

The Campesino to Campesino Program of Siuna, Nicaragua

Context, accomplishments and challenges

Nelson Cuéllar and Susan Kandel



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The study combined a literature review of secondary sources; a review of primary documents; field work in Siuna, Nicaragua (April 2004) that included participation in workshops with leaders, farmers, promoters and community self-systematizers; and interviews with Siuna PCaC leaders and with informants in Siuna and Managua. This paper was enriched by contributions from international workshops and exchange visits held in San Salvador, El Salvador (May 2004, methodological workshop), Petén, Guatemala (October 2004) and Costa Rica (July 2005), where preliminary findings were reviewed and discussed with community leaders and members of the project’s steering and advisory committees. The document also includes findings from the report commissioned to Eduardo Baumeister about the development of the Siuna municipality and the basic characteristics of the farms.

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Contents

Methodology and acknowledgements	iii
Introduction	1
Nicaragua's North Atlantic Region: Historical Background and Overview	3
The History of Nicaragua's North Atlantic Autonomous Region	3
Declaration of the BOSAWAS Biosphere Reserve	9
Restrictions on Access to the BOSAWAS Core Zone	11
The Lack of a Proposal for the BOSAWAS Buffer Zone	12
BOSAWAS: The Conjunction of Several Frontiers	12
Origins and Development of Siuna PCaC	15
PCaC's Origins	15
Stages in PCaC's Development	16
External Support: Features of the Accompaniment to PCaC	26
A Look at the Current Context	29
Agricultural and Livestock Intensification in Siuna	29
Property Rights Dynamics and Markets: A Serious Obstacle to Governance	33
RAAN: Tendencies from the Central Government and Foreign Aid Agencies	34
Siuna PCaC's Accomplishments and Contributions	39
Campesino Integration, Dialogue and Reconciliation	39
The Development and Accumulation of Social and Human capital	39
PCaC and Buffer Zone Management	40
PCaC's Contribution to a New Campesino Identity	41
Challenges and Opportunities for Siuna PCaC	43
References	47

Introduction

Siuna and the North Atlantic Autonomous Region (RAAN) in Nicaragua have generally been characterized as ungovernable territories heavily influenced by the presence of external actors. In recent years, the region has been a zone of enclaves (lumber, mining, and agro-industries, the destination of waves of internal migration from the country's central and Pacific regions, the scene of military conflicts related to global cold-war politics, and a region of increasing cattle ranching and accelerated expansion of the agricultural frontier, all of which have left their mark. This, along with an incipient regional autonomy and the creation of the BOSAWAS Biosphere Reserve, have contributed to new conflicts over access to land, exacerbating the already ungovernable conditions in Siuna.

These processes coalescing around Siuna in the early 1990s led to the creation of the Campesino to Campesino movement in this municipality and directly determined the characteristics of the organization. In such a context of ungovernability and social disintegration, local peasant farmers adopted slash and burn agriculture as a survival strategy in what was the BOSAWAS buffer zone. Facing restrictions, they in turn searched for alternative farming methods to meet their food security challenges and to restore law and order.

In response to growing insecurity, the Programa Campesino a Campesino (Farmer to Farmer Program or PCaC in Spanish) of the National Union of Farmers and Ranchers (UNAG) promoted and supported peasant-farmer experimentation and the accumulation of social and human capital. This support responded to people's needs because of Siuna's existing organizational practices, where most local people had been linked to the Sandinistas or the Contras.

In a relatively short period of time, PCaC demonstrated that it was possible to transform local farming methods, replacing swidden agriculture with a variety of management practices based on green manure cover crops that ensured food security for families without expanding land use. This contributed to a switch from traditional shifting agriculture to sedentary agriculture, that is to say, peasant families producing crops on stable farms.

In this way the Campesino to Campesino movement in Siuna helped slowing the advance of the agricultural frontier; improved food security; created a peasant network that strengthened governance in the region; added a social and productive component to the management of the BOSAWAS buffer zone; built a new identity for campesino farmers capable of transforming natural resource management and protecting the environment; and initiated a process of campesino innovation that led to new organizational structures and strategies for strengthening livelihoods that go beyond food security.

Siuna PCaC has also gone through a process that included not only the technical and methodological accompaniment of different campesino strategies, but also, relationships with actors whose approach to assistance was not always in sync with the empowering nature of the campesino to campesino methodology. Still, PCaC strategies led to the development of new strategic proposals to strengthen the sustainability of the BOSAWAS reserve, as well as innovative social and productive proposals with implications for territorial management.

However, the current context still poses challenges to the accomplishments achieved to date. A new wave of migration, expansion

of agriculture and ranching, the territorial expression of globalization in the North Atlantic Autonomous Region and the corresponding logistical corridor to Port Cabezas (also known as Bilwi) are driving the land market and have a visible impact. This represents a serious threat, particularly due to persistent disputes – still unresolved – over property rights. Likewise, the region continues to be subjected to strategies being forcefully pushed by external actors.

This context demands that the Campesino to Campesino movement take steps toward a territorial perspective, and seek greater ties with territorial partners to ensure that it gains a favorable position in all the above-mentioned dynamics. Internally, PCaC is facing the challenge of its evolution as an institution. Not only does it have to address the expansion of its strategy of promoting widespread implementation of natural resource management in Siuna and deal with the process of introducing changes in the emerging community groups, which are clamoring for accompaniment in new areas, it also has to make connections with other stakeholders in the territory to solidify a new perspective and design a joint proposal for the territory's sustainable social, productive and environmental management.

The first section of this report presents some features of Nicaragua's North Atlantic

Autonomous Region. They are helpful for understanding the role played by external actors attracted to the wealth of natural resources; attempts made by the Nicaraguan government to have a presence in the region; and some of the historical problems linked to land rights, which were magnified by the BOSAWAS conservation strategy, characterised by the lack of a proposal to manage the buffer zone.

The second section discusses the conditions that contributed to the creation of Siuna PCaC, its evolution and the type of external support it has received.

The third section describes the current situation in Siuna, marked by expansion in agriculture and ranching; the dynamics of land rights acquisition and some of the proposals developed by the central government and external assistance agencies.

The fourth section highlights the principal achievements of PCaC Siuna and their implications for governance, the accumulation of social and human capital, and also the contribution to a campesino proposal for buffer zone management and a new peasant identity.

Finally, the fifth section lays out the primary challenges and opportunities this valuable experience is facing, based on the analysis of its achievements and of the current context.

Nicaragua's North Atlantic region: Historical Background and Overview



Nicaragua's North Atlantic region is a territory that has been heavily influenced by outsiders since British influence (15th to 19th centuries) and United States involvement during the first half of the 20th century. Later, this territory was used as an extractive enclave (lumber, mining, and agro-industry); as an escape valve for social pressure resulting from the collapse of the agroexport model and the lack of access to land by the peasant population in the Pacific region. It also played an important military role during the Somoza and Sandinista administrations.

During these various stages, indigenous communities made alliances with external actors to maintain control over their territories. The Nicaraguan Atlantic or Caribbean Coast region reflects the difficulty the Nicaraguan government has had integrating this territory to the dynamics of the dominant central and Pacific regions. Siuna, one of the seven municipalities of the North Atlantic Autonomous Region (*Región Autónoma del Atlántico Norte* or RAAN), is the scenario of serious conflicts over access and rights to land, which were compounded by the declaration of the BOSAWAS Biosphere Reserve (see Map 1), an initiative propelled, once again, mainly by external actors, which rekindled demands related to the region's historical problems.

The History of Nicaragua's North Atlantic Autonomous Region

In contrast to Nicaragua's Pacific and central regions, the Atlantic coast remained essentially isolated from 16th century Spanish conquest

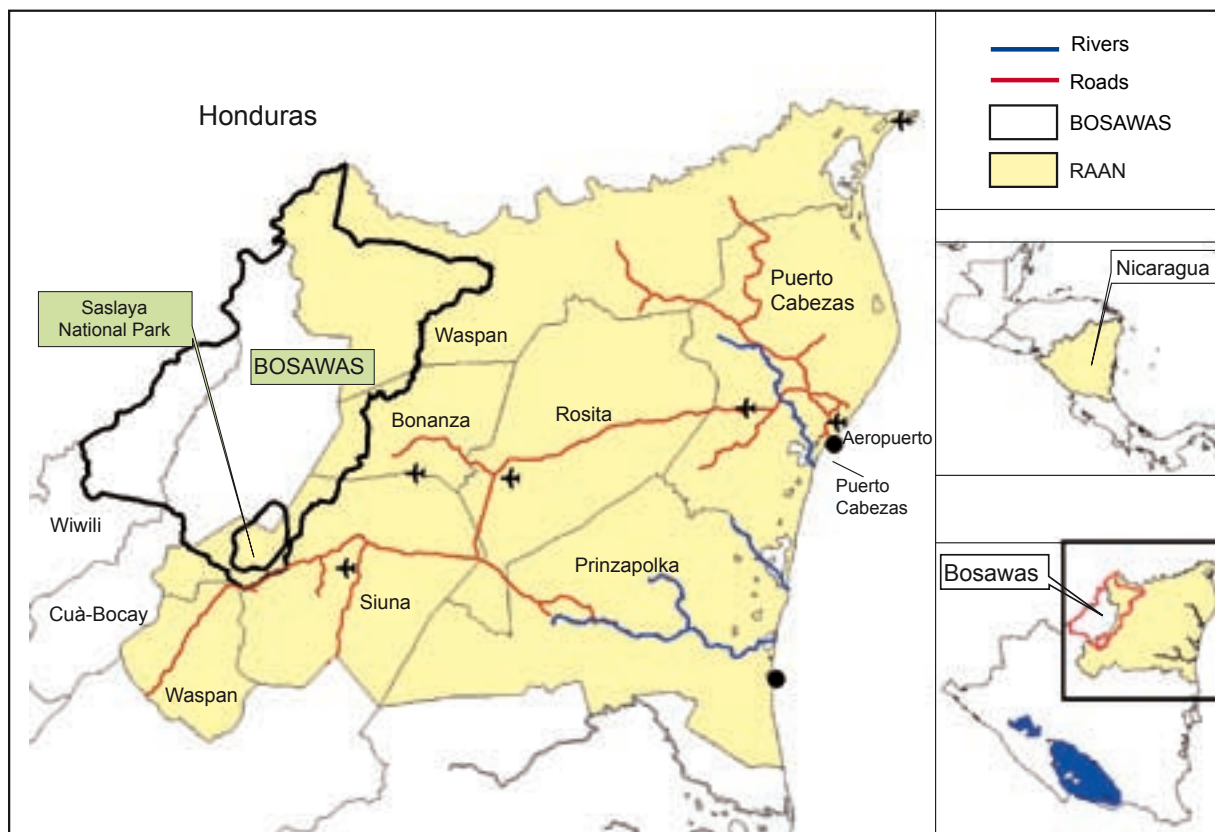
and influence.¹ This region – covered by a vast and impenetrably dense tropical rain forest – was strongly influenced by European pirates, mainly British, who, like the Spaniards, wanted to expand their domain and exploit natural resources.² However, a united front against the Spanish monopoly by Atlantic coast indigenous peoples and the British led to a British-indigenous alliance based on the defense of territories that had traditionally been under indigenous control. This alliance allowed attacks on cities under Spanish control and by 1678, the British had already created a Miskito kingdom that had not previously existed in the indigenous culture but that constituted a clear artificial structure for the purposes of territorial control. Although, it had a limited function, the Miskito kingdom existed for nearly two centuries (Envío, 1981).³ Following

¹ Thompson (n.d.) and Ortega Hegg (1997) refer to the dichotomy that arose between the indigenous peoples as a result of the Nicaraguan colonial process. Those who suffered Spanish colonization in the country's Pacific and central regions and the indigenous peoples of the Caribbean Coast where the British influence was strong belong to two essentially differentiated territories, which even now are only weakly integrated, with each region maintaining its own culture.

² In 1630, the British established a trading post near the mouth of the Coco River and began logging operations for the purpose of providing materials to repair and build their naval fleet. Later, they exported hardwoods such as mahogany (*Swietenia macrophylla*) and Santa María (*Calophyllum brasiliense*), and later on, pine (*Pinus caribaea* var. *hondurensis*). In 1776, the British had several sawmills on the Atlantic Coast that exported timber to the British colonies in the Caribbean and to Europe (Andersen, 2003). The British also had begun tapping rubber, which came to be an important product in the region's economy; however, this impact was fleeting, since around 1879 rubber prices fell and rubber lost its sway.

³ As a result, the Miskito kingdom was primarily a product of the British strategy against the Spaniards' colonial monopoly in Nicaragua, and was created as an essentially political structure, which lasted despite treaty requirements that England withdraw from Spanish territories (Mattern, 2002).

Map 1. Nicaragua: Present Boundaries of the North Atlantic Autonomous Region and BOSAWAS



Source: Nicaraguan Atlantic Biological Corridor

Central American independence in 1821, the British reoriented their domination through the declaration in 1843 of a British Protectorate over the Mosquito Coast, a legal mechanism to protect their interests in that region which lasted until 1860, when the Nicaraguan government exerted its claim over the territory in the Treaty of Managua, putting an end to the protectorate (CACRC, 1998). However, this claim did not end British extractive activities. In fact, there was an exponential surge in the exploitation of natural resources, similar to what would happen in the 1870s with rubber and in the 1880s with the gold fever, following decades of rumors about gold deposits (CACRC, 1998).

By 1884, some 22 indigenous communities had recognized Nicaraguan sovereignty over the Atlantic coast, leaving behind its status as a protectorate and subkingdom of England, which also created the need to have communities rights over their lands recognized and formalized. Ten years later, the government of Nicaragua, with United States support, issued the declaration of “Reincorporation of the Mosquitia”. The Harrison-Altamirano Treaty of 1905⁴ between

England and Nicaragua was intended to resolve the problem of communities’ rights, through the creation of the Mosquito Coast Titling Commission. But in practice, of some 500 communities, only 22 were awarded titles (around 100,000 ha), while the rest of the territory remained without the legal recognition implicit in property titles (Andersen, 2003).⁵ By 1909, 10% of the Mosquito coast had been granted to U.S. investors who would exploit the region’s mineral and timber resources and establish banana plantations (Envío, 1981).

In addition, the United States began a military occupation that lasted over two decades, replacing prior British domination. By 1931, this presence, along with the establishment of enclaves of U.S. capital, resulted in considerable

⁴ In this treaty England ceded all rights as Protectorate over the indigenous peoples of the Mosquito Coast and recognized the sovereignty of Nicaragua over the region.

⁵ The Moravian Church established in 1847 by German missionaries in the region was a strong, influential presence in the communities that received property titles between 1915 and 1920. This church had been (CACRC, 1998).

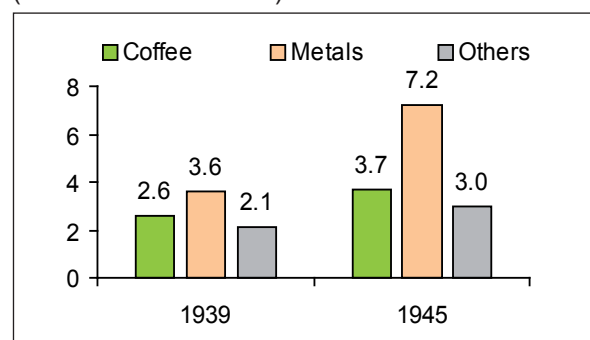
growth in exports, primarily to the United States. The main exports were gold, rubber, mahogany, cedar, pine and bananas (Envío, 1981). In the case of timber, by the 1940s, over 400,000 hectares ha of forest had been felled, primarily of pine and precious woods such as mahogany. This was done independently from the Nicaraguan government; the amount of timber harvested was underreported and officials were bribed so that U.S. companies could evade paying taxes (Thompson, n.d.).

U.S. enclaves on the Caribbean Coast were magnets for population groups. However, in the case of U.S. banana enclaves, increasing production costs, low soil fertility, pests such as the Panama disease (*Fusarium wilt*) and a devastating hurricane in 1941 brought the end of banana plantations in the Nicaraguan Caribbean. Meanwhile, by the 1950s, enclaves in general had reached their peak and had begun to collapse. This was the result of several factors, among them, a tax increase that affected the profits of foreign companies, and the overexploitation of forests, leading to lower production (Thompson, n.d.; Envío, 1981).

The historical dichotomy between the Caribbean and Pacific coasts in their relationship with the Nicaraguan government is reflected by Nicaragua's export products, which before the 1950s, were comprised of two main groups: coffee, produced mainly in the Pacific region, and products of the Atlantic region, primarily precious metals and high-quality timber. The Atlantic had a significant share of all exports, and among these, metals grew to represent over half of all exports in 1945 (Graph 1), which included the production of the "mining triangle," composed by Siuna, Rosita and Bonanza in the North Atlantic region. After 1950, mining waned in importance.⁶

As Maldidier and Marchetti (1996) point out, the Atlantic region developed on the basis of an enclave economy devoted to extractive activities that attracted population groups scattered along the Atlantic Coast and mestizo groups from the Pacific. These groups created new core areas for an agricultural and livestock economy that supplied workers with food. When the enclaves declined and closed, many of the former employees turned to farming and cattle raising.

Graph 1. Nicaragua: Principal Exports
(Millions of US Dollars)



Source: Baumeister, 2004

Several attempts were made during the Somoza era (1935-1979) to integrate the Caribbean Coast into the rest of the country. Part of Somoza's strategy was to lure foreign investors to the Atlantic Coast by attracting poor, landless mestizos from the Pacific in search of jobs and by making relative improvements in the communications infrastructure, particularly the opening of the Waslala-Siuna road. One example was Tropical Colonias Inc., which, starting in 1951, promoted the influx of colonists, particularly to Port Cabezas (Bilwi) and Twappi (CACRC, 1998).

Thus, the colonization process was initiated with successive waves of migration. The pace and motivation of these migrations was related to the strategies of the Atlantic enclaves, to the Pacific agroexport model that forced people out, to the opening of dirt and all-weather roads, and to the possibility of accessing land on the Atlantic.

The Somoza period was characterized by the expropriation of land and natural resources from communities and the transfer of people from the Pacific. The transportation monopoly assured

⁶ While in the late 1940s, precious metals represented 52% of the country's exports, by 1960, their share had dropped to 14%, and their relative importance dropped even further in the ensuing decades. The "mining triangle" would reflect this collapse. In Bonanza, by 1971, in addition to gold and silver, the mining industry had expanded to copper, lead and zinc production; operations which shut down in 1978. In Rosita, the mine installations were abandoned between 1981 and 1982. There, installations included some 20 gold mines, a copper and iron deposit and large limestone deposits (Lundberg *et al.*, 2004). In Siuna, the collapse occurred earlier, since by 1968, mining activities had shut down and, despite the attempt to reactivate them in 1979, traditional mining ended definitively in 1984 (Hodgson, 2004).

relative economic control over the region, which led to the development of a territorial economic integration strategy and a permanent policy of concessions for economic development (Mattern, 2002). In fact, in 1960, the Somoza government unveiled a large-scale colonization plan to colonize the foothills of the Caribbean region, over five million hectares from the Honduran to the Costa Rican border (Jones, 1990).

The Somoza administration, as well as those of Violeta Chamorro and Arnaldo Alemán (during the 1990s), used land colonization as a political safety valve, based on the assumption that the rural poor would be less likely to rebel if they had access to land (Nicaragua Network Environmental Committee, n.d.). In this context, the Caribbean Coast presented an enormous opportunity for colonization, especially considering that in the Pacific region the predominance of large landholdings devoted to agricultural and livestock production had limited poor peasants' chances to gain access to land, condemning them to work on large Pacific estates as farm laborers (Envío, 1981).

The mid-20th century boom in cotton, sugarcane, coffee and cattle in the Pacific region put the land in that region into production, pushing newly landless peasants to advance toward the Atlantic. This movement continued to expand, due to land pressure and the later stagnation of agroexports in the Pacific region that eliminated jobs (UNDP, 2000).⁷ In addition to its role as a colonization territory, the Nicaraguan Caribbean coast also had a geopolitical and military function during the Somoza administration that was intensified with the launching of the Bay of Pigs operation from Port Cabezas in 1961, following a propaganda campaign by the governments of Nicaragua and the United States.⁸

The National Agrarian Institute, created in the mid-1970s, promoted the occupation of government lands in different agricultural frontier zones in the Atlantic, facilitating occupation by peasants from the central region, and to a lesser extent from the Pacific. The amount of land being farmed grew rapidly and logging continued unchecked. Occupation of new land, deforestation, and slash and burn agriculture was accompanied by the sale of valuable timber at very low prices. Livestock production grew rapidly, specializing in cattle breeding and cheese production. The government had an

open land policy for small, medium and large producers and also for timber harvest. In 1976 the first primitive road linking the Pacific to the Atlantic was built along the Waslala-Siuna route. By then, there was already an all-weather highway between Siuna, Rosita and Bonanza (the mining triangle) and a dry-season road had been built between Rosita and Puerto Cabezas (Bilwi).

During the Sandinista years (1979-1990), the Atlantic region had different roles. In contrast to the Somoza era, during which the government maintained a rather limited, sporadic presence in the Atlantic, the Sandinistas sought to integrate the region into the revolutionary process and its benefits (Envío, 1982).⁹ However, little attention was given – particularly during the first years of the Sandinista revolution – to understanding the unique history and culture of the Caribbean Coast, which in addition, had been quite detached from the Sandinista revolution.

In the 1980s, as a consequence of the agrarian reform program the advance of campesinos on the agricultural frontier declined, while mid-sized and large producers scaled back their search for new ventures and land. The Sandinista government tried to improve the road from Río Blanco to Port Cabezas, but it was unsuccessful in building an all-weather road. In areas where central government institutions had a presence, restrictions were placed on felling trees. Mining picked up some momentum following nationalization, but never flourished again as it had before the 1970s. Differences grew between indigenous groups and the government because national authorities held a narrow view of indigenous peoples' territorial rights.

⁷ Thompson, (n.d.) points out that between 1960 and 1978, the cotton and cattle expansion meant the displacement of new colonists toward agricultural frontier zones doubling agricultural lands during those years—from 1,750,000 hectares to 3,500,000 hectares.

⁸ The campaign consisted of persuading the population of the Caribbean Coast that their greatest enemy was Cuba, which was exporting atheist communism to the entire world (Envío, 1981).

⁹ Using this rationale, the Sandinista government promoted, among other things, the following: the Coastal Literacy Campaign (in Spanish, English and Miskito), which included the most isolated villages, and which would receive international accolades; the Adult Education Crusade, implemented throughout the region; a resident doctor and clinic in every town with over 2,000 inhabitants; health campaigns to fight dengue fever, malaria and other diseases; and the deployment of volunteer teachers and doctors, particularly Cubans (Envío, 1981).

Box 1. Indigenous Peoples, Sandinistas and the Nicaraguan Atlantic region

Promoted by the Moravian Church, the Alliance for the Promotion of the Miskito, Sumu and Rama (ALPROMISU) was formed during the Somoza era to improve trade conditions for indigenous groups, which is why it was never really considered a political threat to Somoza's rule. Following the Sandinista triumph in 1979, the government felt that ALPROMISU was an organization that would not collaborate with plans to integrate the Atlantic Coast into the rest of the country. Because the indigenous population protested and insisted on maintaining the organization, the government yielded, but pressured them into changing their name to Miskito, Sumu, Rama and Sandinistas (MISURASATA). MISURASATA worked freely and grew in membership and influence. There were tensions with the Sandinista front because the organization prioritized economic issues and felt that ethnic concerns constituted separatist aspirations by indigenous groups. For their part, MISURASATA leaders maintained a skeptical stance toward the revolution and encouraged their members to stir up conflicts with Sandinista authorities.

By 1980, MISURASATA was expressing serious concerns about the assimilationist ideals for the coast. They felt that the methods, curriculum and language of the rural school program were foreign to local culture and not only did it seek to turn the children into a sort of generic mestizo lacking personality, but it also sought their assimilation into the national, capitalist culture. In MISURASATA's 1981 plan, their demands already included regional autonomy. The government acknowledged the indigenous people's concerns over land; however, the plan did not take into account the interests of the mestizos and creoles on the coast. MISURASATA demanded five seats on the Council of State and a representative on the Government Junta. As a result, the Sandinistas felt that MISURASATA had betrayed their trust.

Ronald Reagan had become president of the United States and was seeking to derail the Sandinista revolution by using accusations that it was helping Salvadoran guerrilla forces, at the same time that Contra camps were operating openly in Honduras. The Sandinistas made public the details of a conspiracy by the counterrevolutionaries, whose goal was to provoke a general uprising of the Miskitos on the Atlantic Coast and set up a provisional government in the department of Zelaya, which would then make an appeal for aid to sympathetic governments, led by the United States. Members of the Moravian Church were supposedly also involved in this conspiracy, which increased Sandinista distrust of the church and of course of the Miskitos. As a result, the Sandinistas decided to relocate the people living along the banks of the Coco River (the border with Honduras) to a region located deeper within the Nicaraguan Caribbean Coast. In turn, the Moravian Church claimed that the principal causes of the problems on the Atlantic Coast were the following: lack of progressive orientation to the coastal population so they could better understand the revolution's objectives; unemployment, which made it more difficult to understand the revolution; cultural clashes between natives of the Atlantic and the Pacific; mishandling of the MISURASATA problem, which drove a wedge between the people on the coast and the Sandinista Front; and finally, the problems related to communal lands.

Source: Based on Envío, 1982.

Even though the agrarian reform implemented in the 1980s impacted each of Nicaragua's main regions differently,¹⁰ the Caribbean region and indigenous communities would once again play an important military role in the internal war between the Sandinista army and the Contras. Box 1 gives an overview of relations during that period.

It is believed that some areas in the Atlantic region, among them Siuna, were 'military enclaves' where the Sandinistas, for military reasons, created a belt of cooperatives that

served as barriers to contain resistance groups (Rocha, 2001a).

The historic demand for greater autonomy for the Atlantic Coast and the political need to build understanding with the indigenous people there (natural United States allies to be exploited in its

¹⁰ Baumeister (1998) explains that during the 1980s agrarian reforms, there were regional differences in the formation of state enterprises and cooperatives due to the location of land subject to the reform (primarily in the Pacific region), pressure from peasant farmers and farm workers who were demanding land, and the priorities of the revolution's leaders.

war against the Sandinistas), led the Sandinista government to announce its acceptance of this demand and to appoint, in December 1985, a National Commission that would initiate the process for defining the region's autonomy (Envío, 1985).¹¹

The Autonomy Statute for the Regions of the Atlantic Coast of Nicaragua was passed in 1987. The Atlantic Coast region comprised 50% of the territory of Nicaragua and its inhabitants accounted at that time 9.5 per cent of the country's total population, with less than 300,000 inhabitants.¹² Two autonomous regions were established: the North Atlantic and the South Atlantic regions.

Despite the statute's passage, it was not until 15 years later that its respective regulations and other important legal provisions were created, especially in reference to the problem of land ownership in the Atlantic regions,¹³ which for many people reflected the lack of political will to support the institutionalization process of regional autonomy. In fact, the establishment of the autonomous regions presented the Nicaraguan government with a dilemma and a contradiction as it sought to exercise and consolidate its sovereignty over the nation's territory. In this sense, it was crucial that the Sandinistas were trying to moderate the historical demands of the indigenous territories, while at the same time prevent these territories from becoming bases of support for the Contras, which required concessions to the indigenous groups. Likewise, this region served – as it always had – as an important escape valve to provide land to poor peasants.¹⁴

In the 1990s, several significant events took place. The population increased considerably as people who had been displaced by the internal war returned and migrated toward ex-conflict zones. The government continued its "open land" policy to solve immediate political problems, while logging intensified using the route that links Río Blanco with the rest of the country. The aim of these policies was to guarantee the reintegration of ex-combatants, prevent confrontation, improve governance in the short term, and attract resources from assistance agencies; but in general, no controls were put on the extraction of timber and other

resources. One important event in the mid-1990s was the paving of the Boaco-Río Blanco highway, with aid from the government of Venezuela during the Alemán administration (1996-2000), and expectations still persist that the Río Blanco-Mulukukú-Siuna-Port Cabezas section will be paved.

In the post-war period, there was also a significant increase in basic grain production, caused by the reopening of the agricultural frontier and the liberalization of Central American trade, which turned Nicaragua into a supplier of maize and beans for the regional market. Something similar occurred with livestock, due to the boom in small-scale cheese production for the Salvadoran market and to a lesser extent for the U.S. market.

Post-war Nicaragua also proved to be fertile ground for the environmental conservation movement, which had been gaining strength around the world. In Nicaragua, it came to play a role that would further complicate historical territorial demands and governance problems in the North Atlantic region. Proposals for forest conservation and protected areas began to include the Atlantic region, particularly in the north. Here, the BOSAWAS conservation proposal gained momentum, in the framework of the Mesoamerican Biological Corridor and of regional, international and government environmental commitments.

¹¹ Regional commissions (North and South Atlantic) were also formed to carry out a consultation process among coastal peoples, which would be taken into account when drafting a special statute on autonomy that would form part of the new Nicaraguan constitution (Envío, 1985).

¹² 182,000 Spanish-speaking mestizos; 75,000 Miskitos; 26,000 Creoles; 9,000 Sumus (Mayangnas); 1,750 Garífunas; and 850 Ramas (Asamblea Nacional de la República de Nicaragua, 1987).

¹³ The Law for the Communal Land Tenure System of the Indigenous Peoples and Ethnic Communities of the Autonomous Regions of the Atlantic Coast of Nicaragua and of the Bocay, Coco, Indio and Maíz Rivers was passed on 13 December 2002 (Asamblea Nacional de la República de Nicaragua, 2003).

¹⁴ Historically, the Atlantic Coast has been an escape valve to take pressure off Nicaragua's Pacific and central regions. In the early 1990s, some 701,500 manzanas were distributed to demobilized combatants as part of the peace agreements between the Contras and the Sandinistas (66% of these lands were allocated to ex-Contras).

Declaration of the BOSAWAS Biosphere Reserve

The declaration of the BOSAWAS Biosphere Reserve converged with a worldwide environmental boom and concern about accelerated environmental degradation and its worldwide effects. This environmental awareness translated into a growing worldwide conservation movement and discourse that brought to the fore the urgent need to “protect” particular zones of global interest. In 1979, the BOSAWAS territory was designated as a reserve in response to the advance of the agricultural frontier. However, during the 1980s, the area was not managed, since it was the battleground for the armed conflict between the Sandinistas and the Contras. In October 1991, BOSAWAS was declared a National Natural Resource Reserve through Executive Decree No. 44-91.

BOSAWAS covers 14 percent of Nicaragua’s territory; the core zone almost 800,000 ha, and the buffer zone approximately 2,000,000 ha.¹⁵ It constitutes, together with the Tawaka, Patuca, Rus Rus and Río Plátano protected areas (all in Honduras), the largest contiguous protected area in Central America and one of the most extensive forests north of the Amazon. Six years after the presidential decree, BOSAWAS became a biosphere reserve under the UNESCO Man and the Biosphere Program and joined the World Network of Biosphere Reserves.¹⁶

The name BOSAWAS is derived from three significant geographic landmarks which delineate the reserve’s core zone limits: the BOcay River, Mount SASlaya, and the WASpuk River. The boundaries of the buffer zone correspond to the administrative limits of the six adjacent municipalities bordering the core zone (see Map 2): Bonanza, Siuna, Waspam, Waslala, Wiwilí and Cuá-Bocay (the last two are in Jinotega, a department outside the RAAN). The buffer zone contains four protected zones (Mount Kilambé, the Peñas Blancas Massif, Mount Banacruz and Mount Cola Blanca in Bonanza), while the Saslaya National Park is in the core zone, in the municipality of Siuna (MARENA-BOSAWAS, 2004).

Over 200,000 people live within these limits.¹⁷ The main settlements are composed of indigenous peoples from two ethnic groups in the reserve’s

core zone: the Miskitos, who live along the banks of the Coco River; and the Mayangnas, who live at the heart of BOSAWAS and along the banks of the Pis-Pis, Waspuk, Bocay and Lakus rivers (MARENA-BOSAWAS, 2004). These groups have a total population of approximately 25,000 people (Eriksson, 2003). It is also estimated that close to 200,000 mestizos live primarily in the buffer zone (Eriksson, 2003).

Legally, BOSAWAS is Nicaraguan government property, under the management of the Ministry of Environment and Natural Resources (MARENA).¹⁸ However, there are overlaps in jurisdiction, since geographically, BOSAWAS is located in an autonomous territory (RAAN), shared by several municipalities, there are six indigenous territories inside the core zone, and even within the central government, there is overlapping authority between different government ministries.¹⁹

In addition to this array of legal authorities, the reserve was created against a backdrop of significant disputes of differing natures between indigenous and mestizo groups, armed bands, national and international extractive industries, non-governmental organizations (NGOs) and churches (Kaimowitz, 2003). As a result, its

¹⁵ The core zone covers 735,491.35 ha (7,441.9 km²) and the buffer zone 1,307,044.56 ha (12,400 km²). From: www.marena.gob.ni/areas_protegidas/reserva_biosfera_bosawas.htm

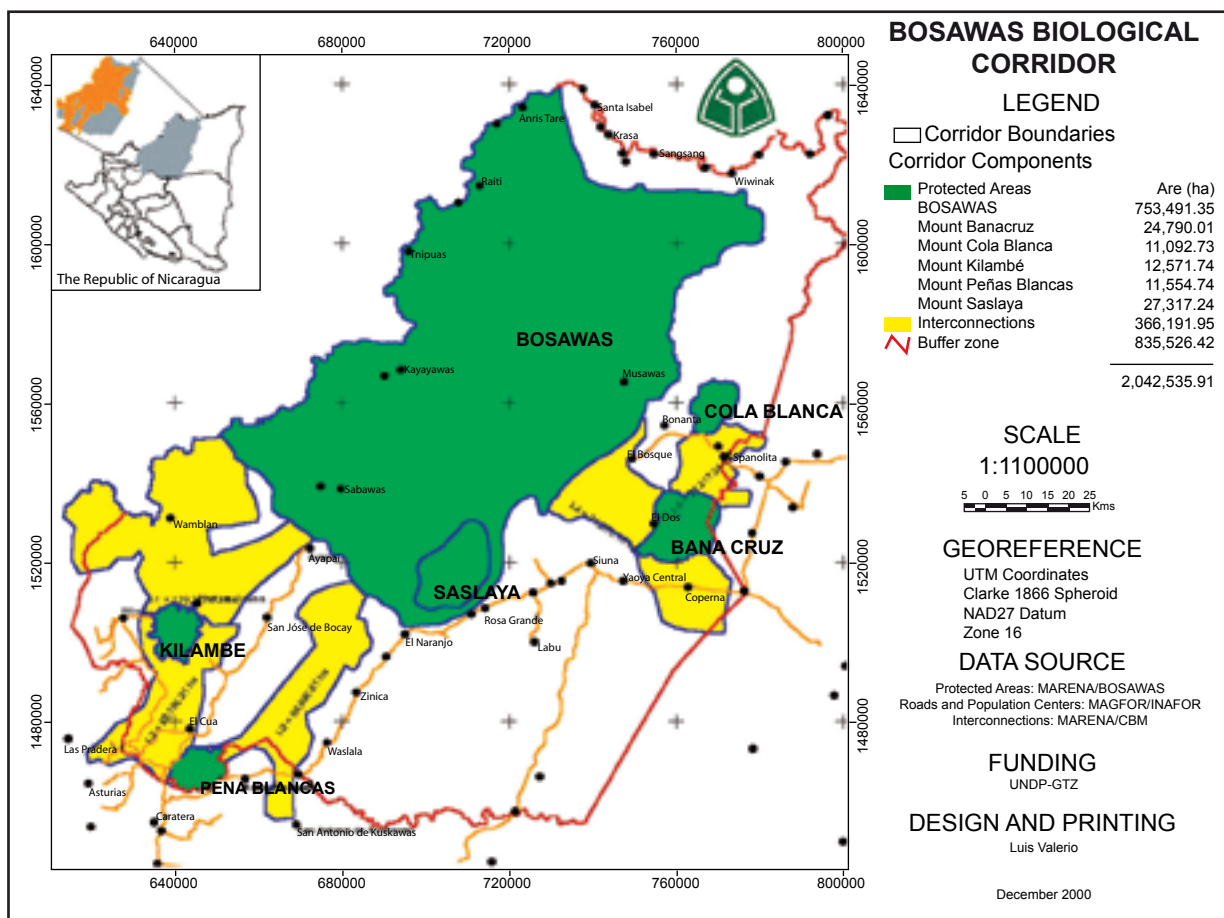
¹⁶ www.marena.gob.ni/areas_protegidas/reserva_biosfera_bosawas.htm. The reserve was created to conserve the flora and fauna of the region through the sustainable management of its resources and to protect the cultural heritage of indigenous groups in the zone (Stocks, 1998).

¹⁷ This was the estimated population for the core and buffer zones when Decree No. 44-91 was issued.

¹⁸ The BOSAWAS Technical Secretariat (SETAB) is the executive body of the Ministry of Environment and Natural Resources and of the National BOSAWAS Commission. The conservation activities were set forth in the BOSAWAS project, initiated in 1994, which was funded primarily by German cooperation agencies, particularly GTZ and KfW (SETAB-UNESCO-MAB, 2002). This aid was centered on formulating a management plan and on addressing the issue of the demarcation of the indigenous territories. The reason the activities were concentrated in the core zone was that this was the most peaceful area in a climate of extreme insecurity and social disintegration.

¹⁹ A clear example of this is the mining concession inside the reserve to the U.S. company Nycon Resources on land that the Mayangnas consider theirs. It was approved by the Ministry of Economy and Development (MEDE) and the concession was granted without consulting the Ministry of Environment, the RAAN, the municipality of Bonanza or the Mayangna community (Stocks, 1994, in www.alistar.org.ni/English/case_study.htm).

Map 2. BOSAWAS Biosphere Reserve and Corridors



Source: Nicaragua Atlantic Biological Corridor

creation as well as its control and management have been quite complex, and reflect the contrasting interests and points of view of the different territorial actors.

Both the declaration of BOSAWAS as a national reserve and later as a biosphere reserve were manifestations of a convergence of interests by international conservation and the Nicaraguan governmental, indicated by the lack of mechanisms and processes for consulting the coastal population, which was not even informed about the declaration. BOSAWAS was declared a reserve so hastily that baseline studies and precise territorial demarcation were left undone; rather, the declaration revealed the Nicaraguan government's urgent interest in meeting the requirements for qualifying for financial aid, especially from the World Bank and the Global Environment Facility (GEF). Along these lines, the establishment of the BOSAWAS also reflects the conservationist wave that came

to the Atlantic region, which was attempting to increase conservation areas in ecologically important zones, from the standpoint of maintaining global environmental security to protect and conserve biodiversity.

The declaration of the BOSAWAS reserve was advantageous to the Nicaraguan government, not only for accessing new funding sources, but also for exercising territorial control through a concrete institutional framework. The declaration of the BOSAWAS reserve implicitly reinforced the State's property rights, as the entity with the authority to designate the natural reserve status first and the biosphere reserve later. However, the central government has little presence and even less control in BOSAWAS.

In practice, there are other actors and populations that have the *de facto* control, and in some cases, legal rights over this territory. Among these are the indigenous communities, which are

traditional inhabitants and have a historic claim to the territory. In fact, the Autonomy Statute of 1987 recognized the communal, collective and individual property rights of indigenous populations, including rights to management, exclusion and alienation. The law established that the exploitation of natural resources (minerals, forests, fisheries, etc.) on communal lands in the autonomous regions be governed by agreements between regional and central governments. However, no specific norms exist for putting this law into practice. Even more critical, the government has not awarded property titles for indigenous lands – only 9% of the land in the RAAN is titled – and as a result, land is considered State property (Eriksson, 2003). This clearly contradicts the intention of the Autonomy Statute, and also with the way indigenous people view their ancestral territorial rights. The 1991 declaration was made at almost the same time that indigenous and other groups of people that had been forcibly displaced during the war between the Contras and the Sandinistas were being repatriated and seeking to return to their traditional territories, which compounded the situation and made it a source of tension (Stocks, 1998).

Another key player in the area – actually most of the population – are mestizo peasants, who were not consulted about the declaration of the BOSAWAS reserve either. In general, they are natives of Nicaragua's Pacific region who migrated to the Atlantic region encouraged by the establishment of mining, banana and logging companies and in search of access to land. Mestizo peasant settlements abounded in the municipalities of Wiwilí, Cuá Bocay, Waslala, Siuna and Bonanza, precisely in the area that is now the reserve's buffer zone. This population depends on access to land to ensure their livelihood strategies, based primarily on subsistence farming with the goal of their own food security. However, these strategies are being increasingly combined with small-scale livestock production. This population's main interests are linked to land tenure security to ensure their livelihoods, which strengthens the colonization process, through "improvements" as a mechanism to facilitate the acquisition of property rights.²⁰

Restrictions on Access to the BOSAWAS Core Zone

Control and administration of the reserve is further complicated by the particular history and evolution of property rights, overlapping authority and economic interests in the area, exacerbating the tensions between all stakeholders claiming control over the territory. The declaration of the BOSAWAS reserve was intended to increase restrictions on access and use for all these stakeholders. Given the haste in the process, no specific regulations were established, especially important considering that the status of natural reserve had no precedent in Nicaragua (Stocks, 1998). The legal instrument that governs the protected areas is the Management Plan, which until very recently was still being drafted.

It is striking that indigenous groups and other actors in the territory were not consulted prior to the declaration of the reserve. In fact, when the management plan for the reserve was under preparation, with support from agencies such as The Nature Conservancy and the German technical cooperation agency (GTZ), the process was limited to communities in the core zone (which are almost entirely indigenous groups), relegating the rest of actors to the sidelines, such as settlers in the buffer zone, which shows the reserve's initial approach to management, based on an essentially top-down approach to planning. This is consistent with its status as a biosphere reserve, which has been characterized by processes that pay only lip service to participation (Stocks, 1998).

With the declaration of the reserve, the indigenous populations historical demand for autonomy resurfaced with more intensity and they used this as an opportunity to insist on the demarcation of their territories. Eriksson (2004) argues that before the demarcation process, communities had felt no need to make such a demand, since the land was considered to be theirs *de facto*. However, the designation of the reserve forced communities to demarcate their

²⁰ Commonly, in Nicaragua only land under "efficient use" is considered eligible to be claimed. Efficient use means that the land is being used for agriculture or livestock, which explains why "improvements" (clearing the forest, burning, etc.) have become a legal means to gain access to land (Eriksson, 2004).

territories for the purpose of demonstrating their claims to the Nicaraguan State and to gain a foothold in the management of the reserve.

Despite the fact that the Autonomy Statute supported indigenous communal, collective and individual property rights, it was not until 1994 that the demarcation process began for the six indigenous territories in BOSAWAS.²¹ The World Bank included US\$10 million in the Rural Municipalities Project for supporting activities related to the Atlantic Biological Corridor, along with funding for the management of protected areas, biodiversity projects and the demarcation of indigenous territories (World Bank, 1996).²²

The demand for demarcation led indigenous groups and international conservation organizations to forge alliances. This is illustrated in the new environmental discourse adopted by indigenous groups in which they consider themselves part of nature, traditional inhabitants that live in harmony with their surroundings and as such, safeguard the environment. In this collective imaginary, the colonizers (mestizos) are seen as the invaders and destroyers of natural resources. These ideas struck a chord and indigenous people and conservation organizations integrated them into their discourses.

In the case of indigenous communities, the environmental discourse was based on the argument that their practices with regard to natural resources involved caring for the environment, but more importantly, their discourse was related to their historical claim for autonomy and control over their territories (Eriksson, 2004). Thus, for indigenous groups, demarcation was directly linked to their efforts to stop the mestizo invasion, which became evident in the voluntary formation of a corps of indigenous forest rangers in their territories, along with complaints to the central government to evict the invaders (Stock, 1998).

The Lack of a Proposal for the BOSAWAS Buffer Zone

The indigenous-mestizo dichotomy was reflected in the efforts to design a management plan for the BOSAWAS reserve – with its implications for financial and technical assistance and with the

demarcation of the indigenous territories – which have been almost entirely focused on the core zone. In fact, a study of BOSAWAS by SIMAS-CICUTEC (1995) argues that while gathering information it was apparent that informants made reference to a “buffer zone,” even though a legal or technical frame of reference to support the use of this concept did not exist.

The lack of greater integration of the buffer zone at that time reflects prevailing trends and approaches (which still predominate) of traditional conservation discourses, which tend to concentrate on “primary” or “virgin” forests, without paying enough attention to the important role played by buffer zones in maintaining the ecological stability of ecosystems. The few references related to the management of the BOSAWAS buffer zone reinforce this obsession, which in its most recent version proposes the need to establish “biological corridors” to connect the four protected areas located within the buffer zone (Mount Kilambé, Peñas Blancas Massif, Mount Banacruz and Mount Cola Blanca) with the Saslaya National Park located in the core zone.

BOSAWAS: The Confluence of Several Frontiers

The principal purpose announced for declaring BOSAWAS a national reserve, and subsequently its incorporation into the World Network of Biosphere Reserves, was to slow the agricultural frontier. An agricultural frontier is defined as an area where agricultural activities compete with and put pressure on forests. However, in the case of BOSAWAS, several frontiers come together, ranging from the economic to the cultural and institutional. Eriksson (2004) considers that

²¹ These territories are Mayangna Sauni As, Mayangna Sauni Bu, Mayangna Sauni Bas, Miskitu Tasbaika Kum, Li Lamni Tasbaika Kum and Kipla Sait Tasbaika. The territorial demarcation was based on traditional areas of the different Mayangna and Miskito family groups. The process adopted the traditional territorial concept of the indigenous people, where boundaries are defined by the forks in rivers. However, conflicts arose in defining the borders, particularly in areas distant from the rivers, which were less used although they were considered to be common areas (Eriksson, 2004).

²² This project also included the participation of local communities, indigenous groups and regional and local governments in the management of biodiversity using communication, participation and training activities; as well as planning, monitoring and evaluating land and biodiversity use.

the term agricultural frontier refers to human interventions that convert primary forests for agricultural or livestock uses. Thus, the agricultural frontier describes a change in land use that is environmentally and economically unsustainable due to losses in biodiversity and land productivity. It is also unsustainable socially and spatially, because the land cannot sustain human populations for more than a couple of years, forcing people to abandon their lands and move to new areas, expanding and/or extending the frontier. Eriksson (ibid) also identifies the distinct frontiers that exist in Nicaragua's North Atlantic Autonomous Region:

- Ethnic frontiers: this is a region with an enormous diversity of ethnic groups (Mayangnas, Miskitos and mestizos), with distinct cultures, beliefs and traditions;
- Political-administrative frontiers: different jurisdictional levels exist and overlap within the same region (autonomous governments, municipalities, indigenous territories);
- Occupational frontiers: even though the region is more suited for forestry, it is overlain by extractive enterprises such as mining, with subsistence agriculture and livestock;
- Mental frontiers: the legacy of paternalism and clientelism has smothered the self-management potential of the local population;
- Institutional frontiers: expressed by different institutions working, with little or no coordination.

This multidimensional frontier makes management of the territory particularly complex. Understanding this complexity is crucial, not only for improving governance in this territory, but also for understanding the emergence of PCaC and recognizing its positive role in the sustainable management of this territory.

Origins and Development of Siuna PCaC



In the buffer zone of the BOSAWAS Biosphere Reserve, the work in Siuna is notable for having successfully slowed the advance of the agricultural frontier by building peasant farmer networks that spurred the accumulation and exchange of “campesino knowledge” derived from their livelihood strategies

This section first discusses important contextual factors that contributed to the creation and success of the campesino to campesino methodology in Siuna and its later evolution, and then some characteristics of the assistance that Siuna PCaC has received during different stages of its development.

PCaC’s Origins²³

PCaC responds to a time of transition and political reflection in the Nicaraguan campesino movement. This transition was marked by the role played by the Contras, who had ignited a military revolt with participation of peasant farmers that was particularly visible in northern Nicaragua, including the territory around Siuna. In the mid-1980s workshops were held in Las Segovias to reflect on and discuss the causes of the military revolt and peasant participation in the Contras. The conclusion was reached that it was necessary to start a pilot project to regain control of those territories, which involved developing an organizational strategy. By the 1990s UNAG, created under the Sandinista government, decided to attempt rural reconciliation, recognizing that “farmers had been victims of the main political forces,” and that “a reconciliation effort” was needed

(Castrillo, 2004). In this context, UNAG began PCaC in Siuna to provide an opportunity for dialogue and reconciliation focusing on small individual farmers, who had been ignored by the Sandinista government, which had favored cooperatives. Strategically, PCaC’s advantage was its methodology of dialogue, communication and empowerment.

In fact, the campesino to campesino methodology is an empowering methodology. Beyond the significance and bearing of the technologies being disseminated, a fundamental element of this methodology is peasant experimentation and horizontal learning, where the systematization aspect of experimentation is a determining factor in establishing horizontal learning relationships. López and Rivas (1997) stress that in horizontal experimentation and learning, communication is essential and it should be understood as a relationship between equals that overcomes the fear of participating with clear, simple language in an attempt to strengthen the innovative spirit and the capacity to pass on knowledge among peasants.

Pasos (2001) explains that campesino to campesino methodology is not simply a methodological toolkit or a set of farming techniques, rather, the largest farming movement in the Nicaraguan countryside. Through it, small farmers and

²³ This section is based on the discussions and contributions of the coordinating team for the Project “Learning to Build Accompaniment Models for Grassroots Forestry Organizations in Brazil and Central America,” particularly Rubén Pasos, Deborah Barry and Nelda Sánchez, during the meeting held in San José, Costa Rica, 19-20 July 2005.

cattle ranchers are addressing the crisis in rural life, and developing proposals for developing their farms and communities. This movement, therefore, should be understood in terms of the “seven secrets” that ensure its relevance and sustainability (see Box 2).

Of the fourteen PCaC’s being fostered by UNAG across Nicaragua, the one in Siuna has been the most successful, both in terms of leadership and growth, as well as innovations in the use of velvet bean and other crops. This can be explained by the conditions in the region and the history of the commitment and dedication of the first campesino promoters who were trained by PCaC in Siuna. In the 1980s, Siuna was a Sandinista–Contra war zone, and in the 1990s – despite the ceasefire – numerous armed bands continued to operate in the area (ex-combatants, armed illegal loggers, drug traffickers and criminals).

Likewise, with just one dirt road that is impassable half the year, Siuna was an isolated region on a frank course to social disintegration, to such an extent that in 1994 the public bus between Siuna and Río Blanco was held up 14 times. It was a no-man’s land; where only the military, the armed bands and PCaC could operate.

The first generation of PCaC promoters in Siuna was comprised, almost entirely, of Sandinista supporters, including those who had been Sandinista guerrilla fighters and collaborators. However, at present, Siuna PCaC members come from a variety of sectors, including Sandinistas, ex-resistance members, Liberal Party supporters, Catholic and evangelical church members, among others. The commitment displayed by the promoters who began PCaC in Siuna is linked to their own stories and to the historical period the country was going through at the time. Siuna was a battlefield, and the significance of the revolutionary paradigm meant that people who decided to become militants were willing to give their lives.

The growth of PCaC in Siuna also coincided with the loss of the revolution. Therefore, what happens with PCaC in Siuna – why it works, why it grows – is also associated with the fact that it fills gaps left by the revolutionary

paradigm. The empowering methodology and the characteristics of Siuna PCaC’s promoters were crucial to rebuilding the social fabric of the territory. Its growth among peasants linked to distinct groups, who have gotten involved in PCaC activities, is a testament to its capacity to promote reconciliation and dialogue.

Stages in PCaC’s Development²⁴

Siuna PCaC has evolved since its creation in 1992. Four stages can be distinguished: peasant experimentation, stabilization of settlement and restraining the advance of the agricultural frontier,²⁵ widespread adoption and organization of a promoter network, and the group’s reorganization and move towards commercialization.

Experimentation (1992-1994):

Finding the key in the Velvet Bean

The National Union of Farmers and Ranchers (UNAG) of Nicaragua was created in 1981. It brought together core groups of peasants and medium-sized producers who had collaborated with Sandinista guerrilla forces and who then became pillars of UNAG’s development (Baumeister, 1998).

In 1987, UNAG began the Campesino to Campesino Program (PCaC) in Nicaragua as a training program for peasant farmers. This was the only concrete assistance available to small, individual farmers in a political and institutional climate that favored state agricultural enterprises and the cooperative movement, where the dominant official view favored a socialized model for the countryside (Pasos, 2001).

UNAG, through PCaC, sought to promote the adoption of agricultural techniques that would be more appropriate for Nicaraguan peasant

²⁴ The following stages were identified by and discussed with the founding leaders of Siuna PCaC during a workshop that took place in Siuna April 1, 2004 as part of the “Learning to construct models of accompaniment for community-based forestry in Brazil and Central America” project.

²⁵ Restraining the advance of the agricultural frontier refers to the transformation of farming practices by Siuna PCaC farmers, although it is clear that the agricultural frontier continues to expand in the rest of the BOSAWAS buffer zone.

Box 2. Nicaragua: The Seven Secrets of the Farmer to Farmer Program

Farmer experimentation and appropriation: When PCaC starts working in new communities, they offer a technology that has proven impact on production. Farmers learn how to measure the results of an experiment and compare them with their traditional farming methods, which at the same time fosters appropriation of the experimental method on their farms. The experiments are simple and small-scale so that they do not compete for resources (labor, land or supplies) with the farm's traditional crops and they do not endanger the family's livelihood in case of failure.

Exchange of local knowledge: The farmer to farmer program entails dialogue among peers, among farmers who have common concerns, contributing significantly to building self-esteem. Participants become involved in a collective quest to improve their farms, which draws them into broader efforts through working individually on their farms. When society recognizes the value of the experimentation's positive results on the farm, an "almost biological" need to share it is generated. For this reason, the farmer to farmer program promotes and organizes exchanges among farmers, encouraging them to develop the capacity to use their farming knowledge.

Productive dialogue and innovation: Productive dialogue starts among people at the local level; emphasizing proposals that improve on what is already in place while attempting to avoid promoting technologies that are the sole domain of experts or that require extensive prior training. When an array of technologies are introduced by experts, the local process of mobilizing capacities and experiences is quashed, and the opportunity to set in motion local efforts to seek constant innovation in communities is lost, which is actually a central pillar of PCaC's approach to rural development.

Horizontal dialogue and the logic of shared experience as a multiplier effect: The PCaC methodology spreads rapidly because there is little or no differentiation between farmers. Horizontal dialogue means that proposals for farming practices come from a farmer whose only difference from the other is experience with the new practice. The principle of PCaC is that sharing only takes place when it goes both ways, when farmers have something to share. This is understood as a horizontal relationship that raises the self-esteem of the farmer who has an achievement to share, and encourages the "new farmer" to use the proposed technology and become convinced of its usefulness.

Promoter – a disseminator of productive results: To expand and multiply, PCaC does not require highly-skilled farmers, just the most motivated ones; it does not require special farms, just common ones with "productive outcomes." The role of the promoter is to point out productive outcomes and make them known as well as to visit farmer-experimenters and encourage them to share and exchange their experiences.

Innovation..when its constant pursuit becomes fashionable: The combination of productive breakthroughs on individual plots, motivation and self-esteem contribute to the community's capacity for the constant pursuit of innovation, where local initiatives set in motion easily branch out into new areas (commercialization, credits and environmental issues), as well as changes in the organization, and especially, changes in what people do, compared to what they were doing before.

The constant emergence of local leaders: As a result of the exchange dynamic, new leaders become more visible; their influence is based on their contributions to the generation of production alternatives and the pride they have in their own plot.

Source: Based on Pasos (2001).

families in living on degraded hillsides.²⁶ The initial campesino to campesino proposal was focused on promoting a soil conservation program aimed at small-scale hillside farmers, implemented primarily in the dry areas of Nicaragua's Pacific and central regions. By 1989-1990, PCaC had grown and had concentrated on soil and water conservation, as an option for natural resource management on hillsides in the dry tropics of Nicaragua.

In 1992, UNAG decided to promote PCaC activities in Siuna to contribute, through the use of peasant practices and methodologies, to the stabilization of farmers on the agricultural frontier, to food security and to begin restoring deforested areas in the southeast part of BOSAWAS (UNAG-PCaC, 2002). However, this was a region of heavy armed conflict and its related social disintegration. Additionally UNAG was unfamiliar with the region's humid tropical conditions and lacked a technology and resource management plan for the specific conditions in Siuna. Therefore, its proposal centered on promoting campesino to campesino exchanges, a key aspect of its method for empowerment. The Program was officially run by UNAG's president in Siuna. In 1993, UNAG was on the verge of closing down in Siuna, but the Campesino to Campesino Program gave it a concrete reason to remain (PCaC-UNAG de Siuna-Oxfam GB, 1999).

The unstable conditions were aggravated by the constant migration of peasants to the BOSAWAS Reserve in search of fertile land. Their agriculture was based on slash and burn methods to grow food, which was accelerating the advance of the agricultural frontier. This spurred the interest of Oxfam Great Britain, which was already supporting projects in the Nicaraguan Caribbean, to allocate the first funds to PCaC in Siuna through UNAG, to begin exchange programs and workshops in the mining region (Siuna, Rosita and Bonanza) and farmers from Matagalpa and Boaco (Oxfam GB-PCaC-UNAG Siuna, 2000).

The first exchange programs were with peasants from the community of Rosa Grande, a colonization front in Siuna.²⁷ In August 1993, three peasant farmers from Rosa Grande participated in an exchange program in the

community of Cafén, in the municipality of Boaco, where velvet bean had been used to help restore and conserve soil fertility. Rosa Grande farmers were interested in finding out whether they could get similar results on their farms, which motivated them to learn enough about velvet bean to be able to experiment with and adapt this new production technology to their own situation (Rivas and Zamora, 1998). Enthusiasm sparked by the results that the Rosa Grande farmers observed led them to start a test with velvet bean based on the exchange program methodology (Box 3 discusses velvet bean's qualities and characteristics and its importance to farmers).²⁸ Between 1993 and 1994, 13 Rosa Grande farmers began to experiment with velvet bean. This initial experiment spread to five communities of Siuna, and allowed to build up sufficient local experience and documentation to prepare a first project proposal in 1995, funded by Oxfam Great Britain (Oxfam GB-PCaC-UNAG Siuna, 2000).

This stage consisted primarily of testing what Rosa Grande farmers had seen in Boaco. The PCaC coordinator convinced two farmers who had been in UNAG, to become the main velvet bean experimenters. For this, they started on land that was no longer productive. Their experiment used test plots concentrated on farms located near "auras,"³⁰ which made it easier to see the impact of the new farming practices using cover crops. Thus, Rosa Grande became a "bastion of experimentation" and although the organization was new, leaders had begun to map out a

²⁶ During the first years of the Campesino to Campesino Program, UNAG and the Servicio de Desarrollo y Paz in Mexico coordinated exchange programs for peasant farmers from both countries, encouraging them to share technological practices and experiences (López and Rivas, 1997).

²⁷ In addition to Rosa Grande, the BOSAWAS National Reserve Natural Resource Management Project identified five more colonization fronts: Wiwili, San José de Bocay, El Naranjo, Waní and Raití Walakintang (SIMAS-CICUTEC, 1995); while PCaC identified an additional front in the communities of Campo Uno, El Dorado, Azadín and San Pablo de Aza, all in the municipality of Siuna (Zamora and Rivas, n.d.).

²⁸ Campesino to campesino methodology is based on instructional strategies intended to motivate agricultural experimentation by using community participation and relying heavily on the communication that arises among farmers, which is understood as horizontal peer relationships (Sáenz, 2004).

²⁹ Translator's note: One manzana equals 1.7 acres.

³⁰ These are roads are used by farm families to transport their produce by beasts of burden.

Box 3. Velvet bean

Velvet bean (*Mucuna pruriens*) or green manure (frijol abono in Spanish), originally from China, has been grown since antiquity for improving degraded soils, human and animal consumption, crop rotation and weed control. It is said that velvet bean was brought to Mesoamerica by banana companies to feed the mules used to haul bananas. Banana companies stopped growing it, but farmers began to use it as green manure in order to provide forage and cope with dwindling soil fertility and weed infestation.

Velvet bean is a climbing annual with hardy growth and a height of 30-80 cm. It has fleshy, shallow roots and sturdy, sparsely pubescent stems that grow up to 15 m long. The seeds may be broadcast, planted in rows or planted with a digging stick. Planting with a digging stick uses 30 lbs per manzana²⁹; planting in rows, 50 lbs; and broadcasting, 60 lbs. It can be planted alone as a soil conditioner in fallow fields or as a companion crop with maize, cassava, coffee and others. For green manure, it is incorporated in the soil at the flowering stage; as a cover crop, it can stay in the field until harvest.

Velvet bean contributes to:

Improving soil fertility and structure: Velvet bean's biomass degrades rapidly, liberating its nitrogen. Its contribution to increasing the organic matter in the soil is slow and becomes noticeable after several years of intercropping velvet bean with other crops. Velvet-bean cover improves soil structure in the medium term.

Weed control: It contributes to weed control by forming a dense ground cover. If not managed, velvet bean can become a weed itself because of its vigorous growth.

Source of human food: The beans can be roasted and mixed with coffee or maize. Human consumption requires careful processing to detoxify the beans. In Siuna, it is used as an ingredient in *cajeta*, *atole*, rice and beans, and mixed with meat in meals.

Erosion control: It reduces erosion by lowering the impact of rain on the soil. This effect can be seen three to four weeks after the velvet bean is planted. On steep slopes, especially in areas with high precipitation and soils with low infiltration capacity, it is combined with other soil conservation practices.

Soil moisture conservation: The denser ground cover reduces the impact of rain, improves infiltration and preserves moisture better. However, in drylands, intercropped velvet bean competes with the main crop for water. Studies have shown that velvet bean has a positive effect on yields of all other crops because of its excellent soil moisture retention.

Wind protection: If velvet bean stubble is left in the field following the second season, it protects the soil against wind erosion.

Source: CBM, 2002.

proposal that would include their interests in harvesting more on less land, growing crops in one place and preventing burning.

In addition to the local work of exchange programs, visits and field days in the municipality, farmers who adopted the velvet bean technology were visited by over 300 farmers from the municipality in the first two years (Zamora and Rivas, 1998). During of this stage, Siuna PCaC did not have permanent technical staff to accompany the process, beyond the assistance from the PCaC Central Technical Team from the National UNAG office in Managua. According to Siuna PCaC, at this point, there were 25 promoters and

around 76 farmers who had begun the process of transforming their traditional farming practices.

Methodologically, Siuna PCaC successfully put together an alternative that surpassed and replaced slash and burn agriculture. Practices that stabilized and restored degraded territories based on the promotion of legumes and green manures became the key that opened the door to capturing farmers' interest: "...If your whole life you have been looking for good land and suddenly you realize that you can always have that good land right next door, you only have to know how to use velvet bean and the good land comes to your house,

and you can plant whatever you want there, that is what you have been looking for your entire life. How can that not have an impact on you? How can that not have an impact on others? ... Yes, all you need to do is look at Fausto's farm, which was on waste land, and suddenly he is harvesting and he harvests 30, 40 and up to 50 hundredweight of maize every year and what he plants, produces, so, for me, that has a tremendous impact" (Agustín Mendoza, in OXFAM GB-PCaC-UNAG de Siuna, 2000).³¹

In Siuna, as a result of the war in the 1980s and the prevailing climate of insecurity, many families were fragmented and some communities were polarized. But there was a situation that would contribute to awakening the interest of the farmers. Many of them were interested in finding alternatives to traditional swidden agriculture, and this became the motivating factor for the first visits and exchanges. In this context, PCaC also became a vehicle for uniting farmers, families and communities around a common technological and production agenda. This agenda would be developed by the people themselves and would eventually become a platform for addressing other social problems, such as security, health and recreation, among others (UNAG, 2002).

Promoting velvet bean (1995-1997): Stabilization of families, food security and containing the advance of the agricultural frontier

This stage was marked by two milestones: the first pilot project in 1995 to support Siuna PCaC's strategic objectives and the Siuna UNAG Assembly in 1997. Growing velvet bean as a companion crop to maize had already become an option for sustainable production. It is easily adopted and transferred and requires few external inputs and, in addition to contributing to the stabilization of agricultural systems, was promising to reduce the pressure on natural areas. Using this as their rationale and based on the results obtained in Rosa Grande, PCaC submitted its first project proposal to Oxfam Great Britain, aimed at expanding the work in Siuna and diversifying the technological and methodological components to implement an agricultural system appropriate to humid tropical conditions. The project's main objectives were to improve the production systems of peasant families, conserve the environment and

improve the campesinos' quality of life (Oxfam GB, 2000).

During this stage, PCaC concentrated on promoting a shift away from practices based on slash and burn agriculture, on initiating diversification of farm production and on containing the advance of the agricultural frontier. The resources provided by Oxfam went into expanding PCaC's coverage to eight additional communities along all the routes near Siuna (to Waslala, Rosita and Río Blanco), and the exchange visits among communities started to take place.³² PCaC's aim was to get people talking amongst themselves about the benefits of what they were promoting.

The exchange method was no longer limited to promoting and experimenting with green manures; it now included agricultural diversification strategies using at least 10 different crops, including fruits and perennials such as cacao, allspice, coconut, cinnamon and medicinal plants. This led to better farm and home garden planning, the latter involving women. Thus, in addition to increasing yields of basic grain crops, diversification improved food security, which would be a key element in farm stabilization, leading to a reduction in the amount of land needed for basic grain production.

At this stage, PCaC grew stronger. Plant stock was provided to promoters, who had to visit their own communities. During this time, videos filmed on promoters' farms were used and a strategy to reach community leaders was sought (church workers, health promoters, etc.). Promoter groups were formed and gradually these committees selected coordinators. Eventually, these first promoter committees

³¹ Mr. Agustín Mendoza was one of PCaC Siuna's best promoters and one of UNAG's best leaders. In 2002, Agustín was murdered by an armed band active in the area.

³² Zamora and Rivas (n.d.) mention that 91 activities were held during 1996 such as workshops on the use and management of velvet bean; experience sharing between communities in the same municipality; promotion using videos filmed on promoters' farms in Siuna; and exchange visits outside of Siuna. By then, a total of 2,389 individuals had participated in the different activities. There were 10 exchange visits outside the municipality that same year, which included Boaco, Matagalpa, Santa Lucía, Nueva Guinea, El Rama, Río San Juan, Managua and Dipilto. Two farmers also participated in exchange programs in Honduras and Cuba.

participated in the First UNAG-Siuna PCaC Assembly in April 1997.

Since it began in 1992, the practice of campesino-led promotion and experimentation has aided the emergence of new leaders and promoters. Although the process was supported by the Siuna UNAG president, there were differences of opinion from some of the National UNAG directors. In part, this could be explained by information problems, but additionally, in 1997, several of the Siuna PCaC leaders were interested in taking control of Siuna UNAG. The Siuna UNAG president and the Siuna PCaC coordinator were also dealing with personal problems at that time.

This was the backdrop to the assembly in 1997 where the Siuna UNAG authorities were elected. Almost all assembly members had been motivated to participate in the campesino to campesino process. At the assembly, a new Siuna UNAG president was elected and an agreement was reached to reelect the Siuna PCaC coordinator, who also became a member of the Siuna UNAG Board of Directors. However, the new Siuna UNAG president had a different view of Siuna PCaC's work and was more interested in taking advantage of the fundraising potential Siuna PCaC had developed. He argued that Siuna PCaC should be controlled by UNAG, despite the fact that the promoters and farmers had always been grateful for UNAG's role and support. For the Siuna PCaC promoters and coordinator, this reflected the Siuna UNAG president's vested interest in controlling the resources and projects that were supporting the process, rather than in supporting the development and consolidation of Siuna PCaC.

In these conditions, the Agricultural Frontier Program (Programa Frontera Agrícola or PFA in Spanish) was close to providing support for Siuna PCaC's strategies and objectives, convinced that sufficient local management capacity existed.

The promoter-leaders became aware that the new Siuna UNAG president wanted to change the focus of PCaC and they decided, without breaking ties with UNAG, to form a Board of Directors, and they convened an assembly of the most active promoters. In late 1997, Siuna PCaC had formed its Board of Directors, which had

the objectives of keeping alive the organizing process created by PCaC, becoming more involved in Program decisions and improving implementation and monitoring of the activities supported by Oxfam GB and by the PFA. In this way, the network of leaders, promoters and farmers was able to maintain control over the real power that gave life to PCaC, and therefore, to Siuna UNAG, even though they did not control the formal structure.

Scaling Up (1998-2000): The promoter network Organization and Consolidation

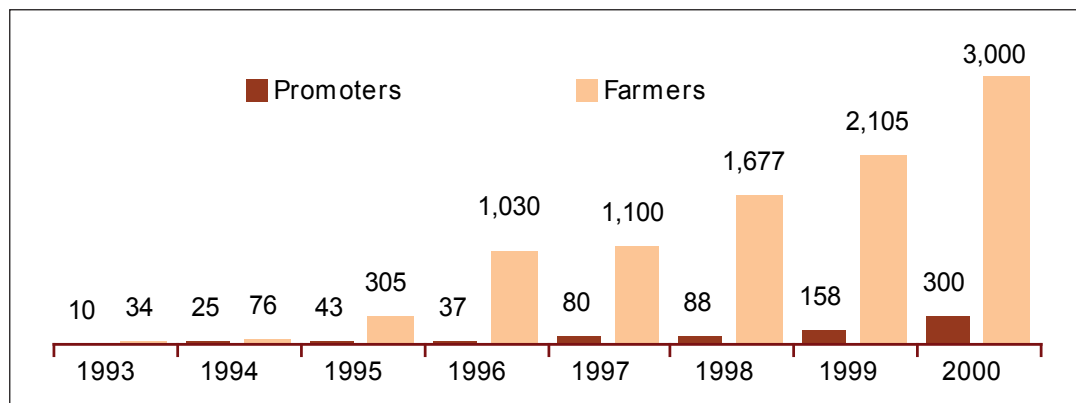
This was the stage of when dissemination and promotion were strongest. Funding from the Agricultural Frontier Program gave PCaC communication media, such as televisions, video cameras, motorcycles, and other equipment. PCaC worked on expanding to other municipalities with the objective of making the program visible everywhere, reaching out to other farmers and disseminating information on a mass scale. In addition to these communications tools, in this stage they began to use methodological tools that would later have a considerable impact on natural resource management, such as scaled mapping of farms and communities.

The Board of Directors created four zones organizing PCaCs work territorially. Regular meetings of the Board of Directors were instituted every two months and reports began to be written. Meetings were held with community leaders and in contrast to prior stages, each promoter was responsible for a group of six or seven communities. It is estimated that at this stage, 60 communities and 300 promoters were involved in the program.

Siuna UNAG's budget was basically covered by Oxfam GB with funds channeled through National UNAG, in contrast to funds provided by the Agricultural Frontier Program, allocated directly to Siuna PCaC,³³ which were used to purchase PCaC's current office in Siuna. Siuna PCaC directors were blocked by UNAG and even though they tried to convince them that PCaC Board of Director's work assisted and

³³ The funds were handled in a separate account by the administrator hired by Siuna UNAG.

Graph 2. Siuna PCaC: Number of promoters and farmers (1993-1999)



strengthened UNAG, one year after its creation, the office was declared illegal by UNAG and ceased to function.

At this point the relationship between UNAG - PCaC Siuna which had allowed financial support to flow to PCaC through the national UNAG continued to fall apart. Up through 1998, Oxfam GB was disbursing funds for Siuna PCaC to national UNAG. PCaC's coordinator, who was also president of UNAG Siuna, requested funds from national UNAG. However, PCaC Siuna promoters stated the need form a directory to exercise greater control over those projects, largely because the UNAG Siuna president was responsible for executing them but did not inform others of avances. which in turn, disbursed the funds to the Siuna UNAG president, according to a quarterly plan that he would submit. Up until then, two Siuna UNAG administrators were the ones in charge of administering the funds. With the prior Siuna UNAG president, this had worked well, but the new president stopped informing PCaC promoters and the Board about the disbursements, generating mistrust. In April of that year, the PCaC Board agreed to form a team of specialized personnel to administer the funds. It was under this framework agreement that the PFA funds were given directly to PCaC, which were provisionally administered by PCaC. The Oxfam GB funds also switched to being administered by the PCaC officer.

This arrangement worked for three months, until discrepancies arose among the Siuna PCaC administrator, the Siuna UNAG president, the Siuna PCaC coordinator and the new promoters' Board, ending in the dismissal of the administrator, which was agreed upon by all. Despite the hiring of a professional administrator,

the Siuna UNAG president centralized the administration. In 1999, Oxfam GB allocated the funds to Siuna UNAG, but given that the UNAG president was frequently in Managua, many of the programmed activities were delayed. In light of this, Oxfam GB channeled the second disbursement for that year directly to Siuna PCaC, streamlining the execution of activities (PCaC-UNAG de Siuna-Oxfam GB, 1999).³⁴

The PCaC Board was obstructed by the Siuna UNAG president with the support of a National UNAG board member at the time. Despite attempts to prove that the PCaC Board of Directors was supporting and strengthening UNAG, a year after it formed the Siuna PCaC Board was declared to be illegitimate by the UNAG national board member who was serving Siuna, and the Siuna PCaC Board ceased functioning.

In 1998, Siuna PCaC requested to have a World Bank representative visit the communities of Rosa Grande and El Bálsamo, which were interested in the potential for extracting essential oils from crops such as allspice. The potential for the extraction and commercialization of essential oils sparked the interest of 15 communities and the formation of the Siuna Multiple Services and Essential Oils Extraction Cooperative (COOPESIUNA), with 53 members. It obtained legal status with the idea of seeking long-term

³⁴ The Siuna UNAG president not only confused the handling of PCaC funds, but he was also selecting promoters in a mechanical way.. The process of training and selecting promoters was an organic process, determined by the work of the farmers. They are the ones who become promoters, and neither PCaC nor UNAG decide who is and who is not a promoter (PCaC-UNAG de Siuna-Oxfam GB, 1999).

Map 3. Siuna: Communities Participating in the Campesino to Campesino Movement, 2000

Source: Prepared by authors, based on PFA

investment funding (Oxfam GB-PCaC-UNAG de Siuna, 2000).³⁵

As work continued towards the objectives of widespread adoption and by 1999, the number of promoters and farmers participating in the PCaC Program had doubled (see Graph 2). PCaC had achieved considerable territorial coverage in the municipality. This can be seen in Map 3, which shows the communities most involved in the campesino to campesino process, demonstrating the high level of territorial coverage that had been achieved in the municipality by 2000.³⁶

During this stage, Siuna PCaC conducted exchange visits throughout Central America and intensified the use of methodological tools. As a result, a much clearer territorial perspective emerged, based on achievements in farm management. The use of velvet bean for stabilization and diversification, has led to a totally new concept of the mestizo on the agricultural frontier who was being transformed through the PCaC methodology.

In addition to scaling up, initiatives were promoted such as farm land-use planning and community mapping,³⁷ the concept of

³⁵ The project for the extraction and commercialization of essential oils involves a local supply based on already-existing crop production, practices and management in Siuna. Organized as a cooperative enterprise (COOPESIUNA), the farmers accept and provide continuity to a series of standards that they integrated into their farm management, which are to be monitored by the community to guarantee the environmental attributes of the essential oils.

³⁶ By 1999, PCaC had expanded into over 60% of the communities in the municipality of Siuna, reaching around 90 communities through the volunteer promoter network (Oxfam GB-PCaC-UNAG de Siuna, 2000). Later PCaC documents mention a coverage of 80 communities.

³⁷ PFA aided PCaC in the use of territorial analysis tools. This support included equipment (Global Positioning System, computers, software such as MapMaker, among others), cartographic maps and satellite images, and community and farm mapping methods. The PFA's original plan contemplated the use of geographic information systems and satellite imaging in Central American agricultural frontier zones. A single satellite image covering all of Central America is available on a daily basis. However, in 1996, the PFA found that the Siuna Campesino to Campesino Program was already drawing community maps, since these were requested by credit-granting institutions. They were also probably used to monitor community health conditions or as part of rural participatory appraisals (Torrealba and Laforge, 1998).

“campesino” biological corridors and proposals for creating cooperatives. In October 1999, the first cooperatives were formed, with support to Siuna PCaC from the organization Intercambio Solidario 44. The communities of Rosa Grande, Tadazna and Montes de Oro were trained in cooperative organization and financial management, which enabled them to apply for grants from a small revolving fund for projects to repair homes and put up fences, which were monitored by Siuna PCaC (Oxfam GB-PCaC-UNAG de Siuna, 2000).

In 1999, an assessment of 32 communities in Siuna found that all of them had become very familiar with velvet bean; 76% of the families surveyed were using velvet bean; 65% were in the process of diversifying their farms; 26% had decided to conserve forested areas; and 24% were allowing lands they owned to regenerate naturally (PCaC-UNAG de Siuna-Oxfam GB, 1999). By the year 2000, Siuna PCaC had over 100 experts in the use of green manure as a result of campesino experimentation (Oxfam GB-PCaC-UNAG Siuna, 2000).

On farm land-use planning was associated with a larger-scale land use planning process that was documented with community mapping tools, which highlighted the environmental and territorial role that farm management plays. Community mapping also helped participants prioritize and coordinate collective action. These included implementing community projects and the development of a land-use planning proposal for farm management intended to increase the sustainability of BOSAWAS: *campesino biological corridors*.

In effect, based on the methodology of experimentation, exchange visits and community mapping, farmers began to see the larger dimensions of the issues and farming practices they were addressing. Several communities promoted proposals to create campesino biological corridors, seeking not only recognition of their contribution to the sustainability of the BOSAWAS core zone, but also a way to link and expand their livelihood strategies and strengthen their collective action, with the aim of constructing a new territorial identity. In practice, the strategy is simple. It involves connecting second growth and natural forest in mountainous terrain to form several biological corridors connected to

the BOSAWAS Reserve. This is also related to the significant benefits peasant families receive from natural resource management, where the need for water, firewood and timber (for fence posts, house repairs, etc.) has been a factor in their appreciation of forest and natural regeneration areas.

The strategy of creating campesino biological corridors reinforced the adoption of land use plans so that natural regeneration and/or remaining forests would be linked to these corridors. The proposal was developed through negotiations by the peasant families themselves. In this strategy, the methods used for community mapping redefined the role of communities and their farms through an endogenous effort to value their territory. This played a key environmental role for BOSAWAS and for different environmental services, which now form part of the farmers’ livelihood strategies.

Through this experience, along with other efforts, projects and organizations, PCaC also contributed to the development of closer relationships and a common agenda. From their beginning, the promotion of alternative sustainable agriculture encouraged joint actions which also address deficiencies in essential services (housing improvement, potable water, sanitation and education), citizen security problems, risk management and forest fires. All together, these collective actions have also contributed to improving the capacity of Siuna communities to run themselves.

The need to open participation to women was addressed during this stage. In fact, there were still problems encouraging promoters to accept participation by women. This was due, in part, to the lack of a gender perspective in the PCaC workshops or in planning. Therefore, it was proposed that between 2000 and 2001, the self-assessment, community self-mapping and planning processes would all be carried out with a gender perspective, with assistance provided by the PCaC national technical team (Oxfam GB-PCaC-UNAG de Siuna, 2000). An evaluation in 2000 identified the following problems facing PCaC: insecurity in the municipality, weather conditions, pests, the increasing momentum of the land market and the role of Siuna UNAG, which did not correspond to Siuna PCaC’s strategic or operative course (see Box 4).

Box 4. PCaC's Principal Difficulties in 2000

- During most of the year, work in the countryside was done under insecure conditions, causing the delay or cancellation of activities. For example, the self-assessment process was put on hold because of the prevailing insecurity.
- Inclement weather, pests and fires slowed progress towards results. Most sugarcane and pineapple fields, which had been producing since 1996, were destroyed by a plague of rats in early 1999 and a good number of promoters had to start over again.
- Land markets increased pressure on farm owners, especially due to expectations generated by the paving of the road to Río Blanco. This shifted the expectations of campesinos and many delayed the adoption velvet bean, hoping that a cattle rancher would buy their pasture. Tadazna leaders believe that if people in that community had not been having good harvests, they would have already sold their lands and migrated to the municipality of Bonanza, especially when considering that the price of land had gone from 200 Córdoba to 1,500 – 2,000 Córdoba per manzana.
- Most of the time the UNAG president in the municipality had the PCaC technical support team busy developing new projects and for a good part of the year they lost contact with promoters, since they feared being fired if they did not follow the president's requests.
- The focus of the work entered into contradiction with other projects being promoted by Siuna UNAG: while PCaC was encouraging people not to burn their lands or use agrochemicals, Siuna UNAG was involved in a bean project that did use agrochemicals.
- Support to other regions, such as Waspam, Bocay, Bonanza and Rosita, increased the workload of promoters and as a result, many of the local activities and coordination initiatives that had begun in Siuna were neglected. This affected the submission of narrative and financial reports to Oxfam GB as well as successive disbursements.

Source: PCaC-UNAG de Siuna-Oxfam GB, 2000

Dispute over the Control of PCaC (2001-2004): Reorganization and Commercialization

This stage was characterized by the struggle for control of Siuna PCaC and Siuna UNAG, and by the search for market access, following on the progress made by the cooperative groups formed during the previous stage. The founding leaders of Siuna PCaC explained that during this stage more cooperative groups formed and decided to work on other issues including forestry and the role it could play. According to the founders, when there is food security, people begin to talk about what comes next; and when the harvests are bountiful, and the food security problem solved, the desire to enter the market grows. As one of the Campesino to Campesino promoters explained, *"Our bellies are full, but our pockets are empty."* The need to generate income grew much stronger during this stage, which had already been the rationale behind the creation of COOPESIUNA during the previous stage.

At this point, Siuna PCaC had already attained high national and international profile, and

decided to join the Central American Indigenous and Peasant Coordinator of Communal Agroforestry (ACICAFOC).

Other assistance agencies became interested in the Atlantic region and the municipality of Siuna, especially because of the destruction left behind in the wake of Hurricane Mitch in Nicaragua. In some cases, the assistance offered to PCaC was channeled directly to the recently formed cooperative groups and to some communities, in particular because these new organizations required a legally established entity to enter into cooperation agreements. Most of these agencies promoted credit programs for basic grain production.

Having access to credit led to problems with defaults and with payment of arrears, which tainted PCaC. Many promoters became debtors while others became debt collectors. As a result, not only did the momentum gained during the previous stage of mass implementation weaken, but additionally, promoters dropped out in at least 50 communities. Credit projects also encouraged the use of agrochemicals, because

they sought to ensure good harvests. Once again, the role of the Siuna UNAG president was crucial, since he was seeking to broaden UNAG's membership by using credit as a way to bring in more campesino affiliates. The project "Strengthening the Stability and Economy of Peasant Families with Sustainable Agricultural Practices in 30 Communities of the Municipality of Siuna" (FDCV-CN/Save The Children Canada/UNAG-PCaC Siuna, 2002), required that beneficiaries be UNAG affiliates, and to be eligible for credit they or their families needed to own land and use sustainable agricultural practices.³⁸

Another aspect of these new assistance agencies that weakened PCaC was the requirement by projects that PCaC hire a specialist. In addition to paying the person, the specialist had to be trained, but once the project had finished, the benefit from the training did not remain with PCaC. This is the stage in PCaC where projects had the most resources but the institution was facing a serious crisis. For their part, promoters felt undermined and stopped doing the work they had been doing. It is not surprising then that during this period, PCaC's number of promoters and producers remained the same.

Oxfam GB's, support ended in April 2002. That same year Siuna PCaC won the world Equator Initiative prize, which coincided with a financial crisis within the organization.³⁹ However, despite the adverse conditions, PCaC continued to hold exchanges and be proactive, leading them to call their process a *Program With No Expiration Date* (UNAG-PCaC, 2002).⁴⁰

Meanwhile, the Siuna UNAG president delayed the Assembly one year, which had initially been scheduled for 2002. In an assembly of its own, PCaC chose a slate composed by promoters and founders who had been on the PCaC board that Siuna UNAG had declared illegitimate. The February 2003 Siuna UNAG Assembly resulted in the selection of a new Board of Directors in an election campaign where PCaC promoters and farmers played a critical role. Currently, although Siuna UNAG and Siuna PCaC are under the leadership of Campesino to Campesino promoters and founders, they need to change their approach since it has become increasingly influenced by external projects, which has weakened their capacity to make social and productive proposals.

Under these conditions, it is understandable that the cooperatives that had started at the end of the previous stage were developing their own proposals, although they had also been participating in developing the strategy for gaining access to power venues, such as the case of Siuna UNAG. Therefore, this stage is also characterized by the reorganization of PCaC while the cooperatives were looking for markets to sell their products.⁴¹

Despite these problems, PCaC has demonstrated its capacity to slow the expansion of the agricultural frontier, by strengthening livelihood strategies and shifting toward new modes of territorial management. It is striking that these new modes continue to operate from a campesino perspective, but with clear environmental and sustainable management dimensions.

Currently, the farmer to farmer program in Siuna includes over 300 promoters and more than 3,000 families in 80 communities are using the practices and knowledge disseminated by the program (UNAG-PCaC, 2002).

External Assistance: Features of the Accompaniment to PCaC

Siuna PCaC's origins and evolution have been strongly influenced by UNAG's role. Not only did it support the establishment of a program using the campesino to campesino methodology in Siuna, at a time when the area

³⁸ According to project data, only 10% of the farmers in Siuna hold a public deed or land reform title; 20% of farmers have an unregistered deed or title; and 70% have only an affidavit, a conveyance document or no document proving ownership of the property.

³⁹ The Equator Initiative of the United Nations Development Program (UNDP) recognizes and rewards experiences in sustainable natural resource management in the equator belt, where most of the world's poverty and biodiversity are concentrated. UNDP Nicaragua played an important role in the effort to publicize Siuna PCaC in the framework of the Equator Initiative, which positioned the PCaC experience as one of worldwide importance.

⁴⁰ Between 2003 and 2004, the Ford Foundation, which was the first assistance agency that supported the beginnings of PCaC in National UNAG, funded a project to support Siuna PCaC. It was aimed at reactivating and consolidating the work of the promoter network and expanding the Siuna PCaC experience by initiating activities through UNAG in the municipalities of Rosita, Bonanza (in the RAAN) and Cruz de Río Grande in the South Atlantic Autonomous Region (RAAS).

⁴¹ The insecure conditions in Siuna also affected PCaC. Eight promoters lost their lives at the hands of armed bands and some 40 families left their farms and moved away (UNAG-PCaC de Siuna, 2002).

was ungovernable, and experiencing social disintegration, but also because of the technical and especially methodological accompaniment that UNAG provided through the Campesino to Campesino Program's Central Technical Team. The Central Technical Team has played a role in the methodological expertise of Siuna PCaC promoters and farmers, which is visible in their considerable command of experimentation, horizontal exchanges and innovation, to name a few. This accompaniment has been crucial to learning new strategies for cultivating velvet bean and using methodological tools.

Furthermore, the trade-association model that held sway in UNAG was a determining factor in the dispute for the movement that had been created around the campesino to campesino methodology in Siuna. This model not only fought for hegemony over the different kinds of organizations that Siuna PCaC was developing; it also had implications for ensuring that the different kinds of external support and accompaniment would be consistent with the empowering campesino to campesino methodology. During Siuna PCaC's early stages, UNAG fulfilled the incipient movement's need for formal organization. UNAG operated as the formal agency that represented and mediated agreements and projects that supported Siuna PCaC. Although this by itself is not a determining factor, in this case it was important, to the extent that PCaC, despite being part of UNAG, also needed to begin to exercise its own management capabilities, including the negotiation and management of funds from assistance agencies that were supporting PCaC activities. In some cases, this aid ended up tainting the aim of activities and strategies, such as in the case of the credit projects.

In this framework, external aid for Siuna PCaC through projects and assistance agencies has had different aims. In the case of Oxfam – the assistance agency with the greatest presence throughout the different stages – the aid had a dual character: on one hand, it funded the implementation of campesino to campesino activities, evolving into a scenario of UNAG involvement and which kept management of financial resources centralized in National UNAG. On the other, Oxfam was also key in complementing the incorporation of other concerns that were no less important into Siuna PCaC's activities, such as the role of women and a gender perspective.

The support for PCaC from the Agricultural Frontier Program stands out because of its support from the beginning. While continuing to coordinate with National UNAG and with the PCaC National Technical Team, it also sought a direct link with Siuna PCaC, reasoning that local management capacity did exist. It also supported and promoted the use of important methodological tools, such as the community mapping that would be crucial to the development of proposals for farm land-use planning and campesino biological corridors, among others. It also helped the farmer-promoters understand the territorial-scale impact of their work in the BOSAWAS buffer zone.

In addition to financial support for projects, support has been provided to disseminate PCaC's achievements, such as enabling its participation in regional exchanges through ACICAFOC, and the role that UNDP played in PCaC's participation in the Equator Initiative.

A Look at the Current Context



The current context has implications for Siuna PCaC. This involves the dynamism of the agricultural and livestock activity in the municipality of Siuna, the emerging momentum in the land market and the complexity associated with land ownership rights, the new proposals and strategies being developed by the central government for the Atlantic region, expanded conservation proposals and, once again, the role of external actors in proposals for natural resource and territorial management of the RAAN.

Agricultural and Livestock Intensification in Siuna⁴²

Between the 1950s and 1970s, the population in Siuna grew at a rate of less than 2 per cent per year.⁴³ With the signing of the Peace Agreements, thousands of ex-combatants and repatriates sought out Nicaragua's Atlantic region to reestablish their lives. During the peace process, which granted Contra combatants control over certain areas and resources for their security and reintegration into the economy, as well as the interest in regaining land, there was a large influx of immigrants who were also attracted by the social services promised and the opportunity to reconnect with old leaders, employers and other ex-combatants. This process activated very aggressive "pioneer fronts" on the agricultural frontier in areas inside the current BOSAWAS reserve (Rocha, 2001b).

Siuna is one of the destination for migrants in Nicaragua's Atlantic region and one of the municipalities that has received the heaviest

in-migration.⁴⁴ According to the 1995 census, only 38 % of rural farm household heads were born in the municipality or were not in another municipality five years ago, and almost half (48.4%) were born in another municipality.⁴⁵ Siuna's 2004 population was estimated at 78,169 (Larson, 2004). The population is by and large mestizo (98% of the residents). The indigenous population is composed by Miskitos and Mayangnas, is just 2%.

The "peasantization"⁴⁶ of Siuna accelerated after 1960, from 44% in 1963 to 61% in 1971 and 77% in 2001 (Table 1).⁴⁷ This is explained by three factors: a) the earlier makeup of the population, a combination of miners, loggers and indigenous peasants dependent on subsistence

⁴² This section is based on the report by Eduardo Baumeister (2004).

⁴³ This was related to changes in the natural population growth rates, particularly in the mortality rate, due to the decrease in malaria deaths and the introduction of antibiotics following World War II, which would have a strong impact following 1950; the effect of internal migration; the fact that mining was not labor intensive; and that the region's extreme geographic isolation from the rest of the country slowed population growth.

⁴⁴ According to the most recent population census (1995), of a total of 144 municipalities studied, Siuna held sixth place in the proportion of "old" rural internal migrants in the rural population. The municipalities with the heaviest rates of internal migration in the country are in the Atlantic regions: Muelle de los Bueyes, Nueva Guinea, El Castillo, San Juan del Norte and San Carlos.

⁴⁵ Most of the migrants came from Matagalpa, Jinotega, Boaco and Chontales, all in departments in the Nicaragua's central region. Quite probably, the next population census, in 2005, will show a similar proportion, since the trend to high natural growth rather than internal migration has held since 1995.

⁴⁶ The ratio of farms to the approximate number of families living in the municipality.

⁴⁷ This proportion is higher than the national average, which was approximately 59% in 2001.

agriculture, supplying the domestic demands of mining activities or of the rest of the current RAAN; b) the new pattern of encroachment on the agricultural frontier, associated with the relocation of basic grain areas and pastures displaced by the expansion of cotton production in the Pacific region; and c) by the promotion of colonization and agrarian reform processes.

The expansion of the agricultural frontier translated into a dramatic increase in agricultural conversion, from 41,000 manzanas in 1963 to 608,000 manzanas in 2001. This increase is also characterized by the dramatic increase in average farm size, as well as an expanding number of commercial producers and a greater proportion of extensive livestock production. Between 1963 and 2001, the ratio of different animals per farm shows an increasing specialization in breeding and dairy cattle for cheese production, which flourished after 1990. An enormous change has taken place in less than thirty years, with close to 80% of the area in Siuna now being farmed.⁴⁸

Of the 5,096 km² in the municipality, nearly 733 km² (104,086 manzanas) are in the BOSAWAS core zone, while the rest—around 619,546 manzanas—are in the reserve's buffer zone.

The 2001 Agricultural Census disaggregates farm area by the portion used for agriculture, livestock and covered in brush and forest. In total 38% of Siuna is forested land. It can be assumed that the municipality's 104,086 manzanas inside the BOSAWAS core zone are part of the off-farm forest (see Table 2).⁴⁹ This means that the core area is made up exclusively of off-farm forest, while the buffer zone includes all the farm area plus an additional area with off-farm forests.

According to the 1995 Census, more than 90 % of the municipality's rural households practice agriculture. Nearly three-quarters of households are headed by a self-employed agricultural worker; only 4% are headed by an agricultural employer, and a minimal percentage of households are headed by a salaried agricultural employee.

Table 3 shows the distribution of the principal variables used in the 2001 Agricultural Census, stratified by farm size. The stratum of farms between 10 and 200 manzanas totals almost 80% of the farm area, which supports the evidence

Table 1. Agricultural properties, area and average size of properties, 1963-2001

Year	Number of agricultural properties	Area (manzanas)	Average Farm Size (Manzanas)
1963	1,325	41,529	31
1971	2,692	246,264	91
2001	8,029	608,678	76

Source: Based on the 1963, 1971 and 2001 agricultural censuses.

that the intermediate strata, between the small producer (<10 manzanas) and large producer segments, have considerable weight.⁵⁰ The average farm size in Siuna is 73 manzanas, much larger than the national average of 45 manzanas, according to the 2001 Agricultural Census.⁵¹

Annual crop production is concentrated on smaller farms. Farms with less than 50 manzanas hold 40.7% of crop land. However, the importance of farms between 50 and 200 manzanas is notable. This is the largest farm group in the municipality, representing a little over one-third of all farms, 47.8% of total area, 45.8% of annual crops, a similar percentage of permanent crops, 47.7% of cattle, and 50% of calves in the municipality. As far as land use is concerned, two categories are particularly important: 'brush and forest,' and 'other uses.' In the municipality as a whole, 21.5% of land is on-farm forest and 30.8% is for other uses, which include fallow land, scrubland (*tacotales*) and areas that are unsuitable for production (swamps, rocky ground, etc.).

⁴⁸ During these years, three main periods can be identified: First, rapid growth in farm land area, in the number of farmers and in herd size; second, the reversal of this process during the 1980s due to the war; and third, rapid repopulation and agricultural and livestock expansion during the post-war period.

⁴⁹ The area corresponding to the buffer zone, estimated at 619,546 manzanas, is broken into 558,000 manzanas of farms (sum of categories 1, 2 and 3 in Table 2) and 55,000 manzanas of off-farm forest that is not part of the estimated 104,086 manzanas in the core zone.

⁵⁰ As can be seen, farms over 500 manzanas stand out; these are the large producers, which hold over 12% of the municipality's total land area.

⁵¹ This municipal average is consistent with its location in an agricultural frontier zone, with low population density and a growing influence from livestock activity.

Table 2. Siuna: Land Use, Core Zone and Buffer Zone in BOSAWAS

Land use	Area (Thousand of manzanas)	Percentages
1. Agricultural and livestock areas (crops and pasture)	266.5	36.8
2. On farm forested area	119.7	16.5
3. Fallow areas and other uses	171.7	23.7
Farm area (1+2+3)	557.9	77.0
4. Off farm forest	158.9	21.9
5. Other uses (urban centres, roads, etc.)	7.2	1.1
TOTAL (1+2+3+4+5)	724.0	100.0
BOSAWAS Core Zone	104.0	14.4
BOSAWAS Buffer Zone	620.0	85.6

Source: Based on the 2001 Agricultural Census and Larson (2004)

Table 3. Land use according to farm area, 2001 (In manzanas and percentages)

Strata	Number of farms	Areae	Annual Crops	Permanent Crops	Pastures	Forest	Other Uses
Manzanas							
0-10	1152	7,431	3,241	565	946	559	2,120
10-50	3,520	110,002	23,310	4,041	27,408	17,436	37,807
50-200	2,574	266,672	29,849	4,915	90,728	52,357	88,823
200-500	334	106,070	6,192	883	42,257	25,650	31,088
500 or more	68	67,787	2,633	313	29,226	23,727	11,888
TOTAL	7648	557,962	65,225	10,717	190,564	119,729	171,727
Percentages							
0-10	15.0	1.3	5.0	5.3	0.5	0.5	1.2
10-50	46.0	19.7	35.7	37.7	14.4	14.6	22.0
50-200	33.7	47.8	45.8	45.9	47.6	43.7	51.7
200-500	4.4	19.0	9.5	8.2	22.2	21.4	18.1
500 or more	0.9	12.2	4.0	2.9	15.3	19.8	7.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Based on the 2001 Agricultural Census.

On-farm land use is clearly oriented toward cattle raising; 34.2% of farm area is used for this purpose. The majority of the remaining on-farm land is brush and forest, including a few areas of dense forest, and land classified as other uses, including *tacotales*⁵². Cattle ranching is of an extremely extensive type, with a ratio of 1.7 manzanas of pasture per head of cattle.⁵³

The increase in cattle ranching is shown by the increase in the number of animals per farm and by the increasing influence of livestock in the municipality. The average farm devotes approximately 8.4 manzanas to annual crops,

mainly maize and beans, and 1.4 manzanas to permanent crops, used for small-scale coffee, cacao and banana plantations. Average pasture area is around 25 manzanas per farm and there is an average of 14.5 head of cattle per farm, which results in a stocking rate of 1.7 manzanas/head (0.58 head/manzana of pasture), meaning almost half a head per manzana of pasture, a

⁵² Tacotal areas are naturally regenerating pastureland and bushes that can be used later for crops or pasture.

⁵³ There are no large differences in intensity between strata, except for the denser stocking rate per unit of area on farms smaller than 10 manzanas, a marginal segment for cattle raising.

Table 4. Siuna: Farms with Cattle, 2001

Strata (manzanas)	0-10	10-50	50-200	200-500	500 or more	TOTAL
Farms with cattle	254	1,890	2,055	297	65	4,561
Farms with cattle as percentage of total farm area	22.0	53.7	79.8	88.9	95.6	59.6
Herd size	1,065	18,766	53,074	22,232	16,023	111,160
Percentage of cattle	0.95	17	47.7	20	14.4	100.0
Calves	313	5,463	13,680	4,961	2,924	27,341
Percentage of calves	29.4	29.1	25.8	22.3	18.2	24.5
Calves as percentage of total heard size	1.2	20.0	50.0	18.1	10.7	100.0
Calves per farm with cattle	1.2	2.9	6.7	16.7	45.0	6.0
Pasture per head (in manzanas)	0.89	1.46	1.7	1.9	1.82	1.71

Source: Based on the 2006 Agricultural Census.

clear indication of the extensive nature of cattle ranching in Siuna. Farms under 50 manzanas are used for basic grain production and less for cattle ranching.⁵⁴ Farms over 200 manzanas are mainly used for extensive livestock production. Of total farm area, 41% is devoted to pasture, 29% is forest and 25% is fallow, mainly *tacotales* and other unusable areas.

In Siuna, cattle ranching is undergoing a notable increase, which is tied to farm size and to the proportion of producers that have cattle. In farms smaller than 10 manzanas, only 22% have at least one head of cattle and in the stratum from 10 to 50 manzanas, 53.7% have cattle (see Table 4). Therefore, on farms smaller than 50 manzanas, around 54% have no livestock, which indicates the lack of on-farm consumption of milk, cheese and meat in those families and the low capital formation in this segment. This raises the question as to whether these strata will obtain beef cattle on their own or as public policy once the road system is expanded or programs are implemented to facilitate obtaining animals.

In terms of cattle ownership, the intermediate group (50-200 manzanas) stands out, holding nearly 48% of the cattle and 50% of the calves in Siuna, with an average of 6.7 fresh cows per farm, that can produce around 27 liters of milk a day, or over half of a 40-liter milk container.

Siuna is in fourth place for the availability of calves, after the municipalities of Paiwás, El Rama and Nueva Guinea, all located in the Atlantic region in areas where the amount of farmland has expanded in recent decades due to the expansion of basic grain production (especially in Nueva Guinea) and cattle raising activity.

Cattle ranching in Siuna is linked to two value chains (Mendoza, 2004). One is for *morolique* cheese (a hard cultured cheese), primarily exported to El Salvador and the United States and tied to cheese producers and vendors of Matiguás and Río Blanco. The other value chain involves the production of more rustic, native cheeses, which most producers are involved in during certain times of year. These cheeses are difficult to market because they are mainly distributed along the Atlantic Coast and to a lesser extent on the Pacific. It is estimated that

⁵⁴ On average, farms under 10 manzanas have only 0.92 head of cattle per farm and farms between 10 and 50 manzanas have an average of 5.3 head of cattle per farm. However, in the stratum between 10 and 50 manzanas, farms with cattle have almost three calves per farm and account for 20% of all calves in the municipality. A clear picture of the farm profile can be had by looking at the demand for permanent employees: Farms under 50 manzanas essentially do not hire permanent employees. Starting at 50 manzanas, there is a greater demand for salaried labor, while farms over 200 manzanas have more than one permanent salaried employee in charge of cattle management (animal care, milking, transport to receiving centers).

around 30% of the producers supply milk for *morolique* cheese production.

The increasing cattle ranching activity in the departments of Boaco, Chontales and Matagalpa is extending into the RAAN. The expanding market, through the liberalization of foreign trade, often through informal routes such as contraband, is linked to the growth of the herd, to a significant proportion of fresh cows and to the establishment of a small-scale cheese industry that buys milk and processes cheese for export with little government regulation over the sanitary conditions of the milk delivered, the processing facilities, and the packaging and transportation of the cheese. Siuna is becoming one of the important secondary hubs in the dairy—cheese-making—cattle-breeding production structure.

Public policies have not been successful in improving yields for cattle or basic grain production, despite having created the general conditions for the expansion of cattle ranching and basic grain production without placing restrictions on the conversion of forested areas into pastures or fields for annual crops.⁵⁵

The course that is seen as most feasible is intensification of cattle ranching, both for dairy—cheese-making—and for the raising calves and young steers, or a combination of both. This could increase land sales by small and medium-sized producers located along roads or land that would benefit from the expansion of the road network. This second option could have the logical consequence of land being purchased or occupied farther into the interior of the municipality, in areas that are relatively more forested, for their later incorporation into cattle ranching and basic grain production.

As the road system expands, the intensification of extensive cattle ranching is expected to increase demand for land in Siuna, replacing the agricultural frontier dynamic with that of the cattle-ranching frontier. This will require governmental and non-governmental initiatives to promote more intensive livestock production methods, in addition to feeding systems that are less dependent on natural pastures, pasture rotation systems that are more conducive to

maintaining the nutritional value of the pastures, fodder systems and living fences.

Property Rights Dynamics and Markets: A Serious Obstacle to Governance

Land ownership rights acquisition in the North Atlantic constitutes one of the principal barriers to the proper management of territories rich in natural resources. This aspect is central to understanding the issues and conflicts over governance among the multiple actors on the agricultural frontier, and in particular, the management of BOSAWAS. However, little reliable data exists on the land tenure and ownership system in Siuna. This lack of data reflects not only the feeble state of the government's statistical monitoring, but also the legal ambiguities surrounding land tenure in this region.

Land that is not legally owned or in open and obvious "use" is considered property of the state. Since the government has little institutional power to exercise control over the land, state lands are regarded as free access areas, open to colonization, use and land claims (Eriksson, 2004). Land designated as national or idle land constituted a special class of state property intended for concessions to large enterprises for the exploitation of natural resources or for colonization by landless peasants (Mordt, 2002, cited in Eriksson, 2004) and in the case of Nicaragua, for redistribution programs at the end of the conflict.

"...The most widespread mechanism of acquiring rights to land ... has been *adverse possession* [*prescripción adquisitiva*]: that is, the occupation in good faith for a continuing period of time. ...Rights of possession can be acquired after one year. Ownership rights can be obtained after 10 years (*prescripción ordinaria*) in cases where a document had been issued, and 30 years (*prescripción extraordinaria*) where this was not the

⁵⁵ According to the 2001 census, only 2.6% of farms in the municipality had access to technical assistance and 4.7% to agricultural and livestock loans. Both rates are below national averages, which are close to 16% for farm technical assistance and 14% for credits.

case" (World Bank, 2003, p. 40). 'Improvements' can be purchased from third parties to acquire access to the land through rights of possession. Over time, these rights undergo a process of institutionalization, where rural extension projects, credit systems or other mechanisms reinforce these property rights.

This situation favors colonization through 'improvements.' On the North Atlantic agricultural frontier, the common practice has had a marked pattern and sequence: First, colonists (campesinos-mestizos) cut down trees to demarcate the area claimed. In many cases, this task is left to loggers, who extract high value species (mahogany and cedar). Then, the "new farm" is prepared by clearing and burning remaining forests. Basic grains are grown in cycles of approximately three to four years in the same field. Since soils in the region are fragile and are unsuitable for intensive agriculture, soil fertility is rapidly depleted, requiring new land to be opened up, starting the cycle over again. The depleted, degraded land is abandoned or sold to cattle ranchers, which contributes to land concentration.

In addition to the different types of *adverse possession*, property rights can be obtained through *supplementary titles* (*títulos supletorios*) and/or *judicial sales* (*ventas judiciales*), which often have an illegal origin, but end in legal ownership rights (Stocks, 1998). "*Supplementary titles...* can be requested by anyone who is in possession of a property without a title that supports his rights. Upon verification of possession through three witnesses from the same municipality and a public announcement to check that there is no opposition to the issuance of the title, a civil judge will grant such a certificate. (...) They can be registered, and...used...for gaining full title through ordinary prescription after 10 years... *Judicial sales* ...grant ownership and award full title, rather than just rights of possession. (...) Although they were initially designed as a means to cancel debts in a forced liquidation, judicial sales are widely used to create new registry records. Given the high costs of this rather complex process, judicial sales are biased in favor of the rich. The process consists of four steps. First, the possessor of the property files a suit stating that he or she bought the property but did not receive the corresponding deed from the seller. Second, the judge notifies the

seller ...to appear in court.... Third, if there is no opposition, the judge grants the property to the claimant. [Finally]... the sentence is registered in a new registry record" (World Bank, 2003).

This dynamic driving the acquisition of rights is clearly the ongoing migration toward the agricultural frontier. As a consequence, the future management of the BOSAWAS territory (both the core and buffer zones) will depend greatly on the manner in which land ownership rights are determined.

RAAN: Tendencies from the Central Government and Foreign Aid Agencies

The central government has developed a number of proposals and strategies for the Atlantic region that have clear implications for the Siuna municipality and BOSAWAS. An important factor in any proposal for the Nicaraguan Atlantic is its isolation from the rest of the country and its history of underdevelopment. The concrete manifestations of this situation have been limited investment in production, minimal transportation infrastructure, lack of coordination with the regional production structure, citizen insecurity, limited coverage for essential services and public investments, and a shaky democratic framework (Blanco, Bendaña and Guevara, 2004). Thus, the Proposal for a National Development Plan states the need to develop a central government policy given the region's ethnic composition, isolation, poverty, weak government presence, heavy migration from the rest of the country, and recent drug activity. Four large areas for action are proposed: i) strengthen the presence of the government on the Caribbean Coast, both of central government institutions and the judiciary; ii) make progress toward the resolute definition of property rights; iii) undertake the construction of infrastructure that connects of the Coast with the rest of the Caribbean, under the rationale that it is unreasonable to think that tourism and services can be attracted to the Coast from Managua; and iv) work on a closer relationship with the Caribbean countries (Gobierno de Nicaragua, 2004). These actions are aimed at laying the groundwork for a strategy to promote tourism, given the wealth of natural resources on the Caribbean Coast.⁵⁶

In fact, actions have been already taken to improve access to the Atlantic region, including paving the Río Blanco-Siuna-Puerto Cabezas highway, which would make it into an all-weather highway. This highway (in the fundraising stage) and the San Lorenzo-Muhan-Rama highway (under construction), El Rama Port (being improved) and the Nueva Guinea-Bluefields highway will all contribute to strengthening the development of mining areas, renewable energy, the meat and dairy industry, forestry plantations and ecotourism. They will also attract national and foreign investment in the installation of free trade zones that will take advantage of the connections to Atlantic ports. In addition to improving the transportation in the Atlantic regions, these highways could improve security and contribute to decreasing the use of Caribbean ports in neighboring countries (Gobierno de Nicaragua, 2004). The proposed improvement of these roads sought to support a number of sectorial proposals for the North Atlantic, several of which are described below.

Based on the Atlantic region's biophysical characteristics, the Atlantic Biological Corridor project of Nicaragua includes proposals for agriculture and livestock, in four strategic areas (Blanco, Bendaña and Guevara, 2004). These include: i) crop production to ensure food security (basic grains, bananas, root and tuber crops), primarily on a small scale for on-farm consumption by rural families and to a lesser degree for generating a surplus; ii) traditional export crops that are highly profitable and from forests (roots and tubers, cacao and oil palm, among others); iii) non-traditional export crops, such as exotic fruits, palms, ginger, cinnamon, black pepper and others; and iv) cattle ranching, which requires the introduction of improved pastures and sylvopastoral systems, the construction of a slaughterhouse in the Siuna and Rosita area, the promotion of a cattle-feeding industry, and the development of the poultry and pork industries.

A forestry proposal for the North and South Atlantic regions is included in the national forest policy, which has four principal objectives for increasing the commercial value of forests and encouraging their management: i) improve forestry production chains; ii) redistribute benefits to forest owners; iii) develop timber and non-timber product markets and increase the

percentage of raw material processed in regional industries; and iv) market of forest products (Andersen, 2003). The forestry proposal for the Atlantic regions also includes studies⁵⁷ that could serve as information for regional and municipal governments, given their limited capacity to manage the sector. It also recommends revisiting the 1991ECOT-PAFP proposal, since many of its objectives are relevant for the development of forestry on the Nicaraguan Atlantic and for strengthening forest management capacities, including natural forests (pine, broadleaf forest, mangroves), secondary forests and commercial forest plantations; and finally, modernize wood transformation industry to increase value (ibid).

Siuna and Bonanza are being explored for new mineral deposits in the framework of the new mining law, which seeks to attract foreign and national investments. Environmental impact studies have already been discussed to evaluate the impact of a new hydroelectric dam to satisfy the demand of energy (Lundberg, Moreno and Hodgson, 2004).⁵⁸

Land use planning is also on the agenda for the Atlantic region. As often happens, a proposal was developed for zoning and land-use planning based on current land-use maps, potential use, and conflicts over land use and management.

⁵⁶ Proposals for an Atlantic Biological Corridor include the development of tourism through an inventory of attractions needing minimal infrastructure, such as "mining museums and mine tunnels;" the Santo Labú Trail in Siuna; the promotion of protected areas and the biological corridor included in the BOSAWAS Management Plan; the development of cultural tourism in indigenous communities; sports fishing; ecotourism; adventure tourism; scientific tourism; and community tourism; among others (Friecke, 2004).

⁵⁷ Community organizations and options for strengthening bargaining power; the timber market and proposals for increasing transparency and competition in price setting (timber markets, stumpage auctions); production and use of non-timber products; forestry chains (prices, costs, taxes and profits); forestry concession models; areas suitable for commercial forestry plantations; among others.

⁵⁸ In mid-2004, there were 73 assigned mining rights in the Atlantic region, concentrated in the mining triangle (Siuna, Bonanza and Rosita). Of these 73 concessions, 20 were granted between 1994 and 2004, and 53 were applications for concessions made between 2001 and 2004. Of the mining concessions, 8 are for gold mining (2 working and 6 inactive) and 12 for exploration, 5 of which are being used for prospecting activities. The mining rights concessioned include all minerals within the concession's perimeter, for a duration of 25 years, renewable for an additional 25 years. The mining rights concessioned cover almost 240,000 ha, 30,000 are in operation and around 210,000 are eligible for exploration (Lundberg, Moreno and Hodgson, 2004).

The proposal includes biodiversity conservation and protection zones (restrictive conservation, conservation and sustainable use of wildlife, hydrological protection); small-scale fisheries zones; forestry production zones (production and management of pine and broadleaf forests); zones for sustainable production systems in agricultural frontier areas (agroforestry systems, extensive livestock production and annual crops in the consolidated agricultural frontier; agroforestry systems, extensive livestock production and annual crops under sylvopastoral systems and soil conservation in pioneer agricultural frontier zones); and mining zones (Cedeño, 2004). These proposals include a portfolio of “strategic project” profiles for implementing the land-use planning proposal, totaling almost US\$150 million.

All these proposals must address one common problem: land ownership rights which constitute a critical element for any management, conservation, production and investment proposal. The World Bank is attempting to improve land tenure security – through a Land Administration Project – under the assumption that it will “(i) boost investment in agriculture, leading to productivity and income growth; ... (ii) promote the sustainable use of natural resources; (iii) increase revenue collection, and iv) facilitate planning at the municipal level, as a means to foster the decentralized provision of services” (World Bank 2002).⁵⁹ In the RAAN, this project is supporting the demarcation of the indigenous territories located in BOSAWAS, covering a total area of 655,572 ha.

Even though these proposals and actions may constitute concrete opportunities and agendas for the Atlantic territory, the autonomy process has made limited progress, as has happened with the regulatory framework for the Autonomy Statute. In fact, the regulations were issued 16 years after the Autonomy Statute for Nicaragua’s Atlantic Coast Regions, and many of its sections seem to be a mechanism that extends roles and commitments from the central government to the regional governments. For example, Articles 18 and 19 (Asamblea Nacional de Nicaragua de la República de Nicaragua, 2003b), stipulate that the autonomous regions shall establish appropriate regulations to promote the rational use of waters, forests and communal lands and the defense of their ecological system, taking

into consideration the criteria of Atlantic Coast communities and the regulations established by competent agencies.

The Regulations for the Autonomy Statute for the Atlantic Coast grants regional governments the right to manage their resources and institutions: they shall administer programs for health, education, culture, procurement, transportation, community services, sports and infrastructure in coordination with the corresponding central government agencies or ministries (Rosenthal, 2003; Asamblea Nacional de la República de Nicaragua, 2003b).

Mattern (2002) considers that one of the main limitations to the autonomy of the Atlantic region is the political parties’ domination of the regional councils, which subordinate regional political expressions to the large national parties, hindering the development of regional parties. Likewise, he identifies the following factors limiting the development of autonomy:

- The lack of a coastal plan with its own political priorities, given that the powers of the regional councils are limited, especially in their legislative authority, which severely curtails administrative autonomy.
- Despite the existence of internal regulations for regional councils, the work commissions have generally not functioned. Even though considerable advances have been made in administrative and technical capacities since 1990, there is little capacity for execution, and project formulation and strategic planning are weak, to such an extent that neither region has a regional strategic development plan.
- Regional offices face serious constraints due to the lack of equipment and staff, which results in insufficient and poor quality services.
- Neither regional government has developed a local taxation plan nor have they applied for the special development fund stipulated in the Autonomy Statute, which means that financial resources available for investments

⁵⁹It proposes to achieve this objective by regularizing property rights; establishing a secure and legitimate land rights regime by collecting current field information; and improving land administration services provision. This process will facilitate elimination of overlapping land claims; pending legal revisions; extremely centralized and ineffective services delivery (i.e. titling, registration); land-related conflicts; non-sustainable land use patterns; and other property problems (World Bank, 2002, p. 3).

are extremely limited. Basically the only source of income for regional governments are revenues received from the use of natural resources, even though these are managed at the central level through the Ministry of Finance, the institution responsible for collecting fees and allocating funds.

Furthermore, municipalities have a significant fiscal gap; most of them cannot carry out the basic duties established in the Constitution and the Municipalities Law. They have problems with financial soundness due to budget transfers that have been either delayed or withheld. In addition, decentralization has shifted responsibility to municipalities for funding shortfalls for services—allocations to the municipalities account for only 1% of Nicaragua's budget (Rosenthal, 2003).

The role in the Atlantic territory of the three tiers of government (national, regional and municipal) is not clear and no institutionalized coordination, cooperation and oversight mechanisms exist. In light of this situation, relations between the central government and the autonomous regions are maintained through political party, discretionary and informal channels. The decentralized administration of the Atlantic territory makes coordination between the regional and municipal levels difficult, because the central government representatives in the Atlantic region do not have decision-making authority (Mattern, 2002). Added to this, is the lack of coordination between donors and projects, which leads to duplication of efforts and multiple planning and land use exercises (Rosenthal, 2003).

Siuna PCaC's Accomplishments and Contributions



In just one decade, Siuna PCaC has made impressive progress. One of its achievements has been its contribution to integration, dialogue and reconciliation among the rural population. The combination of its organizational history and the empowering campesino to campesino methodology were crucial, which in turn contributed to the accumulation of human and social capital. This allowed a qualitative leap toward an extremely significant social and productive proposal for managing buffer zones in general and BOSAWAS in particular. Likewise, Siuna PCaC represents a movement that is contributing to the creation of a new “campesino-mestizo” identity and discourse, playing a critical role as a key partner in developing a type of territorial management that is more socially, economically and environmentally sustainable.

Campesino Integration, Dialogue and Reconciliation

Siuna PCaC has achieved a process of true integration, dialogue and reconciliation among the rural population in an extremely hostile environment of social disintegration. During the 1980s, this context was deeply affected by the war between the Sandinistas and the Contras, the socio-economic crisis of the time and the region's geographic and political isolation. With the defeat of the Sandinistas, both sides of the military conflict –Contras and Sandinistas– were abandoned to their fate (Pasos, 2005).

The empowerment methodology resulted in a convincing proposal – velvet bean– which meant working less while reaping more bountiful harvests. Gradually peasants started planting, producing and diversifying on the same piece of

land. This combination of elements was key to making inroads in the region and working with old adversaries, who went from mutual distrust and fear to joint action (Pasos, 2005).

The Development and Accumulation of Social and Human capital

One of the PCaC methodology's main achievements has been the generation of human capital⁶⁰ and social capital,⁶¹ contributing to the development of a campesino movement where local people themselves become community managers based on sustained communication processes and exchanges that value of campesino knowledge by putting into practice the techniques they themselves transmit. This method has facilitated the program's expansion in terms of the territory covered, technological content, teaching-learning methodologies, productive capacity, ecological awareness and the organization of experimenter groups. For this purpose, they gradually developed a people oriented proposal, attempting to address factors limiting their production using local resources with an ecological perspective and seeking

⁶⁰ Human capital refers to the aptitudes, knowledge, work skills and good health that enable populations to implement different strategies and reach their livelihood goals (DfID, 1999).

⁶¹ Social capital refers to the organizing capacities in an area, and the communities' abilities for securing resources (knowledge, collective action, market access, etc.) by virtue of their membership in social networks or other social structures, and includes two key dimensions: a) the capacity of the members to use its organizational structure to discuss, agree, implement and monitor actions and activities among its members; and b) the quality and density of its external social networks employed for receiving support and resources that advance community goals (Rosa, *et al.*, 2003).

to change the traditional vertical relationship between technicians and campesinos. (UNAG-PCaC de Siuna, 2002).

The horizontal methodology builds self-esteem and a campesino-mestizo identity by offering something relevant and has forged a new campesino sense of worth and pride. This pride has been reinforced by the regional and international recognition received, such as the Equator Initiative prize awarded to Siuna PCaC in 2002. The strong sense of identity serves as the foundation for the accumulation of social capital both internally and organizationally, which facilitates collective action. Likewise, as PCaC attains greater regional and international recognition – to the point where PCaC has become a regional school (Castrillo, 2004) – it further extends its network, which can contribute to expanding collaborative relationships for attaining community goals.

However, this campesino prestige – which simultaneously shows and strengthens a strong accumulation of social capital – has its constraints and limitations. Just as social capital increases internal cohesion, the exclusion of “non-members” is reinforced, which can become a barrier to building alliances with other important stakeholders in the region, for example, indigenous peoples. Something similar could also occur among the indigenous population, as a result of their own internal social cohesion.

PCaC and Buffer Zone Management

In just one decade, Siuna PCaC has rapidly scaled up from an offer of farm management to an alternative proposal that has stabilized and restored degraded territories. As Siuna PCaC farmers have acknowledged, this has been possible because they realized velvet bean gave them an entry point. However, the process scaled up not only because of the mass adoption of velvet bean and farm land-use planning, but also because it applied the same methodology of experimentation, exchanges and community mapping at a territorial scale. The widespread implementation of farmland-use planning rapidly turned Siuna PCaC into a larger-scale territorial planning process. The experimentation and exchanges contributed to building self-esteem

and identity, which, combined with community mapping instruments, enabled people to look beyond the farm and see themselves in a larger territory and perceive common problems and opportunities.

Another key element in the program’s growth to a territorial scale is associated with the sense of belonging. PCaC, with the adoption of velvet bean and its methods, has overcome both the need and the desire of colonists on the agricultural frontier to expand into new lands. It is in this context that, the relevance of the proposal for campesino biological corridors should be understood since it represents a significant leap from farm to landscape management with a profound concern for the ecology.

The strategy of creating campesino biological corridors entailed negotiations among peasant families, which was a critical element for collective action and future interaction with other territorial actors. Likewise, these discussions and negotiations are contributing to a growing awareness among campesinos of their role in managing the BOSAWAS buffer zone, and with this to a growing counter-demand of support for their strategies. The innovative element is that the formation of campesino biological corridors is not only an attempt to gain recognition for their contribution to managing the BOSAWAS, but it also demands that support be linked to their livelihood strategies.

A collective process has begun expanding livelihood strategies based on velvet bean cultivation, the fallowing of land for natural regeneration, and organic farming and agroforestry practices. This is happening, for example, with the proposal to extract essential oils from allspice, lemongrass, cinnamon, vetiver and ginger, all crops that are part of the production and agroforestry management strategies common in many of the communities, especially in those closest to BOSAWAS.⁶²

All of this, in addition to diversifying and strengthening peasant livelihoods, is also contributing to building a sense of belonging linked to farm management and to bringing together shared interests and values that had not previously existed in the territory. This is

⁶² These essential oils are to be marketed as cosmetic ingredients for the U.S. market.

especially true considering that Siuna has for decades received migrants from Nicaragua's Pacific and central regions. Despite this, it is noteworthy that peasants in Siuna are disconnected from the dynamic of managing the BOSAWAS core zone, which explains their strong sense of identity with regard to the process that they themselves have fostered, rather than to the importance of the reserve per se. However, they are growing more aware of the contribution they are making to the reserve's sustainability, and their peasant livelihoods are beginning to tie in more clearly with new perspectives and opportunities associated with the forest and the environment.

PCaC's Contribution to a New Campesino Identity

The evolution and experience of Siuna PCaC represents the construction of a new identity and imaginaries of the former campesino-mestizo of the agricultural frontier in a buffer zone, which contradicts the dominant discourses that view mestizos as pioneers of the agricultural frontier and environmental predators.⁶³ This new identity creates opportunities for conceiving forest and natural resource management based on a kind of community management that recognizes the role of rural communities in managing anthropogenic landscapes.⁶⁴ Equally, PCaC's accomplishments represent a fresh proposal, based on concrete experiences and results regarding the traditional dichotomy between conservation and production, which demonstrates that it is possible to conserve natural resources by using production proposals intrinsic to campesino communities.

In addition to the new identity, new imaginaries have also been constructed as a result of the confluence of natural, human and social assets which in turn has facilitated the development of a concrete proposal for managing production in the buffer zones based on campesino strategies. These imaginaries include campesinos' aspirations for converting their agroforestry and farm management strategies into cooperative enterprises (campesino-entrepreneur), integrating cattle ranching into a farm management framework (campesino-cattle rancher) and projecting themselves as an alternative for farm management that contributes

to the sustainability of BOSAWAS (campesino-preserver of natural resources).

However, from the perspective of PCaC campesinos, there are several imaginaries that may or may not contribute to future alliances between conservation and productive management of natural resources from a community-based perspective. It would seem that their strongest goal is to become cattle ranchers, which, to the extent that this expands could become a scenario that competes even more with the imaginary of being campesino-entrepreneurs. At present, none of these imaginaries is exclusive of any other, however, decisive collective action is required for ensuring that the first two imaginaries (cattle rancher and entrepreneur) do not become detached from the construction of the third (campesino-mestizo preserver of natural resources). The foregoing supposes new challenges for PCaC, both in terms of selecting imaginaries and making them compatible, as well as in terms of selecting future partners and allies.

It is noteworthy that the need to emigrate is not found among the imaginaries of the campesinos themselves, despite the fact that many of them were immigrants from the Pacific and central regions in search of land and better living conditions. This points to two factors: first, the viability of their livelihoods, and second, the strong identification and sense of belonging that campesinos feel toward the territory, which they are building together. To a large extent, these factors are testimony to and a consequence of the PCaC methodology, which has contributed to "the stabilization of families, to food security and to the restraining the encroachment on the agricultural frontier," as they themselves see it.

⁶³ Zeledón (2004) maintains that the mestizos on the agricultural frontier are social subjects with their own cultural identity, which has been denied and ignored because of the dominant perspective imposed through State-nationalist myths that keep them from being seen as actors who are culturally estranged from archetypical mestizaje. According to Zeledón, campesinos on the agricultural frontier have family and indigenous solidarity relationships "that impede or inconvenience the full formation of other individualistic mestizo social relationships" and therefore, a "cultural continuum exists between the indigenous communities in the north and center of Nicaragua and the campesino communities on the edge of the agricultural frontier."

⁶⁴ This is not trivial and requires a considerable shift in practices and approaches, where the landscape dimension is more fully integrated beyond the core zones of the protected areas, in order to make the management of these areas more ecologically and socially sound.

In Siuna, a process has emerged for the social construction of strategies that seek to strengthen the livelihoods of the campesino population, with clear territorial implications. The local and national UNAG constitute the formal institutional structure that supports and guides the process; however, it needs to improve its performance, especially considering that in the last stage, Siuna PCaC has been accompanying the accomplishments of the process by itself. UNAG can strengthen these achievements even more, especially those related to the mass adoption and intensification of the management of the BOSAWAS buffer zone.

Despite the extremely adverse context that it has endured, PCaC has facilitated an uncommon process, not only for making food security stronger and more practical, but also for forest conservation and natural regeneration on the farms, which runs counter to the traditional ways of thinking and the practices of subsistence agriculture strategies in agricultural frontier zones. This reveals that there is a new way to value forests and the potential for natural regeneration. For these reasons, in Siuna, PCaC's achievements contribute not only to making the BOSAWAS buffer zone productive, but also to a new campesino identity.

Challenges and Opportunities for Siuna PCaC



The current context in which Siuna PCaC is operating poses different kinds of challenges. First, and foremost, is the trend toward agricultural and livestock intensification in the municipality, which has become stronger during recent years. This has invigorated the land market, which is also being strengthened by expectations around projects such as the building of an all-season road. There is a clear risk that campesino-to-campesino farmers may sell their land (especially when it is close to the road), particularly to cattle ranchers, in a context where PCaC's current responses and proposals may not be up to the task. PCaC must also respond to the changing aspirations of its members, for whom livestock is an attractive option and for which there is still no production and management proposal, like the one for agricultural production.

The RAAN continues to be the object of strategies strongly pushed by outsiders. This region is a territorial convergence zone for proposals, which, in the case of external assistance agencies and the central government, are mainly oriented toward addressing pending issues such as territorial demarcation, stimulating the real estate market, investments to improve connectivity and the road system, etc.

As the proposals are implemented, they have clear repercussions for the strategies put forth by PCaC and other actors from the Atlantic region in general, and BOSAWAS in particular. Some of these proposals represent important opportunities for PCaC to expand its networks of relationships based on the potential that its success has for more integrated, inclusive territorial management. In this context, PCaC

should make a considerable effort at being in charge of its own institutional development, which, as can be seen, is not independent of the context in the present or in the near future. Thus, it is important to point out several areas to which PCaC should link different strategies.

Property rights are such a central element that it would be very difficult for PCaC to remain on the sidelines of activity around the issue, which particularly affects the agricultural frontier zone, as in the case of the BOSAWAS buffer zone. Defining land rights has clear implications for the management of both the BOSAWAS core zone and its buffer zone.

As PCaC's accomplishments become broader and more complex, its alliance-building with other actors should also broaden to improve its advocacy efforts at the public policy, program and project levels. This means widening their perspective to take in the rest of the actors in the territory, not only from Siuna, but also from BOSAWAS. The importance of PCaC's achievements and lessons must be linked to a more territorially integrated proposal with greater possibilities for governance, which means entering into dialogue with other actors in the buffer zone and also with the communities and actors in the BOSAWAS core zone. With regard to the buffer zone, it seems that PCaC is clear about its potential to disseminate the campesino to campesino methodology (and velvet bean) in other municipalities of the buffer zone that are feeling their own pressure on the agricultural frontier. With regard to the core zone, it seems that PCaC is reluctant to enter into more direct dialogue with the actors there. PCaC could present itself to them as a movement with

territorial, not just sectoral, importance, which is playing an extremely crucial role for the governance and sustainability of BOSAWAS, based on its community-based farmer networks in the buffer zone.

Siuna and the BOSAWAS buffer and core zones need venues for building consensus over development strategies for these territories. Given this, PCaC, rather than just a sectoral actor, has accumulated considerable experience and has the potential for assuming a role of a more territorial nature. This is especially true considering its evolution over time, which has involved the communities' social and organizational fabric, the expansion and diversification of its production proposal and the environmental-territorial character of natural resource management implied in the Campesino to Campesino seal in Siuna.

The foregoing has implications for UNAG. Siuna PCaC's input and achievements contribute to strengthening and consolidating UNAG, and also to getting a grasp on the growing trends, leadership and interactions of a territorial rather than sectoral nature.

Another key aspect for the social and environmental sustainability of the BOSAWAS Reserve is to look beyond the core zone, so that progress can be made toward a more territorial approach to managing BOSAWAS. This assumes that PCaC will also counter traditional conservation discourses – commonly supported and reinforced by government and external assistance programs, policies and

strategies – that continue to focus on core zones, with little consideration for the strategic role of buffer zones, as in the Siuna case. In fact, recent literature supports the need for a more integrated approach for the areas surrounding the reserve (see Box 5). However, traditional conservation discourses still predominate, to such an extent that the buffer areas – generally where anthropogenic forests, agro-ecosystems, vegetable gardens or community forests are found – continue to be ignored by policy makers and programs.

PCaC should also address the challenge of building new relationships with government agencies that have a territorial presence in Siuna, BOSAWAS and the RAAN. Accumulated social capital should also be channeled into forming new strategic relationships with different municipal, regional autonomous and central government entities, especially considering that various proposals (programs and projects) are being defined at this time that have clear implications for Siuna, BOSAWAS and the RAAN.

In addition to the challenges posed by contextual conditions, PCaC needs to work on its own institutional development. This refers to creating arrangements for accompanying the cooperative groups that have been forming as part of the process. To respond to them, PCaC must have the capacity to provide technical support to ensure that the mechanisms for commercialization and market access will reinforce current natural resource management and accumulation of social capital. The relationship itself with the market could taint Campesino to Campesino

Box 5. Fragmented Ecosystems and the Management of Complex Matrices

Complex matrices refer to the ecosystems surrounding a conservation site and include forest fragments and land uses such as coffee plantations, fruit orchards, manipulated and secondary successions, multi-cropped milpas, agroforestry systems, pastures, hedgerows, etc.

The dynamics and structure of these complex matrices contribute to explaining why many highly endangered ecosystems do not experience the extinction rates predicted by theory. In these areas, human actions for soil conservation and fruit-bearing vegetation often enhance the value of these anthropo-genic ecosystems and act as nurseries and havens for forest species.

Data from Central America increasingly shows that the diversity in these sites is significant. Thus, human impacts on age and heterogeneity of habitats, complexity and enrichment of matrices may be close to “natural” conservation sites themselves in generating diversity at a landscape level.

Source: Based on Hecht, *et al.*, 2002

relationships, unless there is an appropriate means for sharing costs and benefits, while respecting PCaC's characteristics. The campesino-entrepreneur identity is still being constructed, although significant progress has been made, such as in the communities of El Bálsamo and Tadazna.

It will be quite a challenge to shift from the subsistence, on-farm consumption and natural resource management that they have already achieved toward a larger-scale proposal that ties into the market. Once again, innovation, which is already part of PCaC's methodology, will be crucial in how this shift to running a campesino enterprise is accomplished. This includes seeking

ways to link up with producer networks, aspects of commercialization, and quality and value chains, all of which are extremely important issues that should be incorporated into the exchange program methodology. All of this also assumes the need to balance the community-based nature of the project with the demands of the enterprise, in a setting where disputes arise for the value added in production in the different commercialization channels. The market niches they enter will be a determining factor in whether an appropriate balance is achieved. The strategies for community and enterprise development that include expanding to a territorial scale will require innovations for a territorially-styled institutional framework.

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Central America urgently needs to firmly face the dual Challenger of strengthening rural livelihoods and attaining sustainable natural resource management. The experiences of the Campesino to Campesino Program of Siuna, in the buffer zone of the BOSAWAS Biosphere Reserve in Nicaragua's North Atlantic Autonomous Region, offer extremely important lessons for responding to this dual challenge. This experience has taken place in a context characterized by a lack of governance and social disintegration, but it has been able to promote the construction of campesino alternatives that not only have contributed to transforming natural resource management, but have also injected a socio-productive element into the management of the buffer zone of BOSAWAS, the largest protected area in Nicaragua.

The empowering nature of the Campesino to Campesino methodology using experimentation and exchange visits has led to a widespread transformation in farming practices, centered on the cultivation of velvet bean, improving food security and restraining encroachment on the agricultural frontier. Going further, the Siuna Campesino to Campesino Program also entails the accumulation of social and human capital through building campesino promoter networks. Not only have the conditions for governance in Siuna improved, but, in addition, a new campesino identity has been forged that has transformed natural resource management. A process of campesino innovation has evolved into new ways of organizing, and new livelihood strategies have been developed that go beyond basic food security.

Current conditions pose a significant threat to the experience of the Siuna Campesino to Campesino Program. However, it has the potential to evolve and build alliances with other stakeholders in the territory, especially given the strong need for more integrated, inclusive approaches, including the strategies for conserving the protected areas and their so-called buffer zones.

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