

For Geography 766
"Undergraduate Honors Thesis"

**The Fairness of Forests:
A Case Study of the Rio Bravo Carbon Sequestration Pilot Project
Belize, Central America**

By

Elise L. Parker
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Abstract

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Carbon Sequestration forestry projects generate heated debate among negotiators of global climate change policy. Advocates of carbon sequestration see these projects as a remedy to the problems of global climate change, biodiversity conservation, and sustainable development. Opponents criticize carbon sequestration projects on technical, environmental, political, and economic grounds. One particularly serious criticism is that carbon sequestration projects are a form of Carbon Colonialism. This research weighs the charge of carbon colonialism against the Rio Bravo Carbon Sequestration project in Belize, Central America. A review of the design and implementation of the Rio Bravo project shows that the project has successfully addressed key equity concerns including maintaining national and local sovereignty. Key to the project's success is that it has official support of the Belizean government and it is being implemented by a strong Belizean non-profit organization that has a well established and positive relationship both with the government and with communities in the area of the project. Furthermore, the project does not interfere with, and may in fact enhance, Belize's national development priorities via its emphasis on sustainable forestry practices. The success of Rio Bravo is positive experience for carbon sequestration, though concern over the likelihood that future carbon sequestration projects will maintain the same high standards begs a question: Is Rio Bravo a model or an unattainable ideal?

I. Introduction

Since the late 1980s, international parties have debated the many possible solutions to a central global problem: climate change. Climate change is a result of elevated levels of heat-trapping greenhouse gases like carbon dioxide (CO₂) in the earth's atmosphere. The current and dangerous levels of CO₂ are the result of human activities, such as fossil fuel combustion and deforestation, that release CO₂ into the atmosphere. Though fossil fuel combustion in the industry, transportation, and residential sectors of developed nations constitutes the bulk of annual CO₂ emissions, it is the smaller contributions from deforestation that have sparked recent debate.

The source of debate is not the amount of CO₂ that deforestation has contributed to the atmosphere; most scientific estimates indicate that deforestation accounts for 15-25% of annual CO₂ emissions and 30% of the atmospheric stock of CO₂ (Brown, Kete, and Livernash 1998; Frumhoff, Goetze, and Hardner 1998; Mattoon 1998; Trexler 1998). The origin of deforestation-related CO₂ emissions is also clear; the vast majority, approximately 75%, of deforestation-related CO₂ has come from developing nations (Austin, Goldemberg, and Parker 1998). Given this information, the international and interdisciplinary debates are focused on a seemingly simple question: How can the world's forests, now known to be significant and growing sources of CO₂, be incorporated into an international strategy to mitigate climate change?

According to the proponents of one innovative and market-based solution, forests can be at the heart of a cost-effective climate mitigation effort and provide a solution to related issues: tropical deforestation, resultant biodiversity loss, and sustainable development. The idea is to protect and manage forests in a way that minimizes carbon loss due to deforestation and maximizes carbon stored in biomass. Trees remove, or sequester, CO₂ from the atmosphere to obtain the carbon they need to grow and build tissues. When trees decompose or burn, the carbon stored in their tissue returns to the atmosphere in the form of CO₂. By protecting and enhancing forests, the world's biotic sinks for carbon, forest projects could reduce the overall atmospheric concentration of CO₂. These carbon-focused forest projects, or carbon sequestration projects, could give new value to standing forest, thereby providing financial incentive to prevent deforestation.

The issue of carbon sequestration forestry is quickly mired in myriad issues ranging from the technical feasibility of accounting for deforestation emissions to the social ramifications of controlling forests, a crucial and heavily exploited natural resource, in the name of climate mitigation. One fundamental problem is that the vast majority of forests in need of protection from rapid rates of deforestation are in developing countries, but the primary historic responsibility for CO₂ build-up in the atmosphere rests with industrialized countries. As a result, the primary focus of carbon sequestration forestry is not on action within individual countries, but rather on partnerships between countries, particularly between industrialized and developing countries.

Though many such partnerships are currently underway and no two projects define the roles and responsibilities of each partner identically, the rationale behind each is the same. Industrialized countries have the responsibility and, in most cases, the monetary resources to address climate change through carbon sequestration projects. However, the lack of forest and high land prices in many industrialized countries make forestry projects impractical. Industrialized countries have turned to developing countries because many of them have the natural resources to accommodate a carbon sequestration project, but lack the monetary resources to support one or the responsibility to prioritize environmental protection over sustainable development and poverty alleviation. By forging international partnerships between their countries, industrialized and developing country partners are able to pool their resources, natural and economic, to combat climate change and promote sustainable development simultaneously.

While proponents have heralded these international partnerships as a panacea of solutions for climate mitigation, deforestation, and sustainable development, the idea of industrialized and developing countries, the “north” and the south,” working together in mutually beneficial partnerships has been greeted with a great deal of skepticism. Equity has not, historically, been upheld in north-south relations (Harvey and Bush 1997). As a result, in the early 1990s many critics assailed carbon sequestration projects as “Carbon-Colonialism,” a method of exploiting the weaknesses of developing countries so that developed nations could avoid making necessary reductions in fossil fuel emissions at home (Agarwal and Narain 1991). While such charges have become less frequent, there remains a strong emphasis on ensuring that international carbon sequestration projects are

equitable and reflect the vastly different economic circumstances that exist between industrialized and developing countries.

Today, the international community is on the verge of a new phase of the carbon sequestration debate. A pilot phase, designed to test the feasibility of carbon sequestration and other partnerships, is about to draw to a close (see Background). This pilot phase constitutes the first tangible experience with forest projects within a framework set by international climate negotiations. Though an assessment of this pilot phase prior to its official completion in December 1999 would be premature, certain individual projects have already begun to provide useful evidence to aid in the many facets of the carbon sequestration debate.

The present research is an attempt to connect the development of one pilot project with the many issues of political and socio-economic equity that have come to the fore in the past decade. The Rio Bravo Carbon Sequestration Pilot Project (RBCS) in Belize, Central America, offers a mature and carefully designed example of how the forest conservation and sustainable forest management project of one set of unlikely partners might contribute to climate change mitigation in an equitable way. The purpose of this research is not to evaluate the overall success of RBCS, but to ground the equity debate in an analysis of a single real-world example. In terms of equity, RBCS sets a good example. RBCS has the potential to be a model for other carbon sequestration projects because it addresses the common criticisms of carbon sequestration projects through careful planning and attention to equity issues.

In order to set the context for an analysis of RBCS and the relevant equity issues, a brief background of the climate change negotiations and the resultant policy will precede the case study and discussion. Appendix I offers a glossary of acronyms to reference while reading the background and following sections. The case study will detail the genesis and design of Rio Bravo, as well as the backgrounds and interests of the project partners and the host country. Finally, a broader discussion of the equity issues challenging carbon sequestration projects, specifically referencing RBCS, will attempt to evaluate RBCS's merits as a model for the future.

A. *Methods*

Research for this project took place in three stages utilizing two basic research techniques: literature review and interviews. The first stage, a general review of literature gathered from journal and Internet sources as well as from the collections of private and government entities, provided necessary context for an analysis of the specific research questions.

The second stage of research was a compilation of materials to form a case study. The Rio Bravo Carbon Sequestration Pilot Project was chosen for two reasons: Rio Bravo was designed to address many of the same equity issues on which this research is focused; secondly, because Rio Bravo was the first approved and funded AIJ project in the United States, it has been underway for several years and offers a level of assurance that what was planned in theory can be implemented in practice. Literature sources for the case study included the original project proposal and several reports and publicity pieces written by representatives of one or more of the project partners. Additionally,

interviews were conducted with a representative of each of the project partners (Wisconsin Electric Power Company, The Nature Conservancy, and Programme for Belize) as well as the Deputy Minister of the Environment to the government of Belize and the head of Belize's Climate Action Program. Appendix II is a comprehensive list of all interviews conducted for this project.

The third stage of research involved a broader investigation of the politics and procedures of forest projects. A series of interviews were conducted with representatives of non-governmental organizations concerned with climate change and equitable solutions, including World Resources Institute, Climate Action Network, World Conservation Union, The Centre for Sustainable Development in the Americas, World Wildlife Fund, and Greenpeace.

B. Background

Carbon sequestration forestry is a small but significant part of the international climate negotiations that have been underway since 1990. In 1990, a United Nations Intergovernmental Negotiating Committee drafted the Framework Convention on Climate Change (FCCC). The ultimate object of the FCCC is to stabilize concentrations of GHGs at a level that will not cause dangerous anthropogenic alterations of the climate system (Harvey and Bush 1997). Though the FCCC set a goal of returning GHG emissions to 1990 levels by the year 2000, it did not set any specific emissions reductions targets or a timetable to achieve reductions. The FCCC did, however, recognize the historic responsibility of industrialized countries for the buildup of atmospheric GHGs and the need for those countries to take the lead in reducing emissions. The FCCC

entered into force on March 21, 1994, thereby committing developed countries to stabilize GHG concentrations in the atmosphere at a safe level and to help developing countries begin to address climate change by providing them with cleaner technologies and funding for cleaner development (Brown, Kete, and Livernash 1998).

Though developing nations bore little historic responsibility for GHG emissions, future projections suggested that their contributions would grow substantially in the coming decades. The FCCC acknowledged these projections by allowing countries aiming to reduce emissions to “implement policies and measures jointly with other parties” (Harvey and Bush 1997, p.15). This concept was termed Joint Implementation (JI) in 1995 at the first Conference of the Parties (COP-1), the first of a series of meetings held to discuss the details of the FCCC. At the COP-1 international negotiators defined JI as “efforts undertaken voluntarily and cooperatively between at least two parties in two or more countries that reduce, avoid, or sequester” greenhouse gas emissions (Brown, Cabarle, and Livernash 1997, p.3). In essence, JI would allow entities within industrialized nations to meet part of their commitment by sponsoring projects abroad. JI included forest-based projects as well as technology-based projects, such as alternative energy. Additionally, JI included partnerships among industrialized countries and between industrialized and developing countries. JI received particularly strong support from industries in developed nations in favor of generating a broad portfolio of potential mitigation techniques in order to reduce the cost of climate change mitigation.

The concept of JI was greeted with both kudos and condemnations. Some saw in JI the potential to foster environmentally beneficial partnerships between developed and

developing countries while reducing the overall cost of climate change mitigation. Others denounced JI as a form of eco-colonialism based on economic and political inequalities maintained throughout the history of north-south relations. Opponents argued that JI was simply an attempt by developed nations to shift responsibility for emissions reductions to the hapless south, thereby avoiding necessary reductions at home (Agarwal and Narain 1997; Sierra Club 1998). Including forestry projects in JI further inflamed critics who were concerned that any focus on land-use emissions unfairly targeted developing nations, further diverting attention from developed countries and the energy sector.

The intense debate over forest-based JI prompted the COP-1 to adopt the Berlin Mandate, which established clear parameters for a JI pilot phase to end before the year 2000. During the pilot phase, termed Activities Implemented Jointly (AIJ), joint projects could be designed and implemented, but no credit would be given for CO₂ reductions (Goldberg 1998). AIJ partnerships with the United States are promoted, approved, and evaluated by the U.S. Initiative on Joint Implementation (USIJI), a Secretariat established in 1993.

Partnerships between developed and developing countries have since been extracted from JI and placed under a new heading, the Clean Development Mechanism (CDM). The CDM is outlined in article 12 of the Kyoto Protocol (1997), the most recent result of COP-3 negotiations of the terms of the FCCC. The CDM is a modified version of a Brazilian proposal for a “Clean Development Fund” and incorporates several new design principles proposed by delegates from developing countries (Brown, Kete, and Livernash 1998). Like JI, the CDM would allow industrialized nations to meet part of

their reduction commitments with certified emissions reductions (CERs) accruing from projects undertaken in developing countries.

The present and future role of forest projects as a mitigation strategy remains unclear. Since the CDM does not specifically mention land use change and forest projects, it is not certain what types of projects will ultimately be allowed. There is no guarantee that forest conservation projects will be granted CERs for the carbon they sequester; the CDM could opt to limit the use of forests to more easily quantifiable afforestation and reforestation projects. In fact, at a broader level, there is no guarantee that the Kyoto Protocol, and the imbedded CDM, will ever enter into force. The Kyoto Protocol, which proposes very specific reduction targets, has yet to generate the support it needs and is not likely to do so before several key issues and terms, including the allowable forms of forest projects, are clarified.

In lieu of a concrete agreement about the role that forests will play in climate mitigation, the AIJ pilot phase continues to test the feasibility of partnerships between industrialized and developing countries. Though participation in AIJ has been inhibited by the absence of any economic or carbon credit incentives, a variety of projects are yielding useful experience with the design, implementation, and management of both energy and forest-based projects. The AIJ projects have enabled supporters and critics of joint action on climate change to enter into a new stage of the debate, one grounded more firmly in practical experience.

II. Case Study: The Rio Bravo Carbon Sequestration Pilot Project - Belize, Central America

The Rio Bravo Carbon Sequestration Pilot Project (RBCS) has yielded four years of practical experience in managing forest for multiple sustainable uses and for complimentary causes including carbon sequestration. Forest preservation, sustainable logging, non-timber product extraction, eco-tourism, and scientific research are all part of the design and vision of RBCS. RBCS is an important case study for several reasons. First, it was the first carbon sequestration project approved by USIJI under the AIJ pilot phase, so it has a longer and richer history to analyze than other USIJI projects. Secondly, RBCS has more complex and ambitious goals than other types of carbon sequestration projects (forest preservation, forest plantations), and thus yields the most potential benefits to project partners. Finally, the project partners have held RBCS up as a model. It is therefore appropriate, as the pilot phase draws to a close, to carefully and analytically accept that invitation.

This case study will introduce the project partners' overall missions and interests in carbon sequestration, discuss the qualities of Belize that make it a good match for an AIJ project, and detail the process of selecting a project and developing a proposal. This case study of the RBCS project will reveal some of the pitfalls and possibilities for the future of equitable projects. Is RBCS an equitable project? If it is, what key components make it equitable? The answers to these important questions will enable us to assess the potential of RBCS as a model for other carbon sequestration projects.

A. The Original Project Partners—WEPCO, TNC, and PfB

1. Wisconsin Electric Power Company (WEPCO)

WEPCO of Milwaukee, Wisconsin, provides approximately 950,000 customers in parts of Wisconsin and the Upper Peninsula of Michigan with electricity and steam services (WEPCO 1998a). WEPCO estimates that it will emit nearly 24,000,000 tons of carbon dioxide in 1999 and that is including a series of reduction efforts they agreed to implement as part of their voluntary participation in the U.S. Climate Challenge Program (WEPCO 1998a). Among WEPCO's reduction strategies are promoting energy-efficiency and demand-side programs to all of its customers, improving equipment efficiency at their existing facilities and improving the efficiency of energy delivery (WEPCO 1998b). WEPCO believes that carbon sequestration projects represent an innovative and economically efficient addition to any portfolio of carbon dioxide reduction strategies. They argue not only that carbon sequestration is very cost-effective, but that it is entirely necessary to include every possible strategy in climate mitigation efforts in order to make the enormous reductions required to prevent global warming. Officially, WEPCO supports

environmental projects with realistic chances to achieve something of lasting value. It is Wisconsin Electric's vision that environmental excellence and economic growth are compatible goals. We support creative, cost-effective solutions that encourage partnering and cooperation leading to mutually rewarding solutions. (WEPCO 1998b, p.1)

2. The Nature Conservancy (TNC)

TNC has a mission to "identify, protect, and maintain the best examples of communities, ecosystems and endangered species in the natural world" (Proposal 1994,

p.5). TNC owns and manages over 1500 preserves in the U.S. and more than 9 million acres worldwide, constituting the largest private system of nature sanctuaries in the world. Key to TNC's success is innovative methods of generating conservation funds, including much popularized debt-for-nature swaps (The Nature Conservancy 1999). TNC views carbon sequestration projects as a unique opportunity to couple the interests of industry and the environment. Carbon sequestration projects funded by major corporations could provide the means to protect the biodiversity found in species rich areas like Rio Bravo, which is home to over 330 bird species, 220 plant species, and many endangered mammals, including jaguars and tapirs. Additionally, TNC acknowledges that climate change itself presents a major threat to natural ecosystems and biodiversity. TNC has used its vast and diverse experience developing and implementing conservation projects to help generate and design partnerships like Rio Bravo.

3. Programme for Belize (PfB)

PfB is a private Belizean organization established in 1988 to "promote the conservation of the natural heritage of Belize, to promote wise uses of its natural resources, and to conserve a representative area of natural forest. PfB privately owns and manages over 87,000 ha of forested land brought together by a series of donations and purchases to form the Rio Bravo Conservation and Management Area (RBCMA). The Belizean government is supportive of PfB and has a Memorandum of Understanding with the organization which calls for PfB to promote activities such as sustainable logging and eco-tourism to demonstrate the practical application of sustainable development practices to all of Belize. Carbon sequestration forestry is of interest to PfB because it provides

conservation funding that would likely be unattainable by a small non-profit organization in a developing country.

4. Belize - The host country

Belize is a small, sparsely populated country on the east coast of the Yucatan Peninsula. With a land mass of only 8,886 square miles and a population of 205,000 (Barry and Vernon 1995), Belize is about the same size as the state of New Hampshire (NHSDC 1998). Belize is topographically and biologically diverse, ranging from thick tropical forests in the peaks of the Maya Mountains to swampy “Bajo” vegetation in the low-lying areas. The RBCMA itself encompasses areas of broadleaf forest, pine formations, and seasonally inundated scrub or Bajo.

The timber industry was the main source of export income for Belize until the 1950s. Though heavy logging seriously depleted logwood and mahogany stocks throughout the country, the forests of Belize were not historically subject to clear-cutting. As a result, much of the country is still covered with a thick forest canopy. The presence of intact forests enables Belize to take a preventative approach to forest conservation (Barry and Vernon 1995).

The history of land tenure and the current economic orientation of this small, ecologically diverse country lend themselves to an experiment in privatized conservation such as the carbon sequestration project at Rio Bravo. Land use and land tenure in Belize are heavily influenced by its very recent colonial history; Belize gained its independence from England only in 1981. Toward the end of the colonial period in Belize, 3 percent of landowners owned 95 percent of freehold land, and foreigners owned 90 percent of

freehold land (Wallace and Naughton-Treves 1998). Despite the concentration of land in the hands of very few people, land scarcity and competition have never been major problems in Belize due to the low population density (Wallace and Naughton-Treves 1998). In their 1998 assessment of RBCMA for TNC, Wallace and Naughton-Treves argued that the history of large private land holdings is one of the main reasons that privatized conservation, like Rio Bravo, is practical in Belize. Large tracts of land have always been inaccessible to the general Belizean populace. As a result, the selling and conversion of private land holdings to private conservation does not snatch land away from the average Belizean, but simply reallocates land that was always out of their reach.

Lands tied up in conservation have a great deal of value for Belize, a country whose economic development is heavily anchored in eco-tourism. Tourism is second only to sugar production as Belize's leading economic activity (Barry and Vernon 1995). A series of national parks, private conservation projects, and local eco-tourism ventures are the backbone for the booming tourism industry. The government of Belize therefore has an economic incentive to protect the natural heritage of Belize, but lacks the resources to adequately manage a vast network of protected areas. By supporting privatized conservation, the government of Belize can reap the benefits of eco-tourism while leaving much of the economic responsibility to national and international private organizations.

The land tenure history and economic orientation of Belize make it a good fit for a carbon sequestration project. It certainly satisfied the criteria set forth by TNC and WEPCO. Belize was among the first countries to ratify the FCCC, doing so in 1994. And though the Ministry of Environment is currently investigating the potential benefits of carbon sequestration projects, the government accepted the development of a pilot

project and the concept of tradable offsets¹ Ratification of the FCCC and acceptance of tradable offsets were necessary criteria for government of Belize to meet, but by far the most important attribute of Belize as a host country is the close, productive relationship it has with PfB.

B. Project Selection

Soon after the AIJ pilot phase was established, WEPCO and TNC decided to work together on a carbon sequestration project. Based on prior experience working together on conservation projects in the state of Wisconsin, both WEPCO and TNC saw potential in such a partnership. In addition, “both TNC and WEPCO recognized that the confluence of international concern over global warming, biodiversity protection and sustainable development offered unique opportunities to find comprehensive solutions”(Proposal 1994, p.9).

The partners were highly selective when choosing a project. They began with a list of approximately 200 sites involved in TNC’s Parks In Peril Program and then evaluated the potential of the most appropriate projects based on specific criteria. Following is a list of those criteria as written in the Rio Bravo Carbon Sequestration Pilot Project proposal. Each criteria is annotated with a brief synopsis of how Rio Bravo proved to be a good fit for WEPCO and TNC’s agenda.

¹ When the RBCS Project Pilot Proposal was written in 1994, “tradable offset” was current terminology for a unit of carbon dioxide emissions reductions that could be exchanged between two countries. The current term for such a unit under the CDM is “Certified Emissions Reduction” or CER.

1. The site must not be involved in carbon sequestration efforts and must be modest, but likely to produce net carbon benefits (p.9).

The Rio Bravo site was composed of two parts: an existing conservation management area owned and run by PfB and an endangered parcel of privately held land. At the time of project selection, the Rio Bravo Conservation and Management Area totaled 86,928ha of forest land. The additional parcel, to be purchased and incorporated into RBCMA totaled 6012ha. No portion of the proposed site had previously, or at the time of selection, been part of a carbon sequestration project.

2. In-country institutional capabilities must be present to assist with project planning and implementation (p.9).

PfB employs a host of individuals well-trained in various aspects of conservation management. The institutional capabilities of PfB were supported by its sophisticated management plan for RBCMA and its proven success implementing management strategies.

3. Forest degradation, or imminent threat of conversion to a land use that would cause significant carbon dioxide emissions, must be clearly documented (p.9).

Rio Bravo met all aspects of this criterion. All the land included in the proposed site had been subject to 150 years of selective logging which depleted the area of much of its valuable hardwoods, including mahogany and Mexican cedar. In recent years, the growth of mechanized agriculture has begun to present a new threat to forests throughout Belize, including the region of Rio Bravo. Increasing land conversion rates are well documented and expected to intensify in the coming decades. This trend was realized when the 6,014 ha parcel of private land was put on the open market in 1992 and the owner, New River Enterprises Logging & Milling, received several offers from practitioners of mechanized

agriculture. Had the parcel not been incorporated into RBCMA, the partners estimated that it would have been cleared within a few years.

4. It must be possible to apply proven forest management practices to reverse these problems (p.9).

A significant part of PfB's mission was to develop techniques for forest management and sustainable use in Belize; Rio Bravo was created to help achieve that end. As a result, this criteria was easily satisfied. At the time of project selection, RBCMA already employed a host of management practices including permanent reserves for the protection of natural habitats and biodiversity and sustainable activities such as chicle extraction.

5. Adequate information must be available to estimate the potential carbon benefits, to assess the side-effects of chosen strategies, and to estimate the project cost (p.10).

Rio Bravo is a well-studied area. In 1993, PfB, with the support of the United States Agency for International Development, concluded a study of the potential for implementing sustainable forestry within RBCMA. Additionally, several inventories of the standing biomass within RBCMA have been completed in recent years. These studies along with PfB's experience with conservation planning, implementation and monitoring provided an excellent base from which to make the required estimates.

6. The in country partner organization must have an established relationship with the host country and local governments (p.10).

PfB's strong relationship with the Belizean government has been established previously in this paper. PfB's relationship with "local governments" is more complex given the variety of communities and landowners that border RBCMA. RBCMA's neighbors include small-scale subsistence farmers in Mestizo and Afro-Caribbean Creole

communities, Mennonite farmers who carry-out mechanized agriculture, and a handful of business interests including cattle ranching, eco-tourism, and logging. According to 1998 survey conducted by Wallace and Naughton-Treves, PfB has extended outreach activities to the Mestizo and Creole communities most likely to be affected by the presence of RBCMA. While the outreach programs have not been successful in developing alternative economic activities for the communities, they have established solid relationships with the communities; environmental education efforts encouraged respect for RBCMA's borders and instilled a basic understanding of the connection between conservation and development. Members of the Mennonite community have been less responsive to outreach activities, but PfB has managed to establish a positive, if limited, dialogue (Wallace and Naughton-Treves 1998).

7. The host country must have ratified or scheduled ratification of the FCCC (p.10).

Belize ratified the FCCC on October 17, 1994.

8. The host country must express acceptance of the project and of the concept of tradable carbon offsets (p.10).

In 1994 the Deputy Prime Minister of Foreign Affairs for the government of Belize sent a letter to the Undersecretary for Global Affairs for the U.S. Department of State expressing the full support of the Belizean government. In the letter, the Deputy Prime Minister recognized that mitigating climate change was "of mutual benefit to developing and developed countries"(Proposal 1994, Appendix) and that JI presented an opportunity to "reduce or sequester greenhouse gases and promote sustainable development and protect biodiversity in Belize"(Proposal 1994, Appendix). The letter further expressed support specifically for the RBCS and the future of implementation of

transferable carbon offset credits. The government of Belize expressed support for allocating carbon offsets “to the project participants in proportion to their financial contribution to the pilot project”(Proposal 1994, Appendix).

C. *Project Design*

In 1994, PfB, TNC, and WEPCO wrote a project proposal to submit for consideration under the USIJI. In the proposal, the partners outline three components of the project: A. Purchasing a significant parcel of endangered land; B. Managing a portion of the existing RBCMA to enhance carbon storage and make protected forest economically sustainable; C. Extending the activities tested in component B beyond the borders of RBCMA. The Rio Bravo Carbon Sequestration Project Pilot proposal is the source for the following summary of the three components.

1. Component A

This component is a crucial part of the pilot project because it involves the purchase of endangered forest land, thereby preventing deforestation. Component A is composed of 6,014 ha of endangered forest land that was purchased from New River Enterprises (NRE), a neighboring lumber and milling company. In 1992 NRE put 10,927 ha of land that divided the western and eastern portions of the existing RBMCA on the market. NRE received several offers from members of a local Mennonite community. Had the parcel been sold into that community, it almost certainly would have been converted to agricultural land. Such a conversion would have placed a rift between the eastern and western portions of RBMCA, not only removing an important corridor of

habitat for the wildlife, but also preventing RBCMA from attaining acreage large enough to implement a viable sustainable forestry initiative.

2. Component B

This component aims to increase the amount of carbon stored in 37,019 ha of the greater RBCMA. The land encompassed by RBCMA is all partially degraded due to a long history of logging for mahogany and other hardwoods. This component of the project aims to rehabilitate and enhance that forest in the following ways: allow broadleaf timber stocks to recover to a higher maintenance level for carbon sequestration; create conditions necessary to regenerate primary timber species; practice sustainable harvesting of the broadleaf forest using techniques designed to minimize damage; market the harvested timber for use in durable wood products such as furniture; and, finally, protect and enhance the pine forests located on the degraded savanna areas in RBCMA.

Solely in terms of carbon sequestration, component B seems to undermine the goals of the project; harvesting timber and selling it for furniture production results in a loss of carbon. However, in light of PFB's greater goals, absolute preservation would not provide the necessary opportunities for sustainable development. Component B is designed to retain as much carbon as possible within the context of a sustainable logging and management practice.

3. Component C - Extension

Employing working models of forest management techniques developed in component B, this third phase of the pilot project is designed to extend appropriate activities across the broader Belizean landscape. Two main activities promoted by

extension are reforesting cleared lands and retaining forest on private lands. Initially, the extension area will include approximately 600,000 ha surrounding Rio Bravo. As noted earlier, the land bordering Rio Bravo is subject to a variety of uses: private and government-owned protected areas, logging concessions, small-scale Mestizo and Creole agriculture, and mechanized Mennonite agriculture.

D. Summary

After four years of practical experience with carbon sequestration forestry, the partners of RBCS are all satisfied with the project's progress. Such satisfaction suggests that the project is yielding the broad array of benefits it is designed to effect. Of primary concern is the amount of carbon that the project can sequester. The pilot project is expected to achieve maximum carbon benefits by the end of its 40 year life span. Combined, components A & B are expected to sequester 1,309,495 tons of carbon. Component A is expected to store 767,681 tons of carbon after five years, while component B is expected to sequester 541,814 tons of carbon after twenty years (Proposal 1994). The project is designed to attain maximum carbon benefits within 40 years and funding is guaranteed for the first ten years.

In addition to carbon benefits, the project partners are satisfied that additional benefits will also be attained. The project has begun to positively impact regional employment by training and employing individuals from local communities in the labor-intensive practice of sustainable forestry. The training necessary to participate in Rio Bravo's activities adds new technical capabilities to the labor market, including techniques for sustainable forestry, timber product development, and marketing. Finally,

additional environmental benefits including biodiversity conservation and environmental education are resulting from land management and extension activities.

The carbon sequestration project at Rio Bravo is one of several such projects currently underway as part of the AIJ pilot phase including a Bolivian project involving TNC. All projects are subject to the same concerns and criticisms and all are likely to yield useful insights should creditable carbon sequestration projects under the CDM commence.

As a pilot project, RBCS has achieved a great deal of success and is recognized for that success by proponents of carbon sequestration projects internationally. Despite its apparent success and the progress of several other pilot projects, concerns about the potential for inequitable, colonial relationships are still expressed by many developing countries and their proponents. The remainder of this paper will be devoted to a discussion of a few of the equity-related criticisms commonly aimed at carbon sequestration projects within JI or, more recently, the CDM.

III. Discussion

This section serves more as a forum for a variety of viewpoints than as an evaluation of the merits of any particular view. The discussion will be anchored in the project detailed in the previous case study, but will not be limited to an evaluation of that project. The goal of this section is to bring to light the strengths and weaknesses of RBCS in terms of a few specific equity issues and consider to what degree RBCS might serve as a model for future carbon sequestration projects.

A. *Defining Carbon Colonialism*

Carbon colonialism, a derivation of environmental or eco-colonialism, is a phrase that has been employed against the idea of north-south collaboration on climate mitigation since the late 1980s. It is an intentionally harsh phrase undoubtedly chosen to evoke the same intensely negative connotations that are associated with the colonial era. Though frequently used and emotionally charged, the phrase is insufferably difficult to define.

Some argue that it is the trend toward globalization, both of environmental problems and their solutions, that is colonial in nature; global environmental efforts have become a normalizing and determining force in our “one world.”

In the face of the overriding imperative to ‘secure the survival of the planet,’ autonomy easily becomes an anti-social value, and diversity turns into an obstacle to collective action. Can one imagine a more powerful motive for forcing the world into line than that of saving the planet? Eco-colonialism constitutes a new danger to the tapestry of cultures on the globe.” (Sachs 1995, p.108)

Though the above quote is not directed specifically at carbon sequestration or JI, it certainly attacks the notion of collective global action that is at the heart of such partnerships. Sachs (1995) suggests that global environmental policy eliminates autonomy and diversity, effectively turning the world into a homogenous collection of countries and peoples assimilated into the model set by the dominant country or culture.

In a 1991 article entitled “Global warming in an unequal world: A case of environmental colonialism,” Indian authors Agarwal and Narain draw similar conclusions in their criticism of jointly implemented carbon sequestration projects:

Solutions for global warming are becoming more and more ludicrous. The latest is to plant trees in the countries of the Third World to fix the dirty carbon thrown out into the air by Western nations so that the West can continue to expand its

fleet of cars, power stations and industries while the Third World grows trees. (Agarwal and Narain 1991, p.23)

Described in the above manner, carbon sequestration projects are illegitimate, if not corrupt endeavors. The Sierra Club described JI as “A Big Sham” and “Neo-Colonialism” and stated that “allowing industrialized countries to receive emissions credits by protecting small tracts of forest land or planting a forest of saplings in developing countries is indefensible” (Sierra Club 1998). Such action is indefensible, they argue, because “industrialized countries are overwhelmingly responsible for the global climate change threat” (Sierra Club 1998).

In the end, a review of related literature reveals that in reference to carbon sequestration, Neo-, Eco-, Environmental, and Carbon Colonialism are all umbrella terms used by those who believe jointly implemented carbon sequestration projects have no place in ameliorating climate change; instead, industrialized countries are responsible for creating the problem, therefore they are responsible, morally and financially, for solving the problem. Carbon sequestration in JI and the CDM is seen in many ways as an effort to shirk this historically earned responsibility. Responsibility, and industrialized nations’ alleged avoidance of responsibility, is the common thread among the many uses of the phrase Carbon Colonialism. That Carbon Colonialism is based on responsibility is less a definition than a generalization. Nonetheless, the charge of Carbon Colonialism carries a tremendous amount of weight with both critics and advocates of carbon sequestration projects.

Two arguments, from two vastly different perspectives, challenge the notion that developing countries should not be involved in climate change mitigation efforts. First,

the fact that developing nations are not responsible for the current climate crisis will not spare them from the ramifications of climate change. If industrialized countries are unable or unwilling to make the necessary reductions that they are responsible for, developing countries will suffer just as assuredly as will industrialized countries. This argument, though true, does more to further inflame JI's toughest critics than to encourage the participation of developing countries. A more convincing argument is the following: Carbon sequestration projects, if properly designed and implemented, could yield tremendous benefits for developing countries. Why not use carbon sequestration and other jointly implemented projects to the advantage of developing countries—countries that are tired of being taken advantage of?

Taking advantage of carbon sequestration projects—in fact turning the terms of the projects in favor of developing countries—requires a departure from the philosophy of Carbon Colonialism. Mary Vasquez, Programme Office for PfB, emphasized the importance of this departure in an interview earlier this year:

Idealistically speaking, you might well say that eco-colonialism is a fact and it's hard to evade and no matter how strong or how knowledgeable the developing country is, they're always going to lose out. Even if you take that extreme position, I think it's rather defeatist and I'm not sure where it will get us. Something has to be done, and if we only look at all of the obstacles to getting it done, then we won't do anything. (Vasquez, pers.comm, Jan. 1999)

If it is the case that something needs to be done, as it seems that it is, then the question is not should we pursue carbon sequestration projects in the CDM, but how can we ensure equity in the partnerships once we choose to pursue them.

B. Ensuring Sovereignty

Though it is not possible to conclusively define Carbon Colonialism, it is possible and necessary to identify and overcome the challenges most likely to make a partnership inequitable. There are a number of circumstances and arrangements that could jeopardize the equality in these unusual partnerships between countries and private parties with drastically different needs and priorities. One criterion for an equitable partnership emerges as the most fundamental: Sovereignty. Sovereignty, as defined in the following section, is a crucial building block for carbon sequestration projects. Sovereignty is equally important for industrialized and developing countries, but in the context of the CDM it is the sovereignty of developing countries that is most likely to be threatened. Thus, the following section will assert the importance of sovereignty and assess whether RBCS has maintained it.

Sovereignty is a complex issue that needs to be considered on several levels. On the most basic level, the terms of AIJ and the CDM specify that carbon sequestration projects, as well as other jointly implemented projects, must have approval of the host country. Given this requirement, it seems unlikely that a project could violate the sovereignty of the host country. Anne Hambleton, Program Director for the Center for Sustainable Development in the Americas (CSDA), seconded that notion: “Each country has the sovereign right to say yes or no and to determine what the project criteria are it needs to fill” (Hambleton, pers. comm., March 1999). Sovereignty, thus defined, is easily guarded and not endangered by the CDM.

The RBCS in Belize certainly meets this standard. The government of Belize expressed its support for the pilot project, the FCCC, and the concept of tradable offsets in a letter to the U.S. Department of State in 1994 (Proposal 1994). TNC and WEPCO required such a letter of support as a criterion for site selection. The government of Belize had the sovereign right to reject the pilot project if it felt a carbon sequestration project was not in its best interest, but it chose to offer its full support.

Many agree that ensuring sovereignty is not as easy as making the project voluntary. Hambleton continued, “The question really becomes is the capacity of that country to evaluate the costs and benefits of that project strong enough to look out for its own interests (1999)?” The governance capacity of various developing countries is an issue that merits careful consideration in a discussion of sovereignty. Many U.S. environmental organizations agree that a lack of capacity to make informed and self-interested decisions is a major problem in some countries (Hambleton, pers. comm., March 1999; Orlando, pers. comm., March 1999). Nathalie Eddy, International Coordinator of the U.S. Climate Action Network (CAN), agreed, but noted that the last few years have yielded a positive change in the capacity of developing countries: “more and more, developing countries have found that it is in their best interest to get engaged in these projects and so they’re educating and positioning themselves so that they’re better able to negotiate on their own behalf” (Eddy, pers. comm., March 1999).

Another concern related to sovereignty is the prospect that CDM funds could influence national priorities. In most cases, developing countries are focused on local and regional environmental and development problems, like poverty, health, access to clean water, and food (Harvey and Bush 1997). Some opponents of jointly implemented

projects are concerned that the promise of funds for climate change mitigation projects will change the focus of developing countries from such immediate concerns to the larger issues targeted by the CDM. “The dire financial situation of most governments in the South will surely weaken their bargaining power when it comes time to negotiate the direction of joint implementation investments and a fair price for emissions credits” (Harvey and Bush 1997, p.40).

The RBCS project in Belize appears to achieve these more involved standards of national sovereignty as well. The purpose of the RBCS is nicely in-line with Belizean national priorities, just as is the whole of Rio Bravo. It is the policy of the Belizean government to protect forested land for eco-tourism and other forms of sustainable development. “If it is the policy of the government already to maintain it (forest), why not use it?” asked Carlos Fuller, the head of the Belizean Climate Action Committee (pers.comm., Jan.1999). As noted in the case study, the government was supportive of the RBCMA as a way to test modes of sustainable development to be implemented throughout the country. The government’s support of the carbon sequestration pilot project at RBCMA was a simple extension of that existing support.

Even without the pre-existing support for activities carried out at RBCMA, the government of Belize would likely have been supportive of RBCS. Since RBCS is not a forest preservation project that precludes other uses of the forest, and in fact is designed to promote sustainable economic development through limited extraction and selective logging, it does not threaten to overrule the more fundamental economic concerns of the country of Belize. The RBCS does not distract attention from issues of poverty, health,

access to clean water, and food. In fact, it tends to promote these issues through a working model of sustainable forestry.

The likely success of RBCS at upholding Belize's national sovereignty does not necessarily translate to likely success for all carbon sequestration projects. Carbon sequestration projects based on forest preservation, reforestation or afforestation, are not likely to yield the same benefits for sustainable development or for the environment because of their singular focus (Cairns and Meganck 1994). That is not to say that such projects could not possibly yield tremendous social and economic benefits to the host country—they could. Ensuring that a given project would provide sufficient benefits and aid in sustainable development is something that must be achieved individually by each host country. To this end, “each country should define their sustainable development priorities” (Hambleton, pers. comm., March 1999).

Sovereignty is not limited to the nation state. The sovereignty of local communities is equally important to uphold. In many countries throughout the world, property and usage rights for forested land are contested by local communities. A carbon sequestration project would further confuse property rights because the financial partners, often in the form of northern industries, would become owners of the carbon in the trees. In the process of outlining the many perceived challenges to forests as a tool for climate change mitigation, an analyst for World Resources Institute (WRI) wrote that “In many cases it will not be sufficient to contract with the host government entities for projects; it may also be necessary or preferable to negotiate and/or contract directly with local and indigenous users of the project area” (Brown 1998, p.11). This possible necessity arises from the same kind of inequalities that challenge national sovereignty. Just as some

developing countries worry that CDM funds and forest projects could determine their future, many communities within developing countries already experience such domination by the state. What is in the best economic interest of the country as a whole could be at the expense of an individual people or community, and national resource planning sometimes undermines subsistence activities [Sachs, 1996 #62].

The sovereignty of local communities in the area of RBCS was not violated by the land purchase or the management plan for that land. The land that composes component A of the project was previously owned by a single, wealthy Belizean. Prior to that, the land had moved through a series of foreign hands. Though RBCS did purchase the land “literally from underneath the plow” of Mennonites practicing mechanized agriculture (Bedford 1998), PfB asserts that land classification data clearly shows that the land in component A is not appropriate for agriculture (Proposal 1994; Vasquez, pers. comm., Jan. 1999). Furthermore, there are lands in the vicinity of the Mennonite settlements that are more suitable for agriculture. Vasquez included the land acquired for the pilot project when she said “there are some lands that aren’t good for agriculture so leaving them as standing forest is leaving them in the state where they are most economically useful” (Vasquez, pers. comm., Jan. 1999).

The involvement of PfB as a project partner further ensures respect for the land management concerns of local Mestizo and Creole communities. PfB is a non-profit, Belizean, non-governmental organization. Key to PfB’s success since its inception in 1989 has been positive community relations (Proposal 1994). PfB is not in a position of power that would enable it to manipulate communities. Instead, PfB has a vested interest in building trust with local communities, involving them in the planning and

implementation of conservation activities. Despite the fact that, as noted in the case study, Pfb's outreach activities have not yielded substantial economic benefits for local communities (Wallace and Naughton-Treves 1998), their activities have in no way worsened the state of economic affairs and have built a solid foundation for constructive community-based action in the future.

Sovereignty at all levels is key to an effective and fair carbon sequestration project. It is important for present and future designers of carbon sequestration project to recognize that asking for host-country approval might not be sufficient. The inherent power imbalance between industrialized and developing country demands that the industrialized country partner take the lead in preparing the host country for a project by openly disclosing the potential costs and benefits and not pressuring them to shift their development focus. Of course, ensuring that the host country has the capacity to look out for its citizens' interests is an enormous task. Perhaps it is the enormity of this task that has caused some countries and organizations to view carbon sequestration projects as carbon colonialism.

C. Conclusion

Restricting the discussion of RBCS and carbon sequestration to the issues of Carbon Colonialism and sovereignty leaves many critical issues untouched. Can we accurately measure the amount of carbon stored in forest? Is it right to equate carbon stored in forest and durable wood products to carbon stored in fossil fuel deposits? How much of a country's reduction commitment should it be allowed to achieve through

projects abroad? Is forest management for carbon sequestration ultimately compatible with management for biodiversity protection and sustainable development? It is no surprise that a proposal to use carbon sequestration projects to unite climate change mitigation, biodiversity conservation, and sustainable development into a single solution is criticized by a large and diverse audience. Economists, policy analysts, biologists, environmentalists, and forest managers all have perspectives on what issues need to be addressed to make carbon sequestration in the CDM workable. The purpose of this research was to determine what practical issue is at the heart of the charge of Carbon Colonialism. That issue, fundamental to any equitable relationship, is sovereignty.

The case study of RBCS reveals an AIJ project that meets all requirements for sovereignty set forth in this paper. RBCS is a well-planned, conscientiously designed, trustworthy project that is likely to have a considerable and positive influence in the carbon sequestration debate after the completion of the AIJ pilot phase. Along with other projects in the AIJ, RBCS has served to demystify the concept of jointly implemented projects, undoubtedly lessening cries of Carbon Colonialism. RBCS illustrates that a country like Belize that bears little or no responsibility for increasing CO₂ concentrations in the atmosphere can significantly benefit from the implementation of a carbon sequestration project.

Specifically, RBCS withstands the charge of Carbon Colonialism as a result of careful project selection and implementation. Certain characteristics of PfB and Belize are ideal for a carbon sequestration project. As noted in the case study, Belize offers sizable tracts of intact forest, a low population density, and an economic orientation toward eco-tourism. Additionally, the history of land tenure in Belize makes privatized

conservation possible. PfB has technical experience with this type of conservation as well as a strong and working relationship with the government of Belize and many local communities. These characteristics of Belize and PfB made RBCS an excellent project choice, but the project's careful planning and execution were necessary to ensure sovereignty.

Perhaps the single most important key to RBCS's success is the incorporation of forest conservation and multiple sustainable uses into the project methodology. Many of the levels of sovereignty, including host government acceptance, compatibility with national priorities, and benefits to local populations, would not have been achieved if the project partners had chosen to implement strict forest preservation instead of sustainable forestry and sustainable use. Indeed, PfB and Belize would probably not have entered into a partnership that offered only forest preservation because the benefits at the national and local levels would have been severely diminished.

Is RBCS a model of equity for present and future carbon sequestration projects in AIJ and the CDM? There is no simple answer to this question. If, to be a model, RBCS must exemplify an ideal that other projects can aspire to, then it may be a very good model. However, if, to be a model, RBCS must be replicable, then its status as a model is less certain. Despite the preponderance of RBCS's many positive attributes, some still find room to criticize. Gary Cook of Greenpeace called RBCS a "boutique" project. Cook questioned whether the standards set by RBCS would be attained by future projects, but still recognized that the standards set by RBCS are high. He said, "the Nature Conservancy is not going to be doing these projects. There will be other people

doing these projects who are not going to be doing them to the same level of detail that they (TNC) did” (Cook, pers. comm., March 1999).

Though it is not fair to fault RBCS for being too perfect and dismiss it as an anomaly of the circumstances presented by a pilot phase, it is necessary to consider whether there are likely to be sufficient outstanding project opportunities to satisfy the demand created by credited projects under the CDM. Given that the proponents of carbon sequestration and the CDM are very strong, it is likely that forests will, ultimately, be included in the global strategy for climate change mitigation. A pilot project like Rio Bravo, though possibly an example of an unattainable ideal, will certainly set a very high standard to aspire to meet.

Appendix A. Glossary of Acronyms

AIJ	Activities Implemented Jointly
CAN	Climate Action Network
CDM	Clean Development Mechanism
CER	Certified Emissions Reduction
COP-1,2, etc.	Conference of Parties
CSDA	Center for Sustainable Development in the Americas
FCCC	Framework Convention on Climate Change
GHG	Greenhouse Gas
NRE	New River Enterprises
PfB	Programme for Belize
RBCMA	Rio Bravo Conservation and Management Area
RBCS	Rio Bravo Carbon Sequestration Project
TNC	The Nature Conservancy
USIJI	United States Initiative on Joint Implementation
WEPCO/WE	Wisconsin Electric Power Company
WRI	World Resources Institute

Appendix B. Interviews

Baumert, Kevin
Research Analyst, Climate Energy, and Pollution Program
World Resources Institute (WRI)
March 22, 1999

Cabarle, Bruce
Program Director
World Wildlife Fund (WWF)
March 23, 1999

Cook, Gary
Climate Campaign
Greenpeace
March 24, 1999

Cutright, Noel
Technical Advisor, RBCS
Wisconsin Electric Power Company (WEPCO/WE)
October 26, 1999 and April, 1999

Eddy, Nathalie
International Coordinator
U.S. Climate Action Network (U.S. CAN)
March 23, 1999

Firstenburg, Eric
Climate Change Program
The Nature Conservancy (TNC)
April 1999

Fuller, Carlos
Project Coordinator
Belize Climate Change Project
January 11, 1999

Hambleton, Anne
Program Director
Center for Sustainable Development in the Americas (IUCN)
March 24, 1999

Orlando, Brett
Climate Change Program Officer
The World Conservation Union (IUCN)
March 23, 1999

Vasquez, Mary
Project Manager, Rio Bravo Carbon Sequestration Project
Programme for Belize (PfB)
January 11, 1999

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