

Smallholders' Partnerships in the Brazilian Amazon: Civil, public and private sectors

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Abstract: Brazilian smallholders are seeking new types of partnerships and economic opportunities amid a changing world. Market opportunities, however, have incurred demanding environmental, financial and labour requirements and created trade-offs between expanding cash crops and maintaining livelihood security. We analyze the Tomé-Açu region in the Brazilian Amazon, a region that has pioneered partnerships between smallholders and industries. Partnership strategies have been important to increase the ability of marginalized groups to participate in rural development programs and new global markets. Power asymmetries between smallholders and between them and industries remain a stumbling block to participation and the success of new collaborative efforts.

Keywords: Partnerships, Nikkei and Colono Smallholders, Private Companies, Civil Organizations, Brazilian Amazon.

INTRODUCTION

This paper addresses the emergence of new forms of institutional arrangements involving smallholder farmers and a variety of stakeholders aiming at increasing their access to agricultural markets and benefits from rural development in the Amazon. These arrangements are supported by new institutional and economic context in the region and include a broad range of horizontal and vertical collaborations to improve efficiency in production and commercialization of farming products. We assess the opportunities and limits of these initiatives to overcome structural bottlenecks to include smallholders in rural development initiatives in the Brazilian Amazon, a major dilemma in the region. Characterized by many ups and downs, the failed attempts to integrate small farmers in different rural development programs have usually ended up with the highest costs on their shoulders.

During the 1960s, the federal government created incentives for small farmers from other regions to settle in and produce in the Amazonian lands. This rural development program aimed at alleviating land conflicts in the South and chronic poverty in the Northeast as well as to integrate the ‘underdeveloped and empty’ Northern region to the developed parts of the country (Bunker 1985). In the 1970s, under the military government, rural development programs shifted to policies promoting large infrastructure projects and larger-scale production systems such as cattle ranching, commercial fishing and mineral extraction (Moran 1981). Land concentration, exclusion of small farmers, and increased inequality and poverty in the 1980s intensified land conflicts in the region (Alston et al. 1999). In an attempt to minimize land grabbing and tensions, few initiatives – though, very timidly - were put forward by the federal government in the 1990s. The creation of new agrarian settlements helped to regularize the land tenure status of squatter and to settle landless families (Futemma and Brondízio 2003), while creation of special financial credit lines helped to support small scale farming productions.¹

Despite these improvements, two main factors have contributed to limited success to include small-scale farming in rural development programs implemented by the national government in the past. First, the programs have been usually designed and implemented from a top-down process, executed by non-local agencies and focused on pre-defined goals (Gomes and Vergolino 1997; Noda et al. 1997). Infrastructure improvement often overlooked challenges to maintain access in rainy season, designated cash crops did not account for suitability to particular regions, and technical assistance did not take into account local farming knowledge. A second factor driving unsuccessful experiences is the disregard to the institutional dimension of rural development. The low levels of social and human capitals, and the high transaction costs to foster collective action, was often overlooked in those national programs, leading to discontinuity after their implementation (Figure 1).

More recently, increasing levels of land use restrictions, bureaucratic procedures to access credit lines, land tenure regulations, and more stringent labour rights and environmental rules have added to the institutional complexity for small farmers to carry out their activities. While some of

¹ FNO or Constitutional Fund for Financing the North was initially established by the Brazilian Constitution of 1988 and

these changes may have created opportunities for some groups of farmers (e.g., land security and new credit lines), those who are not able to access those new channels on their own and to comply with new land use and labour restrictions hardly can make their farming activity economically viable. To meet the increasing and demanding set of requirements, small farmers are responding with new types of collaborative practices among themselves and with a range of other actors.

[Figure 1 about here]

Collaborative initiatives may help smallholder farmers to meet legal requirements and conservation targets while opening new opportunities for production and commercialization. On the other hand, these collaborations pose new challenges to build knowledge and experience about when, how and with whom to team up. Moreover, engagement in collaboration with capitalized farmers and industries implies overcoming asymmetric power relations, often steep learning curve, and distrust. Finally, new forms of collaboration imply complex economic and social arrangements which are often vulnerable to external influences.

In this paper, we focus on emerging collaborative initiatives among smallholder farmers and between them and other actors involved in rural development and economy in the region. We discuss the opportunities and limitations of new types of institutional arrangements to overcome historical and more recent barriers limiting the participation (and benefits) of these farmers in regional/local rural development and market opportunities in the Amazonian context. We focus on small-scale farmers in Tomé-Açu (Eastern Amazon, Brazil). The region includes a diverse set of smallholder farmers, which are representative of the larger Amazonian region. A significant portion of smallholders in the region face social challenges and constraints such as low levels of human capital (i.e., high rates of illiteracy and low technical capacity), restrictions and high costs to access market (i.e., lack of information and high cost of transportation) (Callo-Conchas and Denich 2014) and deficiencies in transportation and communication infrastructure and in government services. On the other hand, the region includes a large community of Japanese immigrant farmers and their descendants- who are pioneers in innovative agroforestry systems and successful insertion of their products and agro-industrial activities into national and global markets (Brondízio 2012; Yamada and Gholz 2002).

In addition to the successful agroforestry system driving rural development and sustainable land use, the region has recently been home of the expansion of oil palm in large-scale plantations and small-scale contract farming systems. In this context of agroforestry and oil palm expansion, Tomé-Açu provides a unique case to understand small-scale farmers' agency to overcome historical structural barriers to rural development in the Amazon.

COOPERATION AS AN INSTITUTIONAL INNOVATION

Cooperative initiatives include practices among multiple actors aimed at reaching mutual goals, which may not necessarily be the same. Cooperation strategies may involve different forms of collective action and partnership arrangements to which we now turn our attention. Collective action refers to collaboration among individuals to achieve a common goal. Early works on collective

action argued that individuals are prone to engage in cooperative relations only under external pressure - either from the state or some kind of coercion - or under incentives to selective benefits (Olson 1965). This narrow rational choice approach was challenged by scholars based on more cultural and neoinstitutionalism approaches. Some scholars have shown that participation in collective action is possible without any external intervention, depending upon the incentives and circumstances individuals face (Bromley 1992; Ostrom 1990; Wade 1988).

Empirical studies have shown that appropriate institutional arrangements are a key factor to a successful collective action, which can overcome dilemmas related to group size (Agrawal 1996), heterogeneity (Varughese and Ostrom 2001; Ostrom 1999; Schlager and Blomquist 1998), and communication costs (Andersson et al. 2009), refuting arguments that smaller (Park and Feiock 2005) and more homogeneous (Blair 1996; Cernea 1989, 1988) groups tended to lower coordination and communication costs.

When and by which means individuals decide to join a collective effort and what are the motivations and incentives behind cooperation are gaps in the Amazonian peasant studies. Rural and peri-urban peasant communities comprise of multiple cultural, economic, social, and political groups. Fail to recognize this social diversity in development projects often leads to perverse outcomes (Schmink and Wood 1992). For example, asymmetric distribution of assets and differential opportunities in gaining personal benefits such as prestige, power, or security affect the incentive of individual to join or avoid collaborative initiatives.

In contrast to collective action (Olson 1965; Ostrom 1990), which individuals or organizations join together for a common goal, partnerships are collaborative behavior (Narrod et al. 2009; Park and Feiock 2005) driven by different, but in principle, compatible goals. It is an institutional arrangement that can be established between two or more parties or agents. Partners can be an individual or an organization who may not necessarily share values, perceptions, interests, or goals. They can be private, public, and civil organization or individual and they may be linked to horizontal and/or vertical relationships. Such joint works – sporadic or long-term – may take place between two (bilateral partnerships) or more (multilateral partnership) parties (Zawari and Mitchell 2011).

Bilateral partnerships between agents occupying very different social positions (e.g., family farmers and agribusiness corporations) tend to be shaped by asymmetric relations. Nevertheless, under certain conditions asymmetric power relations can be an opportunity to empower local communities such as the partnership between communities and the state in co-management systems, as pointed out by Adger et al. (2005). Multilateral partnerships are more complex arrangements in which may combine similar or different but complementary goals. In a collaborative network, bilateral and multilateral can be complementary strategies rather than competing ones (Zawari and Mitchell 2011).

In the remaining of this paper we focus on both bilateral and multilateral partnerships, which Tomé-Açu smallholders have recently been engaged in.

Partnership and Social Capital

Collaborative work can be both supported and a driver of social capital when marginalized groups are empowered to influence its design and practices (Putnam 1993). However, under asymmetric relations, it may become a mechanism to reproduce inequality and dependency (Bourdieu 1986). These two contrasting perspectives have been conceptualized as ‘sociology of integration’ and ‘sociology of struggle’, respectively (Siisänen 2000).

Collective action, for example, may help generate social capital among partners. According to Putnam (1993) social capital are resources comprising of three components: moral obligations and norms, social values (e.g., trust), and social networks (e.g., voluntary associations). Through social organizations such as familial ties or relationships, individuals learn social norms that convey values such as trust, reciprocity, and commitment. This perspective is supported by empirical evidences showing that political participation and membership in local associations contributed to enhance the network among individuals based on trust and reciprocity (Durstun 1998; Narayan and Pritchett 1997; White and Runge 1995; White 1996). In rural settings, the history of individuals’ participation in collective action geared toward political purposes, production systems, or even religious and recreational ends contribute to enhance the network among individuals at both – household and community settings (Durstun 1998; Narayan and Pritchett 1997).

In contrast, Bourdieu (1986) treats social capital as a resource used by different individuals in his or her own interests, especially by dominant partners to keep their status and position within a social structure characterized by asymmetries in access to assets and power. According to the author social capital is a symbolic capital internalized through practice in a society structured by individuals who occupy different positions. Such a perspective emphasizes conflicts and power relations (Siisänen 2000) and contrasts with the arguably romanticized images of communities (Levi 1996, 51) presented by Putnam (1993) and Coleman (1986) and disregards to heterogeneity in social structure in collaborative relations (Tzanakis 2013; Siisänen 2000; Levi 1996).

In addition, Levi (1996) argues that the emphasis on civil society overlooks the role of state in contributing to build or erode social capital. The state may play a key role in setting up collective action or partnerships among different local organizations in horizontal and vertical relations in a decentralized governance (Feiock 2013; Park and Feiock 2005).

In sum, in a cooperative situation, problems of coordination affect the success of partnership. Thus it is important to understand how horizontal and vertical relations and bilateral and multilateral partnerships emerge and perform. Individuals may face a set of constraints that discourage them from engaging in cooperation, and thus choose for an individual strategy. Through new institutional arrangement – in this case bilateral and multilateral partnerships-- individuals can assess their social capital in order to create new incentives to engage in collaboration with others actors.

Previous experience in collective action can help to build trust among members and increases the likelihood of collaboration (Durstun 1998). History of past participation in social-political organizations -- kinship systems, grassroots, and/or religious organizations -- and mobilization contribute to enhance individuals’ abilities to coordinate and to learn how to overcome some

problems of collective action (Putnam 1993) and partnership such as cheating or free riding. This process of social participation in organization and the experience of beneficial outputs contribute to build social capital and human capital (Flores-Macías 2012). In this paper, we emphasize the shaping of social bonds that might improve future beneficial outcomes of the parties involved in collaborative initiatives (Ostrom 1995).

ENVIRONMENTAL AND SOCIAL SETTINGS

The municipality of Tomé-Açu (TA) is located in the Eastern Amazon in the approximately 250 km south of Belém, the capital of the Pará state (Figure 2). The climate is humid and hot, with an average annual temperature of 26.5°C and 2,660 mm of rain annually, mainly between December and May, and relative humidity over 80 per cent (Barros et al. 2009). In the past two decades, the Human Development Index has shown a gradual increase from 0.347 (1991) and 0.438 (2000) to 0.586 (2010). Nevertheless, the region still faces rural poverty, growing crime rates, limited roads, lack of sanitary system, deficient public health system, poorly structured and connected markets, among others constraints.

The Tomé-Açu population is characterized by migrants from two main groups – *Nikkei*² community and *Colono*³ families. In 1929, the first of few cohorts of Japanese immigrants arrived in the region and since the 1960s, peasant families, mostly from the Northeastern and South of Brazil (Callo-Concha and Denich 2014), have gradually settled in the region. They represent the two main groups of smallholder farmers and are the focus of this study.⁴ Although the history of Tomé-Açu is intertwined with the saga of Japanese immigrants, this group is currently a minority in the

² *Nikkei*: Throughout this paper, we use this Japanese term to referring to Japanese immigrant in Brazil or Japanese-Brazilian (Japanese descendants) individuals.

³ *Colono*: we use this term from now on to refer to smallholder farmers who are not descendant of Japanese or Brazilian-Japanese families in Tomé-Açu. Callo-Concha and Denich (2014) created two categories for non-*Nikkei* smallholder farmers in Tomé-Açu: *immigrants*, those who arrived in the region about 30 to 40 years ago; *newcomers*, those who arrived in the region in the 1990s. For purposes of this analysis, we include these two groups into only one category: *Colono* smallholder farmer. See Brondizio et al (2009) and Brondizio 2004 for a review of different classifications of small farmers in the Amazon.

⁴ Tomé-Açu is also a home of traditional communities: Indigenous, Afro-Brazilian and Riverine. Traditional population has become an umbrella category in Brazil for a number of social groups, such as Amerindians, Afro-Brazilians and Riverine, whose cultural distinctiveness is expressed in terms of specific territorialities. They have been characterized by culturally and historically specific forms of land occupation and appropriation of natural resources and they have claimed their rights to occupy their traditional homelands (for further discussion see Castro et al. 2006).

municipality. Historically, the Japanese population has not passed 300 individuals (Brondízio 2012; Piekielek 2010) and in 2010, the *Nikkei* community was composed of 770 individuals which was 1.36 per cent of the municipality population (IBGE 2010). The *Colonos* are the majority group in the municipality, with an estimated population of 7,670 individuals in 2006 (13.6 per cent, IBGE 2006).

[Figure 2 about here]

Tomé-Açu is known in the region for a successful agriculture system. Between mid-1940s and mid-1980s, the region was a top black pepper global producer (Brondízio 2012; Piekielek 2010; Homma 2004, 1998; Flohrschutz et al. 1983). Since 1980s, the former black pepper fields gave room to an economically and ecologically successful agroforestry system (Batistella 2012; Brondízio 2012; Piekielek 2010; Homma 2004; Yamada and Gholz 2002; Yamada 1999). The agroforestry systems developed in Tomé-Açu or SAFTA (Agroforestry System of *Tomé-Açu*⁵), unique in the Brazilian Amazon region, was designed by *Nikkei* family farmers. More recently, a new agricultural trend has thrived in Tomé-Açu through strong support from the State. The expansion of oil palm (*Elaeis guineensis*) cultivation in large-scale (agribusiness systems) and small-scale (contract-farming systems) (Castro and Futemma 2014; Repórter Brasil 2013). Initially introduced in the region in the 1970s (Homma and Furlan Jr. 2001), the expansion of oil palm in the region is part of a national program in a particular socioecological zone (Oil Palm Zone) where the municipality is located.

Farming activities have historically been mixed with other land use such as pasture and logging. As a result of dynamic agricultural activities, the regional landscape comprise of a mosaic of different patterns of land use and forest cover – from pasture to secondary succession of different ages – under constant change (Colla-Concha and Denich 2014; Batistella et al. 2012; Yamada 1999).

Historically shaped by market demands and government development programs, the farms and landscape managed by *Nikkei* and *Colono* farmers are increasingly influenced by environmental and labour policies implemented by the Brazilian governments at the federal, state and municipal levels. Two regulatory instruments have led to significant changes in environmental legislation. First, the New National Forest Code, approved in 2012, reinforces former obligations under a more stringent monitoring system. Among other requirements relevant to small-scale farmers, rural property owners must ensure the preservation of gallery forests and wetlands along rivers, lakes, and streams and their water springs, and keep a forest reserve of at least 80 per cent of the property's area⁶, and comply with several other regulations related to usage and protection of mature and secondary forest at different stages, usage of fire, soil management, and protection of wildlife⁷.

In regard to labour working conditions in rural properties, the Brazilian Constitution includes numerous regulations (Brazilian Constitution of 1988, Article 7) to protect labour conditions such as

⁵ In portuguese: *Sistema Agroflorestal de Tomé-Açu*

⁶ In the case of 'consolidated' agricultural zones such as the Tomé-Açu region, this percentage has been dropped to 50 per cent according to the state EEZ. For more information see <http://www.semas.pa.gov.br/servicos/zee/importancia-do-detalhamento>.

⁷ For more information see http://www.agricultura.gov.br/arq_editor/file/camaras_setoriais/Hortalicas/26RO/cartilhaCF.pdf

minimum wage, retirement, maternity and paternity leave, unemployment insurance, use of Individual Protection Equipment (IPE) to fulfil health and safety standards⁸. Small and medium-scale farmers often complain about difficulties in complying with all labour rights' requirements due to limited information and costly procedures.

DATA GATHERING

Data collection took place in Belém and Tomé-Açu (Figure 2), during annual field trips of two to four weeks between 2011 and 2015. We have interviewed key informants -- researchers, officers and agents -- from public universities, governmental agencies and grassroots in Belém⁹ and Tomé-Açu¹⁰. We have visited and interviewed several rural properties and farmers – medium and small-scale – and we have talked to managers and technical assistants from two oil palm private companies (Biopalma Vale and BBB - Belém Bionergia Brasil). In addition to primary data, we have collected secondary data by accessing information from public agencies¹¹.

SOCIAL CAPITAL BUILDING: COLLECTIVE ACTION EXPERIENCES

The history behind the failures and successes of Japanese and *Nikkei* farmers in Tomé-Açu contrasts with the trajectory of *Colono* farmers marked by high levels of family turnover, low levels of income and education, modest and often deprived living conditions, and limited agricultural productivity. At least in part, this marked contrast results from differential investment in building human and social capital through collective action and by crafting new institutions to overcome challenges related to a changing environment.

Nikkei Smallholder Business Farmers

The first Japanese immigrants arrived in Tomé-Açu in the 1920s (Figure 3) as part of a rural settlement program (JAMIC). Each family farmer initially received a lot of 20 hectares, which expanded for those who remained through gradual land acquisition, in some cases reaching more than 200 hectares¹² (Piekielek 2010). Some immigrants arrived with high education degrees, such as agricultural engineer and most with agricultural training. From the onset, they have invested in their

⁸ For more information see <http://portal.mte.gov.br/data/files/8A7C812D33EF459C0134561C307E1E94>

⁹ Emilio Goeldi Pará Museum (MPEG), Federal University of Pará (UFPA), the Brazilian Agricultural Research Corporation (EMBRAPA) and the Brazilian Gas and Energy Company (Petrobrás), BBB, ITERPA.

¹⁰ Secretaries of Tomé-Açu (Agriculture; Environment; Education; and Social Welfare); The Mixed Farming Cooperative of Tomé-Açu (CAMTA); The Union of Rural Workers of Tomé-Açu (STTR) and the Union of Family-Based Farmers and Rural Workers (SINTRAF); Bank of Amazonia (BASA) and Bank of Brasil (BB); and the National Institute of Agrarian Reform (INCRA).

¹¹ Brazilian Institute for Demography and Geography (IBGE), Ministry of Agrarian Development (MDA), Institute for Development of Pará (IDESP), and Secretary of Environment of Pará (SEMAS).

¹² Rural properties up to 200 ha are considered small-scale in the Brazilian Amazon region. However, their income surpasses the average income in this property size rank. For purposes of this analysis, we consider *Nikkei* farmers as part of the smallholder farmer category.

children's education; later on, *Nikkei* farmers often sent their children to college in the state capital, in other major regions (e.g., São Paulo state) or, in some cases, even abroad (e.g., Japan). They also promoted student exchange programs with Japanese universities.

The Japanese immigrants and their descendants (*Nikkei*) have become the protagonists of two important economic events in the region; the post-WWII black pepper boom (locally referred to as the Black Diamond period) and the more recent innovative tropical agroforestry production model (locally referred to as SAFTA). The former represented the first wave of social and institutional development, when *Nikkei* farmers invested in Asian black pepper production and eventually became one of the top three global suppliers. For nearly five decades, they accumulated and invested monetary capital generated from the black pepper production (Brondizio 2012; Piekielek 2010; Homma 2004). The later correspond to the development and expansion of a more diversified farming systems based on multiple cash crops, a mixture of annual and perennial plants (Batistella et al. 2012; Yamada and Gholz 2002; Yamada 1999).

This agroforestry system provides raw material for the production of tropical fruit pulp and seed oil and export to other parts of Brazil and abroad (USA and Japan, especially *açaí* fruit palm (*Euterpe oleracea*) and passion fruit (*Passiflora* sp). In order to reach the international market, they have developed knowledge and technology to meet international sanitary criteria and commercial regulations (Piekielek 2010). More recently, some *Nikkei* farmers have decided to take an opportunity and invested in oil palm plantation in their own properties through two different production models: collaboration with large companies promoting oil palm monoculture (Agropalma) and collaboration with an environment-friendly cosmetic company (Natura) based on oil palm in agroforestry system. They have succeeded in diversifying their production systems within their properties and income sources. To carry out such an intensive and productive farming system, *Nikkei* farmers hired rural workers in a permanent contract basis. Some employees quit their jobs in the *Nikkei* farmers to invest in their own properties after learning agroforestry techniques; others remain employed in the *Nikkei* properties but may also invest in their own properties. This situation reveals a process of knowledge transmission through empirical basis – learning by doing and learning from others (Foster and Rosenzweig 1995, 1177) -- between *Nikkei* farmers and *Colono* employee-farmers.

Based on refined empirical knowledge, they have developed a highly complex and diversified agroforestry system considered unique to the region (Batistella et al. 2012; Yamada 1999). Grounded in strong entrepreneurial logics, their production is processed in the community and oriented to national and international market. They have earned several prestigious awards nationally and internationally¹³. Throughout, they have sought scientific support and carried out their own experiments to improve productivity and diversification of their agricultural systems, and have

¹³ International Cocoa Award – Cocoa of Excellence (Paris/France, 2010); Certificate of Appreciation-Japanese International Cooperation Agency (JICA, 2009); Agroforestry System and Social Inclusion Award (Bank of Brazil Foundation, 2013); Sustainable Entrepreneurship (Bank of Amazonia/FIEPA, 2012); Cooperative of the Year Award (2012), to cite a few.

fostered contacts with private companies and donors. This process, however, has been a bumpy road in which collective action has played a key role.

[Figure 3 about here]

Nikkei farmers have a long history of collective work in many dimensions of their lives – productive, entertainment, sports, infrastructure, and cultural celebrations. Black pepper production brought wealth to *Nikkei* families, providing an average annual income of US\$ 45,000 per family during 1950s (Piekielek 2010). In addition, they have had technological and financial support from the Japanese overseas aid agency, the Japanese National Company (1930-40s), later on it was replaced by JICA (Japanese Agency for Development, 1970s-2000s) (Figure 3, Piekielek 2010).

The *Nikkei* community has played a major role in Tomé-Açu's political and economic spheres. They have participated in key local political representations, such as mayor and heads of municipal secretaries/agencies, run a private elementary and high schools, built the small-scale airport and hospitals, and they run key local businesses (Brondizio 2012; Piekielek 2010). They have founded and ran two key local organizations – the agricultural cooperative CAMTA and the cultural association ACTA. The Mixed Cooperative of Tomé-Açu (CAMTA) was first created in 1931 as the Cooperative of Vegetables (CAMTA 1967) and, in 2015 comprised of 166 members, including a few non-*Nikkei* farmers, 180 collaborators/employees and more than 1,000 registered farmer suppliers¹⁴.

CAMTA and the *Nikkei* community are closely intertwined as it played (and still does) major role in the identity and social organization of the *Nikkei* community, and farming system chain within which they are embedded, from production to commercialization. The cooperative is an example of resilience of collective action. Despite major harsh distresses throughout its history (Homma 2004; Piekielek 2010; Yamada 1999), its members were able to redesign their strategies and reshape their organization in order to overcome challenges and surprises due to flexible and innovative behavior (Brondizio 2012; Piekielek 2010). Changes from elder and traditional leaders to young members, external financial support (mainly Japanese aid) in situations of shortage of money and debts, and continuous investment in infrastructure, technology (*e.g.*, fruit pulp processing plant), human resources (*e.g.*, technical assistance and high education), and social resources (*e.g.*, shared knowledge and information, and trust built through reciprocity) (Brondizio 2012; Piekielek 2010; Yamada 1999) were some of the actions taken by members to ensure CAMTA upholding. In addition, cultural bond and entrepreneurial vision supported the collective action towards more sustainable and profitable farming system.

Collective action emerged not only around the agriculture production chain but also social aspects of *Nikkei* life. ACTA (Cultural Association of Tomé-Açu), founded around 1970s, has nearly 200 members and an administrative board with 12 members in 2009. This association offers several activities related to the Japanese culture to its members (Brondizio 2012; Yamada 1999), such as baseball and gateball, elementary and high schools, course on Japanese language and culture, and

¹⁴ Registered farmers are able to sell their agroforestry products to CAMTA once they reach the required standard quality.

celebrations along the year¹⁵. In addition to formal organizations, other collective efforts have been developed by *Nikkei* community in Tomé-Açu to overcome local problems. For example, in order to solve energy problem in the region, CAMTA founded the Rural Electrical Cooperative of Tomé-Açu (COERTA) in 1987, and later sold it to the Pará State electric company. The sale provided US\$ 2,000,000 to CAMTA, which was invested to implement a fruit pulp processing plant (Piekielek 2010). The organization of a community-based police patrol in the 1980s to control the increasing burglary and petty crimes is another example of collective action among the *Nikkei* community members (Brondizio 2012). Patrol groups took turns to guard streets and feeder-roads connecting Japanese family farms.

More recently, CAMTA created a forum for debate and to exchange knowledge/experience across small-scale farmers, oil palm companies, local, state and federal governmental agencies, public universities, and non-profit organizations. The Annual Agroforestry Symposium, initiated in 2010, represents a multi-scale heterogeneous social network focusing on small-scale farming productive systems. At the same time, *Nikkei* farmers and CAMTA are also involved in the organization of the Annual Agriculture Fair in collaboration with the Association of Rural Producers of Tomé-Açu (SPR)¹⁶ which is focused on agribusiness. Progressively, *Nikkei* farmers seek to include smallholder *Colono* farmers in this event.

Colono Smallholder Family-Based Farmers

The first wave of *Colono* migrants arrived in Tomé-Açu during the 1950s and 1960s, attracted by the success of and labour opportunities emerged from the black pepper economy. Settlers continued to arrive in the region throughout the 1970s and 1980s occupying rural lots of 50 to 100 ha. In the 1990s, a new wave of migrant farmers arrived as beneficiaries of government agrarian reform programs, to settle in lots usually smaller than 50 ha (Colla-Concha and Denich 2014, 42).

Similar to other Amazonian regions, *Colono* farmers relied on low farming technology (e.g., manual agricultural equipment) and mostly on family labour (Colla-Concha and Denich 2014), and are illiterate or have low levels of formal education (IDESP 2014). They grow annual crops such as manioc (*Manihot esculenta*), corn (*Zea mays*), beans (*Phaseolus vulgaris* L.) and some other edible roots and fruits in a shifting cultivation system. Despite the market bottlenecks, they strive to maintain a balance between subsistence and commercial production and continuously search for opportunities to improve their economic and social conditions.

Colono farmers do not share a history of collective actions as *Nikkei* farmers do. However, collective action among *Colono* farmers is common at the rural village level -- community celebrations, soccer games, churches' activities and schools' festivities. Along the year, villagers

¹⁵ For instance, *Bon odori*, dance for the good spirits and *Undokai*, an annual leisure gymkhana with multi-sport activities, see www.actabunkyo.org.br.

¹⁶ In Portuguese: Sindicato dos Produtores Rurais (SPR) de Tomé-Açu. In English: Association of Rural Producers in Tomé-Açu.

from many local communities celebrate some religious dates – Saint John, Saint Peter, Christmas – with food and non-alcoholic beverages at wish and in a potluck’s style. They also organize soccer championships – they play every weekend -- that involve male and female players and teams from numerous communities¹⁷ from the region. Students’ families and overall villagers also participate in schools’ festivities, such as Indigenous’ Day, Mothers’ Day, Fathers’ Day, among others. All these activities underlie an intense social interaction and exchange that reinforce social ties between villagers and across communities.

In addition, through the work of active grassroots organizations, such as the Rural Workers Union of Tomé-Açu (STTR) and the Rural Workers and Family-based Farmers Union of Tomé-Açu (SINTRAF), they have gained political awareness and voice over the last two decades (Figure 3). Some family farmers became Union members in search of support for labour rights and social benefits, such as maternity leave, retirement pension, legal service and dental care. In 2014, the STTR signed the collective labour agreement with oil palm companies to regulate standard working conditions for employees, such as working hours, minimum wage and days off.

In recent years, many *Colono* farmers have invested in agroforestry and some others sought temporary off-farm jobs, which may be or not compatible with farming tasks within their own properties. Under the recent oil palm expansion, for example, oil palm companies have recruited *Colono* farmers, mainly young men, to work in their plantations.

Regardless their performance and relevance, these collective actions are important mechanisms to strengthen the social linkages among individuals sharing similar goals. They support the development of sense of community, trust, and skills to group work. This social capital shaped through these interactions represents supporting pillars upon which these actors build their partnerships with other actors.

EMERGENT PARTNERSHIP INNITATIVES

In this section, we analyze how partnerships are structured, constituted and operationalized in Tomé-Açu. This region turned out to be an inspiring social laboratory in which partnerships are playing an important if not a major role in local development and in agricultural innovation. The analysis of the institutional arrangements of different partnership models reveal several facets emerging from complexity and challenging interactions, but also potential to overcome environmental, infrastructure, and economic barriers to local development faced by the farmers.

Both *Nikkei* and *Colono* smallholder farmers have established bilateral and multilateral collaborations with local and non-local actors – at individual and organization levels. As discussed earlier, *Nikkei* farmers present a longer history of partnerships than *Colono* farmers (Table 1). Their success results in no small part from their dedication and investment in building social and human capital at the community level.

[Table 1 about here]

¹⁷ There are more than 90 rural communities in Tomé-Açu (STTR’s Director, pers. communication)

Nikkei Smallholder Farmers' partnerships

The *Nikkei* community has built a complex net of bilateral and multilateral partnerships with a large range of actors at multiple levels (Table 1), both individually or collectively through their cooperative – CAMTA.

Individually, some farmers have collaborated with farming researchers to conduct experiments in their properties, to cultivate oil palm to supply fruits to an oil company (i.e., Agropalma) and, eventually to access Bank loans (Bank of Amazonia - BASA). Another example is the multilateral partnership involving *Nikkei* farmers, CAMTA, and a large Brazilian cosmetic industry (i.e., Natura) to carry out experiment to evaluate the economic and environmental viability of cultivating oil palm (*dendê*) in agroforestry system. This initiative has been supported by three *Nikkei* farmers who have voluntarily donated 6 hectares of their property for the experiment (Castellani et al. 2009, 2). Although this initiative is supported by their cooperative (CAMTA), some technical assistants monitored the experiments and they were paid partially by the company. Recent preliminary data indicate that after 6 years (2008-2014), this initiative seems promising both economically and environmentally (Castellani, per. communication).

Since the 1990s, *Nikkei* farmers have established partnership with researchers from governmental agencies such as EMBRAPA (Brazilian Agricultural Research Corporation) and CEPLAC (the Brazilian Cocoa Research Center) to exchange information about farming systems and to carry out field experiments to test new techniques to improve production and/or find solutions to plant diseases and plant recovery.

In the 2000s, besides collaborations with private companies and governmental agencies, *Nikkei* farmers partnered also with a Japanese environmental NGO (Figure 3) to expand the sustainable farming techniques in the region. *Nikkei* farmers are members of several local organizations and can be involved in several bilateral partnerships, and often occupy leading positions. In addition to ACTA and CAMTA, which are founded and run by the *Nikkei* community, other local organizations may also be headed by *Nikkei* leaders such as SPR's Director, Municipal Agriculture Secretary and the Municipal Government. Moreover, some *Nikkei* farmers involved in cattle ranching work in collaboration with the regional Agribusiness Association (AAVA)¹⁸.

Through these organizations, *Nikkei* farmers have collectively built up partnerships with several organizations. CAMTA is a particularly relevant organization in this process. Through CAMTA, *Nikkei* farmers have established several types of bilateral and multilateral partnerships at local, national and international scales (Table 1): (i) the Municipal Secretary of Agriculture of Tomé-Açu (SEAGRI); (ii) The Municipal Secretary of Environment of Tomé-Açu (SEMA); (iii) Extension Service and Technical Assistance of Pará (EMATER); (vi) National public universities (UFAM, UFRA, UNESP); (vii) National public research institutes (EMBRAPA and CEPLAC); (viii) Brazilian private cosmetic company (Natura); (iv) Japanese agency for overseas development (JICA); (x) Japanese environmental non-profit organization (WSA); and (xi) Japanese university (University

¹⁸ In Portuguese: Associação Agropecuária do Vale do Acará (AAVA). In English: Agribusiness Association of Acará Valley.

of Tokyo). These collaborations have supported knowledge exchange and building on agroforestry, market expansion, and financial and institutional capacity.

Colono Smallholder Farmers' partnerships

Colono farmers have established partnerships mostly at the local level (Table 1). Individually, some family farmers were members of either Rural Workers Union of Tomé-Açu (STTR) or Rural Workers and Family Farmers Union of Tomé-Açu (SINTRAF). Since 2010-11, some *Colono* farmers have been engaged in partnerships to cultivate oil palm supported by a national policy to foster the expansion of oil palm cultivation for biodiesel production. Despite of the multilateral partnership arrangement, including private companies (Biopalma Vale and BBB - Belém Bionergia Brasil), credit banks, and the Rural Union.

Smallholder out-growers deal bilaterally with each of their three partners. The credit banks are the official donor which provides the loan under 25-year contract based on strict rules¹⁹. The oil companies are the official buyer of the production; they define the way the oil palm must be cultivated and harvested. Finally, the Rural Unions are the official endorser of the farmer to prove their eligibility to participate in the program according to certain social and economic criteria. Both Rural Unions --STTR and SINTRAF -- have intermediated the negotiations between out-growers and oil palm companies by signing a collective labour agreement and providing advices to the prospective farmers. Their roles have been particularly important in clarifying the contractual clauses and their eventual implications in their autonomy, food security, benefits and responsibilities. The STTR, however, has been more critical about this partnership as illustrated in the explanation about the contract conditions given by a STTR's leader to *Colono* farmers during a clarification meeting "*It is not a marriage of 25 days, but of 25 years!*" In 2014, more than 200 *Colono* farmers were involved in this initiative.

In addition to private actors, mainly female *Colono* farmers have collaborated with the Secretary of Education of Tomé-Açu (SETA) since 2011/12 as part of the National Program for School Meals (PNAE)²⁰ (Figure 3). This program, created in 2009, requires that at least 30 percent of the products used in state schools' meals be supplied by local family farmers (e.g., vegetables, fruits, meat, chicken, pork, among others). In addition to SETA, who coordinates the collaboration arrangement, this multilateral partnership includes the Secretary of Agriculture of Tomé-Açu

¹⁹ Contract: (i) each farmer must cultivate a minimum of 10 hectares of oil palm; (ii) farmers may cultivate subsistence and cash crops and raise animals but in different plots; (iii) minimum of two male labours per family (ages between 16 to 65 years old), each family farmer may hire one labour temporarily; (iv) farmers have access to technical assistance provided by oil palm companies (on a monthly basis); and (v) farmers have access to financial credit from Bank of Amazonia (BASA).

²⁰ PNAE: the National Program for School Meals, for more information, see <http://www.fn-de.gov.br/programas/alimentacao-escolar>

(SEAGRI) who gives support to participating farmers, and the Federal University of Pará (UFPA) who provides assistance with regard to food sanitary standards while slaughterhouses share responsibilities in selling meat and chicken to the program. The most important aspect of this initiative is to provide a stable market for smallholder farmers to sell their product along the year and at low transportation cost. The partnership is based on an annual contract between a farming association and the municipal government, through which the farmer may sell up to US\$ 5,000/year (R\$ 20,150)²¹ in farm products. In 2014, around 50 families supplied more than 40 different products to SETA.

Nikkei and Colono partnerships

Nikkei and *Colono* farmers have also built bilateral partnership between themselves. In this process, they had to overcome cultural and social differences in favor of working together while respecting their different views, interests and goals. Despite differences in sociocultural background, material assets and formal education level, bilateral partnership started in the 1980-90s, when public insecurity was growing in the region. In the past 5-10 years, they have moved to a closer partnership for the expansion of agroforestry. *Colono* farmers engaged in partnership with CAMTA and SEAGRI to cultivate tropical fruits in agroforestry systems designed by *Nikkei* farmers (SAFTA) (Table 1). In contrast to the contract farming systems with oil palm companies described earlier, these partnerships were established in a more informal basis. Although CAMTA suppliers must comply with certain quality-related requirements, everyday life interactions (e.g., technical assistance, provision of seedlings and transactions) take place under non-contractual terms.

Partnerships around agroforestry expansion emerged from an initiative by a local *Nikkei* leader to enhance farming production among *Colono* farmers. According to him, the contrast between growing unemployment, rural-urban migration, and limited market among *Colono* farmers and the successful agroforestry system among *Nikkei* farmers created more inequality. In order to fight the increase of burglary and petty crimes in the region, this *Nikkei* farmer started to transfer knowledge and techniques on black pepper and agroforestry farming systems to *Colono* farmers in order to create incentives to improve their farming system (Castro and Fudemma 2015). In addition, he provided training in financial management and opened the possibility for *Colonos* to become members of the CAMTA cooperative despite the strong resistance of members.

Later on, this informal initiative turned into a formally structured regional program aiming at outscaling the Agroforestry Systems of Tomé- Açu (SAFTA) to *Colono* farmers and traditional peasants, supported by the Secretary of Agriculture of Tomé-Açu (SEAGRI), a Japanese NGO and a mining company Hydro through a CRS program²². Ever since, intensified interactions between *Nikkei* and *Colono* farmers have allowed more frequent exchange of knowledge and training.

Their collaborations reveal a complex institutional structure in which both actors individually and collectively have established bilateral and multilateral partnerships at multiple spatial levels with

²¹ Exchange rate (Jan/12/2016): US\$ 1.00 = R\$ 4,03

²² CRS: Corporate Social Responsibility.

peers (horizontal relations) and non-peers partners (vertical relations). However, the collaboration and partnerships involving *Colono* farmers tend to be limited to the local level, and are reduced in number when compared to their *Nikkei* counterparts (Table 1).

ARRAY OF BENEFITS

The previous section shows that partnership is a complex institutional arrangement to set up and it is hard to keep it between and among partners through time. Nevertheless, if difficulties are overcome, they can result in net of positive outcomes or benefits. In Tomé-Açu, we have observed the four key benefits: (i) Improvement in production and access to market; (ii) Improved self-esteem (mentions to self-respect and pride); (iii) Social and human capital building (technical training and abilities); and (iv) Diversification of crops.

In general, smallholders in Brazil face significant bottlenecks in terms of access to technology to improve their production system and access to market to sell their products (The World Bank 2006). Through exchange of information and experience between partners – oil palm company and the cooperative -- smallholder farmers have acquired more technological and monetary resources to improve their productive systems (Castro and Fudemma 2015). We have observed improvements in farming technology, capacity building, and forum for exchanging knowledge and experience during meetings, in experimental fields, and in interactions with technical support extensionists (Braga and Fudemma forthcoming).

Although *Colono* and *Nikkei* farmers can choose their buyers, CAMTA members must prioritize sell their products to the cooperative. This market exclusivity combined with required standards for export restrains *Colono* farmers from joining the cooperative; instead, they prefer to be registered as an independent supplier and keep the freedom to sell their products to different buyers according to the price.

Partnerships in agroforestry system or oil palm cultivation opened new opportunities to *Colono* farmers to overcome historical barriers to access new markets. Their increased bargaining power allowed them to upgrade their productive standards and contributed to enhance their self-esteem as illustrated by the emphasis on the entrepreneur position by one of the *Colono* farmers in the region, “dealing with large companies, export, and stock market”. This trend moves the smallholders’ role beyond their relevant contribution to domestic food production (IBGE 2006), and changes their historical image linked to backwardness, resistance to change and economic marginality (Schmink and Wood 1992). Finally, partnership also provides the opportunity of production diversification. In addition to the regular annual farming systems, *Colono* farmers can engage in cultivation of vegetables for school meal program, agroforestry products for the fruit market and oil palm for oil companies.

Despite of net benefits and trust building, partnership arrangements may also reveal drawbacks for partners with less economic and political resources. Asymmetries among participants often lead to unequal share of benefits as illustrated by the oil palm contract farming. While the oil company benefits from the increased supply of oil seeds, farmers are held on a debt relation with the

Bank and their land is locked in a 20-year production cycle. *Colono* farmer occupy a vulnerable position in this contractual arrangement, which was crafted mainly by federal officers and Banks. On the other hand, grassroots organizations, unions, and experiences acquired in a day-to-day partnership arena seem to have played an important role in the increasing level of awareness among farmers. In particular, the Rural Unions act as watch dogs and monitor the working conditions of both rural workers and farmers' families. After five years since this partnership has been initiated, some farmers seem satisfied with the initial results.

PARTNERSHIP: OVERCOMING OR REPRODUCING HIGH-LEVEL SOCIAL DILEMMAS?

Partnership is an institutional arrangement that can help solve higher level social dilemmas. While collective action deals with perverse incentives under common goals (Olson 1965; Ostrom 1990), bilateral and/or multilateral partnerships takes place often between highly asymmetric actors and under multiple (but in principle complementary) goals. Therefore, the analysis of partnerships (Zawari and Mitchell 2011; Narrod et al. 2009) require attention from both collective action and conflict theories as these social arrangement presents features that may contribute to address asymmetries. On one side, collective action theorists (Ostrom 1990; Olson 1965) have paid little attention to divergence of interests and resources inequalities among social agents that might lead to non-cooperative behavior. On the other side, studies on conflicts (Veltmeyer 2008; Tilly 1998) emphasize divergence of interests and complex structure of power asymmetries due to enduring inequalities (social, economic and political) among social agents (Bourdier 1986) and leave little space for discussing possibilities for cooperation. In Tomé-Açu, the different partnerships reveal a range between more symmetric and bottom up initiatives to more asymmetric and top down initiatives. Partnership between *Colono* and *Nikkei* farmers illustrate a more symmetric arrangement. The former sought to learn how to produce black pepper and tropical fruits to increase their family income and to reduce economic risks by diversifying their production within the property. The latter sought to increase the supply of fruit pulp in the processing plant and to guarantee the continuity of agroforestry system as well as CAMTA's agroindustry in the region. This partnership arrangement differs from the contract farming partnership around oil palm in which *Colono* farmers sought to get access to financial credit, to learn new techniques on how to reach out a new market and, most of all to increase their family income while oil companies aimed at participating in the biodiesel auctions²³, improving their image, and to receive public subsidies (Castro and Futemma 2014; Instituto Observatório Social 2014; Schaffel et al. 2012).

In other words, both *Nikkei* and *Colono* smallholders have been able to build different partnership arrangements in order to overcome individual self-interest, to foster cooperation and to

²³ National regulations require the inclusion of a minimum percentage of oil palm production from smallholder farmers (for more information see <http://www.mda.gov.br/sitemda/secretaria/saf-biodiesel/o-selo-combust%C3%ADvel-social>)

reduce historical injustice and poverty. Leadership played a key role (Flores-Macías 2012) in these local initiatives and emerging forms of cooperation (Figure 1). Many key individuals contributed to the development of knowledge in the productive farming system and creating opportunities to build collaborative initiatives. Once they were given opportunities and incentives (Figure 1), these individuals have showed their abilities, willingness and strength to produce and organize socially and politically. In particular, one key *Nikkei* leader, who is well-respected, knowledgeable, and politically articulated, has been instrumental in expanding the SAFTA agroforestry system beyond the *Nikkei* community and Tomé-Açu. He stresses the need for farmers to team up with other social agents in order to reduce costs of production and to be able to thrive as farmers. Similarly, one key *Colono* smallholder farmers, Union's leader politically trained in the Liberation Theology (Gutierrez 1996) and recognized for his charisma, strived for labour rights and benefits of rural workers. He asserts that *Colono* and *Nikkei* should work together to overcome local difficulties in regard to physical infrastructure and to improve their wellbeing.

In addition to leadership, the history of collective action has been key for the ability of *Nikkei* farmers to build innovative models and large range of partnerships. The different collective action initiatives among this group did not only strengthen their social capital but also gave support to build new financial capital creating incentives to participate and to comply with their expected obligations.

In sum, Tomé-Açu case discussed here illustrates the ability of smallholder farmers to change their trajectories of poor and marginal rural populations in the Amazon. *Nikkei* farmers, in particular, have been more successful in building up partnerships to develop innovative model of production from the bottom-up. One of the key aspects to make partnership works is trust (Park and Feiock 2005; Ostrom 1998; Levi 1996; Putnam 1992, see Table 2). Appropriate monitoring system can contribute partners to accomplish assigned tasks and duties (compliance); if they do so, reputation may arise, which contributes to build trust and increase level of cooperation. In addition, trust can be enhanced through channels of sharing information and communication (Andersson et al. 2009; Lubell et al. 2002; Ostrom 1990).

[Table 2 about here]

Building Trust

Trust implies a process of common understanding and shared expectation (Ostrom 1998). In Tomé-Açu, we observed three forms of institutional arrangements which range from everyday life practices to contractual agreements (Table 2). The former requires a long time frame for individuals to interact and to socially bind through a common understanding while the latter relies mainly on a legal framework to lower transaction costs among actors who may not share similar views.

Interpersonal Relationship is characterized by repeated and face to face communication and it was observed in agroforestry systems between *Nikkei* farmers and *Colono* farmers or between CAMTA's extensionists and *Nikkei* farmers. These interactions took place in situations of friendship, co-working, and comradeship. Built through experience of working together, close collaboration was reinforced by reciprocity between partners in which compliance contributes to enhance the reputation

of participants. This process allows for a light monitoring and sanctioning system based on social control and social sanctions (Table 2).

In Informal Accord arrangements, social agents also communicated and exchanged information face to face; however, in this case, social interactions were on a professional basis with tighter norms. The partnership between CAMTA and *Colono* farmers illustrated this case, in which *Colono* farmers could become a CAMTA supplier only if they fulfilled some requirements. Notwithstanding the more stringent control to bind less acquainted partners, rule compliance was controlled through informal and more subtle monitoring mechanisms. Trust were built on a mid- and long-term process of reputation acquired by partners, who recurrently fulfilled their expected obligations.

Formal Contracts refer to the most restrictive and structured form of interaction as illustrated by the partnership between *Colono* farmers and oil companies. In contrast to the usual contract farming schemes (Oya 2012; Key and Runsten 1999), oil palm out-growers do not hold any formal contract with oil companies. The financing Bank, who acts as a contracting party in this multilateral partnership, lays out highly structured set of rules and carries out stringent monitoring and sanctions to limit rule violations (Table 2) as well as to guarantee the expected production and payments of credit debts. The legal framework of this partnership reveals strong power asymmetries between the oil palm companies and out-growers, who occupy a more vulnerable economic, legal and political position (Bourdieu 1986). Nevertheless, face to face interactions may also take place such as informal conversations between farmers and oil palm company's extensionist²⁴. Usually local residents, who attended technical school in the region (Braga and Fudemma forthcoming), these extensionists contributed immensely to build favorable social relations with oil palm out-growers through a common language and their understanding regarding farmers' behavior, wishes and productive systems in the area.

Overall, in all three types of partnership arrangements -- interpersonal relations, informal accord, and formal contract -- participants' interactions have contributed to build a minimum level of trust in this rural setting. In addition, face to face and repeated communication among partners helped to lower costs of exchanging and accessing information, particularly to *Colono* farmers. Monitoring and sanctioning mechanisms (Tucker 2010, 2004; Gibson et. al. 2005; Ostrom et al. 1994; Ostrom 1992), however, remarkably differ across partnership arrangements according to their level of interaction and level of commercial relations. Among partners holding a long-term interaction built upon reciprocity, mutual compliance and reputation, monitoring has been more flexible and carried out more informally. Among less acquainted partners in the case of out-growers and oil palm companies, third party contracts were needed.

In sum, trust is a central element of a robust and enduring partnership. While trust was built on a more solid and long-term basis in Interpersonal Relations and Informal Accord, the Formal Contract arrangement reveals a more fragile foundation of trusting.

²⁴ According to the contract, an extensionist must visit the farmer's property once a month.

FINAL CONSIDERATIONS

In the Amazon, rural areas have been characterized by low social capital, low human capital, and thus high transaction cost (Figure 1) as a result of history of boom-and-bust economic cycles, successive failures of development programs and deficient institutional support (weak local governments). In this study, we argue that bilateral and multilateral partnerships may offer opportunities to smallholder farmers to overcome these historical setbacks and bottlenecks common to the region. The history of farmers from Tomé-Açu shows the emergence and expansion of partnerships as an innovative institutional arrangement that are helping to lower the costs of production and improve the bargain power among farmers who have to negotiate with suppliers and buyers. We have also observed that social network through partnership has played a major role in the flowing of information and exchange of knowledge among different actors, especially across smallholder farmers.

Diversified forms of collaboration are now at place in Tomé-Açu region: between individuals and organization; bilateral and multilateral partnerships; between locals and outsiders (local, national and international partners); horizontal (peer) or vertical (non-peer) relationship. In all these arrangements, the initiative and, in many cases, the incentives to collaborate initiated from local agents (in *Colono* and *Nikkei* communities) rather than external agents -- e.g., non-governmental organization or international aid agency-- as it is usual in developing countries.

During the last two decades, the rural context in the Brazilian Amazon has become increasingly challenging to farmers confronted with new environmental and labour regulations and markets demands (e.g., Forest Code, Labour rights). Different types of collaboration strategies are evolving as a response to these changes. However, one cannot overlook the unequal distribution of power among heterogeneous stakeholders which may create unbalanced net of benefits. This situation may only change as the position of the farmers in the partnership arrangements improves. Only through re-distributional equity, including access to better formal education (e.g., technical high school and college), access to key information (e.g., technological and market), and financial incentives can the gaps in sharing benefits be fulfilled. Thus, asymmetries of power must be explicitly considered in the design and implementation of partnerships addressing rural sustainable development programs.

REFERENCES

- Adger, W.N., K. Brown and R.L. Tompkins, 2005. The Political Economy of Cross-Scale Networks in Resource Co-Management. *Ecology and Society* 10(2): 9, <http://www.ecologyandsociety.org/vol10/iss2/art9/> (accessed 03 Mar 2015)
- Agrawal, A. 1996. Group Size and Successful Collective Action: A Case Study of Forest Management Institutions in the Indian Himalayas. In *Forest Resources and Institutions*, ed. Clark Gibson, Margaret A. McKean, and Elinor Ostrom, 49-74. (First published as Working Paper No. 3 Bloomington, Workshop in Political Theory and Policy Analysis, Indiana University.)

- Alston, L.J., G.D. Libecap and B. Mueller, 1999. *Title, Conflict, and Land Use: The Development of Property Rights and Land Reform on the Brazilian Frontiers*. Ann Harbor: The University of Michigan Press.
- Andersson, K., G.G. De Anda, F. van Laerhoven, 2009. *Local Governments and Rural Development: comparing lessons from Brazil, Chile, Mexico, and Peru*. Tucson: The University of Arizona Press. 232 p.
- Barros, A.V.L., A.K. Homma, J.A. Takamatsu, T. Takamatsu and M. Konagano, 2009. Evolução e Percepção dos Sistemas Agroflorestais Desenvolvidos pelos Agricultores Nipo-Brasileiros do Município de Tomé-Açu, Estado do Pará. *Amazônia: Ci. & Desenv.*, 5(9): 121-151.
- Batistella, M., E.L. Bolfe and E.F. Moran, 2012. Agroforestry in Tomé-Açu: An Alternative to Pasture in the Amazon. In *Human-Environment Interactions: Current and Future Directions*, eds. E.S. Brondízio and E.F. Moran, 321-42. Dordrecht: Springer.
- Blair, H.W., 1996. Democracy, Equity, and Common Property Resources Management in the Indian Subcontinent. *Development and Change*, 27: 475-499.
- Bourdieu, Pierre., 1986. The Forms of Capital. In John Richardson, ed. *Handbook of Theory and Research for the Sociology of Education*, 241-58. New York: Greenwood.
- Braga, A.C.R. and C. Fudemma, Forthcoming. Pluralidade da Assistência Técnica e Extensão Rural: Pública, Privada e de Organizações da Sociedade Civil. *RURIS* 9(2)
- Bromley, D.W., 1992. The Commons, Property, and Common-Property Regimes. In *Making the Commons Work: Theory, Practice and Policy*, ed. D.W. Bromley, D. Feeny, M.A. McKean, P. Peters, J.L. Gilles, R.J. Oakerson, C.F. Runge, and J.T. Thomson, 3-15. San Francisco: ICS Press.
- Brondízio, E.S., 2012. Institutional Crafting and the Vitality of Rural Areas in an Urban World: Perspectives from a Japanese Community in the Amazon. *Global Environmental Research*, 16: 145-151.
- Brondízio, E.S., A. Cak, M. Caldas, C. Mena, R. Bilsborrow, C.T. Fudemma, E.F. Moran, M. Batistella and T. Ludewigs, 2009. Small Farmers and Deforestation in Amazônia. In *Amazônia and Global Change*, eds. M. Keller, M. Bustamante, J. Gash, and P. Silva Dias, 117-43. Washington, DC: World Scientific Publishing/Geophysical Monograph, Series 186.
- Brondízio, E.S., 2004. Agriculture intensification, economic identity, and shared invisibility in Amazonian peasantry: Caboclos and Colonists in comparative perspective. *Culture and Agriculture*, 26(1/2): 1-24.
- Bunker, S.G., 1985. *Underdeveloping the Amazon: extraction, unequal Exchange, and the failure of the modern state*. Chicago: The University of Chicago Press.
- Callo-Concha, D. and M. Denich, 2014. A participatory framework to assess multifunctional land-use systems with multicriteria and multivariate analyses: A case study on agrobiodiversity of agroforestry systems in Tomé-Açu, Brazil. *Change Adaptation Socioecol. Syst.*, 1: 40-50.
- CAMTA, 1967. Relatos Históricos da Cooperativa Agrícola Mista de Tomé-Açu. Belém, Pará.
- Castellani, D, R.E. Monteiro, J.A. Takamatsu, O.R. Kato, M.R.L. Rodrigues, A. Miccolis, M. Costa

and J. Casara, 2009. Estudos de Sistemas Agrossilviculturais para a Produção de Dendê (*Elaeis guineensis*) em Propriedades Rurais de Tomé-Açu (PA). Paper presented at Congresso Brasileiro de Sistemas Agroflorestais/EMBRAPA-CPATU, <http://www.alice.cnptia.embrapa.br/handle/doc/657675> (accessed 02 Jun 2015)

Castro, F. and C. Fudemma, 2015. Farming Knowledge building between migrant and local peasants in the Eastern Amazon. Paper presented at XVth Biannual Conference of the International Association for the Study of the Commons: The Commons Complexity and Change. Edmonton Alberta. Canada.

_____. 2014. The Biodiesel program and territorial reconfiguration in Eastern Amazon, Brazil Paper presented at 2014 Global Land Project Open Science Meeting: *Land transformations: between global challenges and local realities*. Berlin, Germany. IGBP-IHDP.

Castro, F., Siqueira, A. D. and Ferreira, L. C. 2006. Use and Misuse of Concepts of Tradition and Property Rights in the Conservation of Natural Resources in the Atlantic Forest (Brazil). *Ambiente e Sociedade*, 9(1): 23–39.

Cernea, M., 1989. User Groups as Producers in Participatory Afforestation Strategies. World Bank Discussion Papers n. 7. Washington, D.C.: World Bank.

Coleman, J.S., 1988. Social Capital in the Creation of Human Capital. *The American Journal of Sociology*, v. 94 Supplement. S95-S120.

Durston, J. 1998. Building Social Capital in Rural Communities (where it does not exist): Theoretical and Policy Implications of Peasant Empowerment in Chiquimula, Guatemala. Chicago: LASA (Latin American Studies Association).

Feiock, R.C., 2013. The Institutional Collective Action Framework. *Policy Studies Journal-PSJ*, 41(3): 397-425.

Flohrzchutz, G.H.H., A.K.O. Homma, P.C. Kitamura and A.I.M. Santos, 1983. *O Processo de Desenvolvimento e Nível Tecnológico de Culturas Perenes: O Caso da Pimenta-do-Reino no Nordeste Paraense*. Embrapa-CPATU Documentos. Belém: CPATU

Flores-Macías, G.A., 2012. Making Migrant-Government Partnerships Work: Insights from the Logic of Collective Action. *Political Science Quarterly*, 127(3): 417-443.

Foster, A.D. and M.R. Rosenzeig, 1995. Learning by Doing and Learning from Others: Human Capital and Technical Change in Agriculture. *Journal of Political Economy* 103(6): 1176-1209.

Fudemma, C. and E.S. Brondízio, 2003. Land Reform and Land-Use Changes in the Lower Amazon: Implications for Agricultural Intensification. *Human Ecology*, 31(3): 369-402.

Gibson, C., J.T. Williams and E. Ostrom, 2005. Local Enforcement and Better Forests. *World Development*, 33(2): 273-284.

Gomes, G.M. and J.R. Vergolino, 1997. Trinta e cinco anos de crescimento econômico na Amazônia (1960-1995). Texto para Discussão nº 533. Brasília, DF: IPEA. 146 p.

Gutierrez, G., 1996. *The Making of Modern Theology: Nineteenth and Twentieth Centuries Texts*.

Minneapolis, MN: Fortress Press.

Homma, A.K.O., 2004. Dinâmica dos Sistemas Agroflorestais: O caso da colônia agrícola de Tomé-Açu, Pará. *Revista do Instituto de Estudos Superiores*, www.ainfo.cnptia.embrapa.br (accessed 06 Mar 2015)

_____. 1998. 'A Civilização da Pimenta-do-reino na Amazônia'. In *Amazônia: Meio Ambiente e Desenvolvimento Agrícola*, ed. A.K.O. Homma, 61-91. Brasília: Embrapa – SPI.

Homma, A.K.O. and J. Furlan Jr., 2001. 'Desenvolvimento da dendeicultura na Amazônia: Cronologia' In *Agronegócio do dendê: uma alternativa social econômica e ambiental para o desenvolvimento sustentável da Amazônia*, eds. A.A. Müller and J. Furlan Jr., 193-201. Belém: Embrapa Amazônia Ocidental.

IBGE. 2010, Censo Demográfico e Agropecuário 2010 – Brasil. Instituto Brasileiro de Geografia e Estatística. Rio de Janeiro, www.ibge.gov.br (accessed 15 Oct 2014)

_____. 2006. Censo Agropecuário 2006 – Brasil. Instituto Brasileiro de Geografia e Estatística. Rio de Janeiro, www.ibge.gov.br/home/estatistica/.../agropecuaria/censoagro/2006 (accessed 15 Oct 2014)

IDESP, Instituto de Desenvolvimento Econômico, Social e Ambiental do Pará, 2014. Estatística Municipal – Tomé-Açu. Governo do Estado do Pará. Secretaria de Estado do Planejamento, Orçamento e Finanças. 47 p.

Instituto Observatório Social, 2014. O comportamento sócio-trabalhista na produção do óleo de palma do dendê no Estado do Pará com foco nas empresas Agropalma, Biovale/Biopalma, Petrobras Combustíveis. Relatório Final. São Paulo, SP: Observatório. 76 p.

Key, N. and D. Runsten, 1999. Contract Farming, Smallholders, and Rural Development in Latin America: The Organization of Agroprocessing Firms and the Scale of Outgrower Production. *World Development*, 27(2): 381-401.

Levi, M., 1996. Social and Unsocial Capital: A Review Essay of Robert Putnam's Making Democracy Work. *Politics & Society*, 24:45-55.

Lubel, M., M. Schneider, J.T. Scholz and M. Mete, 2002. Watershed Partnerships and the emergence of collective action institutions. *American Journal of Political Science*, 46(1): 148-163

Moran, E.F., 1981. *Developing the Amazon*. Bloomington: Indiana University Press.

Müller, A.A., J. Furlan Júnior and P.C. Filho, 2006. A EMBRAPA Amazônia Oriental e o Agronegócio do Dendê no Pará. Embrapa Amazônia Oriental Documentos 257. Belém, PA. 67p.

Narayan, D. and L. Prichett, 1999. Cents and Sociability: Household Income and Social Capital in Rural Tanzania. *Economic Development and Cultural Change*, 47(4): 871-897.

Narrood, C., D. Roy, J. Okello, J. Avendaño, K. Rich and A. Thorat, 2009. Public-Private partnerships and collective action in high value fruit and vegetable supply chains. *Food Policy*, 34: 8-15.

Noda, H., L.A.G. Souza and O.J.M. Fonseca, eds., 1997. *Duas Décadas de Contribuições do INPA à Pesquisa Agrônômica no Trópico Úmido*. Manaus: MCT-INPA. 332 p.

Olson, M., 1965. *The Logic of Collective Action: Public Goods and the Theory of Groups*. Cambridge: Harvard University Press.

Ostrom, E., 1999. Social Capital: A Fad or a Fundamental Concept? In *Social Capital: A Multifaceted Perspective*, ed. P. Dasgupta and I. Seraeldim, 172-214. Washington, D.C.: The World Bank.

_____. 1998. A behavioral approach to the rational choice theory of collective action. *American Political Science Review*, 92(1), 1–22.

_____. 1995. *Self-Governing and Social Capital*. Oxford: Oxford University Press.

_____. 1992. *Crafting Institutions for Self-Governing Irrigation Systems*. San Francisco, California: Institute for Contemporary Studies Press.

_____. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge: Cambridge University Press.

Ostrom, E., R. Gardner and J. Walker, 1994. *Rules, Games & Common-Pool Resources*. Ann Arbor: The University of Michigan Press.

Oya, C., 2012. Contract Farming in Sub-Saharan Africa: A Survey of Approaches, Debates and Issues. *Journal of Agrarian Change*, 12(1): 1-33.

Park, H.J. and R.C. Feiock, 2005. Collaborative Approaches to Economic Development: Regional Development Partnerships and Social Capital. Paper present at the Annual Meeting of the American Public Administration Annual Meeting, April 2-5. 31 p.

Piekielek, J., 2010. Cooperativism and Agroforestry in the Eastern Amazon: The Case of Tomé-Açu. *Latin American Perspectives*, 37(12): 12-29.

Putnam, R.D., 1993. *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton, N.J.: Princeton University Press.

Repórter Brasil, 2013. *Expansão do Dendê na Amazônia Brasileira: Elementos para uma análise dos impactos sobre a agricultura familiar no nordeste do Pará*. São Paulo, SP: ONG Repórter Brasil/FASE.

Schaffel, S., S. Herrera, M. Obermale and E.L. La Rovere, 2012. Can family farmers benefit from biofuel sustainability standards? Evidence from the Brazilian Social Fuel Certificate. *Biofuels*, 3(6): 725-736.

Schlager, E. and W. Blomquist, 1998. Resolving Common Pool Resource Dilemmas:

Heterogeneities among Resources Users. Paper presented at Seventh Common Property Conference of the International Association of Common Property, British Columbia, Canada, June 10-14.

Schmink, M. and C. Wood, 1992. *Contested Frontiers in Amazonia*. New York: Columbia University Press.

Siisiainem, M., 2000. Two Concepts of Social Capital: Bourdieu vs. Putnam. Paper presented at ISTR Fourth International Conference "The Third Sector: For What and for Whom?" Trinity College, Dublin, Ireland. July 5-8.

Tilly, C., 1998. *Durable Inequality*. Berkeley, CA: University of California Press.

Tucker, C., 2010. Learning on Governance in Forest Ecosystems: Lessons from Recent Research. *International Journal of the Commons*, 4(2): 687-706.

Tzanakis, M., 2013. Social Capital in Bourdieu's, Coleman's and Putnam's Theory: empirical evidence and emergent measurement issues. *Educate*~, 13(2): 2-23.

Varughese, G. and E. Ostrom, 2001. The Contested Role of Heterogeneity in Collective Action: Some Evidence from Community Forestry in Nepal. *World Development*, 29(5): 747-765.

Veltmeyer, H., 2008. New social movements in Latin America: The dynamics of class and identity. *Journal of Peasant Studies*, 25(1): 139-169.

Zawari, N.A. and S.M. Mitchell, 2011. Fragmented Governance of International Rivers: Negotiating Bilateral versus Multilateral Treaties. *International Studies Quarterly*, 55: 835-858

Wade, R., 1988. *Village Republics: Economic Conditions for Collective Action in South India*. New York: Cambridge University Press.

White, T.A., 1996. Private Exchange and Social Capital: Multiple Functions of Common Property Regimes in Haiti. Paper presented at 6th Annual Conference of the International Association for the Study of Common Property. Berkeley, Calif., June 5-8.

White, T.A. and V.F. Runge, 1995. The Emergence and Evolution of Collective Action: Lessons From Watershed Management in Haiti. *World Development*, 23(10): 1683-1698.

Yamada, M. and H.L. Gholz, 2002. An Evaluation of Agroforestry Systems as a Rural Development Option for the Brazilian Amazon. *Agroforestry Systems*, 55: 81-87

Yamada, M., 1999. Japanese immigrant agroforestry in the Brazilian Amazon: a case study of sustainable rural development in the Tropics. Ph.D. diss., University of Florida, Gainesville.

TABLES AND FIGURES

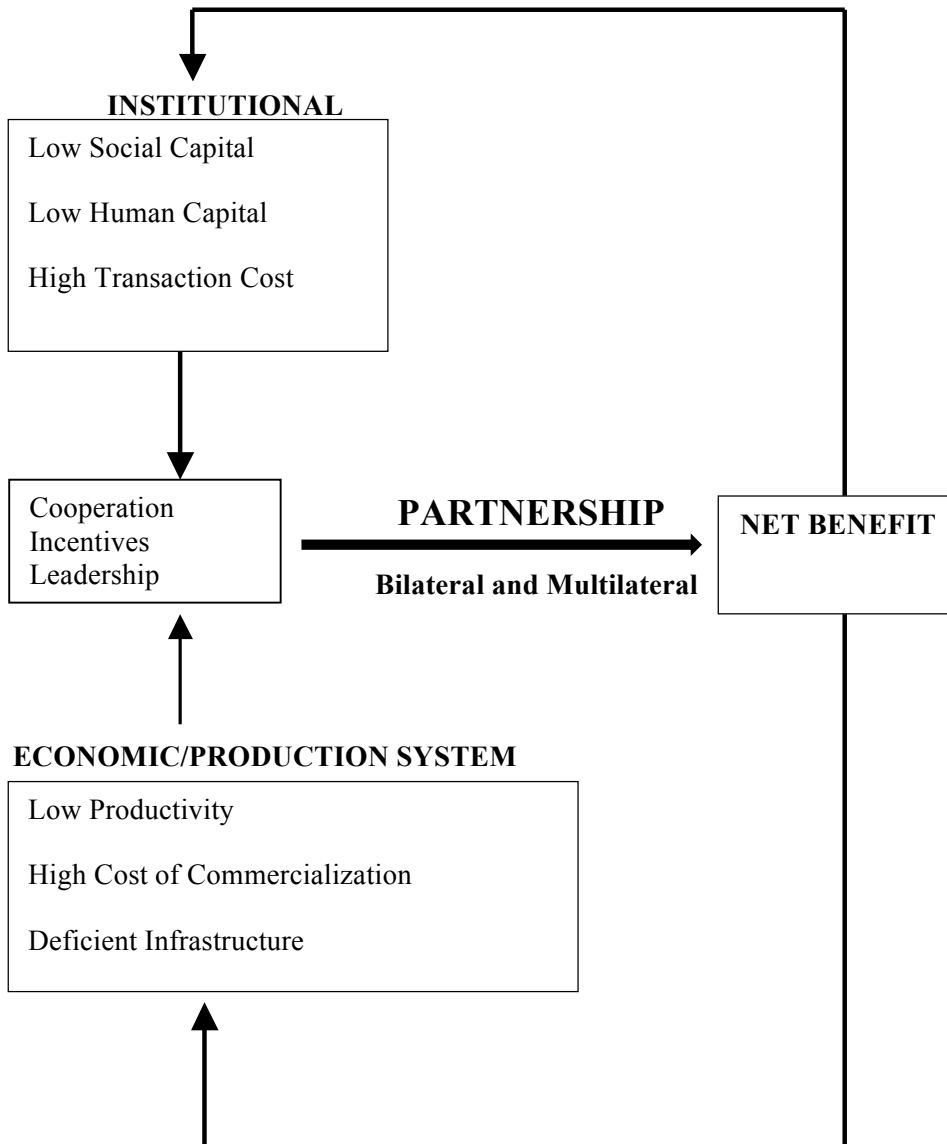


Figure 1. Constrains and opportunities for smallholders' partnerships in Tomé-Açu.

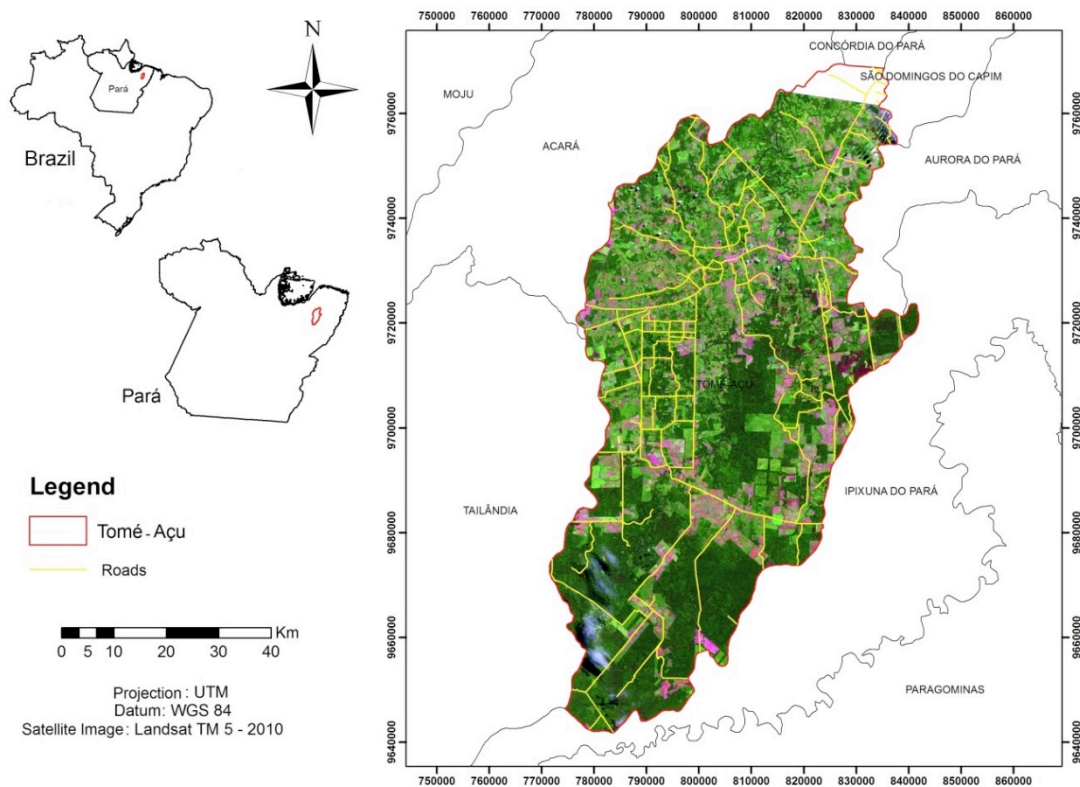


Figure 2. Location of Tomé-Açu municipality, within the state of Pará, Brazil, which is part of the Northeastern of the Amazon region (elaborated by: A.C.D.Moraes, 2014).

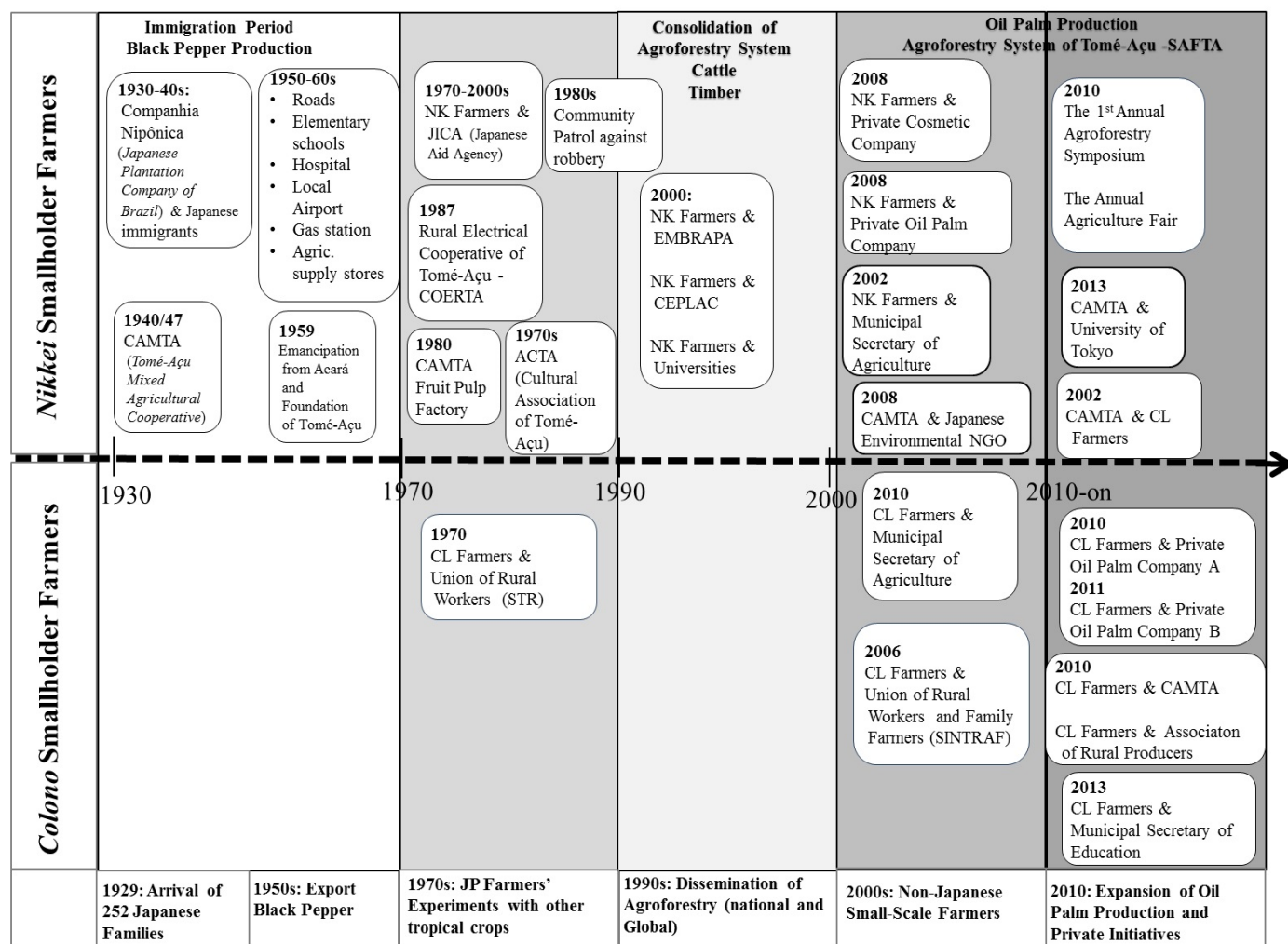


Figure 3: Timeline – Joint Actions and Building Social, Human and Physical Capital.
Source: Field data (2011-2015); Brondízio (2012); Piekielek (2010)

Table 1. Structural Arrangements of Partnership in Tomé-Açu among *Nikkei* and *Colono* Smallholder Farmers. (2015)

Bilateral	Multilateral	Vertical/Horizontal Relations	Spatial Level: Local/National/International
<i>Nikkei-Colono</i>		Vertical	Local
<i>Nikkei</i> -Oil Palm Company		Vertical	Local
<i>Nikkei</i> -Cultural Association		Horizontal	Local
<i>Nikkei</i> –Cooperative		Horizontal	Local
<i>Nikkei</i> -SEAGRI/TA		Vertical	Local
<i>Nikkei</i> - SEMA/TA		Vertical	Local
<i>Nikkei</i> – Public Universities		Vertical	National
<i>Nikkei</i> – Research Institute		Vertical	National
Cooperative – Japanese University		Vertical	International
Cooperative – Japanese NGO		Vertical	International
	<i>Nikkei</i> -Cooperative-Cosmetic company	Vertical	National
	<i>Nikkei</i> – <i>Colono</i> – Cooperative – SEAGRI/TA	Vertical	Local
<i>Colono</i> - Union 1		Horizontal	Local
<i>Colono</i> – Union 2		Horizontal	Local
<i>Colono</i> – Cooperative		Vertical	Local
	<i>Colono</i> -Oil Palm Company-Bank	Vertical	Local
	<i>Colono</i> –SE/TA-SEAGRI/TA –Public University Slaughterhouse	Vertical	Local

Table 2. Three forms of institutional designs to build or enhance trust through partnership in Tomé-Açu. (2015)

Institutional Arrangements	Communication- Information	Share Responsibility	Compliance	Monitoring	Sanction
Interpersonnal Relations	Face to face Repeated and Frequent	Reciprocity	Expected	Social control	Social sanctions
Informal Accord	Face to face Repeated and Frequent	“Do your part”	Expected	Informal and discrete/flexible	Social and economic sanctions
Formal Contract	Face to face Periodical	Structured set of tasks “Do your part”	Enforced	Highly structured between parties and thirty party (formal)	Structured and legal