

Master's Thesis

Sustainable Development – Earth System Governance

Seeding a new future?

The role of the state in agroecological transitions

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Abstract

The negative impacts of modern industrial agriculture are widely recognized in academic literature, supported by growing calls for systemic change. It has become clear to rural citizens and social movements that public policies designed to foster the Green Revolution model have subjected them to external technological and monetary dependency while degrading the environment and human health. Therefore, calls for an *agroecological transition* have now spread among scientists, international organizations and the broader civil society.

Sustainability transitions (ST) is a field of research dedicated to studying how fundamental systemic changes in societal regimes come about. Scholars have increased efforts to study agroecological transitions in the past years. One central actor in the constellation of actors in society is the state. ST literature is adamant in positing that its active participation is required for sustainability transitions while acknowledging the capitalist state as part and supportive of the incumbent, unsustainable food regime. Therefore, it is unclear what role states actually play or can play in sustainable transitions, suggesting a relevant knowledge gap in the literature. This research, thus, responded to calls for more research on the state's role by bringing a novel theoretical perspective to ST scholarship – ecofeminism. This study developed an analytical framework originally combining ST and ecofeminism to investigate the state's role in agroecological transitions.

As a case study, it applied the framework to the recent experience of a state-supported agroecological transition in Brazil between 2012-2019. The results showed that the federal government created an institutional framing that fostered deep cooperation between state actors and civil society, allowing innovations to emerge autonomously from the protagonists of agroecological practices. In addition, the case study highlighted a less-explored aspect in the literature on agroecological transition: the importance of the *types* of markets the state is fostering, which should be compatible with the agroecological premise of transforming food systems and relations between producers and consumers. The addition of ecofeminist lenses to ST literature was vital for unveiling the importance of *which types of* markets are being nurtured.

However, the same institutional setting deemed appropriate to foster the agroecological transition proved highly fragile, supported only by *government policies* and not rooted in deeper *state policies*. Therefore, this case study has shown that states can play critical roles in helping but also hindering transformations if these transitions are not ingrained enough in deeper state institutions.

Key concepts

Agroecology, ecofeminism, political economy, role of the state, agroecological sustainability transitions.

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List of Acronyms

Acronym	Portuguese	English
ABA	Associação Brasileira de Agroecologia	Brazilian Agroecology Association
ANA	Articulação Nacional de Agroecologia	National Agroecology Alliance
ASA	Articulação no Semiárido Brasileiro	Articulation in the Brazilian Semi-arid region
ATER	Assistência Técnica e Extensão Rural	Technical Assistance and Rural Extension services
CNAPO	Comissão Nacional de Agroecologia e Produção Orgânica	National Commission for Agroecology and Organic Production
CIAPO	Câmara Interministerial de Agroecologia e Produção Orgânica	Interministry Chamber for Agroecology and Organic Production
COAGRE	Coordenação de Agroecologia (e produção orgânica)	Coordination for Agroecology (and Organic Production)
CONDRAF	Conselho Nacional de Desenvolvimento Rural Sustentável	National Council for Sustainable rural development
CONSEA	Conselho Nacional de Segurança Alimentar e Nutricional	National Council for Food and Nutrition Security
CONTAG	Confederação Nacional dos Trabalhadores Rurais Agricultores e Agricultoras Familiares	National Confederation of Rural Workers Agriculturists and Family Farmers
CTAO	Câmara Temática de Agricultura Orgânica	Thematic Chamber of Organic Agriculture
CONTRAF	Confederação Nacional dos Trabalhadores e Trabalhadoras na Agricultura Familiar Do Brasil	National Confederation of Rural Workers in Family Agriculture
CT-Org	Câmara Técnica de Orgânicos	Technical Chamber for Organics
DPMRQ	Diretoria de Políticas para Mulheres Rurais e Quilombolas	Office of policies for rural and Quilombola Women
EMBRAPA	Empresa Brasileira de Pesquisa Agropecuária	Brazilian Agricultural Research Corporation
INCRA	Instituto Nacional de Colonização e Reforma Agrária	National Institute for Colonization and Agrarian Reform
MAPA	Ministério da Agricultura, Pecuária e Abastecimento	Ministry of Agriculture, Livestock and Food Supply
MDA	Ministério do Desenvolvimento Agrário	Ministry for Agrarian Development
MDS	Ministério do Desenvolvimento Social	Ministry for Social Development
MLP	Perspectiva multi-nível	Multi-level Perspective
MMA	Ministério do Meio Ambiente	Ministry for the Environment
PAA	Programa de Aquisição de Alimentos	Food Acquisition Program
PAP	Plano Agrícola e Agropecuário	Agriculture and Livestock Plan
PCT	Povos e Comunidades Tradicionais	Traditional Peoples and Communities

PGPAF	Política de Garantia de Preços Mínimos para os productos da Agricultura Familiar	Minimum Price Guarantee Policy for Family Agriculture Products
PGPM-Bio	Política de Garantia de Preços Mínimos para os Produtos da Sociobiodiversidade	Minimum Price Guarantee Policy for Sociobiodiversity Products
PLANAPO	Plano Nacional de Agroecologia e Produção Orgânica	National Plan for Agroecology and Organic Production
PNAE	Programa Nacional de Alimentação Escolar	National Program for School Food
PNAPO	Política Nacional de Agroecologia e Produção Orgânica	National Policy for Agroecology and Organic Production
PNATER	Política Nacional de Assistência Técnica e Extensão Rural	National Policy of Technical Assistance and Rural Extension services
POPMPR	Programa de Organização Produtiva das Mulheres Rurais	Productive Organization Program for Rural Women
PPA	Plano Plurianual	Multi-annual Plan
PRONAF	Programa Nacional de Fortalecimento da Agricultura Familiar	National Program for the Strengthening of Family Agriculture
SPG	Sistemas Participatórios de Garantia	Participatory Certification/Warranty Systems
ST	Transições para Sustentabilidade	Sustainability Transitions

Introduction

An intensive agricultural production model was introduced to the Global South in the mid-twentieth century as a solution to expected future food shortages (Pingali, 2012). This new, industrialized mode of production was based on monocultural techniques, heavy use of pesticides, and transgenic or “miracle” seeds (Shiva, 1993). It was praised by agricultural scientists and international organizations - mainly the World Bank - for its increased crop yield and reduction in global food prices (Evenson & Gollin, 2003; Murgai, 2001; Pingali, 2012; Weltbank et al., 1991), awarding this new technological paradigm the title “Green Revolution”.

However, the scientific framework for this technological paradigm was questioned by critical scholars, which suggested the existence of a *myth* of higher yields (Altieri, 2004; National Academies of Sciences, Engineering, and Medicine, 2016; Quarles, 2017; Shiva, 1993, 1995). Vandana Shiva, world-renowned environmental activist and ecofeminist scholar, explained how studies comparing crop yields by Green Revolution enthusiasts were an unfair, partial, and biased comparison, mainly in terms of food security. The author sustained those studies compared a “high yielding” crop variety in a monoculture, such as wheat, to only that same variety in a multi-cropping system, ignoring yields of all other varieties. Shiva defends a complex mix of diverse crops, external input, caloric and protein value would be essential variables to compute, and comparisons, therefore, are very difficult (Shiva, 1993).

In addition, research showed how agricultural intensification has brought many socio-environmental consequences worldwide such as deforestation, biodiversity loss, soil depletion, food insecurity and increased dependency on food imports (Altieri, 2004; Gibbs et al., 2010; Vermeulen et al., 2012).

While the latest Intergovernmental Panel on Climate Change (IPCC) report has unequivocally confirmed that greenhouse gas emissions from anthropogenic¹ activities are the primary source of climate

¹ While the prevalent notion of the Anthropocene in sustainability science suggests *humans* are responsible for the climate crisis, others argue that specifying that *some* humans, following the specific mentality and paradigms of

change (IPCC, 2021), the global food system contributes to one-third of all greenhouse gas emissions, with up to 86% coming from modern agricultural production (Vermeulen et al., 2012). Still, modern food systems have not significantly changed, weathering a “nonsustainable, chemical-intensive, water-intensive, and capital-intensive” agricultural model (Shiva, 2016b, p. 19). The most recent IPES-Food report argues how the war in Ukraine sparked a third global food price crisis in 15 years due to failures to reform food systems (IPES-Food, 2022). The report suggests that the rise in food insecurity in many countries of the Global South is a direct consequence of the Green Revolution’s agricultural model. It alludes to central issues, such as commodity-oriented monocultures, industrialization of all aspects of food production, dietary shifts to a handful of staple crops and the increased control by transnational corporations of a global, fossil-fuel-intensive market that leads to farmer dependency on external inputs and health issues for consumers.

1.1 Agroecology as an alternative

As a form of resistance to Green Revolution tenets, *agroecology* has emerged as an alternative approach to food production (Francis et al., 2003; Gliessman, 2018; González de Molina et al., 2020; Petersen et al., 2012; P. Rosset & Altieri, 2017; Shiva, 2016b).

The concept of agroecology varies. According to Gliessman, a leading scholar in the field, the most common definition for agroecology in the early 1980s was “the application of ecological concepts and principles to the design and management of sustainable agroecosystems, or the science of sustainable agriculture” (Gliessman, 2018, p. 599). While this conceptualization is still used (Oxfam, 2018), Gliessman defends the definition of agroecology matured, becoming “the ecology of the entire food system” (Francis et al., 2003; Gliessman, 2018, p. 599). This definition resonates with the views of Rosset and Altieri, which define Agroecology as a triad concept: A science, a practice, and a movement.

modern capitalism, such as limitless economic growth, is a more accurate description of responsibilities for the ecological crisis (Jackson, 2016; Kothari et al., 2014; Mies and Shiva, 1993; Moore, 2017; Shiva, 2017).

The *science* of sustainable and resilient agroecosystems is rooted in “small-scale, autonomous resilient and efficient farming systems” (Teixeira et al., 2018, p. 2), with vital social components valuing territorial rooting and human rights, especially of women, youth and indigenous people. Vandana Shiva proposes that modern science is now catching up with agroecology as a widely recognized scientific paradigm but that the system is based on century-old, time-tested peasant and indigenous knowledge, respecting and valuing the “interconnectedness of life and the complex processes that take place within nature” (Shiva, 2016b, p. 20).

The *practice* of agroecology relies on technical aspects, such as local knowledge of land and ecological processes and minimal dependence on external inputs (Teixeira et al., 2018). It may also give prominence to social aspects, for instance, valuing local culture, ancestral knowledge, social participation, community building and food traditions.

Agroecology as a *movement* entails the political struggles and power asymmetries that permeate the current industrial food production model. It offers an alternative, a complete overhaul of food production, from corporate control and distribution worldwide to local-based, autonomous and small-scale, led by a direct or closer relation between food producers and consumers. According to Rosset and Altieri, this third aspect of agroecology is the most controversial one, as it is at risk of cooptation by powerful actors (Rosset & Altieri, 2017).

Nowadays, agroecology is currently being promoted as the best alternative against incumbent agri-industrial regimes, with societal actors worldwide supporting its geographic scaling, such as international organizations (FAO, 2018), scientists (Feola, 2013; IPES-Food, 2022; IPES-Food & ETC Group, 2021; Shiva, 2016b), civil society organizations (Oxfam, 2018) and social movements (La Via Campesina, 2019; Moreira, 2019).

In 2014, FAO - which for decades has strongly supported the paradigm of the Green Revolution (Alexandratos & FAO, 1995; FAO, 1996) - held an International Symposium on Agroecology for Food

Security and Nutrition, its first-ever event on the topic (Rosset & Altieri, 2017). Since then, it has changed its discourse to include agroecology in its set of solutions for transitioning to sustainable food systems (FAO, 2018). According to Rosset and Altieri (2017), institutional actors, such as FAO and some nation-states, try to relegate agroecology as a mere set of tools to be incorporated into the dominant world-scale food system, making it less harmful to the environment whilst maintaining current power relations. Peasant and food sovereignty movements echoed the concern of reducing agroecology to a set of techniques. They stated “it is a paradigm shift in the social, political, productive, and economic relations in our territories (...) Agroecology cannot be just another tool for the expansion of the industrial agri-food production model (...)” (La Via Campesina & The International Planning Committee for Food Sovereignty (IPC), 2018).

The fact remains that scaling up agroecology is challenging, as it comprises not only developing a new socio-technical system but replacing an unsustainable one.

1.2 The transition to agroecology

One can consider scaling up agroecology as a *transition* to a more sustainable food system or a *sustainability transition*. Studying such processes, Sustainability Transitions research (ST) is a young field with around three decades of existence (Markard et al., 2012). It explores how incumbent industrial complexes might be weakened and replaced by sustainable ones (Köhler et al., 2019; Markard et al., 2012). “*Sustainability transitions* are long-term, multi-dimensional, and fundamental transformation processes through which established socio-technical systems shift to more sustainable modes of production and consumption” (Markard et al., 2012, p. 956). Socio-technical systems are complex: simple interactions between some parts can lead to unexpected consequences in the whole system (Meadows, 2009). Therefore, ST scholars use frameworks as tools offering conceptual and theoretical features to enable the analysis of such highly intricate schemes and facilitate the visualization and understanding of its mechanisms (Köhler et al., 2019; Ollivier et al., 2018).

In ST terms, the current global agro-industrial food system is a *dominant regime*. The stability of dominant regimes is often conceptualized based on *lock-ins*² and path dependencies that enable inertia and the maintenance of the status quo (Geels, 2014). Starting to bring agroecology to scale means increasing its practice worldwide in a way that influences current unsustainable trajectories in land use and environmental degradation. This process is usually called an *agroecological transition* (Ollivier et al., 2018; Petersen et al., 2012; Schiller et al., 2020; Teixeira et al., 2018).

Teixeira et al. (2018) define an agroecological transition as a gradual change farmers must undergo, moving from monocultural practices towards agroecological farming principles, supported by paradigm changes in the technological, societal, institutional, and organizational structures. In line with the concept of agroecological transition as a societal shift (and not only a technological one), put forward by social movements and activists, enacting this transition entails paying attention to politics and political struggles which inevitably usher any socio-technical transformation (Geels, 2014; Köhler et al., 2019; Meadowcroft, 2011). The primary locus for this shift in modern societies is the capitalist system.

1.3 Capitalism and the State in transitions

Long-standing historical analyses determine that capitalism as a social system rests upon the ultimate paradigm and imperative of infinite capital accumulation (Luxemburg, 1913; Marx, 1867). In addition, one of capitalism's prominent structures for guaranteeing its reproduction is the state (Feola, 2020). In other words, Newell and Paterson (1998) explain that the central role of the capitalist state is guaranteeing the maintenance of the conditions for capital accumulation.

The call for attention to capitalism and the capitalist state as a social system is familiar to many strands of critical theories when discussing the ecological crisis and the climate emergency. It stems from a broad

² An example of technological lock-in in this regime is the high amount of capital invested in machinery and external inputs, usually through debt, that makes it difficult for farmers to take decisions to change its production methods once money was committed.

recognition of the oxymoronic relationship between *unlimited* economic growth and biophysical planetary *limits* (Brand et al., 2021; Feola, 2020; Goodman & Salleh, 2013; Hickel & Kallis, 2020; Kothari et al., 2014; Mies & Shiva, 2014; Newell & Paterson, 1998, 2010).

During the past years, criticism has emerged regarding ST scholars' lack of attention to politics and the role of powerful actors and institutions in shaping transitions (Avelino & Rotmans, 2009; Meadowcroft, 2009, 2011; Newell, 2020; Shove & Walker, 2007). Many authors have engaged and attempted to respond to such criticism by focusing more on the politics and political economy of transitions³.

Nevertheless, Feola (2020) argues that ST has "essentially taken capitalism for granted" (p. 242), failing to "engage in any significant analyses or critiques of capitalism" (p. 241) as the current dominant socio-economic system in which any societal transition is embedded in and subjected to. Van Oers et al. (2021) argue that engaging with political economy aspects of transitions enables the examination of "how systemic interplay of capitalist economic and political conditions influence whether and how transitions happen" (p. 159). Similarly, Newell (2020) suggests that further engagement with the critical political economy scholarship is not only helpful in analyzing existing conditions and acknowledging the existence of power asymmetries and incumbent relations but also in exploring the potential for transformation *beyond* the existing system.

The need for endless capital accumulation clashes with agroecological principles for food production and social relations. Agroecology relies on minimizing external inputs for food production, production re-localization and short commerce circuits, as well as local knowledge and community practices, all of which are arguably incompatible with the current globalized and transnational food system (González de Molina et al., 2020; Mies & Shiva, 2014; P. Rosset & Altieri, 2017; Shiva, 2016b).

³ See Loorbach et al. (2017) and Truffer et al. (2022) for a review of recent knowledge dynamics in ST scholarship.

The acknowledgement of a historical understanding of the role of the current states in supporting the capitalist growth paradigm does not prevent ST authors from sustaining an implicit or explicit view that the state is an essential actor for sustainability transitions. Johnstone and Newell (2018) postulate that "large-scale, society-wide shifts in infrastructures and the provision and consumption of services and resources, as befit notions of transition and transformation, imply a key role for the state" (p. 73). Similarly, Meadowcroft (2011) writes that state intervention is essential for efforts towards sustainable development, while Swilling et al. (2016) affirm, building on ST literature, that sustainability transitions can only happen if the state facilitates a long-term structural transformation process to more sustainable modes of production and consumption. Furthermore, papers discussing the state of the art of transitions research mention the contribution to public policy as a critical explicit goal of this theoretical strand, implying the existence of a state to enact them (Köhler et al., 2019; Loorbach et al., 2017; Truffer et al., 2022).

This apparent contradiction of acknowledging how the state supports capitalism's underlying unsustainable paradigm of endless capital accumulation while also stating the crucial role of the state in sustainability transitions is justified by the urgency to tackle climate change and the vision that states are the only actors with enough range and depth of powers to act fast enough in influencing future trajectories, either by supporting new sustainable socio-technical systems (Johnstone & Newell, 2018) or destabilizing unsustainable ones (Turnheim & Geels, 2012, 2013).

Upon assessing the state's role in ST literature, Johnstone and Newell (2018) provided evidence of how ST literature so far had engaged minimally with analytical understandings of the role and nature of the state⁴. More recently, Truffer et al. (2022) analysed the focal concepts addressed in the leading journal for the transitions field from its creation in 2011 until 2021. They coded 127 codes with around 2800

⁴ A few exceptions worth mentioning are discussions on the role of the state in *just* transitions, which is not the main subject of this study (Mao et al., 2021; Newell & Mulvaney, 2013; Routledge et al., 2018; Swilling et al., 2016). All these still assume a key role for the state in future transitions.

occurrences in 491 abstracts. The authors did not mention codes for government or state, despite having a code category for actors and networks. These findings support the argument from Johnstone and Newell (2018) of a lack of studies where the state is a unit of analysis, suggesting research and conceptualisations from other fields can help close the gap in understanding the state's role in sustainability transitions.

1.4 Ecofeminism: a vital perspective to study agroecological transitions

Ecofeminism provides a different and possibly complementary perspective on the role of the state for two main reasons. First, while both feminists and ecofeminists diagnose gender⁵ hierarchy as generating woman's oppression, the specific contribution of ecofeminism lies in the understanding that an *empirical and theoretical link between woman's and nature's exploitation exist* (Merchant, 1989; Mies et al., 1988; Tickner, 1993). The conceptual tools connecting gender-based and nature exploitation as part of a quest for capital accumulation can be used to investigate the state's role as a strategic actor enacting or facilitating such a quest. Hence any critical investigation of environmental issues – such as an agroecological transition – needs to include gender as an analytic component. This view resonates with González de Molina et al. (2020) when they affirm that “the gender perspective is essential to transform the food regime according to an agroecological approach” (p. 133).

Secondly, ecofeminists have extensive empirical studies with alternative forms of agriculture as a form of resistance to accumulation-based modes of living and production, as well as theoretical artefacts derived from these experiences. According to ecofeminist scholars, the modernization of agriculture was not passively accepted but resisted by women, peasants and peoples of the forests and water. Ecofeminists documented such struggles in different parts of the world, such as India (Mies & Shiva, 2014; Shiva, 2016a, 2016b), Mexico (Veronika Bennholdt-Thomsen) and Venezuela (Claudia von Werlhof) (Mies

⁵ According to some (eco)feminist authors, such as Lerner (1987) and Mies (1996), it is important to differentiate between a sex-gender nexus and only the term gender. In this study I opted to use gender alone for reader's clarity, but gender is always referred as a sex-gender nexus, and not to gender alone as the social construct. For the difference between them and a definition of sex-gender system, see Lerner (1987, p. 238).

et al., 1988; Mies & Bennholdt-Thomsen, 1999). These empirical cases put traditional forms of agricultural knowledge and practice at the root of ecofeminist theory. From the perspective of the social movements, grassroots agroecological movements have strong links to women's movements, especially in the Global South, reinforcing the usefulness of feminist conceptualisations when studying agroecological transitions (Jalil, Laeticia & Moreira, Sarah Luiza, 2018; Moreira, 2019; P. M. Rosset et al., 2021b; Schiller et al., 2020; Shiva, 1995).

1.5 Brazil as a case study for agroecological transitions

Brazil has recently gone through a period of institutional openness to an agroecological transition. In 2012, former president Dilma Rousseff signed a Decree creating a national plan for agroecology and organic production (PNAPO) (Decreto N° 7.794, 2012). The country's former institutional website for the plan affirms that Brazil was the first country to create a national policy to foster agroecology. In 2019, however, current president Jair Bolsonaro signed another decree (Decreto N° 9.784, 2019) that effectively ended the concerted institutional efforts to bring agroecology to scale in the country.

Moreover, the creation of PNAPO was strongly influenced by women's rural and indigenous social movements (Moreira, 2019). The solid political articulation and orientation of a myriad of social movements and civil society organizations born out of peasant movements have challenged not only policies but arguably the role of the state concerning agroecology.

This recent experience, still underexplored in environmental governance literature in the English language, makes this case study particularly suitable for a rich academic investigation into the role of the state in agroecological transitions.

1.6 Problem Statement and Knowledge Gap

The negative impacts of modern industrial agriculture and farming practices are widely recognized in academic literature, supported by growing calls from peasants, rural workers, and traditional

communities for a systemic change. In Brazil, it has become clear to rural citizens and social movements that public policies designed to foster the Green Revolution model have subjected them to external technological and monetary dependency, all while degrading the environment and human health (Petersen et al., 2012). Therefore, calls for an agroecological transition and supporting public policies have now spread among scientists, international organizations and the broader civil society (FAO, 2018; IPES-Food, 2022; IPES-Food & ETC Group, 2021; Jomalinis et al., 2021; Teixeira et al., 2018).

Sustainability transitions is a field of research dedicated to studying how fundamental systemic changes in societal regimes come about (Loorbach et al., 2017), and scholars have increased efforts to study agroecological transitions in the past years (El Bilali, 2019; Ollivier et al., 2018). One central actor in the constellation of actors in society is the state, and ST literature is adamant in positing that its active participation is a requirement for sustainability transitions to come about (Johnstone & Newell, 2018; Köhler et al., 2019; Meadowcroft, 2011), while also acknowledging the capitalist state as part and supportive of incumbent, unsustainable regimes (Feola, 2020; Johnstone & Newell, 2018; Newell & Paterson, 1998, 2010; van Oers et al., 2021). Therefore, it is unclear what role states actually play or can play in sustainable transitions, suggesting a relevant knowledge gap worth tackling.

1.7 Research Aim and Questions

This research, therefore, responds to the call from Johnstone and Newell (2018) for more research on the state's role, considering the multiple and relational forms of states. It does so by bringing a novel theoretical perspective to ST scholarship – ecofeminism – to complement an analysis of the role of the state in agroecological transitions, using Brazil as a case study.

The core research question (RQ) guiding this proposal is: *what roles can states play in agroecological transitions?*

To answer the RQ, the following sub-questions (SQ) are formulated:

SQ1: What conceptualizations does ST literature offer when discussing the role of the state?

SQ2: What can ecofeminist perspectives on the role of the state add to existing conceptualizations of the state in ST literature?

SQ3: What role did the state play in the agroecological transition in Brazil?

1.8 Scientific Relevance

The main academic contribution of this research is advancing a critical analysis of the state's role in sustainability transitions by contrasting and complementing ST literature with a novel theoretical approach, namely ecofeminism, which has not informed ST debates to date. Discussions on gender and patriarchy are largely absent in ST literature⁶. Truffer et al. (2022) show how gender as a focal concept has only appeared once in the main journal of the field. In addition, one of the key benefits of drawing upon ecofeminist literature is that, differently from other disciplines engaged so far with ST, it does not consider the (nation-)state as a necessary actor for societal transformations.

Conversely, the intersection between agroecology and sustainability transitions is flourishing, while ecofeminism has always been closely linked to alternative forms of agriculture, which include agroecology. This research bridges two theories associated with agroecology but not with each other. Employing a framework that incorporates ecofeminist thought into ST scholarship on the role of the state in studying (agroecological) transitions is an original contribution aiming to add nuance and an explanatory capacity to current conceptualisations of potential societal transitions developed by ST scholars (figure 1).

⁶ For a notable exception, see Sovacool (2021).

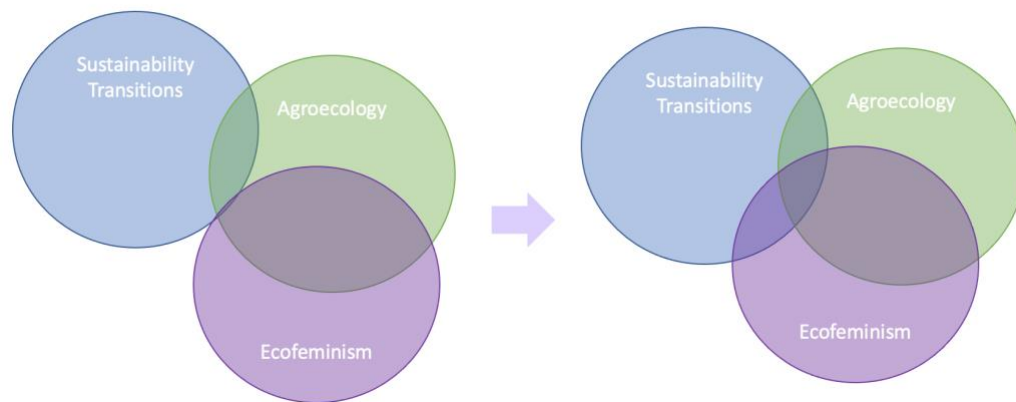


Figure 1: *Bridging theoretical strands*

1.9 Societal Relevance

Not since pre-modern times has humanity faced a challenge that can end our whole species, turning the environmental crisis into the biggest threat to our society (Rockström et al., 2009). More than adding to climate change scholarship, contributing to knowledge towards climate justice is the underlying intention of adding critical perspectives to sustainable transitions scholarship. The interdisciplinarity of this research aims to speed up the transition to sustainable food systems studied by ST scholars while acknowledging past and current oppressions and systems of domination and subjugation, such as colonisation and patriarchy. Only this way can we advance toward a truly sustainable society, not *shifting* environmental and social problems but *solving* them (Feola, 2020).

2. Ecofeminist Conceptual Framework

ST literature is focused on understanding the complex logic of current regimes so they can be changed towards sustainable ones. From this point of view, there is growing recognition that modern capitalist nation-states and capitalism are at the core of the problem and need to be part of a detailed analysis (Feola, 2020; Johnstone & Newell, 2018; Köhler et al., 2019; Loorbach et al., 2017; Meadowcroft, 2011; Truffer et al., 2022). From incumbent relations to regime actors to the difficulty of enacting transitions (Geels, 2014; van Oers et al., 2021), underlying paradigms exist that, arguably, explain **why** such social structure is so resistant to change towards sustainability. These might be found in ecofeminist literature.

Ecofeminism departs from a different starting point than ST: its theories emerge from practical political struggle and women's resistance against gendered forms of domination linked to nature and environmental issues (Mies, 2014; Mies & Bennholdt-Thomsen, 1999; Mies & Shiva, 2014). In similar logic, women's studies as a field of investigation "was *not* the result of academic efforts, it did *not* arise in research institutes, it was *not* invented by a few gifted women scholars, but arose on the street (...) in which housewives, secretaries, students, and a few social scientists came together, who jointly, as women, wanted to fight against patriarchal exploitation and oppression" (Mies & Shiva, 2014, p. 67).

From the practical struggles of women worldwide, mainly in the Global South, ecofeminism derived a plethora of concepts and critiques of modernity, capitalism and western cultural homogeneity (King, 1995; Mies, 2014; Shiva, 1993). These concepts can aid in understanding why capitalism's structures are so resilient and what needs to change for true socio-environmental sustainability. Three main conceptual structures that answer this need are detailed below.

2.1 Patriarchy

In her book "The creation of patriarchy", historian Gerda Lerner (1987) re-creates a path since the neolithic period to understand how modern sexual division of labour and sex-gender asymmetries came about. Lerner proposes patriarchy is a historic human creation that took 2500 to its completion and

appeared as the archaic state, evolving from patriarchal families, then clans, which at some point started to be moulded as the modern nation-state. In her account, the author illustrates how women's sexual and reproductive capacity was commodified in the Neolithic period to foster inter-tribal peace and increase labour power; agriculturists needed it more than hunter-gatherer societies. This commodification later assumed other uses, such as sexual and reproductive slavery of women from conquered tribes, whereas male enemies were killed. Later, men were exploited as slave workers, whereas women were as workers *and* sex providers *and* reproducers. By the second millennium, in new modes of living, women's oppression was ingrained enough so that daughters in poor families were sold for economic purposes, which according to Lerner, could represent the first accumulation of private property.

Therefore, the biological capacity of women to reproduce was what created the first sex-gender asymmetry. Women were subjugated because of their biological capacity, and a gendered system started to develop to maintain control over these qualities. The patriarchal social process is the basis for a series of historical and social processes, norms, and institutions behind the rise of the capitalist state and accumulation as the objective of this new mode of production. It is quite challenging to extricate each concept and process, as they are closely intertwined. Still, I attempt to lay out here the main consequences of a patriarchal mental model and how it can influence the role of the state to date:

2.2 The Death of Nature

The gender oppression and exploitation explained above were also at the root of a new logic for nature exploitation, traced to the Enlightenment period. An original critical contribution from ecofeminist thinking lies in uncovering that between the sixteenth and seventeenth centuries, nature was no longer seen as "mother nature", a living organism, but as a mere resource. Carolyn Merchant (1989) details this process in her book "Death of Nature", explaining how the fathers of modern science and knowledge were behind this transformation of mindset, which started juxtaposing nature and society; human society above nature, in a hierarchical relationship, in the same known hierarchy between men and women.

Merchant (1989) and Mies (2014) explain how the death of nature was also linked to witch hunts in Europe. Witch hunts and the torture of women to extract secrets were the favourite story-telling metaphor of Francis Bacon when explaining how the inductive method was to use the same technique to explore nature and extract its secrets. He stated nature must be bound into service, enslaved and dissected, for “there are still laid up in the **womb** of nature many secrets of excellent use having no affinity or parallelism with anything that is now known (...)” (Merchant, 1989, p. 169, emphasis added). By the end of the process, nature is considered only a raw, dead material, ripped into its smallest elements and ready to be re-created by a (man) engineer into new machines (Mies & Shiva, 2014).

King (1995) explains that breaking down culminates in a modern idea of simplifying organic life, related to the standardization, simplification and decline in diversity in both nature and human culture. This new form of knowledge is intrinsically related to a colonial way of seeing the world as a dichotomy: nature or society, us and the others, rational and emotional, primitive and civilized, or what Vandana Shiva called when defying the modern industrial regime, a monoculture of the mind (Shiva, 1993, 1995). Shiva further affirms that what is today referred to as “science” in general is “in fact Western, mechanistic, reductionist modern science, which became the dominant practice of understanding the world during the Industrial Revolution and has continued as the dominant paradigm” (Shiva, 2016b, p. 21).

Furthermore, it was based on this new method that the technological warfare inventions were developed and used as a fundamental method to establish violent dominion over women and nature (Mies, 2014). Consequently, ecofeminist thinking perceives modern science and technological development logic as oppressive and based on power artefacts since it does not work in conjunction with or respect natural systems.

2.3 Ongoing colonization

It was also around the same time that modern science flourished based on these mental models that the ideological and material bases for the capitalist state and economy emerged. It is reasonable that a system based on *endless* accumulation develops together a new paradigm based on *endless* limits for scientific inquiry.

Patriarchy, as Lerner explained, was based on oppression, violence, and subjugation – first of women and then of other people. Mies (2014) links how warfare and conquest became a more straightforward mode of production than subsistence work based on communities, relying on violent logic that has been developing for centuries. At a certain point, colonies started to be plundered for resources by the incipient modern nation-states, providing the capital needed for capitalism to be established, what Mies (2014) called the first phase of primitive accumulation, followed by primitive accumulation in Europe with the processes on enclosures (Marx, 1867). Therefore, patriarchal ideology is defended by Maria Mies (2014) to be at the root of the state and, later, the capitalist state; without the logic of subjugation and modern knowledge explained before, the systematic exploitation of natural and human resources from colonies in the form of slavery and plunder, possibly would not have happened.

With the development of capitalism, limitless accumulation (in its modern form defined as economic growth) became the main logic of systemic functioning. Another main theoretical contribution of Mies (2014) and Mies et al. (1988) is a new perspective on the *ongoing, permanent* primitive accumulation based on the work of Rosa Luxemburg (1913). The authors explain that endless capital expansion requires a constant material basis besides profit extraction from wage labour. This material basis is obtained by (1) colonial and neocolonial extractivist practices and nature exploitation in the Global South, to the detriment of racialized people and traditional communities, and (2) the reproductive work of women. Reproductive work can be defined as all tasks related to the social reproduction of humans – not only child-bearing and rearing, but also care work, such as cooking, cleaning and maintaining a household. The

latter is a process defined by Mies as *housewifization*, where women's reproduction work continue to be appropriated for free for capitalism to reproduce its labour force.

By linking both nature exploitation and women's reproductive work, the process of turning sources (of life) into resources (Mies & Shiva, 2014) has been mainly opposed by women in (traditional) communities because subsistence and care work are historically and socially relegated to women in patriarchal relations. Therefore, women have a socially constructed closer link to nature; hence, they are more aware of our dependence on ecological balance for survival.

2.4 The patriarchal capitalist states

In conclusion, this social relation between women-nature, first imposed by a sexual division of labour, then reinforced by the origins of modern science and finally cemented by the division of productive and reproductive work in capitalism, is the conceptual and empirical ground of ecofeminist theory. As discussed, the modern state was established based on patriarchal constructs of dominion over nature, power asymmetries and a hierarchical relationship between humans. Therefore, ecofeminists oppose mechanisms and instruments that reinforce these forms of knowledge and practice. In the words of Mies, (eco)feminism "is basically an anarchist movement which does not want to replace one (male) power elite by another (female) power elite, but which wants to build up a non-hierarchical, non-centralized society where no elite lives on exploitation and dominance over others." (Mies, 2014, p. 37).

3. Research Methods

This chapter explains the data collection and analysis processes for this study. It begins with a research design (3.1), followed by two sections on the two different methodologies for each part of the study: the creation of the framework (3.2) and the case study (3.3) applying the framework to analyze the state's role in the agroecological transition in Brazil. Finally, considerations on research ethics (3.4) and validity, reliability, replicability and positionality (3.5) conclude this chapter.

3.1 Research Design

The main goal of this study was to advance the knowledge of what roles states can play in agroecological transitions by analyzing the Brazilian case. This research used sustainability transitions literature, supplemented with ecofeminist scholarship perspectives, to formulate an analytical framework. The framework allows a historical analysis of the state's role in Brazil's agroecological transition. Sustainability transitions literature was chosen due to its focus on studying and understanding how complex societal changes come about, complemented by ecofeminist scholarship, which brings different perspectives on the roles that capitalism and capitalist states may perform in relation to food systems, especially agroecology⁷.

The first research question corresponds to ST's conceptualisations when discussing the state's role (SQ1). The method for answering this question was a qualitative approach based on a literature review, detailed below in section 3.2.

⁷ In political science studies, the difference between (nation-)state and government is well defined or at least well debated. The Oxford English dictionary follows a state theory classification that defines a state as "a nation or territory considered as an organized political community *under one government*". This definition is helpful to bear in mind. Nevertheless, both ST and Ecofeminist scholars usually use state and government as interchangeable concepts when discussing public policy and the role of the state. Therefore, for the purpose of this study, the common literature use of equating government and state was used, unless explicitly stated otherwise.

The literature review on ecofeminist scholarship offered complementary perspectives to ST on the state's role, answering SQ2. It helped uncover potential blind spots of ST scholarship, especially regarding gender issues. Details on how the literature review was conducted are also explained in section 3.2.

Both literature reviews were then operationalized into indicators in an analytical framework to investigate the role of the state in agroecological transitions. Using an analytical framework helped unpack a descriptive process into different categories to better understand the relations between *the role of the state* (central concept) and the historical process of the agroecological transition in Brazil.

As the second part of this study, a case study approach was chosen for its proven ability to aid in an in-depth understanding of the complex phenomena (Bryman, 2012; Yin, 2014), such as food system transitions. A detailed explanation of the process undertaken for case selection, data collection and analysis can be found in section 3.3. The following figure offers a visual summary of the research design, including data sources for each research phase and their connection to research questions.

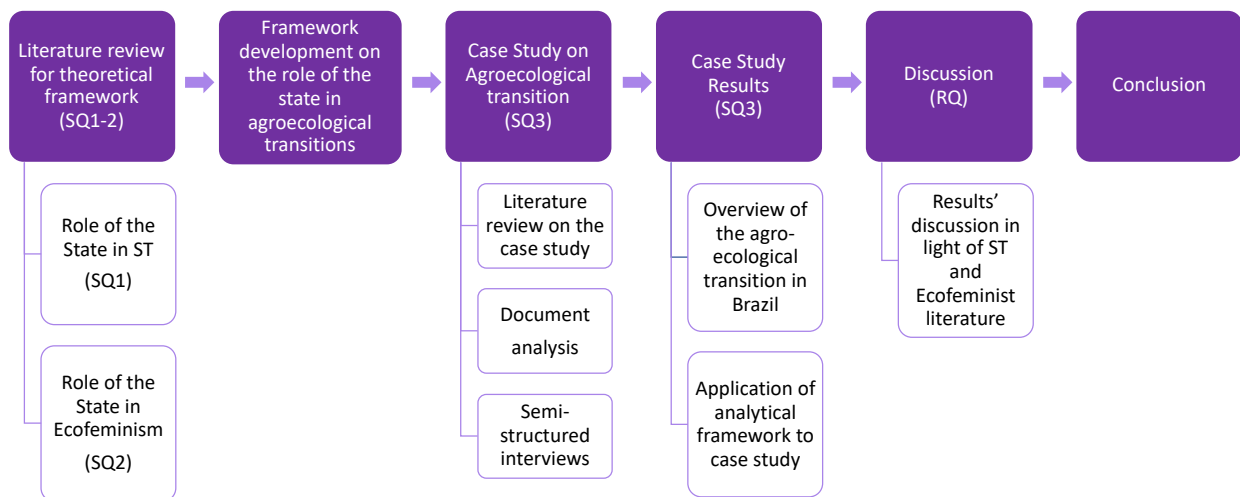


Figure 2: Research design

3.2 Framework Methodology

3.2.1 Data Collection

The method for creating the conceptual framework consisted of an iterative process between (1) a literature survey on empirical examples of how government or the state has acted in past transitions, (2) conceptualisations on structural roles states play in capitalist economies, and (3) normative understandings of what states should do to accomplish societal values and expectations, such as social equality and environmental protection.

The author first conducted a literature search on the term sustainability transitions (and variations of the term) and the state or government in abstract, keywords and title on Scopus⁸, which yielded 501 results. The next step was reading all abstracts and titles and filtering these results, looking only for peer-reviewed articles that focused on the role of the nation-state or federal government in different types of sustainability transitions, excluding papers that dealt with regional-level policies, such as states or cities. A second filter was the focus on more than only one type of policy and broader regime transitions, such as mobility, energy, or food transitions⁹. In other words, the unit of analysis had to be policies or the government's role in a regime-wide transition, and not one specific type of policy or technology-based transition. Finally, papers on small developing islands were excluded, as the complexities of a continental-sized nation like Brazil might not be comparable to small-island states, considering these might be more appropriate to compare with regional-level policy in terms of food system idiosyncrasies. These initial filters have lowered the number of papers to 47. After skim-reading for content, 12 papers were selected as most fitting, discussing or suggesting roles for the state and/or the government in different transitions. The low number of papers supported the critique from Johnstone & Newell (2018) on the lack of attention

⁸ TITLE-ABS-KEY ("sustainab* transition*" AND (state OR government))

⁹ It was not possible to only take food transitions into account as the corpus of literature on the role of the state or government in food transitions is not yet broad enough.

to the state's role among ST scholars. From the selected articles, snowballing from references was used to offer more intellectual subsidies for building and informing the conceptual framework.

It is essential to highlight that 3 of the 12 selected articles from ST literature might be considered to belong to environmental politics scholarship. These are two strands of literature within environmental governance, and their units of analysis and methodologies sometimes overlap. Environmental politics, as its name suggests, is subsidized by political science. Hence, it is more concerned with political aspects of transitions – or transformations (more common terminology in such scholarship). Consequently, it is coherent that 30% of the relevant papers when searching for the state's role in transitions came from this theoretical strand. The cross-fertilization with political sciences within ST is also corroborated by the recent study from Truffer et al. (2022), which shows an increase in the use of its theories since 2014 in the leading ST journal.

The literature review on ecofeminism was based on seminal books by its prime scholars¹⁰, complemented with a literature search on Scopus for articles on the state or government and variations of the term ecofeminism¹¹, yielding 121 results. This second search aimed to discover if more recent perspectives or practices based on ecofeminist theory emerged since the 80 and 90s when most ecofeminist scholarship was written. Six resulting articles were deemed valuable for this research, and snowballing from them concluded the ecofeminist addition to this study with a mix of classic and recent conceptualisations.

3.2.2 Data Analysis

The author then performed a qualitative content analysis of the selected literature with the help of an open category system (Verschuren & Doorewaard, 2010). This process resulted in the development of a

¹⁰ See (d' Eaubonne, 1981; Federici, 2020; Lerner, 2019; Merchant, 1989; Mies, 2014; Mies & Shiva, 2014; Puleo, 2017; Salleh, 2017; Shiva, 1995, 2016)

¹¹ TITLE-ABS-KEY ("ecofeminis*" AND (state OR government))

conceptual framework with three dimensions – functions, relations, and resources. These conceptual devices were operationalized into an analytical framework to investigate the role of the state in agroecological transitions. The functions dimension has indicators from ST and ecofeminist literature. The dimensions and indicators guided the coding process during data analysis for the case study, which is explained in detail in the next section.

3.3 Case Study Methodology

An explanation on the case study methodology is provided below. For visual aid, figure 3 presents the research steps pertaining to this section.

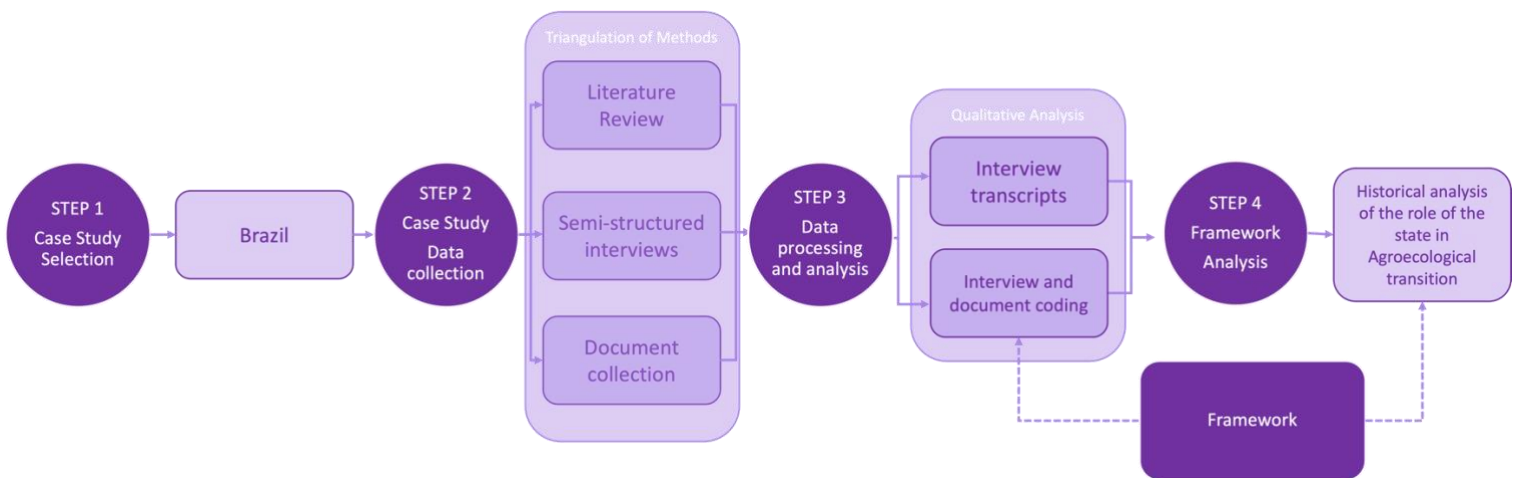


Figure 3: Case study steps

3.3.1 Case Selection

The option for analysing the Brazilian case followed a *strategic* sampling approach (Verschuren and Doorewaard, 2010) explained by three main reasons.

Firstly, as explained in chapter 1, Brazil has recently gone through a period that can be described as a state-supported agroecological transition. In 2012, former President Dilma Rousseff, from the left workers' party, signed a Decree creating a National Policy for Agroecology and Organic Production – (PNAPO) (Decreto N° 7.794, 2012), citing the objective to integrate, articulate and adequate policies,

programs and actions contributing to the agroecological transition. In 2019 President Jair Bolsonaro signed another decree which effectively dismantled the state committees responsible for operationalizing the PNAPO (Decreto Nº 9.784, 2019). Therefore, between 2012 and 2019, a national policy articulating an agroecological transition was in place. The same period was also hugely affected by political turmoil, including a coup d'état culminating in the impeachment of president Dilma Rousseff in 2016, followed by three years of a government with vice-president Michel Temer, who participated in the coup, finishing on the election of far-right president Jair Bolsonaro in 2019, the current president. Such short but intense experience can offer valuable lessons on the specific roles the state has played during this period when the agroecological transition was officially a state policy, assuming such political convulsion has also affected the state actors' perception of agroecology as an alternative for the future of the national food system.

Secondly, assuming the veracity of the claims from Rosset et al. (2021a, 2021b) that agroecology in Latin America is “qualitatively more political, more social, more cultural, and more driven by grassroots social movements, than agroecology in North America, Europe, Africa or Asia” (p. 43), the Brazilian case offers a fertile ground for investigating the role that politics and its embodiment in the nation-state played in the agroecological transition.

Thirdly, the institutionalization of agroecology in Brazil was strongly influenced and pushed by the peasant women's movement (Moreira, 2019; Niederle et al., 2019). Consequently, it had a substantial gender issues agenda, inextricable to any analysis of this agroecological transition in the country. Therefore, ecofeminist scholarship offers sharp conceptualisations and analytical tools to investigate such topics concerning the state, creating a positive loop between the theory and the case study.

3.3.2 Case Study Description

The Decree establishing the National Policy for Agroecology and Organic Production (PNAPO), published on August 20, 2012, is the conceptual and legal framework guiding the state's role in the

agroecological transition in Brazil. A description of this instrument is presented below to describe the case study.

The Decree establishes the aims for the national policy to integrate, articulate and adapt policies, programs and actions that induce the *agroecological transition*, contributing to sustainable development and the population's quality of life through the sustainable use of natural resources and the supply and consumption of healthy food (Decreto N° 9.784, 2019).

It then states the federal government will carry out the policy *in cooperation* with states and municipalities, civil society organizations and other private entities. Its second article defines the policy's conceptual framework, including a definition for agroecological transitions, sociobiodiversity products, and organic and agroecology-based production, which connects to the premises of the policy, on its third article. The premises form the set of values promoted by the policy: food security and sovereignty; sustainable use of natural resources; ecosystem conservation and restoration based on renewable resources; fair and sustainable food production, distribution and consumption, prioritizing family agriculture and land settlement beneficiaries; agrobiodiverse and socially biodiverse products based on resource genetic conservation, mainly of native and traditional varieties. Besides the target on family agriculture¹² beneficiaries, the last two premises also highlight the importance of the rural youth, aiming to fight rural exodus, and women, seeking to reduce gender inequalities and increase women's economic

¹² The law 11.326 of 2006 defines family farmer or family agriculture worker as one who practices activities in rural areas, simultaneously meeting the following requirements:

I - does not hold, for any reason, an area larger than four fiscal modules; II - predominantly uses the family's own labor in the economic activities of their land or enterprise; III - has a minimum percentage of family income arising from economic activities of their land or enterprise, as defined by the Executive Power; IV - manages the land or enterprise with their family.

In the case of collective forms of property, the ideal fraction per owner cannot exceed four fiscal modules. A fiscal module is the rural property's minimum area allowing for an economically viable exploitation of the land. Fiscal module's sizes vary in the country from five to hundred and ten hectares, mostly depending on the region.

autonomy. This wording reflects the interaction with social movements to agree on a final version, a process described in more detail in the following sections.

PNAPO also cites the government's instruments (or *resources*) for promoting agroecology, including pricing policies, knowledge dissemination and regulations, albeit leaving the possibility for new ones. As its main instrument, it defines PLANAPO – the National Plan for Agroecology and Organic Production, in which strategies, goals, objectives, initiatives and result indicators should be clear. As an essential point of contention, PNAPO has not defined specific new budget sources for its policy but relies on the budgets of the bodies and entities participating in it with programs and actions.

Finally, PNAPO establishes two commissions to manage and implement the plan: an Interministry Chamber (CIAPO) and a National Commission CNAPO. CIAPO was composed of a primary and an alternate member; government officials, and/or public servants from ten ministries. The Ministry for Agrarian Development (MDA) coordinated the group, and its core task was to elaborate the PLANAPO and collaborate with CNAPO and internal state departments and other state levels to implement the plan. It was also responsible for monitoring PLANAPO's execution and presenting periodic reports to CNAPO (Sambuichi, Spínola, Mattos, Ávila, Moura, et al., 2017). CNAPO was a commission formed by 28 primary members, 14 from civil society and 14 from the government, as well as their alternates, comprising 56 people. Its main attributions were to debate ideas, bringing civil society's and social movements' experiences and vision to state actors, and to propose and promote objectives, actions and priorities that aided CIAPO in the elaboration and formulation of PLANAPO (Decreto N° 7.794, 2012).

3.3.3 Data Collection

Data collection for the case study relied on a triangulation of methods to increase the validity of the findings (Bryman, 2012; Verschuren & Doorewaard, 2010), especially important once only one case study is being analysed. The methods involved were a literature review, desk research and semi-structured interviews.

3.3.3.1 Literature Review and Desk Research

First, a literature review on the Brazilian case was conducted in 3 languages: Portuguese, Spanish and English, in which the author has full (certified) proficiency. For English, literature was searched in Scopus, whereas for Portuguese and Spanish, Scielo and Redalyc were the data sources of peer-reviewed publications. Due to the relatively small number of publications on the agroecological transition in Brazil, possibly for its recent developments, the use of grey literature was helpful to form a context of the agroecological transition in Brazil from the perspective of other units of analysis, such as social movements (Moreira, 2019), lower government levels and specific policies (Corbari, 2020; Job Schmitt et al., 2020; Martin & Sambuichi, 2019).

As a second step, desk research was conducted based on online policy and legal documents, news pieces, and snowballing from the most recent literature. The agroecological transition's institutionalization in Brazil was a 7-year historical process based on a national policy and two national plans, comprising more than 300 initiatives. Therefore, due to time constraints, during data collection and posterior result's presentation, a choice was made to summarize the main types of initiatives and government programs based on both plans. In addition, results for the second plan were not made available by the government, as the national policy was dismantled. Therefore, some results from the first plan were presented if readily available in the literature and when deemed relevant to the state's role in the period.

As discussed, social movements were and are crucial for the internalization of agroecological paradigms in Brazil's societal and state actors (Petersen et al., 2012). Their mobilization and coordination capacity is expressed in two major institutions which provide a rich repository for academic work, policy documents, and social movement documents sent to the government with policy proposals: the National Agroecology Alliance (ANA) and the Brazilian Agroecology Association (ABA) (Petersen et al., 2012). These

organizations were valuable as they engage in discussions with, via and against the state in different settings, sharing policy analysis, informative briefings, and news on their websites.

Due to time limitations, only the federal level was considered for this case study. This decision entailed an in-depth analysis of federal government dynamics, also offering the advantage of exploring the political shift in the federal government's orientation, from left to right-wing, during interviews.

3.3.3.2 Interviews

State actors' motivations and strategies and how these actors relate to the state's role were paramount to this research. Therefore, interviews were conducted as a complement to document analysis. Interviewees were defined following a purposive sampling approach (Bryman, 2012), focusing on active participants in the creation and implementation of the two National Plans for Agroecology (PLANAPO I - 2013-2015 and PLANAPO II - 2016-2019). A total of 10 participants were interviewed, six men and four women. Three participants were from social movements, and seven were from the federal government. Four participants from the government were public servants. The other 3 were appointees, which usually means a higher level of influence but also more susceptible to institutional changes: appointees usually leave their functions or are forced to leave when the government changes. Participant data was anonymized due to the personal content of some statements. A list of participants and the reference code used for each is shown below in table 1.

Participant	Societal Actor
CS1	Civil Society Organisation/ Movement
CS2	Civil Society Organisation/ Movement
CS3	Civil Society Organisation/ Movement
G1	Government
G2	Government
G3	Government
G4	Government
G5	Government
G6	Government
G7	Government

Table 1: List of interviewees

The semi-structured interviews were conducted in Portuguese, based on an interview guide (see appendix), informed by the three dimensions of the state's role. Quotes from interviewees were translated into English when used in the results presentations. While it was easier for interviewees to understand the questions on the functions of the state or how it related to other actors, the questions on instruments proved more challenging to explore. Still, the language and terms used by interviewees made it possible to deduct when they were discussing instruments, smoothing the coding process. Using the framework as a guide helped maintain the interviews on-topic, simplifying posterior data preparation and analysis. As expected, interviewees offered valuable insights into the motivations, dynamics and struggles before and during policy elaboration and implementation and offered background information on the official policies. Some interviewees also offered new documents, which were added to the document mix and coded accordingly.

3.3.4 Data Preparation and Analysis

For data preparation and analysis, a qualitative content analysis method was chosen (Cho & Lee, 2014), using coding as the primary method for systematically analyzing government documents and interviews. Codes were created based on the analytical framework. Ultimately, new codes also emerged during the analysis in an iterative process, which were incorporated into the coding scheme. Specifically, a first-order code of “Case Analysis”, next to the three dimensions, helped organise information on specific policies, problem statements and results from the national policy and plans (PNAPO, PLANAPO I and II). Coded data were also cross-referenced with the literature to check statements, data provided, and historical facts' veracity to ensure the internal validity of the results (Yin, 2014). NVivo software was used for the coding process.

Besides the Case Analysis family of codes, some topics emerged as sub-nodes to categories in the analytical framework, rendering more nuanced views and even unexplored topics, such as intra-state orchestration, below actor orchestration as a function indicator from ST literature. A few rounds of double-checking and re-arranging codes based on the new information available from other documents or interviews were performed. By the end of this process, the coded data were analysed and interpreted based on qualitative interpretative analysis, allowing to relate the coded data and interpret them. A table with the final list of codes is presented in the Appendix (Document III).

3.4 Research Ethics

Ethical practice is vital in scientific research, particularly in online interviews, where personal data may be collected and stored (Salmons, 2014). Before the interviews, informed consent was asked in electronic format from participants, who had filled out a form for data collection for research purposes. The form explicitly asked participants if they would like their names anonymized or all their data. Only two government participants have asked not to reveal the names of the ten interviewees. Still, given the sensitive and sometimes personal content of answers, based on personal experiences during the analysed

period, the author decided to anonymise data to prevent any harm to participants (Bryman, 2012), dividing the participants merely based on their roles in either civil society or the government. The consent form with participants' names and recording data files were all stored in Utrecht University's cloud system, following General Data Protection Regulation (GDPR), the Netherlands Code of Conduct for Research Integrity and Utrecht University's policies regarding data protection in research. All primary interview data will be deleted after the end of the research project.

3.5 Validity, Reliability, Replicability and Positionality

The validity of this study's research design was discussed throughout this chapter. Nonetheless, a summary is offered in this section. Using a triangulation of methods for the case study was the chosen strategy to improve the internal validity in cross-checking information and sources. In addition, using one in-depth case study ensured this research's feasibility, adding to the result's internal validity (Verschuren & Doorewaard, 2010). The external validity of case studies is, in general, a topic of concern, as the small N and sampling methods in comparison to quantitative research (Bryman, 2012). In this study, this is not problematic as the objective of studying the agroecological transition in Brazil aims to contribute to theory building on the state's role in agroecological transitions, in which the case study results aim at offering subsidies to compare to other cases of agroecological transitions. Therefore, the results are mainly analytical generalisations concerning the theory of what can states' role be in such transitions, resulting in "moderatum generalization" (Bryman, 2012, p. 406). Regarding replicability, as with any case study, this proves more difficult. However, the analytical framework developed might be adapted and used for analysing the state's role in other contexts, creating the possibility of future comparison between case studies.

Regarding general reliability, as discussed in Bryman (2012), it is not possible to be completely free of bias and values. Therefore, reflexivity in acknowledging one's values is necessary and valuable to increase the research's validity. This view concurs with feminist epistemology and research methodology

standpoints, which consider all knowledge produced by people is positioned (Mies & Shiva, 2014). This perspective disagrees with the institutionalized dichotomy from modern science between object and subject, discussed in the conceptual framework. Therefore, situated knowledge and reflexivity are used to ensure transparency and increase the study's reliability. The author, therefore, positions herself as a woman from Brazil, the country studied in the case study, and with a strong identification with feminist movements and activism, which could bear influence in topics related to gender in this study. To prevent any bias in this direction, during data analysis and collection for the case study, more attention was paid to ensure the information on gender issues in the transition was corroborated by comprehensive data and references. As an advantage of this positionality, women's experiences as a class in relation to other actors are still a less discussed topic in academia. The author's awareness of such issues might prove valuable in unveiling mechanisms related to the state's role that could otherwise remain invisibilised.

4. Part 1 of Results - Theoretical Framework on the role of the state

This chapter presents a framework to analyze the state's role in agroecological transitions. The framework was developed based on a literature review on the role of the state within ecofeminist and ST literature. In the first section (2.1), a brief explanation of the conceptualization used for the state is presented. The chapter then moves to a conceptual framework on the role of the state based on a literature review on sustainability transitions scholarship, with the aid of some environmental politics papers on macro-functions of the state as well as ecofeminist scholarship answering the first and second sub-questions (2.2). Finally, a resulting analytical framework is presented (2.3). The analytical framework guides the data collection and analysis of the case study, the next chapter's topic.

2.1 The state

When one reflects on the state's role, discussions of power and power relations are present (Avelino & Rotmans, 2011; Geels, 2014; Johnstone & Newell, 2018). As power is an abstract concept with hundreds

of years of intellectual debate on what it consists of, its forms and consequences, a detailed analysis of power is not part of this research. However, because of the intertwined characteristic of the state and power discussion, this research relies heavily on the work of Avelino & Rotmans (2009) on power to develop its definition of the state. Avelino & Rotmans (2009) developed an original framework for studying power in transitions. The authors developed this framework to study power considering a multi-actor perspective and their complex interactions. In this study, however, the focus on the role of the state meant adapting or limiting the use of some concepts and using ST and ecofeminist literature examples to develop a conceptual framework fitting the role of the state.

Their conceptualisation of power is “the ability of actors to mobilize resources to achieve a certain goal” (Avelino & Rotmans, 2009, p. 550). As the state is one of such actors, the state is conceptualized as a societal actor mobilizing resources to achieve certain goals. **Therefore, the state's role in a transition relies on understanding how the state uses its ability to mobilize resources to achieve specific goals.**

2.2 Role of the state's dimensions

The goals described above are actions or activities government actors execute or aim for (Dryzek, 2003; Hausknot, 2020), which can be called *functions*. They are usually expressed as verbs or nouns conveying action. To execute functions, the state and its agents need different *resources* (Avelino & Rotmans, 2009, 2011) and *relate* (Avelino & Rotmans, 2009, 2011) to other societal actors in different ways. Therefore, resources and relations are preconditions for the state to perform functions (figure 4).

In addition, states can make use of different *types* of resources to execute functions, and it can also *relate* in *different ways* to other societal actors. Therefore, a typology of resources and relations is needed, as it may explain how states perform functions and how these ways may be perceived as good or bad, influencing outcomes for state functions. For example, relating to civil society in a dominant or coercive way to execute a function, such as environmental protection, may be perceived as negative and face resistance, obstructing the outcome or success of the state in performing a function.

Functions, resources, and relations form the analytical framework used in this research to study the state's role. Each dimension is explored in detail in the following sub-sections, and examples from ST and ecofeminist literature illustrate the description. First, resources and relations are explained as preconditions to perform functions. Next, state functions are described and discussed, and conceptual indicators from ST and ecofeminist literature are linked to each state function, contrasting concepts from both scholarships.

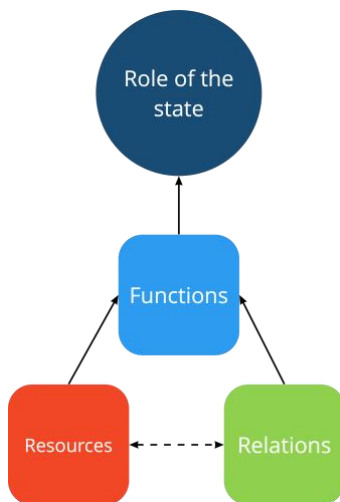


Figure 4: Conceptual model of the three dimensions that affect the role of the state

2.2.1 Resources

According to Avelino & Rotmans' (2009) definition of state power as the ability to mobilise **resources**, a definition and typology of resources is necessary. The authors define these as people, assets, materials or capital in 5 different types of resources, as shown in Table 2 below.

The authors also outline that all the resources listed can be owned. They differentiate between these and “institutional phenomena such as ‘rules’, ‘laws’, ‘culture’ or ‘traditions’” (p. 551), which cannot be owned. There is no hierarchy between them, and to mobilise one type, another type may be needed.

However, one may argue that some institutional resources, such as laws, regulations and policies, are only enacted and can only be legally used by the state apparatuses. In other words, the state “owns” some institutional resources. Therefore, once this research focuses on the role of the state, a new type of institutional resource was added to the list of resources.

Resources	Description	Source
Mental	Information, concepts, ideas, beliefs	(Avelino & Rotmans (2009))
Human	Human leverage; personnel, members, voters	(Avelino & Rotmans (2009))
Monetary	Funds, cash, financial stock	(Avelino & Rotmans (2009))
Artefactual	Apparatuses, products, construction, infrastructure, art	(Avelino & Rotmans (2009))
Natural	Raw materials, physical space, time, organic life	(Avelino & Rotmans, 2009)
Institutional	Laws, regulations, and policies	Author's elaboration

Table 2: Typology of resources adapted from (Avelino & Rotmans, 2009)

When discussing the state, policies, laws, and regulations are sometimes mentioned as an activity or function. However, in this study, a distinction is made between *resources* or instruments the state *uses* and the objective or goal of the activity, which is the *function*. Therefore, when authors mention regulations to foster technological innovation, the function is technological development. The resource used was of an institutional type, as the state used its capacities to regulate to accomplish a goal. A short list of examples from some types of resources and their use by state institutions are found in ST and ecofeminist literature are outlined below.

Mental instruments used by state actors, such as core ideas and beliefs, including unconscious biases, cannot be underestimated. Correspondingly, ecofeminist theory has developed explanations for the underlying ideologies of the modern capitalist nation-state that influence state actions, relations and the use of instruments, which were discussed in the ecofeminist conceptual framework.

Schiller et al. (2020) studied the agroecological transition in Nicaragua through a common framework in ST (Multi-level perspective or MLP). They concluded that the government mainly used *institutional resources* such as regulations and law for *discursive* purposes, which was an essential step in legitimating agroecology in the dominant regime. However, the lack of *monetary* or other institutional resources, such as monetary and pricing policies to fulfil economic development and environmental protection, ended up reconfiguring the incumbent regime, not transforming it towards an agroecological transition. The authors also mention the lack of *pricing regulations* concerning foreign trade, yet another example of an institutional instrument belonging to the state.

Many authors, including Schiller et al. (2020) and Kortetmäki & Huttunen (2022), mention the combination of mental and institutional resources for knowledge creation, dissemination and capacity building. These are usually mentioned in ST literature when discussing the need for socio-technical development, such as the dissemination of agricultural practices or new forms of production for better resource efficiency. As discussed further in the state functions, resource efficiency is a conceptual indicator of ST literature for the state's role in fostering environmental protection.

Analysing how the state has been a central actor in the governance of mobility transitions in the Philippines, Sunio et al. (2021) mention infrastructure building, an *artefactual* instrument aiding the economic development and market formation of a new, more sustainable transport system in the Philippines. The authors observe how, given the multi-actor and complexity character of socio-technical transitions, the state has a unique, significant capacity to coordinate and steer various actors towards sustainable futures via its institutional resources, such as industry regulations.

Geels (2014) cites tariff protection, loans, grants, patent laws and tax subsidies and concessions as examples of institutional and monetary resources used by the government. As for mental and monetary resources, information and research institutions publicly owned or supported with government subsidies can be used. The author also suggests that the frequent contact of policymakers with lobbyists from

incumbent firms may result in ideas and interests of industries being incorporated by such policymakers. Therefore, the state may have mental resources that originate from agents other than state agents and use them for policy purposes. The same is valid for dialogue and relation to civil society actors, although power asymmetries exist when comparing firms and social movements and their relation to the state.

Drawing from ecofeminist literature, Shiva (1995) describes how the British Empire first took possession of its forests for timber extraction at the beginning of India's colonisation process. According to Tickner (1993), the process of exploiting colonies' *natural resources* is at the root of a transition to a market economy and the formation of nation-states. Furthermore, one of the main critiques on this strand is viewing nature *as a resource*, not as a living organism, from which all other forms of life, including human life, derives, and its consequences for social and environmental issues (Mies & Shiva, 2014; Shiva, 1993, 2016a; Tickner, 1993). The view that nature can be reduced to mere resources to be explored is discussed in detail further when the functions of the state from an ecofeminist perspective are explored. Rivadeneira H. (2022) discusses the issues of indigenous women in Ecuador and the violation of their right to self-determination by the Ecuadorian state. Her interviewees offer examples of how, despite having the legal right to self-determination in their territories, exploitation of natural resources is still practised with no consequences, including allowing a private oil company to carry out activities in their territory without formal consultation. Her study can also be linked to the dimension relations and functions of the state, which will be discussed further.

2.2.2 Relations

In this conceptual framework focusing on the state's role, state actors can only use resources to achieve goals *in relation* to other societal actors – citizens, workers, business owners, community members, indigenous groups, and others. *How* the state relates to these groups may influence the outcomes and its ability or inability to perform a role. The surveyed literature did not have an existing typology only for state relations to other actions but was more complex in its conceptualisations (Avelino,

2017; Avelino & Rotmans, 2009, 2011). Therefore, for this purpose, this study takes examples from types of relations described in the literature and creates standard definitions based on the examples summarized in table 3.

Relations	Description	Source
Incumbent	The unofficial power of <i>other</i> powerful societal actors to influence state decision-making in a way that outcomes reinforce and reproduce such actors' power.	Author's definition based on (Geels, 2014; Köhler et al., 2019; Loorbach et al., 2017; van Oers et al., 2021)
Dominant	A relation based on the use of, or threat of, strong forms of power, such as violence or coercion, to change the behaviour or enact change over other societal actors.	Author's definition based on (Mao et al., 2021; Mies & Shiva, 2014; Sempértegui, 2021; Sunio et al., 2021)
Influential	A relation based on soft power to direct the thinking or behaviour of other societal actors.	Author's definition based on (Sunio et al., 2021)
Cooperative	A relation based on dialogue and cooperation with other societal actors	Author's definition based on (de Koning et al., 2021; Pandey, 2009)
Autonomous	A relation that respects the wish for self-governance or partial self-governance of other societal actors without state interference	Author's definition based on (Mies & Bennholdt-Thomsen, 1999; Rivadeneira H., 2022; Sempértegui, 2021)

Table 3: Typology of State relations to other actors

Incumbency is usually referred to in the ST literature as the power of non-state actors or state actors acting to maintain the status quo, that is, an unsustainable regime. Swilling et al. (2016) cite the case of the mineral-energy complex in South Africa as an example of *incumbent* relations to the state that hinder energy transitions in the country. Similarly, Geels (2014) performs a case study to examine politics and power within the UK electricity system, focusing on the different forms of incumbent relations of industry players to state actors, such as policymakers, and how it increases the resistance to regime change.

In their study on the sustainable transport system in the Philippines, Sunio et al. (2021) use two useful conceptualizations of strong (coercive) or soft (without the use of force) power relations used for the influential and dominant relations. The authors exemplify that policies can be coercive, *demanding* compliance against the threat of sanctions, or soft, *encouraging* voluntary cooperation towards objectives. A good example of *dominant* relations can be found in Mao et al. (2021), which showed how the authoritative way of the Chinese state in fighting environmental issues had exacerbated social issues, opposing two different state functions. Van Oers et al. (2021) draw on political economy concepts to show how incumbent relations from the poultry industry in the Netherlands were able to neutralize the transformation of the socio-technical system and maintain the status quo.

In terms of cooperation, ST literature offers the example of Nicaragua and the Netherlands. Schiller et al. (2020) point out that the government held the largest public consultation process ever held in the country to draft a law to regulate agroecological production, aiming for broad societal *cooperation*. In a similar process, De Koning et al. (2021) study the case of a state-led participatory process in the Netherlands. The authors explore the results of this effort of the Dutch government to open discussions between stakeholders competing for marine space and to reach an agreement, which was necessary for energy transition efforts towards the use of offshore windmills. According to the authors, “one of these transitions is the transition of the governance system itself, moving towards a more egalitarian style of policy-making” (p. 1).

The idea of a governance transition is valuable as it depicts the state's role as a shifting and dynamic process. It is also essential to point its opposing perspective to the broad ecofeminist literature, which sees nation-states as a product of and constituted upon a colonial economic order and therefore, there is no possibility of a nation-state or capitalism without hierarchies and different “colonies” to explore – be them women, racialized people or natural resources (Mies & Shiva, 2014). Nonetheless, ecofeminist authors do not form a monolith block. Pandey (2009), in a more recent reading, suggests it is necessary

to transcend a civil society vs the state debate and see them as complementary or able to work in *cooperation*. The author suggests cooperation can be beneficial as long as the state is “democratised”, for which the author offers examples of political empowerment by women and suggestions for policies for ecosystem restoration in Garhwal, India.

As reviewed in the previous section, Rivadeneira H. (2022) discusses the issues of indigenous women in Ecuador and the violation of their right to self-determination by the Ecuadorian state. As a thought-provoking fact, the author reminds us that the most biodiverse areas in the world are in indigenous territories. These territories, in some cases, are considered outside of state control or are at least highly autonomous to the state. In a similar topic, Sempértegui (2021) studies how relations of Amazonian indigenous women to actors such as the state, missionaries, and environmental activists have open spaces for indigenous self-organization and politics. The author explains that the marginalisation of Amazonian indigenous communities did not destroy their ways of living: “non-capitalist means of existence have survived along with local sources of mobilization and resistance, which have long confronted the extractive “invasion” of the state and other actors in their territories. These partly autonomous ways of living have also encouraged indigenous political proposals that challenge modern understandings of nature and territory.” (p. 207-208). Nonetheless, the mentioning of resistance to the state’s invasion of their territory might also configure a dominant relation of the state towards the communities, showing how relations to even the same actors can also be partial, fluid and change rapidly over time, mainly within democratic states in which governments of opposing ideological views might be chosen to succeed its predecessors.

The concept of autonomy, or respect for self-governance specifically within the capitalist state, is vital for this research topic – agroecological transitions. Mies & Bennholdt-Thomsen (1999) propose that for capitalist accumulation to exist and expand, it needs to incorporate all means that allow people to socially reproduce and produce wealth, allocating them specifically to the production of exchange value. Peasant

and indigenous modes of living can exist outside of the capitalist social reproduction system; therefore, they need to be attacked. “Only after people’s capacity to subsist is destroyed are they totally and unconditionally in the power of capital” (p. 19). Because modern states operate under the logic of capitalism, territory autonomy and land use redistribution are usually the main demands to states in agroecological social movements.

2.2.3 Functions

When acknowledging the importance of discussing the role of the state or politics in sustainability transitions, many ST authors (Argyriou & Barry, 2021; Feola, 2020; Johnstone & Newell, 2018; Köhler et al., 2019; Kortetmäki & Huttunen, 2022; Swilling et al., 2016) refer to literature from environmental politics on transformations to more sustainable, green societies (Dryzek, 2003; Eckersley, 2021; Hausknost, 2020; Hausknost & Hammond, 2020; Scoones et al., 2015). Both academic strands (ST and environmental politics) have become more intertwined as the importance given to the politics of sustainability transitions has been on the rise (Truffer et al., 2022). Therefore, environmental politics literature was used to subsidize a structured framework for the functions of the state.

For this research, by mixing both descriptive and normative conceptualisations, five current capitalist state functions were defined to analyze the role of the state in sustainability transitions: (1) economic development, (2) social development, (3) environmental protection, (4) legitimation and (5) domestic order. A discussion is presented below on the five functions, while table 4 summarises their description.

Functions	Description	Source
Economic development	Secure economic activity by increasing services and goods’ production and consumption.	Author’s definition based on (Dryzek, 2003; Eckersley, 2021; Hausknost, 2020; Koch, 2020)
Social Development	Secure basic human needs to all citizens such as nutrition, health, education, security, housing and, in capitalist economies, the ability to consume market goods and services.	Author’s definition based on (Eckersley, 2021; Koch, 2020)

Environmental protection	Protect ecosystemic functions responsible for maintaining human life.	Author's definition based on (Dryzek, 2003; Eckersley, 2021; Hausknost, 2020; Hausknost & Hammond, 2020)
Legitimation	Maintain state power to reproduce its institutions.	Author's definition based on (Dryzek, 2003; Eckersley, 2021; Mies & Shiva, 2014)
Domestic order	Use the rule of law and other instruments to maintain minimal social cohesion.	Author's definition based on (Dryzek, 2003; Koch, 2020; Mies & Shiva, 2014)

Table 4: Description of State functions

Environmental politics discuss high-level, structural functions of states based on classic and contemporary political science¹³. Such authors distinguish between *environmental* and potential *green states* (Dryzek, 2003; Eckersley, 2021; Hausknost, 2020; Hausknost & Hammond, 2020; Koch, 2020).

Eckersley explains that the environmental state is an analytic-descriptive conceptualisation of actually-existing democratic capitalist states (and their incapacity of enacting ecological sustainability). In contrast, the green state is a normative idealization of an ecologically-inspired state.

The author cites the primary function of existing capitalist states to accumulate (1). This function was born in pre-capitalist states, according to Dryzek (2003), from the need to self-finance through revenue generation. In the past, it was done exclusively via tax collection. In capitalist economies, economic growth mechanisms guarantee a revenue stream of money without the need to increase taxes or the number of taxpayers. The state can also generate revenue with profits from supplying products or services. Therefore, capitalist state reproduction mechanisms are directly linked to economic growth¹⁴.

¹³ Many environmental politics scholars are linked by research focus to ST scholarship, mainly within PEST and discuss sustainability transitions. In the field, however, transitions are usually called transformations, an indicator of some separation between the fields.

¹⁴ This is acknowledged and stressed by literature on the political economy of ST (Argyriou & Barry, 2021; Feola, 2020; Geels, 2014; Johnstone & Newell, 2018), as well as ecofeminist literature (Mies, 2014; Mies et al., 1988; Mies & Bennholdt-Thomsen, 1999, 1999; Mies & Shiva, 2014; Shiva, 1995). Ecofeminists have different conceptualizations from political economy literature for *how* the state maintains and ensures unlimited capital accumulation, which were explored in the previous chapter.

Besides accumulation, state apparatuses have other self-maintenance needs – maintaining the domestic order and ensuring social legitimation. The Domestic order function (5) has the broad objective of maintaining social cohesion (or social control) within the boundaries of the nation-state. Dryzek (2003) explains that this function precedes the capitalist state. From a modern perspective, Koch (2020) links this function to capitalism, explaining that since modern society is based on fundamental inequalities necessary for capital accumulation, the capitalist state is, more than ever, a necessary locus for conflict resolution via the rule of law (institutional instrument), guaranteeing the maintenance of social order.

By its turn, the legitimation imperative (4) conveys the necessity of the state to reproduce its material and structural conditions, thus reproducing its power (the capacity to mobilize resources for a goal). One of the forms to fulfil the legitimation imperative is to be aligned with societal concerns, which shift over time (Eckersley, 2021). Accordingly, the last two functions, (2) social development and (3) environmental protection, are intrinsically associated with the legitimation imperative once they are both born out of societal needs.

Chronologically speaking, the imperative of social welfare or social development was born out of the working class struggles against capitalist economy fluctuations and labour exploitation (Dryzek, 2003). The author explains that, for capitalist states to maintain their legitimacy, they had to develop into a welfare state.¹⁵ Similarly, environmental protection is now increasingly recognised as needed for preventing the extinction of the human species, which calls states into action. According to Dryzek (2003), environmental protection is not yet a core function of the state but is increasingly gaining importance for states in the face of ecological collapse.

¹⁵ Although authors do not refer to social development as an intrinsic core task of the state per se, I keep this function as a core state function, once there is a normative understanding within most branches of environmental governance scholarship that any transition to a sustainable society includes a minimum level of social welfare (Brand et al., 2021; Feola, 2020; Köhler et al., 2019; Kortetmäki & Huttunen, 2022; Stevis & Felli, 2020).

However, environmental protection means respecting ecological boundaries, which is at odds with the unlimited economic growth imperative. Eckersley (2021) explains that this oxymoronic relation places current capitalist states in an “accumulation-legitimation dilemma” (p. 249). In other words, Hausknost (2020) explain how the (first 3) “functional imperatives work as system boundaries, providing an ‘invisible glass ceiling’ of socio-ecological transformation” (Eckersley, 2021, p. 250). Koch uses materialist state theory to conclude that the **ultimate** glass ceiling is the growth paradigm, which simultaneously limits and defines state action in economic, social, and environmental spheres, reducing policymaking to the provision of green growth. The legitimation imperative, therefore, today has double and contradictory objectives as it needs economic growth to maintain state functions (Argyriou & Barry, 2021; Eckersley, 2021; Geels, 2014; Koch, 2020; Mies, 2014), but is increasingly affected by social and environmental concerns that many argue cannot be conciliated with economic growth (Hickel & Kallis, 2020; Jackson, 2017; Mies, 2014; Mies & Shiva, 2014; Parrique et al., 2019). Despite evidence of the impossibility of absolute decoupling of economic growth and resource use (Parrique et al., 2019), some ST scholars maintain what Argyriou & Barry (2021) call “technological optimism”: a belief that at least some level of sustainability can be achieved via technological upgrading. This argument connects with the ecofeminist critique of modern technologies and its underlying ethos of believing that the natural order can be dominated and changed to suit human interests (Mies & Bennholdt-Thomsen, 1999; Shiva, 1995).

As a point of attention, state activities might be the same but belong to different functions or have different goals. For example, job creation policies can be both an economic or social development function, and the ultimate goal can be both, one or another, depending on the context for that specific policy. Furthermore, functions should be seen as a guide and not as a rigid and fixed conceptualisation, as reality is not made of discrete variables. Actions may have more than one goal or different consequences than intended. Still, these definitions are a useful analytical tool for understanding how specific policies might define the path of transitions and suggest the paradigm under which certain activities fall.

Equipped with a precise framing for state functions, an analysis of function indicators from ST and ecofeminist literature is possible. This step aims to contrast underlying paradigms and views on the state's role from each literature and inform its analysis in the case study.

2.2.3.1 Functions from Sustainability Transitions literature

Moving on from environmental politics' more abstract notions, an increasing number of ST authors explicitly addressing the role of the state discuss how governments encourage, support, are neutral or hinder transformations from one socio-technological base to another considered better in terms of socio-environmental performance¹⁶. As explained, their analyses are seen in this study as indicators of state roles in sustainability transitions. The state is usually referred to as *one* actor in a complex web of actors, institutions, processes, and paradigms (Loorbach et al., 2017). Similarly to environmental politics differentiation of environmental states and green states, two streams of literature can be identified within ST: (1) historical analyses of what the state is doing or has done (Johnstone & Newell, 2018; Loorbach et al., 2017) or (2) what it should be doing, termed by Köhler et al. (2019) as a normative directionality.

As an example of historical analysis, Schiller et al. (2020) explored the agroecological transition in Nicaragua through MLP lenses. The authors describe governmental use of institutional, mental and artifactual resources such as writing new regulations, knowledge formation programs and creating farmers' markets for *increasing commercialisation* - all contributing to scaling up agroecology. This function is classified as *market formation* for economic development (1) since the objective of the government, according to the authors, was to incorporate agroecology within the current regime and mode of production.¹⁷ Pricing policies aimed at *market protection* from foreign products are cited as lacking, squeezing farmers' profits and exposing them to greater financial risk.

¹⁶ A clear emphasis on environmental issues, in detriment of social ones, can be noticed (van Oers et al., 2021).

¹⁷ Knowledge creation and dissemination programs might also have other goals, such as social development or environmental protection. Which specific function it aims to fulfill or fulfills depends on the context, and knowledge formation is an instrument or resource to fulfil one of these functions.

Geels (2014) mainly focuses on relations between policymakers (state actors) and industry players in the UK about resisting changes towards an energy transition. The author suggests that business actors rely on the state to establish and maintain *private property rights* and the *rules of exchange* so that economic growth (1) mechanisms remain in place. He also cites the need for *tax collection* for the state to maintain its power and institutions, an example of the legitimation function (4).

As discussed, Sunio et al. (2021) studied the state's role in mobility transitions. They cited examples of how the state uses artefactual and institutional instruments to create the conditions for *technological upgrading* of the transport system in Manila. The authors mention many industry-specific interventions via government agencies to aid *market formation*¹⁸, such as route rationalization, consolidation of small-scale operators into cooperatives and financing fleet modernization. The modernization of the transportation sector in the Philippines, according to Sunio et al. (2021), also had the objective of *decarbonising* transportation and *decreasing air pollution* from an outdated fleet, aiming at environmental protection (3). The concern with air pollution can also be framed as a *healthcare* concern, part of the social development function (2).

Argyriou & Barry (2021) analyse another aspect of mobility transitions, offering a view of the UK's bus system decarbonization as a case study. Using a political economy of sustainability transitions approach, the authors evidenced the role of the capital accumulation principle (1) in hindering climate mitigation efforts such as *decarbonisation* (3). Instead, UK's priorities lie in *technological upgrading* and innovation for tackling environmental protection *and* economic growth, in line with an ecological modernization ethos. This was done by prioritizing a policy mix composed of market privatization, stimuli to car electrification, investing in clean bus technology, and creating infrastructure (as an artefactual resource), seen as positive contributors to green economic growth. De Koning et al. (2021) explain that the focus of

¹⁸ Market formation is referenced as niche development. It is in line with ST scholarship overall normative direction that states ought to develop sustainable niches and help destabilise unsustainable regimes (Köhler et al., 2019; Sunio et al., 2021; Turnheim & Geels, 2012, 2013).

the Dutch North Sea agreement was to ensure *decarbonisation* through increasing the use of renewable energy (offshore wind farms) and *nature conservation* (3) while ensuring a *profitable* yet sustainable fishery sector in the region, protecting its market (1). For that, artefactual and monetary instruments were planned, such as investments in fishing fleet restructuring and institutional instruments for regulating spatial aspects of the offshore wind farms.

Kortetmäki & Huttunen (2022) and Swilling et al. (2016) studies offer prescriptive, normative views on transitions. The first develop a role-based framework for examining the types of responsibilities each societal actor has in transitions, based on expected social roles. The authors discuss the state's role in using its power – or the capacity to mobilise different resources – especially its exclusive institutional resources. They cite addressing inequalities and providing social welfare (2), protecting people's *rights* (5) and facilitating *capacity building* (2) for employment in a new economy, mainly for those working today in unsustainable sectors. Besides Kortetmäki & Huttunen (2022), other authors mentioned *actor orchestration* as one of the most critical activities of the state in governing sustainability transitions (Argyriou & Barry, 2021; Konefal, 2015; Kortetmäki & Huttunen, 2022; Schiller et al., 2020; Sunio et al., 2021). This activity is linked to the domestic order (5) function, as it aims at maintaining social cohesion within the broad constellation of societal actors towards transitions. According to de Koning et al. (2021), the state is essential to bring together those not actively seeking cooperation.

Finally, Swilling et al. (2016) propose state activities necessary for a just transition in South Africa. To guarantee legitimacy (4) and a fair transition, the authors suggest the need to develop *publicly accountable institutions*. When discussing social development indicators such as *education*, *income generation* and *healthcare*, the authors consider economic development as a proxy and necessary condition for social welfare. They propose high employment rates should be the focus of a just transition in a “developing” country via green growth. Therefore, states should foster *technological development*, *infrastructure building* (1) and *capacity building* (2), i.e., education, to “help meet the twin challenges of

environmental protection and the creation of decent work opportunities” (p. 9), thereby *reducing social inequalities* (2).

The discussion so far enables an answer to the first SQ. It becomes clear that economic development and environmental protection are the focus of the state's role in ST literature¹⁹. Social development activities are far less mentioned, despite general statements that sustainability transitions should strive to reduce social inequalities (Köhler et al., 2019; Kortetmäki & Huttunen, 2022; Swilling et al., 2016). Concerning the legitimation function, ST literature links the material and structural reproduction and legitimacy mechanisms to economic growth in capitalist societies, especially the political economy of ST (Argyriou & Barry, 2021; Feola, 2020; Geels, 2014). Albeit, environmental concerns are increasingly taking space. Therefore, economic development or environmental protection activities are intertwined with the legitimation function., Despite not having several activities, The domestic order function had the actor orchestration activity mentioned by several scholars, highlighting the importance of this function in ST literature. Regarding instruments and relations, the preconditions for the state to perform its functions, ST does not discuss autonomy from other actors concerning the state, focusing more on other relations, with a negative view of incumbent relations and a positive view of cooperation to other non-state actors as beneficial to pursue sustainability transitions.

This literature review shows that ST scholarship has been responding to calls for more attention to the role of the state and the politics of ST (Johnstone & Newell, 2018; Meadowcroft, 2011). The development of the political economy of ST also has helped unveil the prominent role of capitalism and capitalist paradigms in current societies instead of considering it a mere landscape factor (Feola, 2020). The normative-oriented stream of literature indicates a broader sense of optimism towards the state as an

¹⁹ A reason might be the fact that ST emerges together with the neoliberal paradigm (Johnstone & Newell, 2018). Swilling et al. (2016) suggest, however, that ST scholarship in general is wary of the idea of a minimal state. It therefore relies on governance – not necessarily the government, according to Johnstone and Newell (2018) – to correct market failures towards a “fair” market economy in balance with ecological boundaries.

actor in transitions, influencing how ST indicators are geared towards positive roles for the state in transitions.

Ecofeminist scholars do not share this belief. Thus, a literature review on the state's role from an ecofeminist perspective is explored below to strengthen this investigation, using the same conceptual framework on the five state functions.

2.2.3.2 Functions from Ecofeminist literature

Ecofeminist literature departs from a different starting point than ST: its theories emerge from political struggle and resistance against gendered forms of domination (Mies, 2014; Mies & Bennholdt-Thomsen, 1999; Mies & Shiva, 2014). It was, therefore, early on that its practitioners and scholars were confronted with clear structural barriers to women's equality, such as patriarchal state apparatuses. Therefore, based on historical materialism, some classic ecofeminist authors, specifically the work from Maria Mies, Veronika Bennholdt-Thomsen and Claudia von Werlhof²⁰, do not offer positive or purposeful functions for the state or government. Mies explains why they do not see the role of the state as capable of disentangling itself from accumulation based on colonization of women, other people and nature:

Since the beginning of the modern nation-state (the fatherlands), women have been colonized. This means the modern nation-state necessarily controlled their sexuality, their fertility and their work capacity or labour power. Without this colonization neither capitalism nor the modern nation-state could have been sustained. And it is this colonization that constitutes the foundation of what is now being called 'civil society'. (...) Since from its outset capitalism functioned as a 'world system' (Wallerstein) which overran and conquered foreign motherlands, it was able to accumulate more wealth in the centre and there construct the modern nation- state. (Mies & Shiva, 2014, pp. 120–121)

Similarly, to the previous discussion when defining the five categories of state functions, ecofeminists also identify a fundamental link between economic growth (1) and the legitimation (4) and domestic order

²⁰ The work from these authors became known as the “Bielefeld School”.

(5) functions. In the seminal book of the field, *Ecofeminism* (Mies & Shiva, 2014), Mies links the state's use of institutional instruments (the rule of law) to guarantee the sexual division of labour via marriage laws linked to property and later based on the processes of separating productive and reproductive work, or the *housewifization* of women (1). The objective is to guarantee workforce reproduction as a free resource. Based on these ideas, Silvia Federici campaigns since the 1970s for wages for housework and for *housework to be recognized as a form of work* and economic activity (1) (Federici, 2020). This campaign is a divergence from the denial of the state as a locus for change since it asks for government recognition and monetary compensation to women. Therefore, even if a fundamental understanding of the state as incapable of enacting societal transformation exists, it might still be a locus for political struggle and partial victories, what other feminist strands call a "*depatriarchalization of the state*" (4).

Depatriarchalization is added as one indicator for legitimising state structures based on modern ecofeminist scholarship suggesting *some* changes towards *women's equality* and depatriarchalizing structures *within* the state are possible. This indicator falls under legitimation since efforts to depatriarchalize the state legitimise its existence and maintenance. Pandey (2009) offers empirical evidence of the politicization of women in Garhwal, India, as a form of action to change patriarchal institutions and increase environmental protection (2). Similarly, Norgaard & York (2005) and Nugent & Shandra (2009) have found empirical evidence that more women's participation in the state positively correlates to increased environmental protection in the form of environmental treaty ratification. While Noorgard and York conclude their results are "consistent with the argument of some feminist theorists that the exploitation of nature and the exploitation of women are interconnected" (p. 506), Nugent & Shandra (2009) say their results "do not support for broader ecofeminist claims that the overall oppression of women and environmental degradation are linked by a common source" (p. 208). A reason for these opposing conclusions might be that Nugent and Shandra have studied environmental treaties only in the form of protected nature areas. In contrast, Noorgard and York had a broader base in the form

of all types of environmental treaties. Therefore, the idea of the state as a patriarchal configuration is not dismissed. However, when discussing the role of the state, it is useful to consider the possibilities (and limits) of partial *depatriarchalisation*.

The research on gender parity in state apparatuses suggests that *fostering gender equality* (5), in this case in the form of gender parity²¹, can influence the domestic order function. The rise of women's movements has caused social turmoil and some victories for the emancipation of women (Lerner, 1987).

The following indicators for economic development, social development, environmental protection and legitimisation are tightly connected. Capitalism derives its legitimisation from the *dichotomic thinking* (4) and a general orientation towards homogenisation of modern scientific paradigms (King, 1995; Shiva, 1993) or what Mies et al. (1988) call the *colonisation* (4) of different areas of the social fabric²². Based on these logics and the overall aim of accumulation²³, *nature is viewed as a resource* (1) (Mies et al., 1988; Shiva, 1993; Tickner, 1993) and not a living organism deserving equal rights²⁴ and respect. These legitimisation mechanisms aiming at economic development also devalue practices that do not pursue market-oriented production (Shiva, 1995) but "communities to produce their life without being dependent on outside forces and agents" (Mies & Bennholdt-Thomsen, 1999, p. 4). One of such practices in the book subsistence perspective, by Mies and Bennholdt-Thomsen, is *non-monetary transactions* (1).

The subsistence perspective was a controversial book at the time of its launch, as according to the authors, it was seen, mainly by German scholars, to mean regression and lower living standards. The authors decided to maintain the use of the term *subsistence* to defy mainstream notions that saw living in traditional communities and living off lands produce and community exchange as a poor and backwards form of just subsisting or surviving, not living. However, the narratives in the book bring examples from

²¹ which is a different but related concept.

²² Both concepts were explored in the previous chapter.

²³ Equated in this study to the economic development function and the pursuit of economic growth.

²⁴ A growing body of literature discuss the potential and limits of establishing legal personality to nature within the modern system. See, for example, Tănăsescu (2020) and Gudynas (2015).

around the globe, including Germany, of a period not long ago (right after WWII), where community-based exchanges and food production were at the core of the local economic system, with low dependence on external inputs. The *subsistence perspective*, therefore, is an alternative to a capitalist logic of commodity-oriented production. It is geared towards community self-sufficiency, food security and community building²⁵. The authors consider these as actual social development goals (2). The logic of social development as increasing access and consumption of goods and services is a capitalist interpretation of social development. Social development means living fulfilling and happy lives (2), which are not intermediated by consumption while respecting ecological regeneration and boundaries (3).

Shiva (2016b) has recently taken on the task of discussing transitions in more concrete terms. In her words, “we need a road map to transition from a corporate-driven and corporate-controlled industrialised and globalised paradigm to an Earth-centered and people-centred paradigm of agroecology and food democracy” (p. 122). The author then offers nine principles for societal transitions with anchoring in food production and agroecological principles. These ground principles can be summarized in the *re-localization of food production* (3), *Recognition of traditional, diverse knowledge* (3), and *increase in genetic and food biodiversity* (3), including viewing seeds and land as *commons*, not commodities (1), and producing nutritious, minimally processed locally-grown food, with proper pricing mechanisms that do not externalise the costs of environmental degradation.

The principles laid out by Shiva regarding food all aim at *food sovereignty* (2). In the context of the state's role, this practical and policy-oriented approach has many of the same goals as the subsistence perspective. However, it offers precise *institutional* demands to national and international actors. The concept was introduced by La Via Campesina in 1996 in Rome for the occasion of FAO's World Food Summit. According to the organization, it was then presented to counter the apolitical concept of Food

²⁵ The conceptualization of the subsistence perspective is very similar to a more recent debate and growing academic and activist field calling for Degrowth as a new societal paradigm (Bennholdt-Thomsen, 2014).

Security from FAO (La Via Campesina, 2021). Food sovereignty claims rights to access means of food production, such as water, land, and seeds, so that food security, among other benefits, can be achieved. Food sovereignty also considers the territorial rooting rights of peasants and peoples of the water and forests, such as indigenous communities.

Still relating to the principles for societal transitions, Shiva proposes a mindset change from competition to cooperation, as the latter is the proper foundation of human and nature evolution. This topic relates to the system's knowledge base that needs to be changed. It is interesting to note that actor orchestration, which could also be described as cooperation between actors, was a key function of the state for ST literature for guaranteeing the domestic order. Perhaps the link between this function from ST and the broad paradigm of cooperation and mutualism in ecofeminist thinking as a path towards transitions can be made. Indeed, ST authors discussing cooperative relations have pointed out the need for more egalitarian state structures as necessary for sustainability transitions (de Koning et al., 2021; Kortetmäki & Huttunen, 2022; Swilling et al., 2016).

Finally, A fundamental difference between ecofeminist thinking and ST literature is that ecofeminists have a high critical view of globalisation, which is not a primary subject of analysis in ST literature. This topic is vital for agroecological transitions, as, in globalised systems, food production and distribution need corporations to move goods (Shiva, 2016b). In localized systems, communities can be the main actors. Shiva states that this does not mean an end to international trade but prioritises local relations. Despite the focus of this study on nation-states, all references to localisation could open avenues to discuss the empowerment of sub-national state entities, such as cities and municipalities, as a more appropriate locus for change within modern state apparatuses.

To finish the analysis of the state's role from an ecofeminist perspective, the quote below from Shiva summarises the general functioning that sustainability transitions could envision. Despite a strong theoretical basis for not relying on the state to enact such change, other ecofeminist authors have

supplied some evidence for engagement with the state for partial change, which may be one of many strategies pursued on the quest for essential societal transformations.

Within an agroecological system that sustains life, there are three coexisting economies: nature's economy, people's economy, and the market economy. Together they make up an economy of sustainability. Nature's economy includes biodiversity, soil fertility, and water conservation, which together provide the ecological foundations on which agriculture depends. People's economy is an economy of sustenance, where communities produce what is needed and look after each other. And finally, the market economy involves exchanges and interactions between real human beings, not corporations. (Shiva, 2016b, p. 25)

This review of state functions from ecofeminist literature enables an answer to the second RQ.

Regarding relations, ecofeminists have more empirical evidence and interest in autonomy from the state and even forms of resisting dominant state relations (Rivadeneira H., 2022; Shiva, 1995). This is especially true for indigenous struggles for territorial rights. Still, cooperation with and within the state was defended by some authors (Pandey, 2009; Sempértegui, 2021). As for instruments, the link between mental resources, i.e., the underlying paradigms of patriarchy and capitalism and its consequences in the institutionalization of oppressive structures for women, nature (natural resources), and minorities is a clear focus of ecofeminist considerations.

Moving to functions, ecofeminist literature has shown that social development and environmental protection functions are inextricable. The arbitrary division between its functions follows the logic of what function is more affected by that indicator. However, one could switch the indicator's categories without damaging its analytical power. Furthermore, the close link between ecofeminism and the food system critique has shown the suitability of this theoretical strand in offering valuable indicators of the role of the state in the context of fostering agroecological transitions, mainly functions related to food sovereignty.

In comparative terms, the function indicators from ecofeminism are diverse from ST ones because they focus on "harmful" activities and paradigms guiding state functions that limit or prevent change. Still, it

was possible to use such literature to analyze the role of the state. Arguably, the complement between the more purposeful view of ST with the clear view of mechanisms hindering change from ecofeminism offers a complete analytical framework to investigate state roles for sustainability transitions, presented below.

2.3 Analytical Framework

States need resources and relate to other societal actors in different forms to perform functions. The different types of relations and resources aid analysis of *how* the state performs functions. Functions have indicators pertaining to either ST or Ecofeminist scholarship, which operationalize the function dimension into observable phenomena (Verschuren & Doorewaard, 2010) to be identified during data collection and analysis. The three analytical dimensions discussed above - functions, resources, and relations - are summarised in table 5 below.

This section offered a complete overview of the potential indicators and effects of the state's role on agroecological transitions, forming the analytical framework for the case study. The **role of the state** is the dependent variable in this study, defined by the extent to which and how it has acted regarding the scaling of agroecological food production. The five state functions are the independent variables in this study, influenced by the indicators.

Funcio		Sustainability transitions perspective	Ecofeminist perspective
	Description	Indicators	Indicators
Economic development	Secure economic activity by increasing services and goods' production and consumption.	<ol style="list-style-type: none"> 1. Market formation (Gomes and Barros, 2022; Schiller et al., 2020; Loorbach et al., 2017) 2. Market protection (de Koning et al., 2021; Schiller et al., 2020) 3. Technological development (Gomes & Barros, 2022; Schiller et al., 2020; Sunio et al., 2021; Swilling et al., 2016) 4. Secure private property rights and rules of exchange (Geels, 2014) 	<ol style="list-style-type: none"> 1. Recognition of reproductive work as economic activity (Federici, 2020; Mies & Shiva, 2014) 2. Housewifization (Mies, 2014) 3. Market-logic/exchange-value prioritization (Shiva, 1995) 4. Value non-monetary transactions (Mies & Bennholdt-Thomsen, 1999) 5. Nature as a resource (Mies et al., 1988; Shiva, 1993; Tickner, 1993) 6. Property laws based on commons (Shiva, 2016b)
Social Development	Secure basic human needs for all citizens (nutrition, health, education, security, housing) and, in capitalist economies, the ability to consume market goods and services.	<ol style="list-style-type: none"> 1. Reduce social inequality (Kortetmäki & Huttunen, 2022; Swilling et al., 2016) 2. Education/capacity building (Swilling et al., 2016) 3. Healthcare (Sunio et al., 2021; Swilling et al., 2016) 4. Income generation (Swilling et al., 2016) 	<ol style="list-style-type: none"> 1. Subsistence perspective (Mies & Bennholdt-Thomsen, 1999) 2. Food Sovereignty (Shiva, 2016b)
Environmental protection	Protect ecosystemic functions responsible for maintaining human life.	<ol style="list-style-type: none"> 1. Decarbonisation (Sunio et al., 2021; Swilling et al., 2016) 2. Increase resource efficiency (Swilling et al., 2016) 3. Ecosystem restoration (Swilling et al., 2016) 4. Decrease pollution (Sunio et al., 2021) 5. Nature conservation (de Koning et al., 2021) 	<ol style="list-style-type: none"> 1. Recognition of traditional knowledge (Rivadeneira H., 2022; Shiva, 2016b); 2. Increase genetic and food biodiversity (Shiva, 1993, 1995, 2016b) 3. Re-localization of food production (Mies & Bennholdt-Thomsen, 1999; Mies & Shiva, 2014; Shiva, 2016a)

Legitimation	Maintain state power to reproduce its institutions.	<ol style="list-style-type: none"> 1. Tax collection (Geels, 2014) 2. Guarantee publicly accountable institutions (Swilling et al., 2016) 	<ol style="list-style-type: none"> 1. Depatriarchalisation (Lerner, 1987; Mies, 2014; Norgaard & York, 2005; Nugent & Shandra, 2009)(Norgaard & York, 2005; Nugent & Shandra, 2009; Pandey, 2009) 2. Dichotomic Thinking (Merchant, 1989; Mies, 2014; Mies et al., 1988; Shiva, 1993) 3. Colonization logic (King, 1995; Mies & Shiva, 2014)
Domestic order	Use the rule of law and other instruments to maintain minimal social cohesion.	<ol style="list-style-type: none"> 1. Actor orchestration (Argyriou & Barry, 2021; Kortetmäki & Huttunen, 2022; Sunio et al., 2021) 2. Protect (human) rights (Kortetmäki & Huttunen, 2022) 	<ol style="list-style-type: none"> 1. Foster gender equality (Lerner, 1987; Norgaard & York, 2005; Nugent & Shandra, 2009) 2. Ensure women's rights (Lerner, 1987)

Relations	Description	Source
Incumbent	The unofficial power of <i>other</i> powerful societal actors to influence state decision-making in a way that outcomes reinforce and reproduce such actors' power.	Author's definition based on (Geels, 2014; Köhler et al., 2019; Loorbach et al., 2017; van Oers et al., 2021)
Dominant	A relation based on the use of, or threat of, strong forms of power, such as violence or coercion, to change the behaviour or enact change over other societal actors.	Author's definition based on (Mao et al., 2021; Mies & Shiva, 2014; Sempértegui, 2021; Sunio et al., 2021)
Influential	A relation based on soft power to direct the thinking or behaviour of other societal actors.	Author's definition based on (Sunio et al., 2021)
Cooperative	A relation based on dialogue and cooperation with other societal actors	Author's definition based on (de Koning et al., 2021; Pandey, 2009)
Autonomous	A relation that respects the wish for self-governance or partial self-governance of other societal actors without state interference	Author's definition based on (Mies & Bennholdt-Thomsen, 1999; Rivadeneira H., 2022; Sempértegui, 2021)

Resources	Description	Source
Mental	Information, concepts, ideas, beliefs	<i>(Avelino & Rotmans (2009))</i>
Human	Human leverage; personnel, members, voters	<i>(Avelino & Rotmans (2009))</i>
Monetary	Funds, cash, financial stock	<i>(Avelino & Rotmans (2009))</i>
Artefactual	Apparatuses, products, construction, infrastructure, art	<i>(Avelino & Rotmans (2009))</i>
Natural	Raw materials, physical space, time, organic life	<i>(Avelino & Rotmans, 2009)</i>
Institutional	Laws, regulations, fiscal, monetary, and social policies	<i>Author's elaboration</i>

Table 5: Analytical Framework

5. Part 2 of Results - Case Study

This chapter presents the results of the state's role in Brazil's agroecological transition between 2012-2019²⁶. The section starts with an overview of the agroecological transition period (5.1), including the political turmoil that ended it. Then results are presented for each of the three dimensions of the analytical framework (5.2). Finally, a section with the main findings on the role of the state putting together the three dimensions concludes this chapter (5.3).

5.1 Agroecological Period – Broader Dynamics

While the Decree establishing PNAPO was promulgated in August 2012, the articulation of the plan effectively started with the ministerial order from November 2012 defining civil society's members composing CNAPO. At that moment, the formulation of PLANAPO I (2013-2015) was initiated. Its official launch happened in October 2013 after almost a year of intense debate and negotiations. Because PNAPO did not define new or own budget sources for the national policy²⁷, when PLANAPO's formulation started, the pluriannual plan for 2012-2015 was already in place and approved²⁸. Consequently, PLANAPO had to be based on existing planned budgetary actions from state departments. Therefore, most interviewees and academics say that PLANAPO was nothing more than a gathering of the many diffused programs to foster agroecology and organic production that already existed before (Niederle et al., 2019; Sambuichi, Spínola, Mattos, Ávila, & Moura, 2017), except for the program Ecoforte, which will be detailed further under resources. However, according to Sambuichi et al. (2017), it is not *forbidden* for a new plan with

²⁶ The historical background conducing to this favourable institutional setting is crucial to understanding the case. Social movements and civil society heavily influenced its institutionalisation, and past policies were later instrumentalised for agroecology. However, a description of past occurrences are not part of the results. Therefore, a historical summary is offered in the appendix (document II).

²⁷ According to interviewees, this decision was indicative of a low priority level of the policy.

²⁸ The Pluriannual plan (PPA) is the primary budget planning of Brazil's state department, established in the latest federal constitution in 1988. PPA is planned every 4 years, and any national, regional or departmental state investment and expenditure must be included in this plan and approved by the National Congress (Sambuichi, Spínola, Mattos, Ávila, & Moura, 2017)

actions to be launched after an approved PPA, suggesting the choice not to prioritise new initiatives is a reflex of the low priority of PLANAPO in the broad governmental agenda.

The first PLANAPO had six broad objectives, structured in 4 axes, 79 strategies, 14 goals and 125 initiatives. The four axes were: production, sustainable use and conservation of natural resources, knowledge, and commercialisation. The total budget for credit instruments was around R\$7 billion (approximately 1.34 billion EUR) and R\$ 1.8 billion (approximately 350 million EUR) in expenses and investments (Brasil, 2013). According to the balance report, 15 of the 125 initiatives condensed 95% of the allocated budget (Brasil, 2016b), discussed in the monetary resources section. Ultimately, these surpassed the allocated budget, using R\$ 2.4 billion (approximately 462 million EUR).

PLANAPO II started to be planned in the context of political changes and instability, and all interviewees mentioned the demobilisation of PNAPO until 2018. Still, PLANAPO II was discussed and approved in June 2016. It had seven objectives but was now organised into six axes, adding *Sociobiodiversity* and *Land and territory* as new axes. It more than doubled the number of goals, with 30 goals and 194 initiatives (Brasil, 2016a). The objectives from the plan help form a picture of the priority themes and can be seen as how PNAPO understood the state's role in fostering agroecological transitions (table 6 below). A significant change from the first to the second PLANAPO was cutting the objectives focusing on women and youth. It did not mean that the topics were not a priority anymore, but they were articulated into goals, still maintaining specific initiatives. In addition, many of the 194 initiatives throughout the axes have specific objectives focused on youth and women or include quotas for these target groups. Strong criticism of the failure to mention land distribution and territory rights in PNAPO was voiced by civil society participating in its formulation. Although there was a strategy in the first PLANAPO to increase access to land, implement the agrarian reform and ensure territorial rights, this strategy had no initiatives with budget or physical indicators, criticised again by social movements (Sambuichi, Ávila, Moura, Mattos, & Spínola, 2017). In PLANAPO II, a change in these topics was evident. The new plan adds three objectives related to

indigenous and traditional communities' land rights, with many initiatives now focusing on increasing access to land and recognising territorial rights. The initiatives also focus on fostering and respecting their primary mode of living: (sustainable) extractivism. The plans call extractivist products, such as açaí, and coco babaçu, among others, products of the sociobiodiversity. These changes from PLANAPO I to II show again the cooperation between social movements represented in CNAPO and state actors.

	PLANAPO I - Objectives	PLANAPO II - Objectives
1	Foster agroecological production	Foster agroecological production
2	Foster, recognise and value women protagonism in agroecological production	Promote sustainable use and conservation of natural resources
3	Promote sustainable use and conservation of natural resources	Foster knowledge creation, exchange and dissemination on agroecological production
4	Foster knowledge creation, exchange and dissemination on agroecological production	Increase agroecological food consumption via institutional and local markets
5	Foster young farmer's agroecological production, decreasing rural exodus	Ensure access to land and territory rights to traditional peoples and communities and land reform beneficiaries
6	Increase agroecological food consumption via institutional and local markets	Promote recognition of rights, socio-cultural identity and organization of indigenous and traditional peoples and family farmers
7	-	Foster sociobiodiversity product's production, visibility and consumption

Table 6: Objectives in PLANAPO I 2013-2015 and PLANAPO II 2016-2019

In terms of political changes, during 2014 and 2015, a crisis surrounding President Dilma's reelection start to have economic effects. According to one interviewee, PNAPO was affected by the economic crisis. Budget cuts were being felt as CIAPO and CNAPO prepared the plans for the second PLANAPO (CS2, personal communications, June 24). By 2016, the political turmoil reaches its peak. In May, President Dilma is removed from office to await trial, and Michel Temer is inaugurated as interim President. In less than two weeks, Temer demotes MDA to a Special Secretary of Family Agriculture and Agrarian Development (SEAD). On August 31, President Dilma is impeached, and Temer is inaugurated as Brazil's President. Since Temer's government, data on CNAPO and PLANAPO is scarce. Interviewees confirmed that after what many consider a coup d'état, CNAPO and CIAPO began to be weakened. Key state actors

participating in the committees were political appointees that have either been discharged from their duties or decided to quit as they did not agree politically with the impeachment, considering it a democratic rupture and politically motivated (CS2; CS3, personal communications, June 24, 2022). Some interviewees mentioned the official end of CNAPO in what would be the 20th plenary meeting of CNAPO in April 2018, marked by an incident in which CNAPO civil society members were not allowed in Palácio do Planalto (the official workplace of the President) for the plenary meeting because some were wearing a t-shirt with the former President Lula's face and another participant from an indigenous community was wearing his traditional *cocar* (CONTRAF Brasil, 2018). After this incident, according to interviewees part of CNAPO, civil society participants did not meet again.

The election of President Jair Bolsonaro in 2019 marked an abrupt end to a state-supported agroecological transition in Brazil. On his first day in office, Bolsonaro extinguished CONSEA. On his second day, he further demoted the former MDA to a secretary within MAPA, subordinating the remaining functions of MDA to MAPA. As discussed in the historical background, MAPA and MDA carried two different visions of rural development. With this decision, the President creates an official hierarchy between the two distinct state rural development projects. Furthermore, marking 100 days of government, almost all other participation forums, commissions and chambers were dismantled by Bolsonaro with a decree that extinguished the 2014 Decree creating the National Policy for Social Participation (Decreto N° 9.759, 2019). A summary timeline is presented below in figure 5.

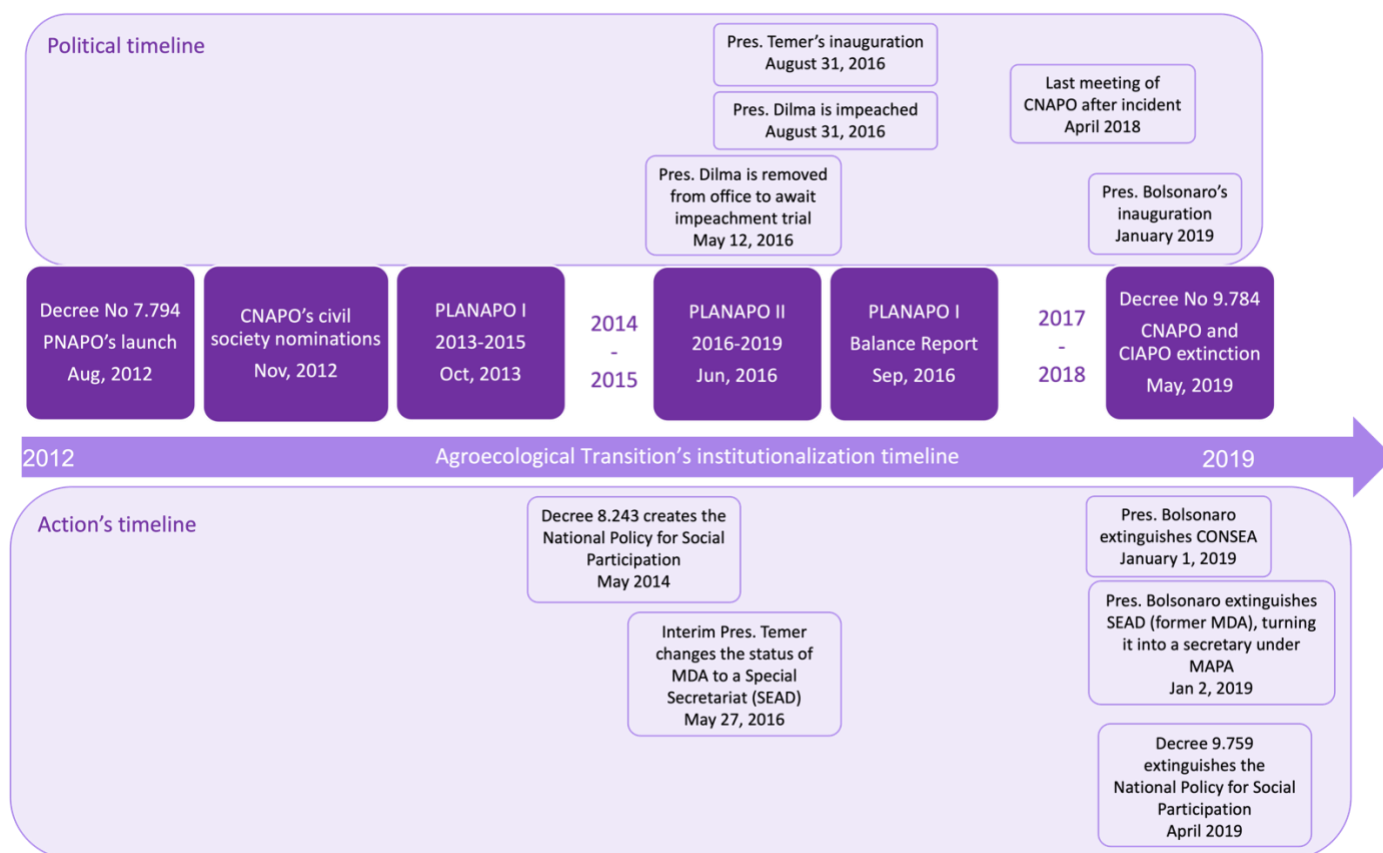


Figure 5: Timeline of the state-supported Agroecological Transition in Brazil

After three years of its formal end, no balance report for PLANAPO II has been made available. Official information on programs from PLANAPO is scarce and extremely difficult to gather. According to interviewees, PNAPO's concrete actions were no longer operational since 2018, with only a few programs being carried further by committed public servants (G4, G5, personal communications, June 29, 2022; G7, personal communications, August 3, 2022).

According to interviewees, five years was a short time to correct problems and failures of the first PLANAPO and to implement improvements to credit and insurance mechanisms, discussed further in monetary resources (G6, personal communications, July 4, 2022). Some actors mentioned both the need to increase cooperation with states and municipalities and territorialisation of the programs to guarantee their execution (CS2, personal communications, June 24, 2022) as well as improve monitoring processes

(Sambuichi, Ávila, Moura, Mattos, & Spínola, 2017), establishing a form of measuring impact, not only the percentage of achievement of initiatives (Sambuichi, Ávila, Moura, Mattos, & Spínola, 2017).

5.2 Roles of the State Dimensions

This section presents the results based on the analytical framework. The three dimensions' results are interconnected, so cross-fertilisation between them was inevitable. Therefore, a choice was made to first discuss the relations dimension, considering it analyses how state actors related to societal actors, leading to different uses of resources and formulation of goals. This dimension's analysis also aids the reader in understanding the beginning and the end of the institutionalisation of agroecology in Brazil. The two other dimensions – resources and functions – analyse the main governmental initiatives and broader dynamics influencing the results.

5.2.1 Relations

The results for the relations dimension are aligned with the literature on the agroecological transition period in Brazil, where authors cite the predominance of fruitful cooperation between civil society entities and the state actors until 2016 (Moreira, 2019; Sambuichi, Spínola, Mattos, Ávila, Moura, et al., 2017; Schmitt et al., 2017). According to interviewees, relations started to change when interim President Temer demoted MDA to a special secretariat.

“For me, it was at that moment that any possibility of the execution of PLANAPO, the continuation of CNAPO, were ruined. Exactly because, as I have mentioned, it was MDA which prioritised the theme of agroecology” (CS3, personal communications, June 24, 2022).

This fact marks institutional changes that undermined the cooperation between social movements and the governmental structures, which escalated with the election of President Bolsonaro, as discussed below.

5.2.1.1 Cooperative

Before Dilma's official commitment to create PNAPO, dialogues between ANA and other organisations were parallel in many institutional spaces. According to Moreira (2019), the Environment Ministry (MMA) team was essential from 2010-2016 in prioritising agroecology at the federal government level. Between 2010-2011, ANA argued for an Agroecology Program within MMA using the institutional spaces of CONSEA (Sambuichi, Spínola, Mattos, Ávila, & Moura, 2017). At the same time, COAGRE at MAPA was already discussing the creation of a National Policy for *Organic* Production since 2010 in a space created for that purpose earlier, the Technical Chamber for Organics (CT-ORG) (Sambuichi, Spínola, Mattos, Ávila, & Moura, 2017). Besides these discussions, an item from the Daisies March agenda in 2011 proposed a national program for agroecology, which was already in negotiation with the President's office (see Document II in the appendix). Therefore, the decision was to unite both processes, and PNAPO would be a National Policy for Agroecology *and* Organic Production. MMA would chair the process from the government's side, and an inter-ministry working group was created to elaborate the policy proposal, including participants from civil society. After rounds of dialogue between civil society and the government in five regional seminars and a national seminar organised by ABA and ABA with the support of MMA, and the analysis of the proposals by other civil society participation spaces such as the organics commissions and CONSEA, a final version was signed in August 2012. Moreira (2019) reveals a "constant tension" within social movements regarding stopping or not negotiations with a government that was not budging on what social movements considered vital areas, such as land and water access rights. Participants saw this decision as directly linked to the incumbent relation to agribusiness. Still, dialogues continued. In the end, such themes were not part of the Decree. Nonetheless, PNAPO was still a milestone for the agroecological transition in the country, formulated based on broad cooperation with civil society.

Furthermore, creating an institutional space for participatory planning, implementation, and monitoring, CNAPO, ensured permanent cooperation with civil society actors.

According to the interviewees, CNAPO had four official meetings during the year, in which both primary civil society participants and the alternates were allowed to participate. Many thematic sub-commissions existed, such as the women's subcommission (Moreira, 2019) and the seeds subcommission (Sambuichi, Moura, Mattos, Ávila, Spínola, et al., 2017).

The space for intra-state cooperation between state actors (CIAPO) was also deemed crucial to ensure policy integration and reduce redundancies and fragmentation, translating into an innovative form of policy governance within the state, a policy owned by all the ten ministries within CIAPO and not only one department or one ministry.

“Another type of policy governance. On the one hand, intersectoral, putting different segments and structures of the state in dialogue (...) This is a novelty because we can see the set [of initiatives] in an articulated way, giving it coherence. (...) I would say that policy-wise, the novelty is governance overcoming the fragmentation that has always prevailed in this field.” (CS2, personal communications, June 24, 2022).

Besides the participatory institutional spaces created by PNAPO, many others existed. In 2014, President Dilma signed a decree creating a national social participation policy, further institutionalising civil society cooperation (Decreto N° 8.243, 2014). In many of these spaces, agroecology policies were also discussed by civil society and agroecological movements; there were sub-commissions and thematic working groups in which policy proposal formulation and elaboration were possible.

A list with examples of other spaces in which agroecology was discussed is presented below (table 7). The list is non-exhaustive, based on the literature examining the agroecological transition and interviewees' mentions.

Participatory Spaces	Policy Type
Consea	Food Security
Condraf	Rural social development
CNPCT	Traditional peoples and communities
CPOrgs	Organic Production
CTAO	Organic Agriculture
CNS	Health
FPAE	Agroecology Techniques

Table 7: List of participatory institutional spaces in the government where agroecology was also a topic of discussion (Authors elaboration based on: Moreira, 2019; CS2, personal communications, June 24, 2022; G1, personal communications, June 29, 2022; Trovatto et al., 2017)

After Temer's inauguration, relations began to change. According to interviewees, President Temer and the new federal government appointees tried to weaken PNAPO and its operations with subtle changes, such as budget cuts, diminishing fora for discussions, and not paying tickets for civil society representatives to fly (G1, personal communications, June 29). At that moment, a purposeful lack of cooperation started to take place. In 2019, President Jair Bolsonaro signed decrees extinguishing many social participation forums and federal councils, including CIAPO and CNAPO (Decreto N° 9.784, 2019; Decreto N° 9.759, 2019). According to then-chief of staff Onyx Lorenzoni, these structures carried a twisted vision of social representation in a government (Jornal GGN, 2019), suggesting social participation and cooperation with civil society organisations for policy formulation were no longer seen as essential for the role of the state.

“Temer started the dismantling process [of cooperation], but I think it is much more incisive in Bolsonaro's government. Some people still thought it was possible to be in spaces of dialogue with the Temer government, but with the Bolsonaro government, it is a lot... The instances of dialogue cease to exist. So, if in the Temer government some things were not so explicit that ‘we are not going to dialogue

with society', in the Bolsonaro government they had no problem saying: 'No. We don't want to talk to you. This space is not legitimate and there is no dialogue'." (CS3, personal communications, June 24, 2022).

5.2.1.2 Dominant

Dominant forms of relationships in this case study were only identified in two moments. First, the April 2018 incident marking the last CNAPO meeting, detailed previously. In video footage by the National Confederation of Rural Workers that day, CNAPO's participants accused the government of violating their free speech and come-and-go rights in public spaces (CONTRAF Brasil, 2018). In this case, interviewees present have linked the feeling at that occasion to a glimpse of a dictatorial state in which their rights were threatened.

One interviewee described a second dominant relation prior to the Daisies March in 2019.

"We were very scared;; we were very afraid of what would happen. We thought a lot. One thinks about what it would be like to deal with security, precisely because he [Bolsonaro] has established fear. It's a good thing there wasn't, there wasn't violence, but the fear was installed, you know? (...) We took to the streets with a lot of fear. So much so that we specified: 'Do not bring the elderly, do not come with children'. Because we were afraid of having to run away, of dealing with tear gas, with police, with cavalry, in short." (CS3, personal communications, June 24, 2022)

According to Van den Berg et al. (2022), the political takeover from far-right Bolsonaro "triggered a surge in violence against Indigenous people, landless farmers and environmentalists" (p. 145), corroborating the idea of an institutionalisation of fear towards social movements.

5.2.1.3 Influential

Influential forms of relations, that is, the use of soft power mechanisms to influence changes and decisions, were identified when veto power was used or the refusal to reach consensus on some questions during the elaboration of policies. In addition, reforms to empty decision-making spaces from its capacity to execute decisions also arguably constitute influential relations.

According to interviewees, after 2016, members of CIAPO started to change, and decision-makers were substituted by technicians who, albeit committed, had low decision-making power (CS2; personal communications, June 24, 2022). These changes were mentioned as ways to weaken PNAP0's management structures without actually stating the policy was being dismantled.

The state's second form of influential relations relates to the failure to approve a National Program for Agrochemical Reduction (PRONARA). Brazil leads the rankings as the biggest agrochemical market (Sambuichi, Moura, Mattos, Ávila, Spínola, et al., 2017), and the high levels of toxicity and contamination bear a direct influence on efforts to scale agroecology. Cases of aerial spraying of pesticides contaminating organic production have already been denounced (Dias, 2020). Therefore, PLANAPO I included an initiative to create a national program for agrochemical reduction. After intense mobilisation and dialogues in CNAPO, a final version of the federal program was achieved in November 2014 (Brasil, 2016a), but CIAPO did not approve it. According to interviewees participating in the process, the reason was that the then-current Minister for Agriculture, Kátia Abreu, did not agree to sign the plan, although all other nine ministries were in favour (G1, personal communications, June 29; CS2, personal communications, June 24).

“The Minister for Agriculture refused to sign. As a result, the President (Dilma) did not sign. She killed the vote of nine ministers. So, that’s why I say the Ministry of Agriculture has a lot of weight in the government” (G1, personal communications, June 29).

Nevertheless, PRONARA was once more included as an initiative in PLANAPO II to be carried out and monitored as a crucial step in the intersectoral articulation for battling health, social and environmental consequences from intensive use of agrochemicals (Brasil, 2016a). To date, PRONARA has not been institutionalized by the federal government.

5.2.1.4 Incumbent

The case of PRONARA and the strength of MAPA are closely linked with incumbent relations to the state by the powerful industrial agriculture lobby present both in MAPA and legislative bodies - the so-called *bancada ruralista* – the conservative agribusiness congressmen and women. Document II in the appendix describes the historical development of the conservative modernisation of agriculture in Brazil and its relation to Brazil's mode of accumulation, including the imperative of maintaining positive balance payments.

The emergence of agroecology as a contesting narrative and mode of rural development did not reduce the influence and incumbency of agribusiness within both executive and, especially, the legislative power (Sambuichi, Spínola, Mattos, Ávila, Moura, et al., 2017). Instead, a “rhetoric of coexistence” was instituted during Lula's government, which persisted during the agroecological transition period (CS2, personal communications, June 24, 2022). The rationale is that Brazil is big enough to have both types of agriculture: industrial monocultures aiming at international markets and agroecological farming as the basis for domestic food security, fighting hunger and increasing people's health.

In addition, Brazilian industrial agriculture is also linked to large transnational corporations that control global food supply chains, supplying soy and maize for fodder and highly processed products of the biggest consumer product companies (Heinrich Böll Stiftung et al., 2021). Such companies support lobbies to maintain the status quo, characterising incumbent relations with legislative and executive power representatives. According to interviewees, pressure from the *bancada ruralista* was common in MAPA when progressive projects or programs were planned; threats to deny budget or even veto other programs if a specific program was carried forward (G1, personal communications, June 29, 2022).

According to interviewees, the decision to move forward with agroecology within institutional boundaries despite agribusiness' incumbency was a conscious one, based on a pragmatic view that one

should not wait for a shift in force correlations to start implementing change; it was possible to start from the fringes (CS2, personal communications, June 24, 2022).

5.2.1.5 Autonomous

As seen in previous sections, agroecology as a concept developed autonomously from state structures, and its conceptual framework relies on local knowledge; its practices are context-specific (Teixeira et al., 2018). Intertwined with such a framework are the rights of traditional and indigenous peoples to live in their territory, including the rights to **self-determination**. The first PLANAPO document states the necessity to value traditional peoples' local and accumulated knowledge in developing agroecological practices (Brasil, 2013). Their knowledge is embedded in specific territories and regional contexts, as are agricultural practices, food crops, and seeds.

Consequently, one of the main challenges in the institutionalisation of agroecology is to foster the autonomy of people to autonomously create their networks of knowledge and local markets *without* controlling or defining what the social innovations should be (CS2, personal communications, June 24, 2022). Furthermore, the emergence of agroecology with such force in Brazil points to the strength of autonomous cooperation in developing social technologies. Accordingly, an interviewee recognised that state actors need to be mindful of civil society's autonomy:

“The [agrarian reform] settlers, the social movements, the cooperatives, the organisations - they have their agroecological transition processes that even precede us” (G4, personal communications, June 29, 2022).

Therefore, autonomous relations and respecting the autonomy of food producers in defining and exploring their socio-technical innovations was the chosen strategy for policymakers and a key characteristic of the agroecological transition in Brazil.

5.2.2 Resources

The resources dimension aims to elucidate what types of resources were used by the government during the agroecological transition in Brazil. Considering the analysis is on the state's role, most of the policies discussed could be categorised as pertaining to institutional and monetary resources once the Brazilian state needs the rule of law to enact any initiative, and budget plans are required to execute them. As this would not offer differentiation between initiatives or any explanatory power, the different types of policies were classified by the kinds of resources they used to cater to the beneficiaries or target groups. For example, if the initiative was related to offering credit, this was considered a monetary resource. The section is divided based on the six resource types defined in the analytical framework.

5.2.2.1 Institutional

Institutional resources pertain to the types of resources only the state has a legitimate use, including state apparatuses. Regulations and control mechanisms, such as certifications, are also part of institutional resources.

Initiatives

Many adaptations to regulations and new programs were needed to foster an agroecological transition, as state institutions, processes and frameworks were already adapted to 50 years of monoculture-oriented agriculture (Sambuichi, Moura, Mattos, Ávila, Spínola, et al., 2017).

Some advancements were already ongoing, such as the organics certification processes (for an overview, see Document II in the Appendix). According to PLANAPO I, organics regulation and certification mechanisms were still not broadly disseminated among farmers and production organisations. Therefore, efforts to implement and facilitate its adoption were planned. According to PLANAPO I's balance report, despite being below the target, there was an increase in the number of certified farmers and organisations.

Agroecology-appropriate inputs are crucial to foster agroecological production. Still, the regulatory framework for such products was poor and unfit. Therefore, regulatory updates and the inclusion of appropriate inputs were planned for PLANAPO I and II (Brasil, 2013, 2016a). Besides agroecology and organic inputs, the same sections on PLANAPO I and II argued the need to reduce agrochemical use in Brazil by implementing PRONARA²⁹. Most of its initiatives were related to revising legislation or increasing regulation, such as agricultural aviation and pesticide legislation and expanding the control mechanisms considering the degree of risk of the products (Brasil, 2013). From initiatives related to the topic, only a program monitoring populations exposed to agrochemicals in all Brazilian states was executed (Brasil, 2016b).

Regarding land regulation, while in PLANAPO I there were no specific actions related to increasing access to land, just broad strategies with no budget pertaining to them, PLANAPO II has added a new axis of Land and Territory, in which land demarcation and control mechanisms to ensure the territorial rights of indigenous and traditional peoples (PCT) is presented (Brasil, 2016a). However, no information regarding initiative execution is available.

Finally, native seeds and their genetic resources are crucial for food diversity and are, therefore, a key component of agroecological transitions to more resilient, local-based food systems (Brasil, 2013). Therefore, PLANAPO I has stated the need to maintain and safeguard farmers' rights to save, use, exchange and sell seeds of local and protected varieties.

[Broader dynamics](#)

State apparatuses, such as departments, internal regulations and dynamics, are also considered part of the state's institutional resources. A relevant topic regarding state institutions arose during all interviews: the view that agroecology should not be treated as a *government policy* but a *state policy*. In

²⁹ The program was already detailed in the influential dimension section.

other words, agroecology should be treated as a primary tool for social rights to food security, work and health, as well as a primary tool for executing an agrarian reform, all constitutional rights under the country's latest constitution (*Constituição Da República Federativa Do Brasil*, 1988), which arguably means *any* government should ensure. Exploring this topic with interviewees, some conveyed they now see how fragile the institutional framework for the agroecological transition was, in agreement with the literature on the subject (Sambuichi, Moura, Mattos, Ávila, Spínola, et al., 2017). This might be why the second PLANAPO proposed the creation of a National Agroecology System (Brasil, 2016a; Sambuichi, Spínola, Mattos, Ávila, Moura, et al., 2017), which was not executed. An interviewee pointed out that, for her, a program needs cohesion between the three state powers - executive, legislative and judiciary – to become a state policy (G5, personal communications, June 29, 2022). This comment was followed by examples of how, despite internal efforts at INCRA (the land reform institute) to implement collective forms of property rights, some land nominations were overturned by the judiciary system based on dubious interpretations of the law. According to an interviewee from the social movements, the lack of convergence happened because the two left governments – Lula and Dilma's – were coalition governments (CS1, personal communications, June 28, 2022). Their priority was to maintain what he called "governability", or the ability to govern effectively. In his view, this is also why the government kept its strong industrial agricultural policies and subsidies, catering to the *bancada ruralista*, and why two ministries were dealing with rural issues.

Some interviewees then mentioned that fixed structures with public servants, and not only based on political appointees, were a way to ingrain policies and programs in state structures (G1, G4, G5, personal communications, June 29). One interviewee mentioned that many times there were discussions to "promote" COAGRE in MAPA from a coordination to a directorate. He was against it for the fact that, in his view, the knowledge from the civil servants in the area is what allowed the progress and institutionalisation of organic production efforts within MAPA:

“We were all in-house technicians, so things would change and we would continue. So, we had history, we had the continuity of the process. It always made a big difference” (G1, personal communications, June 29).

COAGRE was called the Agroecology coordination, later changed to Agroecology and Organic Production coordination under President Temer. Since Bolsonaro’s government, it is called Organic Production coordination. According to an interviewee, the *organics* topic is today seen as a state policy, not a government one, explaining why it survives the current administration (G7, personal communications, August 3, 2022). The reason might be that organics is seen as a niche market suitable for incumbent actors (G1). In contrast, agroecology has an entirely different orientation towards local food chains and a non-industrial mode of production and distribution.

A similar view was shared by INCRA civil servants, who continue their orientation on fostering agroecology when possible, despite the fact it is not the general orientation of the government anymore.

According to three interviewees from different areas of the government, since 2016, the actions related to agroecology were mostly dropped or stopped. The ones related to organic production, which also include some agroecology perspectives (albeit not explicitly), have changed their logic. Initiatives and state resources are now mostly used for regulation, not development. In other words, institutional resources are now used for niche control instead of niche development (G4, G5, personal communications, June 29, 2022; G7, personal communications, August 3, 2022).

Finally, interviewees agreed that budget allocations are the primary evidence of policy priorities. Therefore, securing direct revenue streams to fund programs is the safest route for a government policy to become a state policy.

5.2.2.2 Mental

Mental resources consist of narratives, beliefs, ideologies and knowledge. These composed a large part of PLANAPO I and II, and knowledge was one of the main axes in both. Therefore, initiatives focusing on

knowledge dissemination or creation, such as research or capacity building, are discussed below, followed by the broader narratives and ideological resources affecting the state's role during the period.

Initiatives

Technical assistance and extension services (ATER) form a large part of PLANAPO I and II initiatives. These are the basis for knowledge dissemination among farmers not only of techniques but also helpful information on institutional resources they might access, such as credit policies - how to apply and create technical documents for their application – land access information, among others. Therefore, ATER is seen as an essential instrument for scaling up agroecology (Sambuichi, Ávila, Moura, Mattos, & Spínola, 2017). According to PLANAPO I's balance report, 153.703 families were beneficiaries of the different ATER policies between 2013-2015. The two central ATER policies were agroecology and sustainability, which catered to all publics. In addition, the state also offered target-specific services for women, rural youth, fisherfolk and land settlers, and indigenous and traditional extractivist communities. However, the literature analysing the period considers the lack of capacity among the technicians offering ATER services an issue (Sambuichi, Ávila, Moura, Mattos, & Spínola, 2017).

According to an interviewee, it is essential to note that most family farmers do not produce “agroecologically” but in monocultures or multicultures with heavy use of agrochemicals (G6, personal communications, July 4, 2022). According to him, public policy cannot be an imposition but provide answers to the needs of all these audiences. ATER policies fill this gap while also increasing the base to ingrain agroecology in society and the state:

“We must expand the social base doing agroecology. By expanding it, without a shadow of a doubt, they also become politically empowered to dispute the budget, to dispute the visions in society” (G6, personal communications, July 4, 2022).

Besides knowledge dissemination to farmers, professional training via the Ministry of Education was included in the plans to increase the number of technicians and university courses disseminating agroecology as a discipline and a technique. In addition, fostering knowledge-building and exchange programs were also instruments planned in PLANAPO I and II. As program-specific knowledge creation, PLANAPO I presented initiatives for research on seeds and native species and agroecology-appropriate inputs. Support for agroecology nuclei and their research networks, technology development programs and research composed the initiatives (Brasil, 2013, 2016b, 2016a).

Broader dynamics

The dichotomic ideas around industrial agriculture and agroecology and its forms of institutionalisation within the state were already pondered in previous sections. An interviewee mentioned that despite this dichotomy, the diffusion and *legitimation* of agroecology as a concept was crucial for recognising agroecology as a suitable alternative for Brazil's rural development and food policies.

"It is recognition itself. Because the State recognises the need for an innovative perspective to think about the design of public policies for agriculture in general, for food." (CS2, personal communications, June 24, 2022).

In a counter-movement, Bolsonaro's government has been systematically invisibilising and erasing mentions, programs and narratives with the term agroecology. Besides changing the name of COAGRE, an official government website with all the information on agroecology programs is not available since 2019. It was the primary repository for official documents and information on the state's agroecological policies.

"I think that this erasure, from any [agroecology] history that was related to the government, to previous governments, is really cruel. This erasure of information is cruel. I don't even know how to define it like that, because it's ending up with a story, right? You really end the story. You erase all the history that existed before you" (CS3, personal communications, June 24, 2022).

Similarly, an interviewee said the word agroecology cannot be used to justify any programs or investments anymore; the word agroecology has “left” the Esplanada (the address of all the ministries in Brasília). Family agriculture has undergone a similar process, albeit milder, in which “small-holder agriculture” is a *preferred* term now (G7, personal communications, August 3, 2022).

As a second significant result, a feminist conceptual framework ensuring the relevance of recognising the need for policies to ensure rural women’s rights and their protagonism within agroecology within PNAPO and both PLANAPOs was vital to formulate policies to foster gender equality, as will be discussed in the functions section (Brasil, 2013, 2016a; Decreto N° 7.794, 2012). The same can be said about the shared vision within the plans and policy on the recognition of the protagonism and the rights to the autonomy of indigenous and traditional communities concerning food production, which cannot be extricated to struggles for land demarcation and land distribution. Currently, Bolsonaro’s government has a different ideology based on the need to “develop” indigenous peoples, integrating them into capitalist modes of living (G1, 2020), which translates into different types of policies – including the promise not to demarcate “one more centimetre” of indigenous lands (Madeiro, 2021).

5.2.2.3 Monetary

Monetary resources in this study are direct transfers of resources, reimbursable (credit) or not (funding), and institutional markets as a form of money transfer, all aiming to foster aspects of the agroecological transition. Insurance policies are also considered in conjunction with monetary policies.

Initiatives

The bulk of resources from PLANAPO I was in the form of different credit lines, mainly concentrated in existing lines from PRONAF such as PRONAF Agroecologia, including target-specific lines, for women and rural youth. PLANAPO I budgeted around R\$7 billion (approximately 1.34 billion EUR) in credit, R\$ 2.5 billion from PRONAF and R\$ 4.5 billion from the Agriculture and Livestock Plan (PAP). However, according to the balance report, only 2,5% was used from PRONAF. Data for PAP is unavailable, but only 0,026% of

the total resources from the ABC credit line (low carbon agriculture credit) were to finance organic agriculture (Sambuichi, Ávila, Moura, Mattos, & Spínola, 2017). The literature describes the lack of knowledge from farmers to fulfil all technical plans required from banks, and the lack of capacity from bank employees in dealing with these types of credit lines and how to evaluate the financial feasibility of agroecological projects (Aquino et al., 2020). Other authors suggest that because insurance policies are linked to credit, it is difficult for farmers to access insurance, increasing risks and hindering the transition to agroecological systems (Sambuichi, Ávila, Moura, Mattos, & Spínola, 2017). According to a recent paper, changes were made in PRONAF to correct some of its deficiencies. The data suggests the changes were partially successful, as the total number of contracts for PRONAF Agrecológia is still a meagre percentage of the total PRONAF contracts and resources (respectively 0,036% and 0,034% during PLANAPO II's period). Nonetheless, a comparison between the PLANAPO I with PLANAPO II periods shows an increase of 2,185% in the number of contracts carried out by this line and of 785% in the resources applied (Sambuichi et al., 2020).

Other authors cite a broader debate on the inadequacy of banks and bank-based credit to finance agroecological production, suggesting government funding, fostering credit cooperatives, and rotational credit, among others, are more appropriate (Sambuichi, Ávila, Moura, Mattos, & Spínola, 2017). A similar critique on the inadequacy of credit as a tool for fostering agroecological production was mentioned in the context of rural women (also discussed in the functions section).

“The productive gardens were often intended for self-consumption. The bank does not finance this, it finances for market production, it has to do with which market it would cater for. So, the truth is that the bank always preferred to finance beauty and manicure salons than to finance the productive activity of women. And I think that to this day it is a difficult debate to have within the State” (G3, personal communications, June 27, 2022).

In the context of INCRA, different funding lines for establishing land settlers are offered to beneficiaries, which escape the bank logic. INCRA credit lines are called facilities' credit, which is actually a subsidy from the government, in which 80, 90 or even 100% of the amount, depending on the purpose, does not need to be repaid. The objective is to help beneficiaries build their homes and productive gardens based on agroecological principles, sometimes adding simple irrigation systems, a car to take produce to local markets, etc. (G4, G5, personal communications, June 29, 2022).

Existing policies³⁰, such as institutional markets for buying food – PAA and PNAE – and minimum pricing policy guarantees for family agriculture and sociobiodiversity production (PGPAF and PGPM-Bio, respectively) were also monetary instruments included in the national plans. They were revised to increase the participation of organic and agroecological percentage in its regulations.

Ecoforte was a new program, thanks to articulations from ANA that preceded PLANAPO. Consequently, its funding did not come from PLANAPO's budget. The program offered funding to strengthen agroecology networks in Brazil, considered one of the best outcomes of the agroecological period (Job Schmitt et al., 2020; Martin & Sambuichi, 2019), supporting 28 networks in total during the first PLANAPO. Applicant networks had to be productive organisations producing within agroecological principles. The project formats were not defined by the state but by the organisations themselves, taking into account the underlying paradigm that agroecology is based on grassroots innovation and, therefore, needs to be built by the protagonists themselves (Martin & Sambuichi, 2019). The funding could be used for training, buying agricultural inputs, such as seeds, infrastructure, machinery for fieldwork and agroindustrialisation, aiming to foster food production and facilitate access to institutional markets. The program also included more points in the selection process for networks with women and indigenous and traditional community members. Another ongoing program was also included in PLANAPO I, the Productive Organisation

³⁰ The programs are detailed in Document II in the Appendix.

Program for Rural Women (POPWR), which also included fostering agroecological production in its objectives, and had a similar destination of funding of Ecoforte, to be used for technical assistance, buying production factors, among others (Moreira, 2019). INCRA's program Terra Forte had a similar operationalisation, with funding for fostering the productive organisation of land settlers in agrarian reform settlements.

Broader dynamics

Among broader dynamics related to monetary instruments, the budget prioritisation issue discussed within institutional resources is also fitting to this section. Interviewees shared that the state's budget allocations are the main evidence of policy priorities. In accordance with that statement, a policy proposal document from ANA shared by an interviewee, created to subsidise PNAPO negotiations, suggested three different revenue streams fund PNAPO. The first was the budget from existing initiatives and future initiatives from PPA, which was the only source cited in the policy. Besides that, the letter also proposed the creation of a National Fund to support and promote agroecology and organic production, with resources from public companies, foundations, environmental fines, taxation, royalties, and multilateral organisations and international cooperations. The third proposal was a re-adaptation of existing funding funds and programs also to be used in PNAPO. However, the second and third proposals were not implemented, facilitating the demobilisation of funds as new governments had different priorities.

5.2.2.4 Human

Human resources are people who can be mobilised to work towards the agroecological transition. This resource did not have as many results to discuss as the previous sections.

Initiatives

Regarding the initiatives, as discussed in mental resources, a key issue in policy implementation was a lack of knowledge from groups of service providers in understanding agroecology and agroecological

production to offer related services, even when the budget for such activities was secured. Aware of this problem, PLANAPO has added initiatives to provide training to government staff, as well as banks and NGOs involved in credit and ATER policies to foster agroecological transitions (Sambuichi, Ávila, Moura, Mattos, & Spínola, 2017).

Broader dynamics

Among the state dynamics, the agency of civil servants and government officials emerged as a crucial component for fostering transitions. Moreira (2019) cites the Office of policies for rural and Quilombola Women (DPMRQ) as a decisive component in including women's perspectives, as fighting for changes in patriarchal state structures and recognising and fostering the reproductive work of women embedded in agroecology. This topic will be discussed further in the functions section. The will of state officials and civil servants to work towards agroecological transitions can be linked to an increase since Lula's government in new political appointees who had a history with or within social movements³¹, linking to mental resources and internal belief systems.

5.2.2.5 Artefactual

Artefactual resources in this study relate to tangible materials and services provided to beneficiaries or inserted in broader dynamics of the agroecological transition.

Initiatives

One key initiative related to infrastructure building within PLANAPO I and II was the Segunda Água cistern implementation program (figure 6). This existing program ensured access to potable water for families and farmers living in the semiarid region of Brazil. The objective was to increase access to drinking water and produce food even during dry periods (Satiro et al., 2018).

³¹ See Document II in the Appendix.



Figure 6: Individual 16.000 Liter cistern built in the Semi-arid region for securing water supply and storage during drought periods (image source: ASA, n.d.).

The program was included in PLANAPO I and II. It was the biggest executed initiative in terms of non-reimbursable resources in PLANAPO I (Brasil, 2016b), with almost R\$1.5 billion (approximately 293 million EUR) invested, while the initial budget was R\$600 million (approximately 117 million EUR). Correspondently, the target of 60.000 cisterns was surpassed and reached more than 140.000 homes.

A second result relating to artefactual resources was the existence of plans in both PLANAPO I and II to support building and equipping seed banks to increase native seed conservation and genetic diversity for food security and production (Brasil, 2013, 2016a).

Broader dynamics

The only result for broader dynamics linked to artefactual resources is the use of public buildings for meetings with civil society members. The incident from April 2018, when CNAPO members were not allowed in public buildings, is an example of how spaces can also be used to foster or hinder transitions, as the members did not have a physical space to meet anymore. Consequently, no meetings happened after that day, according to one interviewee (G7, personal communications, August 3, 2022). Another interviewee stated that a positive consequence of COVID-19 as an external shock was the need to adapt to digital forms of communications, which could have facilitated articulations related to agroecology

between social movements and the government if there was still an openness to dialogue and social participation in policy formulation (G1, personal communications, June 29, 2022).

5.2.2.6 Natural

Natural resources in this study relate to how the state instrumentalised biological and physical resources for fostering agroecological transitions.

Initiatives

The only mentions of specific resources from nature as essential to foster transitions are land, water and seeds. Access to water was only mentioned in relation to the Segunda Água program. Regarding land, as discussed in institutional resources, PLANAPO II has added a new axis of Land and Territory, in which land demarcation and control mechanisms to ensure the territorial rights of indigenous and traditional peoples (PCT) is presented (Brasil, 2016a). However, no information regarding the initiative's execution is available. Native seeds and their genetic resources are crucial for food diversity and are, therefore, a key component of agroecological transitions to more resilient, local-based food systems (Brasil, 2013). Therefore, PLANAPO I has stated the need to maintain and safeguard farmers' rights to save, use, exchange and sell seeds of local and protected varieties.

Broader dynamics

No results were found for natural resources within the broader dynamics of the agroecological transition. Discussions on access and property of natural resources and its regulations are discussed in state functions in the next section. A table summarising the initiatives that composed PLANAPO I and II and its matching resources used by the state to foster the agroecological transition is presented below (table 8).

Main Actions defined in PLANAPO I and II		Resources
Main types of Initiatives	Government Program	
Increase genetic biodiversity via native seed and seedlings promotion	-	Artefactual + Mental + Monetary + Institutional + Natural
Ensure rights to save, replicate, distribute and sell seeds	-	Institutional
Land reform, land credit and territorial rights	Reforma Agrária + PNCF	Natural + Institutional + Mental
Research on seed varieties	-	Mental
Agroecology knowledge dissemination among farmers and specific groups - women, youth	ATER	Mental
Research and Network building focused on Social knowledge sharing	-	Mental
Professional Training	-	Mental
Finance socio-technical agroecology networks	ECOFORTE	Monetary
Fostering Land Settlement Agroecological Production Organization	TERRA FORTE	Monetary + Mental
Fostering Women's Agroecological Networks	POPRM + ATER	Monetary + Mental
Increase consumption via Institutional Markets	PAA/PNAE	Monetary
Increase consumption via Local Markets	-	Monetary
Finance and insure agroecological production	-	Monetary
Credit via agroecology-specific credit lines	PRONAF + ABC Orgânico	Monetary
Promote agroecological agricultural Inputs	-	Institutional + Mental
Organic Production Certification and Control	Selo SisOrg	Institutional
Cistern implementation for enabling water access and food production	Segunda Água	Artefactual
Reduce the general use of agro-chemicals in industrial agriculture	PRONARA	Institutional + Mental
Minimum pricing policies for agroecology, organic and socio-biodiversity products	PGPM-Bio/PGPAF	Monetary

Table 8: Summary of main Initiatives and their corresponding resources

5.2.3 Functions

The extensive description of initiatives and the general process of the agroecological transition in the previous sections now allow for a focused analysis of the functions of the state during the transition. Functions' results are mainly based on official documents, as these relate the state's goals and objectives with the initiatives. The section is divided into Sustainability Transitions and Ecofeminist literature functions. Each section presents the results and discusses them based on the indicators defined in the analytical framework. It uses the same method of numbering among parenthesis to show which of the five state functions an indicator relates to. As a frame of reference for the function's result presentation, table 10 is introduced below. The table shows the leading government initiatives during the agroecological transition together with the resources (as shown in table 9) while adding function indicators from ST and Ecofeminist literature, discussed below.

Main Actions defined in PLANAPO I and II		Resources	Functions	
Main types of Initiatives	Government Program		ST Indicators	Ecofem Indicators
Increase genetic biodiversity via native seed and seedlings promotion	-	Artefactual + Mental + Monetary + Institutional + Natural	Market formation; ecosystem restoration	Food Sovereignty; Increase genetic and food biodiversity
Ensure rights to save, replicate, distribute and sell seeds	-	Institutional	Market formation; ecosystem restoration	Food Sovereignty; Increase genetic and food biodiversity
Land reform, land credit and territorial rights	Reforma Agrária PNCF	Natural + Institutional + Mental	Secure private property rights and rules of exchange	Subsistence perspective; Food sovereignty; Property laws based on commons
Research on seed varieties	-	Mental	Technological development	Increase genetic and food biodiversity
Agroecology knowledge dissemination among farmers and specific groups - women, youth	ATER	Mental + Human	Education/capacity building	Re-localization of food production
Research and Network building focused on Social knowledge sharing	-	Mental	Technological development; Education/capacity building	Recognition of traditional knowledge
Professional Training	-	Mental	Education/capacity building	Recognition of traditional knowledge
Finance socio-technical agroecology networks	ECOFORTE	Monetary	Market formation; Income Generation; Decarbonization; Ecosystem restoration	Subsistence perspective; Food sovereignty; Re-localization of food production
Fostering Land Settlement Agroecological Production Organization	TERRA FORTE	Monetary + Mental	Market formation; Income Generation; Decarbonization; Ecosystem restoration	Foster gender equality; Ensure women's rights; Recognition of reproductive work as economic activity
Fostering Women's Agroecological Networks	POPRM ATER	Monetary + Mental	Market formation; Income Generation; Decarbonization; Ecosystem restoration	Foster gender equality; Ensure women's rights; Recognition of reproductive work as economic activity
Increase consumption via Institutional Markets	PAA PNAE	Monetary	Market formation	Re-localization of food production
Increase consumption via Local Markets	-	Monetary	Market formation	Re-localization of food production
Finance and insure agroecological production	-	Monetary	Market formation	Re-localization of food production
Credit via agroecology-specific credit lines	PRONAF ABC Orgânico	Monetary	Market formation	Re-localization of food production;
Promote agroecological agricultural Inputs	-	Institutional + Mental	Technological Development	Increase genetic and food biodiversity
Organic Production Certification and Control	Selo SisOrg	Institutional	Market formation; Market protection; Income generation	-
Cistern implementation for enabling water access and food production	Segunda Água	Artefactual	Market formation; Increase resource efficiency; Income generation;	Subsistence perspective; Food sovereignty; Re-localization of food production
Reduce the general use of agro-chemicals in industrial agriculture	PRONARA	Institutional + Mental	Decarbonization; ecosystem restoration; decrease pollution; nature conservation; healthcare; protect (human) rights	Food Sovereignty; Increase genetic and food biodiversity
Minimum pricing policies for agroecology, organic and socio-biodiversity products	PGPM-Bio PGPAF	Monetary	Market formation; Income Generation	Re-localization of food production

Table 9: Summary of main Initiatives with corresponding resources and functions

5.2.3.1 Sustainability Transitions

By using sustainability transitions theoretical lenses to analyse the agroecological transition in Brazil, it was possible to notice an alignment of the initiatives to the broader trend discussed in chapter 4, where economic development and environmental protection indicators were more prominent in ST scholarship. However, some social development indicators were also present, as well as a central component of *actor orchestration*, which is also in line with the importance of this indicator found during the creation of the analytical framework. Only ST indicators for legitimation – *tax collection* and *guarantee public accountable institutions* – were not present.

Starting with economic development indicators, most of the initiatives described in previous sections to foster agroecological production via credit, institutional markets, local markets, certification processes, minimum pricing policies, increasing access to water, seeds and land for production can be classified as initiatives feeding into the goal of market formation (1). In both PLANAPOs, this goal is explicit in the axes of production and commercialisation (Brasil, 2013, 2016a).

However, according to the documents, the focus was on creating specific types of markets based on food security, consumers' *health* and *environmental protection*. This was an interesting finding regarding ST. In the surveyed literature, discussion on the *types* of markets and market relations the state was fostering was not as prominent as the types of technologies these markets promote. In this case study, the state's role in developing specific types of markets explains why institutional buying programs composed a big part of the agroecological transition in Brazil. In that way, the state could at the same time foster agroecological production - incentivising farmers to switch to a market with secure demand and known selling prices – and offer *healthy* (2) food to vulnerable populations, *reducing social inequalities* (2), especially hunger.

An interviewee agrees that the *type* of market that actors involved in supporting the agroecological transition in Brazil were pursuing was different from mainstream markets. The struggle with agroecology

was to foster trade based on local production and consumption, direct relations between producers and consumers and little external input, and not integrate family farmers in a logic of producing for exporting to international organic markets, for example. The idea was that food is not a commodity, and some parts of the food production process do not need to be commodified:

“Agroecology is another economics of food systems. An economy that, for example, does not need to take to the markets what can be produced by the work itself there in the territory, for example. [There is] no need to have a seed market. Native seeds are a necessity of agroecology and can be managed as a common good” (CS2, personal communications, June 24, 2022).

Accordingly, PLANAPO I and II highlight the importance of fostering local food markets where direct relations can be established between producers and consumers. Interviewees, both from civil society and the government, have voiced their concern that the organic certification process could lead to the same globalised food chains, which is not the purpose of sustainable food systems in their view (CS2, personal communications, June 24, 2022; G2, personal communications, June 30, 2022).

The plans’ documents also refer to investment in research for *technology development* (1) as a critical component of the agroecological transition, mainly concerning knowledge building regarding native seeds and appropriate agroecological inputs (Brasil, 2013). A mention of developing adequate machines and equipment for agroecological production was identified in PLANAPO I, but no initiative was found. *Market protection* (1) indicators were only identified when interviewees suggested the incumbent relations of large-scale industrial farmers could be threatened by scaling up agroecology in the country, mainly regarding land distribution disputes (CS2, personal communications, June 24, 2022). Therefore, in efforts to protect their markets, such incumbent actors would block or oppose structural changes, such as environmental legislation, land distribution and land demarcation for PCT. Results for the indicator *secure private property rights and rules of exchange* (1) were found only in PLANAPO II when land demarcation for traditional communities was presented with its initiatives.

Regarding social development functions, the *health of the population* (2) as an indicator was found when documents mentioned food security and access to more healthy produce and food products, which was one of the objectives of the national policy (PNAPO). Many initiatives in the plans also mentioned this objective. *Healthcare* concerns were also stated in the need to reduce the overall agrochemical use in Brazil (Brasil, 2013, 2016a). *Reducing social inequality* (2) was also mentioned in the plans. The national policy says reducing *gender* inequalities as one of its premises and both national plans put women's rights and gender issues as central to the agroecological transition. However, gender specifically was not part of ST indicators, meaning this vital component of agroecology promotion in Brazil would possibly be invisible in an ST analysis or inserted in the broader category of social inequalities, as is now done in these results.

Furthermore, *income generation* (2) is mentioned several times in official documents as a goal of the agroecological transition. This indicator had co-occurrences with market formation codes, showing the state's objective was to foster specific types of markets that could simultaneously promote social development. In the diagnose section of the second PLANAPO II, this relation is clear:

“Government purchases have triggered a process of organising organic and agroecological family production and played an important role in the provision of new spaces for commercialisation and income generation” (Brasil, 2016, p. 27, emphasis added).

Finally, *education/capacity building* (2) was the most coded indicator of social development, as a whole axis of both PLANAPO I and II were composed of knowledge-related initiatives, strategies and objectives, most in the form of ATER policies. According to PLANAPO I's balance report, around 30% of all non-reimbursable spending was destined for knowledge building and dissemination. In addition, as mentioned by one interviewee, public policy cannot be an imposition on farmers producing unsustainably. ATER policies offer the tools for the transition while increasing the base to ingrain agroecology in society and the state (G6, personal communications, July 4, 2022).

Environmental protection and *nature conservation* (3) were also central components of government policy and plans. Because agroecological production processes necessarily entail environmental protection indicators, many initiatives fostering market formation and production also mentioned environmental conservation and sustainable resource use – which can be linked to increasing *resource efficiency* (3). Other environmental indicators for ST were *decreased pollution*, *ecosystem restoration* and *nature conservation*. *Ecosystem restoration* was directly cited in the narrative of many initiatives, such as improving degraded land with agroecological techniques. This indicator is particularly important in the case of land settlements, which are usually established on degraded land (Monteiro & Londres, 2017). *Decarbonisation* (3) was also not mentioned directly, but intensive farms and farms with heavy agrochemical use are linked to high carbon footprints (FAO, 2018; Gilbert, 2012; Searchinger et al., 2008). The transition to agroecological systems usually leads to a lower carbon footprint.

As explained, no results were found for the two indicators concerning the legitimization function. However, the previously discussed idea that the legitimization function of the state is intertwined with its capacity to respond to social demands (Eckersley, 2021) links to the fact that this transition effort was strongly correlated with the pressure from social movements and their participation in its conception. In addition, one interviewee mentioned that this might be the reason why the topic of organics also “survived” 3 years of Bolsonaro’s attacks on agroecology:

“The Organics agenda links to sustainability, which response to a demand that society already clearly presents for healthy food” (G7, personal communications, August 3, 2022).

However, this survival does not mean initiatives maintain its goals. According to the interviewee, the logic is no longer developing a market or fostering production but regulating or controlling it (arguably a less-transformative form of market protection). In other words, guaranteeing that the current producers that claim to produce organically are indeed following regulations. This was also discussed in the broader dynamics of institutional resources and other two interviewees confirmed the same logic for other state

institutions. In this other area, the initiatives related to fostering agroecological knowledge for food production in settlements were frozen, and the focus is now on increasing land ownership rights as a means for settlers to access credit for producing – whichever form of production it may be (G4, G5, personal communications, June 29, 2022).

Finally, the domestic order function had two indicators: *protect human rights* and *actor orchestration*. The first indicator was mostly linked with the rights of PCT and the processes related to territorial rights, as well as their access to sociobiodiversity. The rights to save, multiply, exchange, distribute and commercialise seeds were also linked to fundamental autonomy and rights of indigenous and traditional communities. A second direct mention of rights was related to women’s struggles for recognition and their right to have their (reproductive) work recognised as essential to agroecology (Brasil, 2013, 2016a), including their productive gardens, which usually feed the farmer's families.

The most coded function for ST was actor orchestration. This function was mentioned several times in all documents and by all interviewees as one of the main positive factors of the agroecological transition period.

“The novelty was to create a space for interaction between state actors and state actors with civil society. I think that it is an absolutely essential function. It had this intersectoral and participatory perspective” (CS2, personal communications, June 24, 2022).

According to the interviewee, it is challenging to implement agroecology policies because the state is organised into departments, “boxes”, and each has its own budget and programs. Agroecology is a holistic process; therefore, it needs cooperation between ministries and areas; in state-supported agroecological transitions, it requires intra-state orchestration. Intra-state orchestration, as part of the broader actor orchestration function, was one of the leading original findings in this case study, as it is not particularly mentioned or emphasised in ST literature. However, in the Brazilian case, it was referenced multiple times as an essential function of the state to foster agroecological transitions for its holistic characteristic.

Furthermore, actor orchestration in this case study was always linked to a cooperative relation between the state to civil society. This result is also in line with the broader ST literature, which discusses incumbent relations negatively and offers a positive view of cooperation with other non-state actors as beneficial to pursue sustainability transitions.

5.2.3.2 Ecofeminism

The conceptual framework in chapter 4 highlighted a general scepticism of broad ecofeminist literature in considering the state capable of enacting fundamental societal transformations. Therefore, analysing a case study on the state-supported agroecological transition through ecofeminist lenses anticipated the prospect of the dominance of indicators related to “negative” aspects or functions of the state in fostering capital accumulation mechanisms. However, the case study offered broadly different results.

From the economic development indicators, *housewifisation* (1) as a function did not yield any results during the agroecological transition period. The process was mentioned by an interviewee when discussing how until three decades ago in Brazil, women could not register as farmers, only as farmer’s wives (G3, personal communications, June 27, 2022). She further explained it was not until 2004 that a national program was created to ensure women farmers had proper documentation to access state pensions. This anecdote was shared when offering a background of the work of the DPMRQ department in MDA.

Whereas the housewifisation indicator was not present, its “positive” contrafactual, the recognition of women’s reproductive work (1), is mentioned by both PLANAPO I and II. In PLANAPO I, the document presents strategies to recognise women’s critical role in food production and the preservation of natural resources.

“They act as the main protagonists in food security and are responsible for agroecological production in the backyards and gardens close to the house” (Brasil, 2013a, emphasis added).

In PLANAPO II, the document recognises a need to foster the implementation of agroecological gardens and women's economic organisations (Brasil, 2016a). As discussed in the resources section, the bulk of monetary resources to foster production was in the form of credit lines. However, the banking system does not finance reproductive work such as agroecological production for self-consumption, hindering two goals: recognising reproductive work (1) and *fostering gender equality*, a domestic order indicator (5).

The indicator for *valuing non-monetary transactions* (1) was also a surprising finding, mentioned in the context of traditional communities I PLANAPO I. The plan proposed extractivist communities contributed in non-monetary forms to the economy and their non-monetary income: offering environmental services, food security and food diversity, access to traditional medicine and other forms of quality of life indicators. These were not accounted for in poverty statistics, and the plan proposed they should be somehow computed. An interviewee added that in his opinion, recognising other forms of economy was central to agroecology to become a social project and not only a market (CS2, personal communications, June 24, 2022).

The indicator for considering different types of *properties as commons* (1), such as seeds, land and access to water, was also present in this case results. Both national plans discuss ensuring the rights of farmers and PCT in accessing, exchanging, and multiplying seeds. In addition, as mentioned in the ST functions, an interviewee stated that, in his opinion, some resources, such as seeds, should not become commodities (CS2, personal communications, June 24, 2022). Furthermore, related to this indicator was a discussion by some interviewees on the types of land property rights that should be pursued in land settlements.

According to two interviewees, Brazil has legal forms of collective land property rights. Some state civil servants in INCRA pursue or incentivise these land settlement property titles (G4, G5, personal communications, June 29, 2022). Another interviewee confirmed that MDA also stimulated collective

forms of production (G6, personal communications, July 4, 2022). Nonetheless, G4 and G5 interviewees conveyed that after 2016 it has been more challenging to pursue and stimulate these types of collective land titles. They said there were even judicial orders reverting collective land ownership, requiring it to be individually assigned. The land access topic and general access to commons function also correlate to *food sovereignty* (2) issues, as access to land, water and seeds for food production are paramount for food sovereignty principles.

The last two indicators for economic development are *nature as a resource* and *market logic/exchange value prioritisation*. These indicators also correlate to the previous one (commons). Considering land as part of nature or natural resources (as discussed in the natural resources section), another interviewee cited how since 2016, the push for individual land ownership titles facilitates commodification of land and re-concentration, as new land owners are influenced or pressured to sell their lands (CS2, personal communications, June 24, 2022). This information is consistent with the information provided by interviewees explaining how initiatives related to fostering agroecological knowledge for food production in settlements were frozen, and the focus is now on increasing land ownership rights as a means for settlers to access credit for producing – whichever form of production it may be (G4, G5, personal communications, June 29, 2022). A similar logic for organics production also happened, as discussed in the ST functions, in which initiatives related to organics went from fostering production to simply ensuring compliance to regulations for organic certification. Certified family farmers are still a small fraction (Aquino et al., 2020; Brasil, 2013) and are more likely to be part of bigger markets, which links to the market-logic prioritisation.

Another result related to the market logic prioritisation concerning land access was found. Government interviewees said there is constant pressure to ensure land settlements from the agrarian reform are commodity-oriented or market-oriented:

“[The] legislation... it doesn’t say you have to get on the big production line and have the surplus and sell. But there is great pressure for the settlements to be productive. So, it is questioned very often, either by the representatives of agribusiness, or by the courts, the Auditors’ Court, for example, or by the Legislative bodies: why create a settlement if it is not productive?” (G5, personal communications, June 29, 2022).

When asked why, in her view, it would be the answer to this question, the interviewee introduced the other two ecofeminist function indicators from social development, namely food sovereignty and the subsistence perspective (2):

*“So, I think the function of the settlement is to promote social justice. So, if the person has access to land and they subsist from it. I, personally, am quite satisfied. **I think the role of the state is fulfilled.** If I took this person out of a precarious situation, I gave them access to land and they can survive on that land, I personally am quite satisfied” (G5, personal communications, June 29, 2022, emphasis added).*

Her colleague said he shared the same vision and that most of their colleagues also did, despite, as explained, not being the view from outside their institution, also from other state actors. This disagreement shows how intra-state orchestration,

The subsistence perspective and food sovereignty indicators correlate to the credit vs funding issue discussed in the monetary resources section. As explained, INCRA offers different funding lines for establishing land settlers outside the bank logic to help beneficiaries build their homes and their productive gardens based on agroecological principles, sometimes adding simple irrigation systems or buying a car for taking produce to local markets (G4, G5, personal communications, June 29, 2022). These forms of funding and subsidies outside the bank logic are aligned with the idea of the *subsistence perspective* (2) brought forward by Mies and Bennholdt-Thomsen, as well as the conceptualisation of Vandana Shiva of *food sovereignty* principles. Furthermore, INCRA’s extended functions explained by interviewees also are aligned with the idea of the subsistence perspective in land settlements.

Interviewees described INCRA's activities to ensure a settlement has a self-sufficient community where most of its needs can be fulfilled with local or regional resources:

[INCRA] also has the budget to create infrastructure. INCRA executes directly or bids, or makes an agreement with the city that provides the machines. That's what I was talking about before, the consolidation of settlements. The assumption is that one has the right to a house, to the water, to the roads so they can get out and carry their produce. For us, that's it, INCRA does not have the institutional task of including these settlers in the production of soy or commodity production, or even agroecological. INCRA has the task of creating the conditions for [food production] to happen, which is the infrastructure, the water, the electric energy. In these small properties. Small, in quotes. It fulfils its social function because there are people who live on that piece of land (G4, G5, personal communications, June 29, 2022).

It is important to consider that INCRA's land settlements are quite a small program, and establishing them is a years', sometimes decades-long process. Therefore, the results related to the *subsistence perspective* shared above should not be considered representative of the whole agroecological transition. However, the types of markets pursued by government programs – based on local production and direct relations –arguably also fit with the subsistence perspective and Shiva's definition of food sovereignty. Both concepts embrace the existence of local markets as essential to thriving communities.

Before moving on to environmental protection functions, a mention of the cistern implementation program Segunda Água is also considered part of the results of the food sovereignty indicator, as access to water is vital for food production.

Mentions of environmental protection function with ecofeminist indicators occurred several times in official documents, strategies and initiatives. *Recognition of traditional knowledge, genetic and food biodiversity* and *the re-localisation of food production* were all explicit objectives in both national plans, as well as part of many initiatives (see table 10) (Brasil, 2013, 2016a). Increasing genetic diversity was also part of the premises of the national policy (Decreto N° 7.794, 2012). These topics were broadly examined

in the previous sections when explaining the plans' initiatives in terms of instruments. To avoid repetition, they will not be discussed.

Regarding results related to the legitimization function, colonisation logic and dichotomic did not yield results. For the *depatriarchalisation* role, results were mostly shared in interview form relating to the internal struggles of the DPMRQ within state structures. Maria Mies and Veronika Bennholdt-Thomsen (1999) described how in Germany a woman farmer in the 80s was usually referred to as the wife of the farmer, not in their own independent capacity to produce. G3 presented a similar issue during the interview. She explained the colossal institutional and operational effort to have both male and female substantives for farmers in the public systems, even after female farmers were recognised by law. The system, however, was never updated. Since it was a clear demand from women's social movements to be recognised in their own capacities and not as an appendix of someone else, the DPMRQ has fought for changes to be implemented (personal communications, June 27, 2022). Another anecdote was related to the effort to offer ATER services to women to build agroecology knowledge, which also links back to the (lack of) recognition of reproductive work by the state:

"[MDA] budgets [are allowed to] pay a professional to do the training, renting a space and equipment, acquisition of teaching material, transportation, food, accommodation. Ok. Now we need to pay for the child's lunch, child's teaching material, child's caregiver, find an appropriate space for that child. There needs to be an extra place in this transport for the child. And then public policy will not understand why - they say that this is a policy for early childhood education. I have to be at the MEC [Ministry of Education], I couldn't be doing this there, where we're doing it [at MDA]" (G3, personal communications, June 27, 2022).

The role of women as primary caregivers and the impossibility of most participating in training if there is no adequate space for their children was invisible before the existence of the DPMRQ. This example shows how state institutions are moulded to and based on the reality and experiences of men. However, state actors' efforts related to the agroecological transition show their commitment to the objectives laid

out in PNAPO to *reduce gender inequalities* and *ensure women's rights*, the two indicators for the domestic order function. These indicators also had many initiatives linked to them, as most production-fostering and knowledge-building initiatives had quotas for women.

5.3 The role of the Brazilian state in the agroecological transition

Based on the extensive report of the results of the three functions, a summary of the prominent roles of the state during the agroecological transition is presented below. By uniting the three dimensions in main processes or dynamics, including indicators from ecofeminist and ST literature, it is possible to understand the roles the state played in the transition in Brazil, offering an answer to the third research sub-question (table 10).

Summary of the the role of the state in the agroecological transition in Brazil fom 2012-2019				
Actions	Helped/ Hindered	Functions	Resources	Relations
Openness to dialogue and strong cooperation with social movements to discuss ideas and elaborate policies with societal input	Helped	Actor orchestration; Recognition of traditional knowledge	Human + Institutional	Cooperative
Unification in a National Policy facilitated the streamlining of a conceptual framework and a narrative to counter the regime's narrative	Helped	Market formation; Recognition of traditional knowledge; Re-localization of food production; Food sovereignty	Mental	Cooperative
Financial and regulatory support to grassroots autonomy without top-down governance fostered the visibility, scalability and emergence of social technologies, including women and PCT	Helped	Income generation; Actor orchestration; Technological Development; Recognition of traditional knowledge; Re-localization of food production; Food Sovereignty; Increase genetic and food biodiversity	Monetary + Institutional + Mental	Cooperative + Autonomous
Broad knowledge dissemination of agroecology techniques and practices through participatory extension services and technical education	Helped	Education/capacity building; Recognition of traditional knowledge	Mental	Cooperative
Strong effort from state actors and social movements to abolish gender inequalities and recognize the protagonism and centrality of women for agroecology practices and production	Helped	Foster gender equality; Recognition of reproductive work; depatriarchalisation	Monetary + Institutional + Human	Cooperative
Limitation of changes in land distribution and access and territorial rights of traditional peoples	Hindered	Secure private property rights and rules of exchange	Natural + Institutional	Incumbent
Maintenance of oximoronic narratives on the possibility for industrial agriculture and agroecology to coexist	Hindered	Nature as a resource; Market-logic/exchange-value prioritization	Mental	Incumbent + Cooperative
Fragile institutional framework facilitated a quick dismantling and demobilization of the National Policy	Hindered	Market-logic/exchange-value prioritization; Nature as a resource	Institutional	Influential
No specific budget sources for the National Plan facilitated its dismantling	Hindered	Market-logic/exchange-value prioritization	Monetary + Institutional	Influential
Since 2016, role of the state went from niche development to niche control	Hindered	Market protection; Market-logic/exchange-value prioritization	Institutional	Influential

Table 10: Summary of the role of the state in the agroecological transition in Brazil - 2012-2019

This case study showed how the emergence of agroecology in Brazil as a concept rooted in social movements struggles was met by a favourable setting in terms of relations. Federal government state actors were open to dialogue and cooperation with social movements and organisations, and an appropriate institutional framework allowed this cooperation to flourish. The collaboration was based on recognising that agroecology is rooted in the knowledge and innovations of peasants, indigenous and traditional communities. Therefore, orchestrating their participation and institutionalising their views and demands were essential to foster an agroecological transition.

Based on these relations, state actors and social movements debated and defined goals for a national policy to foster agroecological production based on core food sovereignty principles, such as access to water, seeds, and land. It also aimed at forming regional markets for the re-localization of food production, reducing the carbon footprint while combating food insecurity and improving the health of Brazilian citizens based on sustainable agricultural practices.

The use of financial and regulatory instruments to foster this new local market, including the general use of institutional markets like PAA and PNAE, has aimed at tackling the objectives of income generation while supporting their grassroots knowledge building. Respecting the autonomy of food producers in defining, exploring, sharing and exchanging their socio-technical innovations was paramount to the goals of national plans. The purposes for socio-technical innovations included increasing food and genetic biodiversity by conducting experiments and research. Despite not having overall results from programs, some partial results showed how the state could support agroecology networks via the program Ecoforte (Martin & Sambuichi, 2019), as well as invest in knowledge building and water access and foster commercialization and production. Furthermore, the monetary instruments also fostered broad actor orchestration in the agroecology networks via programs such as Ecoforte and Agroecology Nuclei, which allowed different societal actors, including more vulnerabilised groups such as PCT and women, to be valued as protagonists in agroecological practice.

Furthermore, the knowledge creation and dissemination programs, operationalised in many education and capacity-building policies centred on the ATER policy, have contributed to the spread of agroecological practices and knowledge among family farmers and built a narrative that legitimises agroecology as a viable alternative for Brazil's rural development.

A mention of explicit goals of fostering gender equality and increasing the recognition of women's reproductive work is crucial, as these were prominent goals in the national policy and both national plans during the agroecological transition period. The pressure from the rural women's movement was met by common beliefs from state actors who both used institutional instruments and fought to change some of them, which were rooted in patriarchal operationalisations of public policy.

Unfortunately, a concomitant political crisis during the period has first slowed (since 2016) and finally put a halt to the state-supported agroecological transition in 2019. While during the whole period incumbent relations existed, until 2016, the rhetoric of coexistence, despite hindering the progress of core goals, such as land distribution and demarcation, has also allowed agroecology to take space. Such incumbent relations were also the main reason intra-state orchestration was vital for the broad operationalisation of the agroecological transition. According to all interviewees, the rhetoric of coexistence is not sustained by reality, as industrial agriculture is a self-destroying process, which relies on the very nature and ecosystems it destroys, thereby damaging the possibilities for agroecology to flourish.

Finally, the same institutional setting deemed appropriate in the beginning to foster the agroecological transition proved extremely fragile, supported only by government policies and not rooted in deeper state structures, such as laws and own sources of financing independent of ministry programs. Forty years of social movement struggles culminated in a Decree institutionalising a national policy. Still, the fragility of its institutional mechanisms made it easy for the new government to demobilise this state-supported

agroecological transition, transforming the role of the state in relation to agroecology and organic production from fostering food production to merely controlling it via regulatory mechanisms.

6. Discussion

This chapter discusses the results of this study in light of its theoretical framework (6.1), offering an answer to the main research question “*what roles can states play in agroecological transitions?*” considering the subsidies this case study has provided. It then reflects on the use of the framework for the role of the state (6.2), as well as a discussion on the contribution and usefulness of adding the ecofeminist perspective to ST literature on the role of the state. Finally, the chapter ends by discussing the limitations of this research (6.3) and how one can learn from these limitations and from the case study for advancing research on the role of the state in agroecological transitions (6.4).

6.1 Discussion of the case study results

Focusing on the state as a unit of analysis with the aid of an analytical framework enabled an understanding of the many mechanisms influencing the state’s role in supporting an agroecological transition. In this case study, some aspects can be highlighted as the main findings, offering some alternatives of what state’s roles can be in agroecological transitions. First, the capacity for cooperation between the state as an institution, state actors, and social movements was the main ingredient in this case study, powerful enough to lead the agroecological transition. The state, as an already existing institution supported by its legitimacy, was able to facilitate the cooperation among diverse civil society actors, social movements, academics and different state actors, legitimising the narrative of agroecology in line with the concepts of social movements and disseminating the sustainable actions and practices of agroecological movements to a broader parcel of the population. This cooperative relationship of the state with social movements might explain why the *cooptation* of the concept of agroecology by the incumbent regime was not extant in this case, as it was in other state-supported agroecological transitions, such as in Nicaragua (Schiller et al., 2020).

A second finding was that the characteristics of what *types of* markets the state is fostering are as crucial for agroecological transitions as the act of market formation itself. Therefore, while ST literature shows how states could aid in market formation, with the aid of ecofeminist literature concepts, this case study highlighted the types of markets that were pursued, following food sovereignty principles – local, based on re-localisation of food production and consumption, valuing seed and food diversity and cultural relations.

The third critical component of this case study was the prominence given to valuing and recognising the protagonism of rural women, peasants, and indigenous and traditional communities as sources of agroecology knowledge and practices. Therefore, participants involved in formulating the national policy and plans have added strategies to include and value their perspectives, fostering the same autonomy that led to the development of a robust alternative paradigm seen as a viable and sustainable solution to the dominant unsustainable food regime.

The fourth lesson from this case study is how changes in the political arena have rapidly influenced the state's role in the transition – first demobilising and then dismantling its institutional settings. The state has then moved from aiding in market formation and fostering agroecology-based production to controlling regulatory aspects of the market, passing from a cooperative relation with civil society to an influential one. The focus on control is significant as it mainly targets a small part of agroecological family farmers (Sambuichi et al., 2017). In addition, core tenets of food sovereignty and agroecology relate to fostering direct relations between producers and consumers based on trust and mutual respect, which is not encompassed in this new form of state action. Therefore, the state's current role in agroecology and organic production is mainly based on catering for a meagre percentage of rural families.

These findings have shown how the state can be seen as an orchestrator or mediator of relations between the many actors, including incumbent actors pushing to maintain the status quo. The literature and interviewees confirmed that many of these powerful interests influenced state apparatuses during

the whole process. This fact adds to the idea of the state as a node to foster cooperation but also to impose limits and establish the terms of collaboration. In this sense, the state can be seen as an intermediary in the web of actors. Due to its institutional legitimacy and instruments, it can play different roles related to these actors.

This case study showed how the state as an intermediary has first based its roles on strong cooperation with civil society in policy ideation, formulation and elaboration, fostering the *autonomy* of protagonists to create and exchange agroecological knowledge and practices. Therefore, the federal government played an essential role in Brazil's agroecological transition until 2016. Then, the state's role changed to that of a market regulator based on incumbent interests and influential relations, first slowing and then hindering the ongoing agroecological transition, putting a halt to it in 2019.

6.2 Use of the framework

The conceptual and analytical framework based on ST and Ecofeminist literature facilitated the analysis of the state's role as a unit of analysis, since the number of processes and actors in complex systems such as the food system makes it difficult to understand and separate explanatory mechanisms. Sustainability transitions literature was the basis for most of the structure of the analytical framework since it is a field of study with a tradition of developing and using frameworks as tools offering conceptual and theoretical features to enable analyses of complex processes (Köhler et al., 2019; Ollivier et al., 2018).

Therefore, the framework was useful to visualise the different components forming and influencing the role of the state in the case study. Furthermore, the general perspective of ST literature in understanding transitions as a process that starts with niche innovations was suitable for the case study, noticing how the state was enabling market formation and acting as an orchestrator, both prominent function indicators for the role of the state in ST scholarship. An actual result from the case study related to ST function indicators was the importance of intra-state orchestration for fostering an agroecological

transition when the different state actors and institutions have different mental framings, beliefs and motivations.

While market formation was identified with the aid of ST literature, a key characteristic of this case study was how differentiation of the types of markets is crucial for agroecological transitions, considering the conceptualisation of agroecology offered throughout this study as imbued of sociopolitical aspects as much as technical ones. In this sense, recognising the types of markets and their importance was only possible due to the use of ecofeminist literature indicators for state functions. Ecofeminist indicators, when complementing the framing of market formation, have helped to show that the dichotomic thinking of market vs state as a typical critical framing (Altieri & Toledo, 2011; Rosset et al., 2021) should shift to states and *which* markets it fosters (González de Molina et al., 2020).

The adherence between the state's positive roles in this agroecological transition was an unexpected finding of this investigation, once the broad ecofeminist literature is sceptical of state action toward transformation (Mies et al., 1988; Mies & Shiva, 2014). Furthermore, for its links with agroecology and food sovereignty, ecofeminist indicators were suitable and fitting to this case study, for the state fostered the same goals ecofeminists specified could aid social development and ecological balance. In addition, as discussed, the conceptual framework of the national policy and both plans placed a centrality to the protagonism and struggles of women and traditional communities as sources of agroecology. This characteristic of this case study was met by appropriate analytical devices from ecofeminist literature in recognising and understanding the historical oppression suffered by such groups by capitalist states. Consequently, it allowed to detail and understand gender issues within state structures and how they related to the state's role concerning women in the agroecological transition. It also highlighted the agency of state actors concerned with gender issues as a force aiming to depatriarchalise state apparatuses, which have been historically based on and suitable for the experiences of men.

6.3 Limitations

Some limitations of this case study are related to the allocated research time. The fact that only one case was analysed prevented the possibility of comparing different dynamics, which might have resulted in new insights. Nonetheless, considering the allocated timeframe, the case study offered deep and rich data and novel insights into the state's roles, which might not have emerged if the analysis had not been as detailed.

A second limitation related to time scarcity was the number of interviews conducted. Ideally, it would have been beneficial to interview participants from all ministries involved in CIAPO and CNPO and confront their perspectives, increasing the internal validity of results. At the same time, the interviewees selected were core participants of the policy formulation and monitoring processes, and it was possible to cover the whole period of the transition, including its historical background, as well as its current dynamics developed as a consequence of the ending of the transition period. Therefore, this limitation is not believed to have affected this case study's overall validity and reliability.

A third time-related limitation was the decision to focus solely on the federal government as the central state actor. The role of municipalities and states in the agroecological transition in Brazil could have added nuance and insights to the broad investigation of the role of the state. At the same time, the policy and plan formulations were planned and executed by the federal stances. States and municipalities were more beneficiaries than the active policymaking actors during the period. Therefore, the decision to focus on the federal government was arguably appropriate, as it allowed for detailing intra-state orchestration between the actors defining the initiatives and policies.

A limitation related to the use of the framework is that ecofeminist function indicators were extremely well-matched to agroecological transitions, which might limit its applicability to broader sustainability transitions. However, many of its indicators can still help analyse other transitions, mainly if one focuses attention on what *types of* transitions, offering a frame of reference on what premises the transitions should be fulfilling, instead of focusing on its technical aspects to the detriment of social ones. This insight

contributes and dialogues with the criticism from some ST scholars on the sustainability of sustainability transitions (Feola, 2020) or how technologies deemed more sustainable might still be based on oppression, gender inequality and the maintenance of power asymmetries (Sovacool, 2021).

6.4 Avenues for Further Research

This research has opened many exciting avenues for further investigation. First and foremost, if we conclude this investigation by seeing the state's role primarily as an orchestrator or intermediary, a question remains whether we *need* an intermediary for sustainability transitions. Political agroecology theorists from Brazil and Spain have suggested we do (González de Molina et al., 2020), as has the broad theory on sustainability transitions explored in the theoretical framework (Argyriou & Barry, 2021; Eckersley, 2021; Johnstone & Newell, 2018; Meadowcroft, 2011). Nonetheless, autonomous movements from other parts of the world with a strong link with agroecology and traditional agriculture suggest otherwise, such as the Zapatista experience in Chiapas (Hernández et al., 2022) or, more recently, community-based agricultural cooperatives in Rovaja (Aslan, 2021). Therefore, a possible unfinished debate is on the **need** for a state now that its role might be more explicit. Exploring this question from another perspective, the emergence of agroecology in Brazil is defined as an *autonomous* ancestral experience born in traditional non-capitalist modes of living and the practices of women, considered outside the productive work sphere. Broader social movements later embraced these experiences as an alternative to an unsustainable capitalist food production system. The state then disseminated them with its institutional capacity for articulation. However, one needs to bear in mind that the very same state fostered the prior dissemination of the unsustainable industrial system. In addition, the state was also oxymoronically still promoting the continuance of the unsustainable regime based on a rhetoric of coexistence. A question that might arise from ecofeminist-inspired literature based on these dynamics is

if a lack of a federal state institution could facilitate direct cooperation of actors instead of the state determining the possibilities while also limiting the extent to which changes might occur.

A more practical question for further examination to be explored arose based on the results. Before this research started, it was already known that states could play different roles in transitions. However, the results unveiled a government policy vs state policy dilemma. Hence, a question to be further explored is: even when the state is supportive, what drivers can turn a government policy into state policy? How can the quickly overturn of state-supported transitions be prevented? Some answers to these questions might be found in studying the roles of lower state levels, the relations between the executive and legislative powers, as well as guaranteeing national programs are based on secure and diverse forms of funding, as well as institutional structures with civil servants that are not replaced when a government changes.

For future use of the framework specifically, it might be a useful tool to understand the role of the state where patterns of development of agroecology were different from Brazil. For example, where agroecology is not ingrained in social movements' demands. In these cases, cooperation with civil society to lead the knowledge building and dissemination might not be possible. Therefore, the framework might also offer a footprint for exploring different configurations of relations, resources and goals that might work for other cases.

In addition, in-depth and empirical analyses of specific resources, relations and goals and their dynamics to further knowledge on their transformative power might offer exciting results. As an example, could the use of social media by the state be a tool to foster agroecological transitions, as knowledge dissemination was paramount in the case of Brazil? Such questions exploring and comparing categories or aspects of the framework might offer subsidies to different case configurations, as well as facilitate the formulation of policies based on the success and failures of the Brazilian case.

7. Conclusion

As a conclusion to this study, the results have made it possible to answer the main research question of what roles states can play in agroecological transitions. Based on the experience of the state-supported agroecological transition in Brazil, it is possible to affirm that states can be seen as mediators or intermediaries of the relations and actions of the broad constellation of societal actors. In addition, states can create institutional framings that foster deep cooperation between state actors and civil society, allowing innovations to emerge autonomously from the protagonists of agroecological practices. This form of relation and action might be hindered if, in other cases, agroecological transitions are not being demanded by or emerging from the civil society; different roles for the state might need to be developed.

In addition, the case study highlighted a less-explored aspect in the literature on agroecological transition: the importance of the *types* of markets the state is fostering, which should be compatible with the agroecological premise of transforming food systems and relations between producers and consumers. The addition of ecofeminist lenses to ST literature was vital for unveiling the importance of *which types of* markets are being nurtured.

The same institutional setting deemed appropriate in the beginning to foster the agroecological transition proved to be highly fragile, supported only by *government policies* and not rooted in deeper state structures. Therefore, this study has shown that states can also play critical roles in helping but also hindering transformations if these transitions are not ingrained enough in deeper state institutions. Hypothetically, further institutionalisation could have allowed agroecology to become a *state policy* broad enough and long enough to be picked up by the majority of family farmers, constituting a complete agroecological transition.

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Appendix

Document I – Interview Guide (in Portuguese)

Guia de perguntas para entrevista

Título (preliminar) da pesquisa: Semeando um novo futuro?
O papel do Estado brasileiro na transição agroecológica
Pesquisadora: Carolina Costa de Souza

1. Qual foi seu papel durante o processo de transição agroecológica no Brasil?
2. Em relação às organizações do governo, você consegue comentar sobre o papel do estado – isto é – das diversas organizações, como INCRA, ATER, etc. entre 2011 e 2019?
3. Após o golpe parlamentar em 2016, qual tem sido o papel do governo na transição agroecológica?
4. Você acredita que existe algum papel ou papéis esperados do estado e que ele o cumpriu ou não cumpriu?
5. Qual a sua perspectiva sobre **como** o estado se relacionou com os diversos tipos de atores dentro do processo da transição agroecológica?
6. Em relação à recursos, políticas, leis, autoridade, violência – isto é, instrumentos que o estado tem **poder sobre** ou **poder de** executar – você tem uma perspectiva do papel que executou com relação à transição agroecológica e aos atores que participaram do processo entre 2011 e 2019?
 - a. Recursos financeiros – ex. PRONAF, subsídios, outros.
 - b. Outros tipos de recursos
 - c. Em termos de regulamentação – mercado, de preços, de políticas de alimentos
 - d. Paradigmas do estado que influenciaram seu papel – como trabalho reprodutivo vs. produtivo, valor de uso e troca, formas de propriedade, uso de violência ou de instrumentos coercivos

Document II - Historical and Contextual Background to the Agroecological Transition Period

In 2012 former President Dilma Rousseff signed a Decree creating a national plan for agroecology and organic production (PNAPO) (Decreto N° 7.794, 2012). The plan directly responded to the 4th Marcha das Margaridas, or the Daisies March, which happened in her first year in office in 2011 (Sambuichi, Moura, Mattos, Ávila, Spínola, et al., 2017)³². However, the decision did not come about abruptly. It was one more institutional step culminating both from intense political struggle and articulation from alternative agriculture movements since the 70s, as well as a continuance from Dilmas' predecessor, President Luis Inácio Lula da Silva (Lula), which had established policies targeting food security in the country during his 2003-2010 government.

According to Van den Berg et al. (2022), agroecology as a concept was preceded in Brazil by a mix of academics, students, social movements, civil society organizations, and government representatives discussing “alternative agriculture” in the 70s as a response and resistance to Green Revolution’s failed promises.

1960-1980

Sambuichi et al. (2017) explain how the “conservative modernisation” of agriculture happened in Brazil. According to the authors, after the second world war, multinational chemical corporations needed to sell their inventories of products used to produce warfare materials. One use for them was the formulation of agrochemicals and fertilizers. At the same time, influential organizations from the US started investing in seed genetic enhancements. The use of such seeds was bounded to a “technological package” of new machines, the recently developed agrochemicals, among other costly and fossil-fuel intensive production factors. In Brazil, this process of conservative modernization was adopted to achieve

³² The Daisies March is a strategic mobilization of women of rural areas, forests, and riversides, organised and realised by the Brazilian National Confederation of Family Agriculture workers (Contag) (Moreira, 2019).

economic growth based on commodities exports. The change to this new mode of production and capital accumulation was grounded in heavy governmental rural credit with negative interest rates. In the 80s, an economic crisis reduced the possibility of rural credit, but the policy for guaranteed minimum prices (PGPM) was instituted. The procedure was able to sustain the consolidation of the agricultural frontiers based on large-scale monocultural farms in the country, dispossessing peasants and increasing rural conflicts. These developments are critical to understanding the role of Brazil in the international division of labour when it reclaimed a similar position it had during the colonial period, exporting primary goods to global industries and importing industrialized goods (Sambuichi, Spínola, Mattos, Ávila, Moura, et al., 2017). Such a process was paramount to sustain economic growth and, most importantly, maintaining a surplus in the balance of payments while ensuring profits for large-scale farmers, which in turn acquired more land to expand the industrial agribusiness.

It is essential to note the broad political context of the time: the country was still under a military dictatorship, and rural social movements were joining the chorus for the re-democratisation of the country, coupled with social demands to counter land concentration, such as an agrarian reform (C. Schmitt et al., 2017). These heterogeneous actors started debating ideas and concepts in many fora, including local and territorial knowledge networks for collective learning and experimenting (Niederle et al., 2019; van den Berg et al., 2018; Van den Berg et al., 2022). One strong node of this web of spaces was the Brazilian Alternative Agriculture Encounter (EBA), with four editions in 1981, 1984, 1987 and 1989. The debate was also promoted by the constitution of the Alternative Technologies Project Network (Rede PTA), a civil society organisation funded by a French technical cooperation in 1983, which is still in operation (currently called AS-PTA) (Weid, 2013). Simultaneously, the debate on alternative agriculture was embroiled in a bigger political context about Brazil's rural development.

On the one hand, the industrialisation of agriculture first developed within agricultural estates (or big farms) and mainly targeted commodity-oriented crops, such as soy, coffee, and sugar cane (C. Schmitt et

al., 2017). Later, it expanded to **small-scale, family-based farmers**, a fertile new market for technological modernisation. However, the promises of profits from higher yields and lower costs never materialised, resulting in indebtedness, low food supplies in the domestic market, and rural exodus.

More marginalised **rural workers** affiliated with worker's unions and the **landless movement** (MST) were fighting for land redistribution and land settlements. These groups were institutionally represented by INCRA, the National Institute for Colonization and Agrarian Reform, created in 1970 to execute the agrarian reform and improve land regulation. The 1985-1990 period was marked by Brazil's re-democratisation processes, including formulating the new Federal Constitution of 1988. Of particular importance to such rural movements, the constitutional text has incorporated the concept of the social function of land ownership, which offered a legal foundation for land dispossession by the state if the area is not used productively, thus reducing the possibility of land ownership for speculation, and turning *latifúndios* illegal³³. Another triumph of the new constitution was opening the potential for civil society participatory spaces in the government, which would later become essential spaces for articulating rural policies.

Despite being two different rural groups, Schmitt et al. (2017) suggest their growing visibility, coupled with an economic crisis and institutional instability, has developed "family agriculture" (*Agricultura familiar*) as an "institutional niche", gaining social legitimacy strong enough to compel the state to cater to some of its demands. In addition, the strong social and political components intrinsic to a period of political struggle for a democratic turn have given agroecology a prominent social and political connotation next to its role as an alternative technique.

1990-2002

³³ Unfortunately, like many other constitutional rights such as the right to all basic social needs, this is not effectively enforced.

The 90s started with the recent promulgation of law 7.802 from 1989, regulating the use of agrochemicals and further cementing the role of agricultural modernisation in the countryside; a dichotomy between agribusiness and family agriculture starts to form. As agroecology progressed as the adopted conceptual framework for some rural groups, institutionalization of (1) organic production, (2) agroecology and (3) family agriculture policies started to take place (see figure 7 for visual aid).

At the international level, the concept of **organic** production was gaining traction. In Brazil, during the alternative agriculture encounters, some parcels of farmers suggested a need for official organic farming regulations (G1, personal communications, June 29, 2022). This proposal was met both with support and resistance. Some argued that the processes were already being developed internationally, with the popularization of the International Federation of Organic Agriculture Movements (IFOAM) and movements in the US and Japan. Therefore, the argument was that Brazil needed its own legal framework for protecting its market, producers, and consumers. Others suggested *autonomy* from the state was preferable: a direct relationship between producers and consumers, based on trust, was preferable to market mediation and third-party control (G1, personal communications, June 29, 2022).

In 1994, a special commission for regulation of organic production was formed within the Ministry for Agriculture (MAPA), with participation from members of social movements and civil society organizations, also linked to family agriculture and the nascent agroecological movement (C. Schmitt et al., 2017). Certification costs and a critique of organic exports in detriment of supplying local markets were among the discussed issues. In 1999, these discussions culminated in the promulgation of Normative instruction 007, the first normative attempt to regulate organic production.

Regarding family agriculture, the first monetary policy to use the concept of family farmers was introduced in 1996: the National Program for the Strengthening of Family Agriculture (PRONAF). It aimed at offering credit mechanisms to facilitate the inclusion of family farmers into market chains and financing modern technologies (C. Schmitt et al., 2017). In a similar movement, to respond to family farmers'

demands, President Fernando Henrique Cardoso (FHC) creates the Ministry for Agrarian Development (MDA), creating a double structure for dealing with rural issues, addressing conflicts and social demands of small-holder farmers and peasants in one ministry while still catering to industrial agriculture actors, first and foremost large-scale farmers and corporations. According to an interviewee, the creation of MDA by FHC was a political response from the federal government to strong international and national pressure for repercussions after the massacre of Eldorado dos Carajás, when nineteen landless farmers from MST were murdered by the military police (G6, personal communications, July 4, 2022).

Finally, the institutionalisation of agroecology in the 90s was more related to knowledge dissemination and integration. In 92, the Brazilian Agricultural Research Corporation (EMBRAPA) - a federal research institute affiliated with the Ministry of Agriculture - started an agroecological farm for empirical research in Rio de Janeiro (Moura, 2017). In 1998, it coordinated an agroecological network, which in 1999 held the first National Conference for Agroecological Research.

At this point, one can notice the formation of distinct but intertwined clusters of farmers (figure 7).

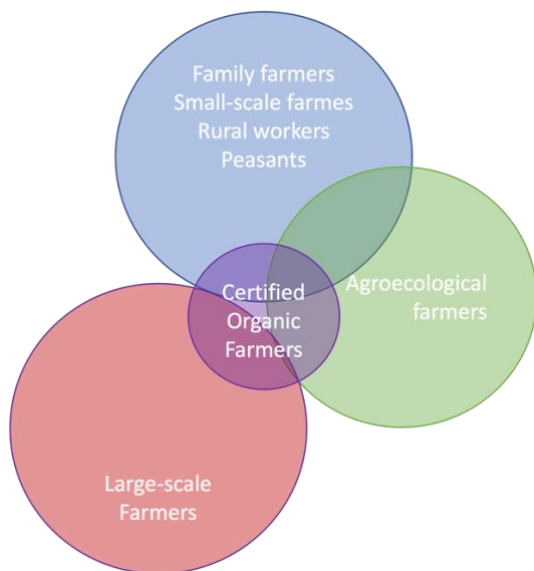


Figure 7: the different rural clusters of farmers

2003-2011

Moving on to the 00s, 2003 marked the election of President Luis Inácio Lula da Silva, an ideological turn to a left-oriented worker's party. Literature on agroecological institutionalisation and statements from interviewees state this moment marks the beginning of changes in the interface between civil society and the state in public policy elaboration (Moura, 2017; Niederle et al., 2019; Sambuichi, Spínola, Mattos, Ávila, Moura, et al., 2017). Not only due to the increase of institutional spaces for collaboration but also because many new political appointees had a history with or within social movements.

Starting from processes that were already ongoing, the organic law was promulgated in the first year of the government. Schmitt et al. (2017) convey that the role of MDA, created in 2000, was essential in including civil society organizations linked to family farming in the discussions to upgrade normative instruction 007 from 1999 to the Law 10.831, from 2003, the so-called "Organics Law". The law was created with ample dialogue, albeit permeated with disagreements, among social movements themselves and civil society and the government. The authors further explain the law included elements to offer more freedom to the relations between producers and consumers: family farmers did not need a certification if they sold directly to consumers, as long as they were affiliated with a Social Control Organization (OCS). The law also included broad descriptions of what constituted an organic production: terms such as "ecologic, biodynamic, natural, regenerative, biologic, agroecological, permaculture, and sustainable extractive practices, and others within these principles" aimed at embracing the diverse set of alternative practices that were developing within a framework of more sustainable forms of food production.

Finally, the law incorporated original elements of certification when compared to international regulations, including the participatory warranty systems (SPGs) in which farmers organize in a broad network and ensure the conformity to organic production of one another, based on principles of solidarity and collective responsibility. According to one interviewee directly involved in the process, after its promulgation, a thematic chamber for organic agriculture was created in 2004 to regulate all practical

aspects, with participation from organic and agroecological movement representatives (G1, personal communications, June 29, 2022). From 2004-2009, other decrees regulating the Organics Law were promulgated based on discussions and decisions by the thematic chamber and public consultation (Moura, 2017). According to the interviewee, the goal of this chamber was to design a National Policy for Organic Agriculture, requested by former President Lula, which would later be merged with the efforts that culminated in the creation of PNAPO (G1, personal communications, June 29, 2022). At the same time, an initiative called Agrobiodiversity Program (Programa Agrobiodiversidade) was planned and executed under the budget of the Environment Ministry (MMA) in the pluriannual budget plan for PPA 2008-2011, which was said to later compose the basis for PNAPO (Moreira, 2019).

During the same period, the network Articulation for the Brazilian Semiarid region (ASA), composed of more than 3000 civil society organizations, proposed and achieved important water collection and distribution policies. Through the Social Development Ministry (MDS), the one million cisterns program (P1MC), and the program one land two waters (P1+2), also called “Second Water” (Segunda Água) program ensured access to potable water for families and farmers to live and also produce food, even during dry periods (Satiro et al., 2018).

President Lula’s government focused on food security and hunger eradication, which are strongly linked to demands from agroecological actors. While agroecology was not a priority for the government, many food security policies created during Lula’s government were later instrumental in the agroecological transition period. These policies were discussed in commissions with joint management from civil society and the state. The literature on agroecology states the primary *loci* for such dialogue were the National Council for Food and Nutrition Security (CONSEA) and the National Council for Sustainable Rural Development (CONDRAF). The authors add that such instances did not affect or reduce the influence and incumbency of agribusiness within both executive and, especially, the legislative power (Sambuichi et al., 2017).

The broad institutional openness to dialogue was met with an enhanced political articulation of agroecology movements with many state bureaucracies regarding the dissemination and creation of knowledge on agroecology, including within EMBRAPA and MDA. The creation of the National Agroecology Alliance (ANA) in 2002, the national conferences on agroecology, starting in 2003, the creation of the Brazilian Agroecology Association (ABA), the mentioned Articulation on the Semi-arid Region (ASA) and the Daisies March form the basis of crucial political articulation spaces for the agroecological movement.

The fertile knowledge exchange culminated in the creation of a National Policy of Technical Assistance and Rural Extension services (PNATER) in 2004 directed at family farmers and land settlement farmers, in which, for the first time, the word agroecology was mentioned in a public policy instrument and which is considered one of the most important instruments to foster agroecological transitions (Moura, 2017). PNATER established that the knowledge services should be based on participatory approaches and has decentralised the execution of such services to a broad base of NGOs and local organizations (Niederle et al., 2019), aiming to reach more farmers in a continental-size country like Brazil.

Other important food pricing policies were the creation of the Food Acquisition Program (PAA) in 2003, the reform of the National Program for School Food (PNAE) in 2009, and the Minimum Price Guarantee Policy for Sociobiodiversity Products (PGPM-Bio).

PGPM-Bio, instituted in 2008, offered a bonus for sustainable extractivist producers in case they sold their produce for a lower price than the government fixed prices. PAA was a governmental buying program to buy food directly from family farmers and distribute it to vulnerable groups through donations to entities working on social assistance. It aimed at increasing food supply while prioritizing local food chains. PAA also allowed buying and valuing native seeds, in consonance with the recent change in legislation in 2003, which recognized the rights of family farmers, agrarian reform settlements, indigenous and quilombola communities to produce, multiply, distribute, exchange and sell such varieties (Moura, 2017).

PNAE was an existing mechanism to supply food to schools that in 2009 was changed to state that 30% of the resources sent from the federal government to local administration need to be spent on family farms' produce. PAA and PNAE also had a mechanism to pay up to 30% more if the products were cultivated in organic or agroecological systems. According to Schmitt and Grisa (2013), both pricing policies have fostered the verification and preference for local sources of food production, as well as food with cultural territorial rooting, valuing local knowledge systems and local food.

These policies created an institutional, secure market destination for family farmers, showing a timid but crescent institutional orientation towards agroecology narratives, defended by actors in MDA and the recently established Coordination for Agroecology (COAGRE) at MAPA, which later would be one of the only bodies to remain after institutional changes from President Michel Temer in 2016 (G1, personal communications, June 29, 2022), as will be discussed further on.

Regarding production financing mechanisms, ANA was instrumental in proposing and articulating the creation of new credit lines for PRONAF³⁴, namely PRONAF Agroecologia, PRONAF Floresta (forest) and PRONAF Semiárido (semi-arid region), which aimed at financing families interested in transitioning to agroecological farming methods (Moura, 2017). However, according to Moura (2017), these credit instruments were not used. The financial agents did not prioritize such offerings. They considered the agroecological projects more complex than monocultures, for which financial instruments were prepared to assess feasibility. In the 2007-2008 period, only 0,01% of the total PRONAF contracts were from PRONAF Agroecologia.

³⁴ Niederle et al. (2019) note that, despite dating from 1996, PRONAF had an significant increase in the amount of resources since 2003.

Before moving to the current agroecological transition period, rural women's movements need to be discussed, as it was their political articulation that culminated in the commitment of former President Dilma Rousseff to create and sign the PNAPO.

Without feminism there is no Agroecology

Moreira (2019) studied the Daisies March's historical contribution to Brazil's agroecological policies. According to the author, the Daisies March is a strategic mobilization of women of rural areas, forests, and riversides, organized and realized by the Brazilian National Confederation of Family Agriculture workers (Contag) every (more or less) 4 years in August in Brasília, the federal capital. The name and month of the march are a tribute to rural worker Margarida Maria Alves, murdered on August 12, 1983. There have been six marches: 2000, 2003, 2007, 2011, 2015, and 2019. From the first march in 2000, more than 20 social movements, among them (rural) labour unions, national and international CSOs, national and international social collectives and research centres, have promoted, partnered, and marched together with around 20.000 participants. Between 2000-2011, the highly diverse character of the movement, which incorporates women and dialogues with organizations with different social demands, also started dialoguing with agroecology. They participate and organize articulation spaces with PTA, ANA, CBA, and form women's working groups within other agroecology movements. Moreira's interviewee states that during these years, the women started to recognize how they have been living their lives and working with the soil, their practices, could be called "agroecology"; they just did not know the term. For them, and the broad agroecological movement in Brazil, agroecology is a mode of production and living, to relate to agriculture, life and other people in the fields, respecting the diversity of traditions, cultures and knowledge while protecting sociobiodiversity and the commons, such as land, water and genetic diversity.

The 2015 March was said to have had more than 100.000 participants, becoming a reference in mass mobilization and the largest rural women mobilization in the world. The primary institutional interface of

the Daisies March was the Office of Policies for Rural and Quilombola Women (DPMRQ), hosted in MDA. During the years that precede a March, the organisations have meetings and articulate working documents. Many of the themes and demands from their records were incorporated or debated during the creation of PNAPO and PLANAPO, such as the practical recognition of women farmers as workers and not wives of farmers and the recognition of their food gardens as a form of valid, productive work (G3, personal communications, June 27, 2022). Before the march, a list of demands is delivered to the government (Moreira, 2019).

During the 4th march's closing event (see figure 8) in 2011, then-president Dilma Rousseff announced that as a response to the list of demands debated and negotiated with the government, a working group would be formed to create a proposal to what has then become the National Policy for Agroecology and Organic Production (PNAPO) on Aug 20, 2012, starting the official period of the institutional agroecological transition in Brazil.



Figure 8: President Dilma Rousseff during the closing ceremony of the Daisies March, in 2011 (Gov.br, 2011).

Document III – Final List of Codes

Analytical Framework Codes
Functions
Functions\1. Economic Development
Functions\1. Economic Development\Ecofem
Functions\1. Economic Development\Ecofem\Housewifization
Functions\1. Economic Development\Ecofem\Market logicExchange-value prioritisation
Functions\1. Economic Development\Ecofem\Nature as a resource
Functions\1. Economic Development\Ecofem\Recognition of reproductive work
Functions\1. Economic Development\Ecofem\Value Non-monetary transactions
Functions\1. Economic Development\ST
Functions\1. Economic Development\ST\Market formation
Functions\1. Economic Development\ST\Market protection
Functions\1. Economic Development\ST\Private property and rules of exchange
Functions\1. Economic Development\ST\Technological development
Functions\2. Social Development
Functions\2. Social Development\Ecofem
Functions\2. Social Development\Ecofem\Food Sovereignty
Functions\2. Social Development\Ecofem\Food Sovereignty\Access to water as human right
Functions\2. Social Development\Ecofem\Food Sovereignty\Ensure access to land
Functions\2. Social Development\Ecofem\Food Sovereignty\Food security
Functions\2. Social Development\Ecofem\Food Sovereignty\Seed and genetic diversity
Functions\2. Social Development\Ecofem\Food Sovereignty\Territorial rooting rights
Functions\2. Social Development\Ecofem\Subsistence Perspective
Functions\2. Social Development\Ecofem\Subsistence Perspective\Recognition of other modes of living
Functions\2. Social Development\ST
Functions\2. Social Development\ST\Education or Capacity building
Functions\2. Social Development\ST\Healthcare
Functions\2. Social Development\ST\Income generation
Functions\2. Social Development\ST\Reduce social inequalities
Functions\3. Environmental Protection
Functions\3. Environmental Protection\Ecofem
Functions\3. Environmental Protection\Ecofem\Increase genetic and food biodiversity
Functions\3. Environmental Protection\Ecofem\Re-localisation of (food) production
Functions\3. Environmental Protection\Ecofem\Recognition of traditional knowledge
Functions\3. Environmental Protection\ST
Functions\3. Environmental Protection\ST\Decarbonisation
Functions\3. Environmental Protection\ST\Decrease pollution
Functions\3. Environmental Protection\ST\Ecosystem restoration
Functions\3. Environmental Protection\ST\increase resource efficiency
Functions\3. Environmental Protection\ST\Nature conservation
Functions\4. Legitimation
Functions\4. Legitimation\Ecofem
Functions\4. Legitimation\Ecofem\Colonization

Functions\4. Legitimation\Ecofem\Depatriarchalisation
Functions\4. Legitimation\Ecofem\Dichotomic thinking
Functions\4. Legitimation\ST
Functions\4. Legitimation\ST\Guarantee public accountable institutions
Functions\4. Legitimation\ST\Tax collection
Functions\5. Domestic Order
Functions\5. Domestic Order\Ecofem
Functions\5. Domestic Order\Ecofem\Ensure womens rights
Functions\5. Domestic Order\Ecofem\Foster gender equality
Functions\5. Domestic Order\ST
Functions\5. Domestic Order\ST\Actor orchestration
Functions\5. Domestic Order\ST\Actor orchestration\Intra-state orchestration
Functions\5. Domestic Order\ST\Protect (human) rights
Relations
Relations\Autonomous
Relations\Cooperative
Relations\Cooperative\Civil society input
Relations\Cooperative\Lack of cooperation
Relations\Dominant
Relations\Incumbent
Relations\Influential
Resources
Resources\Artefactual
Resources\Artefactual\Infrastructure building
Resources\Human
Resources\Human\Agency
Resources\Institutional
Resources\Mental
Resources\Mental\Education
Resources\Mental\Ideology
Resources\Mental\Narratives
Resources\Monetary
Resources\Natural

Case Analysis Codes
Case Analysis
Case Analysis\Historical background
Case Analysis\Historical background\Geopolitics
Case Analysis\Institutional changes
Case Analysis\Operationalisation
Case Analysis\Operationalisation\ATER
Case Analysis\Operationalisation\Certificates
Case Analysis\Operationalisation\Change management
Case Analysis\Operationalisation\Cisternas
Case Analysis\Operationalisation\Consumption
Case Analysis\Operationalisation\Cooperativism
Case Analysis\Operationalisation\Ecoforte
Case Analysis\Operationalisation\Education
Case Analysis\Operationalisation\Extrativism
Case Analysis\Operationalisation\land reform
Case Analysis\Operationalisation\Objectives
Case Analysis\Operationalisation\Organic production
Case Analysis\Operationalisation\PGPM-Bio
Case Analysis\Operationalisation\Plano Safra
Case Analysis\Operationalisation\PNAE or PAA
Case Analysis\Operationalisation\Pronaf
Case Analysis\Operationalisation\PRONARA
Case Analysis\Operationalisation\Renewable Energy
Case Analysis\Operationalisation\Respect forest regeneration capacity
Case Analysis\Operationalisation\State sub-levels
Case Analysis\Operationalisation\Target audience
Case Analysis\PLANAPO I
Case Analysis\PLANAPO II
Case Analysis\Problem statement
Case Analysis\Problem statement\Climate change

Case Analysis\Problem statement\Green Revolution
Case Analysis\Problem statement\Green Revolution\Agrochemicals
Case Analysis\Problem statement\Green Revolution\GMOs
Case Analysis\Problem statement\Lack of Knowledge
Case Analysis\Problem statement\Rural exodus
Case Analysis\Problem statement\Soil degradation
Case Analysis\Results
Case Analysis\Solution statement
Case Analysis\Solution statement\Agroecology benefits
Case Analysis\Solution statement\Sustainable development
Case Analysis\Solution statement\Sustainable development\Holistic worldview