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Agroecological practices as territorial development: an analytical schema from Brazilian agroforestry case studies

Abstract

Agroecological practices have been widely promoted as an alternative to the hegemonic agri-food system, yet they also can help to ‘green’ the system. To strengthen a transformative agroecology, Latin American activists have promoted the concept *desenvolvimento territorial rural* (DTR or rural territorial development), which has different versions. The dominant version advocates broad multi-actor coalitions to strengthen DTR and thus benefit poor people, yet this obscures rival territorial agendas. An antagonistic version instead analyses how capital accumulation drives societal conflicts, contingently resulting in DTR trajectories. Here an analytical schema helps identify how agroecological practices are appropriated for diverse trajectories of territorial development, illustrated by Brazilian agroforestry case studies.

Key words: agroecological practices, territorial development, territorialization, solidarity economy, social technologies, Brazil

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Introduction: territorial development as a strategic concept

In the past couple decades, agroecology has been highlighted, promoted and expanded worldwide, especially for opposing the Green Revolution model. The latter has created dependence on monocultures and chemical usage, consequently harming ecosystems, health and livelihoods. Collective resistance has inspired practitioners to recover and strengthen agroecological alternatives for a transformative agenda. Beyond ‘agroecology’ in that overtly political sense, this paper more broadly identifies ‘agroecological practices’ as diverse forms of territorial development. An analytical schema links theory with methods, illustrated by Brazilian case studies.

Brazil has divergent trajectories from its parallel expansion of agribusiness, agroecological alternatives and support measures for both. Brazil’s various political movements have gained many public policies favourable to agroecological practices. Meanwhile agribusiness has found greater lucrative markets for organic products; sales have been rising by at least 20% every year, especially exports (MAPA, 2019; Sebrae Nacional, 2017, 2019).

In such ways, Brazil’s agroecological practices epitomise three global tendencies: agroecology as a counter-hegemonic agenda; agroecological production seeking new market niches within a capitalist logic; and agroecological techniques selectively adapted for ‘greening’ the conventional agri-system (Holt Giménez and Shattuck, 2011; Levidow, 2015). Together these diverse tendencies have provoked some confusion and dispute over the term ‘agroecology’. To clarify their agroecology agenda, especially in Latin America, some advocacy organizations and researchers have emphasised ‘territorial development’ as a strategic concept for an agroecological transition which can transform the dominant agri-food system (Pronera, 2016; Schmitt et al., 2017).

That concept informs a ‘strategic reading of territory’. Communities participate firstly in evaluating the baseline situation and their current trajectories. Then they identify new opportunities, which depend on cooperating with allies, using or gaining public policies and avoiding various threats. Regional sustainability depends on constructing cooperative, complementary relationships, contrary to the neoliberal vision of economic competitiveness for global markets (IMCA, 2014). This ‘strategic reading’ helps to clarify multi-stakeholder strategies.

The concept ‘territorial development’ eventually became prominent in the agroecology Global Dialogues which have been hosted by the Food and Agriculture Organisation since 2014 (e.g. FAO, 2018a). Participants aim to

re-territorialize food systems for a healthy and diversified diet... A territorial and decentralized approach favouring cooperation between actors, innovative markets for the creation of added value and employment at the local level and the creation of integrated territorial approaches leading to a circular economy and food systems (FAO, 2018b: v, viii).

Towards an agroecological transition, practitioners advocate ‘territorial development processes’, in particular to

Take agroecology to scale through integrated and participatory territorial processes, [e.g. by] Supporting territorial approaches and planning for agroecology that protect the rights of local communities to land, and that integrate across sectors and reconnect the urban and rural by involving all local actors in an integrative, participatory and inclusive way... (FAO, Chair’s Summary, 2018: 6).

That document mentions the need for ‘conflict management’, though any conflict remains vague there. What are the divergent agendas? To address this blind-spot, the above concepts will be linked analytically through the following questions: How have agroecological practices been appropriated for specific trajectories of territorial development? How do these involve power relations? What are implications for an agroecology agenda transforming the hegemonic agri-food system?

To address those questions, the article has four main sections: agroecological practices as a diverse potential for development, linked with agrarian political economy; rural territorial development as a

contested concept, with our own analytical schema; our case studies analysed accordingly; and a Conclusion summarising the relevance to analytical concepts and agroecological expansion strategies.

1 Agroecological practices: tensions with the hegemonic agri-food system

During the 20th century Brazil had several agrarian movements promoting various forms of ‘ecological agriculture’; they all sought a long-term sustainability by managing biodiversity and soil conservation (Ehlers, 1999: 47). Traditional agroforestry systems were newly seen as agroecological when gaining greater attention in the late 20th century (Brandenburg, 2002; Abreu et. al, 2009, 2012). Agroecological methods attracted greater interest and were made more explicit when various social struggles contested the Green Revolution (Matos, 2010). This literature review characterises such tensions with the hegemonic agri-food system and then relates these to agrarian political economy.

1.1 Agroecological tensions with the hegemonic system

Agroecology was originally formulated as ‘the scientific basis for an alternative agriculture’ (Altieri, 1983). Later this was grounded in social agrarian agendas and social movements, especially in resistance to capitalist modernisation, i.e. dependence on technology packages of the Green Revolution (Altieri, 2002). This resistance role was taken up by peasant and indigenous groups seeking a structural transformation of the countryside, markets and society (Altieri, 2008; Altieri and Toledo, 2011; Rosset, 2003; Martinez-Torrez and Rosset, 2014; De Schutter, 2011). Agroecology depends on a complex science for managing relationships between practitioners and the environment. It has been defined as: ‘ecological management of natural resources through forms of collective social action... which contribute to deal with the social and ecological crisis and thus confront neoliberalism and economic globalisation’ (Sevilla Gúzman, 2006: 9).

Around the turn of the century Brazil’s main political force struggling for land reform, the Movimento dos Trabalhadores Rurais Sem Terra (MST), began to experiment with agroecological practices as means towards an alternative future (Borsatto and do Carmo, 2013; da Silva, 2011). Stimulated by the MST and fellow affiliates, the global network La Via Campesina eventually linked agroecology with food sovereignty as a counter-strategy against agribusiness. With support from many civil society groups, this linkage established a common political agenda for intervening in local, national and global arenas (Holt-Giménez and Altieri, 2011, 2013; Holt Giménez and Shattuck, 2011).

This political-economic agenda stimulated statistical comparisons of the two models, especially as regards whom they feed and how. Despite generally holding less than half the land, small-scale peasant agriculture still produces most of the world’s food. It produces as much as 80% of the food in non-industrialised countries, according to the UN Environment Programme, the International Fund for Agricultural Development (IFAD) and FAO (IFAD-UNEP, 2013).

A similar pattern was found in Brazil, whose 4.4 million family farms comprise 85% of agricultural establishments. They utilize less than 25% of the land yet produce 70% of the food that is consumed there. By contrast, agri-industrial farms hold much more land but produce mainly export commodities, e.g. coffee, soy, sugarcane, etc. (IBGE, 2006). More generally, capital-intensive farms favour monocultures, providing mainly raw materials for animal feed and processed food; they have higher productivity only for those purposes. As a ‘productivity paradox’, small-sized farms are generally more productive than large farms if counting all edible products (IFAD, 2001).

Given those advantages of small-scale peasant farms, agroecology agendas have sought to enhance their natural resource base, productivity and livelihoods. Agroecological practices have been ‘restoring local self-reliance, conserving and regenerating natural resource agrobiodiversity, producing healthy foods with low [external] inputs, and empowering peasant organizations’ (Altieri

and Toledo, 2011). They have great knowledge-based internal inputs: agroecosystems mimic ecological processes through nutrient recycling and biodiversity, within and beyond production units (Wezel and Soldat, 2009). Studies have elaborated ‘agroecology’ for various dimensions and scales – from the field, to agroecosystems, to the local and more recently to entire agri-food systems, e.g. linking animal and crop production.

1.2 Agroecological alternatives: agrarian political economy perspectives

Any alternative agri-food trajectory encounters structural obstacles from the hegemonic system. This has been theorised by agrarian political economy, especially through four questions: ‘Who owns what? Who does what? Who gets what? What do they do with it?’ (Bernstein, 2010, 2017). Answers have changed through transitions to the capitalist mode of production.

Agricultural labour still undergoes simple and generational reproduction, as before, but now often internalises the expanded reproduction of capital. This accumulation process happens through the multiple commodification of subsistence, land, agri-inputs and outputs. An ‘accumulation from below’ is carried out by some small-scale producers, complementing accumulation from above. Difficulties of social reproduction lead to dependence on debt and non-farm waged labour. These roles differ from the classic peasantry of agrarian class societies (Bernstein, 2010, 2017: 9). In such ways, modern capitalist agriculture poses great difficulties for small-scale producers, especially those seeking livelihoods outside capital accumulation.

For those reasons, sceptics have doubted whether a peasant-based agroecology can offer adequate productivity for people’s food needs or for market competition. According to the above writer, non-industrial alternatives reject modern techniques along with their crucial advantages (Bernstein, 2014: 1054). Another sceptic similarly identifies an ‘uncritical technological optimism placed in agroecology and in farmer-driven agroecological knowledge as an alternative to high-input, science-driven technological innovation’. In particular, he questions whether the former ‘can compete with high-input industrial agriculture which addresses environmental issues of sustainability and operates within capitalist markets that coordinate the flow of food from producers to consumers’. Such alternatives would benefit from ‘joint farmer-scientist experimentation and debate’ (Jansen, 2015: 214, 223).

Three main rejoinders follow here: First, productivity of what? Industrial agriculture prioritises export commodities as inputs for processed food and animal feed, rather than local people’s nutritional needs, so productivity comparisons between systems can be misleading (as cited above: IFAD, 2001; IFAD-UNEP, 2013). Second, agroecology agendas promote *diálogos de saberes* combining traditional with modern knowledge, incorporating expertise from agri-extension services and specialist NGOs. Together these provide means to enhance farmers’ subsistence, non-commodity inputs, water conservation, productivity and nutritional quality (Delgado and Rist, 2016; dos Santos et al., 2014; Martínéz-Torres and Rosset, 2014). In Brazil such knowledge-exchange is often facilitated by universities and/or the research agency Embrapa (Caetano et al., 2015).

As the third kind of rejoinder, many agroecological producers build short food-supply chains to retain more of the value that they add, while offering nutritionally better food. Participatory certification schemes facilitate direct sales at lower prices, while empowering small-scale producers politically and economically, thus bypassing conventional markets or competition with them (dos Santos et al., 2014). More generally, peasant practices can avoid or minimise commodification ‘if access to land, labour, credit, and product markets is mediated through direct, non-monetary ties to other households or other classes...’ (Van der Ploeg, 2010: 6). In such ways, agroecology agendas attempt to decommodify techniques, inputs and markets; many small-scale producers minimise subsumption to capital accumulation.

Given all those pressures, agroecological practices can play diverse roles, e.g. transforming the hegemonic agri-food system or else conforming to its market pressures, power structures and development models (Levidow et al., 2014). Towards a transformative role, agroecology agendas link three aspects: engagements with scientific knowledge, practices enhancing traditional experiences and knowledges, and social movements for transforming political-economic structures, especially to gain wider support for the above innovations (Wezel et al., 2009). As a terrain of struggle, agroecology has been disputed materially ('agroecology as farming') and immaterially ('agroecology as framing'), i.e. mobilising practitioners for transformative agendas (Rosset and Martínez-Torres, 2012).

To identify such tensions, this paper bypasses definitional disputes over true 'agroecology', instead using the broad term 'agroecological practices' (Rivera-Ferre, 2018). These have diverse forms of management, producers, objectives and societal visions (Le Coq, 2017: 21-22). Those forms will be linked analytically with territorial development, likewise in its diverse forms, as explained next.

2 Territorial development: theory, analytical schema and case-study rationale

Prevalent 'development' models have historically defined people's needs in ways co-opting their aspirations into capital accumulation and its global circuits, while obscuring power relations. This co-optation potential arises from state bodies selectively supporting agroecological practices. 'The outcome will depend on the balance of power in venues where the struggle occurs and on the ability of social movements to eschew the precepts of so-called development' (Giraldo and Rosset, 2018). Or more subtly, social movements reframe development in counter-hegemonic ways, distinguishing among different models and trajectories.

Such distinctions are warranted for 'territorial development', which has divergent, contested meanings. These are firstly presented in a literature survey from original sources in Spanish and Portuguese. Then this section presents an analytical schema and the rationale for case studies being compared.

2.1 Rural territorial development: divergent meanings

Latin American geographers have elaborated the concept *desenvolvimento territorial rural* (DTR), i.e. rural territorial development. The dominant version has meant to encompass and conciliate all relevant actors:

We define DTR as a process of productive transformation in a specific rural space, whose aim is to reduce rural poverty. A productive transformation has the purpose to articulate competitively and sustainably the territory's economy with dynamic markets. Institutional development has the purposes of stimulating and facilitating interaction and conciliation between local actors and relevant external agents... so that the poor population can participate in the process and its benefits (Schejtman and Berdegué, 2003: 32)

Institutions linking all actors 'are indispensable so that development processes can overcome the power relations that exclude poor sectors from the opportunities and benefits of development' (ibid: 27).

Those authors briefly mention distributional issues that may warrant conflict management. A broad coalition needs 'consensus on the necessity for deeply innovating approaches' to DTR for poverty reduction (Schejtman and Berdegué, 2003: 44). According to the latter co-author, some approaches over-emphasise socially marginalised groups, while ignoring other territorial actors such as merchants, bureaucracies and industry. Consequently, some coalitions supporting DTR have 'a narrow social base, which reduces its power and its potentials' (Berdegué, 2016).

This diagnosis implies that poverty reduction depends on all relevant actors sharing a common agenda. This consensual version complements policy frameworks of the Inter-American Bank for Development and likewise Brazil's Ministry for Agrarian Development. The latter says: 'the

territorial focus is an essentially integrative vision of spaces, social actors, agents, markets and public policies...’ (MDA/SDT, 2003).

According to several critiques, the dominant consensual version obscures the class contradictions that generate societal conflict, especially how capital accumulation excludes or exploits poor people (as above). Thus DTR has been turned into a deceptively consensual fashion-concept. It has been widely deployed in ways which turn out to reproduce poverty (Fernandes, 2008: 214). Territory becomes a conflict-free, congenial, harmonious place; social conflicts between classes are meant to be suspended and replaced by a consensual DTR. Given such a role for the concept, it should be dismantled, argues one critic (Rodrigues Lopes, 2015: 187).

Other critics have counterposed versions of DTR highlighting antagonistic agendas: Through territorial development, dominant agents seek to maintain their power, while subaltern groups seek to resist and overcome it. Difficulties result ‘from acute territorial conflicts, mainly between actors of the market and civil society around, for example, the constitution of markets, the appropriation of land and antagonistic trajectories of regional development’ (Leite and Delgado, 2011: 54).

In one antagonistic version, DTR is shaped by dynamics of territorialization, deterritorialization and reterritorialization: When capital accumulation produces space, it deterritorializes peasants, who may try to reterritorialize space through new strategies for appropriating resources: ‘On the one hand, from its logic and principles, capital destroys and recreates the peasantry. On the other hand, the peasantry also recreates itself, breaking with the logic and principles of capital’ (Fernandes, 2008: 182). ‘This contradictory and paradoxical movement promotes development: the market, the state and society conflict and join to overcome their problems, while creating others and still prolonging others’ (ibid: 216). In reterritorialising space, actors renew their social identity in ways linked with class and place consciousness as well as social transformation (Saquet, 2018: 493-94).

Within that antagonistic version of DTR, the term ‘socio-territorial movements’ conceptualises Brazil’s landless movement, the MST: It creates new political spaces by occupying private property and demanding the right to land. Such movements construct forms of struggle beyond the political control of states (Fernandes, 2008: 217).

More generally, ‘Territorialized movements.... are organized and act in different places at the same time, made possible by their form of organization, which permits the spatialization of the struggle for land’ (Fernandes, 2005: 326). They link and strengthen movements that would otherwise remain separate. Agribusiness and family agriculture undergo territorial conflicts which transform the actors in the process (Fernandes, 2013: 27). Such movements oppose the extension of private property rights and commodification of resources, while counterposing communitarian forms of empowerment (Vergara-Camus, 2014: 290).

As a general understanding, power means actors’ capacity to influence outcomes but has diverse cause-effect models. An actor may asymmetrically exercise power over others through greater resources, threats, coercion, etc. More subtly, an actor may shape wider agendas which indirectly shape other actors’ beliefs or aspirations, thus influencing outcomes without coercion or overt conflict. In that sense, power may be ‘most effective when least observable’. It can mean the capacity to persuade or compel others to act contrary to their own interests (Lukes, 2007: 61; Gaventa, 2003). Yet some agendas may generate new interests among actors, especially as territorial conflicts transform them (Fernandes, 2013: 27).

Those meanings of power matter for *desenvolvimento territorial rural* (DTR) as a contested concept. As the dominant version, DTR should incorporate all major societal agents, become more powerful and thus supposedly benefit poor people. By contrast, antagonistic versions highlight actors’ power rivalry over resources for divergent development trajectories.

2.2 Analytical schema of rural territorial development

Drawing on the above critical perspectives, our analytical schema conceptualises agroecological practices as territorial development through four parameters: i) origin and aims; ii) work organization and product certification for market access; iii) relationships with the wider agri-food system and public policies; and iv) knowledge development for technological innovation. Together those parameters help to identify divergent territorial trajectories and their distinctive power relations. Taking each parameter in turn:

i) Origins and aims

The territorial role of agroecological practices depends partly on how the origin and aims relate to the hegemonic system within a specific political-economic context. This involves diverse actors – e.g. conventional businesses, family farmers, landless peasants, traditional communities, etc. – seeking to gain economic and political resources. As a general pattern, agroecological scale-out has happened more in contexts of crises where social movement organisations can channel a collective response (Cacho et al., 2018: 655). At the same time, the state has promoted foreign investment in partnership with Brazil's agribusiness, a tendency known as *estrangeirização de terras* (Sobreiro Filho et al., 2018: 20-21). It has likewise promoted large-scale organic farms for attractive returns on capital investment.

ii) Work organization and product certification for market access

This parameter analytically links two aspects: work organization for a production process and product certification for accessing or creating markets. Agribusiness routinely exercises its power by linking these elements, e.g. in marketing agri-industrial, 'green' or organic products. By contrast, alternative trajectories depend on special collective efforts and organisational forms to bypass or contest that power.

The Social and Solidarity Economy expresses interdependencies across economic activities (Dos Santos and Carneiro, 2008; Schüttz and Gaiger, 2006; Singer and Souza, 2000). Cooperative relationships enhance capacities and income, especially through short supply chains bringing producers closer to consumers. The 'solidarity economy' has been elaborated to promote and expand Brazil's agroecological systems (FAO, 2017; Pronera, 2016). Such initiatives create relationships of trust and rural-urban solidarity, strengthening the social fabric for alternative production methods and distribution networks (Vivas, 2017).

Since the 1990s several civil society organisations have been promoting participatory forms of certification under the producers' control, bypassing official expensive forms of organic certification (da Costa et al, 2017: 290; Schwab and Collado, 2017: 2). Certification facilitates short food-supply chains, promoted by various agencies, e.g. the Assessoria e Serviços a Projetos em Agricultura Alternativa (AS-PTA), and the Rede de Agroecologia Ecológica. Together these support measures help agroecological initiatives to establish consumer support for cooperative work organization and environmentally sustainable practices. Through such short chains, small-scale producers can bypass or contest the power of conventional markets, rather than simply compete on the same terms.

iii) Relationships with public policies and the hegemonic agri-food system

This parameter has two related aspects of power: how initiatives accommodate or contest the hegemonic political-economic system; and how they depend on, gain and/or utilise public policies.

Latin American governments have generally privileged powerful economic actors over small-scale producers or other social sectors (Piadal, 2013: 87-89), especially through market liberalization (IFAD, 2016: 87). The power imbalance has been somewhat redressed by public policies such as

land reform, extension services, public procurement, etc. (FAO, 2017). These sometimes facilitate agroecological practices, which remain small islands surrounded by vast tracts of agri-industrial monocultures (Schmitt et al., 2017: 88-89). Effective scale-up depends on better governance arrangements, especially improving policy coherence across sectors and democratizing agricultural decision-making processes; yet such arrangements are impeded by policies favouring the corporate food regime (Parmentier, 2014: 67).

Brazil's smallholders and agroecological producers have obtained significant support from public policies, especially during the 2003-2016 governments led by the Partido dos Trabalhadores (PT) or Workers' Party. Their support measures responded to joint demands of peasants, indigenous and traditional communities. Some local authorities have complemented or stimulated support roles of national bodies. NGOs also made an important contribution to such support, especially for agroecological practices (Schmitt et al., 2017).

Responding to land occupations, the Reforma Agrária has granted land tenure to many settlements. Initially imitating Green Revolution methods, they soon sought agroecological alternatives, which gained other support measures. Since 2004 the Programa Nacional de Assistência Técnica e Extensão Rural (Pronater ou PNATER) has promoted farm-level experiments of technologies more appropriate for smallholders, include agroecological methods. Yet support measures often extend the typical diffusionist approach of 'technology transfer', rather than 'stimulate the territorial dynamics of agroecological innovation' through knowledge-exchange practices (Petersen et al., 2013: 109). This distinction matters for whether producers gain empowerment through their own collective innovations.

Through its organics regulations (MDA, 2007), Brazil's rules have stimulated the entire organic sector to expand, especially for affluent domestic consumers and exports. Regulations have accommodated the difficulties of small-scale producers, especially by authorising participatory forms of organic certification (see section 3.2). Some smallholders have found institutional markets through state procurement programmes, especially the Programa de Aquisição de Alimento (PAA) for consolidating products from small-scale family farms, and the Programa Nacional de Alimentação Escolar (PNAE) for school meals. Public institutions pay a 30% premium price for organic and agroecological products, making these methods economically more viable for producers. Procurement programmes often favour such products from small family farms (CIAPO, 2013).

iv) Knowledge development and technological innovation

Agroecological systems have attracted new knowledge-investments of several kinds, integrating traditional knowledge with scientific knowledge, especially for biodiversity and nutrient recycling (Delgado and Rist, 2016). Such knowledge of natural resources helps to avoid external inputs and monocultures. Some systems apply syntropic methods, which imitate 'natural succession' processes enhancing symbiotic relationships amongst diverse organisms. Such methods help to recover soil fertility and regenerate ecosystems, as a basis and incentive for agroforestry or permaculture, which can be more productive than conventional monocultures (Campos, 2016; dos Santos Rebello, 2018).

Alongside Green Revolution technological packages, Brazil's agri-extension service has also promoted alternative models, e.g. syntropic agriculture as a basis for agroforestry (e.g. Götsch, 1996). The latter has been widely celebrated as an alternative to capitalist agriculture. Semi-mechanised agroforestry has been proposed as a long-term investment for reforesting large areas for family or communal farms (Götsch, 2015; Hoffman, 2005; ISA, 2011). Yet large-scale agribusiness too has been a focus of research on mechanising agroforestry (CIRAT, n.d.; Venâncio, 2017). Thus agroforestry methods have been newly designed for diverse socio-economic aims.

‘Social technologies’ denote methods which have been developed, consolidated, appropriated by the producers and replicated elsewhere. Their design and use promotes social aims such as collective capabilities, inclusion, socio-economic equity and women’s leadership (Dagnino, 2009; Fressoli and Dias, 2014; ITS, 2004; Serafim et al., 2013). Their diffusion has been promoted by support measures and awards (e.g. CRATS, 2016; FBB, n.d.). Such innovation depends on a collective effort which links teaching, an educational process and cooperative organisation. It goes beyond the limits of an immediate situation by facilitating and disseminating diverse production methods (Pires and Novaes, 2016: 116).

2.3 Case-study rationale and methods

Our research method looked for diverse trajectories of agroecological practices, rather than start from ‘agroecology’ as a political agenda. To answer the questions in the Introduction, this article compares three agroforestry cases in São Paulo state (summarised in Table 1).

Case selection:

All three initiatives illustrate agroecological forms of agroforestry; two once had a partnership for agroforestry training. The case selection had several extra reasons: Each initiative has promoted itself as a showcase for environmentally sustainable methods which could be widely extended for a better societal future. Each had substantial documentation and/or promotional films available on websites; two already had academic studies. Moreover the Brazilian co-authors’ research unit had prior links with the initiatives, as a basis to build on their colleagues’ knowledge. For all those reasons, each initiative hosted a long visit by the research team.

Methods: Before visiting the three sites, the research team collected information on their origins, aims, experiences, internal organisation and external relations, thus building on prior research of the Brazilian co-authors. Each site visit had a semi-structured, in-depth interview, followed by a tour with continuous conversations about its activities. We started with general questions such as: ‘What future are you creating? How is this more sustainable and inclusive?’, including environmental, economic and social aspects. Interviewees’ comments provided a basis for follow-up through more internet searches for primary documents and academic analyses. Many literature citations and all interview material come from Portuguese-language sources; they have been translated by the authors. At the end the Glossary has the original names of Brazilian institutions.

3 Case studies: diverse forms of territorial development

Our three case studies have some superficial similarities, alongside distinctive origins and aims. Our analytical schema helps to illuminate territorial development as specific trajectories, roles and power relations. Each case is analysed in turn below, sometimes varying the sequence of the four parameters (from the previous section).

3.1 Fazenda da Toca Orgânicos

Fazenda da Toca Orgânicos is owned by the Diniz family, who formerly owned the business group Pão de Açúcar. As a self-description, the farm has been developed ‘between native woodlands, residents’ villages, research plots for regenerative agriculture and the Instituto Toca, which is devoted to applying, developing and disseminating a culture of ‘thinking and living organic’ (Fazenda da Toca, n.d). It has developed large-scale agroforestry for land regeneration as well as a lucrative business through organic products.

Here sustainability and profit are closely linked: ‘The real purpose of Toca... is clearly that of profit’, according to the proprietor, Pedro Paulo Diniz (*Época Negócios*, 2017). The initiative originated from the search for economic profitability in an area formerly producing orange monocultures within the Green Revolution model. The Fazenda operates a conventional division of labour, differentiating between waged manual workers and professional staff. For management tasks, a Board of Directors sets the pathways for production, transport and commercialization.

The Fazenda's agroforestry transition piloted the wider agenda of a multi-stakeholder network, the Brazilian Coalition on Climate, Forests and Agriculture. With the slogan, 'Towards a Low-Carbon Economy', its two hundred member-organisations include Brazil's major agrobusiness companies and nature conservation groups. It seeks 'to replicate with native species the strategies that turned eucalyptus and pine cultivation into a commercial success', as a basis 'to multiply ten-fold the area under sustainable forest management'. Potential income would encompass carbon credits, payment for ecosystem services, timber and fruits (Coalizão Brasil, 2016).

In 2016 the Coalizão facilitated a workshop, 'The Economic Valorisation of Reforestation with Native Species', seeking to design agroforestry as an attractive capital investment. Hosting the workshop, Fazenda da Toca's Director set the task: 'It is feasible to obtain good, healthy food without abandoning financial efficiency'. Optimal means were discussed by the 56 participants from agribusiness, nature conservation groups, environmental groups and academia. They identified various options for 'agroforestry systems with an agroecological vision'. In particular, they identified a commercial imperative for reliably rapid sales of products while they are still fresh (WRI et al., 2016). This informed the Fazenda's distribution strategy, as below.

The Fazenda's products gain organic certification by paying for third-party validation (*auditoria*), e.g. by IBD Orgânicos do Brasil, typical of large-scale organic agriculture. *Toca Orgânico* products are advertised as 'healthy food' from healthy processes: 'We cultivate and harvest true food and create a better world which eats well' (Fazenda da Toca Orgânicos, n.d.).

The Fazenda produces fruits and eggs on a large scale. With its organic label, the fruit obtains a premium price for processing by the four large companies which dominate fruit processing and sales in São Paulo state, though some are fruits are sold through supermarkets (interview, 04.09.2017; Scherer and Herzog, 2018). These conventional supply chains reinforce the hegemonic market power.

The business has a strong research investment in agroforestry. Starting from Agricultura Sintrópica principles, Ernst Götsch already had been developing Sistemas Agroflorestais (SAFs) for large-scale fruit production (Agenda Götsch, n.d.). Working with him, Toca's professional team adapted his method to native flora for large-scale production. As examples of resource synergies, root organisms absorb atmospheric moisture, which is retained by the syntropic crop mixture, thus minimising dependence on irrigation.

Farm machinery has been adapted for large-scale agroforestry. The Fazenda has increasingly sought to mechanise the cultivation, raising labour productivity (Venâncio, 2017). It devised relatively lightweight 'coherent, intelligent machinery' that facilitates scale-up and raises efficiency, while avoiding repetitive tasks and soil impaction. The machines would be equally appropriate for small-scale farms (Agrofloresta do Futuro, 2016).

The Fazenda promotes its SAFs as a widely relevant innovation for conserving natural resources: 'We are helping to construct an identity, designing strategies to create a positive impact on the planet' (*Época Negócios*, 2017). It offers courses, holds public events and hosts residencies to share its experiences.

After visiting the Fazenda, MST activists adapted its methods and machinery for the horizontal social structure of Assentamento Mário Lago. One such visitor later remarked: 'The adaptation was easy for us. What Toca does is difficult – structuring agroforestry as a business, having the staff work for it, and so exploiting the worker' (interview, 05.09.2017; see further below). Indeed, Fazenda da Toca has been territorialising space for a typical class-based division of labour, whose products supply conventional markets. By contrast, our other cases build a solidarity basis for producers' capacities and livelihoods.

3.2 Assentamento Mário Lago

Assentamento Mário Lago resulted from an occupation led by the rural landless movement, Movimento dos Trabalhadores Rurais Sem Terra (MST). Like other land occupations in Brazil, this was carried out mainly by peasants who were previously deterritorialized by agribusiness and had sometimes migrated to plantations as labourers or to cities. The struggle was a joint action with a social movement in the nearby city, Ribeirão Preto (Cassin & Nali, 2016). After long judicial proceedings against the agribusiness owner, the land was expropriated for the settlement by a Federal agency, the Instituto Nacional de Colonização e Reforma Agrária (INCRA).

As an adverse local context, agri-industry has territorialised the Ribeirão Preto region by using the most fertile land and natural resources. As a major centre of capital-intensive agriculture, it produces fertilisers as well as commodity crops (sugar, soya, maize, cotton), which are mainly exported. The region's agri-industry organisation seeks more foreign investment, alongside 'a definitive insertion of Brazil into the international market': Ribeirão Preto 'has no limits to grow'. Agri-industry portrays its role as essential for the region's employment, well served by its technological infrastructure and international transport links. It exercises this power with support from the municipal authority, which brands the region as Brazil's Capital of Agribusiness – in English to help attract foreign investment (ABAGRP, 2013; cf. Sobreiro Filho et al., 2018 on foreign investment).

That adverse agribusiness context was turned into an opportunity by the MST. Before its occupation, the settlement site had been a chemical-intensive sugarcane plantation which deforested the area, degraded the soil, and undermined the Guarani Aquifer on which the nearby city depends. Those environmental problems motivated a Sustainable Development Plan to recover the land's role in recharging the aquifer, as detailed in a Federal agreement with the settlement (Nunes and da Silva, 2016). Under a further state contract, 35% of the settlement's area would be protected as a Legal Reserve, restoring agroforestry in Permanent Conservation Areas (Cassin & Nali, 2016: 362). At least 15% must be used for Sistemas Agroflorestais Agroecológicos (SAFAs; see below). The contract prohibited the use of agrochemicals in those areas, thus complementing the Assentamento's decision to abandon the agri-industrial methods of the previous landowners.

Thus the settlement reterritorialized the space for socio-environmental objectives, with the slogan: 'Families cooperate and enjoy... generating a great abundance of food and water' (Cooperafloresta, 2016a). To create such abundance, the Assentamento became a space for training, education and professional qualifications. The settlers sought and developed expertise to address several difficulties (agri-inputs, water scarcity, financial loans, etc.), for constructing agroforestry as a socio-environmental agenda.

Like many other MST settlements, Mário Lago's cooperative structure built the internal capacity necessary to obtain state support measures, e.g the Sustainable Development Plan, school food procurement and technical assistance (Nupedor, 2016). Work teams rotate across the various tasks: cultivation, food boxes, prices, transport, even security, thus building a horizontal organization and capacities among members (interview, 04.09.2017). The diverse agri-production helps to fulfil much of the settlers' food needs. All these capacities help to build economic power for the producers' livelihoods, alongside political power for using public policies.

To gain higher prices on a solidarity basis, the Assentamento obtains organic certification through an Organização de Controle Social (OCS). Under the government framework for OCS, each cooperative has 'a relationship of organization, commitment and trust amongst the participants'. This system aims at 'stimulating a direct relationship between the producer and final consumer' (MAPA, 2007, 2008). Brazil's OCS framework resulted from a multi-NGO campaign demanding official authorisation for such a form of Participatory Guarantee System, as an alternative to

expensive *auditoria* systems (Schmitt, et al., 2017: 85). Farmers participate in building and managing the OCS system.

Mário Lago's cooperatives initially sold some food through public procurement under PAA and PNAE. They depended on these programmes for a stable family income, as well as for a public image as 'good workers', countering the negative public image of *sem terras*. Playing a symbolic role, these institutional sales provided some dignity for the settlers. However, the PAA's bureaucratic requirements dominated the agenda of assembly meetings, which were consequently attended by only 10% of cooperative members (De Melo & Scopinho, 2015).

Going beyond those limitations, in 2016-2017 Mário Lago's cooperatives initiated a subscription scheme for weekly food boxes, *Cestas Agroflorestais*, on the broad model of Community-Supported Agriculture (CSA). The weekly boxes are also sold in fairs, shopping centres and stalls nearer the city centre of Ribeirão Preto. Work teams decide collectively on the contents, prices and commercial strategies. Direct sales have offered more opportunities for building the producers' capacities, democratic self-organisation and political support from civil society groups (de Freitas, 2018), thus gaining economic power through their solidarity relationships. Some members had depended on employment in the nearby city; the CSA's rising income provided a stronger alternative.



Figure 1: Lorry for delivering weekly food baskets.

For the settlement's cultivation methods and socio-environmental objectives, Agricultura Sintrópica was adapted for Sistemas Agroflorestais Agroecológicos (SAFAs). The extra term *agroecológicos* denotes the systematic knowledge-exchange networks building the wider agroecology movement for a social transformation, not simply a niche markets (interview, Mário Lago, 05.09.2017). Extending SAFAs, reforestation serves as much to produce healthy food and provide income as to recover the land; the latter role fulfils the state-contractual commitment to help replenish the aquifer.

The Assentamento's training programme has incorporated scientific knowledge from various external experts. Members visited Fazenda da Toca to learn about its agroforestry techniques and then adapted them for the Assentamento's cooperative structure. As a general strategy, the MST 'has been using the knowledge of technicians who have been trained within its own settlement', thus avoiding disagreements with external technicians and advisors (Nupedor, 2016: 55). The Assentamento seeks to 'spread agroecology and agroforestry systems in other settlements in the state' (interview, Mário Lago, 05.09.2017). As a key means, Projeto Agroflorestar spreads knowledge for 'a regenerative agriculture which promotes food sovereignty' (Basso, 2016). This has been sponsored by the Programa Petrobras Socioambiental of the state oil company, under its statutory mandate to fund socio-environmental projects.

The Assentamento seeks continuous improvement in techniques (Cooperaflorestar, 2016b: 19). Its pillars include: participatory planning, cultivation, monitoring, evaluation and training (Nunes and da Silva, 2016: 46). Given the high cost of drip irrigation technology, for example, it designs systems with plants which can better adapt to drought and provide higher productivity (ibid: 51). It devises social technologies for capture, storage and treatment of water. It started to build a fruit processing unit (interview, Mário Lago, 05.09.2017); this will add market value and retain more for producers.

3.3 Fórum de Comunidades Tradicionais (FCT)

For a long time the Costa Verde area has been urbanized, especially by civil construction projects associated with second homes and/or tourism. Meanwhile, under the state's nature conservation policy, lands of traditional communities overlap with some *Unidades de Conservação*, i.e. protected environmental areas. Such arrangements may jeopardise traditional ways of life (Ferreira & Carneiro, 2005), territorializing the space in ways that deterritorialize their resource base.

In response to those threats, the Fórum de Comunidades Tradicionais (FCT) has brought together three communities: quilombolas (descendants of escaped slaves), indigenous and caiçaras (indigenous-origin name for coastal residents, often engaged in farming or fishing). FCT seeks to maintain, protect and regenerate their territory. Demanding *justiça socioambiental* (socio-environmental justice), the FCT gives a greater public visibility to their culture and way of life.

In the name of nature conservation and public access, government policy often excludes traditional groups and sometimes privatises the management, based on the prevalent 'myth of untouched Nature' (Diegues, 1993). Criticising this hegemonic agenda, the FCT counterposed community-based forms of nature conservation, agroforestry and political defence of their territory (Nonada, 2017; Rosseto, 2014). Building on the area's traditional agroforestry, the FCT initiated Sistemas Agroflorestais (SAFs) seeking to link environmental conservation with their ways of life, which had been partly dependent on officially protected areas. The FCT has developed and promoted agroforestry systems inside the coastal forest. This initiative takes inspiration from their agroforestry traditions, in dialogue with new forms of knowledge (Delgado & Rist, 2016; see further below). Lacking official certification, their products are commercialized collectively, e.g. through school food procurement (PAA and PNAE), public fairs and various regional markets.



Figure 2: Fórum de Comunidades Tradicionais (FCT) collage-logo

The FCT's three communities have jointly designed *Turismo de Base Comunitária*, i.e. community-based tourism. This criticises the mass tourism which had resulted in environmental pollution and land sales, while counterposing 'a tourism based on communitarian management and valorisation of local knowledge' (de Miranda Mendonça et al., 2016: 241). This has been expanding short supply chains for a solidarity economy, featuring their restaurants Quilombo do Campinho. Income is shared equally by all members of each work team (ibid: 244). Together these initiatives showcase the communities' role in forest conservation.

A major threat came from a 2016 proposal to change the ecological zoning of the Litoral Norte (ZEE-LN), facilitating new construction by large real-estate companies. Under a proposed

constitutional amendment (PEC 215), moreover, such zoning decisions would be transferred from state bodies to the Federal Congress, relatively more favourable to real-estate interests. In response to this dual threat, the FCT asserted the communities' land rights and demanded a guarantee that any changes do not jeopardise their ways of life; to gain wider support, it organised protests and spoke at public hearings (Nonada, 2017). Mobilising internal capacities and multi-stakeholder support, the communities have increased their power to defend their space from commercial interests that would otherwise deterritorialise it.

The FCT has sought to maintain its traditional forests and produce food, newly linked with tourism. Its Projeto Juçara helps farmers to generate income from standing trees while also conserving them. The juçara fruit has an unusually high concentration of beneficial anti-toxins and anti-carcinogens, yet the tree was threatened with extinction by intensive harvesting for timber markets. To repopulate the juçara tree, Projeto Juçara has combined nature conservation with new solidarity markets.

Projeto Juçara has sought to become self-sustaining in several ways: selling the fruit pulp in shops and export markets; generating income for owners of protected forests; and likewise for businesses that process the pulp into food products. Its biodynamic agroforestry methods are certified by the Instituto Biodinâmico (IBD). As a business, Projeto Juçara is a collective self-organization of traditional communities. It has been establishing short supply chains in three phases: producing primary materials (raw products), transforming them into products, and then commercializing them.

For such novel forms of production, the FCT has promoted a dialogue between traditional knowledge and new knowledge from NGOs, universities and scientists, especially through state support programmes and the Fundação Oswaldo Cruz. The quilombo community has hosted visits from the state agency Embrapa Meio Ambiente. Its 'technological caravan for family agriculture' advised producers on converting their artisanal methods into professional ones for large-scale pulp processing and year-round marketing (Embrapa, 2017). In a coastal area which had become a notorious sewer, the Praia do Sono, the FCT has adapted permaculture methods as a social technology for ecological clean-up (OTSS, 2018).

Based on those activities, the FCT's Projeto Juçara won a 2016 competition for its social technologies. An action-research approach enhances the societal benefits: 'With a socio-environmental perspective, we are an incubator of social technology, which we are implementing on a larger scale' (interview, FCT, 07.09.2017).

In these ways, the FCT has built internal capacities to draw on expertise from NGOs and agri-extension services. These efforts devise better means of conserving and using natural resources for their livelihoods. This helps to exercise power over their territory and to share this experience with other communities.

4 Conclusions

To strengthen a transformative agroecology, Latin American activists have promoted the concept *desenvolvimento territorial rural* (DTR or rural territorial development), which has different versions. The dominant version promotes conciliation or integration of all relevant agents for broader coalitions strengthening DTR agendas, thereby benefiting poor people (Schejtman & Berdegué, 2003; Berdegué, 2013). According to critics, this version imagines a consensus whereby DTR somehow suspends structural conflicts around capital accumulation (Rodrigues Lopes, 2015). Indeed, the dominant version obscures rival trajectories.

As an alternative version, DTR has been understood as an antagonistic process: capital accumulation drives societal conflicts, contingently resulting in DTR trajectories. Actors seek power over resources for rival agendas, while recreating themselves in the process (Fernandes, 2008). Power comes from multi-stakeholder relationships enabling some actors to influence wider agendas and other societal groups. The antagonistic version of DTR better explains diverse trajectories and multi-actor tensions.

It also complements agrarian political economy perspectives. Going far beyond large agribusiness, the capital accumulation process has been subsuming small-scale farms by various means, e.g. subsistence needs, conventional markets, competition with them, waged labour within and beyond farms, etc. (Bernstein, 2010, 2014, 2017). To avoid or minimise this subsumption, various alternatives elaborate collective knowledge of available natural resources in non-monetary forms (cf. Van der Ploeg, 2010); they devise solidarity forms of subsistence, land tenure, agri-inputs and markets. Short food-supply chains remunerate their cooperative forms, agroecological production methods and/or product quality, thus avoiding or minimising market competition with capitalist agri-industry.

Drawing on DTR and agrarian political economy, our analytical schema helps to characterise agroecological initiatives as territorial development trajectories, variously reinforcing or contesting the hegemonic agri-food system. To recapitulate, the schema links four parameters: i) origin and aims; ii) work organization and product certification for market access; iii) relationships with the wider agri-food system and public policies; and iv) knowledge development for technological innovation. These linkages are illustrated by our three case studies – distinctive agroforestry alternatives to the Green Revolution model (see comparisons in Table 1). In brief:

Fazenda da Toca has designed large-scale agroforestry systems as a basis to sell organic products as healthy alternatives. This business territorializes land which had been degraded by the previous agri-industrial system, restores its natural resources, raises their commercial value and devises technical innovation for these purposes. Its transition pilots a nation-wide agribusiness-conservationist agenda to expand agroforestry as capital investment. Its coalition gave the Fazenda prior advice on how agroforestry could reconcile financial viability with resource conservation, while seeking to build civil society advocacy for the new system.

This advisory network created a subtle power to legitimise a wider agenda for greening capitalism. The agroforestry system depends on a labour division between professional/ manual roles, the latter being mechanised for higher productivity. Its distribution strategy reinforces conventional supply chains. Together these aspects reproduce the hegemonic agri-food system and its territorial power relations. As this illustrates, the sustainable development discourse creates new ‘green’ spaces for reproducing the capitalist mode of production (cf. Whitacker, 2012: 83).

By contrast, the other two initiatives originate in counter-hegemonic socioterritorial movements building ‘autonomous structures of power’ (Vergara-Camus, 2014: 11). Here low-income groups exercise greater power over territory by building internal expertise and cooperative organisation for external engagement, especially with civil society allies and supportive state programmes. For better using internally available resources, they selectively incorporate or adapt external expertise; they collectively devise socio-environmental technologies (*tecnologias socioambientais*), thus extending the earlier concept of social technologies. These capacities ‘stimulate the territorial dynamics of agroecological innovation’, going beyond technology transfer from experts (cf. Petersen et al., 2013). Such capacities build multi-stakeholder networks for gaining and defending support measures. More specifically for those two cases:

Assentamento Mário Lago attracted families who had been deterritorialized by agribusiness and occupied peri-urban land which had been degraded by chemical-intensive agriculture. As an adverse context, the region’s agribusiness exercises great power through support from the public

authority. Nevertheless the settlement reterritorialized its new space, eventually gaining land tenure through the Reforma Agrária, alongside a contractual commitment for environmental recovery through Sistemas Agroflorestais Agroecológicos (SAFAs). It built a horizontal cooperative structure for generating livelihoods and fulfilling the environmental-resource obligations of its state support programme. Institutional food sales provided a modest income but imposed bureaucratic burdens constraining internal democratic processes and left some members dependent on external waged-labour. Later, direct sales (weekly food baskets) provided better opportunities for local solidarity networks, members' income, skills development and participation in strategic decisions. By building internal capacities, the Assentamento strengthened its political power to use public policies, its economic power to generate livelihoods independent of capital accumulation, and its symbolic power to create a positive collective identity maintaining families' commitment to the space.

The Fórum de Comunidades Tradicionais (FCT) unites three traditional groups, initially to strengthen their territorial role in nature conservation, contrary to policy frameworks treating such people as threats to pure Nature. Building on the area's traditional agroforestry, communities have established novel food production and community-based tourism, both supported by civil society groups and academic researchers. The FCT's Projeto Juçara has aimed at communally protecting forests and increasing income from novel fruit products through short supply chains. Together those activities build internal capacities strengthening the communities' economic power to enhance livelihoods through a solidarity economy, as well as strengthening their political power to oppose a real-estate expansion which could deterritorialize their space. These activities shape common aspirations across the three traditional communities, thus softening inter-group tensions and deterring individualistic tendencies to over-exploit natural resources.

The case studies illustrate how actors subtly exercise power (cf. Lukes, 2007). They build multi-stakeholder networks, set agendas, use space and shape aspirations. Together these efforts influence other actors, generally in ways avoiding overt conflict. At the same time, divergent territorial trajectories open up actors to new interests (cf. Fernandes, 2013: 27).

Such analysis can inform 'a strategic reading of territory', identifying multi-stakeholder opportunities and difficulties for specific agroecological trajectories (e.g. IMCA, 2014). Within an analytical schema, each parameter articulates a vertical scale-up of external support measures with a horizontal scale-out or expansion of agroecological practices (Gonsalves, 2001; Ranaboldo and Venegas, 2007; Rosset and Altieri, 2017). From this perspective, a counter-hegemonic strategy can clarify territorial trajectories, potential obstacles and means to overcome them through a transformative agroecology.

Glossary of Brazilian names

Áreas de Preservação Permanente: Areas of Permanent Conservation

Embrapa Meio Ambiente, Environment unit of the Brazilian Agricultural Research Corporation.

Movimento dos Trabalhadores Rurais Sem Terra (MST): Movement of Rural Landless Workers

Organização de Controle Social (OCS): Social Control Organization

Partido dos Trabalhadores: Workers' Party

Plano de Desenvolvimento Sustentável (PDS): Sustainable Development Plan

Política Nacional de Segurança Alimentar e Nutricional: National Food Security Policy

Programa de Aquisição de Alimento (PAA): Food Procurement Programme

Programa Nacional de Alimentação Escolar (PNAE): National Programme of School Food Catering

Programa Nacional de Assistência Técnica e Extensão Rural (PNATER): National Programme of Technical Assistance and Rural Extension

Sistemas Agroflorestais Agroecológicos (SAFAs): Agroecological Agroforestry Systems

Table 1: Agroecological practices analysed as territorial development

FOUR PARAMETERS i) origin and aims <i>+ location</i>	ii) work organization and product certification for market access	iii) relationships with the hegemonic system and public policies	iv) knowledge development and technological innovation
INITIATIVE			
<p>Fazenda da Toca <i>Itirapina</i></p> <p>Aims to combine profits with nature conservation and land recovery. Implements and tests a wider agribusiness agenda for reforestation as capital investment.</p>	<p>Structures a conventional division of labour between waged manual workers and professional staff. Organic label is certified by an external <i>auditoria</i> to sell ‘healthy products’. Fruits become mainly ingredients for processing and sale by the four dominant food companies, thus reinforcing their power.</p>	<p>Abandoned the industrial model of the previous farm. Expands Sistemas Agroflorestais (SAFs) on a large scale, recovering soil fertility. Uses public policies for organic products & markets through long supply chains within the hegemonic food system.</p>	<p>Agricultura Sintrópica was adapted for large-scale SAFs with increasingly mechanised methods. Professional teams construct and adapt relevant knowledge for that model. Hosts courses and visits from other farms to spread its agroforestry methods.</p>
<p>Assentamento Mário Lago <i>Ribeirão Preto</i></p> <p>MST pursues socio-environmental aims. Seeks to consolidate its settlement by conserving natural resources and generating income. Horizontal structure: ‘Families cooperate and enjoy abundance’.</p>	<p>Products are certified by a participatory <i>Organização de Controle Social</i>. Organic label facilitates short supply chains, dependent on support from civil society. Since 2017 Community-Supported Agriculture scheme gains regular income from subscribers for weekly boxes. Work teams take turns in doing and learning tasks. Builds a processing unit to add and retain value from fruit products.</p>	<p>After a long occupation, the settlement gained legal tenure from INCRA. Gained a Sustainable Development Project with a contract to recover the land and so protect the aquifer on which Ribeirão Preto depends. Food sales initially depended on the city’s schools procurement programme, whose bureaucratic requirements dominated the settlement’s assemblies.</p>	<p>Adapted Agricultura Sintrópica for Sistemas Agroflorestais Agroecológicos (SAFAs) with a participatory management; training empowers cultivators to adapt techniques from external experts. Projeto Agroflorestar helps to spread its agroforestry methods to other settlements. Devises socio-environmental technologies, e.g. for water capture, storage and treatment.</p>
<p>Fórum de Comunidades Tradicionais (FCT) <i>Costa Verde</i></p> <p>FCT demands <i>justiça socioambiental</i>: ‘Preserve and Resist’. Agroforestry facilitates unity amongst three traditional communities to defend their territories from external threats.</p>	<p>Family-based agroforestry work has been linked with short supply chains. Although without official certification, agroforestry products are commercialized collectively via schools, fairs, other regional markets, and its own Restaurantes Quilombo. Turismo de Base Comunitária (TBC) provides a showcase for food products, community culture and nature conservation.</p>	<p>Gained state support for Projeto Juçara, which commercialises and conserves forest resources. But land access faces threats from zoning changes, with greater Federal power over such decisions, favouring real-estate expansion. FCT organises opposition, demanding protection for the communities’ way of life.</p>	<p>Sistemas Agroflorestais (SAF) put traditional knowledge in dialogue with new knowledge through action research (with NGOs, universities and scientists). Devises socio-environmental technologies suitable for wider dissemination, e.g. processing juçara into food products and recovering polluted beaches.</p>

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[Note: This list includes items corresponding to text that was omitted to accommodate the length limits.]

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