Food sovereignty in Ecuador: The role of the peasant farmer N. Vasconcellos 2021

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Nícolas Vasconcellos

Propositions

1. Food sovereignty is interpreted differently whether by the receiver or by the implementing institution. (this thesis)

2. Cows can be a mere object of milk production or the love of the farmer. (this thesis)

3. There is more life in a glass of milk than a single law can regulate.

4. Scientific production, important as it is, has no influence if left disconnected from the entities that could apply it to fuel real change.

5. Laws do not negotiate with humans, but humans can negotiate the implementation of the law.

6. Listening with an open heart is better than analyzing with open eyes.

Propositions belonging to the thesis, entitled:

Food sovereignty in Ecuador: The role of the peasant farmer

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Wageningen, 10 March 2021

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This research was conducted under the auspices of the graduate school Wageningen School of Social Sciences (WASS)

Food sovereignty in Ecuador

The role of the peasant farmer

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Thesis submitted in fulfilment of the requirements for the degree of doctor
at Wageningen University
by the authority of the Rector Magnificus,
Prof. Dr A.P.J. Mol,
in the presence of the Thesis Committee
appointed by the Academic Board
to be defended in public
on March 10, 2021
at 1.30 p.m. in the Aula.

Nícolas A. Vasconcellos
Food sovereignty in Ecuador - The role of the peasant farmer
196 pages.
PhD thesis, Wageningen University, Wageningen, the Netherlands (2021)
With references, with summary in English.
DOI: https://doi.org/10.18174/540232
ISBN: 978-94-6395-692-5

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Acknowledgements

This PhD is possible due to an Ecuadorian grant from the Secretariat of Higher Education, Science, Technology and Research (SENESCYT). I am grateful to receive the scholarship from SENESCYT and belong to the governments' program which strongly promotes the academic training and up-grade of Ecuadorian citizens eager to continuously self-improvement with equality of opportunities to all.

My appreciation goes to dr. Stephen Sherwood; dr. Alberto Arce for their great support and kindness, especial merits to Alberto for his insurmountable contribution and patience during the PhD training, and other professors that contributed with their inputs. My thanks to the PhD students from Chile and Ecuador with whom I shared new experiences.

I want to thank all the milk and cheese producers who cooperated during the fieldwork data collection in Santo Domingo Province. Especially to Don Washington Romero and Doña Digna Nuñez. Thanks for your support, wisdom and friendship, and particularly for approaching the topic of this article, and sharing your daily life and milk-producing activities.

Special thanks to the *Ingenieros* from MAGAP, Agrocalidad and ARCSA, for being crucial support and guidance through the many aspects of agricultural production in the area.

Glossary

Actants: This term was coined by Bruno Latour as a source of action that can be human or nonhuman, it has efficacy, can do things, it is coherent enough to make a difference, produce effects, and/or alter the course of events.

Affects: this term is brought by Bennett as central to politics and ethics but also branches out towards an affect not specific to human bodies, but to nonhuman bodies as catalysts. Under Bennett's notion of affect 'Organic and inorganic bodies, natural and cultural objects all are affective'.

Buen Vivir: The Ecuadorian State defines Buen Vivir as a constitutional principle-based in "Sumak Kawsay" which comprises a vision of the world centred in the human being as part of a natural and social environment. The 2008 constitution, in its Article 13 establishes that "The people and collectivities have the right to secure and permanent access to healthy, sufficient and nutritious food; preferably produced at a local level and in correspondence to their diverse identities and cultural traditions" (Art. 13 of the Ecuadorian Constitution, 2008).

Corporeality: refers to greater attention to the body and the material world as distributed across materialities; from these, agencies emerge through practice that acts on daily intentions as well as a contingency.

Ingeniero: in this thesis, the term *Ingeniero* is used to refer to the state extension agents who are in charge of implementing technological programs in agricultural associations in the rural areas of Santo Domingo.

Intersubjectivity: refers to alliances emerge from an interface in which entities (real or not) construct, reconstruct, and dismantle themselves as they cross each other's boundaries to constitute new individualities, be they linguistic or corporeal, capable of generating a degree of power or potential (Deleuze and Guattari, 1988).

Materiality: under the notion of Schatzki, materiality encompasses organisms; he also considers materiality as part of society, thus nonhuman organisms and their socialities are part of society (Schatzki, 2010).

Ethnography: is a research method in the field of anthropology applicable to other disciplines, as it intensely studies the socio-material culture relationships of actors and their worlds.

Emergence: is the process that exposes a reality after being observed or concealed.

Multiplicity: refers to the multiple specifications of the basic elements, structure, or nature of social life.

Indeterminacy: used to refer to a paradox in the study of sociology, often used to argue against the rational value of scientific thought.

Summary

This thesis looks at food policy and its implementation under the notion of modernism as it guides the performance of agricultural services, that are based on science and technology. The research starts from the study of food sovereignty policy established by the State and implemented by its extension agents nationwide, and moves through the regional public institution in charge of agricultural development in Santo Domingo to conclude with the analysis of the policy performance by the State, and what are the effects and affects generated by this public policy implementation. Qualitative material including concepts and quotations involving peasant farmers' practices is presented to establish that traditional practices are imperative to food sovereignty contrary to the policy's implementation. Essentially, this thesis argues that once food sovereignty policy is translated through the state apparatus, it generates intended and/or unintended exclusion among the aimed beneficiaries of such policy.

I aim to understand the peasant farmers' agricultural practices during situations of state intervention using ethnographic methods for data collection. This required examining various elements that form the assemblage of milk production in Santo Domingo and understand how these elements interact with each other and with external elements that derive from a food production process.

The theoretical approach is explained in Chapter 2, where the main concepts used for this thesis's analysis are described. These are rural development interfaces, intersubjectivity, assemblages, and corporeality. The following chapters depict the empirical work as they focus on the agricultural practices of peasant farmers for milk and dairy products and are analyzed through these concepts.

The concept of food sovereignty originates from the rural social movements, and it is gradually inserted into the policy apparatus of the Ecuadorian State, being constitutionalized and legalized for its implementation in rural areas. I explore the resulting practices of peasant farmers in response to public policy interventions. This

included the analysis of the food sovereignty concept in the Constitution and the observation of peasantries. I, thereby, observed how food sovereignty practice is affected when the State ignores local knowledge's pre-existence in rural areas.

In Chapter 3, I examine how the State fosters the formation and involvement of agricultural associations. Specifically, four agricultural associations from Santo Domingo Province are analyzed in terms of technical knowledge interventions to study the associations' interfaces with government agents that attempt to align local milk producers with the State's objectives for food sovereignty. Chapter 4 has examined the affective knowledge between peasant farmers and their cows, looking in-depth into social relations, materials and materialities of producers, and the technologies brought by policy agents. The interface of state regulations versus peasant farmers' traditional practices takes place along with the State's efforts to integrate peasant production into the market. The clash between *Ingenieros* and peasant farmers when it comes to their different bodies of knowledge makes visible the existence of intersubjective relations that depicts human and nonhuman interaction during the process of appropriation of technology provided by the State. Chapter 5 examines the encounter of dairy production as regulated by the State and the peasant farmers' traditional dairy practices. Such an encounter depicts a state food policy that favours industrial agribusiness at a push for the disappearance of traditional techniques for dairy production. This takes place at the consumer level who, despite the conditions of traditional dairy products that the State deems risky for human consumption, they prefer dairy from peasant farmers for its artisan organoleptic characteristics. This unintentional result in the dairy sector, where the State's attempt to integrate producers into the market under industrial standards, originated some producers practicing food sovereignty under their terms, and shows that peasant farmers follow a path towards development that not necessarily aligns with the State.

Beyond discourse, Chapter 6 shows how food sovereignty public policy remains referential, thus the local and particular manifestations of food sovereignty as policy. Therefore, despite attempting to control agricultural practices through the formation of agricultural associations, the State's policy of food sovereignty remains short of

controlling the traditional techniques of peasant farmers. In the end, the implementation of food sovereignty results in how *Ingenieros* translate public policy, conjugating this with their professional criteria, experience, and relations regarding technical knowledge for improving agricultural production in a specific locality and situated event.

CHAPTER 1

Chapter 1 - Introduction: Food Sovereignty as a Field of Study

Food sovereignty was constitutionalized and legalized as the central policy for food production in Ecuador in 2008. This approach promotes permanent access to sufficient amounts of healthy and nutritious food, that is produced locally and based on cultural traditions. Food and agricultural policies are often implemented at the local level by state agencies in the form of technologies. These latter were designed and implemented to foster agricultural development. However, the lack of a sound understanding of the diversity of farming practices occurring in Ecuadorian peasantries results from state-driven farm programs that do not align with the peasant farmers' everyday reality. When the food sovereignty policy was established, extension agents advised technologies to peasant farmers that included unfamiliar practices and methodologies, thereby ignoring peasants' lifeworlds and expecting them to leave behind their cultural traditions, which was the opposite of the original concept of food sovereignty. The latter paradox could be observed and analyzed through the ethnographic exploration of knowledge interfaces between field technicians implementing agricultural programs derived from the food sovereignty public policy and peasant farmers' local knowledge. This thesis focuses on this paradox, concentrating on peasant dairy farmers in the province of Santo Domingo. As such, this thesis aims to understand the rationality behind the implementation of Ecuador's food sovereignty policy and to elucidate if specific ways of policy implementation foster exclusionary practices, and thereby undermine the principles of the food sovereignty policy.

1.1 Food Sovereignty, technology, and policy implementation

Food sovereignty is the right of peoples to eat healthy and culturally appropriate food produced through ecologically sound and sustainable methods; and to define their food and agricultural system (Nyéléni, 2007; Via Campesina, 1996; Patel, 2009; Trauger, 2015). The political and academic narratives presented in this thesis are an attempt to stimulate positive changes in food production and consumption, stressing the importance of empowering local producers' decisions aiming to address the lack of social justice in

rural areas. Food sovereignty is a response to food security shortcomings and highlights the importance of providing rights to those neglected by the neoliberal food policies (Windfuhr and Jonsén, 2005; Anderson, 2008). On the one hand, food security focuses on having available foods and economic access to enough food, whereas food sovereignty goes beyond that. However, when the final aim is to avoid food insecurities, food sovereignty and food security should not be seen as opposites when approaching policy strategies and the food production system (Higgins, 2015).

In context-specific social transformation processes, the concept of autonomy is an essential element to achieve social justice. Sharma (2011) said that, several national food policies combine security and sovereignty orientations. Further, Higgins argues that both directions suffer from what she calls 'exclusionary politics' (2015:55). This is a concern for rural development as it is related to how rural producers are experiencing these policy exclusions. After that, several inquiries emerge: How do they, as a differentiated group, experience food sovereignty and access to food markets? Does food sovereignty technological policy orientation enable rural producers to access what they want? Is the policy perceived as a social control device, which stigmatizes local practices and forms of food transactions? Does technology reinforce connections and disconnections between various policy processes up and down the institutional vertical relations with state agencies? (see McGee, 2004)

In short, the potential exclusion that resulted after inserting a new technology is the problem that caused slower and uneven development in the rural space and is the reason why food sovereignty broad principles experienced drastic paradoxes. One can say that, it is mainly during the process of implementing a policy when government officers' generate - intentionally or unintentionally- exclusions, carving away coverage for the core principles of the policy. In this study, the Ecuadorian food sovereignty policy implementation is the focus of the research. Following the former goal, researchers need to focus on the relationship between the new technologies and the existing practices on the farm family units. Thus, examining which and how technologies are incorporated, and how these experiences influence production, the role of technical management advice,

and how far autonomy becomes a matter of negotiation between local producers and governmental actors implementing food policy. This is a central issue to conceptualize technology in processes of policy implementation. For example, in 1996 "La Via Campesina" suggested to the World Food Summit a protection policy for agricultural products to counteract price dumping, a result of free trade agreements (Brenni, 2015:26). Eventually, the protection of agrobiodiversity and natural resources such as seeds and genetic resources were incorporated as initiatives of the food sovereignty orientation; and this was a way to challenge agribusiness, offering a reorientation of food production and consumption, while protecting local agricultural practices.

In Ecuador, the interpretation of food sovereignty was firmly grounded on the potentialities of distributing new technologies to a local producer, and such distribution was relatively critical to economic liberalism. Conceptually, local producers' access to the market was presented and understood as recognizing their knowledge and practices of local producers through access and benefits-sharing arrangements with institutional state agencies. The latter was a cornerstone for the policy implementation process that led the national state regulation through the establishment of innovation projects that brought new technology into the rural arena. Innovation was initially accepted by representatives of local producers associations who appeared to display a willingness to adapt and develop new practices to participate in the food market. Yet, the producers wanted to continue to use their traditional knowledge and agroecological practices as conceptually promised during the food sovereignty discourse. It is worth mentioning that Santo Domingo's producers do not share the same orientation about food sovereignty as international organizations and environmental NGOs, and other institutions that collaborate closely with the Ministry of Agriculture and Regional Development Agencies, being peasant agriculture highly driven by traditional knowledge.

National and regional institutions in Ecuador emphasize that technology implementation has positive aspects that can potentially push local production into conventional food markets, which is not necessarily the idea for that food sovereignty was built, and in fact, this critical aspect is associated with conventional agricultural production. Thus,

participation in conventional markets being a peasant farmer, under the same conditions as a conventional producer, was the discourse of inclusion based on the food sovereignty principles, which was somehow similar to the food security discourse because it was grounded on production only. However, the increase of peasants' production was creating an institutional environment to support conventional economic growth, which was not the original aim of food sovereignty. In light of this, food production by peasant farmers would be limited as a result of the imperfections of the technology implementation, and would result to be present at the local market for local consumers (in this study is local cheese) or would at best serve the needs of regional agri-food business in principle willing to accept local production at high risk. This latter refers to quality issues, lack of producers' organization, and unfamiliarity with the new technology, such as peasantries receiving faulty cooling tanks and who would not challenge the existing regional arrangement to process their agricultural food. Therefore, it is worth examining the implementation of food sovereignty policy to capture the conflicts and different views, and potential tensions in the performance of technical innovations to achieve food sovereignty and "food justice." This is to moderate the message about the overall significance attributed to the formulation of public policies in Latin-American and by reducing the importance given to technology as the strategy to access food markets for marginalized small producers.

Implementing food sovereignty is a challenge because the translation of the concepts to reality incorporates all the problems that peasant farmers face at an agricultural and market-level specific to the national political arena in Ecuador. Herein, the regulatory entity on food production (i.e. food safety quality control) that was developed to respond to existing rural and urban pressures (i.e. contamination by chemical, physical or microbiological hazard) and responding to market orientations (i.e. taste and smell), was not effective according to public policies, being food production more and more linked with a development agenda, rather than being considered by governments and officials as a tool to solve problems of rural development and food consumption in urban centres.

Countries such as Ecuador adopted food sovereignty in its Constitution in 2008. There is currently a need to evidence the adoption of public interventions aiming at food sovereignty. The enforcement of the latter to increase production among rural farmers has altered relationships within peasant farmers and also between them and the food markets, society, and the agencies of the State, which are paradoxically struggling with providing food security, even though they are the primary food producers and active key of agricultural economies (see Pottier, 1999 for a more general analysis on food policies).

This thesis looks at peasant farmers' and food sovereignty policies in Ecuador using contemporary ethnography, as a methodological framework in rural sociology research (Willis and Trondman 2000). More specifically, it studies the practices of rural farmers, which is shaped by the specific environment they live in, and within the latter, the importance of policy performance to reach food sovereignty is examined based on the assumption that the presence of a policy does not guarantee its implementation (Arce, 1993).

Hereafter, this research focuses on the social factors and relations that are part of farmers' behaviours, ensuring the interactions within a web of connections in the rural space and considers the place peasant farmer are producing food and exist. The study of rural realities in a specific context starts by analyzing policy performance which is happening in the area under investigation. What is initially known is that the development of Ecuadorian agricultural policies has been mostly uncoordinated (Walker, 2007). Each policy had a momentum pushed by a particular network coordinated by actors who developed the interventions. In the case of food sovereignty, this study revises local farmers' behavior who were confronted with the food sovereignty policy that was promoted by the State to present results that describe the affects and effects generated by this policy performance after the analysis of interviews with local actors.

The study evolves into five chapters, from an introductory chapter, which includes the background, agricultural policy and the State of the art, to a second chapter that has concepts, and theories for the research. Then, three chapters include peasant farmers' associations and their role in food sovereignty implementation in Ecuador. To illustrate,

these chapters present the specific case of rural people in Santo Domingo, including the interaction of peasant farmers with their cattle and milking machines, describing the technological intervention within the emerging dairy corporealities. A closing chapter shows a need to incorporate the link between the traditional conditions of local producers and the motivations of producing food in the rural space into policy formulations. Corporeality is the form (aesthetics -in term of Lash, 1994-) that redouble, over, into what is done among existing bodies is a process of intensive transitions in policy intervention situations. Existing bodies (animals, machines, producers, ingenious, artificial semen, noisy engines, etc.) do not coincide with themselves when they start performing for the food sovereignty policy implementation. However, this dissociation, we would argue favours to the transition towards a redoubling of existing bodies. This process generates emerging corporealities. In other words, the study of policy performances of food sovereignty requires to update specific characteristics that are already present in processes of policy implementation, although we would say that the ontology of producers, state agents, policymakers, public policy formulations, family farm animals, and machines' functionality ever agrees with its specific-multiple bodies' interactions and relationships.

This conceptual contribution to rural sociology has scantily addressed the ethnographic and methodological implications of displacing agency yet. This is as a specific and individual human attribution. Agency is to be conceived now as a flow of movements and actions distributed across ontological fields (see Bennett 2010).

In this vein, the notion of assemblages and interfaces between persons, things and animals present us the study of the implementation of public policies, as a composed and overlapping, intersecting, and resonating multiplicity of human and non-human elements. Thus, in this thesis, the distribution of technology among producers acted as a 'communicative' device to delineate the distribution of 'agency' across the multiple 'materialities and materials' of actors' ontological agentic and constraint capacities. Taken seriously this ecological orientation, it is essential to highlight here the active role of 'nonhumans' materials and actors in public life (see Bennett 2010). In this study, public policy formulation and implementation are just two sites at which rural sociology can

contribute to reform, however, we need to start responding more receptively to assemblages and interfaces that researchers find themselves doing their studies. Finally, the research concludes with a discussion and some suggestions for future research.

1.2 Historical background and diverse origins of food sovereignty

Agriculture in Latin America has historically been undermined towards economic growth using a top-to-bottom approach resulting in wealth accumulation on some economic groups (Barsky 1984, Ramos 2019). The reduction of the resulting inequalities is what motivated the so-called left-wing governments in Latin America (McKay, Nehring et al. 2014, Clark 2017, Vergara-Camus and Kay 2017). The latter has confronted the issue of how to finance what is needed in socio-political reforms. These governments paradoxically have increased extractivism (Gudynas, 2017) and rarely have been able to deal with the nature of the peasant farming family (Van der Ploeg 2010). Thus, governmental bureaucracies have continued using the machinery of the national State, blocking reforms that aim to favour small rural producers and their inclusion in the larger society (Fox 1990, Scoones, Edelman et al. 2018).

Food sovereignty in Ecuador was presented in the 90s mainly by four federations FENOCIN[1], CNC-EA[2], FENACLE[3] , and CONFEUNASSC[4]. Together, they created a national space known as the Mesa Agraria[5]. This strategy allowed indigenous and peasant movements to set up a cooperative flow between national leadership and local militants targeting the implementation of proposals and actions favouring the peasant farmers. Thus, creating the opportunity for dialogue and participation between peasant-farmers and state institutions to influence their policies. The Mesa Agraria aimed to switch from the top-to-bottom approach to the bottom-to-top, to include peasant farmers in the dominant agricultural model towards the development of peasant economies. Herein, the

[1] National Confederation of Peasant, Indigenous and Black Organizations of Ecuador
[2] National Peasant Corporation - Eloy Alfaro
[3] National Federation of Free Agro-industrial, Peasant and Indigenous Workers of Ecuador
[4] National Confederation of Peasant Social Security
[5] Mesa Agraria in Ecuador takes shape in the late 90s as a national space of concertation which brought together peasant and indigenous federations and organizations (Giunta, 2013).

focus was on transitioning towards food sovereignty, looking for alternatives to neoliberal policies (Giunta, 2013).

Since the 2000s, Mesa Agraria has headed an opposition against the Ecuadorian government's free trade agreements organized by indigenous-social mobilizations, in both urban and rural sectors (Acosta, Falconí et al. 2006). In 2002, Mesa Agraria presented the Agenda Agraria, which contained as a cornerstone of the development of a policy based on food sovereignty and policy measures to support an agri-food transition from corporate agroindustrial and agricultural export commerce to aiding and developing national peasant farming (Giunta, 2013). Consequently, in 2003, the *Agenda Agraria* was recognized by the government of President Lucio Gutierrez and inaugurated the use of the term food sovereignty in the Ecuadorian legislation. Despite this advance, later in 2003, the relations between Mesa Agraria and the government-run into trouble and eventually collapsed (Clark 2013, Giunta 2013).

During the presidential election of 2006, Mesa Agraria invited candidates to political dialogue (Giunta 2014). This is when the candidate to the president (Rafael Correa) committed himself under a signed agreement: "that in case of being elected, he would promote the Agrarian Revolution under which access to land would be democratized, water privatization would be prevented, and fostering access to necessary resources for the reactivation of the peasant sector would be prioritized (Peña 2013, Martinez Flores 2015). Once the candidate won the elections, the Mesa Agraria supported the creation of a Constituent Assembly. In 2007, leaders from the federations who were part of the Mesa Agraria became members of the assembly. This came as part of the policy package, supported by federations in agreements with members of the assembly to guarantee the promotion of food sovereignty as a proposal for the new Constitution based on the former promise of the candidate (Giunta, 2014).

1.3 Food sovereignty policy VS its social movement's performance

In 2008, Ecuador became one of the first countries in the world that incorporated the concept of food sovereignty in its edited Constitution of 2008 (El Universo 2009). This

was a significantly positive policy step for rural-social movements in Latin America and mainly *La Via Campesina* in Ecuador, who had been pushing the principles of food sovereignty for several years. This movement opposes free trade agreements, in favour of developing alternatives to conventional agricultural production and in favour of different rural constituencies, including agroecology, social economy, and peasant farming, incorporating these orientations to state policy orientations (Andrée, Ayres et al. 2014, Vergara-Camus and Kay 2017, Vergara-Camus and Kay 2017, Henderson 2018). The issue is then how these heterogeneous discourses translate into policy aims.

The integration of food sovereignty production principles in the Constitution aimed for the generation of space to expose the demands of peasant farmers, looking forward to increasing agricultural production while promoting the principles of food sovereignty. These sovereignty principles include "the peasant farmer" as the main actor within the national food production system, and therefore, highlighting peasant farmers as imperative for achieving food production and economic growth (Asamblea Nacional del Ecuador 2010). The primary tool to accomplish this was to design an agricultural policy framework to articulate government interventions and farming associations (Burnett and Murphy 2014, Ponce Cevallos 2015, MAG 2019).

To engage in action, the Ecuadorian government provided to agricultural associations with funds, infrastructure, training, and technical service, aiming to facilitate associations' market competitiveness, yet keeping their political dependency from the agricultural programs of the Ministry of Agriculture MAGAP[6](El Telégrafo 2016). New state bureaus and institutions such as Plurinational and Intercultural Conference of Food Sovereignty (COPISA) (see Arce et al. 2015) and the Bureau of Popular and Solidarity Economy (SEPS in Spanish) and existing ones like MAGAP and the National Development Bank (BNF) were reorganized to foster the creation of a cooperative production framework and the legalization of these associations (Ponce Cevallos 2015). Thus, involving peasant farmers at the policy-making level, where they could have wider access to government

[6] Ministry of Agriculture and Animal Husbandry, Aquaculture and Fisheries

financial aid to increase their production and to have greater participation in the food market.

By doing so, the State aimed to raise rural development to a higher level towards the modernization of the peasant farming family in technology and agricultural practices (El Comercio 2013). The latter has been carried out ever since and through the country to implement several development projects mostly created by MAGAP, and some others by the provincial Decentralized Autonomous Governments (GADs[7]).

In 2009, the projects aiming for modernization in the presence of the Plurinational and Intercultural Conference of Food Sovereignty (COPISA), intended to stimulate greater social participation and civil control over national food agricultural policy (COPISA 2014). The attempt of the State to give an increased political space to civil society was obstructed by the MAGAP lack of political will to support a national food policy (Zambrano 2015). While COPISA wrote and delivered several law projects to support the socio-agricultural policy orientation, some civil-state projects were put aside by the ministry and the National Assembly (Ocaru 2012, Zambrano 2015). Consequently, most of the implemented projects were aligned with political promises during the presidential campaign or those that came from the National Bureau of Planning and Development (SENPLADES) (Correa 2017). The latter institution is in charge of planning intervention and is under the direct influence of presidential orders, who usually pressured his national bureaucracy to approve his policy projects. In this panorama, the president established the limits of the public policy consultation experiment in Ecuador, beyond any political, civil, or statal consultation space, positioning the president's office as the primary decision-making power of the State who at the end has the final word (Martinez Flores 2015).

The installation of Correa's government resulted in the end of 'extreme' neoliberal political trends that dominated agriculture for the last few decades. Correa's government applied

[7] In 2010, based on the Ecuadorian Constitution of 2008, it was established a new decentralized territorial organization of the state which incorporates new competences to the autonomous and decentralized governments of all provinces in the country and which allows them to control their own finances, and to receive support from national institutions to make use of the funds they receive from the state annually.

the discourse of national sovereignty to transform the State into a political and economic project against neoliberal total deregulation positions to recover economic and political control over the national territory. This novel nationalist orientation was supported by globalized neoliberal interests and international financial institutions (Clark 2013). Under these precepts, peasants became idealized to be part of food policy ideals instead of former policymakers. Policy-making in Ecuador has often taken place under notions that render peasant production modes and local traditions invisible and submissive. While the State has been implementing agricultural development programs based on the State's notion of food sovereignty, the policy from which these programs derive seldom reflect food sovereignty principles.

According to Clark (2013), Correa's government brought a post-neoliberal return orientation of the national State, acquiring support from indigenous social movements, such as FENOCIN and the left-wing Ecuadorian Socialist Party (PSE), which allowed Correa to run for president in 2006. This 'populist' coalition managed to secure Correa with the support needed during the first years of his presidency.

Correa's government came along with redistributive social concepts within a rural policy towards a more equitable distribution of resources among all socioeconomic classes than in the past centuries. The referred concepts involved the development of the peasant farming family based on the indigenous ancestral principle of *Sumak Kawsay*[8] (Good living). The latter was instrumental in the creation of the national development plans, and it was also added through the entire Constitution. Currently, state policy for rural development is based on the principles of food sovereignty combined with the notions of *Sumak Kawsay*. This amendment promotes better quality livelihoods through production systems based on the rights of people to define their food and agriculture (Asamblea Nacional del Ecuador, 2008). At the same time, however, the state policy implied the central role of national governments to protect and regulate domestic agricultural

[8] Sumak Kawsay as stipulated in the Constitution of 2008 refers to a new form of coexistence, in diversity and harmony with nature and which objective is to reach *"Buen Vivir"*

production and trade to achieve food sovereignty and sustainable development (ibid. Art 1, 2 13, 14 and 15).

During Correa's government, the "*Alianza País*" party stood for "a proud and sovereign homeland" (Clark, 2013). This premise was aligned with food sovereignty principles and agreed upon by the most extensive national peasant federation in Ecuador, the FENOCIN. The latter is a constituent member of the PSE and is affiliated to *La Via Campesina.* Soon after starting his presidency, Correa created the National Assembly. He provided political space for policy-making to indigenous and social movements, which included prominent members of FENOCIN and left parties like PSE. The presence of social and indigenous groups, like FENOCIN, was most influential for food sovereignty and social and solidarity economy to become institutionalized in the Constitution of 2008.

By observing the past, we can infer that Correa's political orientation towards social movements empowered, in a certain way, the citizens and highlighted that politicians should work for the citizens who were different compared to the top-to-bottom approach before his mandate. Before Correa was a candidate, social movements declined as rural and indigenous people were highly neglected. However, the relationship between political parties and social movements fostered by Correa's government contributed to give more decision-making power to political parties and the State (institutionalization of social movements to further the process of governance). It is believed that social empowerment ended up dominating the government's agenda and subordinating social movements to the Alianza País party (Giunta, 2018).

1.4 Convergent materialities of milk amidst policy interventions

The integration of food sovereignty in the 2008 constitution provided us with the opportunity to examine empirically the space for food sovereignty policy implementation in the milk production sector. The production and transmission of technologies for the milk production sector is neither an economically deterministic process of intervention nor a simple unilinear one. However, this led to an increase in the presence of state *Ingenieros*

in rural areas. Vaccination campaigns for cattle were increased, production kits were provided for free or highly subsidized by the State for milk producers in Ecuador. Production intensification programs were implemented and followed up closely. In Santo Domingo, most of these programs were focused on cattle production, especially dairy farming (Sanchez et al. 2018). These government interventions generated an overt political control of the milk sector and politicized producers' local economy and, therefore, provides a unique arena for studying the policy of food sovereignty.

The present research examines the dairy production process of agricultural associations and the implementation of technologies and technical services from MAGAP that were given to peasant farmers involved in milk production. During the latter, it was evident that there existed two bodies of knowledge deriving from the government: i) expert knowledge and ii) the peasant farmers everyday agricultural practices. These two co-existed within the framework of public policy, and their coexistence generated new ways of agricultural production. Using the assemblage theory, it is possible to map social and material constituent forms of milk production inside the agricultural associations of Santo Domingo using a bottom-up orientation. The assemblage approach's analytical scope notably supports in its implications that things come together, socialize conflicts, and related social and material elements. It contributes to capturing the notion of diverse actors coming together, with agency distributed through emerging processes of policy implementation and events co-produced by a variety of policy actors and rural food producers. In this way, assemblages resonate methodologically with a variety of relational approaches, such as actor-oriented approach (Long, 2001) and actor-network (Latour, 2005), and Deleuzian process-based life perspectives (Deleuze Felix, 1987; DeLanda M, 2019).

Thereafter, this research explores the emergence, multiplicity, indeterminacy, and connection in a broad socio-spatial redefinition and further provisional merging of such diverse functionalities. During the study of the milk production process, it was found that the elements of production are heterogeneous, combining both human and non-human actors and entities. Technological interventions and sanitary regulations carried out by

the State generated multiple ways to produce milk resulting in selective engagements with production methods while disengaging other relations. Producers choosing ensured that transformations of the family and agricultural association continued. The State fostered tighter relations with agricultural associations aiming at a uniform milk production process. However, the State's rural development programs deployed under a vision of modernity struggle when meeting the rooted local practices of peasant farmers (Fals-Borda, 1955; Schultz, 1964; Long, 1977; Popkin, 1979; Netting, 1993; Scott, 1998, Sanchez et al. 2018).

State representatives who followed the milk production process encountered heterogeneous paths, which were adaptations to the diverse life situations of each producer, and what we call context-specific milk realities, such as different transportation methods, temperature control, and traceability of batches of milk. Yet, these heterogeneous paths do not end with the producer but continue with consumers. Once the milk reaches dairy industries, either formal or informal, there are two state agencies in charge of determining if dairy produce is suitable for consumption. Agrocalidad is the agency in charge of monitoring the quality of raw materials like milk, and its standards are to be used in the preparation of dairy products. The National Agency of Sanitary Regulation, Control, and Surveillance (ARCSA) is in charge of providing sanitary registries to products before their commercialization among consumers.

However, parallel to the mentioned state regulators, dairy products become subject to consumer preferences, which bounce between what is legally and sanitary allowed, and the traditional practices with limited sanitary regulation that were used to produce dairy products with identity and nationally recognized taste, such as cheeses and yogurts. Consumer's preferences may be dictated by taste, cost, and tradition, rather than sanitary parameters for human consumption (De la Calle, 2012). This generates contradictions that are difficult to solve by implementing institutional governance rules.

This research has identified that milk production in Santo Domingo is a field of practices on which state actors operate to exercise rural development changes. As such, it is part of the institutional architecture implementing the policy of food sovereignty. Milk is

collected from producers and then redirected to the dairy industry according to milk quality and quotas (although the producer may experience the rejection of his milk when it has low quality). As a result, dairy farmers' negotiations are based on price differential and quality among producers, and these create conflicts among the associations, which hampers their interests and creates an always moving price for the milk. This means that on an individual basis, producers turn to retailing, for example, the production of cheese, which creates disagreements within the associations and sanitary institutions. However, farmers have limited skills when adding value to dairy food products; this is mainly due to a lack of sanitary follow up of existing regulations (for example, temperature control and acceptable manufacturing practices of dairy products). Many family farmers use family labour (mainly from women) to reduce labor costs, diverting the cost of local dairy products to the domestic sphere. Such activities imply a new demand for technologies that can be used at a household level.

However, the State intends to impose norms, sanitary regulations, and technologies which are introduced, assuming that it responds to peasant-farmers' needs. This study argues that regulations and technologies often create further conditions, which links the producers more intensively with the market. Yet, dairy production involves a broad embodiment of actors and social and productive practices that are linked to milk production, resulting in a complex food production assemblage. In that context, the local markets' priorities are different from those of the private market, impeding food sovereignty policy implementation.

Despite all national efforts to implement sanitary control to dairy products, consumers' preference is directed towards domestic production, which is believed, it is directed to the value given by consumers and their traditional cooking practices and taste of unpasteurized dairy products. This turns the process of quality control (microbiological, chemical, and physical surveillance) into an ambiguous policy phenomenon within the food sovereignty program. The above observations evidence that different interactions and relationships result in an environment that embraces interfaces between producers and other technologies; and consequently, it generates food assemblages and a variety of market relations. As a result, the producer-consumer interests and interactions respond

to commodity differentiation (Salazar, 2011), which is believed to be shaping the social materiality of producers' autonomy.

1.5 Agricultural policy and peasant farmers associations

Although food sovereignty was enshrined in the Constitution of 2008, its implementation was led by rural policies that seemed to neglect the 'agricultural everyday reality' of the Ecuadorian peasant farmers. Once approved, the Food Sovereignty legislation was implemented in 2009, aiming for market-oriented rural development. As soon as food sovereignty was in the national Constitution and formalized as organic law, MAGAP along with the specific GADs started with the implementation of various technological programs. These were delivered to agricultural associations aiming for higher integration of technology and the country's food production matrix. However, once the high-tech interventions were in place by the state agents, the traditional local practices of peasant farming families were hampered.

The relationship between producers, the market and its livestock, and the use of technology within the food system has always been complex. A framework that is used to examine these interactions is the technology complex. The empirical study of the application of technology using the ethnographic approach to explore all three mentioned elements in policy implementation has two remarkable features. Firstly, an interface approach shows the human-machine link (Bear, 2015; Porter, 2013) generates emergent properties that are central to an actors' approach methodology, where both producers and *Ingenieros*' interactions are examined using already a set of established methods (Arce, 1999). Herein, particular attention should be paid to the premise that technology complexes are important in the successes or failures of a policy, a result of the innovations undertaken by extension agents working as government's *Ingenieros* of the technical assistance services.

The situations that result from "*Ingenieros*" interactions with peasants manifest themselves in a new set of political and social relations at producers' associations and local production sites. Secondly, technology introduction was examined empirically

through cases locally. Through concentrating on producers and their relationships in Santo Domingo province, it could be inferred that many of the development projects since 2009 were supported by the food sovereignty policies, which were a reality because of the national financial support, and these were fully aligned with the political promises claimed during Correa's electoral campaign.

Nevertheless, the implementation of technology was not in line with the peasant farmers' daily practices and was not agricultural sensitive concerning the local rural livelihoods. One example of neglected rural livelihood by food sovereignty interventions is the case of Santo Domingo. This situation shifted, being Santo Domingo a newly declared province, their inhabitants could host their own Provincial Agropecuary Agency (DPA in Spanish) and receive context-specific technological interventions. As a result, farmers were able to have access to specialized services by contacting local agencies and institutions, and they did not have to go to the capital city as it was done before. This benefited farmers in saving time and having direct contact with policymakers to make decisions.

The status of "province" granted the local population bureaucratic and economic independence from the central government and other provinces. Thus, national technical services, allocated by the MAGAP and given by their technicians, were explicitly designed for the context based on the local agricultural activities being milk production the food production process that evidenced this swift, and it is used as an example for this research.

The degree of autonomy from being a province allowed peasant farmers' agricultural associations to be closer to provincial policy decision-making processes. Meaning that while agricultural technological programs from MAGAP were unfit for peasant farmers in Santo Domingo, agricultural associations were able to negotiate with field technicians aiming for technological components that allowed associations and their members to improve their production. Farmers organized by agricultural associations started to evaluate the quality of the technological interventions from the MAGAP using indicators that they locally perceived as improving their production, being this production quantity

and frequency of extension agents' visits. Thereafter, the creation of agricultural associations was perceived as a benefit resulting from the food sovereignty policy and the national policy implementation, which since 2008 has aimed for the equitable distribution of resources among the most vulnerable populations.

At that time, Correa's political slogan used to start the campaign was *"Currently, Ecuador belongs to all Ecuadorians"* (*Ecuador ya es de todos los Ecuatorianos*), which empowered discursively small farmers with concepts and expectations of equality. The degree of autonomy brought with the political decentralization of provincial governance was based on the referred slogan. In Ecuador, when provinces have their autonomous governments, the local population has higher access to services. Introducing concepts of equality by the new government of Correa resulted in a high inclusion of the poor, vulnerable and indigenous people into the decision-making process for production, resulting in Correa's political approval and acceptance as one of the most popular presidents of Ecuador at the beginning of his presidential period.

1.6 Agricultural associativity in Ecuador

The first legal institution in Ecuador that merged agricultural associations in the country were cooperatives. Initially, the federal early intervention in the creation of cooperative groups was in 1937 during the presidency of Gil Alberto Enriquez Gallo, when the first Law of Cooperatives was issued (Supreme Decree N. 1o, Nov. of 1937) (Da Ros 2007). At that time, the government aimed to rationalize traditional peasant economies by establishing social and economic regulations to avoid indigenous uprisings and modernization of their agricultural production by adopting a cooperative structure (Almeida, 1981) that would allow peasant farmers to have greater access to production resources primarily based in a more equitable distribution of agricultural land (Miño 2013).

In the same year, the Ministry of Social Welfare issued a body of laws that required a transformation of the ancestral forms of territorial organization in agriculture, namely

latifundios[9] and huasipungos[10]. In this regard and during state intervention for the promotion of Cooperatives Law of 1937, it was established that "The Public Power (ie. the state) would adopt the necessary measures to transform communities in production cooperatives". Two types of cooperatives were promoted, production and credit cooperatives (Asamblea Nacional del Ecuador 1937).

Production cooperatives were aligned with entrepreneurial businesses formed by a given number of members. These cooperatives could be oriented to agricultural activities and their legal status enabled them to receive support from the State (subsidies, credit, technical services). Credit cooperatives are formed by a given number of members, among which directives are elected. These cooperatives collect monthly payments and accumulate funds which are used to provide small credits for any of the members at a low-interest rate; the latter is collected and accumulated along with the monthly payments. The latter was intended to financially support agricultural promotion (Art. 11 of Cooperatives' Law).

The objective of the interventions derived from the cooperatives' law was to promote the modernization of peasant farmers as well as avoiding riots from indigenous peasant farmers (Carvajal, 2009). Once grouped in cooperatives, they would have economic benefits from the State aiming for the dynamic development and insertion of the peasant farmers into the market, looking forward to shortening the value chain and procure better income for the peasant household.

These progress trends derived from the presence of members of the Ecuadorian Socialist Party (PSE) in influential governmental positions and intended to reduce the agricultural sector's inequalities (Da Ros, 2007). Most of the cooperatives created under these conditions were for agricultural production and development of rural localities, yet most

[9] Latifundio was a land accumulation system where landlords from the biggest haciendas would accumulate the best and biggest land lots under dubious agreements with municipalities and the central government. These lands were worked by peasant farmers in precarious conditions

[10] The huasipungo was a small piece of land no bigger than a few square meters that the owner of the hacienda would borrow to the peasant worker in exchange for free labor. The peasant worker would live there and produce food for its own subsistence and his family's. However, eventually the owner of the hacienda would come and ask for the best produce.

of the members following this initiative were latifundistas (land accumulators or land grabbers) from middle and high socioeconomic class groups in all the Ecuadorian territory who participated to acquire more land and take advantage of the tributary benefits provided by the State.

In time, the cooperative legal framework was limited by the lack of an adequate management-governance structure, since the responsible entity for the implementation of this policy was the Section of Social Affairs of the Ministry of Social Welfare and Work (Mills, 1986). Thus, while the Law of Cooperatives of 1937 tried to legitimize cooperativism, to achieve rural development, the lack of adequate governmental performance deprived peasant farmers of getting the benefits from this government initiative. In that time, implementation of the law was minimal, and verification of the producers who needed state benefits provided to production cooperatives was not thoroughly assessed. Consequently, technological interventions with a modernizing vision resulted in being of little help to peasant farmers.

Later in the 1950s, religious groups started to promote the formation of cooperatives; again, the aim was to improve the livelihood conditions of rural as well as popular urban sectors. It was in the 1960s, that a new Law of Cooperatives was stabilized together with the Law of Agrarian Reform and Colonization, implemented by several governmental and foreign organisms (CUNA, AID, CLUSA[11]) promoting cooperative integration for development. This course of action was mainly undertaken by the Ecuadorian State and North American Development agencies. At the time, it has been suggested that creating cooperatives was an instrument to fight poverty mainly in rural areas, and to strengthen institutionally and the democratic building of the country (Da Ros, 2007).

In 1964, the State (through the agrarian reform), through the formation of peasant cooperatives, was attempting the integration of small land plots to produce food for the market. This policy aimed to favour smallholder productivity, and it was complemented by the abolition of precarious forms to landholding (latifundismo, huasipungos). The

[11] Credit Union National Association, Agency for International Development, Cooperative League of the USA.

cooperative policy orientation was determined to avoid abuse and distortions on the appropriation and use of agricultural land, which responsibility was given to the Ecuadorian Institute of Agrarian Reform and Colonization (IERAC in Spanish). The latter was in charge of qualifying the socioeconomic status of each potential member of a cooperative to determine if they fit the profile of peasant farmers. IERAC was also in charge of regulating cooperative development programs, their organization, and available resources for their implementation (Da Ros, 2007; Barsky, 1984).

In 1966, the law of cooperatives of 1937 was reformulated, although there had no fundamental changes. The agency in charge of implementing and promoting cooperative was the National Bureau of Cooperatives. Through this agency, the State showed a positive orientation towards cooperative and aimed for their growth through the support of various state agencies (SA)[12]. The reformulated law aimed to stimulate agricultural development with tax exemptions, solving legal issues in favour of cooperative members, levies relief on the importation of tools, agricultural equipment, and seeds, as well as expropriation of land by IERAC in favour of peasant organizations.

The Law of Cooperatives has been modified several times (1969, 1979, 1992, 2004 and 2014). Although, there was no concrete definition of cooperative policy that could be used as an instrument of socio-economic development. State agencies were responsible for the articulated process of supporting the development and promotion of cooperatives, yet the National Bureau of Cooperatives, which was central to this process, was not very efficient in its mandate due to insufficient budget, which limited its reach to various areas of the country (Da Ros 2007, Miño 2013). Since its main office was in the capital city, the bureau was reduced to a paperwork office that issued cooperatives' registries, and few and deficient legalizing documents without immediate solutions.

[12] Municipalities and Provincial Councils were obliged to include assistance for cooperatives in their operational budgets. The Education Ministry was obliged to teach cooperativism in primary schools and high schools. The Ministry of Social Welfare had to organize the formation of juvenile cooperatives for rehabilitation of underaged. The National Development Bank was responsible for supporting cooperatives through the creation of credit programs with low interest rates.

At the beginning of the 1960s, the church under the influence of the Vatican Council looked for greater engagement with the marginalized sectors of Ecuador. The Episcopal Conference of 1967, dictated that the church was not identified or obliged towards any political group or system, and recognized that private property was not an unconditional right for anyone, thus admitting the State's authority to regulate and expropriate land to achieve social integration and democratic justice. The presence of the church, as an institution promoting development and integration of those members of society left behind in social and economic terms, was a very important political influence to generate civic support among social groups that saw real possibilities in the cooperative movement for the development of Ecuador (Zevallos, 1990).

With the support of the Vatican Council of 1965, the church became closer to the popular sectors of the country. The Latin American church attempted to implement programs of agrarian reform. In Ecuador, the latter would take place through the transference of the church's lands to peasant farmers without the intervention of the State. However, land transfer depended on the will of each religious order; thus the amount of land and the transfer process was different for each region of the country.

As a result, this associative form (cooperatives) in marginal rural and urban sectors increased. Additionally, the leadership of the church with the farmers generated a paternalism relationship. The latter strengthens the bonds between cooperatives and the church at the beginning, yet at the end, the priest was seen as the leaders who made decisions, organized, and pushed the cooperative ahead. Thus, without their presence cooperatives rapidly fell in stagnation and recoil.

The legalization of cooperatives was fostered by the State as a way to organize and provide aid in a localized manner. State bureaus were created and articulated with the law of cooperatives aiming for the implementation of rural development programs that intended to address the needs of the peasant farmers. When the State failed to implement its development programs, the church took advantage of this associative form, yet they also failed to provide a path through which they would become autonomous and self/sustaining (Guzman, 2002).

Peasant farmers were challenging to deal with, while the State idealized them as an element of production to be technologically enhanced and reorganized. The action of the State had several limitations in terms of policy implementation. In Ecuador, public policy for agricultural production has been oriented towards industrial production and exportation, leaving rural agriculture and its practices unrecognized and neglected. On the one hand, it is known that the agricultural practices of peasant farmers can be continuously reshaped (Shanin, 1973). In this line, the modernization of conventional agriculture implemented by the State, not only excluded most of the peasant farmers but tended to negatively affect the few ones who followed a modernization which looks forward to becoming agrarian entrepreneurs (Van der Ploeg, 2010).

Food sovereignty policy in Ecuador encountered similar limitations that appeared with the creation of the Law of Cooperatives and the Agrarian Reform back in 1973 (World Bank 2008 and FAO 2017). The agricultural policy that was intended to articulate state agencies for the support and implementation of rural development programs carried an economic vision of technological enhancements as tools to integrate peasant farmers in the national production matrix. Yet, agricultural associations appear to resist this modernization process, selecting from what was available from MAGAP or the GAD to select only what fitted to their reshaped technology. In other words, peasant farmers were opened to modernization, but they firmly kept their traditional agricultural practices.

The Second Agrarian Reform and Colonization issued in 1973, had a central objective the reinforcement of the passed agrarian reform of 1961. While the latter aimed to turn national agriculture into a productive, economically dynamic, and politically progressive sector, the law of 1973 looked forward to solidifying the basis of agricultural production to satisfy the growing demand for food that came with urbanization and the expansion of the industrial sector. In the case of Santo Domingo, the construction of the highway to the coast in 1963 provided a direct connection to the seaports. It thus propelled agro-industrial development, especially of palm oil production (Potter, 2012). The latter was intensified during many years resulting in the boom of oil exploitation in 1972. This brought economic growth, increasing the national GDP and caused rural migration to the cities.

As a result, the State introduced the economic model of Industrialization Substitutive of Importations, which brought a set of protectionist tariffs and levies. Consequently, the metalworking and forestry in Santo Domingo increased towards supplying the demand for material for infrastructure in the growing urban area. At the time, the main crops of the area were bananas, cacao, coffee, and grass for cattle raising, which were abundant in Santo Domingo. The construction of roads that connected Santo Domingo with the capital city and the main port in Guayaquil, along with the boom of oil, rapidly turned Santo Domingo into an attractive place for agricultural development to supply the growing food demands, both internal and for exportation.

Although the process of agrarian reform resulted in multiple production cooperatives, there were no fundamental changes in the effects of the former reform. The latest agricultural reform aimed to transform production cooperatives in self-sustainable associations that could later operate as a company. Yet, it failed to transform them into commercial entities of agricultural production. Besides, it was impossible to form efficient and technical cooperatives as production structures, due to lack of capital and adequate management (Da Ros, 2007; Barsky, 1984; Jordan, 2003; Flick, 1980). Many of these, while being categorized as production cooperatives, were used to legalize lands, thus once this was achieved and the lands redistributed in small individual plots, producers usually dissolved the cooperative.

As cooperatives officially started in 1937, from 1937 to 1959, there were only 440 organizations in the country, compared to the 1960-1969 period in which 1566 organizations were created (Mills, 1986). The 1960's agrarian reform came accompanied by the green revolution worldwide, which started in the same year. The latter reform brought the ideals of the increase in productivity along with enhanced seeds and fertilizers. This was supposed to be the project under which the underdeveloped countries would join the globalized market to solve their development problems. However, the high expectations of opportunities to be part of the global market influenced the creation of agrarian reforms of 1964 and 1973. While intending a fair redistribution of lands and resources among peasant farmers resulted in being used as tools for land accumulation

just as before the agrarian reforms were implemented. The rural reality has not been assessed towards a viable way of delivering timely technical services to peasant farmers (Carvajal, J 2009).

1.7 The Ecuadorian objective for food sovereignty

During the last two decades, *La Via Campesina* has been the leading promoter of food sovereignty, as an alternative to neoliberal globalization by aiming peasant farmers to recover sovereignty over food systems and food policy (Borras, 2004; Holt-Gimenez, 2006; Desmarais, 2007; McMichael, 2009). The rise of food sovereignty has been promoted by processes of depeasantization worldwide (Clark, 2013). Such processes have been accelerated by neoliberalism, aiming for the globalization of food world market circulation. The latter has limited the states' ability to influence the economy towards the development of the peasant farmer family (Clark, 2013), complicating the latter's pathways to sustainable agriculture (Hebinck, 2018). This situation fuels food sovereignty advocates demanding a regain of sovereignty over food national production and strong public food policy to protect small rural producers and national consumers.

The case of Santo Domingo provides evidence of the empowerment of small farmers when assessing the agricultural programs for milk production, introduced in the program '*Ganadería sostenible*' (MAGAP, 2010). The national development objective for agriculture comprises technological modernities and closer integration of the peasantries to local markets. Despite the State's investment in modern technologies and market-oriented policies, the peasant farming family refuses to accept these technical and market policy orientations, as it prioritizes their agricultural practices. For the State and the field technicians of MAGAP, a complete change of the factors of production is critical to the adoption of these technologies to modernize milking activities. This resulted in not only introducing milking machines into daily activities but the renewal of cattle for domesticated breeds, the restructuring of pasture lots along with water stations and electric fences. This "all or nothing" model of production corners peasant farmers between an external criterion of backwardness, and a technology that requires expensive investment.

However, peasant farmers and dairy peasant-farmers, in particular, were able to find a middle point in production investments. Cattle farmers in Santo Domingo, have skillfully selected the technology that fits, or it is adaptable to their everyday dairy activities, making a success of their traditional-yet-modern ways of producing. The latter takes place thanks to the creation of new production corporealities, which are assemblages formed by the peasant farmer, cattle, and the technology brought by the State. These corporealities are part of emerging intersubjectivities within agricultural associations that aim to articulate the political and material environment in which intervention of food sovereignty policy takes place.

In Ecuador, the institutionalization of food sovereignty based on the transformative vision of *"Buen Vivir"* brings interesting elements to the study of food sovereignty and its aim to make it more inclusive, leaving aside the production approach (Giunta, 2014). The Ecuadorian Constitution uses the concept of the Andean Cosmovision (*Buen Vivir*) to propose an alternative to development (Giunta, 2013). The *Buen Vivir,* according to the Ecuadorian State, refuses the economic growth obtained at the expense of the exploitation of the farmers. It embraces a plurality and values intrinsic to natural processes; articulating indigenous knowledge components and criticizing modernity (Gudynas, 2017). However, the social concepts of *Buen Vivir* brought by the government are more closely aligned with a return to state planning and regulation of the economy (Clark, 2013).

Under a new constitution, Ecuador adopted the position of the developmental State whose objective is to transform national politics as well as the relationship between the State and the peasant farmers' associations. The latter re-emerged within a more substantial political framework. The latter derives from a constitutionalized food sovereignty concept and articulates with the Organic Law[13] for Food Sovereignty (LORSA) with all agricultural programs. These latter were aligned and kept agricultural

[13] In Ecuador, organic laws regulate the organization and performance of the agencies created by the Constitution (Art.133 of the Ecuadorian Constitution, 2008)

associations as the central unit of peasant farming, aiming that the small and medium-size peasant farmer became the primary beneficiary for the implementation of agricultural projects.

During the government of Rafael Correa, the discourse of national sovereignty increased the political discourse of equality, looking forward to re-valorize state intervention to habilitate and perform anti-neoliberal political and economic projects. This means recovering control over the State and its capacity to function through public policies, which have been previously guided by globalization and foreign financial institutions. During the neoliberal period, the State remained policy constrained when referring to improving social and economic indicators for improving the quality of life of citizens. However, the socialist government of Correa regained strength and exercised socio-economic policies with the creation of ministries and institutions which were in charge of improving the quality of life of the most vulnerable. Regarding rural development, the return of state policy orientation is evidenced with a more significant presence of MAGAP in rural areas, the creation of the Bureau of Popular and Solidarity Economy (SEPS), and a nation-wide shared strategy for rural development policy. The government renewed the National Bureau of Planning and Development (SENPLADES) and launched a national development plan called *Plan Buen Vivir* (PBV). Consequently, the return of the State takes place, by providing ministries and institutions through which policies for food sovereignty can be implemented. This configuration of policy implementation is composed of various conditions and actors holding multiple degrees of power and influence. The articulation and interaction between material conditions (actors, space and knowledge) and power results in deviating projects's aims and results (McGee, 2004).

1.8 Considerations of the present study: Food Sovereignty, technology and policy performance

A number of considerations seem to have influenced the implementation of food sovereignty policy in Ecuador.

At first, there was the need to give technological empowerment to the constitutional commitments which were present in various policy documents. The conceptual introduction of technology as a powerful innovation key was imperative to be included in food sovereignty interventions. The original concept of producing foods using traditional practices was avoided which led to welcoming new technology which promised to increase production and be less labour-intensive.

Thereafter, the second factor in the food sovereignty policy implementation was to integrate the new technology into small producers' practices to alleviate some of the well-recognized pressures on regional food production realities, while those from local markets for food production intensified or were recognized for the first time. The arrival of wrong or deficient technology, especially in the dairy industry, though leaving a legacy of extensive political discontent, repositioned small producers and their associations, as one of the main political actors of food sovereignty policy. In turn, these efforts open questions about the technical administrative relations to increase, improve and market local food production.

A third factor is that policies bypassed emergent local intersubjectivity, and stereotyped local practices as laggards of milk production modernization, existing at the margin of contemporary markets. This resulted in the increased social and political salience problems amongst small farmers who are eager to have food sovereignty. Local practices became the focus of criticism and political interventions were seen as despoilers rather than guardians of local knowledge and styles of organization, especially when the institutional policy field in Ecuador was promoting associations to circulate technologies from different private agents, making the introduction of technical equipment increasingly difficult to regulate in term of its quality and appropriateness.

The traumatic experiences of the members of the associations related to the introduced technology, eroded producers' willingness to adopt modern technologies, creating a conflict in interest, and producers started to question who would be the primary beneficiaries of new technologies. Finally, and this thesis argues, the most important feature becomes how commercial firms use technical influences to pressure government

specialists (*Ingenieros)* to advise farmers and their associations upon the advantages to increase production promoting the creation of an overall competitive and market strategy, making food sovereignty policy a part of rural, economic and social development, resulting in a greater awareness of the market dimension, while enhancing the empowering of collective strong bodies, like producers' associations. It would be wrong, however, to see in this the triumph of technical knowledge and interests alone. Instead, food sovereignty policy arguments have coincided with another powerful argument for understanding local knowledge and practices for changes in policy implementation, and together these may induced transformations and responses to food producers concerns, not necessarily through and deep ideological convictions, but because of an understanding between the aims of small food producers and the need to achieve food sovereignty, thereby contributing to the supply of food and difficult situation of small farm producers existence to renew their claim for public support and social justice.

1.9 Outline of the thesis

The outline of this thesis is presented in Figure 1. Initially, this introductory chapter presents a brief background of some of the issues highlighted by the policy debates and political controversies that dominated the field of rural development and agro-food studies during the last decades. It also presents the current debate about a more open political and academic exchange of ideas which is more receptive to locating the analysis of rural development within theoretical frameworks that deal with the issue of social justice, environmental concerns, and local food production within the dynamic of rural space, national politics and the implementation of neoliberal market-oriented policies in Latin America.

In Ecuador, the appearance of technological change and market discourses suggest that the issue of local rural development may encompass contradictions that exist within the institutional process and how technological change is delivered to local producers. This has oriented this study to observe the interactions of different government agencies and their agents and local producers during the implementation of programs and projects to comprehend the practical effects and affects of the food sovereignty policy practices

among food producers, the operations of their local markets, and the complex issue of how food is consumed in Ecuador.

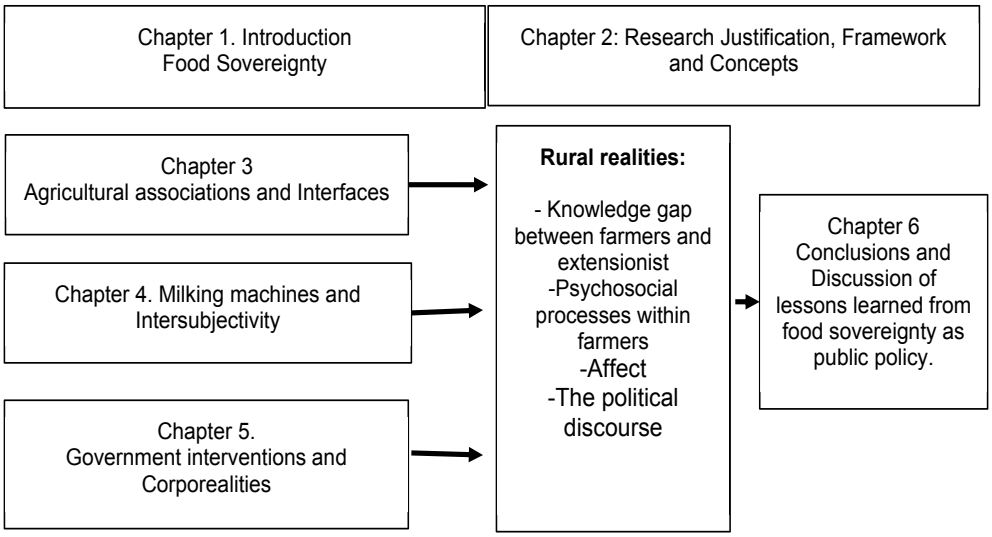

Figure 1. Illustration of the thesis outline, which shows the flow of the 6 Chapters.

In the second chapter, the research justification of this study and the focus of this thesis is presented. The field of technology and technological knowledge and how local actors are involved in the implementation of food sovereignty policy is further explored. This field of social action- technology introduction, delivery, and knowledge interfaces- is understood as a social space in which actors' practices, actions, relationships, struggles are part and parcel of what is understood here as the basis of what constitutes local food producers' knowledge. Then the theoretical, conceptual framework is outlined and the methodological background of the qualitative field research presented. The research area of the ethnographic study introduced and situated institutionally; this includes the significance of the rural associations and the central and regional processes of intervention (programs and projects) in the producers' localities of Santo Domingo. Then a brief section of research questions that guided the chapters of this thesis concludes this methodological Chapter.

Chapters 3, 4 and 5 are the backbone of the qualitative case study of this thesis. Chapter 3 studies the perception of farmers about the milk production system, the perceptions of them within the association as rural development interfaces. Chapter 4 reports the analysis of the environment where the state is the leading key supporter of food sovereignty technological interventions, based on the concept of intersubjectivity. Chapter 5 examines how the state health regulations for dairy products differ from the traditional dairy practices dictated by the consumer's affective preference for traditional dairy, under the concept of corporeality. Finally, Chapter 6 concludes responding to the research questions.

CHAPTER 2

2

Chapter 2 - Research Justification, the focus of the study, the area of the research and conceptual framework

2.1 Research justification

The main argument of this research is how in Ecuador the state directs rural development involving peasant farming family as the cornerstone of food sovereignty policy, whereas the introduction of technologies designed for highly productive agricultural contexts brings change to traditional agricultural practices which are less intensive, use simple knowledge and are passed from one generation to the next.

The issue that results from integrating a change of technology into traditional producers' practices by the application of food sovereignty policy implies social interactions between local producers and governmental, institutional agents. The initial aim was that the idea that family farming would help to reach the production targets and by that peasants would be integrated into the national food production matrix, which was minimal before the food sovereignty concept was integrated into the constitution.

Thus, this research seeks to analyze two dimensions of the understanding of technology in food sovereignty policy. Firstly, technology is a necessary condition, but also it is necessary to have the information needed to use it and the social contact to compare perceptions. In this line, the presence of institutional agents who advise farmers on the use of technology is seen as crucial especially to improve production and the quality of the products. Secondly, technological outcomes do include not only production or economic growth but also social change, which is embedded in the political, ideological and cultural conflicts and agreements of national, regional, and local societies. Therefore, these two dimensions are described in the specific case of milk production.

What is currently known is that food sovereignty policy is a resulting economic endeavour from the state, and it seems to be influenced by consumption standards of the global

market carried out by progressive left-wing governments in Latin America (Vergara-Camus and Kay, 2017), rather than in the 'force' that is inherent to the situated agricultural practices of peasant farmers and the way of living and producing (Vergara-Camus and Kay, 2017) which is not aligned with existing technologies. However, it is known that the development and implementation of food sovereignty are to a great extent guided by funded projects and regulatory bodies of the State. When observing at the Ecuadorian institutions managing food policy, it is known that these are centred by social, economic, and political interactions, which give birth to multiple concerns among different actors. This highlights that Ecuador, just as other countries in the region, has not significantly transitioned from the industrial agribusiness-controlled model of agriculture inherited from past governments, and therefore failed to understand the effects of technology change in the social and political context of food sovereignty and also into producers' association's political arrangements that characterize the way a country and regions operate.

It is through an ethnographic approach, on a specific territory, that this thesis examines the translation of public policy made by the ministry of agriculture from its main political target, which affected the peasant farmers and the involved technology as an integrated process aiming to reach markets that small scale agriculture was not part of before the policy was created. The studied interventions derived from this public policy evidence the encounter of competing regimes of practice between *Ingenieros* and agricultural associations. More specifically, the case of rural development interventions in milk farming addressed by the state under a vision of economic integration of the peasant farmers is what we studied. The included interventions are those conditioned by the implementation of agricultural technologies into peasant farmers involved in milk production. By not being familiar with the implemented technology, select only some technological elements that can be adaptable to the peasant farming agricultural practices combining local and foreign knowledge. This situation gives place to the emergence of intersubjective relations between humans and the material aspects of local farming practices.

2.2 Focus of the Study

This research project focuses on the performance of the agricultural policy, specifically on food sovereignty and its implementation through programs and projects carried out by ministries, GADs, and bureaus such as the Ministry of Agriculture, Livestock, Aquaculture and Fishing (MAGAP), the Provincial and Parish Autonomous and Decentralized Governments[14] (GADs), the Bureau of Popular and Solidarity Economy (SEPS) and the National Bureau of Planning and Development (SENPLADES). It explores multiple interactions between government rural development programs and peasant farmers that take shape during interventions and what effects and affects emerge during the adoption of agricultural programs.

The thesis provides an analysis of the rural reality of peasant farmers in *Santo Domingo de Los Tsachilas*, to study the effect of this policy on a local group of producers that were presented as the primary beneficiaries and actors of the food sovereignty policy in Ecuador. Furthermore, it explores the multiple embodiments formed within the agricultural associations and their farming practices. These embodiments occur when absorbing state interventions, from the MAGAP or the local GADs, while bringing technological novelties for rural associations to improve and increase production, towards a promise of being integrated into the market chain. During the implementation of technologies, the producers observe how these technologies work instead of from a distant position or they observe their neighbours' experience. Some of the factors farmers assess during the observation are the labour needed, the cost, worthiness, time invested and after examining the whole situation using their local decision-making process, they determine if the new technologies are worth integrating into their traditional practices or not. These interfaces between the state and peasant farmers from agricultural associations and the

[14] The Autonomous and Decentralized Governments (GADs) are the institutions that form the territorial organization of the Ecuadorian state and are regulated by the Constitution of the Republic of Ecuador (Art. 238/241) and the Organic Code for Territorial Organization, Autonomy and Decentralization (COOTAD). The GADs are decentralized institutions that possess political, managerial and financial autonomy, and are governed by principles of solidarity, subsidiarity, territorial equity and citizen participation and are organized as regional, provincial, cantonal and parish GADs (CEPAL, 2020).

corporealities that emerge from the use of these technologies allow us to criticize the notions of intervention.

2.3 Theoretical framework

The following concepts are the base of this study, which were retrieved by a review of the literature and are often used in the field of rural sociology.

2.3.1 Rural development interfaces

One of the theories used for the examination of the performance of food sovereignty is Rural Development Interfaces, according to Long (1989). Through the use of the latter, it is possible to see the "point of intersection or linkage between different social systems, fields or levels of a social order where structural discontinuities, based upon differences of normative value and social interest, are most likely to be found" (Long, 1977, 1989; Long, 2001; Arce, 1994).

In this case, the reaction of both *Ingenieros* vs. peasant farmers as two contrasting elements are linked by the state's attempts to impose new technologies for agricultural production to the farmers with limited interest in the realities that propel the every-day rural life and that unknown by the *Ingenieros.* Rural Development Interfaces observes food sovereignty from two different perspectives. It is starting with the state, which carries the principles of food sovereignty in a solid policy. However, looking at food sovereignty principles as a social movement, depicts the reaction to neoliberal globalization and the industrial food system. Far from the state, food sovereignty recognizes the transformative capacity of community empowerment through participation in democratic processes of economic and social decision-making (Andrée, 2014).

This study looks at food sovereignty from the standpoint of peasant farmers, and it goes beyond the conventional structured policy of food production. Mainly because National policy implementation often denies how peasant agriculture is traditionally structured and

their dynamics (Arce, 1994), which is labour-driven intensive agriculture (Van der Ploeg, 2008). Thus, the food policy settled by the state recognizes peasant farmers as entrepreneurs who need help to fit an economic model that attempts to engage with the global market, neglecting their inherent entrepreneurial capacities. This latter sets peasant agriculture as a subject to be aligned and governed by markets (Van der Ploeg, 2008). This represents a threat to the very existence of peasantries, and thus important parts of agriculture (Polanyi, 1957; Gudeman, 2013).

The encounter between both sides (state and peasant farmers) depicts the different interests and resources present. More importantly, the interaction between both parts is present by the level of power they possess over the other (Long, 1989). This dynamic between parties occurring during the policy implementation process affects the goals, interests, perceptions, and relationships of each, giving them as a social group a new shape through their interaction. Through the analysis of rural development interfaces, it is possible to examine and understand the relationship between policy, and its implementation, and the social outcomes (Long and Liu, 2009). The relationship between these three is often conceptualized linearly from policy objectives to the means of implementation and, lastly, the resulting outcome. Herein, a series of steps are conducted aiming that the food product reaches markets and can supply food to the national population. Each step involves a project that separately focuses on agricultural development but is characterized by technological attributes. The latter is assumed to be accepted by the farmers who are open to receiving the interventions to improve and increase food production.

It is essential to understand that the momentum of policy creation, its implementation, and the social outcomes provide no consideration to processes of policy reinterpretation and transformation that take place during policy design and before implementation. This situation may derive from unexpected outcomes from development programs (Long, 1989). Furthermore, rural development interfaces aim to explore how different households and peasant organizations develop strategies to take advantage of new development programs.

2.3.2 Intersubjectivity

As an extension of subjectivity, the concept of intersubjectivity is used to address the evolving relationship between milk producers and their livestock relationship, which evolves due to the introduction of new factors of production, in this case, new technology provided by the state. While subjectivity is defined as being influenced by personal feelings, or external opinions, intersubjectivity is the presence of several components, internal or external, which influence people's choices or feelings. Following Stenner (2008), the encounter of peasant farmers and *Ingenieros* during the process of introduction of technologies of production depict distinctions between subject and object. Such distinctions have influenced pre-designed technological interventions. For Despret (2008), intelligence is related to the capacity to understand human intentions. The situations that show the relationship between animals and humans (cows and peasant farmers) can be brought together as a situation of exchange between humans and animals, thus an extension of subjectivities (Despret, 2008).

The concept of subjectivities provides the opportunity to see beyond the differences between humans and non-humans, and instead see the differences between situations. The latter offers humans and non-humans with the chance to accomplish subjectivities. In the case of Santo Domingo, considering that cows and peasant farmers work together makes visible multiple aspects of their relationship that illuminate the contrast between exploitation and collaboration. Thus, pushing aside the notion of a coherent subject, instead of considering a process and a production that generates subjectivity (Bear, 2015). Such subjectivities are co-constituted by (for example) changing rural economies, experiences of homelessness, and the introduction of new technologies. This situation goes beyond humans, providing animals with a status of subjects, thus allowing them the potential to become (Holloway, 2009). As a result, physical things achieve independence, which happens because it is a fact that things affect other bodies, enhance or weaken their power (Bennett, 2009). This complex interaction is not visible to MAGAP, which considers cows as objects to be exploited for milk production. Because the state presumes the separation between the world of humans and non-humans, it uses this as

a cognitive frame to deal with change and give meaning to the modern world. Both concepts are used in this study to describe cattle's situation within the milk production food system.

2.3.3 Assemblage

The notion of assemblage is used to grasp heterogeneous elements such as nation-states or regional political formations and analyze them together without detaching from their heterogeneity (Acuto, 2013; Anderson, 2012). Since segments are always independent and distinct, the intention is to bring them together and determine the relations between them, and for this, it is necessary to have a specific point of assemblage. In the words of Deleuze and Guattari (1988), an assemblage represents:

“a state of the intermingling of bodies as part of a society, considering all attractions and repulsions, sympathies and antipathies, alterations, amalgamations, penetrations and expansions that affect bodies of all kinds in their relations to one another”.

The notion of assemblage avoids choosing between a variable world of contingent practices and a well-defined world of shifts and formations (Allen, 2011). Every assembled heterogeneous mix of power is built on relationships and interactions that change along with the actors and materials in the arrangement (Bennett, 2010).

2.3.4 Corporeality

Corporeality is the source of embodied and situated knowledge (Lloyd, 2010). The latter cannot be utterly articulated through written words. It’s based on physical actions and subtleties of the actors that participate in the practice of a given social site (Schatzki, 2000). Thus, what we understand as peasant farmers may be a mutation constituted jointly by cattle raising, the state, and various associated technologies.

Peasant farmers and the state meet in the monarchy of agricultural production where food sovereignty is positioned among two different regimes of practice (coming from peasant farmers and *Ingenieros*). The encounter between these different sets of practice derives from lines of flight linked to human creativity (Guattari, 1988). The former is created by state interventions that generate unforeseen corporealities led by food sovereignty public policy. According to Foucault's (1988) study about power and embodiment, one can see how bodies shape themselves and their surroundings. This means that, while there are technologies of domination that govern corporeal subjects, there are also technologies of self-formation. Thus, the body cannot only be subjugated by external forces, because the corporeal self is always present as an integral component of power relations and technology (Foucault, 1988).

This bibliographic evolution of corporeality represents the theoretical basis that guides the corporealities that emerge as technologies for milk and dairy products and that are implemented by the state.

2.4. Methodological background

The methodology applied for each chapter was identified after a review of literature, which retrieves the concepts and theories used for the development of this study.

This study employs an ethnographic approach to examine the agricultural practices of peasant farmers in the province of Santo Domingo. This was achieved by visiting a precinct called Cristobal Colon, which is located deep into the tropical hills of the province. There, a couple of friendly peasant farmers hosted me during the time I was performing the study. Being hosted by local farmers during the period of study allowed me to make early visits to all the producers from the agricultural association of the precinct and also the neighbouring agricultural associations. Also, the constant contact, without abandoning the study area, allowed me to increase their familiarity with me.

Looking forward to understanding the relation between peasant farmers and state *Ingenieros* when they meet for the implementation of production technologies, the study

makes use of the notion of assemblages. The latter takes place during contingencies of public policy in practice. Rural-state assemblages acquire a life of their own when technical and social features of place-based change utter highly dynamic interactions between human and non-human.

To understand these interactions, the study approaches the latter through the notion of intersubjectivity as the emergence of affect when things are not considered as object or subject, but as entities which get together in new corporeality. The latter comprises the farmer and rural elements in the process of production where the agency is equally distributed among their assemblage. These assemblages are glued together by the cognitive knowledge of the peasant farmer as well as the embodiments of its experience, which includes affect.

Following Arce (2010), this research studies an intervention focusing on the reconfiguration of social relationships that redefine the rural space, also on the contradictions generated between diverse forms of knowledge, the changing situated reality, and the material configurations. This variety of materialities and expectations make the effects of institutional policy visible.

In this study, state interventions situate agricultural associations as a homogeneous body of beneficiaries that might comply with the requirement of the modern technologies that are necessary to be integrated within the market immediately. However, the reality resulting from the interventions is that peasant farmers and farming are heterogeneous, although they are together in an association, mainly because they react in different ways to the new technologies. These interventions are captured through the concept of interfaces[15] , which gathers the reactions and responses from *Ingenieros* and peasant farmers as their encounters give place to new corporealities in the national rural social-

[15] A social interface is a critical point of intersection between different lifeworlds, social fields or levels of social organization, where social discontinuities based upon discrepancies in values, interests, knowledge and power, are most likely to be located. interfaces are the areas in which social friction can be experienced and where diffusion of new technology is leading to structural discontinuities (which can be both positive or negative), the interface is where they will occur.

space. This allows us to have perspectives of food sovereignty policies from both sides, the state *Ingenieros* and peasant farmers.

The study of both elements also encounters two different bodies of knowledge, on one side the knowledge from *Ingenieros* and on the other the one from peasant farmers, which dissociation depicts how public policy formulation neglects the pre-existent technologies of the peasant farmers. In practice, the state has enforced the food sovereignty legislation, implementing it through the introduction of new technologies and technological change, and on the other hand, peasant-farmers are using self-developed technologies 'which permit individuals to create by their means, or with the help of others, a certain number of operations on their bodies and souls, thoughts, conduct and way of being' (Foucault, 1988). There is a need to study if there is a grey zone between the interventions that are introduced and that are adopted by peasant farmers or if the intervention is not absorbed in all.

2.5 Research area

The present research explores the case of *Santo Domingo de Los Tsachilas* as a young political territory that officially became a province in 2007 just before the food sovereignty was introduced in the constitution. In that time, the new territorial structure received a provincial status of autonomy which came along with the birth to the development of agriculture from the peasant farmers to the large corporate and exporting agro-business such us Industria Polaca, TONISA, Rey Leche, Frugalp, Agroeden, among others in the province. Figure 2 shows a map of the geographical location of the province. The latter is located between the coast and highland regions, making it a very important place of commercial convergence and agricultural development.

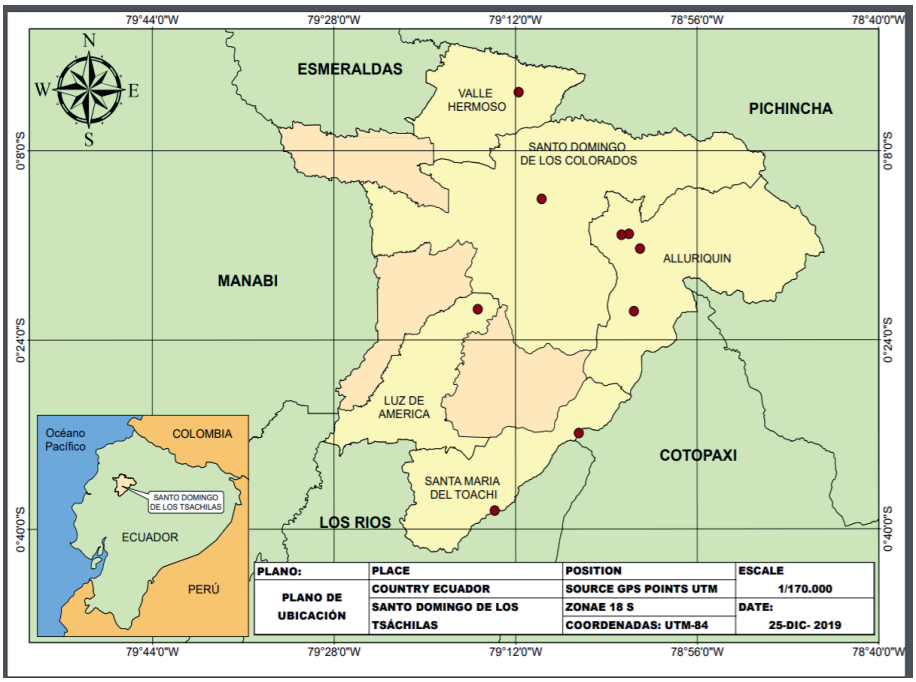

Figure 2. The geographical location of Santo Domingo de Los Tsáchilas, northern Ecuador, as the study area. The red dots show the 7 studied associations located in the province.

Santo Domingo holds large monoculture plantations, but also the largest cattle population in the country. Therefore, this study selected Santo Domingo as being an ideal place to analyze the political performance of food sovereignty concerning milk production.

Santo Domingo de Los Tsáchilas was originally from Quito, on May 29 of 1861 it was a rural parish, then on July 3 of 1967, under Legal Decree, it became the fifth canton of Pichincha Province. On May 4 of 2006, a provincialization committee of the Canton Santo Domingo gathered the demands of the population and managed to request the provincialization to be submitted to elections, where 83.6% agreed with becoming an independent province. This was granted by President Correa and on November 6 of 2007, the Official Registry 205 legally supported the Law of Creation of the Province Santo Domingo de Los Tsáchilas (GAD Provincial Santo Domingo de Los Tsáchilas 2017).

The province is known for being agriculturally rich and oriented towards exportation crops, mainly originated in monocultures such as pineapple, cacao, palm oil, as well as, cattle and poultry production for national markets (FAOSTAT, 2017). While many financially important products come out of this province, MAGAP is largely absent and disconnected from the everyday realities of the peasant-farmer livelihood. This situation generates knowledge gaps, which are important to explore to understand the determinants that are created by the policy space and the embodiment of these technological interventions, which emphasize the local entanglements between "rural matters" and the policy meaning of the intervention.

Due to a significant drought and ensuing economic crisis in southern Ecuador in the 1960s, much of the present-day population of Cristóbal Colón had migrated from Loja to Tsachila lands. Local people became connected with the advent of urban-based markets, goods, and public services during the 1980s, and it is from this period onwards that farmers began to visit Santo Domingo and Quito more frequently. The creation of roads allowed an increasing number of rural families to educate their children outside the precinct, and this reinforced the aspiration of children to seek opportunities outside of agriculture. In turn, this opening of the rural area brought influences from urban culture, which started to transform the *campo,* and those who were in contact with the city wanted to bring elements from the city into the farms.

Since the provincialization of Santo Domingo in 2008, there has been a major presence of MAGAP in the parishes and precincts of the newborn province. However, when it comes to the technical interventions from the state institutions, their assessment criteria is usually clouded by political inclinations instead of field experiences from the '*Ingenieros*' of MAGAP, GADs and Agrocalidad. This creates a panorama of uncoordinated allocation of state funds in rural spaces that are unfitted for the development of added-value products, and this generates agricultural associations unable to connect with the emerging local market. The study of these different state policy interventions is vital to understand how policies are shaped by the interaction between national, regional and local spaces and courses of action. Within this constant struggle to distribute state policies

of modernization and peasant farmers' constant actualizations lies Ecuador's ambitious and controversial food sovereignty policy.

The use of the ethnographic approach in this study guided us to explore the existence of multiple peasant farmer's production practices, where subsistence and food consumption generate new knowledge. This research takes a view of the political existence of agricultural associations within the frame of food sovereignty. This is a public policy that holds them as the main target of nation-state agricultural development. Yet, the state intends to address various situations of the peasant farmer's livelihood under a technocratic and homogenous vision, which is goal-oriented to increase local specialization and productivity. Interventions based on this premise deprive state institutions of assessing different experiential rural-assemblages that conform to the landscape, a peasant reality, and particular inter-subjectivity of actors and their materialities.

Figure 2, shows the map locating the associations and delineates the area of the study. These 7 associations were created with the aid of MAGAP and developed along with encounters of competing regimes of practice between the *Ingenieros* technological vision and peasant farmers' traditional knowledge. These knowledge interfaces fed into peasant farmers' agricultural reality while at the same time creating corporeality that orientated the state to apply technological interventions to keep people satisfied with the current government. Usually, however, those benefiting the most from state interventions are those who are willing to invest in their production models as dictated by the *Ingenieros* from MAGAP.

The information used for the analysis was in the form of documented experiences that took place through fieldwork for twelve months from 2015 to 2016, and six months during 2017. During the data collection period, interviews were conducted using a semi-structured questionnaire, also field observation, and life histories. Besides, individual participant observation was carried out with 25 producers from 7 agricultural associations, including over 55 semi-structured interviews. The latter was performed involving not only producers from the different associations but also the heads of state agencies such as

the Ministry of Agriculture, Agrocalidad, Bureau Popular and Solidarity Economy (SEPS in Spanish), the Province, and Parish GADs, and ARCSA.

Participants were invited to be interviewed, reminding them that it was voluntary. Inclusion criteria involved adults, whether male or female, who live in the area for more than 10 years, and who were actively involved in the milk production sector when the technology was transferred.

2.6 Situating the Study

2.6.1 Rural associations in Santo Domingo, Ecuador

Since food sovereignty became public policy in 2010, its implementation was compartmentalized in different agricultural areas of the country. In the case of Santo Domingo, one of the main agricultural activities are cattle farming for milk and meat production. The state, through the Bureau of Popular and Solidarity Economy (SEPS in Spanish), promoted the creation of associations, as a form of optimizing the delivery of resources by the state, as well as regulating economic activities. Currently, there are 144 agricultural associations registered with SEPS in the province, from these, 86 are active at the time of the study.

Agricultural associations became the legal figure through which peasant farmers would access institutional resources and “technological programs”. The state fostered these organizations, as a way to strengthen the link among peasant farmers, the agro-industry, and the market. By providing rural-agricultural programs involving production tools and equipment, the state aims that producers acquire greater control over the monetary value of their produce by getting direct access to the market, and to a process of ‘financial codification’. The latter leaded to a virtual unfolding of agricultural transformation and food sovereignty, undermining the material capacities of rural transformation that shapes alliances among bodies and the kind of affective flows that occur between these body's relations and their rural existences.

Financial digital information exercises is an important degree of power control, and the capacity of actors' to exist and resist such 'virtual processes', as socially and spacio-eventualities specific within state modernization policies occurrences within continual and continuous flows of effect in rural space transformations, and the effects and affects they produce in actors' practices, alliances, body alliances, productivity and market different integration, underpinning broad social, cultural and policy formulation and implementation, such as food sovereignty policy and food market constructions. It is here that individual practices and decision making may produce 'lines of flight' away from nation-state policies and institutional interventions to govern rural space modernization processes.

In Ecuador, to implement the access to markets and value, agricultural associations have to acquire a tax code. They get registered in the SEPS, where its tax code, location, purpose, and directives are recorded. The code and the institutional registration are the two main things allowing associations to access agricultural programs from MAGAP and the Autonomous and Decentralized Government of the province (GAD). The provincial government receives funding for agricultural programs. However, when it comes to program implementation, the national and the provincial government are usually working independently. To add more organizational complexity, it was also found that agricultural programs co-financed by external funding, are often implemented in parallel institutional arrangements to the national and provincial programs, by the Provincial Decentralized Autonomous Government (GAD).

This lack of institutional coordination generates complex administrative problems among agricultural projects and programs, creating severe difficulties in the delivery of technical assistance services. The implementation of projects and programs evidence a high degree of failures, mainly because of their lack of adaptability to local situations, the exclusion to understand local farming practices, and the dismissal of peasant-farmers' expectations. These are issues of transformation, hindering the institutional technical support to change the local rural space. The State's incapability to recognize local situations generally means that agricultural programs ignore the interests of the active members of these agricultural associations and their social, political, and economic

priorities. The dissolution of 'local realities' in policy formulation and implementation means that the material relations that are shaping life in a rural space are ignored or considered outdated, undermining the implementation of markets.

This is the case with two main projects/programs implemented in Santo Domingo. The Sustainable Livestock Program (PGS) from MAGAP, and the Project for Agricultural Competitiveness and Sustainable Rural Development (CADERS[16]). The PGS started in 2008, soon after food sovereignty was included, as part of the new Ecuadorian Constitution. The PGS focused on the cattle raising activity of medium and small size producers oriented to adopt environmentally friendly practices of production. The program promoted participation and inclusive development to fulfil the goals of the National Plan for Good Living[17]and Food Sovereignty.

The CADERS project was approved by the National Bureau of Planning and Development (SENPLADES), after being promoted by the president to start to show attention and priority for rural development quickly. It was co-financed by various national and international programs, including funding from Japan. CADERS project was funded with 38 million dollars for the entire country. This monetary resource would co-finance projects that benefit agricultural associations. The latter was expected to contribute a fixed percentage of 30% from the total amount of the implementation of the project, yet this was too high, so CADERS reformulated the percentage and contributed to a figure that fluctuated between 15% and 40%, that is according to the economic possibilities of the association so that in the worst case they could cover at least the value-added government tax (VAT).

[16] During 2012, CADERS signed 34 agreements with agricultural associations that were legally organized, in order to co-finance their projects, thus benefiting 44,251 families in the Provinces Manabi, Esmeraldas, Loja, Azuay, Imbabura, Morona Santiago Los Ríos and Guayas. The purpose is to look for improvements in production, collection, commercialization, technology implementation and generation of added value in crops like peanuts, plantains, dairy, onions, rice, corn, coffee, cereals, cacao, malanga and taro.

[17] The Ecuadorian State defines Good Living as a constitutional principle based in "Sumak Kawsay" which comprises a vision of the world centered in the human being as part of a natural and social environment. The 2008 constitution, in its Article 13 establishes that "The people and collectivities have the right to secure and permanent access to healthy, sufficient and nutritious food; preferably produced at a local level and in correspondence to their diverse identities and cultural traditions" (Art. 13 of the Ecuadorian Constitution, 2008).

2.6.2 Regional Governance, CADERS and PITPPA

Regional governance is based on the decentralized and autonomous provincial governments. These autonomous governments became politically, managerially and financially independent, and acquired direct control over their finances and mechanisms to compensate for imbalances in the development of their territory. The main responsibility of the Province GADs is to satisfy the needs of their inhabitants, especially in rural areas, through planning and direct investment, fostering production, road improvements, management of international cooperation, environmental administration and good living initiatives.

The new provincial governance strongly promotes citizen participation in the process of modernizing the Ecuadorian countryside. Among its administrative competences, Santo Domingo GAD is politically responsible to support productive and agropecuario activities in the province. It is within this pattern of decentralization and civic participation that SENPLADES (national planning agency) approved the implementation of the CADERS program in 2007, with the support of MAGAP, Provincial and Parish GADs, and with the agricultural associations of the province.

In Santo Domingo, the CADERS implementation was coordinated with the GADs of various provinces, and it aimed to look for the development and strengthening of smallholders' production by helping them to give added value to their produce. This started with organizing a collection of products in the centre points, to guarantee market food distribution and to make visible the commercial value of associativity. The program focused on improving productivity levels and generating alliances with actors within and beyond the locality to contribute to Good Living in rural areas.

This intervention to modernize Santo Domingo was autonomous from national budget guidelines, and its authority to strengthen agricultural associations increased first degree [local groups constitution of 20 members minimum], and second degree [activity coordination of at least 5 associations of first degree] organizations. In 2012 CADERS was closed by recommendation of advisors from the minister of agriculture.

CADERS was the only project through which MAGAP could invest in the local organization and technological innovation in rural Ecuador. Thus, MAGAP policymakers had to reformulate the Program of Technological Innovation and turn it into a National Project for Technological and Participative Innovation and Agricultural Productivity (PITPPA in Spanish). PITPPA project carried out under the responsibilities of ex-CADERS at local producers' level and continued working with agrarian associations. PITPPA was born with three main components: 1) to promote technological innovation and inputs, 2) technical assistance and training, and 3) to modernize agro-productive infrastructure and equipment.

The second component of the PITPPA program absorbed 2,400 *Ingenieros* statewide which belonged to CADERS; this comprises personnel from PGS. One new element in PITPPA program was that it's no longer acceptable to work with agrarian associations leasing their land. Land for food production became an essential factor to establish local rural production projects. PITPPA policy-makers negotiated agreements with GAD representatives and Municipalities to allow agricultural associations to buy small lots of land to produce food. These acquisitions of land could not be larger than two hectares.

However, the lack of policy coordination between the national and regional governments, and the Province Agricultural Directions (DPA in Spanish) brought, as a consequence, technical interventions started to be affected by political pressures. These pressures influenced the purpose and allocation of state funds, ending up tarnishing the public image of rural development among private businesses and some political actors in the province. This, despite a general agreement among bureaucrats and politicians about the production potential of agricultural associations. However, these organizations were in urgent need to receive technological projects and increase their food production in order to survive.

When you talk with DPA *'Ingenieros*' about the technological interventions by MAGAP, they claim neither they nor the producers have an opinion about these interventions. Indicating a lack of clarity about the purposes of these technological interventions. In a visit made with an Ingeniero called Carlos, he explained that the MAGAP never does assessments before delivering technological packages to producers, and these

technologies are usually brought to producers under promises of production increases. Yet, he explains, the implementation of any of these technologies requires an investment, which the producer is not willing to do, either by lack of economic resources or ignorance, on how to operate with these technologies. Thus, frequently, the implementation of intensification technologies to increase production leaves producers' unsatisfied, which affects their trust in MAGAP's rural interventions. As a result, these experiences have made *Ingenieros* very selective when choosing a producer to receive agricultural technology.

The pressure exercised over MAGAP *Ingenieros* to distribute technologies is coming from the Ministry central office. The lack of assessment on peasant farming practices and the many pressures on achieving modernization is provoking that *Ingenieros*' experience and criteria, a knowledge shaped during years, is ignored and displaced from any use in the technological modernization of these localities. This results in low adoption of agricultural technologies, and distrust from peasant farmers, who are continually complaining about the government's technological interventions, because these are disconnected from the local reality.

In Santo Domingo, GAD supports MAGAP mostly in what are considered large agricultural programs; these are a vaccination against brucellosis and tuberculosis, and in providing institutional data to certify farms' participation. During the study, *Ingenieros* had certified 35 farms and aimed 80 more. However, the province comprises approximately 7,000 farms. It is hard to certify producers because even when producers have nothing to pay for the services provided in these programs, they are not willing to participate if this involves vaccinating their animals in these large vaccination programs.

Some peasant farmers complain about ineffective vaccination from DPA *Ingenieros*, causing animals to get sick or die. The GAD has a project on Good Practices in Cattle Raising, which started in 2012. *Ingenieros* visit the cattle farmers and provide training for cattle nutrition. However, their reach is limited, since they only have two *Ingenieros* to implement the programme, and they continuously have to ask for personnel from other areas in the GAD for support. According to the *Ingeniero* in charge of the agricultural department, in 2015, the main work was animal sanitation, and in 2016, they were looking

forward to working with genetic improvement. Provincial institutions cooperate with MAGAP, but coordination is very poor, resulting in redundant interventions or over-ambitious innovative projects. The result is a severe misunderstanding about how to implement these modernization projects.

The understanding of agricultural associations is usually based on regional politicians' interests and political opinions, and in this GAD is an important arena of discussion and allocation of resources. However, there is no orientation to search for a closer approach with MAGAP activities in the province. This modus operandi has resulted in poorly informed technical interventions, where sometimes expensive equipment is allocated in agricultural associations that either lack commitment to using it to increase food production productivity -due to economic dependence on activities unrelated to agriculture- or in associations, wherein their products are surrounded by fierce local competition. In some cases, failures are due to the distance from markets and the input-demanding agro-industry; in other circumstances, producers just are lacking access to water and electricity. This makes equipment not to work. These are 'real' effects of the rural space, obliterating policy orientations, this reality exists, despite recognizing the importance of agrarian associations to achieve food sovereignty.

The main interventions are planned and commanded by the ministry headquarters in the capital city and concomitantly deployed by the *provincial offices' Ingenieros*. Parallel to this, the GADs also intervene in the associations with their independent agricultural programs. Both of them aim for visible political performances to publicize their efficiency and duly attention to peasant farming in the province. While these interventions aim for the small and medium-sized producers, the more beneficial agricultural programs are taken advantage of large business farmers.

2.7 Research questions guiding thesis Chapters

Many of the food sovereignty studies have given priority to political and economic processes, but far less attention has been given to the impact of technology and technological change on locally-based peasant farmer food production. This thesis examines technology and agricultural change at the national, provincial and local level

during the implementation of food sovereignty policy in Santo Domingo, Ecuador and specifically seeks to address the following questions to explore thereby the performance of food sovereignty policies through the delivery of technology and technical knowledge for local and sovereign food production.

- What interactions generated among producers and their agricultural associations influence access to technology?

Chapter 3 enquires about how the state promotes the involvement of agricultural associations to monitor and control the use of technology and producers' participation in agricultural programs. Building on the methodological considerations, this chapter elaborates on the experiences and trajectories of four Agricultural Associations in Santo Domingo Province, and it follows technological interventions performed by the state to achieve food sovereignty. These are presented as events, where the prospects of success are uncertain, but expectations of these prospects can generate many possible outcomes. The Chapter describes and analyses why and how these outcomes have occurred.

The four associations, Agrilac, Servilac, Francisco de Orellana (AAFO), and Cristobal Colon (AACC) are presented to describe the methodological implications of studying producers' experience and trajectory with the implementation of food sovereignty policy. In this chapter, technical knowledge intervention is used as an appropriate unit of analysis to study the associations' interfaces with government agents, attempting to integrate local milk producers to the food sovereignty targets and objectives. Although useful in conceptualizing the implementation of public policy, particularly in allowing a national policy orientation to be related to its local manifestations, there is a degree of ambiguity on the point of contact between the institutional validated policy aims, and the observed practices, where peasant-farmers must constantly adjust their decision making to the range of everyday expectations depending on the problem perceived (choice, contacts,

power, and interactions) and not to any one of the more possible outcomes formulated by the food sovereignty policy aims.

- What are the characteristics of the technology distributed to local producers, and how are these technologies partially accepted and re-situated in their every day and production practices?

Chapter 4 explores how strong affective knowledge is between peasant farmers and their animals. This latter is to look in between social relations, the materials and materialities of producers, and the technologies delivered by policy agents. To describe ongoing processes of appropriation, re-creation, and negotiations of existing knowledge order frameworks. Does this rather imperceptible process contribute to re-situate rather than resist the implementation of new food technology? This question starts addressing the issue of convergent materialities of milk.

The insertion of the state's regulations into peasant farmers' milking practices. This interface takes place amidst the state's efforts to integrate peasant production into the market. Thus, the state tried to push aside peasant farmers' practices rooted in traditional agricultural practices. This situation creates disturbances for both the *Ingenieros* who is in charge of providing technical services to modernize peasant production under innocuous conditions, and for the peasant farmers who find modern techniques as demanding higher investment and time-consuming.

The result is what we have called here the formation of new corporeality. This is to highlight that policy state interventions are largely expressive, non-dialectical processes of being and becoming (see Sherwood et al. 2015: 211-223), and producers appropriation of government-supported technology reveals human and non-human actors interaction, visualizing the importance of contingency, agency, and self-organization in assembling vital elements of food production, this is mostly part of an unpredictable process of policy intervention and local production practices, where mutual affections and embodiments that frequently appear despite and even because of seemingly insurmountable forces and odds. This provides some unresolved issues about connecting some neglected

conceptual and empirical realities to the more conventional gaze on food sovereignty academic and policymakers discourse.

- Are the different material elements in the traditional milk production experimentally adapted by peasant farmers to new techniques implemented by external experts during the food policy interventions causing disturbances in the whole system?

In Chapter 5, the thesis fathoms an analysis of the third research problem where interventions depict the encounter of competing regimes of practice that clash the expert knowledge from the *Ingenieros* and the traditional agricultural practices of the peasant farmers. These encounters show us how the state addresses rural development under a vision of political control exercised through technology delivery. Yet, the latter is assimilated and, up until a given point, adapted to productive peasant practices under the cognitive of traditional peasant farming. This results in the emergence of intersubjective relations of effect comprising human and non-human elements, in this case, the peasant farmer, state regulations, and the cow. Here the farmer is seen as the client that receives the intervention from the National suppliers.

In other words, food sovereignty policy only has a conceptual existence within political discourse, and therefore, we can only know the local and specific manifestations of the food sovereignty policy. Hence, national policy can no longer be seen as the field of reality controlling local producers' associations' direction and practices. The implementation of food sovereignty policy results from the agents' translations of the national policy, their thoughts, actions, and relations about what technical knowledge is in a specific locality and situated event.

CHAPTER 3

3

Chapter 3 - Peasant-farmers' associations and their role in food sovereignty in Ecuador

3.1 Introduction

An agricultural association is constituted by several members who form a local organization. These members agreed on a common goal to work within their organization by strengthening their political and social bonds to engage with the state policies. This organization provides peasant-farmers with some room for manoeuvre in their dealings with state institutions' policy programs and projects.

This chapter presents an analysis of the performance of agricultural associations, which are not just resisting institutional power, but more importantly, they also are proactively organizing around their particular livelihood interests that may lie outside the interests of state-sponsored economic development.

In this relationship, this study focuses on technological change to examine the implications of how technologies usually enter the farm production often being machinery or equipment, and innovative methods to increase the quality and value to the local food and labor processes. In this line, the commercialization of technology is highly significant.

The use of private contracts to supply new technologies influenced how local producers perceived these public policies, analyzing the time they invest using traditional calculations and assessment. The use of these commercial contractors involves producers' strict control of the machinery's efficiency and operation, which were used indicators that were also controlled by new technology. All these latter were hampering the local routines that adapted to the new ones.

Deficient technology and the limited ability to produce food under quality control are constraints than hampers farmers to participate in market opportunities, resulting in the reduction of the scope of individual producers and their associations to join in the food production system, which has, apart from them, elements such as technical-administrative relations and government interventions through which local food produces are recognized to participate in the national markets. This chapter suggests that the

process of food sovereignty is not guaranteed, although the introduction of new technology for local food production and adding value was a key intervention, particularly because the technology was supplied by commercial contractors hired by the government.

This section explores how agricultural associations and local agencies approach each other, intending to develop associations' production. Yet, at the interface between producers, government officials, and commercial contractors of technology, different bodies of knowledge and peasant agencies depict the level of adoption of technological programs that sometimes problematically have assembled the state policy on food sovereignty.

To investigate the latter, this chapter reports the distribution of agricultural decision-making processes by examining four different experiences in Santo Domingo Province. According to the 2008 Ecuadorian Constitution and related legislation, rural associations are the core of the production and administrative system of peasant farming, and therefore, their organization has become the target of state-based policy interventions.

Concerning the former, the Ecuadorian government has mobilized various public agencies and resource-programs to promote the creation of rural associations to organize and regulate rural organizations, agricultural production, and the territory conditions for self-reliance of Ecuadorian citizens towards development.

The main objective of the institution-building component was to increase the capacity of 'rural food producers' to satisfy the market-oriented demand by improving standards of planning, management, and service (Penafiel, 2016; Villavicencio, 2016). The government seeks thereby to surveil, legitimize and verify the legal status of peasant organizations, as a pre-condition for gaining access to public financing and other institutional resources (MAGAP, 2010).

Through associations, farmers tend to formulate and declare their expectations, needs, and technical demands, including modes and means of exchange, intermediation, and market coordination related to their production. On the other hand, the state agencies commonly seek to render technical assistance to influence and change rural social life

(INIAP, 2009). In this institutional trajectory, a technological and market-oriented 'communitarian discourse' is usually constructed (Cely, 2010). Therein, entities like agricultural associations are not necessarily or primarily conceived to be organized around 'routine' communitarian purposes, but as units stimulating public finance's local consumption (resources) to produce food. This occurred after government policy support to safeguard food sovereignty (ibid.). However, there are social, economic, and political issues in legitimizing food sovereignty into policy action that has tended to perpetuate further differentiation and marginalization of local food producers (Peña, 2013; Sherwood, 2013).

During the process of food policy implementation, there are -actors- involved in peasant-farmer associations, as highly pragmatic in operating within emergent socio-material-political interactions, linking producers to state food policy. In contrast to officialized depictions (Arce, 2003; Booth, 1994), peasant-farmer associations are part and parcel of highly fluid routine encounters, collusions, and contrasts of people engaged in local development farming practices and 'normative' state-based policy-interventions facilitating technological change in the rural space (Van der Ploeg, 2010; Walsh-Dilley, 2013).

In short, peasant-farmers associations are significant organizational instances to understand the 'development' of peasants towards a market-oriented farming existence in Ecuador (Avellan, 2009). In our view, these organizations crystallized the experience, about the actor's feelings, wishes, and thinking related to the occurred market transformations that can be criticized for failing to understand the significance of lifeworld (the socio-cultural defined scope of everyday life) in local food production. This chapter concentrates on the policy implementation materialized, as new technology introduced in the milk production process in Santo Domingo, Ecuador.

3.2 Policy implementation of food sovereignty

Institutional interactions (i.e. policy implementation) may increase or decrease peasant associations' autonomy and decision-making.[18] This is because these interactions are taking place in an arena of individual, collective, and personal change, alongside market influences and political contradictions in providing public financial support to produce agricultural commodities (Clay, 1984). In this vein, market-oriented events[19] are regarded in this study, as influencing the political participation and relevance of actors and their associations, while simultaneously legitimizing and receiving the governance role to implement policies formulated by the national-state, such as the Ecuadorian food sovereignty policy (Arce, 1990; Arce, 1994).

Since 2008, and under political transition (Superintendencia de Economía Popular y Solidaria 2012), material differences and alliances between the government and the agricultural associations are visible. The referred tangible political relationships affect rural associations' everyday existence and their capacities to use and value their lifeworlds' experiences to create networks, understanding how peasant-farmers act and interact as 'entrepreneurial actors'. Yet, the local situation of food production and added value must be understood to explain how the food market is created by farmers' or peasants (Sherwood et al. 2013), but also the state food policies must contribute, stimulating food-oriented market production (Sherwood et al. 2013; Arce et al. 2015.).

The significance placed upon processes operating in the socio-political and situated conditions (which set the conditions for local food production related to the farmers' and markets' needs with an understanding of the rural livelihoods) influence practices and

[18] Here, autonomy and decision making refers to the notion of power exerted by the agricultural associations, this power becomes the consequence of collective action and the people who enter into the composition (Latour, 1984). Thus, power is composed when enrolling various actors in a given political and social scheme. In the case of peasant farmers associations, their autonomy and decision-making ability might be influenced by friction and resistances such as lack of communication, ill will, the opposition of interest groups, indifference, etc. Furthermore, agricultural associations look for political space. The latter is constituted by institutional channels through which policy processes can be accessed or controlled by them, as well as their political discourses, and social and political practices serve to influence decision-making (McGee, 2004).

[19] Market influences agricultural production depending on consumer preferences and state measures that support healthy food consumption. In the case of agricultural associations in Santo Domingo, peasant farmers chose to sell their produce to the industry that pays better and fit their agricultural practices to the demands of such industry.

strategies that agricultural associations adopt and are presented as innovations. Also, there is an understanding about the presence in a specific territory and how actors understand and interpret policy changes that are going on around them and, especially, how far the state has been responsible for satisfying or not, local consents and expectations in circumstances of supporting food production. In this study, dairy production within associations towards food sovereignty is analyzed, having the relationship between associations and the government as the central focus of study.

Food sovereignty in Ecuador is implemented under cooperation named "popular and solidarity economy"[20] (PSE) (Coraggio 2011), which legislation supported and stimulated the ability of local and associative entrepreneur ventures to start business endeavours. In the case of agricultural associations, the legal framework allowed farmers associations to be organized aiming to increase agricultural production, according to national and provincial policy orientations. Associations are seen as neutral social entities to gain access to public technical services, particularly in the form of national-level programs operated by the Ministry of Agriculture (MAG) and autonomous provincial-level development initiatives or GADs. Through this dual national-provincial institutional orientation, the national-state situated food sovereignty policy in geographic spaces.

President Correa's (2007-2017) administration gave heightened public support for peasant farming through diverse agricultural initiatives that explicitly identified small and medium-sized family farming operations as the chief provider of food sovereignty in Ecuador (MAGAP, 2010). The peasant farmer's protagonism was established under the Organic Law for Food Sovereignty (LORSA) in 2010, a year when the agrifood policy environment dramatically shifted from corporate agroindustrial and agricultural export commerce to developing national smallholder production, resulting in a reduction of the

[20] The Ecuadorian National Assembly passed the Organic Law for Popular and Solidarity Economy in 2011, in which popular and solidarity economy was defined as "a form of economic organization in which its members join to produce, exchange, commercialize, finance and consume goods and services that allows them to satisfy their needs and to generate income". The 2008 constitution defines the economic system as social and solidarity which recognizes the human being as subject and end that tends to have a dynamic and balanced relation among society, state and the market, in harmony with nature and which holds as its objective to guarantee production and reproduction of material and immaterial conditions that make "good living" possible. (Art. 1 of the Organic Law for Popular and Solidarity Economy, 2011 - Art. 283 of the Ecuadorian Constitution, 2008.

food production proximity to the consumer. The Ecuadorian political reforms, oriented by the idea to increase diversity and civic participation in policy formulation and implementation was formalized in the Ecuadorian Constitution of 2008. The emergence of a decentralized territorial organization of the nation-state incorporated new competences to the autonomous and decentralized governments of all provinces in the nation, which allowed new provinces to control their finances and to receive support from national institutions to make use of the funds they receive from international cooperation and the state annually.

However, when it comes to delivering state agricultural services to the rural associations, the Ministry of Agriculture, Livestock, Aquaculture and Fishing (MAGAP) and the Provincial Governments fail in recognizing and adjusting the implementation of policies to the agricultural practices of smallholder producers (Vasconcellos, 2018).

3.3 Associations as institutions to implement agricultural policies

Agricultural associations are supported by the institution of individual land property, and the nation-state policy orientations. Therein, an important dimension to consider is the gradual establishment of market liberalization policies in Latin America and worldwide, since between the early 1980s till the end of the 1990s, small rural producers were dramatically affected by the environment of market liberalization (Long, 1989; Arce, 2003; Borras, 2004) and these regional changing conditions brought back the significance of organizations for small agricultural producers (see Arce 2008). Thus, agricultural associations were seen as critical organizational institutions contributing to reducing the transactional costs, and risks to establish local agro-businesses, so different actors would unfold their capacity and ability to coordinate their investment in provincial agro-commercial ventures.

In this line, agricultural associations were representing a political-social orientation to organize and mobilize actions towards food production, which mainly aim to translate individual expectations into a collective compendium to facilitate the rural population participation in institutional intervention to support the establishment of rural markets. Thus, agricultural associations are the building blocks of food sovereignty policy in Ecuador, thereafter individual producers are gradually stimulated to move towards a

competitive way of life, and more specifically, local producers are joining together with other producers, who are willing to organize themselves in associations, to produce and compete in the market. This liberalization of the markets was presented as the autonomy of local producers to engage with the food sovereignty policy (Andrée, 2014; Van der Ploeg, 2014).

In the Ecuadorian State's food policy discourse, most arguments were based on rural development and food sovereignty perspective. It basically implied that small-agricultural producers would eventually negotiate to receive a better price for their products and trade agricultural inputs under better terms by reducing transaction costs. The beneficiary nature of the market (through prices) in the food sovereignty policy is the new constitutive entity to develop the rural space, however, countryside actors have a chance to compete and achieve development by participating in commercial ventures, while appreciating the organizational benefits of rural producers' associations (Cely, 2010; Ponce Cevallos, 2005).

During this period, Ecuador and other Latin American countries opened their economies to globalized forces; the nation-states set up to reorganize their markets and to generate local, regional and national solutions to food issues. In this context, the conceptual challenge that emerged is the description and analysis of the seamed realities, between the State policy stimulation to create food markets (and food relative prices), and the lifeworld practices of producing local food (Arce, 2008; Arzeno, 2015). This critical examination of food sovereignty policies, also examine the performance of agricultural associations and on how local actors understand the situation of which they are a part, especially about technological changes, which failed to address either the origins and distribution of technologies or the effect these experiences have on producers' associations and their multiple relations surrounding food production.

3.4 Agricultural associations and the food sovereignty policy

Agricultural associations tend to be perceived as organizations that mould producers' practices about the implementation of the food sovereignty policy (Beuchelt and Virchow, 2012). Despite this latter institutional perception, producers' local organization requires

an understanding of the peasant farmers' reality. The importance given to local rural organizations within the sovereign food policy has important implications for a change in people's attitude, their participation, and how they mobilized themselves in this process of change. Also, the policy implementation started to bind provincial-rural producers to the institutional processes promoted by the Ecuadorian nation-state, which with the employment of economic and technological programs and projects, supported the expansion of agricultural production, and generated individual and collective affects of national belonging that until the formulation of food sovereignty policy, the rural space was sorely needed.

Furthermore, associations create means to increase producers' participation in local markets' organization and development. Thus, examining producers' decision-making power and examining the policy-designed aims are achieved by establishing agricultural associations. This institution attempted to influence the need for adoption and amplify the impact of the food policy aimed to further the commoditization of food products, while the food sovereignty orientation provided the nation-state with the required legitimacy to intervene with technologies, prioritizing the reorganization of local food producer conditions, and under which local organizational circumstances, agricultural associations would become important components of the food sovereignty policy.

The national policy supported creating these participatory spaces for local and small producers to exercise their decision-making power, legitimizing the establishing of the social and solidarity economy (Hernandez, 2019; Superintendencia de Economía Popular y Solidaria, 2019). Thus, agricultural associations can be seen as a third sector in the rural space, complementary to the public and the private sector to spearhead rural transformations. This emphasis on local participation to re-imagine food production, the market and the social integrity of local food products, followed President Correa civic revolution -revolución ciudadana- (Correa, 2017; Tilzey, 2019). These are a political set of reforms to reduce poverty via the absorption of surplus rural labour, trapped in the local rural -informal- economy to achieve efficiency and the institutionalization of local products. However, the effects of these set of reforms on social and economic relations within households, and on the existing knowledge and practices producing 'local food' is a

dimension that has rarely been discussed (Andreé, Ayres et al., 2015; Beuchelt and Virchow, 2012). The chapter is conceptually examining policy reforms to understand how the production of local food is affected and look at the conflicts and tradeoff between the individual and collective benefits involved in both agricultural associations and the local food production.

In this vein, associations contribute to producers' local decisions, reinforcing their food production and income-generating activities, thus spurring the growth and reorienting rural production, reducing existing pressures on both, the national government to produce affordable food, and activating self-subsistence agriculture. Thus, local producers' decision-making power (local producer voice during the food policy implementation) is a social, and political property that properly organized and directed by agricultural associations would untapped and provide a powerful incentive in the social food production process by family animal husbandry for example. As a result, local food production would improve local nutrition, integrate food territories and local actors, while re-organizing relationships and bringing people together to participate through competition in local, provincial and even national markets. This dynamic may create tensions that mount towards producers' involvement in counter tendencies, subverting institutional actions to transform existing local arrangements to produce food (Arce, Blanco et al., 2008; Anda Basabe, Durango et al. 2017).

Beyond food sovereignty, the ability to compete in the market rests on the notion that individual and collective power in associations can contribute to visualizing the central lines of difficulty and conflicts, therefore under conditions of social groups integration, individual members can maintain their loyalty to their territory, identity, and secure a minimal life chance for group members, while the association of producers, provides the rights to maximize their gains in the market. Yet producers operate under conditions of relative institutionalization, following national policies, market vagaries, and their constant engagement with the technical managing team of the Ministry of Agriculture and Provincial Government to achieve rural development (Arce, 2010). This partial or relative institutionalization is usually concerned with influencing producers' resource allocation on the farm, influencing the production of food, the interaction with markets, and producers'

reaction and acceptance of technical innovations. Thus, the study of agricultural associations' choices and decision-making must take into consideration individuals, agricultural associations, and the institutional state policies; these are the essential interacting decision making entities, promoting and managing rural change (Pacheco, 2014; Anda Basabe, Durango et al., 2017).

This implies to carve a space and power distribution of decision-making processes to support agrarian change, and accommodate how different actors are viewed existing values and performing their senses, feelings, and loyalties in making choices to organise the production practices of local food (Arce, Sherwood et al., 2017; Hale, 2013). Herein, decision making is a process that must be studied along with institutional policy, producers' organization, and individual actions to change the boundaries of the units of policy control and of responsiveness to a potential rural change, where actors' participation and everyday experience are elements to create a partial pooling of control activities, constituted by affective relationship, social interests, political values, between the individual rural producer, the social grouping and the formulation and implementation of policies (Iles and Montenegro de Wit 2015; Ilgen, 2003). This merging of elements (that by their nature and context misalign, yet aim for similar goals through different paths) are led by a food policy that fuses the sovereignty concept with the traditional knowledge of peasant farmers and their territorial assemblages. These territorial assemblages command values and loyalty to situate the core of what would be named the territorial orientation of a public life policy (Deleuze and Guattari, 1987; Yu, 2013).

In our case, institutional decision-making instructions flow down from the Ministry of Agriculture and the Provincial Government, while decision making information and expectations flow up from producers to the governmental agencies. Within this policy hierarchical organization of power, knowledge is one of the most important factors to legitimate authority to implement policy projects and programs from above and legitimize them (Long, 1989; Fisher and Arce, 2000).

Power is here an integrative property of institutions' instructions and producers' decision-making information processes and tends to legitimize meaningful policy reforms. Institutional power is usually expressed in policy formulation and implementation

(Hindess, 2012; King and Le Gales, 2012). The exercise of institutional power within agricultural associations -the process of orienting the making of producers' decisions to allocate resources to produce foods and accept technologies brings together the dimensions of institutional power, institutional agendas, and technical experts' wills to achieve institutionally designated task-targets (in this case production and access to food), and enhance producers' individual, collective, and diverse expectations surrounding their interests and values (i.e. entrepreneurship) (Iles and Montenegro de Wit 2015).

Processes of power distribution are expressed through knowledge 'participation' narratives, and these have an essential significance to construct and territorialize the policy of sovereignty and national food markets. The distribution of power, usually end up entangled with provincial and local decision-making processes, locally shaping the interpretation of the policy and intervention processes, but at the same time, allowing to surface ideas, beliefs and images of what is understood locally, as the struggle of food sovereignty and markets against the 'interests' of foreign multinationals (Ayres and Bosia, 2011). These multinationals are presented in the government discourse, as the actors expand global food homogenization and are responsible for devaluating local food production and culinary practices (Silva, Cortés Belmar et al. 2017). Herein, knowledge emerges from a complex policy process of language mobilization; this involves social, situational, cultural, and institutional factors to legitimize a national policy consensus (Chambers, 2012; McGee, 2012). Thus, food sovereignty policy, as a knowledge factor, is not an accumulation of agronomic or nutritional facts but involves ways of legitimizing participatory policy decisions, and selective incorporations of ideas about the global, national and local food production. The issue here is how peasants-farmers are caught in a web of external and internal relations over which they have little or no control (Charão-Marques, Schmitt et al. 2017).

Generally, the influence exercised by institutional agencies and experts to achieve institutional targets will depend in part on the nature of the object to intervene, the knowledge mobilized, and the degree of producers' participation. The space to make decisions does not occur in a power-free situation. These situations are often affected by

power struggles among local political and provincial -powerful- individuals and groups (McGee, 2004). Sometimes these groups influence local decision-making processes to make visible their capacity to exercise power and show their ability to advance their influence as institutional political operators among agricultural associations and individual producers (Arce and Long 1987).

3.5 The role of associations in the milk production market

Milk production in Ecuador was boosted at the beginning of the twentieth century, as the Ecuadorian cities began developing and demanding high amounts of milk, which started the initiative of imparting specialized cattle for milk production (Vizcarra, Lasso et al. 2015). As mentioned above, the market-and not trade[21]- was perceived as the 'natural institution' generating development possibilities for small farmers; the disadvantage of this view is that issues of volume, price negotiation, and access to weak and unstable markets are problematic for individual producers that need to solve by themselves (Zerbe 2014). As a matter of fact, in the 'real' world, producers, traders, and consumers usually spend significant time searching for each other to become progressively reliable commercial partners. However, in the policy argument of the Ecuadorian State, the aim was to incorporate producers into the market; this radical neoliberal overhaul policy included the coordination of local actors, and the passing down of decision-making policies from 'above' governance institutions to local organizations (MAGAP, 2010).

The market proposal for change demanded from people to modify their social interactions at particular junctures of their daily life and to alter their decision-making processes to participate in projects, programs and to take collective risks. These socio-economic aspects of the policy, arise out of the tendency to prioritize the 'ordering' of social relations (i.e. the institutional environment of the market), as if the lack of social organisation is the

[21] It is worth mentioning that the market here is referred to as a set-up where two or more parties engage in the exchange of goods and services, whereas trade is the actual action of buying and selling goods and services for money or money's worth. Food sovereignty policy aims towards working with producers as traders to develop new marketplaces for targeted communities in order to procure producers market access and market information. However, the implementation of this policy prioritizes technology as the key to access the market, turning the latter into the dominating force which dictates the form and direction of the production process.

factor hindering market and business decisions, disregarding the significance of everyday life practices that make markets, products and their circulation possible among actors, which finally are the specific and distinctive territorial existences. Much of the national state guidelines and market-oriented policy have a social market bias that can be explained by the lack of attention of policymakers and experts to the producers' ability to create their context-specific markets, social relations and 'local products' trading (Pacheco, 2014; Blanco, van Gastel et al., 2017).

Locally organized practices included but not limited to transporting, selling or processing, acquire constitutive and counterfactual importance to state policy interventions (to resist, rework or transform institutional interventions) because these are a reality, such as the existence of knowledge and production practices that linger in a territory, where actors organize the circulation and materialization of local products (Sherwood, Fisher et al., 2017).

Food sovereignty policy constituted a political period of dynamic transformations in the country, and Ecuadorian experts and policy-makers felt particularly uncomfortable at the lack of mobilization, participation and social organization in the country's rural space (Giunta 2013). Their understanding of the rural area led to perceive social organizations as the key institutional structure that would support individual producers to join together with other producers to answer the needs of the current food markets. This new situation led to open local production to exogenous markets activity (i.e. inputs), acquiring central importance aiming to improve producers' commercial knowledge and marketing skills. The government concentrated on developing pathways (roads) to communicate and integrate the national territory, resulting in the construction of new roads, improvement of commercial roads, and fluent transportation are the central elements of a strategy applied to expand food markets and to improve the rural livelihood conditions (Cely, Peña et al., 2010).

In this respect, local producers' associations became the social and collective entities to achieve food policy aims while being informed of the food sovereignty policy and using it to claim services from the government. Thus, the objective is to feed Ecuador, a population who was organized after this vital policy orientation, which resulted in being a

component of the national strategy to modernize and achieve rural development. The main aim was to reach agricultural transformation and food sovereignty through new technology used for food production which was available to peasant-farmers and backed by proper incentives and rewards from the policy orientation to constructing markets. Beyond this food policy, the local organizational market pragmatism, and the integration of the rural space implied drastic transformations in the existing producers' social relations that extended and impacted local food commodity processes. These changes occurred to modernize local agriculture, while the government supported the idea of strengthening provincial awareness for the regional development governance, prioritizing a homogenization of food commodity relations that would inter-relate local existences and a more comprehensive policy social, economic and technological 'realities' (Giunta, 2014).

According to state regulations, these associations' official organization is arranged following a prescribed hierarchical pattern, and they include a president, a manager and a secretary, plus some delegates. The association has a president and a manager who are the head officers of this centralized rural association template. These organizational positions and their members hold the responsibility of keeping the agricultural association active with diverse programs and projects linked to MAGAP and the regional government. Agricultural associations are linked to institutional projects, but their activities are a part of being connected to the agricultural association itself. They are also linked to the individual activity of each producer that altogether participate in rural development. Active participation is vital for the existence of the agricultural organizations, being this a necessary condition to perform the implementation of projects and programs that cannot be institutionally planned, although the local development and opportunities for local rural development are to a great extent guided by national and provincial government projects and policies (MAGAP, 2020).

Local active participation is performed to attract the government and regional agricultural programs. Yet, this effective and affective experience cannot be inter-communicated among actors, as it is perceived and analyzed after the direct experience of the producers, who assess the institutional intervention process and the social, economic, and political

concerns and memorize the situation. In recent years, this 'memory' is constantly activated during producers' decision-making processes, weighing the relevance of the information and sources about new policies and programs. However, the experience cannot guarantee that what has been done before will result in the same outcome. As a consequence, this memory means that peasant associations have considerable variation in terms of policy achievements, accountable to the Ministry of Agriculture and the Provincial Government (Arce, Sherwood et al., 2017; Akram-Lodhi and Kay, 2012). Thus, having a previously successful intervention does not guarantee that the next intervention will be as fruitful, which insets a risk factor of uncertainty.

These institutional experiences are important factors in affecting the will to accept new projects and technical services. This has led peasant farmers to integrate into the form of agricultural associations looking for strength in the number of members, as well as being involved continuously in agricultural development programs from the government and to demand consideration for further institutional help and inclusion within the state agencies range of operations (Long and Roberts, 2005).

3.6 Agricultural Associations: Case studies from Santo Domingo Province

Here, we focus on the interactions of peasant-farmer associations, and project implementation by national and regional government agencies implementing food sovereignty policy. This ethnographic study contributes to identify interactions affecting the process of producer decision making, situating it within the organizational perspective of agricultural associations. By analyzing each particular case of these associations, this chapter aims to show issues of producer agency, different government technological interventions, and the materialization of government-agricultural associations relationship in the process of implementing the food sovereignty policy-program.

The CADERS program was announced in various agricultural events in the province (El Telégrafo, 2013). Agricultural Associations that wanted to receive funds from CADERS had to present a project in CADERS's office in Quito, and just after approval, the *Ingenieros* would visit the association and verify their likelihood to receive the funds for dairy processing and value generation. In some cases, the number of members did not

meet the CADERS's requirements, resulting in a second search for local producers around the same area, who were not initially delivering milk to the association, to complete the required institutional requirements to get access to innovation funds related to achieving food sovereignty.

3.6.1 Agrilac case

On September the 14th of 2015, this association was visited by three *Ingenieros* from DPA, to assess the reasons why some associations that participated in the CADERS project were inactive. This association is not one of the 'favourite' sites of the *Ingenieros*, because it takes them approximately two hours to get there from the provincial capital, and the road is in harmful conditions.

The association was created in 2008, and has managed to buy its land where the milk collection centre is currently established, and its members contributed to building the necessary infrastructure to operate the dairy equipment provided by CADERS. The president, Mrs Karla Ortega, said that a cooling tank was delivered by CADERS, two years after the collection centre was established. Yet, when the equipment was installed, the *Ingenieros* had no milk to test the cooling tank, so the CADERS's technician tested it with water and according to him 'the tank's cooling system' worked fine. In reality, it seems that the tank did not work correctly, and this has been a constant point of friction between *Ingenieros* and producers. Later, when producers tested the tank, they found out that the tank could not keep milk refrigerated. Mrs Karla argues that CADERS technicians had previously delivered the tank to a different association, Servilac, and when producers quickly discovered the tank did not work, the manager, Mrs Mercedez, complained directly to MAGAP central agency in Quito and told them to replace it as soon as possible. According to Mrs Karla, this issue resulted in technicians from CADERS taking the tank and re-allocating it in Agrilac.

Mrs Karla recalls that the technicians told the association that a big regional dairy industry was ready to buy the milk from them if they met the quality standards. However, when Mrs Karla tried to connect with the dairy industry, they refused to collect the milk because

the collection centre was too far away, and the roads were not in good condition. Despite this negative reaction from the dairy industry, and even though the tank was not working, producers started to collect milk and turn it into cheese, bypassing the need for the cooling tank.

However, these local solutions created a new uncertainty, the space to become a cheese-processor plant was limited in extent for a small agro-industry. The dairy centre - Monte Nuevo - where this association is located, is constituted by many milk producers. The high number of dairy producers increases uncertainty because many producers are 'artisanal' cheesemakers, competing against each other, gathering as much milk as possible to produce cheese locally. This local milk demand means that producers tend not to improve milk quality basic requirements, and cheese producers are continually increasing the payment per litre of milk, disregarding milk quality standards, hooking up dairy farmers, and keeping them captive as milk suppliers this local cheese production. When milk producers are captured by local cheesemakers, the latter usually claim the quality of milk is not good enough, and they will decrease the price paid to local milk producers.

There are three uncertainties for the association, being: local cheese production practices, the fluctuating market demanding milk, and the difficulties to establish proper premises for cheese production. These are the result of either lack of information or technical knowledge, difficulting an accurate forecast of yields to anticipate the high-quality cheese within state boundaries for a legal sanitary registry.

During one of the meetings with the association, a producer said:

> *"The government always mentions the Buen Vivir (Good Living Policy) and Equal Rights, and we have heard those all-around little towns like this one. Yet, agricultural and animal production has been neglected, and we need technical support here for things such as insemination to improve animal genetics, and training to improve our products and milk quality. It would have been better if Agrocalidad (an institutional state agency) could also be present in this meeting. The most important thing is that MAGAP visits us constantly, and don't forget about us because we are the ones who produce the milk used for dairy products sold in the city.*

> *Further, the milk collection centre is not working because there are too many cheesemakers in the area, and these producers make it easy for milk suppliers because they receive milk of any quality (acid milk, or milk that has been standing for hours). The collection centre has to work with good quality milk so that we can sell cheese to other buyers in the country.*
>
> *People from the association use the same plastic containers for transporting milk and cheese. The liquid that remains after turning milk into cheese is not suitable for milk quality, people do not clean their containers, so it is not possible to work in this way with contaminated milk in the collection centre. Thus, it is important that Agrocalidad comes and visits the area and verifies what cheesemakers can operate and which should not.*
>
> *I think a lot of the cheesemakers from this area should be closed. It is not the market's fault; it is our fault and also the authority's because clandestine (unregistered) cheese-makers are not being controlled. Agrocalidad should be here, on the spot checking on the cheese quality and its distribution. That is why we cannot work with the milk collection centre because we demand good milk quality and offer a fair price. But the illegal competition is better for milk producers" (Field diary - 14/Sept/2015).*

This situation was aggravated by the fact that associations are heavily regulated by a state agency in charge of food processing plants products for human consumption, which is Agrocalidad. The latter usually demands high-quality standards, which most producers in the association cannot fulfil, and it makes them extremely annoyed due to what they perceive as unfair competition from "illegal cheesemakers". On top of this, the president of the association before Mrs Karla is one of the many clandestine cheesemakers in the area, and he was in direct competition with the association he was heading. The association tried to make cheese twice but confronted with a set of uncertainties and hostile conditions they opted to close down the association cheese venture, finishing with the expected modernization and transformation of the dairy production.

Mrs Karla says MAGAP *Ingenieros* has visited the association to collect information on their activities and on the number of issues they face, but there was nothing done to solve the identified issues. She and the members of the association agreed that this cheese production plant was an important territorial project; however, it was thought and organized with little knowledge about the existing local conditions and the materialities surrounding milk and cheese production, therefore, one of the issues was how to consider the milk and cheese operations in terms of an association that exists in a context, where

everyday utilities rather than quality are the mover of local existence, and how people operate in a territory. The issue of trade versus market started to appear as an essential topic raising awareness about local specificities in food policy sovereignty.

The members of the association had many expectations and aspirations for the project. Still, they received faulty equipment and adjustments required to invest fresh capital for a plant that would produce quality cheese. Yet, since they have no resources, the association failed to make the milk collection centre operative, and this finally compromised the local attempt to add value to their food production. The failure to control milk production supply locally implied that cheese quality production never achieved a better income for the association. These peasant farmers were neglected, assuming that modernization of local food production is guided by the desirability of the food sovereignty policy and projects.

Hence, the introduction of new technologies through commercial contractors do have implications for changing local production, but what is more apparent in this case is that local cheese production has already achieved degrees of market productivity, and competitiveness for milk, yet, this market dynamic is not easily transferable or considered within a national food policy. Modernization of local food circulation must involve a consideration of the existing relations between 'market realities' and producers' expectations and how these may participate in these national policies. The milk collection centre, and the cheese processing plant project, finally acted as a constraint over improving the value of local dairy production, this is because the choice of transformation would mean that other local producers would have to stop eventually, and risk their livelihood activities. In this vein, producers' resistance to keep the existing production of cheese finally prevailed. The outcome of this experience reduced the association members from 25 to 13, and Mrs Karla says that with all the uncertainties, the producers who left decided to cut their losses, and disengaged from the project. Currently, the association continues being inactive, and the Ingeniero in charge of the area says that, members are not willing to invest more capital and time in the milk collection centre, and that there is nothing else to be done, but to wait until the ministry finally collects the dairy equipment allocated in the association.

The case of Agrilac represents the lack of communication between the *Ingenieros* and local producers to evaluate the services locally required, the limited technical guidance supplied by the *Ingenieros,* and the resulting cheese-making market after the technological intervention (milk tank) was not working. These bad experiences linger in the memory of local milk producers, reducing their trust in the new technology delivered by the state, also related to being forced to adapt to other markets and having a reduced price, which resulted in having a higher production of bad quality milk by being not able to control the storage temperatures while not having a functioning cooling tank.

3.6.2 Servilac case

This association was visited by Liliana, one of the field technicians in charge of handling the agricultural associations' performance. Servilac has been part of the CADERS project since 2007 and received approximately $50,000 to purchase dairy equipment, which they kept functional despite their low milk production. Their low productivity was caused by the active presence of rustlers (cattle thieves) in the area, which affected farmers' decisions of whether to increase cattle heads or not. According to Liliana, many dairy farmers do not like to milk cows at all, and they are willing to accept lower returns to escape the drudgery of milk production. She mentions that there is also a seasonal component because cows tend to decrease milk production after four or five milking years, and when they get ill towards the heat period and afterward when they calf. Most importantly, environmental conditions affect the availability of grazing land. CADERS recommended producers to purchase the cooling tank and dairy equipment despite these unique and complex conditions, but once purchased, they quickly realized that the cooling tank did not work. In the appendix, Photo 2 shows the thanks that were used for cooling the milk.

Mrs Mercedes mentions:

"When CADERS promised the delivery of state funds for the purchase of the dairy equipment the producers of the area got together to form the association as required [by CADERS] to receive this technology. We trusted in the knowledge of the Ingenieros because they are professionals from the state, so we thought everything was ok. But, we are naive peasants; nobody opened our eyes regarding what was to come.

Economist Ramos was in charge of telling us where to purchase the equipment. The cooling tank came from InduAcero, where his cousin works. So, since it was money from the state they got hooked-in with the business they could make by selling cooling tanks to agricultural associations. Economist Ramos knew that his position in MAGAP would change in two years and then a new technician would come to deal with the problems left behind… After him, Economist Barros came here... imagine all of them are educated people, and me, a woman who does laundry, cooks and studied until the second year of primary school. How do I know? What should I do? How do I know what those people intend to do?

When we received the tank that did not work, I had to inform the higher authorities, I had to stand firm! Then, we were assigned to a different Ingeniero [Hurtado]. Economist Barros came to check-up on us and noticed that the cooling tank did not work at all. MAGAP [PGS ingenieros] left us aside; everything was with CADERS.

According to Mrs Mercedes and Liliana, once CADERS started working with agricultural associations the *Ingenieros* from PGS moved aside and assisted only those associations that were not considered by CADERS. The lack of coordination of these two programs strongly influenced the degree of success of CADERS. Leaving aside PGS *Ingenieros* resulted in leaving aside technical knowledge about the area, the producers, the local dairy industry, and the local dairy market. This situation shows a state's goal-oriented strategy for agricultural modernization that leaves the national rural reality unconsidered.

Mrs Mercedes continues:

I told Economist Barros that we lost milk with that tank. I called him and told him:

> *"We are in trouble Licenciado [economist], the tank does not cool down the milk, we lost 3,000lt and then we tried with 3,000lt more and we also lost them".*

That tank was only cooling down to 12.5º C, it never went under that, the tank we have now gone down to 4.5º C and works fine, but we had to fight for it.
You could see that between elders, bosses, and experts they took the money from that tank, and gave us a tank that did not work.
I had to stand firm and fight, and kept fighting until Ingeniero Hurtado from CADERS came from Quito and saw that the tank was not working. Then the economist, Licenciado Barros told me:

> *"Mrs Mercedes we are going to sue the guy from InduAcero if he does not give you back the $17,000 that you paid for this tank".*

During this time, it was a nightmare. Ufff... young man! I would not stop at home, I had to leave everything here to solve that problem. I spend money from the association coming and going to different places. Until we went [to Quito] with economist Barros, I am very thankful to him, he was great, transparent and legal. He helped me! we went to InduAcero with a lawyer from CADERS to claim our money back, otherwise, we would have had to sue and go to trial, to tell the state that they [CADERS, InduAcero] were doing things wrong and stealing money; besides we couldn't discover if they were relatives [Economist Ramos and manager of InduAcero]. These people work for the state and take the money away from us, producers. Come on! Don't destroy us like that!

CADERS and their lawyer helped us getting the money back, the manager from InduAcero said that we should go back another day to get the [$17,000] check because the other company shareholder was not there, but I told economist Barros:

> *It is very hard for me to come back here. If you do not give me the money today, I will not leave this place, I won't leave until you give me the money!*

The manager said that at 3 pm, she [shareholder] would be back. She was a relative of economist Ramos; she was married to his cousin. So, she was not there [apparently]. But I told economist [licenciado] Barros and Belgica [president of the association]:

> *I won't leave until this woman comes to sign the check! I will not come back another day!*

And it was very strange because the manager from InduAcero made a phone call and said:

> *Yes, yes! They are here! we'll wait for you, are you coming? ok!*

After a few minutes they were talking to economist Barros and they called me because the shareholder had arrived. How strange! do you think I'm stupid? We are peasants! I am old, she was younger. Do you think I'm silly? She was already there! but the money was running away from their hands! I'm sorry for my words, but those poor bastards with their diplomas! Then they told me the bank cheque was ready and gave it back to me. Then I told him [manager]: go pick up the tank whenever I'm there.

That was a big mess! Imagine a year of losses in which we were not able to store the milk because the tank didn't work and we lost 6,000lt of milk and he didn't pay us a cent for that. And he comes so easily with a tow to take the tank, without paying us any of the losses we had. There I stood! He started calling the employees he sent to pick up the tank.

I told him:

> *I'm sorry, but here the people are burning with rage with such injustice because you are taking the tank without paying any of our losses. If I had owed any monthly payment of the $17,000 I'm pretty sure that you would charge me with interest, isn't it? And you come here like nothing and take the tank without paying? no sir! you come here to pick up the tank and we will fall on you with machetes and sticks. Here I will keep the milk mesh and the milk pump. I will not give it back to you, that way I get payback for the money we lost and which you don't want to pay us. Here we are pissed that you come and sell us useless things, no sir! All I want is you to come here to our territory where the cocks fight in their plaza!*

Believe me, I was so angry I was crying recalling how much I've had to walk and fight. I fought for this thinking I would move ahead, that I would improve my situation, but this has been far worse, even though my son couldn't go to university, he couldn't study architecture which I promised to pay for. All because of this thing [agricultural association], perhaps if I had my own business instead of this, I would have been free, I could have made more money selling milk how I wanted and to whom I wanted. I was crying and crying in the bathroom of the collection centre and told him that he would not take the mesh and the pump. And he told his employees to take only the tank and leave.

To solve this situation, none of the other members came to help. This is just a short story of all I have fought for, and I continue doing so. Now the only thing we need is the land, that way I would be able to sell the dairy produce close to the road because the CADERS engineer told us that we are free to sell directly to the consumer, that the association was not made for selling to intermediaries, we can make cheese, yoghurt and other dairies to sell directly to the consumer. And I have stuck to those words. I tell them: no sir! I was not told to sell to Tony [Ecuadorian dairy corporation], or Rey Leche [dairy industry]. But once I fell into it, once we sold to Rey Leche[22], but since they have milk farms here in Ecuador, they make their own dairy. We used to sell our milk to them, but they only buy when they need milk because during winter their cows give birth and they have lots of milk and reject ours. We had to make huge lines of cars under the sun, and by the time we got there the milk was already sour. At the time we didn't have these [aluminium] tanks, we had the plastic ones, which now are forbidden. Now we only process our milk into cheese and sell it to one of the members of the association [owner of the land where the collection centre is established]. We sell all the milk to her.

3.6.2.1 Retaken Control of Milk Production by Servilac

The case of Servilac depicts a lack of assessment of the current production levels and quality of the association and corruption from state officials who took advantage of state

[22] Rey Leche is a dairy industry located in Quito. They used to be located in Santo Domingo, but just like Nestlé, they closed their operation and moved to Quito in 2008.

programs' and its lack of coordination. This example reflects a food sovereignty policy focused on agricultural technification, as the only final goal, leaving rural realities and producer expectations unconsidered. These last two factors, corruption, and the unfulfilled expectation are affecting producers' decision-making power within the agricultural association; this leads either to thrive through the process of adoption of new technology in adversity or to reject it completely.

This case shows how food sovereignty policy benefits the dairy industry and companies who sell agricultural technology more than peasant farmers' need to overcome their technical and productive constraints.

The national food policy aims for the shortening of the dairy supply chain, which allows them to demand quality standards from agricultural associations, cutting the intermediary out, and also allowing producers to collect a higher profit for their dairy produce. However, the case shows how faulty technology and time invested in trying to solve the distribution of modern milk equipment delays the overcome of milk's production and producers' expectation constraints. The wrong technology distribution eventually vanishes producers' enthusiasm to participate in the association and milk involvement to achieve food sovereignty.

Food sovereignty policy aims for the benefit of peasant farmers, yet when the latter meets the dairy industry, it is the producer who receives most of the pressure to generate changes within its production process, leaving traditional knowledge aside to open up space for modern production techniques. This lack of recognition of peasant farmers' rural reality implicitly affects the production process, resulting in disconnect from peasant farmers' livelihoods.

3.6.2.2 Land problems in Servilac

When Servilac was visited with Liliana, Mrs Mercedes explained that in addition to the problems they had with the cooling tank, they also had a problem with the property titles of the land lot where the collection centre was settled. This situation alone could have been why the association quit and disintegrate. However, using her knowledge of regional and local politics, Mrs Mercedez looked for key actors within the state bureaucratic

network to find alternatives that allow the association to persist and continue functioning. As she makes her way into solving this land problem, she aims for actors whose degree of influence is each time greater until she reaches the very top.

Mrs Mercedez told us:

"I'll be honest with you and I'll open my heart to you, we [association] have a problem with the land titles. It's been difficult and it's getting worse, so we gave up and told our colleague (the lady who owns the property and needed to sell due to economic reasons) to sell this property and that we would get all the equipment out of here, to save it, because we had no money. We all have bank debts, and she (landowner) needs $20,000 to pay debts, but we don't have money. I went to the municipality to talk to the lawyer from the Planning Department. He said that there is a solution for this, but it has to go through a two-month trial. Unfortunately, none of us had $2,000 each to buy the property, and the lawyer from the municipality wants $2,500 to start the legal process in two months with the permission of the municipality. That way we would be able to position the milk collection centre here supported by the legal land titles. The president is willing to sell the land down to the back of his property. However, all of us [members] have debts and can't access the credit from the National Development Bank (BNF), if you check our ID numbers you will notice that we are all indebted. Therefore, since I'm the one that handles this a little bit more, I told our colleague (landowner) who is going through a really hard time, that unfortunately, we won't be able to buy the land.
I stay with one foot outside the land and with the other inside with all this [equipment] here.

Our colleague gave us the 'comodato' for 5 years and then we begged her to give us 2 more years, so it's been a total of 7 years, which already passed. So, we can't... we don't have that money... and the landowner needs the money and needs to sell to pay her debts.
The landowner said that if she manages to sell, she would give us a small space to store the equipment while we get a place to establish the milk collection centre.
There are land lots around this area with legal titles, ready to be bought, but we don't have money. We only get 42cts per litre of milk. We have kids in high school and university, we don't have enough money. You can sell a cow, for $400 - $500, but you got it for $1,050.
I have told my colleagues, sometimes I feel like throwing everything away and get the hell out of here and go and be well seated at home.

We are only nine now, no more, the others left because they saw things were getting hard. Now is even harder, $50,000 per hectare (is the average price in the area), we need two (due to the national ordinance against land fractioning) which means we need $100,000, from where are we gonna get this?

It's not easy… being a peasant is not easy! I tell the members of the association: If I had a building from which I could collect rent, I would sell the farm and get out of here!

I don't have too much cattle, what do I get every fifteen days? $120 - $150, see! It's hard for us peasants!
Where is the help for us the agricultural associations?
I was telling my colleagues:
"I damn the day I got associated, there is nothing good in it!"
Until a certain point, it is good, if I had a store in the market if it doesn't produce a spout at least it leaks. But sometimes they [members] leave, why do you think all the other associates left the association?

Liliana explained the members of the association the case from another association, which was in a similar situation which led them to two options, either they extended the lease or buy the land, yet they had to consider that the new land reform dictates land lots could not be sold unless they were two hectares or more (Subsecretaría de Tierras y Reforma Agraria 2016).

Later that week Mrs Mercedez requested the director of the Provincial Agropecuary Direction (DPA) of MAGAP to meet with the association to get advice for their problem; the lawyer from the DPA and representatives from the BNF were also present. The first suggestion was to ask the land owner for a new lease contract, but they had argued they could not since they had economic debts to cover and needed to sell soon. At that moment, the DPA lawyer made clear to them that since March of 2016, a national ordinance against land fractionation was issued, the decree stipulated that it was not possible to sell a land lot smaller than two hectares. This made the situation of the association even more complicated since they would need to gather more money to purchase land elsewhere, while the land they were currently using was not more than 200m^2. The only way to avoid this ordinance as if the municipality would grant a special exception, but as mentioned above, the legal paperwork for this would cost $2,500 just to start.

By that time MAGAP headquarters created a program to revitalize agricultural associations by providing them with $70,000 to be used for industrializing the milk production, but the main requirement was to own the land where the industrialization was to happen legally. Mrs Mercedez asked the director if some of that money could be used

for buying the land lot, but she was told it was not possible. She was trying by all means to find a solution to their land problem. Her final play was a presidential visit to the neighbouring town close to her community. President Correa did national weekly reports every Saturday, these were presented in different communities, so this was her chance. There she requested him to look into their case, and he asked the BNF and MAGAP to make her case a central point in the agenda.

Currently, the association is being assisted by a special decree called "Follow-up system of sectoral commitments" (SIMODI), which comes from the presidency and forces relevant ministries and institutions to intervene and fix the problems the association is going through. The association received legal advice in relation to the land lease; this was to agree to one more year of the lease, during which time the association was trying to find ways to buy the land or look elsewhere. Anyway, the owner of the land is being allowed to make cheese using the infrastructure of the association; this negotiation somehow eases the lease situation, and buys the association more time to solve the land situation.

Despite the complications that originated from quick and goal-oriented intervention from CADERS, and the lack of sound assessment of the situation of the association; the latter has managed to thrive by using their relationship with MAGAP. Thanks to the empowering management of Mrs Mercedes MAGAP is legally advising the association on how to proceed on keeping the place where the infrastructure is settled; and since they become part of the SIMODI, MAGAP included them in a land program where they can participate to receive their land lot for the milk collection centre. This case illustrates how laws such as the Organic Law for Food Sovereignty (LORSA) and the latest reform on land regulation can result in being counterproductive when being implemented. This thesis also explains that land regulation represents an obstacle for some of the agricultural associations that might be in a similar situation as Servilac. In the end, the persistence on the part of producers like Mrs Mercedez demonstrates how agricultural associations can exert power through their actions, and how their decision-making ability can be influenced by frictions and resistances, but can also influence their political space using

institutional channels in their favour. In the appendix, photo 3 shows the process of receiving milk in small tanks.

3.6.4 Francisco de Orellana case

This association is also part of the CADERS project, it was formed in 1998, but they started working with the production of local cheese in 2008. By the time 13 members were able to invest, but there are also some passive members (who do not own enough economic resources to finance), the total members of the association are 22 small and medium producers. Nine members were added at the end of the process when the association was constituted, because CADERS required at least 20 producers in the association to receive the dairy equipment. These producers have sold their cheese in the local area, producing around 200 pounds of cheese per week, and it was never enough to meet the demand.

When this association was visited the manager, Don Fede, explained:

We've had the [dairy] industry since 2008, but we were shut down in 2015. When CADERS came there was another directive board in the association, I was just a member. When CADERS came, we already owned the land where the association is settled. They gave us $56,000 and we used the money to buy dairy equipment and build the collection centre. But CADERS never came to train us, that was a failure. They only came and made the deposit, we had to look for what equipment to buy. We got together and built the collection centre on our own. In the beginning, there was an Ingeniero [Angel Menendez] who visited us every 3 months to make a report. But then they stopped coming. Later on, there was another Ingeniero from Portoviejo, he would go with us to the industry and check on everything. Later we were told that CADERS would disappear and then the Ingenieros from the DPA started coming. The industry was closed in the middle of that process (due to the violation of sanitary regulations) and it was then when we were put through thousands of obstacles by the National Agency for Health Regulation, Control and Surveillance *(ARCSA). I made an official request to MAGAP for help.*
When CADERS gave us the funds there were 22 of us, but afterwards, we went down to 17 [all milk producers]. They should have trained us since these funds were from the state they should have prepared the members so that they knew about what they were processing and how to do it. But no, never, not even MAGAP trained us. It was like that money was just sitting there and they had to get rid of it.

Around two years ago Ingeniero Hugo Arellano came to close down the project and we had a meeting with the association, and he agreed to come back and give us the documents of the legal closure, but we never saw him again.

The association used CADERS's funds to build a cooling room, and purchase equipment to make cheese, pack yoghurt with cereal, and milk sweets. The investment in this equipment favoured the storage of dairy products and paused better the production of cheese. The production of cheese was started by the members of the association, providing much-needed jobs to these producers. However, the issue here was that the dairy processing did not follow the necessary sanitary protocols, and their operations were shut down by the (ARCSA). The ARCSA decided not to penalize this association and offered them the option to remain closed until they could solve the necessary sanitary issues and reactivate their industry.

"Don Fede" has thrived on keeping the association active, yet he argues that most producers prefer to sell to the local cheesemaker. Don Fede says that after calculating the necessary budget to follow the sanitary recommendations of ARCSA they would need at least $3,000. After several attempts to meet the members, he finally got a consensus to start the paperwork to get the BNF credit. Unfortunately, they discovered that the land titles of the milk collection centre were not legally accurate, and this was a main requirement for the credit. Later, he tried to get a credit in a private agency by setting a mortgage on the dairy equipment, but the equipment had to be insured, so this did not work either.

In that time, MAGAP *Ingenieros* were ordered to give legal closure to the associations involved in the Milk Networks Program; therefore the association decided to request a cooling tank aiming to least be able to collect and commercialize their milk with a local dairy industry. In the last visit of the Ingeniero in charge of the association, she said that because presidential elections were very close, MAGAP was using some of their last funds available to potentiate some of the best associations and that Francisco de Orellana was fully recommended by the *Ingenieros*. Yet, funds were not allocated due to governmental instability amid presidential elections.

This case illustrates the nature of sanitary legislation, and the new technology introduced to supplement their local production with increased dependence on home-based resources is problematic. Since the sanitary issues remain as a core problem, then the

association has remained inactive, and the remaining members were forced to sell their produce to the local cheesemaker. Possibilities to reactivate the machines for dairy products remain uncertain and MAGAP repeatedly warns them of their obligation to produce. Otherwise, the dairy equipment provided could be seized and relocated to another association in need of this equipment. In the appendix, Photo 4 shows the inox tables used for milk processing.

3.6.5 Cristobal Colon case

The Cristobal Colon association started in 2001, and it was visited in 2015 (for this study). The manager at the time, Don Wacho, said that back then [in 2001] the milk production situation was very hard because there was no support from the government and it made no sense to ask the minister of agriculture for help because they were replaced very often, sometimes they just lasted only a few months. He explained:

"there was no support plan, back then aid would come from the government and not from the regional state, there was no budget for agriculture. Some governments wanted to help, others not. Now there is a budget and there is a state project. He [president Correa] wants not only to develop peasant agriculture, but to have a healthy country, that is why he wants the products to be healthy for the consumer, and for that, he needs to help the producer."

In 2005, MAGAP started socializing about the coming CADERS project, which would help producers with $56,000 in funds for agricultural associations to build dairy industries. Don Wacho mentioned that he already had an idea of building a small dairy industry because the Superior Polytechnician School of Chimborazo (ESPOCH) trained him by taking him on a trip to visit small cheesemakers in Riobamba (Chimborazo Province). The association presented their project proposal for the dairy industry to CADERS, yet Don Wacho tells us there was a problem with the president of the parish government who was against opening a dairy industry in the area. He says that *Ingenieros* from CADERS came from Quito headquarters, and she [president of the parish government] told them:

"Why do you want to start a dairy industry there [AACC], they don't even have milk, why would they want a dairy industry? I would like you to change that project and make one for 'palmito' because there is lots of palmito in the area"

According to Don Wacho, these negative comments made CADERS ignore the project the association presented. He mentions:

She was on the board of the association, she was in charge of product industrialization in our association. Thus, she screwed us, when I went to a meeting with the director of the DPA he told us that our dairy industry project was approved. But, suddenly the project was cancelled because this woman said that we didn't even have milk. At the time, we didn't have the milk collection centre and we wanted to start directly with the dairy industry. We went to Quito to ask if this could be solved, but they had already given the funds to a cacao association in the area, and we were told that MAGAP could not give funds for two associations in the same parish. On the day that a cacao collection centre was inaugurated in Puerto Limon, Dr Espinoza [Director of the DPA] invited me and there I spoke with the national director of CADERS, I told him we were approved and I don't know what happened. He asked me what area I live in, I told him Valle Hermoso, then he called the Ingeniero in charge of the area and asked him what happened with our project. The Ingeniero said:

> *"I went with the agreement document to get the signatures of the association members and part of the funds so that you can already start, but the president of the parish government told me that there was no milk in the area, thus how would you make cheese? She told us that she wanted funds for palmito"*

I told him, unfortunately, she is a person that is never aligned with the needs of the small producers, she is only interested in benefiting big farmers. The director told us to present the project again, but I said no! it was very complicated to do it, and then suddenly CADERS disappeared.

Then we started to build the milk collection centre [in 2013], I told the members: "if we have no support from the government then let's do it ourselves"

The association bought its first cooling tank and started collecting milk and selling it to the local Polaca dairy industry. They also bought a truck to collect the milk in each producer farm. They went to BNF to ask for credit, but they did not give credits to associations, but individual producers only. So, they had to handle it directly with the truck dealer; some of the more significant producers pooled some money which was used for the down payment. Those who could not contribute with any cash were deducted a few more cents

out of their weekly milk payment to cover the monthly payments to the truck dealer. By 2015 they finished paying, and now the truck is theirs.

Due to their outstanding development and merits as dairy producers, MAGAP gave them another cooling tank and lab equipment to test the milk quality; furthermore in December of 2014, MAGAP selected them to receive ten milking machines. Since they were refused help by CADERS, producers started growing not only in infrastructure, but also in the quality of their milk, getting certified as farms free from foot and mouth disease and brucellosis, and receiving awards as an exemplary association. This makes them prone to receive constant help from MAGAP, and visits from the local media and the Province GAD.

This association has managed to continue producing dairy products, despite their directive committee finally end up removing Don Wacho as manager of the association. He largely contributed to the establishment of the association and the development and product improvement of dairy products. Nowadays there is a new and younger manager. They have continued selling their milk to the local Polaca dairy agro-industry, which is currently paying a premium price for their milk. Against the odds, the association has managed to maintain a steady production of approximately 1000 lts per day, plus 400 lt they get from external providers. Their milk is the best paid in the area because of the high quality.

Currently, this association is one of the primary examples of peasant-farmers success in the market. The experiences and issues faced has resulted in an association that is a target for re-potentiation programs from MAGAP to achieve food sovereignty in Santo Domingo territory. The lack of support by CADERS has positively affected the association into looking for alternative sources of help to develop their dairy industry. Even though the BNF would not provide credit for the construction of the milk collection centre, or purchasing a truck, the manager accommodated the figures of the big and small producers of the association to achieve upgrades in their infrastructure and dairy production. In appendix, photo 5 shows the cooling thanks provided by the program.

3.7 Interface: Rural associations and their relationship with the government

The Ecuadorian government turned their national policies that favoured a strategy from primarily exports towards a sovereign production orientation that involves technological development, product diversification, and differentiation in terms of products, markets and actors that allow the country to better engage the globalized-national economy.

Concerning agriculture and food production, one of the main goals of the government is to enhance the relationship between agricultural associations and the national production matrix, stimulating changes among individual producers, based on associative principles to compete in a market that is not just following national interests, but is increasingly influenced by international trends. An example of this policy orientation is the creation of the Milk Networks Program by MAGAP.

During the time spent in the Province of Santo Domingo, the Provincial Agropecuary Direction (DPA) of MAGAP was studied. Initially, the DPA was analyzed, which involved the introduction to the Sustainable Livestock Program (PGS in Spanish). The supervisor informed the field technicians and explained, they will be followed during their daily work for data collection about the undergoing study and research. On the day of the visit, the main researcher was assigned to a young girl, Maria. Maria is in charge of the Valle Hermoso Parish and was assigned to provide a tour through the different associations.

The field visit involved the visit of several agricultural associations which were supported by the Project for Agricultural Competitiveness and Rural Sustainable Development (CADERS in Spanish). The visited associations were:

- The Agricultural Association Cristobal Colon (AACC), which was supervised by Maria (local guide), and supervised the progress of the AACC and assured that producers were practising the knowledge transferred and the techniques that the MAGAP have organized and implemented.
- The Agricultural Association Francisco de Orellana was the first to receive the equipment to be installed in a milk production industrial unit, for yoghurt, cheese, and milk sweet.

- The Agricultural Association Servilac which received a cooling tank for the storage of milk;
- The Agricultural Association Agrilac received a cooling tank for milk and equipment to produce fruit jam.

By analyzing each particular case of these associations, this chapter shows that associations can turn their members in a macro or a micro-body politics[23]. The difference between being macro or micro politic directly influences the way of receiving most of the government-peasant farmer relationship. Following the notion of Callon-Latour (1981), it is possible to align those agricultural associations under one body when they are grouped under their organizational form, managing to become visible to the state and increase their voice. When they grow in number and size, they bring together all different negotiation processes, calculations, acts of persuasion, etc., resulting in a macro body. The latter takes place when the macro actors who form the macro body, have successfully translated other actors' wills into a single choice, which is mainly the translation of their voice to political level when dealing with the state. In other words, when working together in synchrony, peasant farmers became visible to the state, and their demands are considered.

The policy implementation of food sovereignty that incorporated the agricultural associations in Santo Domingo is mainly influenced by the hierarchical structure derived from MAGAP organization. The different departments from the ministry execute orders coming from MAGAP headquarters in the capital city (Quito) and bring technological programs to the various communities in the province. This top-down model of intervention ignores the intrinsic knowledge of the key subjects of food sovereignty policy: peasant farmers. Considering this situation, peasant farmers decided to join agricultural associations to be part of the policy process that aimed to increase the relevance of their body politic through networking with different state institutions that provide them with the

[23] Under the notion of "body politic" from Callon-Latour (1981), who analyzes Hobbes's paradox, it is possible to explain the dynamics that peasant farmers channel through agricultural associations in order to establish relationships with state actors. Hobbes explains how differences in level, size and scope of the micro-body politics (individuals, groups, families) and macro-body politics (institutions, organizations, social classes, parties, states) are the result of battles or negotiations; and that there are differences between these two, which is generated through power relations and the construction of networks.

tools to become worthy of MAGAP's agricultural services. Agricultural development interventions in the province were organized through MAGAP, yet parallel interventions were taken place when MAGAP headquarters were politically pressured by direct presidential orders which come through the National Bureau of Planning and Development (SENPLADES). This is the case of the CADERS project, which was executed without considering criteria and experience of the *Ingenieros* from the DPA.

When Liliana (MAGAP field technician) was asked about how was the selection process of these associations to participate in the food sovereignty projects, she told us:

"MAGAP headquarters needed to deliver these funds, thus they were given to the few associations that were sort of working. They never measured the degree of organizational strength of the associations, or even checked if they fulfilled all the requirements, like owning the land, neither they received duly follow-up or technical assessments".

A clear example of this is Agrilac, a very distant association that was given thousands of dollars in funds for equipment and infrastructure without even considering the market possibilities and conditions of the local dairy production.

Agricultural associations like Cristobal Colon constantly thrive on how to organize their producers to meet the technological requirements from MAGAP and the quality standards required by the dairy industry. Since the formation of the association, its members have had to deal with political events at a national and regional level (visits from the president, minister of agriculture, MAGAP provincial director, GAD provincial director, DPA director, etc.) these political events were decisive for the association to demonstrate their worth as an efficient organization in need of state support, thus influencing whether they are suited to be part of technology programs or not.

The decisions regarding the location of the different technological packages were done with the stomach and influenced by local political figures; in the case of the Cristobal Colon, at the time when CADERS started delivering funds to associations, they were already building a milk collection centre and acquiring their cooling tank, and this allowed them to deliver their milk to Polaca Dairy Industry. Yet, the president of the parish government at the time told CADERS technicians that Cristobal Colon should not be

targeted for dairy equipment because none of the local producers' produced milk in that area since she was interested in getting financial support for her own 'palmito' business. Hence, the technological and markets core problems of food sovereignty has introduced factors of social injustice against some local producers, and some of its radical aims were susceptible to co-option (Higgins, 2015) by local politicians and some corrupted interests operating within the implementation processes of the public policy, this contributed to generate some exclusionary actions in the implementation of the food security projects and a relative failure of the food sovereignty policy due to the disenfranchised of local producers associations within the establishment of a neoliberal food regime (Windfuhr and Jansen, 2005; Anderson, 2008).

3.8 Conclusion

The state sought to institutionalize food sovereignty through the 2008 Constitution to establish a legal status to the peasant farmer and its contribution vis-a-vis industrial, corporate-based food production. The state tried to reach the latter by creating several agricultural programs through MAGAP and the GAD. A strategy that MAGAP uses to facilitate the delivery of agricultural services and promote the formation of agricultural associations; this also helps the statekeepg a more accurate record of agricultural activities at a regional and national level. When MAGAP brings agricultural technology to peasants, it repeatedly finds issues regarding the acceptance/adaptation of these technologies in the agricultural practices of the producers, yet the same technologies have greater acceptance by bigger producers.

State interventions for agricultural services have had no thorough approach not a sensitive assessment of the dairy farming practices and local resources of the peasant farmer, it becomes evident that the technological aid provided to agricultural associations have little or no effect when it comes to bringing the peasant farmer closer to a state in which he or she can achieve a higher degree of control over the value of their produce.

Peasant farmers chose to align with laws and regulations from state institutions up until the point where they can take advantage of this relationship. This selective decision-

making process provides them with room for manoeuvre to adapt to aid that best fits their farming practices. Yet, the judgment for this selection process is very much influenced by the role of MAGAP *Ingenieros* as translators of the state's agricultural policies. This is the case with food sovereignty, as brought through technological farming programs.

On the one hand, we have that the programs with a higher degree of success [PGS, Milk Networks Programme, Veterinary Kits, Reproductive Cores, and the Pasture and Fodder Unit] are the ones who have considered the relationship of the Ingeniero with the producers and the concomitant consensus of this interface. On the other hand, there are also projects that are more independent from MAGAP, co-financed by external funding such as CADERs and thus exercise a different form of intervention that bypasses the usual producer-Ingeniero interface. The latter programs evidence a high degree of failure or in-adaptability due to the exclusion of the ideals and farming practices of the peasant farmers as well as the economic priorities of the members of the agricultural associations.

However, when it comes to the intervention, those programs that have fostered a more sensitive farming knowledge input from the peasant farmers are the ones that have a higher degree of acceptance and adaptability.

The organic law of food sovereignty is explicit in that, "peasant farmers are free to choose the products they want to produce in the way they want to produce them, following their diverse identities and cultural traditions". However, when it comes to policy implementation, technologies provided by MAGAP align with the market but not with peasant farmers. In this way, markets end up dominating production. Its impact becomes greater through the agricultural associations who struggle to absorb modern production technologies that show no significant overlap with their current traditional knowledge. Agricultural associations have provided a social fabric for peasant farmers to gather and join forces and be able to thrive economically to connect with a food market under the promise of development towards better and safer ways of production.

In practice, these associations have exposed peasant farmers to local and regional socks where the producer must adapt to improve the current processes of production regarding

important aspects such as the health regulations that demand the national law, but also aspects of local regulation previously approved and following the members of the agricultural associations as requirements for delivering the milk for its storage in a common cooling tank. These new conditions force the producer to form part of a process of transformation towards the modernization of its products at the expense of traditional knowledge, yet aiming to satisfy the demand of a national market ruled by the state. It is worth mentioning that the state's production conditions not only reduce the possibilities for the peasant farmer to produce but also go against the demand for dairy products made under traditional knowledge craved by the consumer for its artisanal flavour.

The case studies presented depict the different challenges that the agricultural associations must face to achieve their production processes. Beyond the routine legal paperwork, it is possible to see that the obstacles that come up are due to internal interests from state agents. In their scarce experience dealing with legal affairs, the representatives of the agricultural associations must confront several irregularities drawing upon the few actors that they consider reliable within the local and regional fabric of the state. Such precedents can affect not only the adoption of production technologies, but also future implementation processes of food policies.

The following chapter of this study moves from identifying some of the issues of producers with the technologies distributed by the food sovereignty policy, and the distinct nature of the local milk markets in Santo Domingo, to examine the creative livelihood arrangements local producers' construct to adopt new techniques to improve quality and thus to participate in markets. In this way, the distinct character of local milk production is seen to alter the types of technologies distributed, reflecting local inter-subjectivities and knowledge, which together with the state policy need are constituting the evidence, even when new technologies challenge local practices constraints, this does not imply the producers will lose their desire to take over the process of innovation, increasing with this indirect control of local milk-based product.

Chapter 4 - People, Cows and Milking Machines*

4.1 Introduction

This Chapter describes the peasant farmers' perceptions of milk production and analyzes the transformations and relationships that created new subjectivities around milk production technology in the study area. This technology is perceived as part of the Ecuadorian government's plans as a key to improving agriculture through technology-based interventions. The Ministry of Agriculture, Livestock, Aquaculture, and Fishing (MAGAP in Spanish) targets peasant farmers as beneficiaries of technological interventions, creating space for a knowledge encounter between competing regimes of practice.

During 2015, *Ingenieros* (agricultural technicians) designated by MAGAP were sent to rural villages across the country to introduce milking machines, artificial insemination, and other technology that was intended to improve the quantity and the quality of milk production. Small-scale producers started to diversely utilize these machines, initiating a process of localized adaptation. This study involves an ethnographic study to get a better grasp of the human-milking machine interface and shed light on agriculture policy in practice.

Following Stenner (2008), the peasant-Ingeniero encounter over agricultural transformations brings to the core discussion if there is a differentiation between subject and object as cognitive and relative terms that have guided and contributed to pre-designed technological intervention. This division that presumes the separation of people and things is an essential cognitive frame regarding change and gives meaning to the "modern world." In this frame, policy formulation and intervention are almost always the institutional property intended to work on people and things, being the body of an "underdeveloped" actor that can enable progress, or increased productivity aiming to address a situation of poverty, and the thing is a modern technology that will help the actor to reach the aims. Such activity is an irrefutable manifestation of the logic of rational

efficiency and institutional responsibility in contemporary society in places such as Ecuador.

Institutional policy interventions in favour of development and progress speak the "truth" about modernization. The purest division of object and subject had been uttered by nation-states' bureaucrats and institutional experts and by "some of the modern things" themselves, which are usually presented without the distorting filter of human experience reflective instance generated by change. During change and transformation, the above is questioned, more specifically if there is a division between objects and subjects to understand how the world works and that specific conceptualizations can change the world. Competing regimes of practice result from this epistemological polarity, which explains why state representatives and peasant farmers frame interventions in rural studies as a situation of reversal and replacement.

Thus, in the presence of a technological intervention, where animals, machines, and peasant farmers are depicting intersubjective relationships of affection is a case threatening the concepts that are predominantly supported by experts in the field of rural development. Nevertheless, acknowledging the nonhuman part as a potentially active element in social change involves an ontology that questions the separation of the object and subject. In practical terms, it demands awareness of the possibility of worldness of things, that can be an animal or a machine, and the value that these can have to constitute the peasant "reality" during technological change moments. This ontology takes the significance of people's experiences in the real world.

This study explores intersubjectivity linked to introducing a milking machine, and the affection of the cows and peasant farmers as one of the fundamental features of rural experience and institutional intervention (Whitehead, 1933/1935). Following this orientation, findings suggest that it is in the distribution and involvement of affects where we can identify the social ground that is conducive to change in existing regimes of practice. This case may unsettle views about the "nature" of agency and the importance of people, but also machines and animals.

Here, intersubjectivity refers to the emergence of affect when things are not understood as subject and object, but as entities which are merged into new corporeality. This corporeality embodies the farmer, the animal, and the machine in a process where the agency is distributed equally in these three assemblage entities. The glue of this happening is not just the farmer's cognitive knowledge but also the embodiments of her or his experience, including affect for the cow and the understanding of the potentials and limitations of the milking machine.

Nevertheless, a separation between matter and policy can dilute how actors may grapple with subject-object interfaces in practice. When treated as a mere object, an entity, that can be a cow or a milking machine, perceived by a particular policy as passive and absent of affect. Although the rural space's materiality is independent of any cognitive policy formulation, some specific material properties, such as the noise of the milking machines or the nervous disposition of a cow, must be considered to recognize “rural” intersubjectivity. The latter is defined as the property of people, in this case, peasant farmers, which are things that generate new world corporealities that constrain policy intervention in regards to rural materiality. This materiality is a reality in the rural world, and in the alliances, people and things create or depict therein, such as the material zone of transition during a policy intervention.

As emphasized in Arce *et al.* (2015), peasant-farmer exposure to modern political and social situations, such as transnational economies, cross-cultural interactions, and mass migration, have contributed to a more diverse and mixed view of what is the contemporary reality. Here, experience detaches itself from classical, collective identities of communities and the nation-state. Thus, political institutions are questioned more often by citizens, as they are not the only valid political configuration in today’s highly globalized world of things, ideas, and people. As argued by Braeckman (2008), in this context, political life is understood as increasingly lying beyond the formalized bureaucratic confines of the nation-state, instead of resting in the less formalized, sub- political spaces of people’s everyday practice in civil society.

Here, this research focuses on milk production in the context of Ecuador being the pioneer on food sovereignty policy, to observe the introduction of technology into rural associations and resulting knowledge encounters among *Ingenieros* as government agents, peasant farmers, and cows. Particular interest is on exploring the intersubjectivity that results from the gatherings when actors dismantle, (re)construct, and constitute materialities, thereby crossing through boundaries that constitute a new particularity (Deleuze and Guattari, 1988), in this case, the corporeality that emerges from the interrelationships among people (technicians and farmers), cows, and milking machines.

4.2 The arrival of food sovereignty in Ecuador

Representatives of Ecuadorian citizens inserted the food sovereignty concept into the country's 2008 National Constitution as a strategy to increase food production that can serve to feed the population while ensuring that food remained in the hands of the producers to fight hunger. The concept is understood as the right of people to healthy and culturally appropriate food produced through ecologically sound and sustainable methods as well as the right of people to define their food and agriculture systems. Ecuador's 2010 Organic Law for Food Sovereignty (LORSA) sustains the "promotion of sufficient production and adequate conservation, exchange, transformation, commercialization and consumption of healthy, nutritious food, preferably grown by small, micro and medium-sized peasant producers."

For this, the constitution also includes the financial commitment to investments in scientific and technological research in agro-food processes. Besides, it ensures investments in "extension" programs, aimed at "transferring" technology between centres of knowledge and farming practices through means of dialogue and exchange between *Ingenieros* and small and medium-sized production units. Finally, the state commits to safeguarding the ability of farmers in rural communities and indigenous nationalities to preserve and promote sustainable water, soil, and biodiversity management, thereby guaranteeing the necessary conditions for maintaining, protecting, and developing

collective traditional know-how, scientific knowledge, technology, and genetic resources for assuring stable food production[24].

Nevertheless, smallholder peasant families struggle to use government programs in their favour to connect to a market that pays a fair price for products, thus helping to improve not only agricultural production but family wellbeing as well. Furthermore, the government established tighter policy reforms regarding short-term labour contracts, leading to an increase in daily wages, mandatory pay raises, health care, and retirement provisions. This important welfare orientation had a substantial increase in labour costs, which practically doubled from one day to the next. While such policies have benefited marginalized labourers greatly, the law ignored that people in rural areas of Santo Domingo only have part-time contracts, so that they can go back home and work on their cultivars. Besides, the law demands increased pay during weekends and holidays, making the hiring of labour impractical for many farm owners.

The government has sought to establish new political spaces for the sake of greater social participation and civil control over society. The Plurinational and Intercultural Conference of Food Sovereignty (COPISA), which works for the National Assembly and is composed of eight representatives from the civil society, was created to generate civil society participation and debate processes on the formulation and implementation of policy, plans, programs, and projects related to food sovereignty (COPISA, 2014). Nevertheless, the policy proposals generated until now are kept on hold by the government, which brings to fore that the new “spaces” may be autonomous from one group of actors while being partly or controlled by others (Brock, McGee, and Gaventa, 2004). This situation places food sovereignty at risk of being manipulated by actors in the state with a mask of civil society participation (Arce, Sherwood, and Paredes, 2015) while perpetuating institutional nationalism's long-standing modality as a style to achieve political development.

[24] Ecuador’s Law of Food Sovereignty (LORSA), National Assembly, Official Registry No. 349, 27 October 2010.

4.3 The experience with peasant farmers as a central agent in food sovereignty

During one year when I was in Santo Domingo de Los Colorados, I lived with a peasant farmer and his wife (Don Wacho and Mrs Dona). Don Wacho was born in Cariamanga, Loja (650 km from Santo Domingo). His father worked for a large- scale cattle farm, where his family lived. When Don Wacho was six years old, he moved to the city of Machala (200 km from Loja). In 1967, he married Dona, and the couple remained in Machala for 23 years, where Wacho worked as a refrigeration technician.

During that period, Don Wacho held several leadership positions in his community. He was the neighborhood's main leader guiding many initiatives to organize people and request basic services to the municipality. During that time, he always saw significant strength in community organizations, and he believed in the power of associations to achieve fairness and justice for all the members of a given group. However, when his father-in-law fell ill, Don Wacho moved to Cristóbal Colón, Santo Domingo to help take care of his farm. After several years, his wife came to join him on the farm, and following the death of his father-in-law, the couple inherited the farm and found themselves working the land for a living.

At present Don, Wacho is the manager of the Agricultural Association of Cristóbal Colón, to which he belongs since arriving in the precinct in the late 1990s. As he once said, “For me, this association is a hobby. As I told you before, I come from a community area where money does not show who I am…, where I have to look for people so that we can all benefit from and not harmed by government policies” (Fieldnote 27 April 2015). From childhood, Don Wacho has been moving between urban and rural areas and vice-versa. These experiences led to a “mutation” of the peasant that was exposed to constant changes that often comprise rapid and unpredictable re-assemblages of the recursive properties of entities – a situation that redraws existing boundaries and promotes the emergence of new social forms (Arce and Long, 2000).

Don Wacho and the 43 members of the AACC have acquired not only their property, but through their advocacy, they managed to capture the attention of the *Ingenieros* at MAGAP, which offered them support through state-sponsored training, marketing of their

products, financing, and equipment for the development of infrastructure, such as the creation of a milk collection centre. As individuals, peasant farmers have access to certain state support programs, but when this fails to satisfy their needs or interests, they mobilize their farmer association to strengthen their voice and make claims and demands. This transition from isolated farmers to an association means that the borders of the state can be effectively challenged and renegotiated. In this way, peasant farmers manage critical interfaces between a variety of local situations and social and political realities in which they live and operate.

This activity can become disrupted when MAGAP targets an association with a technological innovation program and a team of *Ingenieros* arrives in the community, causing peasant farmers to mobilize in the hope of managing the situation in favour of their interests. The farmer or the association may not show its concern or disinterest in the particular proposals, for example, in the promotion of a certain suite of technologies. Instead, they will seek explanations and explore the pros and cons. A manifestation of this can be observed when the MAGAP brings technological programs to agricultural associations and the peasant farmer hesitates to put this technology in use, however, without explicitly refusing or accepting the technology in question. This process takes place in interventions stimulating local institutions for development, such as a community bank, the repairing of infrastructure, a vaccination campaign, or an organization's constitution.

In this case, the peasant farmer is directly involved in negotiations while the state is implementing its policy. Hence, in terms of the actualization of a local livelihood, at the moment of implementation, there is no clear boundary that separates the competing agents from operating on behalf of state institutions (Beck, 2006). It is in these situations where the peasant farmer must find a way to redefine her interests and work to re-establish social and political interrelations.

The main cause of this trespassing of state boundaries is the social dynamics of civil society and its individualization processes[25] (Beck, 1993; Braeckman, 2008). I go on to present an example of a conflict between MAGAP's *Ingenieros* and peasant farmers.

4.4 A knowledge encounter perceived by the researcher

In the case of the producers, whether using the milking machines or following MAGAP insemination protocols[26], acceptance of change depends upon its resonance within established ways of doing as well as the local actors' ability to manage competing influences and negotiate (Arce, 1993). In a visit I made with Carlos, a livestock technician from MAGAP, to see if producers were properly using MAGAP's milking machines, I asked him what should be done when a cow became aggressive while the machine was working. He responded that the farmer should change the cow for a different one. This was a curious point of disagreement with producers of the association since the technician insisted on a certain cross-breeding. Still, the producers disagreed with the breeds offered by the technicians. The technicians tried to improve local animals' breeding by teaching producers to use artificial insemination with MAGAP-selected breeds. One justification for artificial insemination was the avoidance of the need to keep a bull, –as bulls commonly cost US$ 1,500 or more. Nevertheless, when I visited several farms, essentially everyone had one bull, if not two. When I asked why, they responded that one has to repeatedly see if the cows are on heat, to inseminate them at the right moment. In their experience, artificial insemination did not work, and the cow coming on *heat* was important. This was clear for them, it was better to have a bull, and let it impregnate the cow at the right moment, as it was certain that the cow would remain pregnant and in continual production.

[25] The scope of individual and societal action exceeds the boundaries of the nation-state that results from the welfare state and the subsequent individualization processes. This is seen as a basic experience of globalization (Braeckman, 2008).
[26] In 2011 MAGAP started a national cattle improvement program through which the DPA of Santo Domingo received cooling tanks, semen injective equipment, and "improved" genetic material for cattle impregnation.

In a following visit to the AACC, Carlos said that MAGAP would not be receiving more heat-inducing hormonal implants for cows, so they had to work with a cow's natural heat. This involved training someone in the community who could potentially inseminate producers' association livestock. When I asked about the reasons for not using the hormonal implants, he explained:

> *People do not want to change. They are unwilling to change and that has to be fought with. Besides, we have been working with other producers using the syncing procedure [implant heat inducers to make herd heat uniform], and the procedure was not so effective, because the rate of pregnancy with the implant is very low. A best-case scenario is around 55 per cent, so people do not want to hear anything about it. Maybe it was not very well explained to them, and their expectations were higher. Also, some producers express that after the cows were synced and inseminated by MAGAP, they did not get pregnant and have not gone into heat again. All sorts of things have been seen and heard, and those things may be possible. Besides, when this is done as a private service [with business farmers], you prepare the animals – get them to be well fed and in good body condition. But here [with the agricultural association], it is not always possible to do it with all of those details. And the success of syncing rests on those details. (Fieldnote 23 April 2015)*

Such experiences give space to the creation of a body of knowledge, which is presented as part of a homogeneous body of "best practice." In Cristóbal Colón, this clash of agenda and worldview inevitably generates conflict between *Ingenieros* and local farmers. As food sovereignty policies are directed almost exclusively at peasant farmers, field technicians of the ministry, as agents of the state, operate at the cost of local knowledge[27]. In this situation, the concerns of the technician largely reside in the efficiency of their intervention, but also with the task of popularizing science and technology as well as modernization (Arce, 1993). The common determination of such assessment is the "lazy" or "laggard" farmer, which is defined as the last group of people who try the innovation.

[27] This local knowledge originates from experiential knowledge, rather than traditional knowledge. Brock, McGee, and Gaventa (2004) refer to the lived experience of poverty as being very disconnected from the poverty policy process, thereby holding experiential knowledge as less legitimate for the policy process.

4.5 Milking machines: the emergence of a new intersubjectivity

During my first visits, I was accompanied by María, a field technician from the MAGAP. By the time I started my fieldwork, the AACC had received ten milking machines. According to María, the machines were stored for two years before being given to the farmers, and as a result, some machines had mechanical problems due to a lack of use. A technician from the Technological Innovation Department told me that these machines had been part of a credit program from the National Development Bank (BNF). This program supplied machines that never reached farmers. María said each machine cost US$ 4,500 each, but since the machines were part of a program that already bought them, producers who wanted a machine under the new project only had to pay US$ 600 each. The funds were used to repair the devices and make them functional again. Therefore, Don Wacho spoke to the 16 milk producers of the association about the availability of the milking machines. Ten were interested, but only six could pay immediately, so Don Wacho proposed that the remaining four take small portions of their milk payment to cover the cost of obtaining their machines. This suggestion was accepted, and they proceeded to request the equipment.

The pre-established idea that had field technicians about peasant farmers, assuming that they are subjects who would automatically adopt any program brought by MAGAP is a view that bypasses the fact that peasant farmers must assimilate any technological innovation according to their materiality and experiences. The case of the milking machines, and their aim to improve milk production, brings along new bovine spatial-temporalities[28]. This is a new intersubjectivity which is co-produced by the encounter between policy, technologies, and the material characteristics of the existing milking practice. This encounter enables animals to express their already existent yet taken-for-granted intersubjectivity (Bear and Holloway, 2015) within the process of innovation.

During the 12 months of my observations, I visited the producers that belonged to the association, and I noticed that even when they had already received the milking

[28] The introduction of new technologies of automatization act to remove the presence of humans in the farm. This leads to new spatio-temporalities of life in agriculture (Bear and Holloway, 2015).

machines, only two or three used them. The rest did not use it, and were able to list a series of excuses such as; they first needed to set up a specific place to start using them; others said that the loud sound of the machines scared their cows and made them aggressive. During that year the MAGAP *Ingenieros* visited the study area, to make sure the machines were being used. Otherwise, they would confiscate the machines and give them to other producers. Unofficially, I was told that the intended beneficiaries were commonly large-scale producers who had friends in the DPA, even though in some cases they already had machines.

While not many of the farmers made use of the milking machines, those who did argue that it was a daily struggle to get their cows to adapt to the regular milking routine with the devices, because of the loud noise. One morning during one of my early visits to one of the producers, I started walking towards the cattle pen and I could hear the loud sound of the machine as well as endless bellowing from the cows. Don José was tying up his cows to the chute[29] in preparation for milking when he said:

> The cows are stubborn today. They don't want to give milk. They are retaining the milk when we use the machine; we have to repeat the milking session because they are retaining it. We had to milk one twice with the calf[30] to get all of the milk out (See Figure 8). They don't like the sound of the machine; it makes them nervous. We are still seeing how this works [chute structure] if it does not work well. I'd better use a fixed stall [mechanism that locks the cow's head in a trough, while this is milked] so that they go in with their heads. *(Fieldnote January 7, 2015)*

It was clear that this adaptation process involved the cows as well, which initially refused to be milked by the machines, while the ones who were connected reduced their milk production and had to be milked by hand after being milked by machine to extract all of the milk. Otherwise, the cows would retain milk and develop mastitis. This change from a manual to a mechanical milking process represented a new intersubjectivity between the

[29] The chute is a wooden or metal structure simulating a corridor in order to direct cattle from one pen to another, in this case it was used to tight the animals to it and keep them from moving during the milking process.

[30] Tying the calf next to the cow can stimulate the animal to express its milk.

animal and the producer as well as the entire emerging corporeality of man, machine, and cow.

In terms of innovation, MAGAP aspires to "diffuse" and "transfer" technology to producers to have the farmer and the animal immediately adapt to the technology. The result could be a quick increase in milk production. Nevertheless, the reality of absorbing this technological modernity involves a reorganization of the relations embedded in peasant farming practices that go beyond just an increase in productivity. Drawing on Arce and Long (2000), it can be argued that producers do not experience the arrival of technology as the disintegration of their old worlds. Instead, they undergo reality as a living ensemble of imagined and felt experiences that may contrast, harmonize, and interrelate different materialities and agencies, embracing aspects of modernity and tradition. In the same vein, Bear and Holloway (2015), following Law and Mol (2008), go beyond the technological object itself, showing how a cow can be seen as a subject of a series of overlapping "enactments" where the animal is not only a physical body, but also subject to infrastructure design, a factor of economics, a member of a wider group of cattle, and a living being with which a farmer may develop a close relationship. When a producer said, "The cows are stubborn today," this depicts how the cow performs new corporeality, involving a particular technology and its demands. This implies that cows are not only productive animals, but also individuals performing and expressing subjectivity concerning one another, the producers, and technology (Bear and Holloway, 2015).

María mentioned that in July 2011 an agreement between the Cattle Farmers Association of Santo Domingo (ASOGAN), MAGAP and the Municipality of Santo Domingo led to the Project for Technology Transfer for Development (TRATE 2011–2013), in which the municipality and ASOGAN bought seven cooling tanks to carry the insemination straws, and MAGAP committed to creating a linkage among producers' associations from seven parishes. In each association, they trained one of the members to inseminate the livestock, while MAGAP would conduct regular gynaecological check-ups on cows as well as hormone preparations (sync), and the person in charge from the association would

identify the natural heat period and decide when to inseminate. Unfortunately, according to María, the program did not work because "Some associations don't like to progress."

While a MAGAP technician sees the process of technology adaptation slowed by a peasant farmers' unwillingness to cooperate with technology adoption, it can be thought that although it was within the federal politically desirable targets, the policy was no longer achievable due to the instruments used by the nation-state. This bottleneck of policy implementation leads to a control dilemma in which the state mechanisms lose their effectiveness. At the same time, peasant farmers' expectations of the state remain high (Beck and Lau, 2004).

4.6 Conclusion

Peasant farmers can use and develop material and social resources in many ways that reconstitute or transform localized situations, cultural boundaries, and knowledge (Arce and Long, 2000). This process occurs in a latent fashion and is in constant political tension with the nation-state, comprising the development of political loyalties along with diverse forms of life. The appearance of non-state political actors and growing protest movements against neoliberal globalism provides support to a different local structure of a counter tendency to globalization (Beck, 2006), and we would add to state policy food sovereignty program.

In practice, Ecuador's official agronomic approach to rural development – food sovereignty – attempts to displace the knowledge and social organization of rural families. Ecuadorian policy is organized around notions of centralized administration, where the goals and means of transformation are conceived as the product of universal plans, thereby positioning the peasantry as an object vis-à-vis an authoritarian state. This act displaces rural experience while undermining relationships and certain modes of existence and generating conflict.

Therefore, peasant farmers are re-adjusting concepts and categories that belong to the making of a modern nation-state or even reject them radically (Beck and Grande, 2004). The nation-state not only assumes the presence of political society, but it also needs basic congruity between the scope of its competence to regulate social action and the range of social action itself. Both individualization processes and unpredictable socio-economic

developments that arise within civil society and its organizations eventually break the nation-state's container (Beck, 1993; 1997), collapsing the presumed coherence between state-based regulation and the scope of both individual and societal action. This is a threat to the existence of political society since it erodes the basic conditions for solidarity within society. Therefore, if the people of Ecuador want to ensure democratic self-determination and individual rights and liberties amidst rural development, they have to seek new social and political institutions adapted to this opening of the reality of alliances between people and things. The technocratic incongruity between the state's production aims and the materiality of rural livelihoods generates doubt over the possibility of state-led food sovereignty.

The incongruity between state policies and peasant farmers and farming challenges government regulations and technological packages, forcing rural producers to be selective when adopting new technology. These assemblages lead to the emergence of a new intersubjectivity between producer, farm animals, and particular technology. These are new ways of active objectification (Bear and Holloway, 2015; Haraway, 1991) of "rural things" that follow the experience of the farmer and that open a window to thinking about technology and animal participation in policy, in this case for food sovereignty.

In this chapter, we presented the producer, the milking machine, and the cows not as objects or as subjects but as a multiplicity of affect that generates new corporeality comprising each of the three. This new composition and how it operates is what the state cannot capture or understand when it objectivizes the peasant farmer and the process of production to a set of modernization standards and procedures. The state's elements of objectivization do not match this new emergent corporeality. Paradoxically, this increase in objectivity no longer produces an increase in consensus. Instead, it leads to further encounters of dissent (Beck, Bonss, and Lau, 2003).

Hence, policies that aim to support peasant farming seldom align with the materialities of current practices. While the principles of food sovereignty hold the peasant farmer as the main actor, the technocratic way in which the state applies food sovereignty remains

disconnected from the peasant mode of farming (Van der Ploeg, 2009) and its rural materialities. The state's absence of reflexivity when assessing peasant-farmer practices makes food sovereignty policy detached from the matter of rural life, and as such unachievable. The intersubjective experiences that the peasant farmer goes through in confronting technology from the ministry depicts the need for a more sensitive and sensible assessment of the multiplicity of rural life, which lies beyond modernization, progress, and business-oriented agriculture.

In the following chapter, the study goes from the affect that derives from intersubjective relations that result from the introduction of milking machines to the in-depth examination of dairy corporealities, which comprise the lived experiences of peasant farmers and how they influence the degree of adoption of state technologies and further adaptation of state technologies. The introduction of these technologies represents a new heterogeneous component within the assemblage of production. Such introduction derives from the interface of distinct bodies of knowledge that bring the state and peasant farmers to differ in dairy production and processing for human consumption. As a result, the state's attempts to develop stronger ties with agricultural associations to reach a uniform level of modernity is hampered by the rooted local practices of peasant farmers.

CHAPTER 5

5

Chapter 5 - State intervention and dairy corporealities within the food sovereignty policy

5.1 Introduction

Food sovereignty policy in Ecuador involved the adaptation of regulations that guided agricultural production and its related products directed for human consumption. The latter laws were based on international standards of food safety for human consumption. In the case of dairy produce, national regulations include the requirement of pasteurization which is a process that guarantees the absence of microbiological agents. Due to the complexity of implementing food safety standards, which required to invest a large amount of time and money, it seemed that only corporate and big dairy industry was able to meet the imposed sanitary regulations mainly because of the already existing human and economic resources, and also because they were able to invest in the necessary technology that was required for pasteurization. On the other hand, peasant farmers and local cheesemakers remain unable to meet sanitary requirements because they lack all resources.

What happened in Santo Domingo in terms of milk production presents an exciting study scenario, where food production was focused on pasteurized products and food safety, but consumers were interested in consuming fresh cheese that has been prepared under a traditional process that does not involve pasteurization. This issue becomes the determining factor where producers of fresh cheese have to decide whether to meet national sanitary regulations or satisfy consumers' preferences for traditional fresh cheese at the margins of sanitary regulations of what is considered a safe food.

This chapter focuses on the case of artisanal fresh cheese in Santo Domingo, specifically fresh cheese that does not use the state's pasteurization process within its preparation process.

While MAGAP is responsible for the regulation and technical assistance of agricultural production within associations in all the territory for the integration of products to the market, other state agencies regulate the sanitary conditions that surround the industrial processes of dairy products. These are Agrocalidad, which governs food production

processes as a raw material, and the National Agency of Sanitary Regulation, Control and Surveillance (ARCSA), which issues the sanitary registrations that validate the safety consumption of a given value-added food product. Meaning that from milk to cheese, there are three institutions involved. Through these agencies, the state controls which products are safe for human consumption. However, these regulations are more aligned with production processes at an industrial level and make no consideration for artisan dairy practices which derive from producers' inherited traditional knowledge.

In this vein, the food sovereignty policy which was developed into a new constitution in 2008 and driven by a socialist government remains with low applicability in rural areas. The state's version of food sovereignty was in practice focused on production expecting to prioritize rural farmers as the main performers and beneficiaries of this food policy, but in reality, it did not reflect the use of local knowledge and respect of cultures as the original concept. In reality, agricultural programs that derived from food sovereignty policy resulted in the expansion of agribusiness and conventional agricultural production technologies (Clark 2013, Giunta 2013, Giunta 2014, Clark 2016, Clark 2017). This happened at the level of milk production, but also further on the processes that transform milk into dairy products.

This chapter uses the concept of an interface from Long (1989) which is based on the theoretical work on rural development in Western Mexico. The latter focuses on shifting the attention from policy interventions to policy implementers and their interactions with peasant-farmers' reorganization of their existing social formations and modes of producing food. Under this concept, it is possible to examine how food sovereignty policy is implemented by state entities in the rural areas and how state interventions meet the rural reality of peasant farmers and their farm dairy practices. The encounter between state *Ingenieros* and peasant farmers depicts the limitations of state models of policy intervention and shows how different are the concepts and techniques used by the state when interacting with peasant farmers in the usual rural environment. These encounters produce assemblages and interfaces, where actors give place to the creation of new corporealities in the Ecuadorian rural social-space that allow us to have a perspective of

food sovereignty policies looking at these 'phenomenological manifestations' from the standpoint of the state.

In this case, such corporealities occur within a unique territory, Santo Domingo, where traditional dairy practices, peasant farmers, and agricultural associations are the main elements framing this study. The studied region has a long history of dairy products using traditional and inherited production practices. For centuries, the peasant's ancestral milk production practices have been kept in existence within producers' assemblages, which are formed by diverse material elements and producers making alliances with the same purpose. These elements are not an object of food sovereignty policy, because this lingers from non-modern or traditional representations of dairy production, and thus the no-things or things which are not within the principles of policy it is real but not present, which shows that policymakers are not aware of it (Arce, Sherwood, Paredes, 2017; Arce and Long, 2000).

In the case of milk production in Santo Domingo, it is inferred that producers' oriented assemblage has been sustained and selectively transformed according to modern technologies and practices that surround dairy production under food sovereignty policies. By analyzing assemblages and interfaces generated by the *Ingenieros* (implementers from the government) and the peasant-farmers (the receivers) interactions, one can identify the origin of new corporealities, and these acting bodily forms go beyond the technocratic vision of adopting technologies, yet these forms are in part generated by state interventions (Sherwood, Fisher, Arce, 2017). Assuming that the state did not observe dairy production as the result of the life experiences of peasant farmers, but as things or matter that can be shaped, modified, and commodified for human-centred purposes (Andrée, Ayres et al. 2014) (Catts and Zurr, 2013). These corporealities appeared to the eyes of the state institutions only when the interventions were conducted, which is the case of ARSCA that is in charge of regulating sanitary food consumption and approached producers that supplied raw material to the dairy industry and imposed strict regulations for the preparation and transformation of dairy products. The institutional agency created a set of norms that aimed for food safety of dairy products having in mind the preferences and safety of the final element in the food production chain

which is the consumer, but never had in mind the preferences of the producer. However, the institutional regulations assume that consumer preferences are all the same in the territory and forget that some other consumers prefer some traditional taste or aroma which is not necessarily present in the final product. The fresh cheese prepared with milk that has been pasteurized does not have the taste and aroma that has the fresh cheese made with unpasteurized milk, but the latter may not be safe if some other sanitary precautions are absent. Both, traditional or high-tech production counts with sanitary elements but are not necessarily the same. This is the case of fresh cheese produced in Santo Domingo, which has been a problem when assemblages and interfaces of two distinct bodies of knowledge (state vis-a-vis peasant farmers) differ in production processes of a final product that has a local sensorial characteristic, but it is regulated by sanitary norms since it is destined for human consumption.

The concept of corporealities, in this case, allows the introduction of non-human subjects in processes of rural development. Considering all the human and non-human actors involved in production processes like milking and producing dairy products (peasant farmers, cows, cheesemakers, state *Ingenieros*), it allows an understanding of agricultural activities, as an assemblage of heterogeneous components, which are contingent upon the reaction of each other (Arce, Sherwood et al. 2017) and usually escape the normative regulation of sanitary agencies.

Milk production in Ecuador was expected to shift to high tech production by receiving the novel intervention of the state that included pasteurization, under the premise of producing safe foods (El Telégrafo, 2016). However, policy formulation has ignored the pre-existent traditional production, which involved not only the peasant-farmers and their local knowledge but also some practices imposed by the dairy industry. In the way towards food safety, the national regulations enforce several norms through policy implementation, which resulted in peasant farmers distancing and developing self-adapted technologies. This latter originated from inherited agricultural practices and respond to the cow-farmer interactions, the management of milk production, and other dairy by-products. Local traditions are then somehow improved by inserting some

elements of the technological process using their knowledge and means, or with the help of others, into a certain number of operations on their own practices, and the product becomes the vehicle of producers' bodies and souls. Their thoughts, conducts, and way of being (Foucault, 1988). Meaning that despite the technological approach of the state to contribute to food sovereignty, mainly through the distribution of modernities, intended to be used under a fixed protocol for production improvement, the producer chooses to adopt these technologies, as long as they can adapt them using their knowledge (Leeuwis and Ban, 2004; Van der Ploeg, 2009). The latter usually involves traditional and inherited agricultural practices that have been in practice by many generations, which combined with modernities generates post-traditional realities of production (Arce and Long, 2000).

Santo Domingo, the province where this study was conducted, holds a long tradition of cattle raising for both beef and milk production (El Comercio, 2010). Most of the peasant farmers who own cattle in the province are dedicated to milk production since this generates a frequent income (payments) for their produce, compared to beef production, which takes months for cattle to be fully grown and ready for its commercialization (Chiriboga, Chehab, 2011).

5.2 National regulation of milk production

Despite Ecuador being the first country to have the most advanced legal and policy framework for food sovereignty in Latin America, the reality is that the neo-developmental performance remains incompatible with the principles of food sovereignty (Clark, 2017). The agricultural programs from MAGAP are directed by the Organic Law of Food Sovereignty of 2009, although the related articles are more specifically related to the industrialized food system than to any ideas of food sovereignty (Martinez, 2015).

In Ecuador, the implementation of food sovereignty is officially in place through agricultural programs planned and generated by MAGAP with headquarters in the capital city, Quito, and subsequently deployed by the regional agency and provincial offices. However, most of the agricultural programs are approved by the National Bureau of

Planning and Development (SENPLADES). The latter is continuously pressured by the president to support programs swiftly, focusing on the realization of the political discourses used during the campaign. As a result, the programs and interventions are not thoroughly examined and assessed regarding the impact they will have after implementation, but they are designed only based on political discourse. Once these programs are implemented, the extension agents known as *Ingenieros* from MAGAP have to deal with the misalignment of such programs vis-a-vis the traditional knowledge and agricultural practices of the peasant farmers. Since agricultural development programs from the state mainly focus on technological modernization of agriculture, they require expensive conditioning of the peasant farms and further investment for the maintenance of these technologies. Furthermore, those producers who adopt these technologies, invest limited resources in conditioning their farms for these technologies to work correctly, thus having poor results. This situation causes peasant farmers to reject these technologies, which gives the advantage to corporate farmers who have the resources to invest and apply these technologies adequately. The lack of local resources is accompanied by the lack of support from the National Development Bank (BNF) who do not give credit to peasant farmers due to lack of resources such as property rights to support a mortgage, thus once more, the ones who take advantage of this situation are corporate farmers. As a result, the state is promoting the commercial growth of those producers who are already large farmers, which ultimately escalates the export market by financing agricultural corporations which are not in line with the reality of peasant farming.

Structurally the MAGAP headquarters are located in the capital city (Quito). Santo Domingo is part of Region 4, its regional agency is located in Manabi Province, from there it stretches a provincial office or Province Agricultural Direction (DPA) in Santo Domingo. The latter is divided into two main branches, the first one is formed by the planning, communication, management and legal departments. The second branch is the one that deals directly with producers and it comprises the departments of innovation, agricultural units, and land tenure. The Agropecuary Department is in charge of cattle farming.

MAGAP handles cattle through the Bureau of Sustainable Cattle Raising (Subsecretaria de Ganaderia Sostenible in Spanish), from this derive the Milk Networks Program, the Veterinary Kits, Reproductive Cores, and the Pasture and Fodder Unit. These are handled at the level of the provincial offices. In this chapter, the research has focused on the Milk Networks Program as one of the most critical programs in the province due to the great number of peasant farmers and agricultural associations who are involved in this agricultural activity.

5.3 State regulation vs peasant farmers' agricultural practices

The study draws on the case of the agricultural association named *Cristobal Colon* and how its members engaged in a dairy technological program delivered by MAGAP. The latter provided to the association with ten milking machines that were supplied under the Milk Networks Program (MAGAP, 2015).

The analyzed case study provides an examination of the interactions between the *Ingenieros* from MAGAP (supplier) and peasant farmers that belonged to agricultural associations (receivers) as two bodies of knowledge deriving from the government expert knowledge and peasant farmers' local knowledge, respectively. Their interaction is analyzed within the framework of public policy and the resulting creation of new ways of agricultural production. The main researcher uses assemblage theory to map the social and material constituency forms around milk production by agricultural associations in the province of Santo Domingo, Ecuador. Assemblage theory allows us to document the emergence, multiplicity, indeterminacy, and connection into a wide socio-spatial redefinition and further provisional formation made of diverse elements. In this case, these elements are heterogeneous and might be human and non-human (Anderson et. al. 2011; Anderson, Kearnes et al., 2012).

Agricultural technological interventions are inserted together with sanitary regulations brought by the state. These regulations usually generate adaptations to the production process, opposite to the systematization that the norm requires, and this results in different production processes present in each agricultural association as well as the local

cheesemakers. Following the notion of assemblage by Anderson (2011), it can be observed that each component considered within food sovereignty tends to assemble and disassemble depending on the evolution or involution of interactions or relationships, which could stabilize and endure or they might change or disrupt. This means that while the Ecuadorian state fosters a stronger relation with peasant farmer associations (as a strategy towards uniform development) they struggle to reach the modernity level aimed by the state, because of the rooted local practices of peasant farmers (Scott, 1998). MAGAP as the state entity of agricultural development encounters a path of heterogeneous modes and scales of production influenced by unique life situations of each producer, whereas the traditional practices linger in the real production processes (Miele and Murdoch, 2002).

Furthermore, when the milk reaches the local dairy industries either formally or informally, its derived products become the subject of consumer preferences, which bounce within what is legally and sanitarily allowed by ARCSA and traditional practices (which do not always control food safety) to make cheese and other dairy products. Both processes are supposed to be regulated by the state institutions Agrocalidad and ARCSA, but the informal methods are not fully controlled.

Milk production has become part of a material practice through which the state exercises rural development in the province of Santo Domingo as dictated by the policy of food sovereignty. The state pretends to dictate the norms and sanitary regulations for the production of dairy, which are controlled by the ARCSA. However, dairy performs a wide embodiment of actors and social and productive practices that come along with the production of milk. Here we find that while the law dictates regulations to protect consumers from potentially dangerous dairy consumption, the consumers prefer to consume unpasteurized dairy products because of their traditional value and taste (da Cruz and Menasche, 2014). This situation has created doubts regarding the state's capacity to control the market (Akram-Lodhi and Kay, 2012), within its regulations and the ability of the state to deal with the multiple relationships and materialities associated with agriculture and food [dairy] (Arce, Sherwood et al. 2017).

The analysis of agricultural associations provides an opportunity to see how producers thrive within the framework of food sovereignty as public policy. The latter shows how power is distributed as a plurality in transformation among the different social and material components of the food sovereignty such as peasant farmers, milk production, dairy industries, and state institutions.

Following Arce and Long (2000), this study finds that the arrival of modernity, which is defined in this case as technology provided by the state, indirectly implies the disintegration of peasants' traditional world, culture, and practices, establishing a new code of communication and rationality which is not the real experience. Instead, farmers perceive that 'reality' is composed of living experiences and the generated feeling (Arce, 1990). The latter might also generate social forms conceptualized as processes of development, which identifies the state as the unique legitimate body to perform tasks such as the maintenance of law and order, economic planning, and delivery of public services (Galjart, 1981; Arce, 2003). This policy's performance keeps civil society from interacting with techno-administrative decision-making, thus rejecting and bypassing the role that people play in agriculture and food policy (Arce et. al., 2017).

In the case of agricultural associations dedicated to milk production in Santo Domingo there is an important production factor ignored by the *Ingenieros*, which is that peasant farmers use their traditional knowledge above all to produce milk, but when receiving an intervention, they test it in parallel showing no trust to new technologies. Traditional knowledge is attached to an affective relationship generated from their rural livelihoods which involve feelings and experiences with their herds (Bear, 2015). It is well known that for dairy farming the age of the herd is important because it influences production levels (Harding, 1995). Therefore, in the eyes of the *Ingenieros* some of the cows kept by the peasant farmers are useless production-wise, but for the producer, these animals, docile or not, productive or not, are part of the peasant-farmer family. Thus, it becomes evident how to affect moves bodies of dairy products to become, and this involves human and non-human entities, generating new corporealities (Olsen, 2007; Bennett, 2010).

At first glance, the cow has been distanced from society as a mere subject of production which services are in the form of goods selectively in the form of dairy products and specifications dictated by consumer preferences. Yet, the role of animals (as actors who actively participate and show its subjectivity) is what can help destabilize the mechanical human/animal binary (Birke, 2004).

5.4 The emergence of corporealities

Using assemblage theory[31] it is possible to map the production processes of peasant farmers alongside MAGAP technicians' interventions, coming together as heterogeneous components in a regional political formation. The latter takes place within a spatial and temporal order to be understood and engaged amidst public policy (Allen, 2011), in this case, food sovereignty.

Dairy corporealities[32] that are generated during state-rural interfaces under the training and technical assistance from MAGAP. Such corporealities take form during situations where milk is beyond an object with a dynamic of a subject, which shows how this liquid embodies different relations between members of the agricultural associations and these latter with the state. Furthermore, the processing of dairy is influenced by traditions of production that align with the behaviour of the consumer, justified either for its traditional taste or notions of healthy consumption.

New corporealities are generated when the state brings technology to the peasant farmers, and they struggle to adapt these modernities to their daily milking and dairy

[31] We use assemblage as an experimental condition for a social-spatial theory concerned with information. Such condition, allow us to understand the durability of orderings by tracing the relations between the heterogeneous elements that compose them. This makes possible to follow how an assemblage (as a co-functioning) may achieve effects and dive into relations with other assemblages, and mapping the encounter through which the elements within an assemblage are put in touch with forces outside them (Anderson, 2011; McFarlane, 2011; Allen, 2011; Bennett, 2010).

[32] Here corporeality refers to the constant and emergent amalgamation of the human and non-human, cultural and material elements. In this way corporealities are represented by bodies that are multiple and connected assemblages to social, material and cultural worlds (Blanco, 2015; Hinchcliffe, 2012; Bennett, 2010).

practices. These interventions are sometimes understood by the state as failures, yet through the notion of assemblage, we are capable of explaining these interventions not as failures but as the emergence of new corporealities involving peasant farmers' local knowledge and the adoption of technologies brought by the state. This research studies the experience of agricultural associations in the province of Santo Domingo when confronted with state interventions. These latter have received technical support from MAGAP *Ingenieros* through the Milk Networks Programme since 2008. Production technologies have also been accompanied by the intervention of Agrocalidad, who mainly regulates the transportation of milk and the presence of antibiotics. Furthermore, those associations members who entrepreneur into dairy production are regulated by ARCSA. ARCSA is in charge of health protection of the human population when it comes to the consumption of food products. This state agency works side by side with the Ecuadorian Institute for Normalization (INEN), and is in charge of "Increasing the quality infrastructure for standardization, technical regulation and conformity assessment aimed at the development of the productive sectors and services" (INEN, 2013). INEN is in charge of issuing the technical norms for regulating food production for safe human consumption, and ARCSA is the institution that implements these norms. In the case of cheese, INEN's regulation (INEN, 2012) aims for five bacteria groups (actants) which either should not be present at all (Listeria monocytogenes and Salmonella) or whose presence is so low (Enterobacteriaceae, Escherichia coli, and Staphylococcus aureus) that is almost required to be absent. These are mainly gram-negative bacteria, which are characterized by having protective membranes against antibiotics and which infection in humans cause diseases. Therefore, the pasteurization process to high temperatures kills these bacteria but also kills all other organisms which are sensitive to lower temperature levels, which are often present in fresh cheese (Atkins, 2010).

5.5 Dairy Corporealities

The case of milk, its production, and further processing within the agricultural associations provide an interesting framework of political technologies of an embodiment where milk (as a body) is governed by state health regulations, the private dairy industry, local

knowledge and appetite preferences of the peasant farming family (and the daily consumer).

The cow is objectified as a means of food production (milk), which is a carrier of life, whether in the form of bacteria, which under a given period and temperature conditions might be beneficial or not. Nowadays, microbiologists think that milk contains at least 100,000 types of organic molecules, from these most, have not been identified (Singh and Bennett, 2002). Quality standards for this living food are dictated by National regulations, which consider the cow as merely the element that produces the food (milk). As a commodity, the animal cow has become a site of politics (Atkins, 2010), either for sanitary purposes during production or its further industrial processing and maintenance until commercialization. In the case of Ecuador, the implementation of state technological programs (milking machines, cooling tanks, lab equipment, and a series of nutrition formulas and techniques for fodder storage, along with credit programs) emerges together with the legal and sanitary protocols that regulate the quality standards of milk and its derived dairy products (ARCSA, 2016). Through the production programs derived from food sovereignty policy, the state enforces a set of technologies of domination translated by MAGAP, Agrocalidad and ARCSA, and finally carried out by the *Ingenieros*.

These three state organisms are articulated to regulate milk production and quality standards for the healthy consumption of dairy products. MAGAP's work is focused on production, which includes all the necessary techniques for the use of efficient pasture lots, providing cows with adequate feedings, medical care, and aseptic milking practices. Once the milk is produced, *Agrocalidad* is the institution in charge of testing the milk for the presence of water, antibiotics, and bacteria count among other hazardous factors that may affect the resulting dairy produce. Parallel to *Agrocalidad*, agricultural associations are also provided with lab equipment to test the presence of the before mentioned organisms, yet inputs for the equipment to work are not constantly provided by Agrocalidad, and associations cannot always afford them. The next actor in the food system is the dairy industry, which also tests the quality of milk identified by batches and producers. According to the latter, the industry determines the price to be paid to producers, or in a worst-case scenario, to discard the milk. Finally, the National Agency

for Regulation, Control and Sanitary Surveillance (ARCSA) tests the processed dairy products and deem which are adequate for human consumption.

5.5.1 The cow

Cows in a herd are selected by peasant farmers under attributes that go beyond production, of course, the producers want a significant volume of milk to sell. But, they also consider their animals to require low maintenance investment, this means low use of medicine and pasture consumption, which are conditions that the high pedigree cattle would not endure (Bear, 2015; Holloway and Morris, 2008). Therefore, peasant farmers prefer to select cattle breeds that adapt to the humid, hot and rainy weather typical from Santo Domingo and the steep and muddy hillsides in their terrains.

This selection process is associated with being close to the animals and the generated experiences with similar animals, which derives from an experiential and sensual knowledge-practice (Holloway and Morris, 2009). However, selecting more resistant breeds does not always translate into sustainable milk production, and therefore MAGAP recommends finer cattle breeds.

During the technical visits from MAGAP, peasant farmers listen to the *Ingenieros* and some try the proposed technologies. Yet, these technologies only improve production if implemented with a complete set of technologies involving all the production factors. Otherwise, it does not articulate with the traditional agricultural practices of the peasant farmers and becomes economically unsustainable. However, in reality, peasant farmers do not entirely change the way they produce, but they adopt only those technologies that articulate with their existing agricultural practices (Wynne, 1998).

While the *Ingenieros* from the ministry objectify the cow as a material factor of production, peasant farmers who coexist with the animal develop a different relationship based on the affect, and emotions, that is built upon the everyday production routine and contact (Porcher and Schmitt, 2012). Engineers' professional formation does not allow them to assimilate and understand why peasant farmers base the selection of the animals in their herd based on this affective relationship and traditional knowledge (Busch, 1978; Winter, 1997). At the same time, cows also express their will to provide milk based on a safe

environment, this happens when the cow is milked by the person of their trust, the presence of the calf next to it, and the availability of food and water, which are dictated by the producer (Holloway, 2007).

Under this assemblage of modern and traditional practices, the production of milk takes place, generating new corporeality where the cows become more than an element of production in the food system. Cows and technology can be co-produced by peasant farmers, and these interacting entities decide how to respond to each other (Bear, 2015). This cow-producer relationship is externally influenced by the relation between the *Ingeniero* and the peasant farmers, after which the milking process results in more or less milk for the producer, and better or worse milk quality.

This production environment gives place to relationality and performativity that we cannot expect to understand by selectively focusing just on the production behaviour of the animal (Birke, 2004). Under these precepts, milk can only be seen as a lifeless commodity or an inactive thing.

5.5.2 Peasant farmers

Producers who are members of the agricultural associations deliver their milk to the collection centre of the association, once the milk from all the members has been collected, it is poured in a 2000 lt cooling tanks to keep it at 5 °C, ensuring the low bacterial growth in the milk, to keep a standard quality needed for dairy processing. In most cases, this milk is delivered to some dairy industry in the province, but these industries have their quality standards, which they follow to determine the price that will be paid to the association.

Milk production in rural areas faces several problems due to the peasants' farming practices (as mentioned by cheesemaker from ASOPAR during Interview in 2018). Starting at the milking process, farmers should take into consideration a milking protocol provided by MAGAP. This involves the careful care of the animal and the cleansing of the udder before the milking process to milk the animal safely, avoiding dirt and contaminants in the milking area. Farmers start their milking routine by bringing the cows into the milking

station; some of them use troughs for the animal to eat and get relaxed, during the milking process. Peasant farmers make sure the calf is next to the cow during the milking routine, otherwise, the cow will get stressed and retain milk, which lowers production and can lead to mastitis.

Contrary to what is practiced by peasant farmers, large milk farmers prefer to work with pure breeds. This guarantee higher production, but they also count on the resources to provide the required care with these pure breeds demand. Besides, large farmers are used to breaking the mother-offspring relationship since the moment of birth, claiming this way makes cows more docile to handle, and their milk production is not dependent on the relationship between the cow and its calf.

The peasant farmer allows the calf to briefly suck one of the cows' nipples for it to feel stimulated, then the udder and nipples must be cleaned with diluted iodine and rinsed with clean water. Only then, the producer can start milking the cow. Here is when each person looks for their cows since the animals are used to a familiar face, otherwise, they will feel nervous and retain milk.

According to MAGAP and Agrocalidad, the producer must use aluminium buckets and tanks for the milking process and the transportation of milk. Yet, some of the producers still use plastic material, since both entities rarely visit their farms to check on the use of aluminium recipients; besides the aluminium tanks cost around $100 each, compared to the plastic 2 dollars buckets.

Once the milk is extracted, it is poured into 40 - 60 L container tanks and taken to the entrance of the farm where the milk collector can see them and empty these containers into the steel tanks he carries in the back of the truck. Due to the lack of in-farm refrigeration systems, producers came up with a simpler system, which involves dipping the milk containers into a bigger recipient full of cool water, looking forward to reducing the proliferation of bacteria until the milk collector arrives and transports the milk to the collection centre. The milk collector takes the tanks and measures its content by dipping a volume ruler into the tank; after this, he pours the milk into the 300 L steel tanks that are in the back of the truck.

Neither the producer nor the truck has a refrigeration system, so the collection route must be covered as fast as possible to avoid the reproduction of bacteria in the milk. The driver usually takes 4 hours to collect all the milk due to the distance from one farm to the next one and due to the bad condition of the dirt road.
Together with the cooling tanks provided by MAGAP, there is a set of equipment used to measure some mineral elements and bacteria percentage in the milk, however, antibiotics are not measured during these procedures, yet it is one of the most important contaminants controlled by the dairy industry. According to *Ingenieros* from MAGAP, if a cow has been injected with antibiotics, it must be separated from the milking process for 15 days, during which the presence of the oxytetracycline (which is the antibiotic often used) will disappear. But, for producers who handle small herds (8 to 12 animals), separating an animal for two weeks means he/she will lose two weeks of milk production and payment. Therefore, since milk is rarely tested for antibiotics and it is all mixed with milk from other producers, some peasant farmers continue milking these cows. Some producers say there are antibiotics that remain in the animal for less than 15 days, but they do not use them, because they are more expensive.

Despite all the training provided to peasant farmers for non-hazardous milk (without any chemical or bacterial contaminants) as a harmless product in [aseptic] conditions, when speaking with peasant farmers from different associations in the province, they explain that when making cheese for their house, they prefer not to boil it, nor pasteurize it [since you need special equipment for the process]. Peasant farmers claim that the cheese tastes much better when preparing it with raw milk. According to the National Agency for Regulation, Control and Sanitary Surveillance (ARCSA) the process of cheese preparation must be preceded by boiling the milk at 62-65 °C and then immediately produce a thermic shock with water at 4-2 °C by indirect contact (NTE INEN 10:2012) to prevent the presence of bacteria in the processed dairy products. Despite this, producers say that boiling changes the composition of milk, and the cheese made with boiled milk does not have the same consistency, becoming chewy. But when they use raw milk, the cheese becomes creamy and soft.

5.5.3 Dairy industries

Dairy industries collect the milk from the associations' collection centre, the former test it for water. But the test for antibiotics is performed once it reaches the industry in the city, some dairy industries are more indulgent than others. Some warn the associations about the presence of water in the milk, and if they continue finding this, they fine the producers by lowering the milk payment, and when this is repeated, they reject an entire load of milk. When it comes to antibiotics, dairy industries and especially large dairy corporations randomly test milk for antibiotics, and if they detect even a minimum amount of antibiotics, they reject an entire load of milk. This is why associations chose to work with smaller dairy industries, which are more flexible when it comes to quality standards.

A situation that has been taking place between the dairy industries and agricultural associations, during November and December, the consumption of milk and dairy products decreases, which forces the industry to limit their milk purchases (Alaba, 2017). This also involves stricter quality testing for the milk. Still, producers do not trust the industry because it is well known by the producers and state authorities that dairy industries reject more milk loads during these months. The Polaca Dairy Industry refused approximately 3,000 L of milk from the AACC, claiming they found antibiotics in it. Producers took a sample of this milk to Agrocalidad, to double-check it for antibiotics resulting in negative results. However, the producers prefer not to complain to the owner of the dairy industry, fearing he will not buy from them more milk or will become stricter when quality-testing their milk. However, uncertainty and non-trust linger in peasants.
This situation demonstrates that regional dairy industries are 'permissible' and play games to low the cost of milk using milk quality as an excuse, depending on the market demand, and are in an advantaged position when it comes to their relationship with agricultural associations, who prefer to remain silent to maintain a friendly relationship with the dairy industries, despite their losses.

The latter brings us to a second situation where the agricultural associations have to look for an alternative buyer for their milk, to reduce their losses. While Agrocalidad dictates

that all milk with antibiotics should be discarded (MAGAP, MIPRO et al., 2017), producers look for the local cheesemaker, whose quality standards are very low and are always willing to buy any milk he can find.

Local cheesemakers are numerous compared to all other small dairy industries, and most of the peasant farmers prefer them since they find that the bigger dairy industries are complex and have higher quality standards than the cheesemakers. The commercial and friendly relationship with the cheesemakers is relatively informal, there is no contract nor legal obligations from any part.
After speaking to many producers, it was notorious that they see the cheesemaker as a friend, who helps them by collecting the milk and giving back the whey, which the producers believe makes the pigs grow bigger. The cheesemaker also brings them stuff from the city that producers cannot get in the community.

Talking to a couple from the Cristobal Colon Agricultural Association (AACC) who deliver their milk to the collection centre, they say that the local cheesemaker asks the farmer to tell the truth about the source and quality. As a result, the cheesemaker has a different market for fresh cheeses or low-quality cheese. This is influenced by the use that will be given to the cheese; if the cheese will be consumed raw, then the milk should be fresh, but if the cheese will be used for immediate cooking, then there is some flexibility on the level of freshness. This friendly and straightforward relationship with the cheesemaker, makes the producers prefer him.

5.5.4 The cheesemaker

Most cheesemakers in the province operate clandestinely, meaning that they do not follow most of the sanitary regulations (Jácome, 2017 - interview). ARCSA requires all dairy to be produced under strict pasteurization methods. This involves boiling milk at 62-65 °C and then immediately producing a thermic shock with water at 4-2 °C by indirect contact (NTE INEN 10:2012). This process requires special cauldron equipment that not all cheesemakers are willing to purchase. While ARCSA is responsible for regulating

dairy production, the *Ingenieros* from MAGAP mention ARCSA only has four technicians and one vehicle for the entire province. ARCSA is in charge of health protection of the human population when it comes to the consumption of food products, and this state agency works side by side with the Ecuadorian Institute for Normalization (INEN), this institute is charged with "Increasing the quality infrastructure for standardization, technical regulation and conformity assessment aimed at the development of the productive sectors and services" (ARCSA, 2020). INEN is in charge of issuing the technical norms for regulating food production for safe human consumption, and ARCSA is the one that implements these norms.

On a field visit to the Association of Agricultural Producers La Reforma (ASOPAR), the cheesemaker, Mr Sanchez, was collecting the milk from their collection centre. Producers claim they have a good relationship with him and have been selling their milk to him since 2015 because he pays on time, maintains a steady price, and provides them with advice on their milk production.

Later, on a visit to Mr Sanchez's cheese industry, during the interview with his father, he mentioned the entire family used to have three trucks, which they used to collect milk from producers and then sell it to different buyers as a raw material. But around 2008, there was a foot-and-mouth disease outbreak nationwide, and big dairy industries started publicizing the consumption of pasteurized dairy products to avoid contagion of foot-and-mouth disease. This left Mr Sanchez and his family close to bankruptcy, so they had to decide what to do with the milk they bought quickly. They decided to become cheesemakers to be able to compete with bigger dairy industries. For this, they got a steel cauldron and later got credit for two more 500 L cauldrons. Since then, he sells most of the fresh cheese he produces to stores in Quevedo, which is a neighbouring province.

When it comes to fresh cheese, INEN's regulation (NTE INEN 1528:2012) aims for five bacteria groups (actants) which either should not be present at all (Listeria monocytogenes and Salmonella) or whose presence is so low (Enterobacteriaceae, Escherichia coli, and Staphylococcus aureus) that is almost required to be absent. This regulation is implemented by ARCSA on cheesemakers and Mr Sanchez says he tries to stick to this sanitary regulation required by ARCSA since they dictate that no dairy

products can be commercialized without a sanitary registry. But when it comes to the likes of the customer, he has no other choice than dodging one of the most important requirements, pasteurizing the milk. While the cooling systems from the agricultural associations prevent the reproduction of bacteria that damage the milk, for him this is only useful during transportation. Once the milk reaches his industry, he uses the cauldrons to bring milk to 31℃ and then starts the production of fresh cheese. He can turn 1000lts of milk into cheese in a matter of three to four hours. Though he acquired a sanitary registration for 'pasteurized fresh cheese', the same that symbolizes the absence of bacteria, commercially, it is not convenient for him to pasteurize it, because it increases his production costs and customers don't like the taste of it. Therefore, he sells his fresh cheese as pasteurized, but it is not. He explains that when pasteurizing the milk, the process kills the necessary enzymes and bacteria for fresh cheese to congeal, leaving cheese too soft and white. So, he sees these microorganisms as his allies in the production of fresh cheese.

Producers from the AACC mentioned that the cheesemaker from their area is very honest with them and asks them to tell the truth about the quality of their milk because there is a range of quality he can handle depending on what the final consumer is going to do with low-quality cheese. Mr Sanchez confirmed this by highlighting that there is fierce competition between cheesemakers, and it does not matter if a cheesemaker does not want to buy, there is always another cheesemaker willing to. So, what cheesemakers do is to allocate their cheese according to how fast the clients will consume it. One strategy is selling the lowest quality cheese to clients who will use it for immediate cooking.

Mr Sanchez claims that he is well aware of the state constitution and how it details that the idiosyncrasy and diverse cultures of people should be respected and that this [fresh cheese] is part of their culture, and this includes their food. With this in mind, he complains that the ARCSA never met with the cheesemakers to assess the demand for fresh cheese in the market, and thus never considered them to generate the requirements for the sanitary registry of fresh cheese.

5.6 Conclusion

The Agrarian Revolution brought by the progressive government of Rafael Correa aimed for the development of the rural areas in the country under a scheme of direct integration of peasant production into both the market and the productive matrix. However, despite generating a public policy for the benefit of small and medium-size farmers, agribusiness has been strengthened and exports have increased.

Within the panorama of enlargement and strengthening of state structure, we witness the creation of state institutions for the regulation of food production and its healthy consumption. Through the presence of MAGAP, Agrocalidad and ARCSA, we find different interfaces either between peasant farmers and MAGAP and Agrocalidad or between the cheesemakers and ARCSA. These interfaces are a constant interstitial dynamic within the food sovereignty assemblage. The latter takes place under a political framework embedded with a higher degree of participation from civic society, holding in the background the state tends to prioritize those projects that visibly contribute to their political campaign. This situation sets an uneven scale between projects that the state can promote as propaganda representing a progressive government, which is far from the reality in terms of a positive development of bigger state size and citizens' real needs. This situation is in rural areas a toll on peasant farmers who are pushed to modernize their production systems through state development programs that do not consider their traditional practices when being formulated. This results in waste of time and resources and the indirect aid for corporate farmers, thus favouring exportations, instead of actual food sovereignty in the state.

5.7 Reflections

The importance of milk either as food (ready for consumption) or raw material (for further dairy processing) compels an assemblage of rural areas with the traditional agricultural practices that peasant farmers develop, versus the modern tendencies of a progressive state. The same attempts to construct an image of higher understanding and comprehension of the rural ways through the implementation of public policy that aims for the integration of peasant farmers into the productive matrix. However, peasant farmers' cosmovision runs unparalleled from state means of agricultural development. While the state remains inclined towards the use of modern technologies, a means to govern agriculture and its producers in the country, peasant farmers enact rural development intersubjectively perceiving their rural reality as a way of living rather than a set of tools for production. Cows and their products represent their means of subsistence of course, but a close relationship between them takes place through production. Here, cows comprise a set of technologies and practices, however, the role of cows also destabilize the human/animal binary. The protocols for milking processes, the breeding selection according to weather and purpose of the cattle, the pasture lot allocation, and fencing; all these factors of production contribute to separate humans from non-humans both in time and space (Birke, 2004). The modern output perpetuates a boundary. Here is where cows stand and often refuse to perform the role of an object of production. This comes accompanied by peasant farmers' traditional knowledge, which is more influenced by affect than the sole desire of turning their farms into gold mines. Looking at the Organic Law for Food Sovereignty in Ecuador, the state seems to act in contradiction to what dictates the article 13 of the law, where it mentions food will be produced: "preferably at a local level and corresponding to their diverse identities and traditions..."

The state performance of rural development seems to take for granted the diverse corporealities formed by peasant farmers and their "means of production". While these corporealities emerge from the production process, it does not imply a sole commercial operation, but a sensitive and bodily connection.

At the end of this dairy journey, the study revises dairy corporealities unintendedly generated by the production technologies and further regulations imposed on food for human consumption introduced by the state. The analysis of the effects and affects that emerge from milk production shows that the latter are not present in the food sovereignty policy. The next chapter of this thesis shows the confrontation of the state's technocratic vision vs. peasant farmers' traditional practices. Such confrontation is evidenced in the failure of modern agricultural production due to the strong traditional agricultural practices but that it was initially ignored by the state to a level of exclusion within the related policy.

CHAPTER 6

6

6. Discussion and conclusions: Food sovereignty policy performance

This thesis has explored the effects and affects of food sovereignty policy as performed by the state's institutional agents on peasant farmers. The primary research problem addressed by this thesis is: How is food sovereignty policy technically translated and deployed by the state's agents among peasant farmers, and how does this state-producer relationship affect the agricultural practices of the latter? Studying the impact of state intervention policies on producers' associations and how actors adapt to technological policy interventions has allowed me to empirically understand changes in family farm agricultural production and in producers' strategies. These have been described and examined through scrutinitization of the process and impact of technological distribution.

The thesis highlights the clash of two different ontologies: on the one hand, peasant farmers' livelihoods and the agricultural practices situated within them, and on the other hand the state, with its hierarchical and technological vision of rural development. This results in two different 'practice regimes' derived from two distinct knowledge bodies. The knowledge held by peasant farmers is a balance of expert knowledge and personal experiences and practices. The latter is also known as 'traditional knowledge', which is often considered to be outdated, static, and irrelevant (Fonte and Papadopoulos, 2010). Integrating expert knowledge and peasant farmers' experiences and practices are difficult for state agents as it is easier for them to dictate technological expertise from the state that aligns with their professional formation as *Ingenieros*. This study's results depict how the so-called 'traditional agricultural practices' of peasant farmers confront the technical engineering knowledge of state *Ingenieros.* This confrontation reveals a state whose technocratic vision deems small producers unfit for modern agricultural production, and remains insensitive to the perceptions and opinions of peasant farmers.

One major recurrent issue in this thesis is the exclusionary mechanism following the implementation of the food sovereignty policy in Santo Domingo. The lack of clear protocols for fruitfully combining existing agricultural practices with new technologies has

been one of the critical causes of the food sovereignty policy being understood as an exclusionary policy. It is important to recognize that both peasant farmers and extension agents were influenced by how the policy was translated through state agencies and deployed in the form of rural development programs.

However, the encounters between different practice regimes and different bodies of knowledge have also given rise to new assemblages, and given new meanings to policy interventions and their interaction with traditional rural knowledge. The latter has become post-traditional knowledge (see Giddens 1994; Arce and Long 2000), which in this study is associated with the food sovereignty policy that led peasant farmers to adopt new technologies and re-territorialize these into their daily realities.

In the remainder of this closing chapter, I will address the research questions by synthesizing the findings of Chapters 3, 4 and 5. I will then explain this thesis's contribution to the study of food sovereignty policy. I will conclude with a brief discussion of the study's limitations and recommendations for future research.

6.1 Addressing the research questions

6.1.1 Agricultural associations in Ecuador

The first issue explored in Chapter 3 is related to Ecuadorian rural farmers' associativity and how this is a political and financial vehicle for the state to reach peasant farmers and expand technologies, 'modernize' the rural space, and more recently to implement the food sovereignty policy. Associativity in the country had taken place since 1937, when the first law of cooperatives was issued. This aimed to modernize peasant farmers' agricultural production and perform a land reform to redistribute land for agricultural purposes. However, cooperatives and land reform law fell short of achieving the primary goal of improving conditions for farmers and supporting them in producing more food for the country.

In recent years, the government of President Correa has tried to strengthen agricultural associations as institutions capable of modern and sustainable development, but its modus operandi echoes the political vision of previous policies, such as the land reforms of 1964 and 1973 (Brassel, 2008). The latter policies were more focused on modernizing peasant farming than on understanding local producers' agricultural practices as part of their knowledge; that is, their ability and capacity to exist in a territory as peasant farmers. In general, Ecuadorian policies have bypassed local peasant farmers' identity and agency, assuming instead that they are merely beneficiaries/clients of rural development policies. Excluding peasants farmers from program development do not align with the concept of food sovereignty.

The state has historically promoted the formation of peasant farmers' associations on the basis that they, as a group, have access to the necessary resources for subsistence, production, and development. Meanwhile, the state has also undermined its own rural development objectives by implementing policy interventions focused on technological change, while paying scarce attention to local farming practices and their decision-making processes. The Ecuadorian state has set up an institutional development outline consisting of national organizations that guide the formation and registration of agricultural associations (SEPS), technical services (MAGAP, GADs, Agrocalidad, ARCSA), and funds (National Development Bank) in support of associative agricultural endeavours. However, this institutional environment is quite uncoordinated and does not deliver policies that would meet local peasant-farmers' downstream needs, agricultural practices, and interests.

Interfaces for food production emerge in this complex and unstable institutional environment, between state *Ingenieros* and peasant farmers. Examining the process of policy implementation, this study has observed the clash of different bodies of knowledge, each with a regime of practice generating alliances, conflicts, and dislocations. These various dynamics all affect producers' decisions and how the state implements food sovereignty policy. This ethnography of performing the implementation of a policy depicts a policy process in which the food sovereignty discourse distances itself from the

materialities created through the production process, the existence of farm-peasant producers and the materials characterizing rural development. The distance between the original food sovereignty principles and the policy discourse during implementation constitutes another type of exclusionary policy, which has resulted in the de-territorialization of the local and has situated food production and consumption on top of existing local knowledge, capacities and abilities. In reality, however, production practices and food quality control are tailored by adapted local perceptions leading to changes in food markets and political and social environments.

Chapter 3 shows that the practices of agricultural associations pretend to be shaped by the implementation of food sovereignty policy; the spectacle of social policy impacts. However, if local producer organizations do not participate in the performance of policies, the result is state institutions ignoring the need of peasant farmers to be involved in the organization and development of local markets. Policy manifests its exclusionary character by overlooking producers' everyday practices and 'realities'. This situation is presented in Chapter 3 against the background of a changing environment to introduce new technologies that aimed to increase food production. The ethnographic study noted elements of significant disruption and instability in local producers' lives. This was particularly the case when producers realized that the institutionally distributed technology was deficient or not functional. They faced the impossibility of producing or integrating new technologies into their food production to meet the demands of the food market for volume and quality.

The state's limited ability to perceive how peasants can generate their versions of 'open' markets, social relations, and trading show how policymakers and peasant farmers differ in their understanding of a series of abstract principles, situated as they are in different 'realities' of production and consumption. The administrative efficiency and rationality through which policy is formulated and implemented is overridden by the agency exerted by actors and their rural social organizations, as well as by the life experiences generated by these actors and collectivities while the policy is implemented, and the way that

associations interact and intervene to modify existing guidelines and policy objectives (Arce, 2003).

Food sovereignty policy processes in Ecuador are deployed without consideration of peasant farming families' livelihoods, who have been shown to react to technology in ways that are not expected by the state's policy implementers. This also makes them reluctant to move away from their well-established local production bases with their targeted markets. Producers' comments during interviews reveal the deep feelings of neglect and environmental uncertainty, and instability that come with the implementation of new agricultural policies and interventions.

This is supported by the findings of Chapter 3, which focused on the state's investments in agriculture and technical support as the only material political form to benefit peasant farmers. In the four case studies, local milk producers showed that the state's interventions were out of sync with local needs, and that producers struggled with inserting and adapting interventions into their production activities.

In Ecuador, the discourse of food sovereignty has been mainly used by the government of Rafael Correa to re-valorize the state as a vehicle – a kind of agent – for a different type of neoliberalism policy (Clark, 2016). The development has also taken a turn towards a progressive middle-of-the-road social development model that distances itself from past 'pure' neoliberal regimes (as in the case of Chile). However, we still see a state whose public policy responds to market demands, rather than to social needs. Paraphrasing Titmuss (1970), we might say that food policy has to be studied among individual rural producers and peasant-farmers and their implementation of food policy processes. Those who wish to separate politics from local producers' expectations and values will never understand rural development policies nor food sovereignty.

Food sovereignty policies that aimed, in terms of principles, for radical change in rural development appear to have been limited when it came to being translated by state

institutions at the point of implementation. State *Ingenieros* in Ecuador implemented technology in alignment with the Organic Law for Food Sovereignty (LORSA) from which food sovereignty public policy is generated, but did so in misalignment with the agricultural practices of peasant farmers and the livelihoods derived from these practices. This process of de-territorializing the principles of the policy generated critical exclusionary social justice dimensions (Higgins, 2015).

Ingenieros perform the implementation of public food policy by conjugating their academic and technical training with the projects' goals as initially designed by MAGAP headquarters. Amid this dichotomy of political purpose, they encounter peasant-farmers reluctant to move away from their local practices. Agricultural associations allow local smallholders to exist by applying their own politics and interpretation of the public policy. Peasant farmers became organized in the form of these agricultural associations, and this allows them to grow towards a common livelihood goal. To achieve the latter, they selectively take advantage of the state's food sovereignty policy implementation. This means accepting and examining the technology provided by state institutions, and choosing only what they can adapt to their existing agricultural practices. During this experimentation and selection process, peasant farmers re-imagine the role of the state's modern tools in ways that turn these tools into actants within their assemblage of food production. This assemblage of human and non-human elements, merged by relations of affect, carries a series of technology effects on the agency of producers' interfaces generated and gives material participation to what I have named in this thesis as *new corporalities*. In this thesis, technology refers to a material element that affects other bodies, somehow enhancing or weakening their power while changing the rural vital materiality. Thereafter, I have depicted the notion of the subjectivity suggested by Bennett (2010).

One specific example of the impact of technology among peasant farmers is the implementation of technology by agricultural associations. Peasant farmers can access technologies provided by the state, in the process of practice transformation that until now has been mostly self-regulated and mostly exempt from institutional intervention controls.

It is universally perceived that new technology is attractive to peasant families who want to process their foods. However, this study concludes that there is a series of pathways which are followed by peasant-farmers and *Ingenieros*, that are affected by fluctuations in market demands and the quality of the production materials (such as animals, and the organoleptic requirements of milk for niche market cheeses) which have tended to be differentiated by product and commodity, so the rate and direction of technological change has become specific to food products. This tenet was examined through an account of the production of technologies in the dairy sector. I concluded that producers could discuss and recognize the use and advantages of new technologies, and producers actively re-imagined what role these technologies could fulfil as a new actant performing a bridge between agricultural practices, existing livelihoods, and market interests. This meant that specific types of technology, like pasteurized milk tanks, were in high demand to improve the manufacturing of dairy products. However, producers' associations suggested that these technologies provided a means of institutional control, rather than of industrializing family farm production. This was noted in the policy attempts to control and standardize both the timing and the safety and quality of local and small-scale producers. It implies profound effects on the networks circulating dairy products and advice, and strict surveillance of the negotiations between agricultural associations and local agribusinesses.

The creation of an organizational body for the creation and promotion of agricultural associations intended to create a viable path for rural development to be deployed by the state, as part of its legitimisation in formulating public policies. However, public policy formulation and performance for rural development lacks political commitment. The implications of this process should be to allow producers sovereignty of their family-farm decision-making processes. This would contribute to poverty reduction and re-position institutional political will around issues of actors' interactions, their existence in their territory (space) and knowledge (McGee, 2004). The study concludes that the Ecuadorian state has been unsuccessful in using the configuration of agricultural institutions to enhance processes of food sovereignty despite fostering and implementing food sovereignty policies. While this probably unintentionally affected national and regional

food security, it raises the question of which type of food production and consumption models should be pursued in agricultural and rural development policy to guarantee food security in Ecuador.

6.1.2 Milk production and intersubjectivity

In Chapter 4, the introduction of new technologies within the practices of producers could partially be attributed to an attempt on the part of producers to re-territorialize these technologies by re-assembling milking machines based on their knowledge of their own livestock and everyday practices. These material manifestations were named '*new corporalities'*. On the one hand, they are the result of the policy intervention, and on the other, they reflect a counter tendency on the part of producers to the technical interventions made by the Ministry of Agriculture. This process finally created a degree of stability for milk producers.

Furthermore, the language used by technical experts has left producers and their materialities as passive receivers of technological change. However, this ethnographic study has shown that the family farm and its materialities, constituted by human and non-human actors, are vital and active elements of assemblages and interfaces that open local producers to the phenomenology – or appearance – of 'modern things'. Paradoxically, this broadening of the scope to ontology and the significance of people's experiences in shaping and establishing the technical intervention (in this case, milking machines), made peasant farmers and cows visible as vital elements of this institutional intervention. Producers' experiences of food sovereignty raise issues of ambiguity and the crossing of object and subject boundaries in the constitution of newly assembled localized and situated modernities (Arce and Long; 2000:21).

Agriculture is central to the livelihoods of peasant farmers and the public policy of food sovereignty sits in parallel to the development of agriculture in Ecuador. Agricultural programs designed by state institutions (MAGAP, GADs, Agrocalidad, ARCSA, SEPS) aim for the technological modernization of peasant agriculture. Through a technological approach, the state intends to bring peasant farming closer to the national production

matrix, implying the integration of peasant farmers into the regional and national economy. Often, state interventions that are implemented among farmers who belong to agricultural associations are intangible and thus are only visible when local events, strikes or audits are organized. Social interfaces between peasant farmers and *Ingenieros* depict these extension field agents as actors that cannot be seen separately from agricultural production relations, actions, and thought in a specific locality. Peasant farmers become part of an assemblage glued by connections of affect towards crucial elements of the local and specific agricultural production vitality. These relations of affect create a space for the formation of assemblages and the emergence of intersubjectivities between human and non-human elements in the food system, which dictate how milk is produced. Such intersubjectivities are unintended outcomes that take place when the state implements rural development projects with a focus on modernizing peasant farming, aiming to turn farmers into integrated and marketable entrepreneurial units (Paredes, 2010).

These assemblages and interfaces reflect a self-righteousness on the part of the state in its attitude to its knowledge and power over peasant farmers and their traditional milk production practices. Peasant farmers are expected to comply, yet they assemble their own unique and specific production strategies. These allow peasant farmers to choose from the state's agricultural technology. The main conclusion of Chapter 4 is that production technology creates a space for the emergence of intersubjective relations resulting in new corporealities assembled by the practices and knowledge of peasant farmers, where cows and milking machines are part of a wave of rethinking to understand the power of materialism.

Observations by other authors about this process, informed by social construction studies and the body (see Bennett 2010) are exemplified in the recent interest in development studies (Blanco, 2015) and calls for a renewed materialist conceptualization of social processes where such developments are used as signs of diverse modes of existence. This allows me to propose that rural sociology should focus on relational being, common sense, and the public good (Sherwood et al. 2017), following the work in differential counter-developments (Arce and Long 2000), new materialism (Merleau-Ponty 1948,

Coole and Frost 2010, Bennet 2010), multiple ontologies (Mol 2002; Daston 2008; Blaser 2010; Harman 2018), ontogenesis (Ingold 2000; Simondon 2017); affect (Clough and Halley 2007, Massumi 2015); and bodies (Turner 1992; Shilling 1993; Csordas 1994; Lambeck and Strathern 1998).

The nature and potentialities of these different approaches challenge conventional dualistic thinking and what this means for food policy implementation and food producers' practices. The study of technology and local knowledge permitted the ethnographic research to make visible agricultural production objects that were objectified through the indeterminacy of the food policy technological intervention and the engagement of local actors. These material assemblages and interfaces become the phenomenon of the body (*cuerpo* in Spanish), and the organic and non-organic life and the part it plays within the intersubjective ground of policy, technology, and live experience (see Fisher et al. 2017).

Thus, '*el cuerpo'* (body) refers to the constant and emergent amalgamation of the organic and non-organic, cultural and material elements. In this sense, I use the term corporealities to portray bodies as multiple and connected assemblages to social, material, and natural worlds. Through the notion of corporealities, the study focuses on the assemblages and interfaces that generated vital materialities constituted by introduced technologies, local practices, affects and diversity of human and non-human relations. Such corporealities reflect relations of affect between peasant farmers and the most diverse material elements of production, which depending on their role within the production process, might become actors within the animal-human-machine assemblage that local producers are part of during the process of policy intervention in a rural field. This emergence of affect demands adaptability from the process of policy intervention to enhance or weaken the power of other bodies (Bennett, 2010). It is in the phenomenological appearance of these corporealities that this thesis reflects on the need to rethink ideas of agency, technological change, and rural materialities. These elements are essential because they emerge from the rural life experience of policy interventions that give rise to new conceptual and practical issues of food sovereignty within the

struggle for progressive reforms to favor local food and mobilize rural change in Latin America and beyond.

The technologies provided by the state, while considered by institutional experts as mere objects to modernize and increase agricultural production, become a new component in an actor expressing their subjectivity through actual dairy food production; in this case, the agricultural practices for milk production. Through this process, the object (technology) enters the life of producers, their production processes and the animals in this contested rural space. This allows thingsor objtects to become a subject (Stenner, 2008). As such, technology influences and interacts directly with the agricultural practices, life, and materialities of the peasant farmers.

In everyday life of producers, it is evident that the state's use of food sovereignty principles, as an agronomic approach to rural development, has attempted to displace the knowledge and social organization of peasant farming families. Public food policy in Ecuador appears to be organized around a centralized administration of policymakers and experts constantly issuing goals and means of technological transformation as products of a universal plan to achieve the 'modernization' of the rural space, positioning peasantry as an object of control by an authoritarian state that is trying to achieve progress. In doing so, the state makes the rural experience invisible, and at the same time, it undermines relationships and modes of existence, generating a variety of conflicts. In short, food policies are perceived as a social control device, stigmatizing local practices and forms of food transactions and interactions that are important and vital to the voice and resonance of the rural space.

6.1.3 State intervention for food sovereignty

Chapter 5 discusses how the state's policy reveals how technical services exert material political control, generating conflicts with the autonomous and experimental way of life of peasant farmers. The practicalities of food sovereignty implementation are explored. This study uses the concept of interfaces from Long (1989) to explain how state agricultural

interventions meet the rural reality of peasant farmers and their dairy farming practices. Within these interfaces, actors create a space for the creation of assemblages (new corporealities) in the Ecuadorian rural social space.

The concept of corporealities (Birke, 2004; Bennett, 2009) sheds light on the participation of human and non-human subjects in processes of rural development. By considering human and non-human actors performing the production process, the thesis concludes that it is possible to understand agricultural activities as heterogeneous components binding in assemblages and resulting in multiple interfaces. These components are contingent upon the reaction of other actors (human and non-humans) and connote power as a plurality process in transformation (see Anderson and McFarlane, 2011), which in this case is a rural transformation.

In this chapter, I look at how the state deploys technological interventions aiming to enhance agricultural production, in alignment with food sovereignty policy. However, this policy formulation disregards existing local technologies used by peasant farmers. This exemplifies the power exercised by the state through the policy-based implementation of rural projects.

This chapter also draws upon interactions between the peasant farmers' local knowledge, the private dairy industry, the production preferences of the peasant farming family and the organoleptic preferences of the consumers to approach the generation of dairy corporealities, where the state objectifies cattle as means of food production. The objective here is to reinforce the idea that, while being a commodity, milk has also become a site of politics (Atkins, 2010), where the state exercises its power through a set of technologies of domination. However, power can be understood as a network of relations, which are constantly in tension and active (Foucault, 1980). Such relations are always embodied in movement, changing and resisting (Hindess, 2012).

Deeper analysis shows that relations between all actors within a food production sector – specifically, the dairy sector – can be observed. It is in this sector that the state, under

the Agrarian Revolution policy discourse promoted by the government of President Correa, aimed for rural development under a scheme of direct integration of peasant production into the market. However, this political strategy ended up strengthening big agribusiness and increased exports.

Central to the above is the political confrontation in rural areas between locally proved agricultural practices and the incorporation of modern technologies of a progressive state that wanted to achieve agrarian modernization. While the latter endeavours to develop rural areas under the premise of agricultural modernization, peasant farmers' perceive agricultural development differently than the state during implementation. A common belief is that peasant farmers are resisting to change (known as laggards), but agricultural practices reveal the opposite through the appearance of subtle changes that may be considered as innovations (Leeuwis, 2004). Such changes are evidence of how peasant farmers observe and analyze agricultural technologies through their own decision-making process, which determines whether such technologies are adaptable to their traditional practices. This process considers increases in production and the preservation of what they consider the most important factor: their peasant way of living. The latter does not resonate with state interventions, whose policy goals lean towards standardized industrialization and integration with the global market. This turns food sovereignty policy into an interesting opportunity almost tailored for big agribusinesses, who possess enough resources to fulfil all state requirements for credit, sanitary registration, and adequate industrial conditions for food production. However, this achieves little of the original aim of the public policy.

6.2 Contribution to the study of food sovereignty

The study and analysis of food policy based on government food policy, materialities and cognitive constituents of the peasant farmer rural reality, makes it possible to explore alternatives to public policy implementation under a unidirectional vision of the nation-state and what constitutes rural development. This is mainly an orientation based on

market integration, as authors such as Arce (2003) and Titmuss (1998) critically have pointed out.

Titmuss (1998: 13) writes:
"Put in another way, we wanted to know whether these instruments or institutions positively created areas of moral conflict for society by providing and extending opportunities for altruism in opposition to the possessive egoism of the marketplace".

Arce (2003: 857) states:
"To consider how to bring back the social into development as an autonomous field of inquiry and action we have focused on the metaphor of the middle ground, to try to capture the potential of encounters between collective representations, policies, human action, and the creation and circulation of objects. These objects can touch and connect different lifeworlds and interact with the biophysical world, which constitutes the material life of human beings. The trajectories of these objects do not necessarily follow the design of more sophisticated expert systems of control. In this sense, the social carries the possibility of representing interactions and a reconciliation process between human creativity, science, social movements, and nature."

Both authors are referring to social policy and development policies as a reality of potential altruistic opportunities. In particular, this thesis call for studies of food policy that consider the peasant farming family not just as a tool for production, but as an agential actor in its capacity to affect and be affected by state policies, the biophysical world and the objects constituting the material life of the countryside, even when the latter are addressed for the aid of peasant farmers and enhancement of their agricultural practices. However, against the potential of public policies and specifically in this case for agricultural production of local food, this thesis identifies elements that are important actors in the food production system which were analysed using the food sovereignty concept, and its participation resulted in being limited.

This thesis's findings may contribute to the future improvement of some of the methodological issues related to the lack of attention to materialities in other policy implementation scenarios. For example, when examining the conflicts resulting from technology distribution, and how peasant farmers in agricultural associations struggle to express their autonomy when state agencies implement technological changes. Thus, tension arises between a rapidly changing environment for food production and a constant base of agricultural associations. Production and farm development continue to rely on new technologies that are deficient or disregard the materialities of peasant farmers production. This generates a significant disjuncture between technology and local producers' practices and has resulted in exclusionary politics, as uncertainty and risk are transferred through the local production of food.

Therefore, this thesis proposes theoretical and methodological paths to rethink alternatives and conceptual ways for the implementation of food policy by considering peasant farmers as active actors while also considering the materialities participating within the process of policy implementation. No matter how beneficial the modern technologies introduced are, producers will only use those that can be aligned with or adapted to their existing agricultural practices and materialities. This particular situation is seen when peasant farmers prioritize the affects to (their cows) what the state considers mere factors of production. This limits the institutional introduction of technologies into the production system of the peasant farmers; however, the extension agents and farmers are constantly performing assemblages where food production is adapted as a result of these interactions. Thereafter, peasant farmers can be perceived as actors who have valuable knowledge which is adapted or modified when accepting training from statal agencies when using the discourse of inserting new technology as part of a policy strategy for rural development towards food sovereignty.

The contribution of this thesis to the analysis of food sovereignty as it pertains to public policy and the peasant farming family is threefold:

1. The study of food policy provides the possibility to critically reflect on existing 'alternative' paths to conventional rural development. This study on the materialities of food sovereignty policy implementation attempts to clarify how peasant farmers can associate some food sovereignty principles with their agricultural knowledge and local skills, allowing specific technological changes to be tailored to particular local practices.
2. The dynamic underlying local food production continues to switch from family peasant farming and agricultural associations to other interests, such as the creation of a national food policy which responds to the global market. However, a situated analysis suggests a more complex sociological picture. The emergence of intersubjective relations within the process of food production demonstrates that food policy goes beyond the implementation of modern technology. Instead, it demands synchrony with peasant farmers' rural materialities, and how peasant farming families understand, develop and live food sovereignty. In this material understanding, these institutional technologies become more differentiated and have a specific impact on particular food practices and products.
3. It is not sufficient to study food policy under market premises. Rather, the focus should be on how national food safety regulations, agricultural practices and consumer preferences affect and influence each other and thus shape food sovereignty when it comes to the implementation of public policy.

The thesis shows that rural development exercised through the implementation of changing technologies aiming for food sovereignty is a limited framework as the core of public policy for integrating peasant farmers into the market. While agricultural associations represent a useful communitarian social organization, their role within the performance of food sovereignty public policy is restricted when they are considered to be units for stimulating local consumption of public resources to produce food.

Approaching the paradox present when implementing food sovereignty policy from peasant farmers' perspective, they can see that the policy should identify peasant farmers as the main actors within policy performance. Understanding the knowledge from which

they derive their agricultural practices, their world view, and how they experience the rural will lead towards more effective policy implementation. In the case of agricultural organizations, the production, and processing of dairy are not mere processes of production set apart from their daily livelihood, but an essential component of their rural experience representing more than just economic subsistence. However, it is necessary to unpack the increasingly referenced yet still ambivalent notion of materiality and material of the rural space in the context of rural development, social justice, and public food policy implementation.

Rural development planned by the state through the implementation of technology deems peasant farmers skills, abilities and materialities to be the main factors of production, yet their needs and perceptions nor their affects are used as input when it comes to food policy and the way it is designed and implemented. Peasant farmers' material elements are usually perceived as insufficient and faulty and even as being the causal factors of their limited food production. This research's findings draw attention to the intersubjective relations that emerge from production and how these are shaped and complemented by material relations and existing local food practices. Ultimately, these multidimensional relations generate various unique paths for production that fit each peasant farmer's agricultural practices and become crucial to their existence. The neglect of rural farmers is evidenced when assuming that their local knowledge is insufficient for producing foods to satisfy a market, however, they have the capacity to insert new technologies into traditional practices selectively. Selecting specific elements of technological packages allows them to apply those elements that further their relations of affect within their agricultural activities and pose no threat to actors or to what producers consider important for their food production process.

It is also important to mention that food sovereignty principles tend to fade or change when the state turns them into public policy. This is especially the case when implemented in the form of state agricultural projects. The formulation of food sovereignty policy allowed civil society's participation and the reorganization of their political relationship with the state as part of the policy process. However, at the moment of policy implementation

state representatives and experts foster the achievement of food productivity goals more aligned with state rationality than with peasant farmers' livelihoods. Food sovereignty policy in the Ecuadorian state seems to aim for the legitimization of the state's governance tools, with agricultural politics portraying technical implementation as a rational and instrumental solution in the production process rather than as a social justice problem (see McGee, 2004; Higgins, 2015).

6.3 Limitations of the study and recommendations for future research

As an additional finding, this research identified the need to have a better understanding of all aspects of technology implementation and food sovereignty, such as the rights of rural farmers and their level of involvement, to contribute to future research.

Throughout the thesis, one major issue that has continually recurred is the exclusionary dimensions that have emerged from implementing the food sovereignty policy in Santo Domingo. The lack of clear protocols to be used by extension agents to overcome the 'real' overlapping between existing agricultural practices and the introduction of new technologies, is what is claimed by the statal bodies. These assemblages and interfaces may contribute to the discussion of why and how locally situated food production is tied to policies that aim an increasing production for liberalized food markets. The emphasis on this latter, has generated a political, social, and economic tense environment for food production, whether for individual family farms or producers' associations that are neither stable nor buoyant (Teubal, 2012). This ethnographic study on the role of new technologies and the issues generated during milk production identified this instability along with the origin of the exclusionary dimensions of the food sovereignty policy.

The formulation of food sovereignty as a policy proposal needs to consider the analysis of all actors and their materialities participating in and engaged with rural development and local and autonomous food production. The possible assemblages generated at the interface of different bodies of knowledge may result in rural encounters that benefit national policy objectives and local producers' interests.

This study has made a start on linking family farm practices, producers' association orientations, and institutional national and regional policies, but has not addressed either the rights of local producers as citizens in local, regional, and national politics, or the lack of political influence of civil society movements for food in Ecuador. The political and the issue of producers' rights are important shortcomings in the food sovereignty concept (Patel, 2009). This is particularly relevant to the idea of technological distribution (Ishii-Eiteman, 2009), labor-saving technologies that increase production (Khamis, 2018), and even the feasibility of innovations improving existing markets and producers' incomes (Leeuwis, 2000).

The interfaces explored in this study depict the unintended outcomes of state interventions. Such outcomes are valuable for the further exploration of the materialities that affect the implementation of food sovereignty policy. While a state policy should be made considering all the actors within the space of policy implementation, it is also important to consider that peasant farmers' knowledge is heterogeneous and able to develop its own local policy. It is necessary to delve deeper into the study of peasant farmers' interaction with the state to understand the possibilities for a more complex political space. Space for participation and consideration of the traditional knowledge of peasant farmers is key to the formulation of food policy that promotes grassroots rural development.

Finding alternatives for public food policy implementation would require alignment with the needs and rural perspectives of peasant farmers as a policy development discourse so that projects fit the agricultural practices and materialities of producers. Such a methodological view of public food policy should focus more on peasant farming livelihoods than on the potential markets these producers might reach. Understanding peasant farmers' material livelihoods would support the success of state projects as well as signifying an improvement of agricultural practices under a development model where peasant farmers acquire a higher degree of influence on the programs and projects derived from the food sovereignty policy.

This thesis has demonstrated the usefulness of theoretical approaches and concepts like decision-making power, intersubjectivity, and interfaces. Using these concepts has helped to examine agricultural development interactions between the state and rural areas, which in turn has made it possible to contrast the different aims of peasant farmers and the state. Food sovereignty policy in Ecuador is characterized by significant disparities and a lack of sensibility in regard to the relations that emerge from the processes of food production the state intends to enhance. These theoretical approaches might enable us to examine the world from a perspective other than modernism. This means considering human and non-human entities and the relationships that derive from their interactions.

Based on the experiences embodied in this thesis, here are some areas in which the study of intersubjectivity and interfaces can be used to develop research in peasant studies:

- Research on the implementation of production technologies in rural areas should aim to analyze diverse forms of peasant agricultural production and how they respond to public policies for improving family livelihoods in rural areas.
- More intergenerational studies on agricultural practices are needed. Studies should aim to describe and analyze peasant farmers' assemblages and interfaces and how they represent public policies and current agricultural practices. Delving deeper into inherited and existing agricultural knowledge will bring some clarity to the lack of adaptability of new technologies introduced to peasant farmers' existences.
- Research into the relationship between peasant farmers and the material elements of production opens up the study of policy implementation to encounter human and non-human entities' material vitality in the process of rural development and food production. The relations that emerge between peasant farmers and elements of production, as an assemblage of agricultural practice and a diversity of organic and non-organic entities, are key to understanding innovative forms of rural development processes. Furthermore, this suggests a reflexive examination that would eventually

contribute to the improvement of food sovereignty policy and challenge the status quo that seems to exist between rural producers, policymakers, activists, and academics.

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Appendices

Photographs

Photo 1. Focus group interview during the field visit to AGRILAC (Oct, 2015)

Photo 2. Cooling thanks observed during the field visit to SERVILAC.

Photo 3. Farmer controlling the milk in SERVILAC before going in the cooling tank

Photo 4. Area of processing in Francisco de Orellana showing the INOX material used for milk products.

Photo 5. Cooling tanks and temperature control in Cristobal Colon

Methodological notes

Interviews

Wilmer Paredes (Milk collector). Conversation about different producers and the milk they deliver. Interview by Nícolas Vasconcellos. Personal conversation. Santo Domingo, May, 2015.

Don Wacho (Cirstobal Colón manager). Conversations about Agricultural Associations in Santo Domingo, interview by Nícolas Vasconcellos. Personal conversation. Santo Domingo, May, 2015.

Condoy family (Cristobal Colón Association). Conversation about milking techniques in the agricultural association, interview by Nícolas Vasconcellos. Personal conversation. Santo Domingo, May, 2015.

MAGAP ingenieros (cattle importation quarantine). Conversation among ingenieros from Quito and Santo Domingo about cattle imported from Paraguay. Interview by Nícolas Vasconcellos. Personal Conversation, May, 2015.

Don José Calva (Cristobal Colón Association). Conversation about adaptations to start using the milking machine, interview by Nícolas Vasconcellos. Personal conversation. Santo Domingo, June, 2015.

MAGAP ingeniero. Seminar at Universidad Técnica Equinoccial where MAGAP ingeniero explains cattle insurance for cows imported from Paraguay. Recording by Nícolas Vasconcellos. Santo Domingo, June, 2015.

Don Arnoldo Erreyes (Cristobal Colón Association). Conversation about his cows and their reaction to the milking machine. Interview by Nícolas Vasconcellos. Personal conversation. Santo Domingo, July, 2015.

Fabian Intriago (ingeniero from Province GAD Santo Domingo). Insights about the support provided to MAGAP ingenieros. Interview by Nícolas Vasconcellos. Personal conversation. Santo Domingo, August, 2015.

Members of Agricultural Association Cristobal Colon. Monthly meeting to present accountings and technical service by MAGAP. Recording by Nícolas Vasconcellos. Santo Domingo, September, 2015.

Agrilac manager. MAGAP visit to Agrilac members in order to generate situation report, Session recording by Nícolas Vasconcellos. Santo Domingo, September, 2015.

MAGAP ingenieros and milk producers from Cristobal Colón Association. Farm visit to train producers on cleanliness when milking. Recording by Nícolas Vasconcellos. Santo Domingo, Octubre, 2015.

Ahmed Botero (Founding producer of Cristobal Colón Agricultural Association). Workshop organized by MAGAP, Agrocalidad and ARCSA for the creation of Good Milking Practices Regulation. Recording by Nícolas Vasconcellos. Santo Domingo, November, 2015.

Alberto Zambrano (Field technician of COPISA). interview by Nícolas Vasconcellos. Personal Conversation. Santo Domingo, December, 2015.

MAGAP Ingeniero 1. Insights about Agricultural Association SERVILAC, interview by Nícolas Vasconcellos. Personal conversation. Santo Domingo, February, 2017.

MAGAP Ingeniero 2. Information about agricultural associations that were supported by CADERS project, Interview by Nícolas Vasconcellos. Personal conversation. Santo Domingo, February, 2017.

Don Federico (Manager from Agricultural Association Francisco Orellana). History of CADERS and the Agricultural Association. Interview during the milking process by Nícolas Vasconcellos. Personal Conversation. Santo Domingo, March, 2017.

Sra. Chelita (Manager from Agricultural Association Servilac). History of CADERS and the Agricultural Association. Interview during the milking process by Nícolas Vasconcellos. Personal Conversation. Santo Domingo, March, 2017.

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Hector Delgado (MAGAP Supervisor for PITTPA and ex-CADERS projects). Information about the development of PITTPA and ex-CADERS projects. Interview by Nícolas Vasconcellos. Personal conversation. Santo Domingo, March, 2017.

MAGAP ingenieros. Closure of Milk Networks program, interview by Nícolas Vasconcellos. Personal Conversation. Santo Domingo, April, 2017.

Zone coordinator from MAGAP. Details about equipment provided to agricultural associations, interview by Nícolas Vasconcellos. Personal conversation. Portoviejo, May, 2017.

MAGAP province coordinators. Situation of milk production in Santo Domingo pros and cons of MAGAPs programs, interview by Nícolas Vasconcellos. Personal Conversation. Santo Domingo, May, 2017.

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Producer of Cristobal Colón Association. Antibiotic in the milk, interview by Nícolas Vasconcellos. Personal conversation. Santo Domingo, December, 2017.
MAGAP Ingeniero 3. Description about problem with producer adding water to his milk tanks, interview by Nícolas Vasconcellos. Personal conversation. Santo Domingo, December, 2017.

Mauricio Morales (Producer from Agricultural Association Cristobal Colón). Follow-up on milking machines and the case of water added to milk, interview by Nícolas Vasconcellos. Personal conversation. Santo Domingo, December, 2017.

Condoy family (Producers from Cristobal Colón Association). Follow-up on milking machines and the case of water added to milk, interview by Nícolas Vasconcellos. Personal conversation. Santo Domingo, January, 2018.

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Producer from Agricultural Association Cristobal Colón. Insights on artisanal cheese production in the association, interview by Nícolas Vasconcellos. Personal conversation. Santo Domingo, January, 2018.

Cheese maker from Asopar Agricultural Association. Insights about sanitary registry for artisanal fresh cheese, interview by Nícolas Vasconcellos. Personal conversation. Santo Domingo, January, 2018.

Cheese maker from Asopar Agricultural Association. How he became a cheese maker in Santo Domingo. Interview by Nícolas Vasconcellos. Personal conversation. Santo Domingo, January, 2018.

Nicolas Alberto Vasconcellos Fernandez
Wageningen School of Social Sciences (WASS)
Completed Training and Supervision Plan

Name of the learning activity	Department/Institute	Year	ECTS*
A) Project related competences			
Qualitative Data Analysis YRM60806	WUR	2015	3
Globalisation and Sustainability of Food Production and Consumption, ENP 31806	WUR	2014	6
Anthropology of Development, SDC32306	WUR	2014	6
Writing research proposal	WUR	2014	6
WASS Introduction course	WASS	2014	1
Sociological Theories of Rural Transformation, SDC 30306	WUR	2014	6
Essentials of Scientific Writing and Presenting	Wageningen in'to Languages	2013	1.2
Scientific Writing and Production	Universidad de Guayaquil	2019	1.9
B) General research related competences			
First international seminar in animal reproduction	ESPE, Santo Domingo	2015	1.5
Learning and research methodologies	Universidad de Guayaquil	2018	1.5
Rubrics design for the monitoring and evaluation of the teaching-learning process	Guayaquil	2019	0.3
C) Career related competences/personal development			
Teaching graduate course at Escuela Superior Politécnica del Litoral – Ecuador.			
Masters Program: Programa de Maestría Internacional en Desarrollo Rural	ESPOL	2019	4
Course: Comunicación e Innovación Rural.			
Total			**38.4**

*One credit according to ECTS is on average equivalent to 28 hours of study load

The research described in this thesis was supervised by the Sociology of Development and Change Group at Wageningen University, The Netherlands.

Financial support from the Sociology of Development and Change Group for research costs and printing of this thesis is gratefully acknowledged.

Cover Pictures: Nícolas Vasconcellos Fernández
Printing: Digiforce - ProefschriftMaken