sustainable development appraisal matrix. These were then discussed in a three-day community assembly with over 800 people present. The community received its first group of tourists in August 2018.

V. Policy Lessons and Implications

Despite the uniqueness and ongoing nature of the case discussed, the process and context holds some compelling lessons for development banks. For policymakers, it is important to remember that development banks such as BNDES implement the policies defined by their home governments. The lesson here is that development banks can be key drivers of socially and environmentally sustainable development—and all the attendant benefits for social stability, national development, and human security—if the policy context specifically mandates socially and environmentally sustainable development. This supportive policy context consists of the intersection among international, national, and local standards with a funding mechanism that requires local communities to determine for themselves what sort of development project they would like to implement.

The larger question is whether the Amazon Fund constitutes a model can be applied to more conventional development deals between banks and recipient countries. Too often, putting the needs of the local community first is understood by development planners and bank personnel to be at odds with achieving conventional development outcomes such as major infrastructure construction. But this case shows that local communities can occupy a central role in their own development while putting bank resources to efficient use. While it is premature to conclude whether this case study constitutes a paradigm shift in development financing practice, it does provide a clear institutional model for banks to incorporate funding streams for dedicated environmental protection and remediation activities. The fact that BNDES finances environmentally destructive activities while also administering the Amazon Fund is less a testament to the failure of the Fund to transform bank practice than a compelling demonstration of the viability of supporting socially and environmentally sustainable development without radically restructuring development banks. Using the Amazon Fund as a model for incorporating non-reimbursable funding for community-led sustainable development projects can help developed countries meet their Paris Accord commitments while diversifying the institutional capacity of other development banks.

The process of community organizing and governance reform was underway among the Yanomami before BNDES funded the project, which means that any successes can only partly be attributed to the development bank. This suggests that an effective risk management strategy for development banks may be to identify promising works in progress by local communities. This would require development banks to invest in more exploratory fieldwork to identify what grassroots projects are already under way and to consider developing the appropriate infrastructure to support them. If bank personnel are unable or unwilling to allocate extended time in target communities (weeks instead of days, several times a year) to build trust and to learn about local needs, goals, and capacities then they should consider working with, and trusting the judgment of, actors qualified to do so. A middle ground might be for development banks to follow the Amazon Fund model of accepting project proposals from locally embedded civil society organizations with strong records of project and financial management.

In fact, this case shows that government, non-government, and university organizations that specialize in the sort of in-depth, deeply engaged fieldwork that is essential to meaningfully implement social and environmental safeguards are instrumental to successful project formulation and implementation. The evolution of the relationship between NGOs and BNDES—from adversaries to administrative partners under the Amazon Fund framework—should show development bank leadership that civil society has more to offer than either acquiescence or resistance. Working with such counterparts can transform project reach and return, even if such counterparts were previously opposed to other bank projects. Collaboration has additional gain of improving the bank's image, especially if it has a history of funding controversial projects. The Amazon Fund shows that when multiple stakeholders find common ground, be it climate change mitigation, poverty alleviation, or sustainable development, social and environmental safeguards can generate greater buy-in and lead to more sustainable outcomes.

Perhaps the greatest lesson from this case study is the importance of local community protagonism in defining development and directing the development process in partnership with diverse stakeholders. For the bank, its role here has been to facilitate, finance, and audit. This transforms the conventional approach from development of local people to development by local people. This case shows that such an approach leads to robust institutional outcomes and productive working relationships between state, bank, military, civil society, local communities, and international donors, even if the long term outcomes of this particular ecotourism initiative remains to be seen.

Further Reading:

- Bergamini Junior, Sebastião. 2003. "Classificação de risco ambiental: o modelo construído no BNDES." *Revista do BNDES* 10 (20):197-228.
- BNDES, Banco Nacional do Desenvolvimento e Social. 2013. "Monitoramento da Cobertura Florestal na Amazônia Regional." Fundo Amazônia, accessed September 20. http://www.fundoamazonia.gov.br/FundoAmazonia/fam/site_pt/Esquerdo/Projetos_Apoiados/Lista_Projetos/OTCA.
- BNDES, Banco Nacional do Desenvolvimento e Social. 2016. "Gestão e Governança de Terras Indígenas nas bacias do Rio negro e Xingu: PGTAs." [fundoamazonia.gov.br](http://www.fundoamazonia.gov.br/FundoAmazonia/fam/site_pt/Esquerdo/Projetos_Apoiados/Lista_Projetos/ISA_PNGATI), accessed November 22. http://www.fundoamazonia.gov.br/FundoAmazonia/fam/site_pt/Esquerdo/Projetos_Apoiados/Lista_Projetos/ISA_PNGATI.
- Easterly, William. 2006. *The White Man's Burden: Why the West's Efforts to Aid the Rest Have Done So Much Ill and So Little Good*. New York: The Penguin Press.
- Fearnside, Philip M., Adriano M.R. Figueiredo, and Sandra C. M. Bonjour. 2013. "Amazonian forest loss and the long reach of China's influence." *Environment, Development, and Sustainability* 15 (2):325 - 338.
- Forstater, Maya, Smita Nakhoda, and Charlene Watson. 2013. *The effectiveness of climate finance: a review of the Amazon Fund*. London: Overseas Development Institute.
- Gallagher, Kevin P, and Fei Yuan. 2017. "Standardizing sustainable development: a comparison of development banks in the Americas." *Journal of Environment & Development* 26 (3):243-271.
- Klinger, Julie Michelle. 2017. *Rare Earth Frontiers: From Terrestrial Subsoils to Lunar Landscapes*. Ithaca, NY: Cornell University Press.
- Krug, Thelma. 1998. "Space technology and Environmental Monitoring in Brazil." *Journal of International Affairs* 51 (2):655-674.
- Lima, Lucas. 2017. "Yanomami dão mais um passo na estruturação do ecoturismo." Instituto Socioambiental, accessed September 20. <https://www.socioambiental.org/pt-br/noticias-socioambientais/yanomami-dao-mais-um-passo-na-estruturacao-do-ecoturismo>.
- Plataforma BNDES, various, Amigos da Terra, Amazônia Brasileira, Associação de Funcionários do BNB, ATTAC – Brasil, Central Única dos Trabalhadores (CUT), Conselho Indigenista Missionário (CIMI), Coordenação das Organizações Indígenas da Amazônia Brasileira (COIAB), Cresol – Sistema de Cooperativas de Crédito Rural com Integração Solidária, Esplar – Centro de Pesquisa e Assessoria, Federação de Órgãos para Assistência Social e Educacional (Fase), Fórum Brasileiro de ONGs e Movimentos Sociais para o Meio Ambiente e o Desenvolvimento (FBOMS), Fórum Brasileiro de Economia Solidária (FBES), Fórum Nacional de Segurança Alimentar, Fórum Popular e Independente do Madeira, Frente Nacional do Saneamento Ambiental (FNSA), Instituto Brasileiro de Análises Sociais e Econômicas (IBASE), Instituto de Estudos Socioeconômicos (INESC), Movimentos dos Atingidos por Barragens (MAB), Movimento dos Trabalhadores Rurais Sem Terra (MST), Instituto Políticas Alternativas para o Cone Sul (PACS), Rede Alerta contra o Deserto Verde, Rede Brasil sobre Instituições Financeiras Multilaterais, Rede Brasileira de Justiça Ambiental, and Rede Brasileira pela Integração dos Povos (Rebrip). 2007. "Plataforma BNDES." IBASE. http://www.ibase.br/userimages/Plataforma_BNDES.pdf.
- Seymour, Frances, and Jonah Busch. 2016. *Why Forests? Why Now? The Science, Economics, and Politics of Tropical Forests and Climate Change*. Washington, DC: Brookings Institution Press.
- UNFCCC, United Nations Framework Convention on Climate Change. 2010. Report of the Conference of Parties on its sixteenth session, held in Cancun from 29 November to 10 December 2010. In *UNFCCC/CP/2010/7/Add.1*, edited by Conference of the Parties. Cancun: UNFCCC.
- UNFCCC, United Nations Framework Convention on Climate Change. 2014. Report of the Conference of the Parties on its nineteenth session, held in Warsaw from 11 to 23 November 2013. In *UNFCCC/CP/2013/10/Add.1*, edited by Conference of the Parties. Warsaw: UNFCCC.

LAND USE & LIVELIHOODS

The Land Use & Livelihoods Initiative (LULI) is a research initiative at Boston University's Global Development Policy Center. The GDP Center is a University wide center in partnership with the Frederick S. Pardee School for Global Studies. The Center's mission is to advance policy-oriented research for financial stability, human wellbeing, and environmental sustainability.

www.bu.edu/gdp

The views expressed in this Working Paper are strictly those of the author(s) and do not represent the position of Boston University, or the Global Development Policy Center.

ACKNOWLEDGEMENTS

This report was funded by the Global Economic Governance Initiative at the Frederick S. Pardee Center for the Study of the Longer-range Future and the Global Development Policy Center Boston University as well as the Macarthur Foundation. Thank you to Rebecca Ray, Cynthia Sanborn, and Kevin Gallagher for comments on earlier versions of the study.