Carbon-Based Conservation Projects in Traditional Communities in Ecuador and Suriname: An Analysis of Vulnerability and Conflict Potential

Gwendolyn Smith

Abstract

The global climate mitigation effort provides an opportunity for communities that are directly dependent on local resources to receive payments for ecosystem services for the protection of headwaters and forests and the replanting of deforested areas. The general perception is that local communities have a limited ability to participate in such efforts due to a lack of understanding of technical issues. In this study, however, the involvement of communities in decision-making is seen as crucial for project success. This paper assesses the vulnerability context of two collective communities in South America by using the Sustainable Livelihood Framework. The historic development of the tribe, outside dominance, internal values, and systems for decision-making and leadership are important factors in defining vulnerability and subsequently enabling development. Local communities can buffer shocks and overcome conflict when their traditional system of peace-building and decision-making is intact, thereby ensuring flexibility, transparency, and ownership in the implementation of projects.

Introduction

The meaning of biodiversity conservation has changed since its establishment as an environmental strategy in 1992. At that time, the consensus was that biodiversity conservation was about the protection of natural habitats and sustainable use of natural resources, and implementation of which focused on establishing protected areas to conserve the species within (Heller & Zavaleta, 2009). The majority of protected areas were established and managed by governments through funding from the United Nations, Global Environmental Fund, World Bank and other institutions. Subsequently, however, conservationists became aware that the protected area model would not be able to counter the increasing pressures on natural ecosystems because of its minimal infrastructure and personnel, averaging one field agent per 600 km2 (Kaimowitz, 2002).

When highly biodiverse areas came under the pressure of deforestation in the 1990s, the meaning of biodiversity conservation shifted towards the sustainable use of areas for ecotourism, certification of wood products, and marketing of non-timber forest products (NTFPs). For these activities, the local communities needed to be incorporated into the strategies for conservation. However, most conservation efforts have continued to ignore the needs of these, usually poor, communities by undermining their rights and livelihoods with displacement, denying them access to resources, and subjecting them to enforcement measures (Van Vliet, 2010). Conservationists are still learning about the social needs of communities and trying to successfully link biodiversity conservation and development. As a result, few of these efforts have been found profitable and conflict between local communities and protected area management are not uncommon (Southgate & Clark, 1993).

In 2007, biodiversity conservation was reframed for the second time because of the increasing effort for combating climate change. After it became evident that global forests are an important counterbalance to the world’s CO2 emissions (Ring, Drechsler, Van Teeffelen, Irawan & Venter, 2010), the United Nations Framework Convention on Climate Change (UNFCCC) agreed to compensate activities related to marketable payments for ecosystem services. These services include direct payments for protecting headwaters and forest, and indirect payments for halting deforestation and promoting reforestation (Fogel, 2002). However, these schemes are designed by and in favor of the “polluters” and are not expected to have substantial development benefits for the local communities that live in and from the forests. Once again, local communities living in the forest have to be involved, but now the schemes are more complicated due to multiple stakeholders and high-tech trading scenarios.
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Studies have revealed that carbon conservation projects are top-down and often result in conflict (Boyd, Gutierrez & Chang, 2007; Hagerman, Dowlatabadi, Satterfield & McDaniels, 2010). One reason for this conflict is that local communities are excluded from decision-making, usually because of time-related factors (Corbera, Kosoy & Martinez Tuna, 2007; Van Vliet, 2010) and inadequate framing (Bisaro, Wolf & Hinkel, 2010). Second, carbon projects have marginal profits due to high start-up costs and low global emission prices (Hagerman, Dowlatabadi, Satterfield & McDaniels, 2010). Third, local communities need some form of education or interpreters to understand the technical aspects of climate change (Gray, Bilsborrow, Bremner & Lu, 2008; Berkes, Colding & Folke, 2002; Lemos, Boyd, Tompkins, Osbahr & Liverman, 2007). Boyd et al. (2007) discuss the literature on carbon projects initiated in nature-dependent communities in Latin America, finding that trustees involved in the establishment of these projects often favor technical assessment over the social issues at the grassroots level.

Carbon projects offer a unique opportunity for improving biodiversity conservation as well as the social and economic development of local forest communities (O’Conner, 2008). In the largest standing forest, the Amazon rainforest, approximately one million indigenous peoples are involved in conservation efforts to protect the source of their daily livelihood (Moran, 1993). These local communities make economic and risk-related decisions regarding the development initiatives that are presented to them. Whether or not climate change mitigation efforts can be considered among these development initiatives is presently debated. It is expected that climate change efforts will provoke conflict, especially for nature-dependent communities (Nordas & Gleditsch, 2007), yet the drivers for climate conflict are diverse and not well understood. Understanding local communities’ sensitivities to conflict, including their hidden and non-rational systems, will provide more insight into the formulation of effective carbon-based conservation efforts.

The purpose of this research is to reveal the conflict potential in traditional communities when climate change becomes a driver for biodiversity conservation. Two case studies of indigenous communities with different development levels are presented: the Trio indigenous community in the tropical rainforests of Suriname and the Agua Blanca community on the Ecuadorian coast. The study uses the Sustainable Livelihood Framework (Scoones, 2005), which takes a holistic approach in assessing the role of the individual structures and the result of their interaction when conflict is not yet occurring, as is the case with climate change. With a focus on people, the framework enables an understanding of the specific assets that are present and/or needed to overcome shocks. The result of this vulnerability analysis will be used to assess the conflict potential of each tribe by using a number of participatory methods to understand each community’s sensitivities to conflict. The Strategic Conflict Assessment guidelines from the United Kingdom Department for International Development (DFID) (2002) are used to promote a systems approach and to assess the role of the individual structures and the result of their interaction.

Livelihood context

Community livelihoods include all social and material activities required for a means of living. Community livelihood is therefore defined by social, financial, physical, human and natural assets (Scoones, 2005). Analysis of the assets is a tool used to determine an inside-out picture of a community in terms of sustainability and development. The assets are based on the primary and secondary orders of Maslow’s hierarchy of needs, consisting of shelter, food, health and safety, and security (Maslow, 1943), and make up the skeleton of the Sustainable Livelihood Framework that focuses more specifically on the interaction between the community system and the outside environment. This framework was designed to facilitate and justify donor interventions (DFID), and through the framework, donors have both an organizational and sectoral perspective into a community’s livelihood strategy. In this way, livelihood is linked to internal and external processes and automatically brought into the vulnerability-adaptation dichotomy.

Vulnerability is described as a reaction to an outside stressor and can operate on different levels and scales (Pouloitte, Smit & Westerhoff, 2009). On the community level, scholars relate vulnerability to the risk, exposure, and the sensitivity of the community-system to natural stressors such as climate events (Smit & Wandel, 2006; Hahn, Riederer & Foster, 2009). Only recently have social evaluations of community risk been included (Smit & Wandel, 2006). Because each community has different assets and vulnerabilities, each has a unique way of adapting to shocks based on their previous exposure to similar situations (Larson, 2010). In this way, vulnerability is connected to the adaptive capacity of communities.

The literature provides four types of adaptation-vulnerability analyses for climate change (Smit & Wandel, 2006). The first type focuses on modeling the impact of climate change on communities (Parry, 2002). This research avoids going into detail about the internal processes that communities undergo to adapt to changes. The second type focuses on the specific measures that are taken to adapt to change, and often chooses between different options or scenarios (Adger,
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Arnelt & Tompkins, 2005; Smit & Wandel, 2006). The third body of literature focuses on measures against adaptation that are holistically calculated into an overall score for vulnerability. This type of research is promoted by the global climate policy debate, seeking to compare and contrast vulnerabilities of countries (O’Brien, Leichenko, Kelkar, Venema, Aandahl, Tompkins, Javed, Bhadwal, Barg, Nygaard & West, 2004). The fourth type of research focuses on the field level experiences of communities in adapting to climate change (Petheram, Zander, Campbell, High & Stacey, 2010).

In the dichotomy of vulnerability and adaptation, the fourth body of research provides an opportunity to study community livelihood and development. Because communities do not necessarily discriminate between climate change related programs and other development opportunities (Pouliotte et al., 2009), a holistic approach can provide further insight to the choices and trade-offs between livelihood opportunities. In this line of thinking, it is assumed that a community livelihood system is not a homogenous unit, and that each type of asset, as it behaves differently to outside shocks, contributes uniquely to the overall vulnerability. However, interactions between the different assets are not sufficiently considered in this livelihood vulnerability analysis. These internal dynamics are rather hidden and have often contributed to the failure of development interventions (Chambers, 1997; Petheram et al. 2010).

Hidden constructs are important factors in societies with a high level of interdependency such as traditional communities. Many traditional societies, including those examined in the present study, are directly dependent on local natural resources. For example, in Latin America alone, traditional communities depend on the forest for 35% of their income (Boyd et al., 2007). Traditional communities are built on relational networks (Lederach, 1995), and thus undergo frequent changes over time. These changing social positions are the result of power tensions between members that correspond to a change in an individual’s social capital (organization and network) and/or human capital (skills). Such a change can then influence the availability and distribution of other assets among tribal members, including financial assets. To understand these hidden interactions between assets, an amendment is needed to the sustainable livelihood framework.

One way to consider these internal dynamics is to facilitate community participation in assessing vulnerability. Van Vliet (2010) draws on the adaptation model of Smit and Wandel (2006) to map the vulnerability for climate change from a community perspective. She found that vulnerability context is highly interactive and changes rapidly over time, similar to findings by Vogel, Moser, Kaspersion & Dabelko (2007). Van Vliet (2010) proposes to use participatory vulnerability assessments for mapping risks and opportunities for development. However, this approach is only effective when communities perceive a risk. In many cases, for instance with climate change, risk is difficult to perceive (Weber, 2007).

Another approach for assessing hidden interactions is presented by Larson (2010). She underscores that understanding community perceptions is a tool to see hidden barriers and interactions that may have been missed otherwise. For example, Larson (2010) found that family health and safety are more important to communities than the health of the natural ecosystems. The research focused on the family system, which is an open system, constantly subject to change and moving in a forward direction of development. Because the family system functions at the community level, interactions between the family units (social capital) are unnoticeable. Larson’s (2010) diversity approach complements the more homogenous system practiced with the Sustainable Livelihood Framework.

To illuminate hidden local constructs, we propose to adapt the DFID Sustainable Livelihood Framework to traditional community development. Traditional community development holds the promise of future betterment based on communities’ learning processes and past, current and future assets (Chambers, 1997; Berkes, 2008). This adapted definition of development suits the dynamic nature of assets based on the collective, dependency nature of the groups. The definition implies their sacrifice of self-interest and complies with the direction of the group (Komarrajju, Dollinger & Lovell, 2008). Also, the different types of assets can provide more information about the cooperative or conflict potential of development strategies. It should be noted that this methodology is specifically attuned to collective societies that capture hidden structures. The link between leadership, development, and conflict is only valid in this context, and not applicable to individualistic societies.

Within this framework of development, livelihoods of traditional communities depend on seven rather than five assets, as political and historical assets are added to the analysis of social, human, financial, natural, and physical assets. The historical asset includes the developmental path of the tribe. In tribal communities, past events are transferred from older to younger generations as teachings on ethics, enemies, events, spirits, and other symbols necessary for their cultural existence (Geertz, 1973). Historical events strengthen the collectivity of tribes (Timura, 2001), and hidden social memory drives their development approach. For instance, in the Trio indigenous community in Suriname, the tribes place great value on “keeping their word” in development projects because of a previous event in which they were scammed by another tribe (a swindler is called pianakoto).
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A second community characteristic to consider is political capital. With growing westernization, tribal leaders have combined traditional leadership with western models and incorporate these into their societies. Also, man tribal leaders are involved in the global movement of human rights on indigenous peoples. For instance, the community of Agua Blanca in Ecuador has obtained both a western and traditional model of leadership succession; candidates are put forward by consensus, after which each community member votes for the preferred candidate. Thus, political ambitions are embedded in the social institution (Avruch, 1998) and seem to have an influence on their development path.

In order to understand the livelihood and development link of communities, there is a need to assess a complete picture of assets from each community, including their historical and political capital. In this way, hidden structures and processes become known and the livelihood strategies and choices can be better understood. The question of whether carbon-based conservation initiatives are seen as a valuable option for sustainable development by collective societies can then be answered. The assessment can provide more insight into the conflict potential of carbon-based initiatives in traditional societies.

**Case study of community in Machalilla National Park, Ecuador**

The case study was undertaken during a Conflict and International Development course from Nova Southeastern University in Ecuador in July-August 2010. Three in-depth interviews were taken from community members in a non-structured manner, including one traditional leader, one woman, and one man from the community. Leading conservationists and politicians in Ecuador provided additional information on the conservation system and visions from the Government, respectively. Impressions from the natural and cultural environment were obtained by visual observations. Document analysis was performed after return from the site. Data analysis has resulted in an ethnographic description of the livelihood strategy and conflict potential of the community, and is presented below.

**Ecuador is made up of various ecosystems that provide a highly diverse landscape.** One of these ecosystems is located on the Pacific coast and comprises 128,000 ha of marine and coastal habitat, and includes fog and dry forest (nature conservancy). As one of the most beautiful countrysides along the Ecuadorian coast, the region was protected by establishing a national park in 1979. However, in the 16th century, the community of Agua Blanca inhabited the region until the Spaniard colonist forcibly removed them from the land. The Spanish conquest is a significant event in the community’s historical and present livelihood, because it diminished the population until 1930s, when 45 families proudly returned to their ancestral land (historical asset).

To facilitate their return to the land, the community studied the Ecuadorian system and understood that security to land (usufruct title) was only possible with a minimum settlement of 21 families. Since their return, they have built a town and tripled the population as a community livelihood strategy. The land they occupy is full of cultural heritage. Human graves and approximately 600 traditional structures are dispersed over the territory and date back to 800-1500 BC. Bamboo huts with thatched leaves are a visual mark of internal power struggles between leaders, indicating that these (healthy) tensions have been an issue in the past. Tensions in leadership have been resolved by way of the establishment of a hybrid system of traditional and western influences (political asset).

Cultural leadership is appointed to a council of five members, consisting of a president, vice-president, treasurer, secretary, and syndicate. The council is chosen every eight years by votes from individual community members, after the candidates have been traditionally put forward. The council serves as the bridge between the community and the outside western system, especially for the discussion of the generation of income. One such activity is ecotourism. Tourism has provided financial security for the tribe for the last 22 years and in this arrangement the community receives US 5 from every entrance ticket of US$12 for their services as guides. Also, the women sell ceramics to tourists in a special hut near the entrance building of the tourist area. Maintaining this important income generating activity is a livelihood strategy of the community (financial asset). However, the community decided in the assemblea that the conservation of land and forest is their ethical (non-monetary) obligation to nature.

Apart from ecotourism are communities engaged in subsistence agriculture and fishing (natural asset). The Agua Blanca community members were once transporters and traders of goods to the nearby town of Puerto Lopez, reaching as far as the countries of Mexico and Peru. The community still lives traditionally from the land, and was particularly dependent on the Buena Vista River. However, since the mid-1990s, the river has lost more than 80% of its volume, most likely due to the effects of El Niño and climate change. Water for agricultural irrigation is now provided by a nearby lake, while drinking water is extracted from a well with a pump and piping system. The community lives fairly close to an access road, which leads to all parts of Ecuador, as well as providing for electricity and telephone access (physical asset).
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The community in Machalilla National Park, Ecuador has obtained both a western and traditional model of leadership succession; candidates are put forward by consensus, after which each community member votes for the preferred candidate. Thus, political ambitions are answered. The assessment can provide more insight into the conflict potential of carbon-based initiatives in traditional societies.

In order to understand the livelihood and development link of communities, there is a need to assess a complete picture of assets from each community, including their historical and political capital. In this way, hidden structures and processes are involved in the global movement of human rights on indigenous peoples. For instance, the community of Agua Blanca in Ecuador has obtained both a western and traditional model of leadership succession; candidates are put forward by consensus, after which each community member votes for the preferred candidate. Thus, political ambitions are answered. The assessment can provide more insight into the conflict potential of carbon-based initiatives in traditional societies.
The community has one elementary school with limited supplies and one teacher. The community has only a few people who studied in college. However, the role of women in the community is changing, and one woman is now functioning as treasurer in the assemblea of leaders. Tourist guides speak the national language and were trained by a not-for-profit organization in a short project. Skills are obtained traditionally and transferred through gatherings of men and women in the traditional village, which is closed off to tourists (human capital). This implies that the Agua Blanca community likes to retain its privacy regarding traditional cultural practices. One sacred activity is the collection of plants for medicinal purposes, which is practiced by the majority of the tribal members. The community sees a need for reinstating a traditional spiritual leader and currently a shaman is being trained. The candidate shaman practices Catholic religion and this fits with the missionary-established Church in the village. In this way, traditional and western cultures are embedded into one system. Thus, cultural preservation is an important part of the livelihood strategy in Agua Blanca (social asset).

Agua Blanca is experiencing the effects of climate change through drying rivers and it is aware of the possibilities for receiving monetary payments for the conservation of forests. However, the Agua Blanca community members do not have the property title to this land. The community heard from other Indians participating in carbon-based conservation that the projects initiated divisions in the tribe leading to the loss of land and culture. Until three years ago, all planning of land was coordinated by the central government. A change in the constitution gave jurisdiction to local governments to allocate and manage state matters by themselves. The Agua Blanca community is therefore reluctant to participate.

The above description of Agua Blanca demonstrates that the community adheres to certain values and beliefs embedded in history and culture and has developed its livelihood strategy accordingly. The community is practicing conservation in terms of ecotourism and can easily step into the new frame of carbon-based conservation because of their acquaintance with the money economy. Their major livelihood strategies are: 1) keeping close ties to the land, 2) population establishment and growth, 3) promoting cultural preservation and cohesion, and 4) a strong promise for conservation. These strategies are implemented through a model of compromise; as demonstrated in the case of institutionalizing the shaman and participation in outside projects. Thus, the community creates a mixed model of traditional and western systems that promotes cooperation and avoids conflict.

Case study of Trio indigenous community in Kwamalasamutu, Suriname

This case study is based on the researcher’s relationship with the Trio tribe from 2004-2010. The researcher has interacted with the Trios once a month through participant observation, conducted 15 non-structured interviews, as well as focus-group sessions with elders and community members. Additional data was acquired from research documents administered by the not-for-profit organization Amazon Conservation Team (ACT). ACT has worked with the Trios for more than 28 years in preserving biodiversity, health, and culture. The information was analyzed by the researcher and is presented in the following ethnographic description.

The Trios indigenous communities have practiced a forest culture since 4000 BC in the southern part of Suriname, near the northern border of Brazil. The formerly nomadic community has retracted to the southern part of the country out of fear of Dutch colonists and former African slaves who moved into the rainforest after 1863 (historical asset). First contact was established with missionaries, who constructed airfields and transformed the community with teachings of the bible. A conglomerate of 15 communities with shared history, culture, and language gathered together in the village of Kwamalasamutu to receive bible school and western healthcare. Leaders are chosen by succession and the new leader is always the son of the former tribal leader. Trio tribal leaders receive a stipend from the government for time spent administrating the tribe. Decision-making processes are traditional, with power tensions, face saving, and harmony as primary features. However, the missionaries co-appoint the tribal leader to ensure domination. For the last 50 years, the Baptist religion has influenced traditional leadership by giving advice to important decision-making processes (political asset).

The Trio area consists of lowland forest with a high number of fresh water rivers that function as the main transportation routes. The Trios use a farming system that is based upon shifting cultivation of agricultural crops. Because of the large area of suitable land, the Trios are free in using the land for hunting, fishing, weapons, body care, construction materials, medicine, planting crops, and rituals (natural asset). They have no title on land but due to the remoteness of the tribe, there is no enforcement system present. The Trios have compiled an ethnographic map of their lands to convince the government to grant them the title to the land (political asset).

Trios rely on the natural environment for cash income, for example, traditional handicrafts and medicines, and the selling of live animals, bush meat, and fish. Enterprises are non-existent because most efforts are done collectively. Their
selling of live animals, bush meat, and fish. Enterprises are non-existent because most efforts are done collectively. Their there is no enforcement system present. The Trios have compiled an ethnographic map of their lands to convince the medicine, planting crops, and rituals (natural asset). They have no title on land but due to the remoteness of the tribe, area of suitable land, the Trios are free in using the land for hunting, fishing, weapons, body care, construction materials, routes. The Trios use a farming system that is based upon shifting cultivation of agricultural crops. Because of the large The Trio area consists of lowland forest with a high number of fresh water rivers that function as the main transportation asset).

Baptist religion has influenced traditional leadership by giving advice to important decision-making processes (political primary features. However, the missionaries co-appoint the tribal leader to ensure domination. For the last 50 years, the administrating the tribe. Decision-making processes are traditional, with power tensions, face saving, and harmony as is always the son of the former tribal leader. Trio tribal leaders receive a stipend from the government for time spent of Kwamalasamutu to receive bible school and western healthcare. Leaders are chosen by succession and the new leader the bible. A conglomerate of 15 communities with shared history, culture, and language gathered together in the village contact was established with missionaries, who constructed airfields and transformed the community with teachings of first the northern border of Brazil. The formerly nomadic community has retracted to the southern part of the country out of the fear of Dutch colonists and former African slaves who moved into the rainforest after 1863 (historical asset). First The Trios indigenous communities have practiced a forest culture since 4000 BC in the southern part of Suriname, near present in the following ethnographic description.

Case study of Trio indigenous community in Kwamalasamutu, Suriname systems that promotes cooperation and avoids conflict. These strategies are implemented through a model of compromise; as demonstrated in the case of institutionalizing the establishment and growth, 3) promoting cultural preservation and cohesion, and 4) a strong promise for conservation. With the money economy. Their major livelihood strategies are: 1) keeping close ties to the land, 2) population terms of ecotourism and can easily step into the new frame of carbon-based conservation because of their acquaintance in history and culture and has developed its livelihood strategy accordingly. The community is practicing conservation in the above description of Agua Blanca demonstrates that the community adheres to certain values and beliefs embedded into one system. Thus, cultural preservation is an important part of the livelihood strategy in Agua Blanca. This is reinforced by the fact that the Agua Blanca community has the traditional spiritual leader and currently a shaman is being trained. The candidate shaman practices Catholic religion purposes, which is practiced by the majority of the tribal members. The community sees a need for reinstating a traditional village, which is closed off to tourists (human capital). This implies that the Agua Blanca community likes organization in a short project. Skills are obtained traditionally and transferred through gatherings of men and women in treasurer in the assemblea of leaders. Tourist guides speak the national language and were trained by a not-for-profit organization in college. However, the role of women in the community is changing, and one woman is now functioning as the community has one elementary school with limited supplies and one teacher. The community has only a few people (social asset).
sensitive to conflict. Similarly, the isolated nature of Trios is now reflected in their struggle for development. Trios want the fact that they were removed from the land before. Thus, the tribes see living on the land as a priority and the issue is underscored by Humpreys (2005), who finds that historic events play a larger role than future events in natural resource conflicts. In our analysis, the Agua Blanca community wants to reinforce their ties to the land, informed by the historical demonstration that the history of tribes is closely relates with their goals and the development of conflicts. This is although the literature shows that collective societies usually avoid conflict if it is not possible to resolve, the analysis 4) acquiring income for obtaining status goods in Trio society. Trios implement these strategies by accommodating outsiders and their accommodating approach can elicit conflict when outsiders provide incompatible opportunities to the tribe.

Conflict-potential for carbon-based development projects

The vulnerability assessment maintains that development projects should create a holistic picture to be able to reveal hidden structures operating in collective societies. However, the vulnerability context of the communities provides insufficient information about the potential conflicts that may occur when initiating carbon-based conservation projects. Therefore, conflict analysis gives further insights in the existing structures to overcome external shocks, the conflict actors and the dynamics that may initiate conflict between the actors, according to DFID (figure 1).

Although the literature shows that collective societies usually avoid conflict if it is not possible to resolve, the analysis demonstrates that the history of tribes is closely relates with their goals and the development of conflicts. This is underscored by Humpreys (2005), who finds that historic events play a larger role than future events in natural resource conflicts. In our analysis, the Agua Blanca community wants to reinforce their ties to the land, informed by the historical fact that they were removed from the land before. Thus, the tribes see living on the land as a priority and the issue is sensitive to conflict. Similarly, the isolated nature of Trios is now reflected in their struggle for development. Trios want
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outsiders provide incompatible opportunities to the tribe. Outsiders into their system While beneficial in many respects, their accommodating approach can elicit conflict when and 4) acquiring income for obtaining status goods in Trio society. Trios implement these strategies by accommodating resources, 2) an openness to modernization, including western education, 3) preserving culture and potential trade secrets and better opportunities are presented. The Trios livelihood strategy consists of: 1) acquiring the right to land and however, these are based on their own development goals. The exploration of Non Timber Forest Products (NTFP) has been chosen as their main activity for obtaining income; however, it is unclear if this is an intermediate activity until new however, these are based on their own development goals. The exploration of Non Timber Forest Products (NTFP) has

As mentioned in the above description, the Trios are opportunistically adopting new developments into their lifestyle; imrove their status.

The community is aware that nature is changing and blame observed climate changes on disrespectful ways of living with the forest. The Trios possess insufficient western knowledge to understand the mechanics and opportunities of carbon-based conservation. However, conservation and acquiring land rights are high priorities for the Trios. For instance, in 2004, the Trios chief sent members to live in all corners of the land as a means of traditional demarcation.

The community is aware that nature is changing and blame observed climate changes on disrespectful ways of living with the forest. The Trios possess insufficient western knowledge to understand the mechanics and opportunities of carbon-based conservation. However, conservation and acquiring land rights are high priorities for the Trios. For instance, in 2004, the Trios chief sent members to live in all corners of the land as a means of traditional demarcation. Western goods are seen as a status symbol. Projects are therefore seen as opportunities to create wage labor for more Trios to

Trios have always been open to receiving monies for purchasing western goods, e.g., sugar, salt, and batteries. Western income-generation such as ecotourism has not succeed due to 1) the gap between western and traditional systems and 2) a lack of familiarity with the monetary economy because of its fairly recent introduction five years ago. The community Protecting the tribal recipes is an important strategy for securing Trio income. However, other non-traditional sources of asset).

outsiders. In the last year, these health services are providing a source of income to the shamans and their apprentices The Trios use more than 100 plants for medical purposes. They also provide health services to both tribal members and material resources provides formal primary education to children.

The Trio youth usually do not succeed in finishing elementary school because of the cultural and language barriers The Trio youth usually do not succeed in finishing elementary school because of the cultural and language barriers (native language of Trio versus the national language of Dutch). Young women and men who do complete school usually The Trio youth usually do not succeed in finishing elementary school because of the cultural and language barriers (native language of Trio versus the national language of Dutch). Young women and men who do complete school usually (financial capital). As such, the shamans make an herbal extract as a means of earning money (financial asset).

The Trios use more than 100 plants for medical purposes. They also provide health services to both tribal members and material resources provides formal primary education to children. The community has a low level of community –based organization. Except for some women organizations, the primary organized physical structures – wooden houses on stilts - are made from traditional forest materials. Petroglyphs and other stone drawings, some of which are approximately 5000 years old, are found near the waterways and shelter places. The Trios
to participate in development at all costs, with or without a dependency-relationship. However, implementing development projects without addressing the basic human needs of Trio people will initiate conflict.

Figure 1: Comparative analysis of conservation-related conflict potential in research areas

<table>
<thead>
<tr>
<th>Ecuador</th>
<th>Suriname</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Background</strong></td>
<td>Sustainable development initiatives may conflict with the values and beliefs of the Agua Blanca community.</td>
</tr>
<tr>
<td><strong>History</strong></td>
<td>No recent history of conflict.</td>
</tr>
<tr>
<td><strong>Structure</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Political</strong></td>
<td>International: The global community pushes third world countries to avoid deforestation and protect forests to lower greenhouse gas emissions. National: Ecuador has no structures in place to avoid influx of outside organizations in carbon trading. Local: The Agua Blanca community works collaboratively with the Government in management of national park.</td>
</tr>
<tr>
<td><strong>Economic</strong></td>
<td>International: Involvement of global financial institutions, brokers and civil society for carbon trade. National: Ecuador is in the process of participating in the global carbon trade. Local: Involvement of community in earning money through organized interaction with outsiders - ecotourism. Community has basic services (electricity, water) for development projects.</td>
</tr>
<tr>
<td><strong>Social</strong></td>
<td>International: Strong movement for indigenous human rights for self-actualization. National: The forest-dependent community is living in the lowest poverty situation in Ecuador and has only usurious rights on land. Local: The community is seeking for more employment opportunities within the urban areas.</td>
</tr>
<tr>
<td><strong>Actors</strong></td>
<td>Local community: Agua Blanca community wants to survive and earn income through conservation. State of Ecuador: The country wants to participate in the global carbon trade. Global community/civil society: The interest is to use the forests of Ecuador for “buying” carbon emissions. Non-profit organizations: Guidance of communities for fame and promotion of methodologies.</td>
</tr>
<tr>
<td><strong>Dynamics</strong></td>
<td>Event trigger: Conflict will be initiated by contacts with local communities when not involving the state. Strength of greed: The state of Ecuador wants to obtain money through forest conservation to provide for country’s income. The global community institutionalized a capitalistic scheme for forest protection.</td>
</tr>
</tbody>
</table>

The conflict potential of carbon-based project is comparable to that of other development projects. Sikor, Stahl, Enters, Ribot & Singh (2010) and Petheram et al. (2010) promote the implementation of carbon projects in collaboration with other community development initiatives, because they are not seen as separate by local peoples. Development is dependent on the strength of the community to implement such projects. In Agua Blanca, the community has a well-established leadership system to deal with western development projects. The community leadership overcame the acculturation shock and created a structure that has financial authority. Such authority over finances is believed to strongly connect with communities’ decision-making ability (McDaniel, 2002). In contrast, individual leaders of the Trios tribe appear to be more interested in maintaining cultural and physical power because of ongoing struggles with outsiders and insiders (influenced by outsiders). Similar to the Shuar tribe in Ecuador, the Agua Blanca people have maintained a traditional cultural identity while institutionalizing western development (McDaniel, 2002). Such mixed systems accommodate leaders that acquire skills in
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Similar to the Shuar tribe in Ecuador, the Agua Blanca people have maintained a traditional cultural identity while institutionalizing western development (McDaniel, 2002). Such mixed systems accommodate leaders that acquire skills in
both systems, traditional and western. These leaders need to be legitimate in the eyes of westerners and their own community (Lauer, 2006), and they need to have highly developed negotiation and peacemaking skills to overcome conflicts between and within the systems. It was evident from the interviews that the community was well aware of the involvement of other communities in carbon-based development projects. Thus, Agua Blanca leadership is well connected, and maintains a strong external network, which is an indicator of overall community resilience and leadership (Bebbington & Perreault, 1999).

The Agua Blanca community has successfully transformed their traditional leadership, which was historically based on knowledge, to a system based on other resources (Lauer, 2006). In contrast, the Trio tribe seeks funding for basic needs such as health and education, by collaborating with outside funding organizations, without integrating the systems (Ziegler-Otero, 2004). This leads to a dependency-relationship, reflective of weak social capital (Bebbington & Perreault, 1999). The Trios community has not been able to overcome the external shock and is at risk of being swallowed by the outside system. In comparison, the Huaorani tribe of the Ecuadorian Amazon lived in isolation and was overwhelmed by the support for basic needs from the oil companies who were extracting oil in their territory (Ziegler-Otero, 2004).

Conclusion

This assessment sought to provide an understanding of the livelihood strategies of both communities, as well as an in-depth view of their historical values. These values are embedded in the leadership systems of each group. Because leaders are often the primary point of contact with outsiders, the leadership structure mirrors a community’s worldview, and correspondently their conflict potential. In our assessment, the Agua Blanca community attempts to balance traditional culture and practices with participation in development projects and the wider money-based economy. This mixed model of traditional and western practices is reflected in their leadership council. In the Trio community, a similar pattern is observed; however, traditional Trio leadership is less open to change and, therefore, more dependent on outsiders for decision-making, a trend which is reflected in tribal attitudes towards development.

Leadership is believed to be a significant factor in the success of development projects, especially in high-tech projects related to carbon-based conservation (Corbera et al. 2007). The ability of leaders to function within the traditional and the western system and between traditional and western systems may be more important than the educational level of a tribe. For instance, the Huaorani tribe had well educated leaders but the tribal leadership was unable to overcome the pressure of the oil companies in Ecuador and lost legitimacy in the eyes of their own peoples. As a result, conflict occurred and the leadership became divided in favor of the oil companies (Ziegler-Otero, 2004). In cases in which leadership cannot accommodate the pressures of development, conflict is likely to occur. This assessment indicates that community leadership in development projects function better when principles are based on equity. One may see inequities between traditional and western societies, therefore, as a unique opportunity for improving the social and economic equity of local forest communities (O’Conner, 2008; Boyd et al. 2007). However, as revealed in these case studies, equity between the dominant western system and traditional leadership systems does not exist. Rather, greater social stability and development should be pursued through adaptive processes.

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References


Ring, I. Drechsler, M. Van Teeffelen, A. Irawan, S. & Venter, O. (2010). Biodiversity conservation and climate change:
What role can economic instruments play? Current Opinion in Environmental Sustainability 2, 50-58.


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