# VARIETIES IN ORGANIC AGRICULTURE

## An Assemblage Thinking Approach to Agri-Environmental Governance in India

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# Varieties in Organic Agriculture: An Assemblage Thinking Approach to Agri-Environmental Governance in India

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| | |
|---|---|
| **AEG** | Agri-Environmental Governance |
| **AI** | Agroecological Intensification |
| **APEDA** | Agricultural and processed Foods Exports Development Authority |
| **APMC** | Agricultural Produce Market |
| **ARISE** | Agricultural Renewal in India for A Sustainable Environment |
| **ASSOCHAM** | Associate Chambers of Commerce |
| **AT** | Assemblage Thinking |
| **ATC** | Agricultural Training Centre |
| **BCKV** | Bidhan Chandra Agricultural University |
| **BECCS** | Bio-energy with carbon capture and storage |
| **BMZ** | Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung |
| **BOP** | Bottom of the Pyramid |
| **CAGR** | Compound annual growth rate |
| **CDFI** | Committee on Doubling Farmers' Income |
| **CE** | Common Era |
| **CEO** | Chief Executive Officer |
| **CGIAR** | Consultative Group for International Agricultural Research |
| **CPR** | Common-Pool Resources |
| **DAC&FW** | Department of Agriculture, Cooperation and Farmers Welfare |
| **DDM** | District Development Manager |
| **DFI** | Doubling of Farmers' Income |
| **DNA** | Deoxyribonucleic acid |
| **DRCSC** | Development Research and Communication Services Centre |
| **EU** | European Union |
| **EUR** | Euro |
| **FAO** | Food and Agriculture Organization |
| **FCRA** | Foreign Contribution Regulation Act |
| **FDI** | Foreign Direct Investment |
| **FPC** | Farmer Producer Company |
| **FSSAI** | Food Safety and Standards Authority of India |
| **GDP** | Gross Domestic Product |
| **GIZ** | Deutsche Gesellschaft für Internationale Zusammenarbeit |
| **GPN** | Global Production Network theory |
| **GST** | Goods and Services Tax |
| **GVC** | Global Value Chain analysis |
| **ha** | hectare |
| **ICAR** | Indian Council of Agricultural Research |
| **ICRISAT** | International Crops Research Institute for the Semi-Arid Tropics |
| **ICS** | Internal Control System |
| **IEC** | Import Export Code |
| **IFOAM** | International Federation of Organic Agriculture Movements |
| **INGO** | International non-governmental organization |
| **INR** | Indian Rupee |
| **IPES-Food** | International Panel of Experts on Sustainable Food Systems |
| **kg** | kilogram |
| **KVIC** | Khadi and Village Industries Commission |

| | |
|---|---|
| **KVK** | Krishi Vigyan Kendra (Farm Science Centre) |
| **MGNREGA** | Mahatma Gandhi National Rural Employment Guarantee Act |
| **MNE** | Multinational Enterprise |
| **MSP** | Minimum support price |
| **NABARD** | National Bank for Agriculture and Rural Development |
| **NCOF** | National Centre for Organic Farming |
| **NGO** | Non-governmental organization |
| **NOP** | National Organic Program (of the USA) |
| **NPOF** | National Project on Organic Farming |
| **NPOP** | National Programme for Organic Production |
| **OA** | Organic Agriculture |
| **OFAI** | Organic Farming Association of India |
| **OSFA** | One-Size-Fits-All |
| **PAN** | Permanent Account Number |
| **PGS** | Participatory Guarantee System |
| **PGS-NAC** | PGS National Advisory Committee |
| **PKVY** | Paramparagat Krishi Vikas Yojana ( Plan for Promotion of Traditional Farming) |
| **PO** | Producer Organizations |
| **POPI** | Producer Organization Promoting Institution |
| **PPP** | private-public-partnership |
| **PR** | pesticide residues |
| **SC** | Scope certification |
| **SFAC** | Small Farmers' Agribusiness Consortium |
| **SHF** | Smallholder farmers |
| **SHG** | Self-Help Group |
| **SI** | Sustainable Intensification |
| **SPNF** | Subhash Palekar Natural Farming |
| **TC** | Transaction Certificates |
| **TPC** | Third Party Certification |
| **UK** | United Kingdom |
| **UOCB** | Uttarakhand Organic Commodity Board |
| **US** | United States of America |
| **USD** | United States dollar |
| **USDA** | United States Department of Agriculture |
| **WBIOA** | West Bengal Institute of Organic Agriculture |
| **WHO** | World Health Organization |
| **WTO** | World Trade Organization |
| **ZBNF** | Zero Budget Natural Farming |

## Zusammenfassung

Die Notwendigkeit einer nachhaltigen Landwirtschaft hat angesichts der sich stetig verändernden Umwelt zunehmend an Bedeutung gewonnen. Verschiedene Strategien zur Steuerung von nachhaltigen Ernährungssystemen wurden entwickelt; eine davon ist die Einführung privater Standards für die ökologischen Landwirtschaft innerhalb formalisierter globaler Wertschöpfungsketten. Eine bislang noch wenig erforschte Strategie in diesem Kontext ist die Entwicklung nicht-formalisierter Formen der Landwirtschaft als Reaktion auf spezifische Probleme von Kleinbauern im Globalen Süden. Die vorliegende Arbeit widmet sich dieser Forschungslücke und erforscht die ökologische Landwirtschaft als eine Form der Agrarumweltpolitik in Indien. Sie untersucht anhand des Ansatzes des Assemblage-Thinking wie verschiedene Formen ökologischer Landwirtschaft entstehen, die als Reaktion auf Probleme unterschiedlicher lokaler Bedingungen in einem spezifischen und situierten geographischen Kontext entwickelt wurden. Ganz konkret werden nicht-formalisierte, bestehende Formen der ökologischen Landwirtschaft analysiert; im Fokus steht die Untersuchung verschiedener Formen des ökologischen Reisanbaus in Westbengalen und weiteren Teilen Indiens. Ein mangelndes Verständnis nicht-formalisierter Formen der Agrarumweltpolitik führt zu einer eingeschränkten Sichtweise auf Nachhaltigkeitsstrategien und zu dem Glauben, diese seien hauptsächlich von Anforderungen außerhalb des jeweiligen Systems geleitet. Diese Dissertation gibt einen Überblick über die verschiedenen miteinander agierenden (diskursiven und nicht-diskursiven) Komponenten, die von verschiedenen Akteuren genutzt werden, um neue Formen der nachhaltigen Landwirtschaft zu entwickeln, und leistet damit einen Beitrag zur Debatte rund um Agrarumweltpolitik. Einfach ausgedrückt: Die nicht-formalisierte ökologische Landwirtschaft vertritt eine alternative Sichtweise auf die Globalisierung und ordnet das Material anders an. Dies stellt andere Formen der Globalisierung, wie ressourcenintensive Landwirtschaft und exportorientierte ökologische Landwirtschaft, in Frage und schafft eine Übersicht über Inkommensurabilitäten und unerwarteten Allianzen, um konkrete Entscheidungen und Handlungen besser zu verstehen.

Kapitel 2, *Conceptual Framework: Assemblage Thinking and Agri-Environmental Governance in the Anthropocene*, trägt zur Erweiterung der Literatur über Governance-

Ansätze bei und vergleicht den analytischen Ansatz zu Globalen Wertschöpfungsketten und des Ansatzes des Assemblage Thinking. Zudem wird das Konzept Assemblage Thinking tiefergehend erläutert. Kapitel 4, *Recoding Sustainability in Organic Agriculture: Locating Approaches On the Continuum between Two Paradigms of Sustainability in Agriculture*, vergleicht die zentralen Paradigmen Sustainable Intensification und Agroecological Intensification der beiden miteinander konkurrierenden Theorien zur Nachhaltigkeit in der Agrarumweltpolitik. Ökologische Landwirtschaft wird als Zusammenspiel von Diskurs und Praxis konzeptualisiert und auf einem Kontinuum zwischen den beiden Paradigmen platziert. Kapitel 5, *What Can Organic Do? A Rhizomatic Approach to Understanding Organic Agriculture in India*, betrachtet biologische Landwirtschaft unter Berücksichtigung der Situation in Indien anhand verschiedener sich im Laufe der Zeit ändernde Perspektiven auf deren Umsetzung. Kapitel 6, *Organic as a Capitalist Assemblage: Understanding The Role of Companies in Territorializing Organic Agriculture in India*, analysiert das Vorgehen von Unternehmen, die an der Zertifizierung biologischer Formen der Landwirtschaft beteiligt sind, und vertieft die Auswirkungen, die sich bei der praktischen Umsetzung der definierten Standards aus den Anforderungen ergeben. Kapitel 7, *Organic as a Departure from Territorial Assemblages: Smallholder Rice Farmers and Initiatives for Sustainability in West Bengal*, betrachtet die Bedeutung nicht formalisierter ökologischer Landwirtschaft als eine Möglichkeit für die Bauern, neue Wege zu gehen. Kapitel 8, *Constructing New Markets: The Potential of Organic Agriculture as a Nomadic Assemblage,* stellt verschiedene Initiativen vor, deren Ziel es ist, Wertschöpfungsketten an den Interessen der Bauern zu orientieren, und ihnen neue Möglichkeiten zu eröffnen. In konzeptioneller Hinsicht zeigt diese Dissertation, wie anhand des Assemblage Thinking ein besseres Verständnis lokaler Gegebenheiten gefördert und es in eine größere akademische und soziale Debatte eingebunden werden kann. Dieser Ansatz ermöglicht die Verknüpfung von Theorien verschiedener Disziplinen, die sich alle auf biologische Landwirtschaft beziehen, erläutert die Diskussionen rund um die Nachhaltigkeit landwirtschaftlicher Vorgehensweisen und analysiert die sich ergänzenden Ansätze der Agrarökologie und des Assemblage Thinking. Agrarumweltpolitik wird als ein Prozess definiert, der sich durch die Anpassung an äußere Umstände entwickelt, was die Entstehung von Innovationen ermöglicht. Die

Dissertation untersucht mit empirischen Methoden die unterschiedlichen Formen ökologischer Landwirtschaft sowie die unterschiedlichen Motive formaler und nicht-formaler Systeme und legt deren Chancen und Grenzen dar. Ökologische Landwirtschaft als Konzept wird als ein vielschichtiges Gefüge (*Assemblage*) verstanden, das vorherrschende Systeme sowohl bestärkt als auch in Frage stellt. Obwohl die ökologische Integration landwirtschaftlicher Systeme eine zentrale Rolle bei der Förderung der Einführung nicht-formaler Systeme spielt, verhindert die physische Realität von Orten und Entfernungen jegliche Bemühungen einer umfassenden Verbreitung dieser.

## Summary

The need for sustainability in agriculture has become increasingly important in the face of mounting pressures from the changing environment. Several strategies for governing sustainability responses have emerged, one of which has been the adoption of private organic agriculture standards within formalized global value chains. A less researched strategy, however, has been the creation of non-formal forms of agriculture as a response to the specific problems faced by smallholder farmers in the Global South. This study seeks to fill this gap by studying organic agriculture as a form of agri-environmental governance in India. Using an Assemblage Thinking approach, it deals with the question of how varieties in organic agriculture arise in response to problems faced on the ground in a specific and situated geographical context. More specifically, I examine non-formal, existing versions of organic agriculture, exploring the diverse forms of organic agriculture in rice production as practiced in West Bengal state, and across parts of India. The problem of a lack of understanding non-formal forms of governance leads to a narrow view of sustainability governance as being mainly driven by desires and forces external to the system in question. The aim of this dissertation is to contribute to the discussion around agri-environmental governance by providing an overview of the various components, both discursive and non-discursive, which interact together and are utilized by various actors to produce an emergent form of organic. Put simply, the non-formal varieties of organic exist as an alternative imaginary of globalization, and arrange materials differently. In doing so, these assemblages challenge other concurrent assemblages of globalization like input-intensive farming

and organic-for-export, creating a map composed of incommensurabilities and strange alliances to better understand governance in practice.

Chapter 2 in this dissertation, *Conceptual Framework: Assemblage Thinking and Agri-Environmental Governance in the Anthropocene*, contributes to the literature on approaches to governance, comparing the GVC analysis approach and Assemblage Thinking approach. It also identifies aspects in Assemblage theory to incorporate into Assemblage Thinking approaches. Chapter 4, *Recoding Sustainability in Organic Agriculture: Locating Approaches On the Continuum between Two Paradigms of Sustainability in Agriculture*, compares the two paradigms of Sustainable Intensification and Agroecological Intensification which frame two competing approaches to sustainability in agri-environmental governance. Organic agriculture is conceptualized as a package of discourses and practices placed along the continuum between these two paradigms. Chapter 5, *What Can Organic Do? A Rhizomatic Approach to Understanding Organic Agriculture in India*, situates organic agriculture in the context of India, adopting different perspectives of its implementation over time. Chapter 6, *Organic as a Capitalist Assemblage: Understanding The Role of Companies in Territorializing Organic Agriculture in India*, explores the governance by companies involved in the formal form of organic, and focuses on the implications of requirements as outlined by standards put into practice. Chapter 7, *Organic as a Departure from Territorial Assemblages: Smallholder Rice Farmers and Initiatives for Sustainability in West Bengal*, examines the role of non-formal organic agriculture as a way of opening up new room for experimentation as farmers negotiate between competing assemblages. Chapter 8, *Constructing New Markets: The Potential of Organic Agriculture as a Nomadic Assemblage,* describes various initiatives to build value chains around the interests of farmers, and the potential for opening up future lines of flight.

Conceptually, this dissertation demonstrates the use of Assemblage Thinking in aiding a better understanding of the specificities of place while linking it to wider academic and societal debates. This approach allows the linking of theories from different fields pertinent to organic agriculture, clarifying debates on sustainability of agricultural systems, as well as exploring the complementary approaches of agroecology and Assemblage Thinking. Agri-environmental governance is conceptualized as an

emergent process arising from an adaptation to circumstances, which leads to the possibility of innovations wherever capacities are created. Empirically, the varieties of organic agriculture explored in this dissertation explore the different desires driving formal and non-formal systems, making clear their limitations and possibilities. Organic as a concept is understood as a multi-faceted assemblage, at times enabling prevalent systems and at times challenging them. Although biological integration of farm systems emerges as a key theme driving the adoption of non-formal organic, the physical reality of place and distance thwarts efforts to encourage widespread adoption.

# 1. Introduction

Organic agriculture seems like a benign and harmless issue, a scraggly plant growing in the corner of your yard. Once you walk over and start pulling on it, determined to get to the bottom of the issue, you might be surprised. Your brow might furrow in consternation, as the ground around it starts shifting unexpectedly. Using more force and leverage, you pull on it even more, and the dirt gives way to a tangled mass. More of the ground moves, as the plant seems inexorably entangled with the roots of other issues – issues of environmental sustainability, soil health, seed rights, feeding the world, markets and supply chains, economic development. As the heady smell of freshly-moved soil wafts over you, and the sweat starts prickling on your neck, you might begin to feel flustered and try to cram the roots of the plant back, pat down the soil and forget you ever saw it. Or, like me, you might be fascinated and intrigued, and drop down on your knees to examine more closely these entanglements.

These entanglements matter more with each passing day, as agriculture and the wider food system is increasingly implicated in driving planetary-scale changes, but is also one of the most vulnerable sectors to these very changes: disrupted weather patterns, loss of ecosystem services and of increasingly polluted environments (GRAIN, 2016; Pretty & Bharucha, 2018). Without an adequate response to these changes, the possibility to continue farming becomes compromised. A fundamental question thus arises: How does sustainability in agricultural systems emerge from agri-environmental governance responses? This issue is explored through case studies of non-formal organic agriculture in India.

The dissertation is structured in the following way. Chapter 2 is an introduction to the conceptual framework of this thesis. It proposes Assemblage Thinking as a way to better comprehend things and ideas that overflow the categories into which we try to divide the world. In doing so, I propose a way to engage with the "wild side of agro-food studies" (2013) as Michael Carolan so enticingly puts it. The chapter also highlights the two key factors contributing to the precarious situation of smallholder farmers in India: changes associated with the Anthropocene and the emerging agrarian crisis in India. Chapter 3 goes over the methodology that I used to conduct the research, as well as reflections on

the research itself. Chapter 4 is a conceptual discussion of sustainability in agriculture, a key issue in organic agriculture. In this chapter, I outline the two paradigms in sustainability as discussed in the academic literature to establish the difference in approaches. I then follow the evolution of organic agriculture in a global context. Much of the discussion up to this point is concerned with establishing the ontology used in the dissertation. This is followed by Chapter 5, where I examine the history of organic agriculture in India, and adopt several different perspectives in order to provide a multi-faceted account. I explain the different actors involved in organic agriculture at different levels of governance and what they expect from organic agriculture, before explaining a cross-cutting case to illustrate how these different levels of governance interact to actually bring together a form of organic agriculture. Chapter 6 is based on interviews conducted with companies in India engaged in organic rice value chains. I elucidate the price-setting strategies the companies follow, and how they control space and actors to put together a profitable model of organic agriculture. In Chapter 7, I follow a group of farmers in West Bengal, India to understand how they put into practice a form of organic agriculture suited to local conditions, and the obstacles they face. Chapter 8 discusses several existing initiatives to create new kinds of markets that cater to the needs of smallholder farmers (SHF) seeking to sell non-formal organic produce. I also report the focus group discussion where representatives of these different initiatives are brought together to discuss possible future pathways for organic agriculture. I close with Chapter 9, where I summarize the main findings and discuss the limitations of the research and possible future research opportunities.

## 1.1 Research Questions

The research questions addressed in this dissertation are as follows:

1. What is the value of an Assemblage Thinking Approach vis-à-vis more conventional approaches like Global Value Chain analysis to the study of agri-environmental governance?
2. What is the broader discursive and non-discursive agri-environmental context within which organic agriculture is situated?

3. What are the factors that shape the specific context within which varieties of organic agriculture have emerged in India? What are the discourses that are used within these varieties of organic agriculture?
4. How are aspects of geographical space and economic value in organic agriculture governed through formal value chains in India?
5. How is organic agriculture understood and practised by SHF in West Bengal, India? How does it rearrange the material relationships of SHF systems to increase environmental sustainability?
6. How are aspects of geographical space and economic value in organic agriculture governed through non-formal assemblages in West Bengal, India? What are the assemblages involved, and what limits their capacities?

Taken together, these questions aim to answer the more general question: how does sustainability in agricultural systems emerge from agri-environmental governance responses?

# 2. Conceptual Framework: Assemblage Thinking and Agri-Environmental Governance in the Anthropocene

## 2.1 Introduction

I start this chapter with a section comparing different approaches to the study of agri-environmental governance[1] (AEG) using the example of food, one of the main products of AEG. After doing so, I will draw out the distinctions between Assemblage Thinking (AT) vis-à-vis more established approaches (exemplified here by Global Value Chain analysis), and highlight the conceptual gaps in the latter that I seek to fill using Assemblage Thinking. This section is followed by a description of AT in the study of AEG and an exploration of the links between AT and Assemblage Theory, as I attempt to re-ground AT in the theory from which it derives. In doing so, I highlight five key aspects of AT: (1) an emphasis on a problematics approach within AT to capture the variety of approaches to AEG, (2) an emphasis on the emergent yet deliberate nature of assemblages, (3) an ontology based on the processual nature of becoming rather than being, (4) the assemblage as existing to yoke together the dimensions of content and expression, and (5) a selective principle, multi-species liveability, for choosing between competing assemblages. Finally, I explain how these features of AT help me to answer my research questions.

## 2.2 Approaches to Agri-Environmental Governance

In this section, I provide a brief description of Global Value Chain (GVC) analysis, one of the key toolkits at the geographer's disposal when studying AEG. I then provide a table comparing GVC with the conceptual toolkit used in this dissertation, AT. This helps highlight the key distinctions to be kept in mind as I explain the use of AT as an approach to studying AEG. Table 1 provides a broad overview of the conceptual terrain in discussion. Leach et al. (2020), in their review of the ways in which food politics has been conceptualized and studied, argue that a wide range of conceptual approaches is necessary to understand the "opportunities and challenges to build more equitable,

[1] AEG is "an encompassing concept to understand how environmental issues are addressed within the food system by a set of diverse actors of the public and/or private sectors" (Forney, 2016)

sustainable food systems". Food is a complex topic, and being a key product of AEG, provides a reasonable proxy for comparing different approaches.

*Table 1: Different Approaches to the study of food in Agri-Environmental Governance*

| | Interests and Incentives | Institutions | Food Regimes | Contentions and Movements | Innovation Systems | Discourses | Socio-Natures |
|---|---|---|---|---|---|---|---|
| **Key Foci of Analysis** | Rational, Individual Actors | Formal and informal Institutions (esp. Firms) | Historically-shaped political, social, and value regimes | Different groups mobilizing around issues and interests | Groups which change systemic features (primarily State-led) | Actors who shape ideas and discourses | Assemblages composed of humans and non-humans |
| **Some Underlying Theoretical Perspectives** | Neoclassical and Behavioural Economics | New Institutional Economics, Global Value Chains | Structural Marxism, Historical Materialism | Social Movement Theory, Contentious Politics | Multi-Level Perspective in Innovation Studies | Feminist, and Post-Colonial Critiques, Poststructural Theory | Cultural Geography, STS |
| **Insights for Governance** | Changing rational and irrational incentives | Changing the "rules of the game" | Changing the whole regime | "Bottom-up" challenges to hegemonic power | Recognizing path-dependencies, change through experimental niches | Change the narrative | Breaking apart old, and creating new assemblages |

Source: Adapted from Leach et al. (2020)

Leach et al. (2020) identify seven stylised approaches, while acknowledging that there is a mixing and exchange of ideas across approaches. For the purposes of this dissertation, I discuss the Institutions approach exemplified by GVC, and the Socio-Natures approach, exemplified by AT.

### *2.2.1 Global Value Chains as an Approach*

Advances in technological capabilities, resulting in inventions like diesel engines, container vessels, and telecommunications (Smil, 2019) along with post-World War Two organizational changes, such as liberalization and deregulation of international trade (Ponte, 2019), led to a reduction in the economic costs and time involved in governing over a distance. This made it increasingly profitable for firms to start outsourcing production and manufacturing processes to offshore locations to take advantage of lower labour costs (Dicken, 2015). This development allowed for a more spatially fragmented and globally dispersed mode of production resulting in a fundamental restructuring of economic activity, with global value chains emerging as a "new long-term structural feature of the global economy" (Kano et al., 2020, p. 579). In response to these empirical shifts, researchers launched a concerted effort to establish

a coherent perspective on value chains, and in September 2000 CE, at a conference held in Bellagio, Italy, the GVC concept was presented as a unified[2] way to understand how the process of globalization is governed by MNEs (Gereffi et al., 2001). Within the GVC perspective, globalization is understood as the functional integration between internationally dispersed activities, and the GVC perspective is seen as a way to problematize the question of governance within these chains. Governance is defined as the "non-market coordination of economic activity" (Gereffi et al., 2001, p. 4). This coordination was exercised through one firm in the chain, usually the lead firm, influencing or determining the activities of other firms and suppliers along the value chain. A later paper by Gereffi et al. would identify five distinct forms of governance, with the goal of better understanding how power operates within global value chains, and more importantly for policy, to anticipate change from existing forms of governance to new ones (2005). Borrowing from the principal-agent theory of corporate governance and applying it beyond the confines of a single firm to the whole value chain (Ciliberti et al., 2011), one of the key underlying assumptions is that the lead firm (the principal) is (1) better informed about the final consumers' demands, (2) has better management practices and (3) is more aware of institutional requirements (the so-called *rules of the game*) than the other partners (agents), and through judicious governance, is able to persuade other actors to adhere to these *codes* of doing business, thus inducing industrial upgrading along the value chain and benefitting all the participants in the value chain while controlling the risks posed by the misbehaviour of agents (see Kano et al., 2020 pp. 599-609 for examples of lead firms as principals). Summarizing briefly, through the transfer of codifiable knowledge and tacit knowhow (Hidalgo, 2015), the principal could improve conditions for the agents. The early approaches in GVC can thus be characterized as falling under the "interests and incentives approach". Much of the contributions from economic geographers to GVC analysis came through the integration of the "institutions approach", best characterized by the rise of GPN theory

[2] Under GVC, overlapping terms including supply chains, international production networks, global commodity chains, *filiere*, and global value chains were described. The value chain concept was used as it was perceived to be "the most inclusive of the full range of possible chain activities and end products", although the value of these contending terms is acknowledged (Gereffi et al., 2001). Another point of unification was of scale: GVC was to cover the multiple spatial scales of the local, national, regional and the global.

(Henderson et al., 2002) which sought to embed firms within a wider production network which also included and was shaped by the complex inter-network linkages and territorial institutions. GVC analysis showed that, at their best, global value chains are able to unleash the positive aspects of capitalist assemblages by overcoding (in the Deleuzo-Guattarian sense) existing territorial and state assemblages, as evidenced by phenomenon such as industrial upgrading (Pipkin & Fuentes, 2017) social upgrading (Barrientos et al., 2011), and implementation of higher standards for food safety (Gereffi et al., 2009).

Over time, as GVC was adopted first in the social sciences, and then in international policy communities and international business studies (Kano et al., 2020), GVC gradually transformed from *a tool for understanding and critiquing* governance in multinational enterprises (MNEs) to *a way of doing governance* through MNEs (Vicol et al., 2018). Through value chain interventions facilitated by a business-enabling institutional environment, SHF could be "upgraded" (socially or industrially) by a transfer of knowledge from lead firms in an approach termed Value Chain Development (Neilson et al., 2014). One of the drivers of this new approach was the burgeoning literature on the implications of global value chains for agri-environmental governance (AEG). Much of this research was informed by the adoption of Convention Theory, a strand of heterodox economics in an attempt to supplant the neo-classical economy roots of GVC (Wilkinson, 1997). Research coming out of this strand made visible "a diversity of forms of coordination based on a 'plurality of conventions' …" (Allaire et al., 2018, p. 80). These studies have examined various types of complex and highly organized global value chains for agriculture, addressing important questions around who drives and governs these value chains, leading to inquiries about determinants and conditions of access to global markets, as well as the advantages and disadvantages of this integration for SHF in the Global South (e.g. Ayuya et al., 2015; Dannenberg & Nduru, 2013; Franz et al., 2014; Lee et al., 2012; Ouma et al., 2013). The adoption of Convention Theory thus allowed scholars to explore the *contentions* and *discourses* that frame the economic transactions along the value chain in an approach labelled *governance as normalizing*, where governance issues were framed as a question of steering diverse justifications for action to be more in line with "dominant standards,

expectations, or norms (Gibbon et al., 2008)" (Ponte, 2019, p. 62). Another strand of GVC research, studies of governmentality, integrated insights from Actor Network Theory, focusing on the role of technologies like standards and the role they play in reconfiguring materiality of the value chains as well as governance practices (V. Higgins & Larner, 2010). Environmental issues were brought into the picture as a way for MNEs to differentiate their product from others, as they sought to appeal to the end consumer as a form of quality while also providing upgrading opportunities for the farmers who supplied the produce (K. Smith & Lyons, 2012). Within the GVC literature, the question of governing sustainability to address environmental issues was theorized as being dealt with in three ways: (1) sustainability management *within* the global value chain, (2) sustainability governance *of* value chains within the global production network, and (3) sustainability governance *through* the production chains and networks (Bush et al., 2015). The latter two forms of governance required a conceptual leap in sense of using public-private hybrid instruments as the jurisdiction of the two forms of governance began to overlap (Ponte & Daugbjerg, 2015). Indeed, Ponte discusses the need for public *orchestration*, which when applied correctly, can counter the commodification of sustainability set into motion by the green capital accumulation strategies of MNEs (2020). Orchestration here refers to tools and combinations of instruments, both hard and soft forms (Abbott & Snidal, 2000) that public institutions and citizens can use to set the agenda for issues at a global scale (Ponte, 2019). Summarizing the developments in GVC analysis as presented here, researchers have integrated insights from various disciplines and approaches to governance in attempts to change GVC analysis to better account for empirical reality. In the process, the number of actors considered to be relevant has increased, as has the number of instruments and modes of governance. However, despite these incremental modifications, I argue that several issues with GVC analysis as a way of approaching issues in agri-environmental governance remain unsolved, and that these issues might better be addressed through the use of AT. These distinctions are briefly summarized in Table 2. The differences will be elaborated on in the following sections as I delve deeper into the AT approach and what it entails. Before doing so, however, I explain one key aspect, economic perspective, that warrants further explanation because of the way it informs many of the key differences between the two forms of analysis.

*Table 2: GVC analysis and Assemblage Thinking, two contrasting accounts of Governance.*

| Components of Governance | Accounts of Governance | |
|---|---|---|
| | GVC Analysis | Assemblage Thinking |
| **Environmental and Societal Context** | External to the system, and secondary to profitability. Impacts on society and environment classified as externalities. Undervaluation of existential risk. | An assemblage immanent to the system. Causes the universality of precarity, forcing the adoption of a heuristic of multi-species livability. |
| **Power** | Exercised by certain entities: MNEs as lead firms, public institutions are examples. | Immanent, capillary-like and relational in nature. De-centred, polycentric and topological. |
| **Actors** | Discrete, reified types and categories. Prescribed roles, singular memberships. | No types/categories. Possibility of multiple roles, memberships. |
| **Purpose** | Transcendent, top-down and externally determined. | Immanent, both top-down and bottom-up forms. |
| **Goal** | Profitability for lead firm, and value chain participants. | Multispecies survivability, competition between different assemblages for increased capacity to act. |
| **Structures and procedures** | Predetermined, formal, institutional. Depends on bureaucratization. | Predetermined/Formal and Emergent/Informal. |
| **Praxis** | Implicit or ignored. Where researched, poses challenges to theoretical underpinnings, requiring expansion of heuristics. | Source of insights, central role. Attention to friction: "awkward, unequal, unstable and creative interconnections across difference". |
| **Formal/ Informal divide** | Formal preferred over informal. Informal as something to be subsumed and absorbed into the formal. | Formal as continuously appropriating the informal, Informal as continuously critiquing the formal and cutting its contents loose. |
| **Outcomes** | Predefined, fixed. "Fundamental, non- | Emergent, situated and a result of ion of "dwelling rging of new, strange alliances a possibility. |

Source: Elaborated by author on basis of contents of dissertation, and based on Briassoulis (2019).)

One of the key critiques of GVC analysis has to do with its basis in neo-classical economics and its emphasis on growth and profitability (Raworth, 2017a). AT, while not explicitly wedded to a certain economic model or form of economics, has features that would necessitate a move away from the neoclassical perspective. At its most basic, AT questions many of the assumptions made by economic theory to simplify reality and make it easier to understand and predict. Taleb (2010), in his study of the importance of risks posed by unexpected events (which he terms *Black Swan Events*), suggests a heuristic to understand the different categories of risk, reproduced here in Table 3. He

argues that while most of lived reality in modern society, characterized by connectivity and primacy of abstract work, era lies in the Fourth Quadrant, our assumptions and models of reality often misguide us into thinking we are in the First or Second Quadrants. The shifting of agricultural systems from Quadrant Four to Quadrant One, for example, was key to the success of modern agricultural systems. A single-minded focus on measurable indicators like yield and efficiency on the conceptual level (Patel, 2013) enabled this shift, rearranging components on the material level, resulting in a simplified and high-yielding agricultural system but at the expense of incurring various negative externalities.

*Table 3: The Four Quadrants*

| | | Type of Outcome | |
|---|---|---|---|
| | | **Simple (Binary outcomes)** | **Complex (non-binary outcomes)** |
| Type of probability distribution of risk | **Thin-tailed distributions** | **First Quadrant:** Experiments in laboratory settings, well-defined games with pre-defined outcomes. Conditions made possible through reductive assumptions. Highly predictable. | **Second Quadrant:** Predictable outcomes, contingent on having enough data and the right model. Future can be extrapolated from relatively small sample sizes. Ensemble averages matter. |
| | **Fat-tailed distributions** | **Third Quadrant:** Impact of unexpected extreme events does not drastically impact payoffs. Unpredictability is countered with complexity of systems with features like redundancy and competition. | **Fourth Quadrant:** Unpredictable outcomes, fragility of networks with a concentrated architecture in face of "Black Swan Events". Absence of evidence does not equal evidence of absence. Time averages matter. |

Source: Elaborated by author, adapted from Taleb (2010).

Ong and Liao (2020) offer a brief overview of these negative externalities, citing an increase in marine hypoxic regions, an increase in nitrogen dioxide emissions, depletion and contamination of freshwater sources, collapse of arthropod populations, deforestation and habitat fragmentation, declining crop diversity, soil degradation as some of the environmental consequences, and global market instabilities fuelled by

price instabilities and crop failures, depopulation of rural areas, and abandonment of local food systems as some of the social costs.

In effect, this shift from the Fourth to the First Quadrant has exacerbated the unpredictability of the Fourth Quadrant. The risks posed by events like climate change and mass extinction in the Anthropocene are a case in point. Owing to the non-linear (exponential and non-reversible) nature of these changes, it is highly risky to wait and watch. Early mitigation efforts are more impactful, as they may help in avoiding more extreme scenarios in the future when later mitigation efforts will not be enough to have a significant effect, a point explained in detail in the book *Climate Shock* (Wagner & Weitzman, 2016). The problem with most models based in neoclassical economics, however, is that they tend to treat these fat-tailed[3] problems as thin-tailed problems, thus underestimating the possible true costs of climate change. More relevant here, however, is the effect that global value chains have had in the context of AEG and the risks inherent in the technoscience that makes these global networks possible and continues to support them. Issues of food supply homogenization (Khoury et al., 2014), slow shift away from agricultural production for human consumption towards feed and fuel (Cassidy et al., 2013), breakdown of biogeographic boundaries through introduction of alien species (Capinha et al., 2015), for example, would not exist without the development of global value chains and the cost-efficient transport of agricultural commodities. These features, whether intentional or unintentional, keep agri-environmental systems within the Fourth Quadrant.

Taleb suggests that in order to avoid the problems of Black Swan Events, we will have to move societal systems in the directions of the Second and Third Quadrant. This aspect will be revisited in the Conclusions chapter with examples from the fieldwork.

[3] "A fat-tailed distribution is a distribution that approaches zero polynomially or slower, making extreme downsides nonnegligible", (Weitzman, 2011) and therefore worth avoiding altogether.

### *2.2.2 Assemblage Thinking in the Study of Governance*

AT has been increasingly deployed by geographers to study topics as varied as state formation (Protevi, 2019), forest conservation (Li, 2007), tourism destinations (Briassoulis, 2017b) and value chains built on foraging of mushrooms (Tsing, 2015). Helen Briassoulis, a human geographer, defines assemblages as the object of study in the following way: "Assemblage is an ontology of becoming, denotes the coming or fitting together of diverse, heterogeneous, material and human components into dynamic, provisional, decomposable, but irreducible wholes to serve a purpose, and creating agency" (Briassoulis, 2019). A common theme that runs through these seemingly disparate topics is a desire to better understand the situated and complex phenomenon of governance (Anderson & McFarlane, 2011; Baker & McGuirk, 2017; Briassoulis, 2019; Russell et al., 2011; Tsing, 2015). AT is also increasingly applied in the study of how sustainable forms of agriculture are being created (Briassoulis, 2019; Forney et al., 2018a; Heron et al., 2016), making use of AT's willingness to open up to a broader set of possible relations. Geographers have increasingly turned towards AT to challenge "established framings (ontologies) that use tightly defined categories as a means to simplify real world complexity in order to improve understanding of social process" (Forney et al., 2018a). One key reason to challenge predominant ontologies is to facilitate reconnection of the diverse themes of food, justice and environment (Forney, 2016) under the framework of Agri-Environmental Governance (AEG). AEG is "an encompassing concept to understand how environmental issues are addressed within the food system by a set of diverse actors of the public and/or private sectors" (Forney, 2016). While the term governance is used in a number of theoretical perspectives, these perspectives have coalesced around the understanding that the boundaries between different entities (like state, civil society and private actors) are steadily blurring when discussing responsibility for economic, social and environmental issues. In doing so, these approaches affirm the importance of autonomous self-governing arising out of AEG assemblages (Vaughan Higgins & Lawrence, 2005). Further, the set of diverse actors is not limited to humans, but also acknowledges the influence of non-human actors, thus engaging in a more-than-human conception of governance. AEG as a concept seeks to facilitate an approach that "address[es] the complexity of governing agriculture practices in the context of environmental

sustainability" (Forney et al., 2018b). As shall be seen in the empirical chapters, the complexity of governance in agriculture is especially pertinent in the case of India, where food security remains a key social, political and environmental issue (Pritchard et al., 2014). Reframing agricultural governance in the context of environmental sustainability also requires us to challenge established ontologies like sustainability and organic agriculture, and explore their polysemic nature. It also challenges the researcher to break the silence of affected aloofness and try to answer the often political question of what to do (Anderson & McFarlane, 2011; Russell et al., 2011). In this dissertation, I take cues from Bruno Latour's *Down to Earth: Politics in the New Climatic Regime* (2018) where he asserts that the first step of governance should be to acknowledge and describe the *dwelling places* in as much concrete detail as possible so as to capture their materiality, the *dwelling places* referring to the entanglements that make life possible. Before proceeding further, however, I elaborate further on AT, and how it might benefit from integrating some insights of Assemblage Theory, the philosophical study of the concepts underpinning AT.

## 2.3 Assemblage Theory and Assemblage Thinking

Assemblage Theory is widely regarded to have its origins in the works of Gilles Deleuze and Felix Guattari, particularly in their books *Anti-Oedipus* and *A Thousand Plateaus*. Their aim in undertaking project is described as "providing the metaphysics appropriate to contemporary science – a science based on non-linear mathematics, and sometimes referred to as complexity theory or dynamic systems theory" (Holland, 2013, l. 319). The metaphysics that they contrived is based in critical realism (Briassoulis, 2019) and emphasizes an ontology of continuity over ontologies that give precedence to discontinuity, which they claimed dominated much of philosophy and laid the foundations for the natural sciences (Adkins, 2015). The two books, however, do not explicitly aim to set out a coherent and structured account of their theory, eschewing accepted conventions of writing to create an elaborate, self-referential and seemingly convoluted medium to allow for new thoughts to arise. This has given rise to a rich body of hermeneutic work (referred to as Assemblage Theory) but has also made it difficult to access the insights afforded by a proper grasp of assemblages. This difficulty in

grasping the exact meaning of what an assemblage is has prompted the rise of AT, which, rather than engaging with the meanings of the concepts per se, attempts to operationalize these concepts in the analysis of specific issues (Baker & McGuirk, 2017; Briassoulis, 2019), often in conjunction with other conceptual theories like Actor Network Theory and New Materialism. A key example is the book *Deleuze and Geophilosophy* (2004) by Mark Bonta, a geographer and John Protevi, a philosopher, who use complexity theory as a way to explore the geophilosophy of assemblages. An extreme example of this reworking is Manuel DeLanda's book *A New Philosophy of Society* (2006), where Delanda creates a new "Assemblage 2.0", reconstructing the whole philosophy with his own definitions for technical terms and using different theoretical resources to develop a much more coherent theory of assemblages (Briassoulis, 2017c). While an embrace of an abridged AT has contributed to the rapid spread within the social sciences, it has prompted philosophers like Ian Buchanan and Thomas Nail to voice concerns about some key errors arising when attempting to distil the ideas in Assemblage Theory, leading to a loss of conceptual clarity and an inability to discriminate between competing interpretations of assemblage (Buchanan, 2017; Nail, 2017). Buchanan asserts that a lack of grounding in Assemblage Theory strips AT of analytical capacity, often reducing it to an adjective, a way of describing situations as being complicated without providing any real insight (2015, 2017). He suggests that re-anchoring AT in Deleuze and Guattari's Assemblage Theory will help to restore a degree of precision and analytic power. In the following section, I first explore how AT has been used in geography research for governance. I then go on a brief foray into some literature on Assemblage Theory, to identify ways of re-anchoring AT. I end by summarizing the key objectives of using an AT approach to the issue at hand, organic agriculture in India.

The term Assemblage is an English translation of the French term *agencement* used by Deleuze and Guattari which means "a construction, an arrangement, or a layout" (Nail, 2017, p. 22) It is not to be confused with assemblage in everyday usage, which is a cognate of the French word assemblage, meaning "to join, to gather, to assemble", giving the word a different, sometimes diametrically opposed, meaning (Buchanan, 2017). This confusion arising as an artefact of translation from French to English sets the tone

for the rest of the ideas explored in Assemblage Theory, where a recourse to definitions in everyday usage sets one up for failure to grasp the core message of this theory, as conceptually-loaded neologisms lose all their conceptual strength and end up creating more confusion (Buchanan, 2017, pp. 458–463). It is thus important to make clear the definitions of the various terms that will be used. Returning to the concept of *Agencement*, Ian Buchanan explains, was in turn a translation by Deleuze and Guattari of the German term and concept of *der Komplex*, which gives credence to the assertion that Assemblage might better be understood as a syndrome or as an arrangement (Buchanan, 2014; Nail, 2017).

### *2.3.1 Transcendence and Immanence*

To explain the ontology of continuity mentioned previously, I briefly refer to the immanent ethics of Baruch Spinoza as understood by Deleuze. An ontology of immanence eschews the concept of transcendence. Transcendence is an understanding attributed to Abrahamic theologies, which achieve conceptual stability by applying a dualism to the world we live in. In a reality as created by a transcendent being (God), there are two substances, the creator-substance (God) which is ideal and perfect, and the created-substance, which is a shadow, an imperfect copy. The former is considered to be transcendent, and superior to the latter, which is considered inferior. Further, the existence of the world is predicated on the existence of a transcendent being, but not the other way around (Ames, 2016). There is thus a constant reliance on the transcendent to provide morality through a set of *constraining* rules, that "consists in judging actions and intentions by relating them to transcendent or universal values"(D. W. Smith, 2011, p. 124). Morality is supported and constructed by universal and *a priori* categories like *Good and Evil*, discrete categories with no overlap, against which actions and entities are to be judged. These categories, according to Deleuze, are discontinuous, predicated on two distinct orders of being (the incommensurable categories of Platonic Ideas and their corresponding analogues on earth), and can be understood through seeking the universal essences of things, things that do not shift and change (Adkins, 2015). While the issue may seem arcane and far-removed from us, this mode of thinking still persists. Whether it be through positing pure free-market models and then

identifying constraining imperfections in existing markets (Ackerman & Beggs, 2013), or through calculating yield gaps between the maximum attainable yield and the actual yield and then working to reduce the gap by removing the obstacle in existing agriculture production systems (Sumberg, 2012), the focus is on realigning reality so that it moves closer to the Ideal. Perhaps the clearest conflict is illustrated by Bruno Latour, where he identifies a conflict between the Local and the Global as understood by those enamoured with the grand project of Modernization (Latour, 2018). Seen through the lens of this grand project, the Local represents all that is "archaic, backward, thinking only of their own little parcels of land" in a reactive and risk-averse manner (Latour, 2018, p. 13), while the Global stands for everything that is forward-looking, profit-seeking and cosmopolitan made possible by techno-scientific advances. Seen in such a way, the Local was an entity that had to be abandoned and even actively vanquished in order to reach this transcendent state of utopian Globalization.

In contrast, the idea of the continuous asserts that there are no discrete categories, only temporary results of a continuous process acting upon one substance — God, or Nature. In an immanent world, God/Nature is everywhere, giving rise to what is known as substance monism, which asserts that there is only one substance. This, then is the source of ontological univocity in Deleuze and Guattari's system (Adkins, 2015). In Spinoza's ethics, there is *good and bad* (describing degrees of capacity to act along a continuum) instead of *Good or Evil*. Anything that increases our capacity to act is considered to be good, while anything that diminishes this capacity is considered to be bad; the key is that this capacity can always change (Buchanan, 2019). The focus on immanence and continuity is also reflected in and inspired by the rise of complexity theory and systems thinking, which deal with the "study of the self-organizing capacities of 'open' systems (those through which matter and energy flow" (Bonta & Protevi, 2004, p.17). Complexity theory has been increasingly applied in evolutionary economic geography, posing a direct challenge to the idea of a transcendent ideal market system and instead re-embedding regional economies through concepts like selection, lock-ins and path dependency (Martin & Sunley, 2007; Pike et al., 2016). Within agriculture, attempts to capitalize on insights from complexity theory to improve agricultural systems have resulted in a challenge to the idea of monocultures with the sole aim of

reducing yield gaps, with increasing focus on redesigning agriculture based on the science of ecology accounting for concepts like critical transitions and abrupt shifts in agroecosystems (Pretty & Bharucha, 2018; Vandermeer & Perfecto, 2017). Latour uses a similar approach to break down the previously mentioned poles of the Global and Local into more nuanced groups, ultimately identifying a common ground between the two warring factions, the idea of a Terrestrial which will have to reorganize politics in order to ensure the flourishing of life on earth (Latour, 2018). Another important dimension is that of time. A linear conception of time is discarded, and instead a non-linear conception is adopted. Borrowing heavily from the work of Henri Bergson, the past is conceptualized as an a-temporal bloc of events in the past, where "each and every past event co-exists with all the others" (Holland, 2013, l. 392). This bloc is known as the virtual, and serves as the repository of a multiplicity of potentials, of which only one is *actualized* in the present. The actualization is not final, and will change with time in the future, with the actualized present interacting with relevant pasts, effectively rendering time irreversible (Holland, 2013). A direct outcome of this insistence on continuity is that it provides an alternative to the logic of unities (Nail, 2017). A unity is an organic whole, like a human body, whose various organs work together, and would stop working if this organic whole is broken up. The organs and the body are bound by these intrinsic relations, where any disruption would be fatal. Thus, any rearrangement or changes in relations would not be possible. In contrast, what Deleuze and Guattari suggest is that assemblages are characterized by extrinsic relations, where component parts subsist independently and yet are drawn into relations with each other in multiplicities.

### *2.3.2 Ontology of Assemblage Theory*

Deleuze and Guattari view the world as being an open system, with a tendency towards self-organization (Holland, 2013). The single field of interaction (as proposed by the idea of the continuous) is called the *plane of consistency*, which is where all the virtual potential (in the past) exists, and is actualized in the present. Self-organization on this plane is brought about by *abstract machines*, which appropriate matter-energy flow from the world, and the *desiring-machines or concrete assemblages* which effectuate

these abstract machines (Bonta & Protevi, 2004). The abstract machine lays out the conditions, the set of relations within which concrete assemblages appear and are arranged. The concrete assemblage, in turn, is "the productive intersection of a *form of content* (actions, bodies and things) and a *form of expression* (affects, words and ideas)" (Buchanan, 2015, p. 390). Together, the abstract machine and desiring-machine work to form *strata*, systems which are actualized systems (made real in the present) with homogenized components operating at near stability, giving the illusion of whole and stable structures. Deleuze and Guattari identify three major sectors on the plane of consistency, or *mega-strata*: "the inorganic, the organic, and the alloplastic" (Holland, 2013, l. 437). These three sectors approximately correspond to the abiotic, the biotic and the cultural respectively. The inorganic stratum refers to the non-living chemical and physical components, the organic stratum refers to living beings and the biological processes that govern them, while the alloplastic stratum refers to the created or built environment, referring to the capacity of mostly humans and some other animals to actively shape their environments (comprising organic and inorganic factors). Within these strata, we see the self-organizing effect of assemblages that first *deterritorialize* and *decode* existing structures and then *reterritorialize* and *recode* giving rise to coherent structures we are familiar with, like sedimentary rocks, trees and languages, but which are no more than statistical aggregates for the moment which will be broken down eventually. While these three mega-strata are subject to a principle of parity, they are different because they each have different capacities to self-organize. In the inorganic stratum, self-organization is predictable and replicable (i.e. same conditions lead to same outcomes) and occurs over larger periods of time. Tectonic plates drift, slowly applying pressure in places, renting and rupturing in others. Diamonds and fossil fuels form, materials with the same content but different forms of expression (Holland, 2013). In the organic stratum, self-organization is less predictable, with biological reproduction guided by DNA sequences adding a layer of complexity that makes changes harder to predict. The abstract machine of the need to survive in different environments (called *milieus*) gives rise to countless variations of possibilities through the self-organizing processes of random and/or induced mutation and ecological selection which operate at the genotype and phenotype level. We see a fundamental difference from the inorganic stratum, insofar content and expression are independent

of each other. It is in the alloplastic stratum, however, that the need to distinguish between content and expression becomes most apparent. Self-organization on this stratum involves the use of tools and symbols (primarily language) that shape expression. The question of survival is addressed through the formation of markets, through defining sovereignty, through delineating territory, or by responding to the environment (milieu). These solutions may be "false (illusory, or 'ideological'), but they are nonetheless effective in organizing production and exchange relations to address the Problem of survival in a distinctively human way" (Holland, 2013, l. 536). This "distinctively human way" is what is commonly referred to as governance, a topic that will be addressed at length in following sections. This governance extends to agents both human and non-human (from the inorganic and organic strata) although it cannot govern these agents fully; it can only give rise to and control only certain aspects, what Thomas Nail refers to as *personae* (Nail, 2017). Working together, tools and language enable humans to not only self-organize on the alloplastic stratum but to also reach out to the inorganic and organic strata and re-organize them (Holland, 2013). One of the forms of expression, language, allows us to *overcode* the other strata, the application of a new code on top of something already existing. It allows for *incorporeal transformations*, where a change in a machinic assemblage is wrought without changing the bodies (form of content) involved. Examples include court sentencings (guilty verdicts), marriage vows and demonetization (Adkins, 2015; Bonta & Protevi, 2004), or something as simple as labelling a plant a weed and thus rendering it a nuisance. These transformations are in a relation with corporeal transformations, resulting in a change in the machinic assemblage under certain circumstances (Adkins, 2015). This ability gives rise to three illusions: The illusion of hierarchy within the three strata, the illusion of the necessity (as opposed to the possibility) of language to mediate knowledge, and the illusion of an anthropocentric world, where human superiority is assumed through the ability to perceive the world scientifically (Adkins, 2015). Together, these illusions end up dampening the feedback loop between Humans (alloplastic) and Nature (organic and inorganic), prioritizing ideas and expression over the very real and tangible material content. This mistake may have the effect of setting the assemblage on a path of change to an unintended new assemblage, aided either by the refusal to consider corporeal ramifications (labelling them externalities or unintended consequences) or a

profound lack of imagination as everything is made to fit in a particular ideological framework. The two aspects of content and expression are held together by the assemblage in a dialectical relationship, and the two planes must be adequate to each other. If they are not adequate to each other, they start to drift apart, making the job of keeping the assemblage together more difficult. When the efforts to keep the two aspects yoked together, the forces of deterritorialization and decoding are set in motion, leading to a change in the nature of the assemblage. The trigger for this change is known as an *assemblage converter*, a move that triggers a bifurcation. This change sets the various heterogeneous components of the assemblage onto their *lines of flight*, whether to a previous state or to a new, unknown goal that fundamentally transforms the assemblage. Lines of flight are "those parts of the assemblage that escape the structure of which they are part and serve to connect such an assemblage to that which is outside itself" (Thornton, 2018, p. 12). The fact that the goal is unknown means that no one knows before experimentation whether the outcome will be "good or bad, fascist or liberating" (Adkins, 2015, p. 33). Deleuze and Guattari do not claim however, that the line of flight will necessarily lead to a better outcome. Creating something new is risky, and requires leaving behind the security afforded by conventional thought.

#### *2.3.2.1 Four Ways of Arranging Through Assemblages*

Returning to the *Problem of Survival* as addressed through governance described in the previous sentences, Thomas Nail identifies "four major types or ways of arrangement" in which assemblages are laid out: territorial, state, capitalist and nomadic (Nail, 2017, p. 28). The first type, Territorial assemblages are "arranged in such a way that the concrete elements are coded according to a natural and proper usage" (Nail, 2017, p. 28). The idea of what constitutes proper or natural is arbitrarily decided within the assemblage (expression) and acts as an artificial limitation on the concrete elements (content). These arbitrary delineations are necessary to make sense of the world, but at the same time differ according to context, just as cultural norms differ from country to country. Indeed, territorial assemblages are limited by cultural memory and privilege things that already exist: "this is how things are done, how they have always been done" (Nail, 2017, p. 29). Change is gradual, as each boundary is tested and limits are crossed to make place for the constant overflow of surpluses, the things that do not fit. The

second type, state assemblages employ a hierarchical mode of organizing power, operating on the logics of centralization of power and resources, and homogenization by forcing conformity to the provided codes (prescribed ways of being). The freedom to express other personae and to thus assemble and participate in other assemblages is curtailed as the state imposes a monopoly on the ability to overcode (Hennings, 2018). The third type, capitalist assemblages, work through the processes of privatization and marketization. Rather than working to code or to overcode, it works through the medium of money to replace codes of the terrestrial and state assemblages with "a strictly economic general equivalence between purely unqualified (decoded) elements" (Nail, 2017, p. 32). This gives the capitalist assemblage potential positive attributes like "freedom, ingenuity, permanent revolution"(Holland, 2002, p. 17) which help overcome the feudal and despotic nature of the territorial and state assemblages. However, capitalism occurring through the axiom of privatization allows for the removal of qualitative relations (codes) to render everything globally exchangeable as products on the market. Deleuze and Guattari rely on Marx's general formula of capital, M-C-M' to identify the unique role of money in producing more money. This understanding helps illustrate the main drive of capitalist assemblages as the "need to maintain the rate of profit" (Buchanan, 2008, p. 110) . This characteristic makes capitalist assemblages ultimately conservative in outlook, only embracing innovation and change when it is profitable to do so (Buchanan, 2008). In the fourth type, the nomadic assemblage, "the assemblages are arranged in such a way that the conditions, elements and agencies of the assemblage are able to change and enter into new combinations without arbitrary limit or so-called "natural" or " hierarchical" uses and meanings" (Nail, 2017, p. 32). Instead of applying one-size-fits-all solutions to Procrustean problems, solutions and problems in nomadic assemblages are "transformed directly by those who effectuate them and who are affected by them" (Nail, 2017, p. 33). In other words, this mode of assemblage relies on participation and self-governance to create fitting responses to the specific problems faced (Briassoulis, 2017a). The problem, however, is clear: "It requires too much care, too much attention, too much time, too much diplomacy" (Latour, 2018, p. 91). The success of this arrangement hinges on the ability to make possible alliances and negotiations that are unthinkable under territorial, state and capitalist assemblages (Hennings, 2018; Latour, 2018; Tsing, 2015). It challenges us to imagine other personae

for the bodies that may already be antagonistic because of the current ways in which they are coded or overcoded. It challenges us all to acknowledge the uses of minor or nomad science that seeks to open up new possibilities and thus show new lines of flight. Nomad science outlines a problem-solving approach that makes the best use of available resources: a good example is *jugaad* innovation, a colloquial Hindi word that can be translated as "the art of overcoming harsh constraints by improvising effective solutions using limited resources" (Prabhu & Jain, 2015, p. 847). Nomad science requires us to start reimagining farmers not just as food producers but also as nomad scientists, capable of experimentation and coming up with locally suitable solutions (Doerksen, 2018). An important caveat to keep in mind is that none of these four types can be found in a pure state; any real situation will contain a mixture of the four types to different degrees (Nail, 2017). An important implication of this understanding is that all assemblages are inherently political, as they have a distinct mode of organization deriving from the four different types of assembling.

### *2.3.3 Talking About Becoming*

In this dissertation, the different modes of assembling governance in organic agriculture will be examined. In the following chapters, I will look at what organic looks like for the four different ways of governing assemblages, and how the different modes of governance impact the way organic is put into practice. I will explore the ideas of *intensification* in agriculture, and of the various meanings attached to the word *organic* in India. It allows us to consider diverse forms of organic that currently exist in India (T. Brown, 2017b; A. Mukherjee, Dutta, Goyal, et al., 2017) and avoid limiting research to certified forms of organic (Osswald & Menon, 2013; TechSci Research, 2016; Thottathil, 2014), doing justice to the richness of the concept. By avoiding reified generalisations of heterogeneous phenomena, it is possible to avoid inadvertent assumptions, both on part of the researcher and the reader. It creates room to focus on the struggles between the different conceptions to claim legitimacy, struggles which would otherwise be overlooked because we lack the ontologies to define the contours of the conflict. An example will help illustrate. The concept of tree (arborescent) and rhizome (rhizomatic) is one way in which Deleuze and Guattari try to outline two poles on the continuum of assemblages, between striated and smooth space. Striated space, as illustrated in Figure

1, refers to a bounded space of thought that is highly ordered and structured. Conversely, smooth space is associated with movement and instability, and is understood to give rise to new possibilities by opening up previously bounded relations. These characteristics are mapped onto the trees and the rhizomes on the plane of consistency. The tree is highly legible. Its parts are distinct, and it has a root system, a trunk which branches out, and leaves at the end of the branches. A rhizome, on the other hand, has no beginning or end. It has an amorphous shape, and grows haphazardly from all directions. The *tree* is preferred for its legibility, and a good example of this is certified organic. Seen from a distance, the organic label is highly legible. It encapsulates complex information about how something was produced in the form of a small image. The consumer can see it and decide to buy it based on this information alone. The rhizome, in contrast, is more like non-formal organic agriculture. The boundaries are not clear; it arises out of repeated experimentation and adoption of practices under the desiring power of wanting to produce organically. This distinction is useful to help understand why one is favoured over the other. The highly legible trees attract the interest of macro actors like the state and capitalist assemblages, while the rhizome is legible only on close inspection at the micro-level of the nomad assemblage. AT also suggests that by putting the emphasis on describing what exists instead of testing idealised theories, it is possible to suggest new ways forward that build on local initiatives. In other words, it is the first step towards *theorising up* (Rigg, 2007). There is a practical imperative to assemblages, beyond the descriptive function of compositions of relations it serves. This imperative is the selective principle.[4] Rephrased in the context of the Anthropocene, it means understanding whether the approach one chooses enables one "in managing to register, to maintain, to cherish a maximum number of alternative ways of belonging to the world" (Latour, 2018, p. 15). It entails a selection of those assemblages which can provide for multispecies survivability, or entanglements (Tsing, 2017).

[4] "As Deleuze puts it, there is no Good or Evil in Spinoza's ethics, but there is good and bad. Good is when a body combines with ours and increases our power to act, while bad is when a body combines with ours but in doing so diminishes our power to act" (Deleuze 1989, 22, as cited in Buchanan, 2019).

Buchanan posits that an assemblage is composed of two interrelated dimensions. As illustrated in Figure 1, one dimension is the material elements, the plane of content, that constitute the assemblage, the relations they entail and the new arrangements and relations they may facilitate. The other dimension is that of how this arrangement or assemblage is justified and legitimated, the plane of expression. In other words, what makes it seem right and proper? (Buchanan, 2017). An example will help illustrate. Certification in organic agriculture is trust in a form of expression. Third-party Organic Certification implies a bureaucratic procedure, a ticking off of pre-defined requisites. The requirements are determined by an agency in accordance with regulations, and a

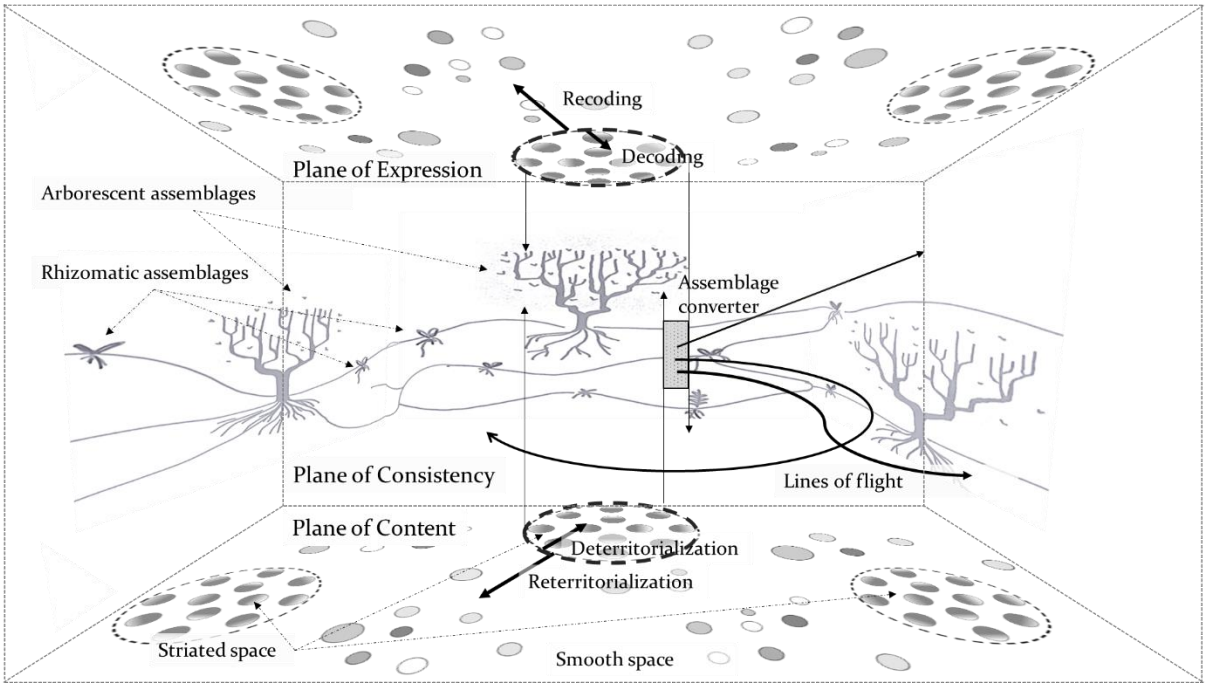



*Figure 1: An illustration depicting some of the concepts discussed in Assemblage Theory. The assemblage is represented by the space between the Plane of Expression on top, and the Plane of Content at the bottom. The assemblage emerges as a way to yoke the two planes together, and may be highly striated and thus appear to be systematic and arborescent, or may tend towards smooth spaces, thereby appearing to be more rhizomatic. Over time, the boundaries of striations (represented here by the thick dotted circles) shift as they are de/reterritorialized and de/recoded, leading to a mismatch referred to as assemblage converters. Lines of flight emerge; as new connections are sought. (Own illustration).*

trustworthy auditor (trustworthy by virtue of being a third-party) checks to make sure the producer conforms to these standards. The trust is transformed into a certificate, which then becomes the embodiment of trust. It can be commodified, traded as if it is the real thing, almost like currency flowing through the economic system. Despite the elegance of this system of transferring trust, serious doubts remain. Doubts not in the system of certificates and trust, but more at the evaluation stage. Seufert et al. (2017) point out that organic certification does not make many practices mandatory. Crop

rotations, soil mulching and other practices so essential to the organic production, are not checked for when giving out the certificate. This begs the question of what is actually the basis of the trust, what the content of the certificate is. This emphasis on linking the material dimension with the expressive dimension thus exposes the problems with approaches that purport to be One-Size-Fits-All (OSFA), approaches which often end up being little more than bureaucratic exercises in ticking boxes in the expressive sphere whilst ignoring the actual task at hand, that of creating enduring and meaningful forms of sustainable agriculture in the material sphere.

Through this brief foray into ideas and vocabulary used in Assemblage Theory and using them in AT, I have explained several aspects of AT as used in this research project:

1. A turn to ontology within Agri-Environmental Governance to better apprehend social processes by challenging established framings that try to simplify irreducible complexity by omitting aspects crucial to a better understanding.
2. A Problem-Solution relationship approach to governance to see responses to the realities of the inorganic and organic stratum, while also actively shaping them.
3. Understanding assembling as a process of ongoing *Becoming* rather than of a static *Being*, and thus a combination of tendencies towards stasis and towards change.
4. Assemblage as a yoke that brings together the two dimensions of content and expression.
5. A selective principle, an ethical duty within Agri-Environmental Governance, to choose *multi-species livability* as a guiding principle to negotiate between competing assemblages

## 2.4 What Is The Context?

This section outlines the argument justifying the themes addressed within this dissertation. Starting from a global perspective through the use of the Anthropocene

concept, the section also goes on to explain some of the themes suggested by the focus on a particular country, India.

### *2.4.1 The Anthropocene*

The term Anthropocene was "coined to crystallise the growing realisation that human activities – or, more often, the unintended consequences of human activities – had fundamentally changed the Earth System" (Zalasiewicz et al., 2019). Originating in Earth Systems science, the claim is that the rapid rate of increase in carbon dioxide, the subsequent ocean acidification, the staggering amount of species loss in what has been termed the Sixth Mass Extinction event, and the disruption of the nitrogen cycle have caused a rupture in Earth history and shifted the Earth System out of the Holocene epoch and into the Anthropocene (Hamilton, 2017). The significance of this disruption is made much clearer through the concept of planetary boundaries (Rockström et al., 2009; Steffen, Richardson, et al., 2015). The planetary boundaries framework indicates levels of risk posed by potential disruptions to hypothesized tipping points, and provides a framework within which to place regular updates to scientific knowledge through large and extensive studies such as the assessments carried out by the Intergovernmental Panel on Climate Change on issues such as land use change, climate change, and the ocean. Agriculture is implicated in the disruption of the nitrogen cycle, given the steep increase of the amount of nitrogen fixed from the air and applied as fertilizer, the concentrated animal feeding operations that pool together manure rich in nitrogen with no place to go (GRAIN, 2016; Pretty & Bharucha, 2018). Land-use change, especially deforestation that takes place to clear new land for agriculture is a major destroyer of carbon sinks. Other changes include draining of swamps and conversion of grassland into fields, simultaneously reducing the carbon fixing potential of these lands and releasing potent greenhouse gases like methane into the atmosphere (IPCC, 2014). Soil degradation and erosion hastens the desertification elsewhere, constantly eating away at the land available for cultivation (Montgomery, 2012). Notwithstanding the importance of biodiversity in provisioning ecosystem services like habitat, pollination, pest suppression, and non-timber forest products (TEEB, 2018), agriculture is also implicated in the rapid decline of biodiversity (FAO 2019). A globalized agriculture has a large footprint in terms of greenhouse gas emissions as feed and food is shipped across

large distances (GRAIN, 2016), and also homogenizes the global food system (Khoury et al., 2014), putting it at risk of production failure at a global level. The stakes are high, given the irreversibility of much of the changes that take place. The concept of absorbing states provides a way to understand the irreversibility of most of the changes listed here. An absorbing state is a state that, once entered, cannot be left (Taleb, 2018). There are many irreversible changes, many of them pertaining to natural resources, and some to social resources. Absorbing states include (but are not limited to) loss of biodiversity, some types of land use changes, and loss of soil: once this happens, it is virtually impossible to go back. Social absorbing states include the loss of rural communities, loss of traditional knowledge, financial ruin, and the death of farmers.

While ostensibly a change that affects the physical characteristics of the Earth System, the Anthropocene is also having an impact on, and is impacted by, the biotic and alloplastic (human) systems. Perhaps its greatest effect on the discourses that frame human existence can be summed up as the contradiction of all "narratives, philosophies, and theologies that foretell a preordained and continuous rise of humankind to ever-higher levels of material, social, or spiritual development" (Hamilton, 2017, p. 157). What has emerged from this rupture is a renewed focus on human and nonhuman well-being, and an interrogation of what contributes to this well-being. This focus is expressed in many ways, by researchers from different disciplines. Within the social sciences, other terms for the Anthropocene which have been proposed: The Capitalocene, where the role of capital and the people who control it in cheapening nature is highlighted (Patel & Moore, 2018), the Plantationocene, which identifies the "dynamics through which plants and animals are abstracted in order to become resources" (Haraway et al., 2016) are but some of these proposals. Identification of the racial and gender aspects of the Anthropocene also shed light on the inequities baked into the system where everyone is not equally culpable yet suffer disproportionately (Nishime & Williams, 2018). Mindful of these challenges to the idea of an anthropocentric Anthropocene, many scholars have highlighted the need for common survivability. Vaclav Smil, an interdisciplinary scientist who looks at the issue of growth in all aspects and at different scales in his book *Growth* calls for actions that "ensure the habitability of the biosphere while maintaining human dignity" (Smil, 2019, p. 512).

Bruno Latour, a key philosopher and anthropologist in Science and Technology Studies, uses the term *terrestrials amid terrestrials* to illustrate the situation we humans find ourselves in within the Anthropocene, where our survival is dependent on our ability to get along other non-human terrestrials (Latour, 2018). Kate Raworth, the economist who created the concept of the Doughnut to ensure that an acceptable level of social justice is maintained while remaining within ecological boundaries, proposes this a goal for 21st century economics, thus moving away from the other economic goal focusing solely on continued GDP growth. Anna Lowenhaupt Tsing, an anthropologist and geographer, focuses on multispecies entanglements as a key to continued human well-being (Tsing, 2015, 2017). Researchers from diverse backgrounds are thus converging on a common agenda: the importance of the biosphere in ensuring human survivability.

The quest for sustainability in agriculture, a topic which will be dealt with in more detail in subsequent sections, can thus be construed as part of a broader search for ways of living in the New Climatic Regime. A term proposed by Bruno Latour, this term refers to the implications of the Anthropocene, namely a shifting of the foundational physical framework upon which the project of Modernization has played out (Latour, 2017). This foundational framework is alluded to through a key assumption in much of economic theory: the assumption of nature as an inexhaustible resource, and the need for constant growth driven by the promotion of material consumption (Hamilton, 2003; Raworth, 2017a; Smil, 2019). The New Climatic Regime is thus a shorthand for the collective cognitive dissonance brought about by the shift from the Holocene to the Anthropocene epoch. Along with the confusion that such a dissonance brings, it also lays the ground for an important conceptual advance within economics: the idea of an embedded economy. Most notably discussed by Kate Raworth (2017a) in the idea of Doughnut Economics, the embedded economy underlines the need for framing economic activities as a subset of ecological flows and balances, and subject to social imperatives. While the ecological aspects have been discussed through planetary boundaries, the social imperatives are suggested by many of the 17 Sustainable Development Goals proposed by the United Nations. Briefly summarizing, the Anthropocene, provides the ultimate frame of reference within which to situate any questions regarding sustainability, future development and notions of livelihood.

### *2.4.2 The Agrarian Crisis in India*

Shifting from a planetary-level perspective to a perspective on India but keeping the idea of ecological boundaries and the social imperatives, I hope to further flesh out the social dimensions of the problem in India. Agriculture has been in crisis mode across many parts of India, often driven by natural resource depletion but exacerbated by socio-economic realities (Sainath, 2018). The increasingly erratic monsoon and changing rainfall patterns have triggered both droughts and floods across India (Bollasina et al., 2011; McElwee, 2019; V. Mishra et al., 2020; D. Singh et al., 2019). Soil degradation through excessive use of fertilizers and heavy cropping (R. Bhattacharyya et al., 2015; Lal, 2015), soil and groundwater salinization (Krishan et al., 2013; Sheikh et al., 2017), influx of saline water into depleted groundwater resources (Acharya et al., 2018; Werner et al., 2013) are some of the localized environmental challenges. Several worrying trends suggest that the social dimensions are at high risk of being breached as well. The World Inequality Report of 2018 indicates that the top 10% of the population in India earn 55% of the national income, making India the second-most unequal country to India (Alvaredo et al., 2018). The Global Hunger Index records India's improvements in tackling problems of hunger, but the slow rate of change has seen it sliding down the global hunger index rankings (von Grebmer et al., 2019). A similarly slow improvement can be seen in India's Human Development Index rankings fuelled by improvement in life expectancy, maternity and infant mortality rates, and improved school attendance. However, improvement on gender inequality lags behind other nations in South Asia, along with performance on reducing inequalities.

These social factors have been made particularly worse for the rural population by recent events. The demonetisation of most of the cash in circulation that took place late in 2016 was a cruel blow to small and marginal farmers, as it deprived them of the cash that formed the basis of their informal transactions. Rising fuel prices and increasing costs of inputs have made the cost of doing conventional forms of agriculture high, and a risky proposition as well as each harvest must succeed in order to pay off debts incurred (Gupta, 2017). The rent-seeking behaviour of actors along the value chains means that much of the final price that consumers pay is siphoned off, with little left for the farmer to reinvest in her farm. Such unfavourable exchange relations, where

farm-gate prices of produce either stagnate or decrease while off-farm input prices increase, is termed as a *squeeze on agriculture* by van der Ploeg (2014), and is a phenomenon that is seen across India. There is a lack of SHF representation at the policy-making level as social upwards mobility becomes a pipe-dream, and any representation is for large landowners who form lobby groups for various cash crops. Although the government claims that its aim is to double farmers' incomes by the year 2022 (Committee on Doubling Farmers' Income, 2017), its interest also lies in getting as many people out of the agricultural sector as possible.

Any attempts to improve SHF livelihoods in this context, organic farming included, must thus deal with these issues if meaningful improvements in livelihoods are to be achieved.

## 2.5 Looking Forward

The key reason to use AT, therefore, is not only to interpret organic agriculture in India, but to interrogate it: what can organic agriculture do? How does it respond to the problems facing agriculture? It entails gaining an understanding of the productive intersection of the plane of expression and the plane of materiality. Using insights afforded by the agroecological intensification paradigm, I hypothesise that gaining access to lucrative markets is not the sole way to improving SHF livelihoods. Given the long history of rent-seeking in India (Drèze, 2017; Gupta, 2012), the lucrative markets pathway is susceptible to elite capture (T. Brown, 2017a; Véron et al., 2006), wherein the emphasis on certification creates an audit culture (Christopher Rosin & Campbell, 2009) situation where "lengthy and cumbersome bureaucratic requirements provide an advantage to incumbents familiar with the paperwork and the people involved in their approval" (Hidalgo, 2015). The World Inequality Report of 2018 indicates that the top 10% of the population in India earn 55% of the national income (Alvaredo et al., 2018), and a conventionalised version of organic facilitates co-optation by this group, all the while ignoring crucial questions of how to empower farmers. The characteristics of agriculture worldwide, where SHF produce more than three quarters of the world's food (Lowder et al., 2016a), means that it is worth looking at how value chains could work for SHF instead of the other way around. One of the advantages that certified organic enjoys is the clarity of who belongs and who does not; it is a highly territorialized

concept. The lack of clarity regarding what non-formal organic is poses a formidable obstacle in studying the non-formal organic market. The lack of a clear definition results in no reliable data existing regarding the extent of non-formal organic farming in India (Osswald & Menon, 2013). Nevertheless, it is no less legitimate than its certified counterpart, especially in the local context. Exploring this nomadic aspect of what organic might become will thus be a key contribution of this dissertation.

# 3. Context and Methodology

I consider organic agriculture to be a subset of the wider debate of sustainability in agriculture, and I provide an insight into the academic debate around this issue in the chapter *4. Recoding Sustainability in Organic Agriculture: Locating Approaches On the Continuum between Two Paradigms of Sustainability in Agriculture*. I conduct a literature review on the scientific literature on the sustainable intensification paradigm and the agroecological intensification paradigm. Later in the chapter, I look specifically at the literature on organic agriculture, drawing on grey literature sources as well.

In the next chapter, *5. What Can Organic Do? A Rhizomatic Approach to Understanding Organic Agriculture in* India, I look at how the concept of organic agriculture is created from several perspectives. I draw on official documents and policy proposals (at different levels of governance) in an attempt to understand what the understanding of the word *organic* is, and also conducted an unstructured interview with Ardhendu Sekhar Chatterjee as an example of how civil society organizations approach the issue of organic agriculture.

These two theoretical chapters are followed by three empirical chapters, where I use a pragmatic case-study approach with assemblage theory as my methodological and theoretical framework. The case studies are based on qualitative descriptions. The intention behind this approach is to be rich in detail and sparing in deterministic theory (Gibson-Graham, 2014). I carried out three field visits to India during the period from March 2017 to January 2019, and organized a closing workshop in September, 2019, also in India. The first field visit (in March-April 2017) was mainly to identify possible field sites, and to meet with prospective collaborators.


*Figure 2: West Bengal state.*

During this period, I visited two potential sites in West Bengal, one in the dryland area of Bankura District, and one in the coastal lowland area of Purba Medinipur District. I chose to conduct my fieldwork in the latter site, focusing on rice production, returning there during my second field visit in February 2018 to discuss the possibility of conducting fieldwork with the farmer Amit Bera, who was my key informant. The fieldwork began in the third field visit in October of 2018 in the village of Bajkul in Purba Medinipur, as I interviewed and documented farming practices of 30 farmers over

a period of three months. These interviews form the basis of the chapter *Organic as a Departure from Territorial Assemblages: Smallholder Rice Farmers and Initiatives for Sustainability in West Bengal*. The first part of the second field visit to India (October 2017 to February 2018) was spent in attending the BIOFACH organic trade fair held in New Delhi in November 2017 and interviewing attending companies. These interviews form the basis of the chapter *6. Organic as a Capitalist Assemblage: Understanding The Role of Companies in Territorializing Organic Agriculture in* India. The participants for the workshop in September 2019 were identified and interviewed at various stages of the research project during the field visits, and access to them was made possible through introductions provided by Ardhendu Sekhar Chatterjee of Development Research Communication and Services Centre (DRCSC), an NGO in Kolkata, India. I conducted unstructured interviews with the founders of Ekgaon Technologies, Bio-diverse Farming Pvt. Ltd., and Nadia Organic Market to gain an in-depth understanding of the motivations and desires that led them to found their respective organizations. I also attended a workshop on Farmer Producer Companies organized by DRCSC to gain a better understanding of how farmers could begin to run one. Taken together, along with the discussions during the workshop itself, these interviews form the basis of the first part of the chapter *Constructing New Markets: Organic Agriculture as a Nomadic Assemblage*. The second part of the chapter is the result of a focus group discussion held at this workshop, where participants were invited to discuss the issues of food processing and environmental issues within the context of agri-environmental governance. Detailed descriptions of the methodology are explained further in each chapter.

## 3.1 Positionality and Reflexivity

Issues of identity are unavoidable while conducting interviews in the field. While not going into the depth of these issues like the geographer Farhana Sultana does in her excellent paper on reflexivity and positionality (2007), I briefly explain some aspects in the spirit of full disclosure. My father, Ardhendu Sekhar Chatterjee, is considered to be a key figure in the organic movement not only in West Bengal but at the national level as well. Through DRCSC, the NGO he co-founded, he has been engaged in rural development for more than four decades. Although my interest in agriculture was

sparked by the exposure to my father's work, I left India when I was sixteen years old to study at an agricultural high school in Japan, and then went on to study anthropology in the same country. I did an ethnography of organic farmers in the Japanese prefecture of Ibaraki as part of my undergraduate studies. My interest took me further to a university in The Netherlands, where I completed my Master programme in Agroecology and Organic Agriculture. My father has thus been actively engaged as a practitioner in the construction of an agroecological model for development, while I have approached the issue from an academic perspective. My purpose for this brief explanation of my background is to try to make clear the differences between my father and myself, while still acknowledging our familial bond. That being said, there is always a risk that I am biased towards my father. I try to overcome this wherever possible by cross-checking and validating his statements with other resources, using academic papers where possible.

In Bajkul village in Purba Medinipur where I interviewed farmers, I was a source of curiosity. I was not only a city boy [*shohorer chele*], but I also looked different because my mother is Japanese and my father is Indian. The fact that I was studying in Germany complicated issues further, and elicited many questions about Japan and Germany from my interviewees as well as curious onlookers.[5] My family name Chatterjee is a Bengali Brahmin name, which brings with it a privileged status within the caste system even if I am illiterate in its workings. My gender gave me a freedom of movement, allowing me to stay at the farmer's house and to hang out in the evenings in the village centre even after it had become dark, while making it difficult to access the perspective of female farmers on issues of farming sustainably. Conversely, at BIOFACH, an organic food exhibition event where the participating companies were looking for potential international buyers, my supervisor, Amelie Bernzen, may have seemed to be a worthier person to talk to because she "looked European" and thus a potential buyer, or at least a connection to the European market.

[5] I found myself having to explain why barbecues are a common sight in Germany (Why would you cook outside with charcoal when you have gas at home?), and how Japanese people could eat raw fish (Doesn't it taste bad?). The fact that women and men can sit together in a room and drink beer in these countries led to one of the deeper conversations about issues of gender equality.

I tried to make use of my outsider status to ask basic, almost borderline stupid, *Fact Questions*. Unlike Perception Questions, which begin with "Why?" or "How?", Fact Questions ask "What? When? Who?". This is a key strategy espoused by Wada and Nakata (2015), two in community facilitation, to avoid asking for people's opinions which are abstract and based on conjecture, and instead engage in a grounded discussion based on what actually is (i.e. facts). Thus, an unstructured interview is necessary, as the pre-existing conditions for each interviewee is different. In the case of the farmers, I visited them in their fields in "go-along" interviews to be able to use the various crops and land-forms as "props" to enable me to ask fact questions, as I could point out something and ask farmers to explain the what it was, when it was planted or created, and who was tasked with the work. I also use this approach throughout the dissertation, explaining terms as much as possible to avoid assumptions being made. This feeds back into the demands of an Assemblage approach that seeks to avoid generalizations.

In selecting my case studies, I avoid the strategy of gaining greater statistical significance by random sampling, instead choosing a snowball method to sample purposefully. The reasons for doing so are as follows:

1. The path dependency (or context-specificity) of the development of organic agriculture. It is the specific connections among specific actors, or in other words the path dependency, that drives the adoption of organic agriculture. Complex systems involve critical transitions, non-linear and abrupt shifts (Vandermeer & Perfecto, 2017). No pure line of derivation is possible because of these shifts. Using an analogy from evolutionary biology, if we rewind history and play it back, each scenario will lead to its own specific outcomes (Holland, 2013).
2. There is a dearth of data about non-formal organic agriculture in India on which I could have relied on, and primary-data generation requires considerable resources. In an interview with the lead author of the study *Organic Farming in India: Status, Issues, and Ways Forward* (2017) , I learnt that private consultants were hired in order to arrange and schedule meetings with each individual company from which they wished to conduct interviews and surveys.

3. One of the key exhortations of the AT approach is to practice nomad science, in an *attempt to see otherwise*. This is an attempt to seek out alternate lines of development made possible by looking at things through the rhizomatic development of non-formal organic agriculture.

What this approach may lack in generalizability to the population (through statistical significance), it gains by providing a more in-depth understanding of how organic agriculture is understood and operationalized.

In trying to avoid parachute or helicopter research (Minasny et al., 2020), I tried to collect all the data myself, conducting face-to-face interviews. This limited the scope for quantitative data collection. I was unable to forge connections with local universities, and was not inclined to do so as well because I was not familiar with the procedures of setting up such a partnership. I did meet with several local researchers; however, I judged that it was too late in the research process to involve them in any meaningful way. While by no means a "German researcher", I am also not a "local researcher". The fact remains, however, that my field visits never lasted more than a month in one location. This meant that I had a limited perspective, seeing the village only at certain times of the year.

# 4. Recoding Sustainability in Organic Agriculture: Locating Approaches On the Continuum between Two Paradigms of Sustainability in Agriculture

## 4.1 Responding to Needs for Framing Sustainability in Agriculture

Agriculture across the globe underwent a dramatic change during the 1940s and 1950s, a period now widely known as the start of the Great Acceleration (Steffen et al., 2015). "A divergent view became dominant: using manufactured fertilizers and pesticides instead of diverse rotations to reach high yields" (Therond et al., 2017). This was facilitated by what Vaclav Smil calls the greatest technological advance of the twentieth century, the Haber-Bosch process that fixes nitrogen (Smil, 2002). This dominant approach, however, has run into problems, as explained in the previous section. A major review was carried out in 2009 to attempt an assessment of the status of agriculture, with a conclusion that "business as usual was not an option" (IAASTD - International Assessment of Agricultural Knowledge, Science and Technology for Development, 2009)). The search was on for new approaches to conceptualize ways forward, yielding insights that fall under two different paradigms, the sustainable intensification paradigm and the agroecological paradigm, that are discussed in the following paragraphs.

### *4.1.1 The Sustainable Intensification Paradigm*

In his book *Regenerating Agriculture*, Jules Pretty (1995) laid out "policies and practice for sustainability and self-reliance" in agriculture, outlining a way for farmer participation to create solutions involving regeneration of natural capital and requiring low inputs. He took pains to explain how sustainability is highly context-specific and a relative concept at best, given the complexity inherent in food systems. He describes sustainable agriculture not as a "simple model or package to be imposed", but as a "process for learning". He distilled the ideas discussed in the book into a brief paper titled *The Sustainable Intensification of Nature* (Pretty, 1997). This is widely recognized

as the first intentional use of the term sustainable intensification. While Pretty's views have remained consistent over the years (Pretty et al., 2011; Pretty & Bharucha, 2018), the same cannot be said of the SI paradigm.

A review by Mahon et al. (2017) points to the re-invention of SI, suggesting that usage of the term increased after the year 2009. Thompson (2018) identifies three key publications responsible for this renewed interest: *Reaping the Benefits: Science and the Sustainable Intensification of Agriculture* (2009), and the *Foresight: The Future of Food and Farming* report by the UK office of Science (2011), as well as a key US publication from 2011 in the Proceedings of the National Academy of Science that failed to reference any of the previous works in this field (Tilman et al., 2011). Together, these three publications provide documentary evidence of a sharp departure from Jules Pretty's originally proposed idea behind sustainable intensification. Eschewing the emphasis on resource-conserving technologies and practices that characterised Pretty's approach to achieving SI, these reports took a "narrowly biological approach" to their analyses, emphasising above all the need to increase yields through transfers of technologies (Thompson, 2018). Subsequent publications try to address aspects that contribute to environmental sustainability, and do bring up new indicators for biodiversity and ecosystem functionality, particularly focusing on carbon sequestration (Mahon et al., 2017). However, the emphasis on productivity, and on genetically modified seeds to deliver the desired yields has remained a key aspect of sustainable intensification (Levidow, 2018).

One of the core tenets of this paradigm is the need for a higher level of production. Higher production in turn is to be achieved through innovations that reduce yield gaps (Ittersum & Rabbinge, 1997; Sumberg, 2012). Innovations here refer to a particular set of technological advances, referring to biotechnological solutions: improved seeds, the application of anthropogenic fertilisers, and increasingly tailored pesticides. Through these inputs, deficits in productions – yield gaps – are overcome in order to achieve full potential. In other words, the emphasis tends to be on changes in inputs and less on agroecosystem design and management practices. Improving resource use efficiency has been used as another approach, achieving impressive results in the reduction of fertiliser run-off by improving the efficiency of agricultural systems (Cui et al., 2018).

A good example is the rise of precision agriculture within the sustainable intensification framework. Precision here refers to the ability to treat the inevitable heterogeneity that arises within an agricultural field in a highly tailored way. Supported through innovations in information and communication technology, and the rapid uptake of unmanned aerial vehicles and autonomous tractors (Bongiovanni & Lowenberg-Deboer, 2004; Finger et al., 2019). The key mechanism remains efficiency, and discussion of the potential lock-ins and sunken costs remains underdeveloped (Struik et al., 2014). Lock-ins may also happen at a cognitive level: The goal of efficiency proposed by SI is likely to be "stifling and uncreative, not allowing for malfunctions and accidents, which are ironically much more like the way things actually are" (Morton, 2018).

In summarizing the more mainstream understanding of SI, Paul Thompson (2018) observes that while many scholars used the term during the 1990s, few felt the need to define it. Where definitions were ventured, it was primarily in contrast to the idea of *extensification*, referring to the practice of converting open land into farmland. Thus, SI has been used by most researchers as "a happenstance phrase" that remains undefined but tries to signal that sustainability is being taken into account without challenging the way research is conducted.

### *4.1.2 Agroecological Intensification Paradigm*

Agroecological intensification, and the science of agroecology that underpins this paradigm, has undergone changes from when it was first conceived to how it is used now. When the word was used by Basil Bensin for the first time in 1930, it was largely restricted to the need to match farm-level inputs to local ecological conditions (Gliessman, 2013). An agroecological approach, in this early sense, aided farmers' decision-making regarding purchases of equipment and inputs for the farm, helping to avoid disappointment for farmers who bought supposedly universal *input-based* solutions that did not work in specific local settings. Janzen formalized the emphasis on the local in 1973, relying on insights from his research in tropical regions to emphasize the importance of meeting local needs and working within local constraints instead of producing for a global commodity market (Gliessman, 2013). Agroecology in its modern

incarnation was based on research coming out of Latin America in the late 1970s and early 1980s to address concerns with the ecological and social consequences of the Green Revolution (Altieri & Nicholls, 2017) (Altieri & Nicholls, 2017). Books by Stephen Gliessman (*Agroecosistemas y Tecnologia Agricola Tradicional*, 1978; *Agroecology: Researching the Ecological Basis for Sustainable Agriculture*, 1990) and Miguel Altieri (*Agroecology: The Scientific Basis of Alternative Agriculture*, 1987) form the key literature to understanding agroecological intensification. Research was focused largely on emphasizing the understanding of biological and ecological processes and functions in agroecosystems in order to improve their functioning and utilise them for food, fibre, energy and ecological services production (Tittonell, 2014). A paper by Francis et al. (2003) was a key step in the development of agroecological intensification into a study of the wider food system. This change is reflected in the most recent definition of agroecology:

> "Agroecology is the integration of research, education, action and change that brings sustainability to all parts of the food system: ecological, economic, and social. It's transdisciplinary in that it values all forms of knowledge and experience in food system change. It's participatory in that it requires the involvement of all stakeholders from the farm to the table and everyone in between. And it is action-oriented because it confronts the economic and political power structures of the current industrial food system with alternative social structures and policy action. The approach is grounded in ecological thinking where a holistic, systems-level understanding of food system sustainability is required" (Gliessman, 2018).

Along with the focus on the proper ecological functioning of agroecosystems, there was an added emphasis on social justice at all levels of the food system. This emphasis was visible in the recognition of the contributions of rural populations to agricultural innovation, the definition of the goals of agricultural production in a participatory manner, and the call for rethinking the economic systems within which they exist. SHF employing peasant modes of farming are considered to be important (Ong & Liao, 2020; Pimbert, 2017). The role of inputs played by inputs is markedly minor in comparison to

sustainable intensification, making it difficult for the concept to be co-opted or appropriated, as the interventions being talked about are systemic changes that are embodied as knowledge and not any specific product. The reliance on a keen understanding of local agroecosystems means that a universally applicable set of guidelines, a quick fix, is not available. What is required is "local innovation, local adaptation and the creation of favourable socio-technical regimes" that allow for a diversity of creative approaches and solutions with local solutions to global problems (Tittonell, 2014). These characteristics of the agroecological intensification paradigm mean that some solutions and actors are rejected and excluded. The actors excluded include agrichemical companies and major food corporations, while the solutions excluded include genetically modified seeds, *improved* livestock and fish that require specialized feed to produce more, large-scale monocultures and livestock factory farming. This is because they have been found to be either incompatible with or undermining to the agroecological approach (IPES-Food, 2016, 2018; Pimbert, 2015).

Agroecology as a scientific endeavour can best be described as an approach that integrates the ideas and methods of several subfields, rather than as a specific discipline. These subfields include agronomy, environmental studies, ecology, anthropological and geographical studies of indigenous production systems, development studies, soil science, ethnobotany, and entomology (Hecht, 1987). New insights into soil biota functioning (Adhikari & Hartemink, 2016; Brussaard et al., 2007), pest-predator interactions (Bianchi et al., 2006), and landscape level approaches (Kusters, 2015) are some of the ecological insights underpinning this paradigm. Civil society actors are prominent: The International Peasant's Movement (La Via Campesina), for example, issues position papers and declarations that help to understand linkages between agroecology as a science, a practice, and a movement. Their Declaration of Nyeleni of 2007 helps conceptualize agroecology as an integral part of food sovereignty (Pimbert, 2015). Agroecological intensification also started to garner attention at the level of policy-makers and states after the *Agriculture and the Right to Food* report in 2011 by the Special Rapporteur on the Right to Food, Olivier de Schutter (2011). An International Panel of Experts on Sustainable Food Systems (IPES-Food) was

established in 2015 to analyse food systems using an AI approach and to document case studies of systemic transitions.

## 4.2 Contrasting Paradigms

Given the complex history of each of these paradigms and the difficulty of defining sustainability itself, it is not possible to definitively claim the exact terms of each of the paradigms. However, it can be said that the respective paradigms have gradually coalesced around several key concepts. SI focuses on attaining food security, where specialized production guided by comparative advantage, centralisation and free trade and securing access to required inputs help to achieve sustainable food production. In comparison, AI focuses on the need to attain food sovereignty through indigenous and appropriate technologies, decentralisation and solidarity economies in order to achieve sustainable food systems. Therond et al. (2017) build on the contrasts between the two paradigms by placing elements of each paradigm on opposing ends of two continuums: the external inputs-ecosystems services continuum and the global market price-territorial embeddedness paradigm. Their contribution has brought much-needed clarity regarding the various practical manifestations of sustainable farming practices in agriculture. At a time where the changes in the SI paradigm make it increasingly difficult to tell apart the two paradigms, their analytical framework highlights the incommensurable aspects of the paradigms by putting them at opposing ends of axes. While the various systems they discuss may co-exist in different locations at a global scale, choices on which system to adopt need to be made at each particular location, choices that may preclude other options. Interestingly, they find that organic farming systems can exist along the spectrum from SI to AI. They place existing archetypes of practices along two axes of biotechnical functioning and socio-economic contexts, thus highlighting the diversity of practices existing on the continuum between the extreme ends of the two axes. In Figure 3, various forms of organic are mentioned, including the large-scale "conventionalised" forms of organic which fit better within the SI paradigm (Darnhofer et al., 2010). Although this contribution improves the description and analysis of farming systems, it is ultimately left to the paradigms to theorize how systemic change is achieved, and describe the various conditions necessary to achieve

their respective goals along other continuums, a function that is implicitly acknowledged by the authors.

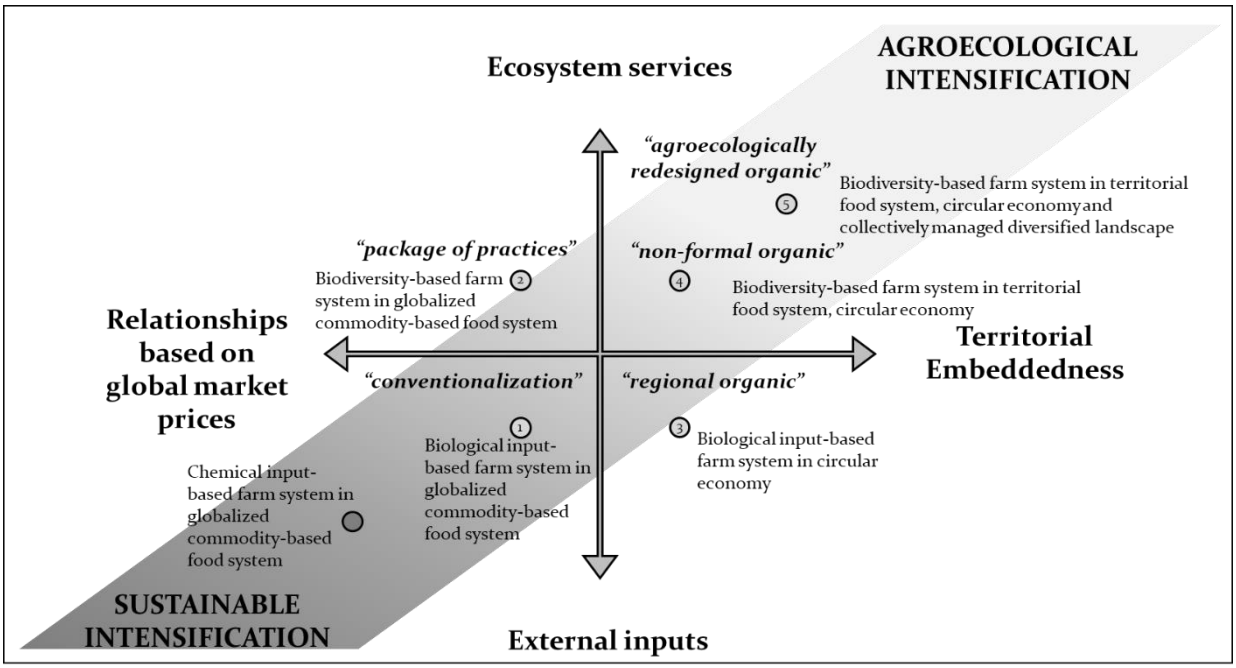



*Figure 3: The different forms of organic as identified along the Sustainable Intensification -- Agroecological Intensification continuum. The two axes identified by Therond et al. (2017) form a matrix in which different combinations of farm and food systems can be located. The captions in **"bold"** identify the different kinds of implementation of organic agriculture. (1) refers to organic production systems that only replace external inputs with biologically-produced counterparts, and is often referred to as a "conventionalized" form of organic in the literature (Guthman, 2004; Darnhofer et al., 2010). In this dissertation, (4) non-formal organic and (5) agroecologically redesigned organic are explored. (Own illustration based on Therond et al. (2017).*

Kuyper and Struik (2014) capture the differences in describing the adherents of sustainable intensification as Utopians and the adherents of ecological and agroecological intensification as Arcadians. Utopias are "idealized visions of perfect societies" and its adherents believe that our real-life diverse forms of agriculture are merely a messy, imperfect copy of an imagined perfect world where, for example, all agriculture would be rendered invisible through mechanization. Arcadia is a particular type of utopia, one which envisions a pastoral existence for humans in harmony with nature. I venture an alternative description for proponents of ecological and agroecological intensification paradigms: Protopians (Shermer, 2016). Protopia is a vision of a future that is achieved through incremental improvement, where the current situation is appraised and then improved upon. This is much more difficult than it sounds: disagreements arise about what constitutes an accurate reading of the current

situation, making it difficult to agree on a baseline. Yet this is preferable to a commitment to an idealized vision that works in theory (Gray, 2011). Indeed, this is a core assertion of AT, an ontology of becoming (Briassoulis, 2019). As Tittonell (2014) points out, the definitions are malleable, and lead to practices not intended by the original proponents. Ideas branch out, diverging, sometimes converging, creating a hotly debated landscape with constantly shifting ground. It is important to avoid taxonomic essentialism and instead favour a worldview recognizing that ideas and the people who have them can always change. The necessity of an ethological approach as opposed to an aetiological approach is rooted in another realization: that there is no ideal past that we can return to (Latour, 2018). Instead, a new self must be invented (Buchanan, 1997) in response to the changes we face.

Summarizing from the earlier section, the agroecological paradigm makes some key assertions. The first assertion is that some forms of agriculture are more preferable than others. While all types of farming have the potential of contributing to the sustainability of agriculture, it asserts that the peasant mode of agriculture practiced by SHF needs to be prioritized over more capital-intensive modes. Solutions or suggestions for areas where SHF dominates must therefore be different for solutions for places where large farms dominate. The second assertion is that knowledge relying on a better understanding of natural functionalities of the ecosystem should be given priority over knowledge relying on a linear and mechanistic understanding of nature. Eschewing *storage-bin thinking*, approaches should seek to understand and enhance the functionalities that are provided in each agricultural ecology instead of replacing them with commodifiable and controllable but inferior anthropogenic inputs. The final assertion is that the local has precedence over the global. Local food systems are favoured over global models of food provisioning, a position encapsulated in the concept of food sovereignty (Pimbert, 2009). These assertions are controversial under the prevalent form of agriculture and the wider structure of the economy.

AT provides another important insight here, namely the categories of *State (or Major) Science* and *Nomad (or Minor) Science*. Deleuze and Guattari base their understanding of *State Science* on a positivist understanding of science, which "operates by the

extraction of constants from variables of extensive properties[6] and the formation of laws expressed in linear equations for the relation of independent and dependent variables" (Bonta & Protevi, 2004). Another important characteristic of State Science is how it separates the task of conceiving new ideas and of executing these ideas so that they become reality, subordinating manual labour to intellectual labour (Holland, 2006). These two properties can be readily assigned to SI as it is currently conceived, which seeks to come up with One-Size-Fits-All solutions to help end world hunger. In contrast, the research agenda of *Nomad Science* is to pay attention to matter and respond to the particularities it gives rise to, to follow it (Doerksen, 2018; Holland, 2013). It requires the insights gained in the process of engaging in the process of the execution of an idea, and thus engages manual labour and intellectual labour in a dialogue. Agroecology, the science behind AI, has many characteristics of a nomad science. It advocates a high degree of site-specificity, and calls for the inclusion of local communities in the generation of scientific knowledge (Altieri, 2002). Crucially, "neither state science nor nomad science can exist without each other....Science is born from their tension and it can only survive as a mixture" (Doerksen, 2018). State science benefits by appropriating the contents of nomad science, while nomad science constantly questions the territorializations imposed by state science (Holland, 2013). In this thesis, I choose to adopt an Agroecological Intensification (AI) perspective, relying on ideas generated within the AI paradigm like the *peasant mode of production* (Chapter 7) and *nested markets* (Chapter 8) to understand empirical phenomenon. Before moving on to the next section that describes the gradual changes in organic agriculture, it is useful to reiterate here that organic agriculture is a package of practices that can fall under both SI and AI paradigms. Understanding the two paradigms is thus a necessary precondition to tracing the development of organic agriculture over the years.

[6] Properties which remain constant, like length and volume, whatever the substance measured. They are measured by an external metric or standard. Contrasts with intensive properties, which are a characteristic of systems where once "driven past a critical threshold trigger a change in the quality of the system"(Bonta & Protevi, 2004)

## 4.3 Organic Agriculture

Organic agriculture has become one of the most recognizable forms of addressing questions of sustainability today. This recognizability is attributed to the clear and rigorous regulations that underpin this form of agriculture (Migliorini & Wezel, 2017). However, these regulations and standards have also come under scrutiny by geographers for their restrictive nature, and have been increasingly questioned for what kind of barriers to entry they pose to SHF, especially in the Global South (Bernzen & Braun, 2014; Nelson et al., 2010). At the same time, the principles of organic agriculture (beyond those espoused by the standards) have been embraced by a wide and eclectic group of actors, thus opening up a discussion about what organic is. In order to understand, as Seufert et al. ask in their paper, *What Is This Thing Called Organic?* (2017), this chapter approaches the question with an AT framework. Doing so allows a discussion of the concept organic from different perspectives as it grapples with the two contrasting realities of stability and change (Adkins, 2015). I argue that while there are both arborescent and rhizomatic movements within organic agriculture, the rhizomatic aspects tend to be ignored, leading to a one-sided view that fails to fully comprehend the developments that lead up to the diffusion of organic agriculture. I aim, in this chapter, to break down the rigid conceptual boxes that characterize understandings of organic agriculture today and instead use an ontology of becoming to highlight the potential of this concept: What can organic agriculture do?

### *4.3.1 What Is Organic?*

While the question "What is Organic?" is an arborescent one insofar as it seeks to establish a particular stratification (a consolidated understanding), it can nevertheless provide a resting place from which the later enquiries into the organic assemblage can be made (Bonta & Protevi, 2004). The definition of organic agriculture offered by two global authorities follows.

The Food and Agriculture Organization (FAO) and the World Health Organization (WHO) Codex Alimentarius Commission, a commission entrusted with the task of

ensuring food is safe and can be traded globally, defines organic agriculture in the following way:

> "Organic agriculture is a holistic production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles, and soil biological activity. It emphasises the use of management practices in preference to the use of off-farm inputs, taking into account that regional conditions require locally adapted systems. This is accomplished by using, where possible, agronomic, biological, and mechanical methods, as opposed to using synthetic materials, to fulfil any specific function within the system (1999)" (FAO, 2020).

The International Federation of Organic Agriculture Movements (IFOAM), whose website says that they are the only umbrella organization representing organic movements (IFOAM, 2019), provides a more compact definition:

> "Organic Agriculture is a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic Agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved".

IFOAM also list the four principles underlying this definition: The principle of health, of ecology, of fairness, and of care (Luttikholt, 2007).

These two definitions make certain distinctions clear. The first distinction is that management practices (i.e. systemic redesign) is favoured over input substitution. The management practices referred to in the two definitions are aimed at enhancing the overall biological functioning to ensure more ecosystem services are delivered. The inputs that are to be eschewed, or substituted, are referred to as off-farm and synthetic (FAO) or as having adverse effects (IFOAM). The second distinction is that systems must be adapted to the local situation. Accounting for local conditions is a key aspect highlighted in both the definitions. The third distinction is the explicit need to improve

the soil conditions, whether through improving soil biological conditions (FAO) or by sustaining its health (IFOAM). Finally, the IFOAM definition goes beyond the FAO definition, calling for fair relationships and a good quality of life for all involved within the wider food system.

However, the two concepts most associated with organic production today, food safety and sustainability (Hughner et al., 2007; Kushwah et al., 2019; Nuttavuthisit & Thøgersen, 2017), are not explicitly included in either definition. This may be attributed to the fact that the four principles of organic as explained by IFOAM are thought to necessarily imply a sustainable form of agriculture (Luttikholt, 2007). The principle of health aims "to sustain and enhance the health of ecosystems and organisms from the smallest in the soil to human beings", the principle of ecology espouses the mimicking of natural ecosystems in order to sustain and reinforce them, the principle of fairness aims to build relationships that are fair not only for the humans and animals involved in the food system but also for future generations, and the principle of care espouses the precautionary approach (IFOAM, 2019). Taken together, the four principles satisfactorily meet most understandings of sustainability (Kuhlman & Farrington, 2010). IFOAM also states that they "work toward true sustainability in agriculture, from the field, through the value chain to the consumer" (2019), thus linking the concept of sustainability to organic agriculture.

These definitions, however, were not there from the beginning of the organic movement. They were introduced as part of the move from what IFOAM calls *Organic 1.0* to *Organic 2.0*. A recent publication from IFOAM suggests that the history of organic agriculture can be divided into three distinct phases. These phases have been called *Organic 1.0, 2.0* and *3.0* (Arbenz et al., 2016). In this chapter, I will first briefly discuss *Organic 1.0*, before examining *Organic 2.0* in greater detail, as it is the current dominant form of organic agriculture. *Organic 3.0* will be looked at in the following chapters.

*Organic 1.0* is seen as the pioneering stage of organic agriculture, when the founders of the modern-day organic movement came together to lay the foundation of organic agriculture. Albert Howard is often credited with having started this movement(Heckman, 2006), with his book *An Agricultural Testament* (1940) which was based on insights he gained while managing agricultural research centres in India

from 1905-1931 CE, being hailed as one of the canonical texts of the organic movement. Other key actors like Eve Balfour, Jerome Rodale, Rudolf Steiner helped lead the efforts that would consolidate the organic movement (Arbenz et al., 2016). Perhaps the best-known, and most widely influential work, however, was *Silent Spring* (1962) by Rachel Carson. This influential book documented the adverse effect of pesticides and other chemical agents in the environment, and hypothesized that the indiscriminate use of pesticides (as opposed to carefully monitored and targeted applications) would lead to the collapse of whole ecosystems, leading to what she so ominously calls a *silent spring*. While detractors at the time doubted her thesis, her assertions may have been borne out by the developments in the Anthropocene, as we witness the Sixth Mass Extinction Event, with arthropods suffering the heaviest losses (Ceballos et al., 2015; Hallmann et al., 2017; Seibold et al., 2019) (Ceballos et al., 2015; Hallmann et al., 2017; Seibold et al., 2019), but also with collapses elsewhere, such as in fisheries (Yamamuro et al., 2019). This issue, the danger posed by synthetic inputs used in an increasingly dominant form of agriculture, became the key issue around which *Organic 1.0* would galvanize. The fear of adverse effects across the whole food chain, from soil microbial life to human consumers, informed many of the global efforts to find an alternative. Thus, *Organic 1.0* can be viewed as a reaction to the problems posed by the failures of an increasingly input-dependent form of agriculture. It sought to be an assemblage that solved the abstract problem of *how to do agriculture* differently.

### *4.3.2 Standards and Certification Schemes*

*Organic 2.0*, the dominant understanding of organic today, is dependent on the implementation of standards (Arbenz et al., 2016) that consolidated the vision outlined in Organic 1.0. Standards have been recognized as ways of shaping reality; they have even been termed recipes for reality (Busch, 2013). According to sociologist Lawrence Busch, standards are means of partially ordering people and things so as to produce outcomes desired by someone. Organic agriculture was one of the first forms of sustainable agriculture to be formalized through standards. Indeed, the major factor which distinguishes organic farming from other approaches to sustainable agriculture is the use of the market to support the environmental, social and animal welfare

objectives. This has led to the development of detailed production standards and certification procedures (e.g. IFOAM, 1995) to draw a clear dividing line between organic and other farming systems (Lampkin et al., 1999).

As Busch argues, standards are a sign of acceptance that we live in an imperfect world: there are no completely rational actors, information is not equally available to all, and all information is not interpreted in the same way. In the face of such uncertainties, standards "always produce partial and impermanent orderings" of affairs (2013). In other words, standards can be thought to rely on historically produced regularities to create categories: This is what is implied by the phrase partial and impermanent. These regularities must not, however, be mistaken for universal essences (Adkins, 2015). Doing so would imply that the same set of standards would work in every context, leading to decalcomania (Bonta & Protevi, 2004). Busch exhorts users of standards to be willing to negotiate these standards in order to avoid such a situation. It must also be noted here that the rigidity of molar segmentation required for arborescent assemblages is not inherently bad (molar segmentation refers to exclusive disjunctions ("either…or") which can best be described in the form of a decision flowchart). There is no continuum, however, and middle forms are excluded. There is a price to be paid for deviance. In the following paragraphs, I explore the *Organic 2.0* system in more detail.

*Organic 2.0*, or certified organic production systems, have been discussed as one of the most recognizable forms of sustainable agriculture (Seufert et al., 2017). Organic agriculture is often understood as certified organic food which is produced in line with stipulations of a private standard. With steady double-digit growth rates over the past decade, it remains one of the fastest growing food sectors worldwide (Willer & Lernoud, 2016). In some countries, organic standards regulate production processes of agricultural products and their further processing along the value chain by including labelling regulations and an independent control system (third-party certification). The idea of certifying organic production has emerged in Europe over the past two decades from a loosely coordinated local network of producers and consumers, gradually transforming into a globalized system with formal regulation at its basis ( Bernzen & Braun, 2014; Raynolds, 2004). Today, organic standards (based on their European roots) thus also attempt linkages of small-scale producers in the Global South and

consumers in the Global North, while securing product quality and environmental sustainability (Vermeulen & Seuring, 2009). Importantly, the main incentive for farmers to produce according to these standards is the attractive premium price that can be gained on the market for certified produce (Hatanaka et al., 2005; A. Mukherjee et al., 2017).

The fact that the lucrative markets were located in core countries in the Global North meant that countries in the peripheral Global South needed to export organic goods in order to access these markets. The export-oriented nature of the organic standards in India, for example, meant that it was mainly geared towards large companies who could pay the high prices for Third Party Certification (TPC) inspection parties. While the government body in charge of organic certification in India made efforts to increase domestic certifying agencies, other restrictions, notably the extensive documentation and non-profitability for small landholding sizes, created limitations that have not been adequately addressed to this day.

The transformation of agri-food systems through organic 2.0 in emerging social and environmental standards and the growing market for certified organic products have been addressed in a growing body of literature in recent years, trying to analyse and unravel interlinkages and dynamics of the integration of producers of the Global South. Studies focus on different aspects and impact of organic certification produce heterogeneous results (Ayuya et al., 2015; Amely Bernzen, 2014; Giovannucci, 2005; Seufert & Ramankutty, 2017). It is argued, for instance, that organic certification could provide upgrading opportunities for disadvantaged farmers in the Global South by re-embedding environmental, ecological and social aspects into agriculture and food production (K. Smith & Lyons, 2012). Moreover, Bacon (2005) argues in a study from Northern Nicaragua that participation in such networks has been able to reduce farmers' livelihood vulnerability.

The dominant discourse in organic supply chains therefore, seems to have become one where SHF need to upgrade their cultivation practices and aggregation capabilities in order to gain access to a lucrative value chain. The rewards of the value chain are supposed to be a higher income and a more sustainable production system. The latter benefit is thought to be delivered through the terms of participation in the value chains

are supposed to be beneficial for the SHF as they are taught how to manage their natural resources in a more sustainable way and they receive a higher price for this more desirable product. This understanding of organic is increasingly popular with the Indian government and its various agencies as they attempt to enable more producers to be certified as organic.

However, there have been escaping flows from this striated space of certification. A striated space, according to Deleuze and Guattari, is a space that attempts to convert essential differences into a single unified whole (Adkins, 2015). But striated spaces are never completely striated; rather, they exist in some form of mixture with smooth spaces: spaces that are open to negotiation. These mixtures are constantly undergoing deterritorialization and reterritorialization processes. Following are some examples of such deterritorializing processes. The emphasis on third-party certification, usually executed by a European agency, leads to higher costs that have been found to start being viable on aggregated land holdings of 12 hectares or more (Meybeck & Redfern, 2014). This aspect of certified organic suggests that it is not suitable for all SHF. Another problem, revealed through a comprehensive literature analysis by Seufert et al., is that "codification of organic practices has led to a reductionist perspective of organic agriculture, focused on avoidance of synthetic inputs" (2017). In other words, the organic principles associated most with environmental sustainability, (soil, water, and biodiversity) have not translated well into regulations, and "are not very prominent in organic regulations across all countries" (Seufert et al., 2017). Social aspects are ignored, and sustainable management practices are not made mandatory or even left out in some cases. There is very little focus on ideas of farmer autonomy, as evinced by the many calls for contract-farming within organic agriculture, and the proliferation of centralized decision-making in organic agriculture.

This move towards certification and standards can be understood as a form of decalcomania (Adkins, 2015; Bonta & Protevi, 2004). The danger of a consolidated social technology like certification is that everything must conform to this idea, and that these ideas are reproduced ad infinitum. However, local contexts tend to overflow the frameworks that are applied to them. Organic 1.0 tried to subvert the arborescent nature of the rapidly expanding dependence on external inputs. It advocated, for

example, the use of manure and compost to take care of the soil. Manure, as van der Ploeg points out, cannot be controlled from a distance. (two more examples) What organic 1.0 was inadvertently calling for, then, was a decentralized form of agriculture. Organic 2.0 was a way to gain economic and political legitimacy, by rendering organic technical and making it more legible (Li, 2007). In doing so, the concept of organic itself became an arborescent narrative, making it a striated space. But interwoven in the arborescent, consolidating narrative of the organic certificate were the countless molecular allusions and ideas: organic produce as being healthier for the consumer, organic as being a better way of being, organic as being fair to earth, nature and animals. These anecdotal claims were not (yet) proved beyond doubt by the exacting standards of science, but nevertheless persisted, and still persist. The certification, then, claimed to mediate between these two modes by overcoding the molecular narratives. However, we are seeing an increasing amount of escaping flows (Adkins, 2015), aspects that cannot be explained or accounted for by the certification which have become critiques of certification and push for a renegotiation of what organic means.

Organic certification benefits from a wide acceptance of the ideas and the spirit espoused in the goals, or definition of organic agriculture. Yet the implementation of the certified form of agriculture does not guarantee that the desired goals will be achieved. Although organic certification is claimed to be a processual certification (A. Mukherjee et al., 2017), in attempts to render it technical, it ends up becoming more of a product certification. In the case of many peripheral states, like India, exporting to core regions, like the European Union, testing of products in laboratories is mandatory (2017). Deleuze and Guattari assert that rigid forms tend to concentrate power (Adkins, 2015). In certified organic systems, a list lays out the criteria that need to be met in order for a third-party inspector to properly assess and evaluate the farming system. This shifts power from the producer to the certifier, or the actor familiar with the extensive bureaucratic measures required to get a certification. Whatever form of agriculture might be practiced, the essential goal becomes the need to meet the criteria.

These critiques have led to the adoption of *Organic 3.0*, which seeks to encourage a "widespread uptake of truly sustainable farming systems and markets based on organic principles and imbued with a culture of innovation" (Arbenz et al., 2016).

### *4.3.3 What Could Organic Be?*

The progression from *Organic 1.0*, where the seminal concepts were brought together in Europe after experiences across the world, to *Organic 2.0*, where the introduction of the certification process consolidated the advances by putting in place several standards which ostensibly sought to attain the goals laid out in 1.0, and then onwards to *Organic 3.0*, where more open experimentation is encouraged, seems to take place on a linear progression, with each iteration better than the previous one. But this apparent linearity of events does not hold up to scrutiny. An alternative explanation, making use of AT concepts, would say that the lines of flight that make organic a more supple and smooth concept have started opening up again. At the same time, the risks of this opening up are very real. "Creating the new is risky. It requires eschewing the safety of models sanctified by centuries of thought, and there are no guarantees how the new creation will turn out" (Adkins, 2015, p. 34). It allows us to explore beyond a conceptualization that sees organic certification as an unattainable yet desirable goal, and renders it immanent. With desiring-machines as the basis of analysis, AT suggests that organic quality standards are merely one instrument among many through which desires are instantiated and actualized. Desire here is not understood as lack-based (I do not have a certificate, so I need to get one) but rather a fundamental driving source: How can I use organic to sustain myself and my environment? We are thus exhorted to approach the concept of organic not as a tree, but as a rhizomatic assemblage.

# 5. What Can Organic Do? A Rhizomatic Approach to Understanding Organic Agriculture in India

## 5.1 Introduction

This chapter gives an overview of the historical development of the concept of organic agriculture in India. Through doing this, I make it clear that several understandings of organic coexist, and not necessarily in agreement. Adopting a rhizomatic view of the understanding of organic in India makes it clear that what is discussed is not limited to technical aspects of what constitutes organic and what not, but about what organic can do, as a tool to be used to achieve wider goals.

The current landscape of organic agriculture as observed through policy at different levels of administration is discussed. The national, state and district level understandings provide a stable starting point for this inquiry into what organic is.

## 5.2 History of Organic in India

In the following section, I provide a historical background of some of the developments that led to the emergence of organic in India. I provide both an arborescent and a rhizomatic perspective to try to explain why organic in India is a concept under negotiation.

I focus on the history of agriculture after 1945 C.E for the following reasons. Several scholars of the Anthropocene concur that growth in agriculture was driven by changes which made it increasingly dependent on fossil fuels, part of a transformation dubbed the *Great Acceleration* (McNeill & Engelke, 2016; Steffen, Broadgate, et al., 2015, pp. 38–40; Zalasiewicz et al., 2019). The year 1947 C.E marked the Independence of India and hopes were high for a more decolonialized, less extractive form of agriculture. Finally, organic is often associated with *age-old practices* or *traditions* (Sofia et al., 2006), but the context within which organic agriculture is becoming necessary can be explained on a shorter time-frame, without relying on tradition as a justification.

Agriculture in India prior to Independence (-1947) can be assumed to be of a proto-organic form. There were no chemical inputs available, and forest cover was extensive. Farmers were not under as much financial pressure, although soil was eroding, and deforestation occurred as cropland was expanded. During this period, India in general, and West Bengal in particular, was subject to repeated famines. While these famines were often triggered by natural causes, their effects were exacerbated by apathy and wilful policies of the British colonial rulers in India (O. Goswami, 1990; Sen, 1977). The Great Bengal Famine of 1943 was still fresh in the collective memory when India gained Independence and the new government started implementing Five Year Plans. The first ten years saw a flurry of large-scale projects being implemented with the aim of improving surface irrigation facilities.

### *5.2.1 Green Revolution?*

At the same time, India fought wars with China and newly-formed Pakistan during the 1960s, a cause of instability in the food supply. The pressures of war led to the start of the Public Distribution System, and a heightened reliance on food aid from the U.S. provided under Public Law 480, better known as the Food for Peace programme (C. B. Barrett & Maxwell, 2007). Other geopolitical incidents had significant impact as well. The 1971 Bangladesh Liberation War was a conflict that had been brewing for some time, and whose immediate trigger was the apathy of the Pakistani government in the wake of the deadliest tropical storm recorded worldwide, Cyclone Bhola. Estimates suggest nearly 10 million refugees entering West Bengal at the height of conflict. Eventually, a million refugees are thought to have settled in West Bengal, making it one of the most densely populated states in India to this day. The sudden influx of so many people put considerable pressure on the food system. Indian politics was undergoing a state of upheaval as well, with the deaths of Jawaharlal Nehru and Lal Bahadur Shastri, in quick succession signalling the end of twenty years' of unchallenged power for the Indian National Congress. Finally, the threat of an advancing communist labour and land reform movement, the so-called Red Revolution (Nally & Taylor, 2015) into India and other Asian countries prompted a response from the United States as it attempted to prevent land reforms.

Against this backdrop, the Green Revolution was started by the Consultative Group for International Agricultural Research (CGIAR) and the Indian Agricultural Research Institute with funding from the Rockefeller Foundation in the late 1960s. Selected districts across India were identified, and were provided access to subsidized inputs (Desai, 1969). While limited in geographical scope, the yields were reported as increasing, turning these select districts into major domestic suppliers. CGIAR also set up several research centres across the world, including the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) to collect and conserve genetic resources, their primary function being to support government-supported breeding programs in the US (Fullilove, 2017). In the eyes of some scholars, particularly within the agroecological paradigm, this transference of genetic material failed to disrupt links to the colonial history of such transfers, instead continuing the long history of challenging local seed sovereignty (Fullilove, 2017; Holt-Giménez & Altieri, 2013; Kloppenburg, 2010). Around 30 years after the introduction of the Green Revolution, the problems started to gain prominence as farmers faced diminishing returns on agrochemical inputs, a trend that continues to this day (Deb, 2009; Dyer, 2014, pp. 71–80; Montgomery, 2012, l. 3531).

While the Green Revolution is generally referred to as a timely and successful solution to the problem of famine resulting from low production, a look at history suggests that the political turmoil in the wake of the divide-and-rule policies implemented by a colonial oppressor was a considerable factor in the creation of said famine (J. Mukherjee, 2015; Sen, 1977), perhaps a greater factor than just low production (Daoud, 2018). However, this account is disputed by Tauger (2009) who asserts that yield losses due to brown rust disease were the main cause). In addition, the benefits of the Green Revolution turned out to be short-lived and not as widespread as anticipated, prompting a rethink of approaches (Conway & Barbie, 1988; Freebairn, 1995; Holt-Giménez & Altieri, 2013). The collateral damage was extensive and largely undocumented. By focusing on improving the yield of one crop, rice, the Green Revolution precluded the recognition of the contribution of other production systems and crop types, many of which were better suited to marginal environments and seasonal variation. Even within lowland rice farming systems, the role played by rotation

crops like tubers and leguminous plants, edible weeds, crustaceans and molluscs, and freshwater fish in augmenting sharecroppers' diets was overlooked. The extensive use of synthetic fertilizers and pesticides contributed to the significant decline of livability for these components of the farming systems. Their illegibility (for quantification) and diversity was sacrificed in exchange for the measurable and appropriable dominant grain crop, rice (Scott, 2017). The effect of this "sacrifice" was felt disproportionately by the actual labourers, with an increase in yield benefitting the land-owning classes.

### *5.2.2 Organic from a Commercial Perspective*

The Green Revolution was faltering elsewhere as well, and consumers in the Global North were soon calling for a rethink of the over-reliance on agro-chemical inputs, as discussed in the previous chapter. Various alternative food movements soon gained in prominence, and these impacts started being felt in India. In the mid-1990s, importing companies in Western Europe started urging their Indian suppliers to adhere to certain organic standards, most notably the EU standards (H. Barrett et al., 2002; Koehler, 2015, pp. 188–195). Plantation crops like tea, coffee and spices were prioritised by buyers, given their high value and large cropping area in plantations under the control of a few individuals. Tea from Darjeeling in West Bengal was one such crop (Koehler, 2015). Second-party certification (inspection by buyers) was issued to companies that met requirements for traceability and for the use of separate processing equipment.

Sensing an opportunity to improve the quality of exports and thus access foreign markets, the Ministry of Commerce and Industry directed APEDA (Agricultural and Processed Foods Exports Development Authority) to design a National Programme for Organic Production (NPOP), modelled closely along EU organic laws, in cooperation with IFOAM (International Federation of Organic Movements). The release of the first version of the NPOP standards in 2001 marked the start of the Indian government's involvement in the regulation of organic products (APEDA, 2015). This standard was built largely around the EU organic requirements, and mandated certain Europe-based certification agencies to carry out the required third-party certification (TPC) inspections (Alvares, 2010; A. Mukherjee et al., 2017), a key point whose significance

will be explained a few paragraphs later. The National Project on Organic Farming (NPOF) under the Department of Agriculture and Cooperation soon followed in 2004, and 1 National and 6 Regional Centres were established through the conversion of former offices of the National Project on Development and Use of Bio-fertilisers. In the latest version of the compiled statistics on organic agriculture around the world, India has around 835,000 producers certified under NPOP working on an area of around 1,780,000 ha, which is roughly 1% of the cultivated area (Willer & Lernoud, 2019).

### *5.2.3 Organic from a Civil Society Perspective*

Parallel to these formal policy developments, civil society organisations in India were already experimenting with organic production as a sustainable pathway to livelihood improvement. While these initiatives first arose independent of each other, some of the organizations came together in 1995 to form an apex body called ARISE (Agricultural Renewal in India for A Sustainable Environment), which became the "principal network for promoting organic farming within [India]" (Alvares, 2010, p. 65). ARISE was short-lived, barely lasting two years, though it turned out to be the forerunner of the Organic Farming Association of India (OFAI), set up in 2002 through the efforts of Claude Alvares and the team behind the Organic Farming Sourcebook (ibid. 2010; a more detailed account is available in the book). While these organizations gradually gained recognition, Alvares underlines the fact that in order to understand organic in India in its totality, it is important not to "reduce the status of farming in India only to identified organic farmers, certified farms, civil society organizations' (Alvares 2010, p.67).

OFAI made an impact on the regulatory scene in 2007, when at the 2nd Goa Meeting, it helped establish the Participatory Guarantee System (PGS) in India. The PGS is certified through a process of peer-review by farmers assisted by NGOs, vastly reducing prices for certification in comparison to the NPOP certification requiring TPC. The civil society organizations organize themselves into an umbrella association called the PGS Organic India Council, which was eventually registered as the Participatory Guarantee Systems Organic Council in 2011 (Hill, 2016). The government was drawn in to help, with the Department of Agriculture and Co-operation and Farmers' Welfare (DAC&FW)

of the Ministry of Agriculture helping to set up a governmental counterpart called the PGS National Advisory Committee (PGS NAC). A total of 333,144 producers on 260,800 ha are thought to be PGS-certified in India (Daniel, 2019).

### *5.2.4 Organic Certifications in India*

As alluded to in the preceding paragraphs, the key difference between NPOP and PGS certifications is the type of inspection that certifies that the product is organic. While a detailed account of the various certification schemes can be found in Mukherjee et al. (2017) and a detailed comparison in Khosla (2006), I will briefly summarize key aspects here. The NPOP standards are a part of the larger push for *Organic 2.0*, discussed in detail in the previous chapter. In order to make it possible for organic products to be sold as such on the world market, the NPOP standard relies on Third-Party certification (TPC). This form of certification is "based on providing an audit trail through every step of production – from purchase of seed to sale of the crop" (Khosla, 2006, p. 6) through the use of Transaction Certificates (TC). The *third-parties* mentioned here are certifier companies accredited by APEDA to issue certifications, and the audit trail is maintained on a closed database known as TraceNet, also maintained by APEDA. In order to reduce costs for farmer groups, a system known as the Internal Control System (ICS) was adopted within TPC. A farmer group is defined as having "a minimum 50 and a maximum of 500 farmers in close geographical proximity", with each individual farm having an area of less than 4 hectares (A. Mukherjee et al., 2017, p. 120). The farmer group maintains records, and the certifier company audits these records and inspects some members of the group, reducing costs for certification (Thottathil, 2014, l. 1214). Under ICS, member farmers are bound to a *Common Point of Sale* so that they can sell only through the group (Khosla, 2006, p. 47). Products certified through this system are almost all destined for the export market, as this is the only market that justifies the costs of paying for certification and the detailed audit trail.

In contrast to the TPC, the Participatory Guarantee System (PGS) is one among the many examples of the recent shift towards *Organic 3.0*. Building on critiques of third-party governance (as expertly outlined by Loconto and Hatanaka, 2018), PGS "certify

producers' [farming practices] based on active participation of stakeholders and are built on a foundation of trust, social networks and knowledge exchange" (Allison Loconto & Vicovaro, 2016). The compliance mechanisms used in PGS are aimed at small, diversified farmers selling into local and domestic markets, with inspections carried out by peer groups (farmers) and the whole farm being certified, instead of individual crops. Authorities like the central and state governments see it as an inexpensive way of certifying farmers for the domestic market. Problems remain with implementation, however. PGS, while seen as innovative when it first appeared in India, has not yielded the speedy uptake of organic that it was hoped to trigger (Khosla, 2006). The lack of any real support for capacity-building and for creating markets meant that organizations that did adopt PGS had to rely on external funds or grants to ensure that PGS projects got off the ground. It is also commonly thought of as being inferior to TPC because the peer review system is wrongly described as "self-certification" (A. Mukherjee et al.,

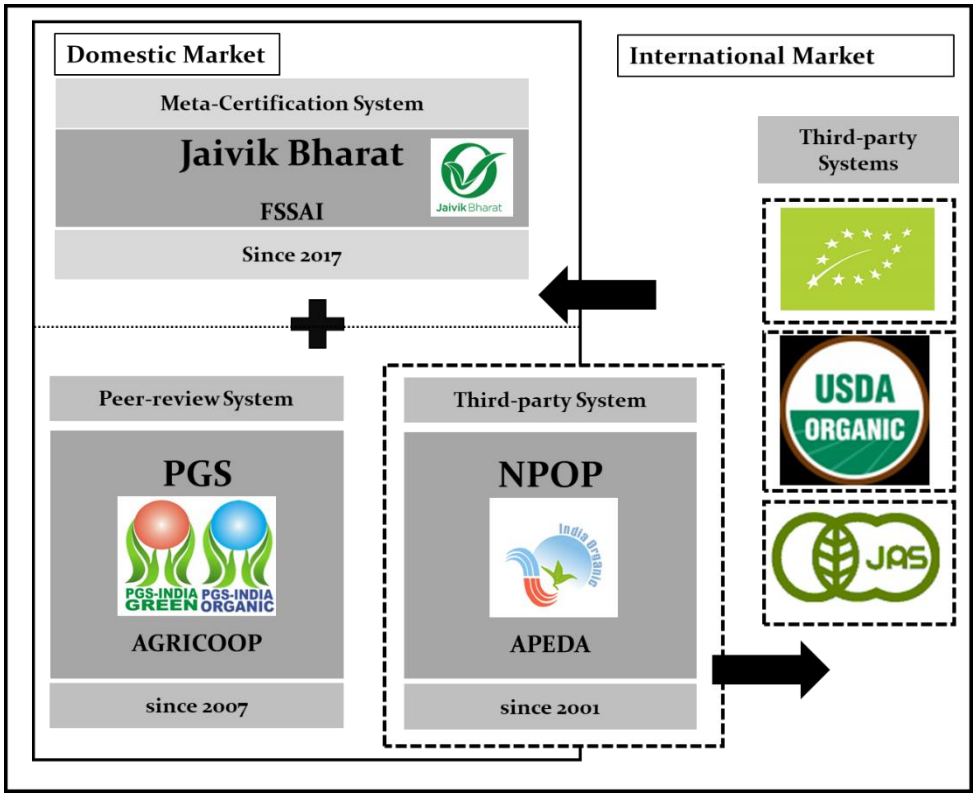



*Figure 4: The different kinds of organic standards in India. Own illustration.*

2017), and because it lacks a system to ensure complete traceability. It is thus viewed by some as a preparatory step for getting to TPC systems, rather than the distinct value system built around participation it was originally hoped to become.

India thus has a dual certification system, a system that still continues. The most recent regulatory development has been the establishment of the *Jaivik Bharat* (Hindi language translation of Organic India) standard in 2017 by the Food Safety and Standards Authority of India (Seetharaman et al., 2017; The Financial Express, 2017). The *Jaivik Bharat* label is aimed at helping domestic consumers differentiate between organic and non-organic foods. It hopes to do this by reducing confusion around labels: As far as this label is concerned, the NPOP and the PGS-India labels are treated equally. At the same time, the Food Safety and Standards Authority of India (FSSAI) introduces the dimension of laboratory tests for insecticide residues and contaminants. Food labelled as organic will have to have less than 5% of insecticide residues that non-organic food is allowed to have, while both organic and non-organic food must comply with the same limits for contaminants (FSSAI, 2017). In effect, there are three certification systems operating in India, with each system administered by different governmental agencies.

## 5.3 Organic Understood Differently within India at Different Levels

In seeking to understand what organic can do, I look at policies formulated at different levels of governance. The Indian government has a federal structure, and agricultural policy is legislated at the state level. However, the central government is afforded residual powers which enable it to affect agricultural policy. In absence of any formal central organic policy, I analyze the reports of the Committee on Doubling Farmers' Income, which provides an overview of the agricultural policies that will be pursued, in order to see how organic is understood. I then look at initiatives at state level, focusing on West Bengal. Here too, there is no formal state-level organic policy, and I rely on a 2011 report by the Associated Chambers of Commerce and Industry of India titled *Organic West Bengal: Ushering New Era of Prosperity.* This is followed by an analysis of organic policies proposed by a peasant organization within West Bengal, *Kisan Swaraj Samiti* (Farmers' Sovereignty Organization), again to understand how they frame organic agriculture. The main goal of this section is to illustrate that while there appears to be a policy vacuum at the national and state level, regional level policies for organic

agriculture are being formulated and implemented. From an AT perspective, the organic agriculture space is more smooth than striated in the case of West Bengal. The section ends with a perspective that straddles these different levels of understanding. In my empirical work, I try to give priority to this view, a view that tries to make the concepts work, to assemble it as a useful and operational idea.

### *5.3.1 National Level*

DAC&FW is directly responsible for agriculture at the national level. Other departments exist that affect agricultural issues, like the Ministry of Chemicals and Fertilizers or the Ministry of Rural Development, The National Bank for Agriculture and Rural Development. There is also a policy think-tank of the central government known as the *NITI Aayog* (Hindi for Policy Commission) that functions as a forum for the central and state governments to cooperate on economic policy issues, as well as financial institutions like National Bank for Agriculture and Rural Development (NABARD), which is a national level financial institution with the mandate of promoting sustainable agriculture and rural development through financial and technical support. Within DAC&FW, there is a National Project on Organic Farming (NPOF), which maintains the National Centre for Organic Farming (NCOF) mentioned in the earlier section.

The central government of India does not have a document laying out a specific strategy or vision for organic agriculture in India (A. Mukherjee et al., 2017, p. 135). As seen in the previous section, there are at least three different government agencies involved directly in defining what organic is (APEDA, DAC&FW, and FSSAI), with two different kinds of certifying processes (TPC and PGS). These certifying processes each have documents laying out criteria for certification. There are also several schemes and programmes funded by the central government which, while not explicitly mentioning organic agriculture, are being used to promote organic practices. Perhaps the most well-known of these policies at the moment is the *Paramparagat Krishi Vikas Yojana* (PKVY, Hindi for Programme for the Development of Traditional Agriculture), which is being used to create *organic clusters* that are certified with PGS certification. Other notable policies are the Mission for Integrated Development of Horticulture, and *Rashtriya*

*Krishi Vikas Yojana* (Hindi for Programme for States to Assist Farmer Development) (A. Mukherjee et al., 2017). However, these are not coordinated under any coherent policy framework for organic agriculture. In lieu of a formal organic policy, I look at how organic is understood and explained by the Doubling Farmers Income Committee in their report aiming to achieve this goal by 2022. DAC&FW has been assigned the task of hosting the Committee on Doubling of Farmers' Income (CDFI), and of implementing the findings of the Committee by the year 2022.

Before delving into the details about organic agriculture, it is worth looking at the overall report. The 14-volume DFI report is over 3000 pages long, and attempts to provide an overview of the approach the various agriculture-related ministries and departments will take in order to achieve "self-sustainable models empowered with improved market linkage as the basis for income growth of farmers" (Committee on Doubling Farmers' Income, 2018, p. ii). The stated goal is to go from an average annual farmer income (comprising both farm and non-farm income) of INR 96,703 (approx. 1,200 euros) in 2015-16 to INR 271,378 (approx. 3400 euros) in 2022-23 at projected inflation rates. The following four aspects form the basis of the report:

1. Sustainability of production
2. Monetization of farmers' produce
3. Re-strengthening of extension services
4. Recognizing agriculture as an enterprise and enabling it to operate as such, by addressing various structural weaknesses (CDFI, 2018b, p. iv)

The report identifies as a starting point the paradox of agrarian distress despite rising productivity in agriculture (CDFI, 2018b, p. v). This apparent paradox is to be resolved through, among many proposed interventions, greater private sector participation in the markets to improve efficiency, diversification into high value crops, and an enterprise or entrepreneurial approach to agriculture (Chand, 2017). A shift in research goals is also proposed: from the *Science of Discovery*, where new technologies are sought after, to the *Science of Delivery*, where the focus is on popularizing innovative technologies (CDFI, 2018d). In doing so, it purports to shift agricultural policy from one fixated on production to one that aims to achieve higher incomes for farmers in order to improve their welfare. The concept of yield gaps from sustainable intensification

(CDFI, 2018b, p. 41) rubs shoulders with calls for agroecological intensification (CDFI, 2018d, p. 51), without highlighting the potential conflicts that may arise.

Organic agriculture is discussed in volume 6 of the report, *Strategies for Sustainability in Agriculture* alongside Watershed Management, Rainfed Agriculture, Integrated Farming System, and Good Agricultural Practices. The goal of organic farming, according to the report, is "to create integrated, humane, environmentally and economically sustainable production systems, which maximize reliance on farm-derived renewable resources and the management of ecological and biological processes and interactions. The purpose is to realise acceptable levels of crop, livestock and human nutrition, protection from pests and disease, and an appropriate return to the human and other resources" (CDFI, 2018e, p. 41). At the same time, organic is described as being contentious and inefficient, with the demand for organic food emanating "from the desire for toxic-free (sic) safe food" (CDFI, 2018e, p. 40). Thus, it is opined that conversion of all cultivated areas to organic may jeopardize the national food system due to the reduction of crop yields. Organic is considered to have higher yields than conventional systems in two situations, however: under conditions of climate extremes, and in smallholder systems (CDFI, 2018c, p.41). The proposition put forward, therefore, is for a geographically-determined spread of organic agriculture., with areas having yields below average to be targeted first, along with areas that have a low rate of use of agro-chemicals (CDFI, 2018c, p.41). The target area proposed for organic farming is 10% of the cultivated area, roughly 14 million ha (CDFI, 2018c, p.59). Organic is described as encompassing other farming methods like bio-dynamic agriculture, Rishi Krishi (Vedic Farming), Panchgavya Krishi (Farming based on bovines), Natural Farming (Subhash Palekar Natural Farming/ Zero Budget Natural Farming), and Natu-eco Farming. A key feature discussed at length is the various kinds of compost or bio-fertilizer to be used (CDFI, 2018c, p.44-47), perhaps due to the fact that the National Centre of Organic Farming was previously the National Bio-Fertilizer Development Centre (Alvares, 2010, p. 83). The case-studies highlighted are Integrated Organic Farming Systems (p.51), and a Cluster approach to Organic production (p.57). Curiously, no mention is made of organic certification in this chapter, nor in any other

chapter. However, certifications (not specific to organic) are seen as a way of facilitating access to pan-India and even export markets (CDFI, 2018c).

Indeed, there are many things that are considered integral to agroecological notions of organic agriculture that are not discussed in the section on organic agriculture, but are instead highlighted as innovations proposed by the panel. Secondary Agriculture is one such example. While a comprehensive definition is provided (CDFI, 2018a, p. 14), I will briefly summarize it as follows: Secondary agriculture is any productive activity at small-enterprise level that utilizes locally sourced materials using appropriate technology. *Secondary Agriculture* is promoted as a new concept, without mentioning organic agriculture or agroecology, which have arguably developed this concept (Gliessman, 2014). As I found out through interviews, a successful shift to organic is not possible without increasing and improving activities in the so-called *secondary agriculture*. The arrogation of such core ideas acts as a new point of departure for potential lines of flight: shorn of context, the ideas are given a new identity as ideas coming from the Committee on Doubling Farmers' Income, potentially giving them access to places they would not have otherwise reached. At the same time, the risk of these ideas not being implemented in the right spirit remains.

### *5.3.2 State Level*

The most significant contributions to organic policy in India have been made at the State level. Sikkhim is now widely known as the first Organic State in India, winning worldwide recognition after receiving the FAO's Future Policy Gold Award for its organic policy (FAO, 2018). Several states across India like Karnataka, Kerala and Mizoram have officially adopted policies for promoting organic agriculture, although they remain in the minority. Thottathil details the negotiations between different groups that went into the formulation of Kerala's 2010 Organic Farming Policy, illustrating the successful mobilization of different groups to collaborate on a common goal (2014). West Bengal currently has no organic policy, so I examine a proposed *Roadmap for Organic* presented by the Associate Chambers of Commerce (ASSOCHAM) in West Bengal.

Assocham suggest that a "Mission Organic West Bengal" be launched by the state, which they estimate would lead to "wealth accumulation of worth [sic] INR 119.99 Billion in next 5 years" (approx. EUR 1.5 billion) (Associated Chambers of Commerce and Industry of India, 2011). They calculate that 35% of the land area can be converted into certified organic cultivation areas. The state, it is proposed, can help with market development, pricing support, and facilitating backward and forward linkages throughout the value chain with help from international retail giants. The report calculates that such interventions will lead to exports worth 70 million euros, generating around 2 million jobs in the process (ibid, p.2). Organic agriculture here is used to refer only to certified forms (ibid, p.1), with certification playing a pivotal role in the establishment of organic (ibid, p.27). A shift away from field crops to horticultural crops, including exotic crops, is suggested (ibid, p.22). Organic aquaculture is seen as another promising area, and is called "the biggest new opportunity" (ibid, p.23). A West Bengal Institute of Organic Agriculture (WBIOA) is to be set up, to offer certification under Participatory Guarantee Systems which are considered to have standards which are "often the same as for the third-party certified production" (ibid, p.28). A few years before the DFI report, the ASSOCHAM report calls for the need to ensure a more than doubling of net farm income. They calculate that the lowered input costs and higher premiums will help increase average per annum farmers' incomes by 250% from INR 6,272.18 (approx. 80 euros) to INR 15,680.45 (approx. 200 euros) in five years (ibid, p.30). The role of farmers is reduced to three bullet points, each of which discuss different ways in which farmers can organize themselves into groups to consolidate land, to grow the same commodity over large areas, and to access credit (ibid, p.30). While certain institutional changes are advocated, the most radical of which calls for a reorientation of research, education and extension services (ibid, p.30), a market-driven understanding of organic is key. Organic is understood narrowly, as a way of accessing new markets, as an instrument to coordinate along the supply chain, and to change the type of crops being grown. ASSOCHAM identifies itself as a catalyst, but not more, perhaps limiting its stake in the actual implementation of its recommendations.

Despite the absence of any real policies in place, some state government agencies have been involved in helping the spread of organic agricultural practices. Two people at

government level were identified in my interviews. One was Anupam Paul, an assistant director at the Agricultural Training Centre (ATC), Fulia in Nadia district. The other is Purnendu Basu, the former agriculture minister of West Bengal and currently in charge of the Department of Technical Education, Training & Skill Development.

West Bengal, like other states, has a wide network of agricultural extension offices, and Agricultural Training Centres. In recent years, under the direction of Anupam Paul, ATC Fulia has become well-known for its work on the conservation of indigenous rice varieties. He organizes annual workshops for members from other extension offices to come and learn more about indigenous rice. In recent years, various landraces of black rice have gained popularity under his direction, and is seen as a promising new variety. Through his research and network of researchers at other ATCs, he has identified promising landraces that can tolerate long periods of submergence, saline conditions, have high yields, can be eaten without cooking, or are aromatic. He shares the seeds of these varieties with farmers from various districts, who sometimes bring their own seeds, along with a story associated with the rice. He is also instrumental in implementing the clustering of farmers in different villages to farm organic rice under the PKVY schemes. He is going to be transferred in the year 2020, however, and it remains to be seen whether his work will be continued.

Purnendu Bose was West Bengal's Minister for Agriculture from 2011 to 2017, when he was abruptly moved to the Department of Technical Education (Datta, 2018; "Minister Purnendu Bose Shifted from Agriculture Department to Technical Education," 2017). During his tenure, he initiated a work on a drafting a policy for organic farming in the state (Press Trust of India, 2016), but the process remains unfinished. He helped set up infrastructure for marketing of organic goods in the city of Kolkata, with four organic hats (periodic markets) built in various parts across the city. Despite having been shifted to the Department of Technical Education, he is still active in the promotion of organic agriculture, using it as a medium for the technical education of rural youth. The current advisor to the West Bengal State government, Pradip Kumar Majumdar, is the chairperson of West Bengal Agro Industries Corporation Ltd., and is thought to view organic agriculture in an unfavourable light (Datta, 2018).

This reliance on having the right people at the right place illustrates a gap that might have been filled with a formal state-level policy. In the absence of formal policies or stances, spread of organic agriculture is slow, and illustrates the risk of smooth spaces, where gains made can always be wiped out by a sudden change in the terms of negotiation, or by the success of a competing idea.

### *5.3.3 Regional Level*

Experimentation and dissemination of organic agriculture in India has also been promoted by various key individuals and civil society organizations, which I have crudely grouped together in the regional level. People like G. Nammalwar (founder of Low External Input Sustainable Agriculture movement), Shripad Dabholkar (Natueco farming), Bernard Declerq (dryland agriculture) are just some of those considered to be pioneers of organic agriculture in their regions, if not across India (Alvares, 2010). Vandana Shiva (founder of Navdanya) is well-known internationally, and Subhash Palekar, the founder of Zero Budget Natural Farming (now called Subhash Palekar Natural Farming) is widely considered to be a proponent of organic agriculture, despite his vocal criticism of "the commercial organic food sector" (Khadse et al., 2018, p. 213). Some of these pioneers in turn were strongly influenced by Masanobu Fukuoka, who is widely credited with creating the concept of Natural Farming in Japan (Fukuoka, 2010). Another strong impetus has been the recent surge in a back-to-the-land ethos, where first-generation farmers take up organic farming (Beelen, 2019; Iyer, 2018). These individuals and movements operate in a relatively smooth space (as opposed to a striated space, where categories and boundaries are more clear and distinct), making them almost illegible but effective nevertheless.

As an example of this level, I look at a policy document for organic agriculture in West Bengal presented by Kisan Swaraj Samity (Farmers' Sovereignty Movement). This movement is a regional association started by an NGO worker at Development Research and Communication Services Centre (DRCSC) as a platform for the various members of the network, chiefly farmers to communicate with each other (see Figure 9 for location). It is a coalition that includes consumers, producers who want to grow organic food, and

of civil society organizations. They have an online presence, with regular posts to a group on the social networking site Facebook and occasional video uploads to Youtube (a popular video-sharing website) that showcase farmers' knowledge from different regions of the state. In the year 2017, they produced a policy document that they use to guide their understanding of organic agriculture and the notion of sustainability, and to make demands to other governmental actors on the basis of this document. The document itself is in the local Bengali language, and focuses on issues that are not addressed as explicitly in other actors' understandings of organic. One of the key arguments the group makes for organic practices is that it helps promote farmers' autonomy, citing issues such as seed rights (production, storage and distribution) and increased control over agricultural inputs through an increased reliance on ecosystem services and renewable energy. A focus on ecological services and biodiversity conservation by proper management of common property resources forms a core part of the understanding put forth in this document. Education and knowledge sharing is a key concern, evident from the calls for Farmer Universities (Krishi Vishwavidyalay), and collaborative research projects involving farmers and local governments. They also seek to use such knowledge-sharing to guide existing organizations like credit co-operatives, NABARD Farmers' Clubs, and Farmer Producer Companies to adopt policies more in line with organic agriculture. Where certification is talked about, it is a region-specific PGS form. Certification here is seen more as a means rather than an end in itself. A gradual reduction of state support (in the form of subsidies) to synthetic pesticides, herbicides and fertilisers is called for, as well as bans on class 1-A and class 1-B pesticides. Where these inputs are used, the document exhorts adherence to the international code of conduct for pesticide management as proposed by the FAO. Demands are also made to the state government to set up a committee to formulate organic policy in the state, to enable more research and marketing support for organic produce. The idea of organic shown here is the broadest among the three levels discussed, encompassing a wide range of goals as outlined in the four principles of organic agriculture. Local understandings of what constitutes organic are prominent, and provide several characterizations like *bishmukto*(poison-free) and *nirbhyajal* (unadulterated). Prioritization of *sthaniyo* (regional) and *deshiyo* (indigenous) products is considered integral to the idea of organic.

## 5.4 Cross-Cutting Case

I have tried to show that the spread of organic agriculture is not a hierarchically driven process. In this fourth sub-section, I try to use a more AT influenced approach, where an assemblage brings together heterogeneous components to give shape to desires.

I focus on the case of Development Research and Communications Services Centre, interviewing one of its founding members, Ardhendu Sekhar Chatterjee, on what he understands by organic agriculture and by illustrating the various connections which shape his work.

Ardhendu Chatterjee, founding member of DRCSC recounted the formation of this NGO and its evolution over time in response to the gradually changing focuses of International NGOs, and how organic agricultural practices were employed as part of this evolution. He is also my father, providing me with unique access to this history.

Chatterjee successfully adopted an agroecological approach to organic agriculture, learning from farmers and then mixing in new techniques appropriate to the situation. He has collaborated closely with some of the well-known figures in the development of organic agriculture in India, such as Bernard Declerq in Auroville, and has also been an interpreter for Masanobu Fukuoka when he toured India. He is well known in India and West Bengal for having trained many grassroots workers in strategies for improving agriculture through the implementation of organic agricultural practices that can more specifically be described as biologically integrated farming systems. Some of these development workers have also later established organizations in other Indian states, and in other countries like Cambodia, giving him a unique network and perspective on the rhizomatic spread of organic in India.

The original goal of DRCSC, however, is not to spread organic agriculture, but to work with the poorest of the poor to improve their capacities to improve their livelihoods. Organic agriculture is just one of the many tools that they employ in seeking to achieve this goal. The crystallization of this goal can be traced back to his personal upbringing and network of friends, but it was also heavily influenced by the work of international NGOs (INGOs). Frères des Hommes was one of the first INGOs to provide funding and

volunteers from France to the local organization that would later become DRCSC. This INGO aimed to bring about sustainable development through small-scale agriculture, social economy and democratic citizenship, and sought to do this by facilitating partnerships between European and local organizations. Chatterjee observes that this required a radical break from the way NGOs were generally operating in India post-Independence (1947).

In the years following Independence from British colonial rule, the new Indian government tried to improve the welfare of its citizens, and where it was unable to reach, NGOs would step in to fill the gap. They provided the connection for the last mile, Chatterjee explained, and were perceived as working in tandem with the government to provide community services like education, health and sanitation services. These NGOs included professional associations, chambers of commerce, Gandhian groups and faith-based organizations. They were largely composed of middle class Indians with a desire to help improve the condition of other members of society. What these *NGOs of the Gaps* did not do, however, was to ask questions of why the government was failing to provide these services, or to question the goals of development. Things reached an inflection point when Emergency was declared in 1975 in India, and the government was deeply distrustful of any elements that might question their legitimacy. Freedom of expression was curtailed, and several measures that allowed the government to exert control over other societal groups were enforced. One of these instruments was the Foreign Contribution (Regulation) Act, 1976 (FCRA), which, among other things like tamping down political dissent, led to the categorization of NGOs into three broad categories: NGOs that needed no authorization from the government to receive foreign contributions, the NGOs that could receive foreign contributions with prior approval, and NGOs that could not receive any foreign contributions. The latter were NGOs that were thought to interfere with the government's goals of state-driven development projects. Examples include opposition to dam construction by citing the environmental and social costs, or human rights-based opposition to land-grabs for mining or setting up economic zones. And while the Indian economy was eventually opened up in 1991, the FCRA continued to exist, being revised in 2010 and used recently to cancel access to foreign contributions for NGOs. DRCSC managed to comply with the regulations,

and changes in the format of INGOs also helped. INGOs were now consortiums with state actors like BMZ and GIZ now collaborating with INGOs to extend help to Indian NGOs, granting them more legitimacy in the eyes of the Indian government. But the regulatory changes DRCSC had to make in order to comply with regulations made it difficult for DRCSC to ensure that the beneficiaries of their activities (the villagers) had representation in decision-making of the activities. This has led them to consider the possibility of Farmer Producer Companies (FPCs), a topic that will be discussed in the coming chapters. The lack of representation of the people who receive assistance in the decisions about the kind of assistance they are to receive is one dimension of the greater paradox inherent in supplying help to enable self-help. This paradox is discussed at length by philosopher and economist David Ellerman, who discusses the idea of autonomy-respecting development assistance in his book *Helping People Help Themselves* (2006). Borrowing from Ellerman's analysis of this paradox (2006) to help explain DRCSC's understanding of organic agriculture, innovations in organic agriculture are innovations that start with the learner's present knowledge, and a result of self-directed learning by the farmers as they grapple with the various pressures they face in the field. DRCSC sees organic agriculture as a suitable entry point, given its familiarity to the learners and the opportunities for experimentation that can be used to test any recommendations. The reasoning behind why organic approaches might be better are constantly being validated and shared by the farmers and field-workers, and training sessions use the Socratic method to engage and encourage participants. Crucially, skills learnt through organic agriculture are hoped to be transferred to other allied fields like food processing and community resource management, allowing for an improvement of overall living conditions.

This understanding means that Chatterjee is hesitant to promote organic certification as a way to spread organic agriculture, as it may easily devolve into yet another form of exerting control over producers and of depriving them of a fair share of the final price paid by the consumer instead of empowering them. He feels that certification might end up taking away the autonomy of the farmer to make decisions. Another point of worry for him is the emphasis on marketing and capacity-building of certification

agencies over other concerns, such as capacity building of producers, capital creation and distribution, and management of scarce natural resources.

DRCSC works not only with INGOs, but with district-level NGOs, helping them to build up capacities to deliver on their goals. Collaborating district-level NGOs like Kajla Janakalyan Samiti (Kajla Area Public Welfare Association) and Swanirvar (Self-Reliance) work at village and block level, and their trainers and field workers use DRCSC as a nodal agency for communication and exchange of information with their counterparts in other districts. They also receive occasional funding, which comes to DRCSC through successful grant applications made to INGOs and development aid, like the Green Climate Fund (Schalatek et al., 2012). Through such field partners as well as the establishment of directly managed field offices, DRCSC has an extensive reach in the state of West Bengal.

It was through working with Kajla Janakalyan Samiti that Amit Bera, a farmer in Purba Medinipur and my informant, first came into contact with the idea of organic methods of doing agriculture. He was interested in learning more, and soon caught the attention of DRCSC, who helped him to further refine the theoretical understanding of biologically integrated farming systems. Soon, he was converting this knowledge into practices while reaching out to other sources of information about organic. In Chapter 7, I delve deeper into the farming practices of Amit Bera and the different farmers he has had an impact on, as a way of understanding how organic is being assembled.

# 6. Organic as a Capitalist Assemblage: Understanding The Role of Companies in Territorializing Organic Agriculture in India

## 6.1 Introduction

This chapter explores the features of companies involved in trading organic agriculture produce in India. Drawing on the extensive literature on companies involved in organic in India, an overview of the corporate landscape of India will be first presented. Four main questions are addressed: (1) what the understanding of organic agriculture is, (2) how prices for organic produce are set, (3) how spaces and geographical aspects are managed, and (4) how the various actors involved are managed. In doing so, it will highlight the importance of companies as coordinators of an assemblage that is difficult to organize (the difficulties are reflected in the interviews) using the certification as an instrument of governance. The results section reveals the strong link between the concept of organic and of space, but not necessarily in terms of localizing consumption. The most notable example of the link is the idea of *clusters*. It also reveals a form of organic that is largely "watered down" (Seufert et al., 2017), with a focus on the absence of pesticide residues and a regulated transfer of trust. Such aspects suggest a striation of the concept of organic in an attempt to make it legible. Yet paradoxically, the form of organic here can be understood more as a process of smoothing of striated space, where existing forms of production and sale for monetary profit try to incorporate a new goal of environmental sustainability. It also reveals the intricate system of trust around organic certification which requires significant investment. This investment can only be justified if it translates to greater profits, making the spread of certified organic agriculture contingent on profitability as the main premise, and thus limiting the extent to which it can spread into marginalized areas (van der Ploeg, 2014), and limits production systems to the commodities that can be certified. The chapter ends with a section on farmer producer companies, a recent development in India which attempts to give farmers the capacity to link into lucrative value chains.

## 6.2 Overview of Companies and The Indian Organic Market

Organic agriculture when discussed in literature gauging its prospects for spreading is often understood as *certified organic* food which is produced in line with stipulations of a private standard (see chapters 4 and 5 for detailed descriptions). With steady double-digit growth rates over the past decade, the certified organic market remains one of the fastest growing food sectors worldwide (Willer & Lernoud, 2016). The Indian market for certified organic food was valued at around USD435 million in 2015 (390 million euros), and was forecast to grow at a compound annual growth rate (CAGR) of a little over 25% for the next five years, according to the market research company TechSci Research (2016). The market value is thus expected to almost quadruple to a predicted figure of USD 1,638 million (EUR 1,466 million).

There have been several developments that make it lucrative for companies to be involved in the organic market. In 2017, the Cabinet Committee on Economic Affairs removed quantitative restrictions for organic products that can be exported (excluding pulses and lentils), restrictions that remain in place for non-organic products, as a way to promote organic exports and thus double farmers' incomes by 2022 (Mukherjee, Dutta, Disha et al., 2017). This interest in exports is in sharp contrast to the domestic situation, where a comprehensive policy on organic products for the domestic market does not exist (ibid). Only in 2017 did the Food Safety and Standards Authority of India (FSSAI) indicate that it was going to address the need for regulations (A. Mukherjee, Dutta, Disha, et al., 2017).

Several studies, both academic and market research reports, have looked at the rapidly burgeoning organic market in India. Osswald and Menon (2013) looked at three major urban markets of South and West India, identifying and classifying the systems of production, distribution and marketing. TechSci Research, a market consulting firm, publishes annual market research reports on the state of the organic market in India. These reports focus on the largest companies involved in organic value chains and providing figures for the extent of the formal organic market in India. Perhaps the most in-depth study has been conducted by Arpita Mukherjee et al. (2017) in their book *Organic Farming in India: Status, Issues and Way Forward*. They survey 83 companies involved in marketing organic food products, and some of their figures are used in the following section to help understand the formal organic market in India.

Research into organic rice production and marketing in India has largely been restricted to cases involving Basmati rice, and to rice cultivation in the South. A study of organic basmati rice value chain at the company Sunstar (Alam, 2007) focused on rice production for export markets, and found that farmers "require considerable support in converting from conventional to organic farming" (p. 35), highlighting the important role that companies play. Eyhorn et al. (2018) studied a project initiated by Coop, one of the largest retail companies in Switzerland and found that SHF participating in "certified basmati value chains that ensure organic and fair-trade prices enables farmers to substantially improve the profitability of paddy cultivation" (p. 13), with this particular study finding a 105 % increase in profit at the farmer level. These analyses focus on the company as a key actor involved in the implementation of organic certification in India. Companies are thus seen as a key actor when attempting to access export markets, and play a decisive role in the selection and recruiting of farmers.

*Table 4: Top ten largest companies by revenue in millions USD for the year 2015*

| Company Name | Revenues (in millions USD) 2015 |
|---|---|
| Organic India Pvt. Ltd | 29.7 |
| Conscious Food Pvt. Ltd | 19.8 |
| Ecofarms (India) Pvt. Ltd | 14.0 |
| Morarka Organic Foods Pvt. Ltd | 12.6 |
| Sresta Natural Bio Products Pvt. Ltd | 10.7 |
| Gayatri Organic Foods Pvt. Ltd | 5.1 |
| Navdanya Agrotech Research Foundation | 4.6 |
| Fabindia Overseas Pvt. Ltd | 3.3 |
| Pristine Organics Pvt. Ltd | 2.5 |
| Suminter India Organics Pvt. Ltd | 2.5 |

Source: Adapted from TechSci Research, 2016)

In Table 4, the ten companies in the organic sector with the highest revenue in 2015 have been listed. All the companies mentioned have a pan-India presence, and most companies also supply the export market. Only Navdanya Agrotech Research Foundation is not a private limited company (abbreviated as Pvt. Ltd); the others are companies under private ownership. These companies also deal in a wide portfolio of

products, both certified and non-certified organic. Fabindia Overseas, for example, uses a *natural* label on its products, a label which has no regulatory meaning. Navdanya Agrotech also commands a premium price on products through its widespread reputation.

Mukherjee et al. (2017) found that 69 of the 83 companies interviewed which were involved in trading organic products realized an increase in revenue (the median value of this increase being in the order of 10-20%) in a two-year window they sampled. This suggests that most companies stand to realize an increase in revenue when working with organic products. When further disaggregated into product types, it was found that companies working with rice experienced this median value of revenue increase the most. The question thus arises as to why more companies do not choose to go organic, given the higher profitability of this sector.

## 6.3 Conceptual Framework

Gereffi, Humphrey and Sturgeon based their theory of value chain governance, known as the GVC approach, on the consideration of three factors, namely complexity of knowledge transfer, codifiability of knowledge, and the capabilities of actual and potential suppliers (2005, p. 85). The GVC approach has been successful in creating a corpus of research describing the power relations in supply chains for complex products like automobiles and electronic equipment. However, the approach of applying the Global Value Chain framework to issues of governance in agricultural production chains has proved to be difficult. The commodities dealt with are often not complex in and of themselves. Rice, for example, does not require the sophisticated coordination found in, say, a bicycle-producing value chain. However, it has contributed to the characterization of global food chains in certified organic agricultural products in the following way: “If the complexity of the transaction is low and the ability to codify is high, then low supplier capability would lead to exclusion from the value chain” (ibid., p. 87). In the context of agricultural value chains, the introduction of private standards for sustainability (organic certification) purport to be a heightened ability to codify production for low-complexity products (agricultural produce), putting the onus on farmers (as suppliers) to increase their capabilities by conforming to the regulations. In

the situation where suppliers are excluded from the value chain, they conclude that "[w]hile this is an important outcome, it does not generate a governance type per se" (ibid., p. 87). Governance outside the value chain, in other words, remains outside the frame of inquiry. On the other hand, through the application of GVC analysis, framing the issue of organic certification as one where SHF have to increase their capabilities in order to access lucrative global value chains has emerged in recent years (Fromm, 2007; Lee et al., 2012) .

However, geographers have been dissatisfied with this narrowly defined response option that tries to identify the right incentives, which are assumed to then lead to the right practices (Briassoulis, 2017a). One key reason to challenge these predominant ontologies is to facilitate reconnection of the diverse themes of food, justice and environment (Forney, 2016). Taken together, this themes constitute agri-environmental governance, which frame questions about the value chain within a much wider perspective, that of an assemblage mediating between the natural environment, the various social entities and the economic interests involved in the production of the commodity. In this chapter, I seek to understand the role that the company plays in the agri-environmental governance assemblage of organic agriculture in India.

## 6.4 Methodology

This chapter relies mainly on the interviews conducted with the companies at BIOFACH held in New Delhi, India in November 2017, and in Kolkata. It also contains information from interviews at the BIOFACH held in Nuremberg, Germany in mid-February, 2017. BIOFACH is a trade exhibition for certified organic produce that started in 1990, first catering to the German market and then opening to the wider European market in 1999. Since 2001, it has been organized by the NürnbergMesse Group, who claim that BIOFACH is "the world's leading trade fair for organic food" (NürnbergMesse GmbH, 2020). Along with a considerable scaling up, the NürnbergMesse Group has also organized this trade fair in other countries, like India.

Interviewees were representatives found at the booth of each company or organization selected from a list compiled of all attending companies listing organic rice from India as a product in their portfolio. Only interviews that lasted longer than ten minutes have

been included. Twelve interviews out of fifteen conducted have been included here (three interviews were too short to be useful). Nine of the interviews have been anonymized to protect business confidentiality. The Uttarakhand Organic Commodity Board (Int.C03), being a quasi-public actor, is not anonymized. An interview with the President of IFOAM (International Federation of Organic Agricultural Movements) is not anonymized as well (Int.E09). Given the special nature of BIOFACH, an NGO is also included within the list of interviews. Names in the Meet and Greet (Int.C12) are not anonymized as the event was open to all attendees of the trade fair. Interviewees were asked questions in a semi-structured interview, with follow up questions asked when more information was thought to be necessary.


*Figure 5: Map depicting the various states of India mentioned in the chapter. The river Ganges flows from Uttarakhand, a state characterized as pristine in comparison to the states downstream, making it a sought-after location for organic production.*

One key limitation to keep in mind is that attending international trade shows like

BIOFACH tend to be expensive in comparison to the many small regional fairs across India. There is thus a bias in the sample towards financially successful companies, as well as companies that are willing to spare the expense for greater exposure. The representative at the stall may also not be the most informed person to explain the company's understanding of organic agriculture, or the general procurement strategy. However, companies involved in organic agriculture tend to be smaller and thus the representatives were generally well-informed.

## 6.5 Results

The results are divided into four sections based on the questions laid out in the introduction: (1) How the companies understand and render technical the concept of organic, (2) how the prices for organic produce are decided, (3) how spaces and geographical aspects are managed, and (4) how the different actors involved are managed. Together, these questions explore the process of the gathering and cohering of a heterogeneous group of relatively autonomous components (Anderson & McFarlane, 2011; Briassoulis, 2017a) These questions attempt to answer from the vantage point of a company: What does the OA assemblage do? How does it produce governance? (Briassoulis, 2019).

### *6.5.1 What is Organic?*

Within an AT approach, the way in which words are defined and operationalized needs to be understood and linked to the practices it engenders. In an effort to understand how the implementation of organic standards enacted agri-environmental governance, one of the questions I asked interviewees was how they defined organic, and the processes involved in supporting this definition of organic. In the case of companies, I found that organic was understood as a response to the disruptive technologies of the Green Revolution, with an emphasis on health and a return to traditions. This narrowed definition is a key step in *rendering technical*. As Tania Murray Li explains in her research on attempts to change landscapes in Indonesia, "to render a set of processes as technical and improvable an arena of intervention must be bounded, mapped, characterized and documented; the relevant forces and relations must be devised

connecting the proposed intervention to the problem it will solve" (2007, p. 125). Once organic agriculture is understood as proscribing practices key to Green Revolution agriculture, the next step is to prove to potential buyers that the farmers do not use those practices. This is accomplished through various modes of certification. The certification allows for the transfer of trust that steps have been taken to meet certain requirements. In the following sub-sections, I report the answers given by the companies.

*6.5.1.1 Organic Agriculture as A Response to The Green Revolution*

Organic was understood by most companies to be a form of agriculture that had been practiced up until the Green Revolution. It was the way "our forefathers farmed" (Int.C01), and thus "nothing new to India" (Int.C02). Organic farming entailed "growing things from where they naturally are, genuine locations, where the products are originally from" (Int.C02). This included farming practices such as rotation, with examples of oilseeds and pulses provided, as well as mixed cultivation, where livestock like cows were also integrated into the production system. Only one company (Int.C06) understood organic as a necessary precursor to increased biodiversity in the fields.

Organic farming was also portrayed favourably as a way to safeguard health, both of the farmer and of the environment in general (Int.C03). It was understood to help prevent the deterioration of land which was damaged by the excessive use of synthetic fertilizers and pesticides (Int.C03). Company 02 portrayed organic agriculture as a way to protect "illiterate farmers from fertilizer and pesticide companies that promote overuse of inputs" (Int.C02). Due to this way of helping both producers and consumers to deal with health issues, Company 05 considered organic to be a "clean business", which was a key reason for our interviewee to start the organic business. Farmers' health was claimed to be positively affected not only by training to help reduce the use of pesticides, but also by paying more attention to their diets (Int. C06). Company 06 explained that they trained farmers to first take care of their dietary needs from their own production and then sell the surplus, which was not the case for most other companies. Reduction in use of external inputs also had the added benefit of reducing expenses for the farmers (Int.C05, C06). This was a key aspect that the companies believed prompted farmers to

farm in an organic manner. The absence of pesticides was widely seen as a key determining factor, a way of differentiating what was organic and what was not (Int.C01). The absence of pesticides had to be verified through laboratory tests for pesticide residues, something that will be explored in more detail in the following passages. One company (C06) was also heavily involved in seeking to stop subsidies on synthetic inputs for agriculture, and instead directing them towards organic agriculture.

*6.5.1.2 Third Party Certification to Support Organic Agriculture*

Third Party Certification was viewed by most companies as an "elaborate system of trust" (Int.C01) through which confidence in organic produce could be maintained. As one interviewee remarked, it was a matter of documentation (Int.C03) required to become "legal organic farmers" (legal in the sense of being formally recognized). Certification, as I found out, was a key tool in the *rendering technical* of trust in the system to deliver on the promise of organic. Certification is a key component of standards, which are a "means by which we construct objective reality", albeit a reality constrained by time and space (Busch, 2013). Trust becomes tangible, an object that can be recorded, valued, transferred, and communicated through several key steps.

Documentation was identified as an important first step, and one of the difficulties to be surmounted. For some companies, it was possible to rely on other parties, hired expressly for this task (Int.C02). Interestingly, various bodies, both governmental and private, help to pay for the costs of certification. Other strategies exist to provide a basis for trust, as was made clear when Company 02 explained their Internal Control System of TPC. They require each farmer to maintain records of farming practices in the form of *diaries*. Internal inspectors, who I found out in subsequent interviews (Int. C03) were employees of the Uttarakhand Organic Commodity Board (UOCB), checks each member's diary entries and corroborate with visits to the fields. They report their finding to the external agency that is tasked with issuing the certificate. These inspectors can rely on this information, but are also obligated by regulations to personally check at least 20 % of the farms through unannounced inspections at randomly sampled farms. The UOCB also provided some insight into how many farmers were certified in Uttarakhand. As of 2016, 50,000 farmers were certified under TPC-ICS

and 30,000 under PGS, a little over 1 % of the farming population (approx. 700,000 farmers) in Uttarakhand state. When quizzed about this low percentage, they explained that the hilly regions (roughly 65 % of the territory) were "default organic" with low rates of synthetic fertilizer and pesticide application. In these areas the average application of synthetic fertilizers amounted to 2.5 kg per hectare. The UOCB explained that other instruments, like Scope Certificates and Transaction Certificates, also existed (Int.C03). Trust is verified in other aspects of quality as well. One interviewee explained: "If a farmer says that moisture content is 17 %, the moisture should be 17%, not more than that" (Int.C02). The farmers are thus expected to demonstrate trustworthiness when selling their produce to the companies.

The next step is to delineate, to bound the object. Once the grain is procured, it is moved through a system designed to maintain the *purity*, and thus the trustworthiness of the produce. Clearly defined, physically separated areas have to be maintained, especially in the milling phase (Int.C05). Some of the companies we interviewed did not deal exclusively in organic produce. It was simply one segment of the product portfolio, necessitating such measures within their own warehouses as well. Different machines are used, to prevent contamination from residues left in the machines used to mill other produce. Different preservatives are used to conform to regulations: One example given to us was fumigation with carbon dioxide (Int.C05). These requirements are designed with the goal of delivering a *safe* food product to the consumer. At the same time, they represent significant hurdles for smaller businesses, which may not have the capital required to set aside equipment or space to comply with the requirements (Int.C09). In the case of small farmers explored in Chapter 8, one farmer explained to us that in lieu of using a different machine for organic produce, the miller would run a batch of rice bran from previously milled rice through the machine to clean it. There were also companies that did not have to get involved in the certification process; they simply purchased the products they needed in the marketplace (facilitated by the UOCB). Company 7 told us they sourced from only those farmer unions that were certified organic; it was their main criterion (Int.C07).

The third step was to communicate the efforts to consumers through the medium of the label. While all the companies we talked to had organic certification from Indian

NPOP standards, some displayed the USDA's NOP or the EU organic logo. These certificates could be issued under Equivalence Agreements where the NPOP accreditation procedure could be used to issue a NOP certificate for a higher price. For the EU, unprocessed plant products are given unilateral equivalence (A. Mukherjee, Dutta, Goyal, et al., 2017). One company explained that even if they did not have buyers in the countries overseas, being certified under several certification schemes would be perceived by customers as being more trustworthy, even though they had just received the USDA certification (Int.C08). The general feeling was summed up by Company C08: "In India, if you have a creditable brand, and if you're certified organic, you're in".

Highlighting the expressive nature of the label (as opposed to the nature of the content itself) Company 06 explained a different approach to certification. They only certified those products which were destined for export as they feel that their company name and reputation is enough for domestic consumers. This meant that while all the farmers they worked with were farming using organic methods, they only certified "those products which have potential for selling" (Int.C06). Certification was viewed more as a problem, as it increased the cost of the final product, and involved a lot of paperwork. When asked about the annual costs they had just for certification (since they paid for the farmer certifications), they mentioned a range between INR 600,000 and 700,000 (between EUR 7,000 and 8,500) per year for the 200 farmers they have under certification.

*6.5.1.3 Participatory Guarantee Systems to Support Organic Agriculture*

Participatory Guarantee Systems were viewed more favourably than expected. One company representative opined that PGS was a good initiative (Int.C02), even more reliable than the TPC. The problem with TPC, our interviewee explained, was that there was always the danger that "everybody takes their hands off" (Int.C02). In other words, the accountability is not clearly assigned to the various actors involved. PGS gets rid of this grey zone by assigning the responsibility to the producers themselves: I produce, I guarantee. In PGS, he finds a recognition of the practice of agriculture, where farmers are already following their own standards, their own way of doing things. Despite this approval, they continue favouring the TPC forms of certification. PGS is "simpler and easier, and effective", explained another (Int.C05). PGS was also understood as a

"stepping stone towards third party certified" (Int.C03), which was useful in the process of getting farmers accustomed to the way in which certification worked.

Indeed, there was only one company that expressed scepticism about PGS (Int.C08). After all, our interviewee reasoned, "[t]he peer group certifies itself, right? It's more trust-based, whereas third-party is more inspection-based" (Int.C08). The UOCB did not favour PGS as well, as potential buyers believe that the end consumer would not understand what PGS is (vis-a-vis TPC certified produce) and thus avoid sourcing PGS-certified produce. This point of view was echoed by Company 8, who reckoned that the consumers had a very low awareness of organic food products in general: "I didn't want to confuse them further, by adding multiple dimensions" (Int.C08), he explained.

In an interview conducted earlier in the year with Andre Leu, the President of IFOAM at the time, I gained insight into what PGS hoped to achieve. PGS is first and foremost about fairness in pricing, Leu explained: "It is about empowering the farmer by involving them in the supply chain" (Int.E09), involvement here referring to the ability of farmers to shoulder the task of certification, processing and labelling. With the right system, the SHF can earn a living without having to rely on a premium. While TPC for export involves many layers of complications to overcome in return for a price premium, PGS did not have significant price premiums. Andre noted that experimentation with PGS was a response to failing market structures depending on premiums, an experimentation necessitated by two key developments. Firstly, it is a response to the way agricultural value chains work. "Most of the money concentrates the higher you go up the chain, with farmers getting less than 5 % of the final price" (Int.E09). PGS aims to become viable by ensuring that prices are fair for both consumers and producers.

Secondly, farmers easily fall in debt when they are exposed to shocks in the global production system. These shocks include extreme weather events, diseases, and pest outbreaks, falling prices. These *black swan events* can derail well-intentioned efforts to link SHF to global markets. Such shocks can result in farmers being unable to recoup their investment, let alone benefiting from a premium. In gauging the success of PGS, the degree to which the system is truly participatory represents the crux of the matter, Leu explained, as he feels that participation is key to empowerment. In this regard, PGS is similar to but distinct from ICS (internal control systems), an extension of third party certification to groups of SHF (Int.E09).

These sentiments were echoed in an interview with an NGO with a stall at the BIOFACH in India (Int.C04). The NGO was focusing efforts on improving the linkages of SHF to the markets (Int.C04). While this does not appear to be much different from what many of the companies were saying they were doing, there was a key difference: the NGO wanted to change the way the markets operated. They wanted to change the markets to fit the needs of the SHF, a transformative agenda that PGS could potentially contribute to. Adding another dimension to the already complicated issue of certification, our interviewee reframed the question of certification, arguing for the need to go "beyond organic", to a concept explained as "being ecological" (Int.C04). To clarify his point, he highlighted a problem with cereal crops, like rice and wheat. "Their management is such that you need a large area of land to manage the crop", he explained (Int.C04). In order to make a profit from these crops, farmers would have to cultivate large areas, especially since they could not be grown with other crops at the same time in the same field. This would be the case for certified organic, even though it is generally considered to be the most stringent form. In such monocrop systems, rice would be grown with groundwater pumped up, and organic inputs like composts being flown in from other states, making the carbon footprint of that particular organic rice questionable. What was being achieved, then, was a substitution of the inputs being used, without any systemic changes.

In this section on the question of what organic is understood to be, I have shown how companies make organic agriculture a manageable problem by focusing on the key aspect of health, and using certification as a tool to communicate to consumers that this aspect is addressed. I used the concept of *rendering technical* an assemblage proposed by Li (2007) to analyze and contextualize the responses I got from our interviewees. I also see that "to the extent that we create standards for things, we implicitly create standards for humans" (Busch, 2013), as farmers, processors and consumers are expected to act differently in response to the organic standards.

### *6.5.2 Deciding on Prices*

Prices are a key component of certified organic agriculture and other private labelling initiatives. The promise of a better and fairer price is a key motivation for farmers to change agricultural practices (Ploeg, 2014; Soper, 2016). The premium price for certified organic is ascribed many roles. To compensate for lower yields by increasing the price per unit (Seufert & Ramankutty, 2017), to account for the cost of ecosystem services and pay for reduction of negative externalities and increase positive externalities (Pretty et al., 2001), to facilitate a transition to a more diverse agricultural production system (Tittonell, 2014), and importantly, for farmers to get better prices and thus improve livelihoods (Eyhorn et al., 2018; A. K. Mishra et al., 2018; Parvathi & Waibel, 2016). Sapna Thottathil deftly outlines these roles in the context of pepper cultivation in Southern India in her book *India's Organic Farming Revolution: What it Means for Our Global Food System* (2014). Price, therefore, is a key component of understanding organic certification. In this section, I sought to understand what factors companies took into consideration when setting prices for procurement of organic produce. I found that most companies decided prices based on prevailing market prices for rice, and then adding a premium. However, it was not clear how the premium price was helping to meet some of the goals mentioned above. In contrast to these approaches that see organic produce as a commodity, one company and one NGO explained their visions for improving prices that farmers got from producing organically.

#### *6.5.2.1 Price (Non)Discovery*

In response to our question of how prices for procuring organic rice were set, most of the companies tied the price to the minimum support price (MSP), a price that needs some explaining. The MSP is a price calculated and recommended by the Commission for Agricultural Costs and Prices, intended to act as a price floor for crops deemed to be important to national food security. It was originally conceived as a way to promote Green Revolution approaches to cultivation of mainly cereal crops, and is now "aimed at intervening in agricultural produce markets to influence the level of fluctuations in prices and the price-spread from farm gate to the retail level" (Chand, 2012). It is a price that is meticulously calculated, and not *discovered* through a market system. The government currently uses this price to procure crops for the Public Distribution System,

and to ensure that farmers are incentivized to produce *essential* crops. Given that it is a price floor, MSP must in theory be set at a point higher than the equilibrium price, but often ends up being lower than the prevailing market price in practice. A study using the formula used to calculate MSP found that the costs of cultivation were growing disproportionate to the value assigned for the final product, rendering paddy a loss-making crop. This disjuncture has been considered by some to be one of the key exacerbating factors of the Indian agrarian crisis (Sainath, 2018).

Private companies linking procurement prices for organic to the MSP thus came as a surprise. Company 01 offered a minimum of 10 % over the MSP or higher if quality was determined to be high at the time of procurement. Company 2 offered some bonus over the highest price for conventional produce in the market.

Company 8 explained how sometimes the price for organic would be below the MSP. "It is not really necessary that the MSP becomes the benchmark for the minimum conventional prices. It does happen in many of the cases, but in some cases, commercial prices of non-organic foods can go below the MSP that the government has offered, because the government ultimately can procure only so much" (Int. C08). There were other practical considerations as well. A farmer, faced with the prospect of lining up in a long queue at the official purchasing points, may say "Okay, fine, give me ten rupees lower [than MSP], I want to sell right now". This would mean that the farmer would not get the MSP in practice (Int.C08), making a price offered by the organic companies attractive.

Company 5 offered a premium over the prices set by the Agricultural Produce Market Committee (APMC) of the respective states. The APMC prices are determined at auctions in regulated markets. By doing this, the APMC aims to ensure that "farmers aren't exploited by middlemen and mercantile elements" by "establishing orderly and transparent markets" which are regulated (B. Goswami et al., 2017). The UOCB adopts a hands-off approach for price-setting, and they play no role in determining the price. Their role was to function as a platform for sellers and buyers like local retailers and exporters to exchange information and negotiate prices, not to interfere directly in the price-setting (Int.C03).

*6.5.2.2 Just Another Commodity?*

A key narrative that emerged from the interviews was the idea that organic rice was a commodity, no different from other commodities, organic or otherwise. One of our respondents was surprised at our question. "Calculate the price?" our interviewee exclaimed. "They quote a price, and we negotiate. No calculation. It's a commodity. We boil down to a number, and we produce it. It's a commodity; there's no value added. He's grown it, he's put in a price, we negotiate, and we get it. If there's a value added, then there is a calculation" (Int.C07). This stark example of the commodification of organic in direct contrast to the attempts to contextualize and re-localize food is part of what Julie Guthman and colleagues proposed in their *conventionalization thesis* where "organic agriculture increasingly takes on the characteristics of mainstream industrial agriculture" (Constance et al., 2015; Guthman, 2004). In these cases, the procurement of organic produce is treated as a cost centre, where success is defined as a minimization of costs of procurement (Aditya, Int.W01). What this means is a need to negotiate the price of the organically produced rice as low as possible in order to realize a higher profit margin. Company 08 was worried about this kind of commodification. "It's becoming too crowded and competitive", he remarked. "Undercutting [of prices] starts happening", leading to what he considers the wrong kind of growth that erodes credibility in the organic food market, leading people to question the genuineness of organic produce and depriving those who are practicing genuine organic farming of a remunerative price. Organic rice is a sought-after product, and taken together with the limited geographical area in which basmati rice can be grown, there is intense competition among companies to procure the rice. Curiously, however, this competition does not lead to better prices for farmers, apparently due to the fixed prices in the conventional markets. Farmers could decide which companies they wanted to sell their rice to, but prices offered to farmers did not differ that much. In fact, our interviewee felt that the farmers bore the brunt of this undercutting, as competing companies "push back on farmers and say, 'we can't pay you so much', and …pay less" (Int.C08).

This approach was put in contrast with efforts to reflect costs involved in the production, and even to communicate these costs. Company 06 was the only one which explained a systematic approach to the calculation of a price. "We calculate the cost of cultivation

of the farmer, our expenditures, and then we just take 10 to 15 percent for profit, and give to the buyer" (Int.C06). Thus, they represent the pricing needs of farmers instead of bargaining with them. They systematically calculate a cost, and then try to find and negotiate with buyers to get this price. Further, an interesting point was made by the NGO I talked to. One of the initiatives they were planning to test was to have a percentage bar that would express the allocation of the final price that consumers paid, as illustrated in Figure 6. He wanted customers to see what they were paying for. The goal would be to have the farmers get 70 % of the final price.

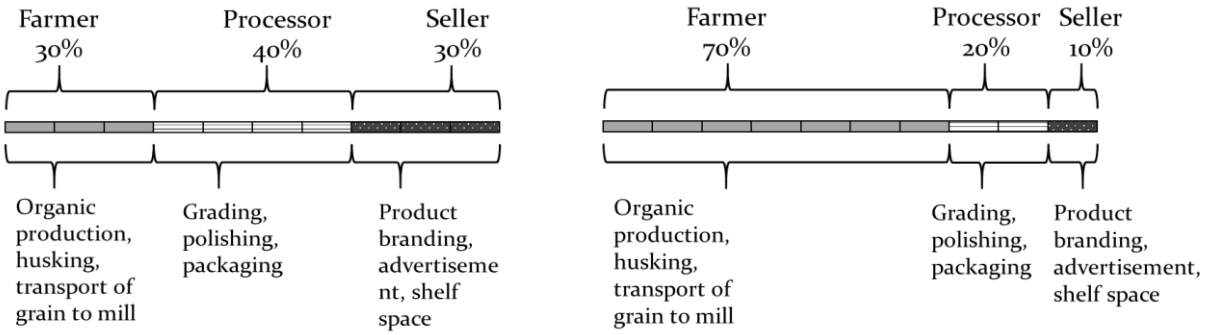



*Figure 6: Illustration of the concept of final share of price. Two hypothetical models are compared here. (Own illustration).*

### *6.5.3 Place Matters: Managing Place and Geographical Aspects*

In this section, I explore place as both a territorializing and deterritorializing component of organic agriculture. Territorializing processes "stabilize the identity of an assemblage by increasing its degree of internal homogeneity or the degree of sharpness of its boundaries" (DeLanda, 2006, p. 12), while deterritorializing processes work to break down the stabilization of the assemblage's identity. I found that the importance of place and location was emphasized in several ways, and on several scales. The location of Uttarakhand in the foothills of the Himalayas was a recurring motif. It represented a strong geographical imaginary of where organic rice should come from. Clusters were another motif. They were discussed in the context of maintaining purity, and of reducing transaction costs. The use of various communication technologies to

overcome geographical space also figured prominently. In the following section, I will explore each of these two ideas.

*6.5.3.1 The Foothills of the Himalayas*

Uttarakhand is located to the north of the Indian subcontinent, and includes within its territory the mouths of the Gangotri and the Yamunotri glaciers, the source of the two major rivers Ganga and Yamuna respectively that flow across the Indo-Gangetic plain. Many companies emphasized the benefit of this location in the context of organic produce. This location was simply less polluted (Int. C01, C02, C05, C11) than downstream regions, making it easier to ensure the product was free from unintentional contamination. This upstream location comes with its benefits, but also with responsibilities. "If we start polluting at the hills, [the] whole country will die" (Int.C02). The cooler climate (due to the altitude) was also understood as contributing to the lower frequency of pest attacks (Int.C02). The cool climate is also a key factor required in the cultivation of basmati rice. The aroma of basmati rice is generally attributed to the wide variation of temperature during the day. Any rice that is sold as basmati must also be grown in either Punjab, Haryana, Jammu, Northern Uttar Pradesh or Uttarakhand, as it is protected by Geographical Indication (Siddiq et al., 2012). Basmati, despite its lower productivity of around 2 tonnes per ha., half of that of some high-yielding varieties (Eyhorn et al., 2018), has a much higher profit margin because it is a much-desired rice in the global market. Companies are thus able to sell this rice for a price of up to 90 % higher than other rice varieties (Int.C11), making it a preferred rice type for all the companies interviewed. Place as origin was also important. If it is decided that a certain product is required, the company looks for farmers from that agroecological zone. There are thought to be between 15 to 21 agroecological zones in India, and the idea is that the products are sourced from the region where they grow well (Int.C01).

It is difficult to overlook the significance of the history of Uttarakhand as a precursor to the success of formal organic markets. Uttarakhand is a relatively new state (2000 CE) formed after seceding from Uttar Pradesh. The history of environmental activism in this state, however goes back to the Chipko Movement, inspired by Gandhian ideals of self-rule, non-violence and care for all (T. Brown, 2014). The state's organic movement has benefitted from the activities of the *Himmothan Pariyojana* initiative of the Sir Ratan

Tata Trust (a prominent charity foundation in India) which funded much of the work in laying the foundation for the spread of organic agriculture and of the Uttarakhand Organic Commodity Board, established in 2003. Vandana Shiva, a prominent Indian environmentalist, also founded the Research Foundation for Science, Technology and Ecology in 1982 CE, the precursor to Navdanya Foundation, established in 1991 CE and widely considered to be one of the most influential actors in the promotion of organic agriculture in India. Like Sikkhim, the much vaunted "first fully organic state in the world" (FAO, 2018), it too lies at the foothills of the Himalayas.

Companies (Int.C01, C02) repeatedly referred to terrace farming in the foothills of the Himalayas as an example of organic, but clarified later on that the rice they source is not from these areas, but rather from the southern plains of Uttarakhand state, where land sizes are considerably larger. While rice-farming does take place in hilly areas, surplus quantities are not generated, explained the representative of Company 02. Instead, they supply high-value crops like millets, dried beans and amaranths, crops which are grown in rotation with rice. Company 01, for example, told us that they work with 600 farmers who farm on 5,163 acres (approx. 2,090 ha.). While it would be unwise to assume the land is equally distributed among the farmers, this figure of 600 farmers working on a total of 2,090 ha suggests that the farmers are not all marginal farmers (the National census defines a smallholder as a farmer having land-size 1-2 ha, and a marginal farmer as having land-size below 1 ha). They explained that the landholding sizes here were larger in certain areas, and that these areas were the places they focused on (Int.C01). Despite this, the company claimed that they "target those villages where organic farming is required" (Int.C01). These places were characterized as those with no irrigation facilities, and reliant on rain. Places where pesticides have become a problem, with falling yields, and lower quality produce, all the while being squeezed by rising input costs. Company 05 sought to bring non-basmati rice from tribal areas in the central Indian states of Chhattisgarh and Madhya Pradesh (Int.C05). (Int.C06) worked with farmers who had less than two hectares. Their aim was to work with and support SHF. Other companies, like Company 11, seek out regions that are in the relatively hilly areas. They consult with some local NGOs and other organisations to find a good region to start in, and then set up model farms which are intended to show an example for

farmers who can decide if they want to grow organic rice. Within a few years, interested farmers start adopting the cultivation practices, to such an extent that there are whole valleys now that are completely organic (Int.C11). Company 06 explained that since their parent foundation – which was the main reason for their existence – was based in Uttarakhand, they would not be moving out.

*6.5.3.2 Clustering*

Most of the companies that I talked to tried to reduce transaction costs by having almost all processes in one physical area. Physical distance was thus identified as a potentially deterritorializing component, and had to be managed. The role of the company, as one interviewee remarked, was to try to meet the expectations of retailers, consumers, and distributors, and their own business, while cutting on costs (Int.C01) They cut costs by doing almost all processes on the same premises: processing steps mentioned included flaking, roasting and grinding; packaging; and space for warehousing (Int.C01). This allowed the company to respond to requirements for either the domestic or the export market, and process it accordingly. Each country, each product may be subject to different regulations (Int.C02), making it important for the companies to be able to meet each of the specifications as required. One step, however, that none of the companies interviewed could do on their own was the milling process. Company 2 clarified that in order to profitably run a rice mill, the quantities processed must be in the order of tens of thousands of tonnes (Int.C02), and he estimated the price of such a facility to be around 50 million INR (around 0.63 million euros). Company 02, for example, would take the rice procured in Uttarakhand to the neighbouring state of Haryana to mill it. The milled rice is then taken to another neighbouring state, Rajasthan, where their main premises are located (Int.C01). Company C05 also makes use of rice mills in Haryana, and also asks them to store the rice to age for one or two years, a process that adds to the quality of the final product (aged basmati is considered to be superior because of its lower moisture content). As mentioned in the previous section on certification, the mills are required to adhere to requirements that maintain distinctions between organic and non-organic produce (Int.C05).

The need for regional clustering as a way of aggregation was a focal discussion point at a Meet-and-Greet event at the BIOFACH in Nuremberg, 2017, hosted by Santosh Kumar Sarangi, Joint Secretary, Ministry of Commerce & Industry, Department of Commerce, Government of India. The discussion started with a request for new processing centres exclusively for organic rice and pulses by the companies assembled. This was expected to help raise the capability of organic producers to meet the requirements of European importers. It was argued that this increased capability would allow Indian producers to scale up. Locations like Maharashtra and the North-Eastern states were proposed, and after a flurry of whispered discussion among the company representatives, Maharashtra was acknowledged to be a good request. A further bold statement was ventured by one of the attending companies, a representative of Sunstar Overseas Ltd., saying that they were seeing how the European companies would take the raw products that they had imported from India and use them to make processed products, such as ready to eat meals. “Why can't we do it?”, he questioned, and others murmured assent (Int.C12). Mr. Sarangi replied that the government was interested in scaling up by setting up clusters for certain foods; these would be food parks based on the private-public-partnership (PPP) model. These clusters would also include value addition units and processing, as well as marketing divisions. A current example (for millets) in Rudrapur, Uttarakhand, was cited (Int.C12). Another group which raised a point was Ecocert, a French certifying body accredited to operate in India, which explained how factors beyond the scope of the organic certification were acting against them. Using the example of sugar, they described the problem as follows: While Indian products are intrinsically considered to be the best raw materials, the finishing of the processing left a lot to be desired. These things included the general finish of the product (including filtering, sorting and grading) which while satisfactory initially, would start falling as time passed, to a point where the clients felt they were not getting what they had agreed they would be paying for (Int.C12). These aspects are not mandated in the certification guidelines, but have more to do with the general operation and are often assumed to be a given.

In this section, I have shown how the certified organic assemblage needs to manage the territorializing and deterritorializing aspects of geographical space. Evocative images of

smallholder terraced rice farming in pristine settings express a certain imaginary that is amenable to commodification, while the problem of small quantities from fragmented field areas forces companies to seek farmers with larger land areas in a bid to turn a profit. Locating organic production in the pristine settings of the Himalayan foothills is appealing, but there are some immediately obvious problems of associating organic agriculture with pure and untouched nature. It greatly limits the spread of organic agriculture to such areas, which may not exist anymore because of the pervasive nature of the Green Revolution assemblage. It curtails the potential of organic agriculture to be used as a possible solution to places that have been *polluted* by the excessive use of synthetic pesticides and fertilizers, thus unable to keep the welfare of farmers as the main priority. Finally, I discovered that managing space is a key task for companies, and the idea of clustering in this context was discussed.

### *6.5.4 Managing Actors*

This section delves deeper into the participants of the assemblage, and how the companies manage the various heterogeneous personae, both human and non-human. With heterogeneity as a key characteristic, assemblages require constant effort to be held together, and may fall apart when desires do not align.

#### *6.5.4.1 Logistics and Backend Operations*

Many of the representatives I talked with explained in depth the complex logistics of the *backend* processes and the amount of work that needs to be done to keep the assemblage together and functioning. The term *backend* is a common term used in software development as a way of describing actions that are done behind the scene as opposed to the *frontend*, which describes processes with which clients can directly interact with. It is no coincidence that this term was used; a large number of entrepreneurs going into organic agriculture have a background in the information technology sector. This was perhaps reflective of an emerging back-to-the-land ethos in India, where "organic farming is pitched as a code that needs cracking, centring…on logistical intuitions, stubborn experimentation, or meticulous financial accounting" (Beelen, 2019, p. 137).

Interestingly, most of the companies did not interact directly with the farmers. A myriad of entities was mentioned when I asked them how they sourced produce from farmers. Procurement teams (Int.C01) work in concert with field supervisors and executives. The field supervisors send pre-samples collected from farmer groups to the procurement groups when the harvest is ready, first to get an idea about quality and then to send them to laboratories to test for pesticide residues (PR tests). It is on the basis of this sample that the procurement teams decide to go into the field; if the sample fails the PR test, the teams do not approach the farmer group for negotiations. Other companies dealt with farmer federations. The farmers are organized into groups and then into federations which range in size from 300 to 400 members, which makes it easier to source from farmers in the small and marginal category. Each farmer, Company 02 explained, sold around 100 to 200 kg of produce. Each farmer keeps a diary of farming practices (Int.C02). These diary entries form the basis of the checking mechanism for Company 02. Internal inspectors check the entries, and then the farm. They report their finding to the external agency, who can use this information, but are also obligated by regulations to personally check at least 20 % of the farms. Company 5 purchased from a rice miller in the state of Haryana. While the company did not know the farmers they were sourcing from, they trusted the rice mill to know the farmers they were sourcing the rice from. Company 08 procures rice through aggregators. “It's the aggregators who interact with the farming level, and we buy from the aggregators, who interact with the farmers directly” (Int.C08). These intermediaries group farmers together, and take care of the certification procedures. Within APEDA’s TraceNet system, they are assigned batch numbers. The aggregator’s batch number is then traceable to each individual farmer. They sometimes provide the necessary inputs, like seeds, or compost. These intermediaries work with something akin to a buy-back guarantee, based on seasonal agreements. The aggregators can refuse to buy the produce at the end of the season if it does not meet their requirements, but the farmer is obligated to ask them before selling the produce to someone else (Int.C08). The company thus maintains relations with the aggregator, and not the farmer. They try their best to keep buying from the same aggregators, as long as they are happy with the quality of the produce they get.

Company 6 was perhaps the only company I interviewed that worked directly with the farmers. They have a few employees who work closely with the farmers and with processors to ensure that no contamination takes place, and to inspect the documentation of the farmers to help them meet the standards required by the certifying body.

In trying to coordinate the large number of farmers associated with them, the use of communication technology became apparent. Popular messaging apps like WhatsApp Messenger are used to send information to farmers, which was understood to be a form of training, and some of the larger companies described call centres used to help farmers discuss issues or to ask for advice (Int.C01). Having the phone number of farmers allows company field staff to keep in touch with farmers. One interviewee showed us a thick binder filled with phone numbers to illustrate and prove just how many farmers they worked with (Int. C06). Directives and weather advisories sent out by SMS (short messaging service) are also used.

Some companies had contracts with farmers, but they took pains to explain that there were not contracts for contract farming. As Company 2 explained, the government guidelines say that "the farmers are always independent". Companies could thus arrange contracts with the farmers, but "farmers are not obliged to honour the contracts" by selling exclusively to them. The contracts do, however, put the obligation on the companies to purchase the rice whenever the farmers wanted to sell to them. Thus, the contracts were "buy-back guarantees with farmers" (Int.C01).

Company C11 was a special case, as the company was part of a large group involved in a development project with international collaboration. Our interviewee made clear that while the company makes the initial investments, the farmers should manage the subsequent project. The farmers, once in, are engaged in a contract with the company, as C11 feels that it is not possible for the farmers to access the market on their own. Further, the payment has to be repaid through successful management. This also means that the company can only expect to see some profit only after five or more years (Int.C11). They also use Fairtrade certification to help making investments in the community, emphasizing the social benefits of the projects that lead to independence, better education, and spread of farming techniques that augment the income from basmati rice production, such as a rotation with a crop of soybean. But these

investments are not made possible only through the company; they require the help of development assistance, partnerships with local NGO/NPOs, the University of Pantnagar (an agricultural university) as well as other companies (Eyhorn et al., 2018). This model is more the exception, however, as companies generally use agreements renewed every year (Int.C05), or are supposed to bid for the rice at the local wholesale markets (Int.C02).

This discussion about the need to work with many partners reminded me of a question raised during the APEDA meet-and-greet. One of the attendees asked that there are special subsidies exclusively for organic agriculture in order to boost production strength and make the market more lucrative. This request was quickly dismissed by Santosh Sarangi, who noted that such a subsidy would be in direct violation of World Trade Organization (WTO) rules, which require all export subsidies to be phased out. However, he did mention that strengthening of supply chain capabilities did not fall under the purview of WTO and could thus be encouraged. There is money, he remarked, but there is no assurance that the private sector will help in the maintenance of the facilities once set up (Int.C12). In his view, the public sector could initiate the process of creating clusters and processing facilities, but it would require a similar commitment from the private sector to make sure the facilities were used as best as possible.

*6.5.4.2 Keeping Track*

The whole process of paddy acquisition happens in a timeframe of two weeks' time, usually towards the end of November. The companies can buy only from registered farmers, who are farmers that have a particular registration number with APEDA (INT.C01). The registration of the farmers in turn, is linked to the registration of the company. This is part of the system known as the Internal Control System, the representative explains. The amount of paddy harvested from the land registered as belonging to the farmer is thus entered into APEDA's tracking system, TraceNet. Along with this information, details of the documentation and the transaction are entered into the system as well. The representative of Company 01 referred to TraceNet as an online system similar to a banking system. He asserted that each transaction was crosschecked to ensure that only registered farmers are selling their registered quantity of organic rice to the registered company (a *credit*), which can only then be sold to a customer or

another business (a *debit*), which must also be registered in TraceNet. It seems that the *debit* cannot be larger than the *credit*, as that would mean more rice is being sold than is being procured. Interestingly, if the farmer registered within the ICS wants to sell the produce grown with the same procedures to a different company, they can do so, but the purchasing company will not be able to register this transaction with TraceNet. The form of expression, in other words, is not met, meaning that the produce cannot be marketed as such.

The UOCB facilitates the smooth functioning of the certification process through their extension team (Int.C03). They help organize farmers into groups, with each group having anywhere between 25 and 500 members. Internal inspectors, who check every field from the registered groups, compile a report for the UOCB's certification body, which in turn checks a random sample of around one-fourth of the inspected fields. Upon successful verification, a scope certification (SC) is issued, which declares that the group is recognized as producing organically (Int.C03). This SC is distinct from the Transaction Certificate (TC) that accompanies each batch of rice as it makes its way through TraceNet.

Not all companies agreed on the best way to do organic agriculture. Perhaps the clearest indication came when C06 distanced themselves from the actors in the "government line" (Int.C06), referring in particular to the government-managed UOCB. They said that "we don't have any contact with them", clarifying their stance by saying that they are not helping the farmers much as they make little effort the market the produce. C06 also felt that the UOCB did not have much of a presence at the ground level, but were more proficient in getting paperwork done.

*6.5.4.3The Farmer*

While there was an understanding of needing to help the farmer, the farmer was also described as an unpredictable entity that needed to be managed in order for the project to make a profit. One key point, emphasized by several companies, was that it was important that farmers were not in it for the extra money that the organic premiums could generate. "Premium price is just not the motivational factor. This is one of the, you know, one of the worst reasons why farmers do organic farming" (Int.C01). The reason given for this denouncement was that it would attract farmers who might be in

for a quick profit, without actually following the necessary procedures. They might, in other words, cheat the system. For example, farmers may try to cheat the buyers by mixing in cheaper grain (Int.C02). This kind of adulteration, while seemingly harmless from an individual farmer's perspective, is costly for the business, as their reputation may be on the line. After all, one interviewee remarked. "The farmer is also thinking, 'How can I grow?'" (Int.C01). If the company is focused purely on business (which likely meant purely transactional), "farmers can, will betray you any time" (Int.C02). These remarks seemed to portray the company not only as a profit-making enterprise but also as benevolent, and at times vulnerable, entity. The sentiment of benevolence was echoed in the statement, "Without us, the farmer is destroying his own capital... With our help, the farmer can take care of his own and his family's health" (Int.C01). Our interviewee thought that the pesticides, fumes and smoke in non-organic agriculture led to issues like cancer, and through using organic methods, reduce exposure. Others observed that "small farmers, they are ready to join [organic production], and they really need the help, they really need guidance...they're also very keen on following us" (Int.C05). The farmer was understood as being the recipient of organic farming practices as formulated by experts: "I have promised them that [if] you do organic farming, I will do your control... [everything for] quality control..., I will do the technology and know-how transfer to you. Whatever support you require, I will help you" (Int.C02). He goes on to say that if this support is accepted, they can offer a premium price for the produce and sell it on the market for them (Int.C02). The farmer is thus drawn into the assemblage held together by the company's efforts. Company C11 also focused on educating the farmer what actions would risk costing them their certified status, are and to understand why these actions were risks. They feel that since there is a different context in the EU, which is their main market, it is important for the farmers to grasp exactly why things should be different.

The companies try to prevent being cheated by keeping close relations (Int. C02), or by letting other, more trustworthy intermediaries manage the relations with farmers. The three years for converting to organic mandated by the organic certification regulations is also used as a period to understand the motivation of the farmer, and to weed out dishonest farmers (Int.C01). Company 06 adopted a slightly different approach. They require that all the farmer's land is converted to organic, to show a commitment to the

ideas behind organic production. This was a more stringent requirement than for other companies, which were fine with purchasing organic rice grown on farms with only one part set aside for organic production. C06 tries to get farmers to do organic not by promising them to buy their products, but rather by telling farmers that organic cultivation methods will help to reduce expenses for cultivation (Int.C06).

*6.5.4.4 Rice*

The actors involved in the value chain are not just humans. The characteristics of rice make it a key component of the assemblage. Rice is a crop with one of the highest water requirements (second only to sugarcane), making water a key resource, and explaining the preference for upstream locations. Company C06 tries not to encourage farmers to grow too much rice just because it is profitable. They consider it to use too much water, and prefer that the farmers increase the number of different crops they grow. The farmers they work with grow rice, wheat, vegetables, millets, *ragi* (finger-millet), and oilseeds, and the company tries to purchase it all. This diversity, our interviewee explained, would help to counteract the many ill-effects of mono-cropping that used to be prevalent. C11 also discourages the use of groundwater for agriculture, and makes efforts to make sure surface-water based irrigation systems are available. However, these aspects were not mentioned by the other companies. They also act like a seed bank, offering seed rice for free but asking for the same amount and an additional quarter (i.e. 125%) back. Farmers are also encouraged to keep their own seeds as a way to safeguard rice variety as well as their own autonomy over inputs. Other companies also sought to deliver inputs to the farmers' doorsteps, including seeds and fertilizers (Int.C01). Rice is a tricky commodity (Int.C02). Unlike wheat or millets, the quality cannot be judged by looking directly at the grain, but instead has to be identified from the characteristics of the hull, the outer protective casing of the rice grain. It must also be kept in mind that during processing, the hull and the bran is removed, leaving behind only about half of the weight of the paddy that was acquired from farmers. Basmati rice in particular, has a lower yield than that of other rice varieties; almost half of the highest yielding varieties (Int.C02, C06). It is thus considered a luxury item, not meant for the domestic market where most consumers would baulk at the price. In fact, C02 opined that the exports keep basmati from going extinct. Sometimes, basmati preferred micro-

climates of particular valleys. When taken out of these places to try to cultivate them in other locations, a steep drop in quality was observed (Int.C06). Another interviewee, C07, remarked that consumer preferences were changing due to exposure to ideas from other parts of the world, and was helping drive the demand for organic produce. “People who travel around the globe come back, and understand the importance of having good food, healthy food”.

In this section, the heterogeneity of the actors involved in the assemblage of organic certification is shown. While they may work towards the same goal of producing and marketing organic rice at the present moment, there is the constant danger of the various components breaking relations and joining other assemblages. Without the machinations of the companies who desire to keep the assemblage going, the same actors would exist, but they may not be recognized as being *certified organic*. The welfare of farmers is used as one of the justifications for marketing organic, yet it is often the case that the company is not in direct contact with the farmers but through intermediary actors.

## 6.6 Discussion and Conclusion

Using the examples found in the interviews, I show that through the system of certification, trust is commodified and made legible (Tsing, 2015, p. 81). However, this commodified trust is not enough; the molecular narratives and enunciations around organic agriculture are yoked together with the striating action of a clearly defined transfer of trust. “Sustainability has become a commodity itself, to be traded, bought, sold and managed like all others", along with cost minimisation, flexibility and speed (Ponte, 2020). Riffing off the illuminative use of roads by Tsing[7] (2005) to explain the features of interconnection across different contexts, export-oriented companies make it easier to export organically-produced basmati rice, but in doing so they limit the spread of organic agriculture to just one type of rice that can only be grown in certain geographical regions.

[7] “Roads create pathways that make motion easier and more efficient, but in doing so they limit where we go” (Tsing, 2005, p. 6).

Most of the companies understood organic as a transfer of knowledge from the company to the farmers. From the perspective of the company, the innovations stem from them. The farmers' role then is to adhere closely to guidelines, which are formulated largely with the certification requirements in mind. These guidelines may be strict about inputs that may be used, but they do not make mandatory any of the sustainable management practices commonly associated with agroecological farming systems (Seufert et al., 2017, p. 15). The true expressive power of certification lies in its ability to portray itself, and not the actual content consisting of the farming practices that enabled the organic produce to come into existence in the first place, as the real enabling force (Buchanan, 2008). This is the way in which organic agriculture is commonly thought to operate. Through a certification regime, which prohibits the use of certain synthesized inputs (fertilizers, pesticides and genetically modified organisms), a safer but somewhat less modern form of agriculture is implemented. Organic is thus conceptualized as a reactive form of agriculture, lacking recourse to the convenient synthetic inputs that it secretly desires due to its adherence to certain requirements. Biological diversification and integration are not taken into account, and thus not high on the list of priorities. What is achieved, at best, is a form of input substitution that falls short of the redesign that is sought by proponents of agroecology. However, this is still an improvement over Green Revolution agriculture with its only avenue for increasing sustainability limited to efficiency (Pretty & Bharucha, 2018, p. 9). Local innovations may be overlooked in the zealous attempt to faithfully recreate one form of agriculture, an example of decalcomania in an effort to reproduce stability, instead of exploiting the potential of organic agriculture to map new realities that might better focus on just sustainabilities (Ponte, 2019; Raworth, 2017b) or multispecies livability (Tsing, 2017). This is not to say that it is easy to implement these certification regimes. As I have explained in this chapter, territorial control is required to avoid contamination that could ruin the chances of export the produce. Companies employ various measures, the most extreme being the attempt to convert whole valleys to organic agriculture to maintain control over possible sources of contamination.

Debates on organic certification is also in many ways a precursor to the issues of privacy and trust which we now grapple with. Does trust stem from total surveillance enabled by an elaborate system of tracking at the expense of privacy, or does it stem from a belief

that the farmers are willing to forgo a more profitable form of farming for one that might be better in the long run? By emphasizing the need to verify compliance, new technologies of measurement, verification and trust are brought into the assemblage. These tools may not necessarily be used in the interest of improving farmers' livelihoods and welfare. As Stefano Ponte makes clear after nearly two decades' research in global value chains, "lead firms in global value chains (GVCs) not only extract sustainability value from their suppliers, but can also benefit from internal cost savings, supplier squeezing, reputation enhancements and improved market capitalization" (2019, p. 221). In recent years, the Government of India has been keen to encourage farmers to emulate these companies, by promoting the idea of farmer producer companies (Trebbin, 2014a). This direction emerges from the conceptual understanding that the problems experienced by SHF stem from the issue of transaction costs (Bikkina et al., 2018). These costs arise particularly when procuring inputs, selling produce, accessing credit, and obtaining market information. By emulating best practices of the companies as explored in this chapter so far, notably vertical integration, FPCs would allow farmers to capture more of the value and command a better final price for their products.

Improvements would include more bargaining power, better aggregation capabilities (clustering), value addition and perhaps even elimination of many of the intermediary actors I learnt were operating in the procurement process (NABARD, 2015). This would help achieve the goal of the Indian government to encourage "groups of small-scale primary producers to connect with corporate buyers" (Trebbin & Hassler, 2012), thus absorbing them seamlessly into the nascent formalized retail sector (through supermarkets etc.). This in turn would lead to increased vertical coordination within the agrifood sector as a whole. In the context of certified organic agriculture, it would enable "access to new markets by establishing flexible linkages to highly specialized demand" (Trebbin & Hassler, 2012, p. 415).

FPCs would allow its members to "leverage collective strength and bargaining power to access financial and no-financial inputs and services and appropriate technologies leading to reduction in transaction costs. Members can also collectively tap high value markets and enter into partnerships with private entities on equitable terms" (MANAGE, 2018).

In conclusion, companies are one of the most visible and potent actors within the certified organic agricultural assemblage. Their main desire remains the profit motive and their interactions with the other components within the assemblage demonstrate this. Their success has prompted the institutional actors to encourage farmers to emulate their organizational structure through farmer producer companies. At the same time, they are limited in their reach and capacity to change the wider agricultural system. To understand organic in India, therefore, it is not enough to limit exploration to companies.

# 7. Organic as a Departure from Territorial Assemblages: Smallholder Rice Farmers and Initiatives for Sustainability in West Bengal

## 7.1 Introduction

Certified organic production systems have been discussed as one of the most recognizable forms of sustainable agriculture (Seufert, Ramankutty, & Mayerhofer, 2017). *Organic agriculture* is often understood to be synonymous with *certified organic* food which is produced in line with stipulations of a private standard. With steady double-digit growth rates over the past decade, it remains one of the fastest growing food sectors worldwide (Willer & Lernoud, 2016). In some countries, organic standards regulate production processes of agricultural products and their further processing along the value chain by including labelling regulations and an independent control system (third-party certification). In the case of India, any organic product leaving India is subject to tests in laboratories for pesticide residues. Today, organic standards (based on their European roots) thus also attempt linkages of small-scale producers in the Global South and consumers in the Global North, while securing product quality and environmental sustainability (Vermeulen & Seuring, 2009).

The dominant discourse in organic supply chains in India has therefore been one where SHF need to upgrade their cultivation practices and aggregation capabilities in order to gain access to a lucrative value chain. The rewards of the value chain are supposed to be a higher income and a more sustainable production system. The latter benefit is delivered through the terms of participation in the value chains, which are supposed to be beneficial for the SHF as they are taught how to manage their natural resources in a more sustainable way while receiving a higher price for this more desirable product. This understanding of organic is increasingly popular with the Indian government and its various agencies as they attempt to enable more producers to be certified as organic.

There are several indications that the Indian government's main interest in promoting organic production is to cater to export markets.

The export-oriented nature of the certified organic products in India meant that it was mainly geared towards large companies who could pay the high prices for Third Party Certification (TPC) inspection parties. While these standards, known as the National Programme for Organic Production (NPOP) made efforts to increase domestic certifying agencies, other restrictions, notably the extensive documentation and non-profitability for small landholding sizes, created limitations that have not been adequately addressed to this day.

In contrast to these approaches, I hypothesise that organic as a way of gaining access to lucrative markets is not the sole way to understand organic in the context of India. One of the advantages that certified organic enjoys is the clarity of who belongs and who does not; and this clarity is relied upon by researchers seeking to make a case for or against organic agriculture. The lack of clarity regarding what non-formal organic is, therefore, poses a formidable obstacle in studying the non-formal organic market. The lack of a clear definition results in no reliable data existing regarding the extent of non-formal organic farming in India (Osswald & Menon, 2013). Nevertheless, it is no less legitimate than its certified counterpart, especially in the local context. It is important, therefore, to understand how non-formal systems are put into practice, and what their understandings of organic are.

### *7.1.1 The Peasant in Agroecological Intensification*

One of the key actors in the AI paradigm is the peasant. The peasant "is a politicized identity. It reflects people who share a deep commitment to place, who are deeply attached to a particular piece of land, who are all part of a particular rural community, whose mode of existence is under threat.... (in) today's politicized globalization, articulating identity across borders and based on locality and tradition is a deeply political act" (Desmarais, 2008). This definition of the peasant links back to the need for a terrestrial identity as described by Latour (2018). There is a distinction here between smallholder and peasant: all smallholders are not peasants, and not all peasants are smallholders. The definition of smallholder depends on the area of land cultivated,

while the peasant mode of farming is a distinctive way of farming. Van der Ploeg provides a succinct definition (2014):

> "It aims at and materializes as the creation and development of a self-controlled and self-managed resource base, which in turn allows for those forms of co-production of man and living nature that interact with the market, allow for survival and for further prospects and feed back into and strengthen the resource base, improve the process of co-production, enlarge autonomy and, thus, reduce dependency. … One's own resource base might be strengthened through engagement in other non-agrarian activities. Finally, patterns of cooperation are present which regulate and strengthen these interrelations"

A key feature of this *choreography* that acts as the engine of sustainability is the "self-controlled and self-managed resource base" (van der Ploeg, 2017). González de Molina & Guzmán Casado (2017) explain this feature using a metabolic perspective, suggesting that a farming system's sustainability over time hinges on "adequate quantitative and qualitative flows of energy and material" flowing internally to reproduce "biophysical fund elements". Ploeg also underlines the importance of pluriactivity in this definition, a feature that Rigg et. al (2016) argue is crucial to solving the "puzzle" of the continued existence of SHF. Increase in production is also driven by investments of labour as peasants search for an improved income (Hayami 1978 as cited in Ploeg, (van der Ploeg, 2014). The recognition of peasants is also the key insight that resolves impasses of their persistence in the face of various pressures to scale up (the persistence puzzle), their superior productivity (the inverse productivity-size paradox (Kagin et al., 2016)) and their apparently economically "anaerobic" existence, surviving without the "oxygen of profit" (Paz 2006 as cited in Ploeg, 2014).

The question "why the peasant?" is answered based on an appreciation of evidence showing the contribution of SHF towards the provisioning of food on global scale, and of their prevalence in India despite resource constraints. Recent findings underline the importance of SHF in a global context, and recognize their contribution to producing the majority of food consumed in the world (Lowder et al., 2016b; Samberg et al., 2016; van der Ploeg, 2017). SHF dominate the agriculture sector in India, with 85% of farmers

working on land less than 2 hectares in size, the total of which represents 45% of the total cultivated area in 2011 (Department of Agriculture Cooperation and Farmers Welfare, 2017). These statistics suggest that consolidation of land will come at a high social and political price.

The shift to an approach that seeks to understand the potential of SHF within AEG comes at an opportune moment when the growing domestic demand in India for safe and healthier food may be creating more opportunities for SHF to participate in domestic sustainable agri-food networks. While little to no attention has been paid to the diverse meanings of organic in India, I argue that this diversity allows room for experimentation in SHF's autonomous efforts to become sustainable. AT will provide the necessary conceptual tools to navigate this complexity and move beyond critiques of neoliberal agri-food systems to create organic agricultural systems built around the needs of SHF. By underscoring the importance of farmers, the AI paradigm reaffirms the "centrality of autonomy in farmers' identities" (Stock & Forney, 2014) opening up new avenues of inquiry. The goals are also changed: with social justice as a driving concept, empowerment, endogenous growth, food sovereignty and appropriate production become much more prominent, and importantly, functional within the search for sustainable production systems.

## 7.2 Locating the study

An interesting aspect of West Bengal with regard to organic agriculture is the lack of any systematic state-level framework explicitly supporting organic agriculture. This has made it difficult for organic agriculture in general and certified organic production in particular to take root in West Bengal. However, SHF who understand the need to farm in an environmentally sustainable manner are already transitioning to more sustainable systems. Consumers are also growing concerned about the impact that their food is having on the environment and their own health. Social entrepreneurs are trying to use this new awareness to replace traditional intermediaries in the food chain (Ekgaon Technologies, 2017).

I look at farmers within the Development Research and Communications Services Centre (DRCSC) network who continue to practise organic agriculture after training projects have ended, in order to study SHF-driven attempts to move towards a sustainable model of rice farming. Rice production here is mainly geared towards self-consumption, although there are also plans to set up a Farmer Producer Company and improve links to markets. This group of farmers did not all convert to sustainable agricultural practices at the same time, and thus there are farmers at different stages of adoption of practices across a time frame of a decade, as well as farmers practising Green Revolution "chemical" agriculture within the same administrative area. Agriculture here is a production system based on rice, with 2 or 3 cropping seasons in a year, depending on availability of water.

### 7.3 Methods

Amit Bera, a graduate from DRCSC and my key informant, is an important farmer in the organic movement in West Bengal state, with a farm located in Tiorkhali village, in the southern district of Purba Medinipur, as shown in Figure 8. As a resource person recognized by the government, he can influence other SHF both as a trainer and as a fellow farmer. He maintains a repository of seed that is widely disseminated, and also produces some organic inputs himself. He coordinates collective efforts to collect local rice varieties, and is helping to set up multi-location trials. His efforts have been recognized by the West Bengal state government, and he is well-connected to NGOs as well.

Amit Bera suggested the three broad categories of farmers regarding organic: the first group of organic [*joibo*] farmers, a second group who were transitioning to organic, and a third group who are involved in mainstream [*rashayonik*] farming. At the same time, he emphasized that they were all good farmers interested in improving their farming systems. As I later found out, using the groups suggested by the farmer was not as precise as when certification criteria are used. Verification of what was understood by organic was not easy, and I had to ask the farmers to explain the practices and approaches they used in *go-along* interviews. An elderly male villager, Bidyut Bera, and a female villager just out of middle school, Jayasree Majhee, were asked to accompany me and to arrange ahead of time a suitable meeting time with the farmers. We bicycled

or walked to most farmers (farmers more further off were accessed with a motorbike or by bus). I carried a small portable video camera (a Sony Action Cam) and a voice recorder. I would ask the farmers to take me to their fields and explain how they farmed in Bengali. One drawback of this method that arose was that for some farmers, their


*Figure 7: Map of Purba Medinipur District, with key places mentioned in the text marked in red.*

rice-fields were far away, and they practiced organic farming only on the fields where they grew vegetables. As a result, I was unable to see the actual rice fields, although I asked and recorded basic questions about the rice production. Advised by local partners to not pay cash as reimbursement for time, I provided gardening implements purchased at the local market to all respondents and hosted a lunch where all interviewees were invited.

The resulting video and audio files were usually around 50 minutes long, and contained details about what crops were being grown, what the organic interventions were, what practices were used, and each of them end with a general discussion about organic agriculture. I produced partial transcriptions before summarizing the results under common themes. Out of a total of 30 interviews, 9 were chosen to be transcribed and described in detail in the following section.

## 7.4 How Do Farmers Practise Organic?

*Joibo chash* (organic farming) in the local understanding comprises several aspects. A focus on health, knowledge sharing, integration of micro- and meso- organisms, an increased reliance on ecosystem services, changes in the production system, a desire to reduce costs, and issues of seed ownership were identified as characteristics of the local form of organic agriculture.

Health was an important issue that was raised in the interviews. Health of the farmer and the family, health of the land, and health of society. One farmer related his realization that the plot of land he owned would have to feed him and his family, and that overuse of chemicals had the potential to destroy this capacity. The selection of crops for their potential health benefits came to the fore. Whether leafy vegetables, or black rice, the need to provide a diverse array of nutritious food to the family was a theme that was often repeated. Another farmer made reference to a perception that indiscriminate spraying of vegetables would mean that the consumer would be directly exposed to a large dose of chemicals. He mentioned that more and more people were having to make trips to Vellore, a city in South India, to receive treatment. I later learnt that this city almost 1800 km to the South is a key medical destination in the Bengali imaginary, as I would come across this reference in many of my interviews. Unfortunately, the lack of a healthy state of body also prevented farmers from being able to carry out the physical labour entailed in organic management practices.

Knowledge emerged as an important theme as well. Farmers explained how they had to gain expertise in a wide variety of production systems in a way that was not being done in the education system or the extension services. The exemplary *joibo* farmers were all

regarded as leaders because of their knowledge in integrating such knowledge, and their willingness to share their knowledge with other farmers. They could reach out to the Agricultural Development Officers of their respective blocks and steer extension efforts in directions that were decidedly in line with organic practices. The farmers were avid users of social networking services, using popular messaging services to share or request information or photos of successful agricultural practices. Organic was not viewed as a return to the way of farming of previous generations, but rather as a way forward, requiring extensive training and constant flows of information.

A key aspect that was highlighted in the interviews is an increasing reliance on micro- and meso-organisms. Vermicompost, which uses earthworms to convert biomass into fertile soil, is one key technology used by successful *joibo* farmers. Vermicompost seems to be a lucrative production system, where raw material costing around 1000 rupees per tonne is sold after composting for around 4000 rupees per tonne. Farmers described the various experiments that they had to conduct in order to reduce the cost, in the absence of reliable information from agricultural extension authorities. One farmer described a push-pull system he developed through trial-and-error to encourage earthworms to move towards new piles of material, thus reducing the labour involved in separating the worms from the compost (Gopal & Gupta, 2019). Two of the three *joibo* farmers were producing on a commercial scale, while the third was producing enough for his own farm and for sharing with others. These farmers also had biogas reactors. This relatively simple technology allows for manure and human wastes to be digested by anaerobic bacteria, creating methane gas that is used for cooking, and a slurry that is applied to fields or processed in the vermicompost pits. Other sources of nitrogen include azolla, a symbiotic water fern (Pereira, 2018), and *Sesbania grandiflora*, a leguminous plant with nitrogen-fixing root nodules. Also carried out were rice seed inoculations, using *Trichoderma viride*. This was thought to reduce the incidence of fungal infections. *Azotobacter* strains were also used in order to enhance the nitrogen-fixing capability of the soil. Straw was harvested and a portion was left to rot in shaded areas to promote the growth of mushrooms during the wet monsoon season.

This use of micro- and meso-organisms fits into a wider understanding of and a reliance on ecosystem services. The soil is fed with different organic inputs, improving the

fertility of the soil. Leguminous plants are planted in rotations in order to fix nitrogen and provide nutritious foods. A mulch of straw is almost always applied in order to reduce evaporation and erosion. Spraying of pesticides, whether chemical or biological, is done in the evening to avoid harming beneficial insects which are more active during the day. Trees are planted in order to provide birds with places to perch, in the hope that they will eat the insects and mice. Complex rotations and mixed cropping was used by all farmers, regardless of which group they were in. These rotations increase the diversity of crops grown, bringing diversity to the plate. The aim to feed the family first means that the farmers often plan the production around nutrition. They also devise complex push-pull systems (Eigenbrode et al., 2016) using herbs like *Ocimum tenuiflorum* and flowers like *Tagetes ssp*., as well as trap crops like *Brassica juncea*.

Surprisingly, and perhaps of most interest, these self-identified organic rice farmers were moving away from rice cultivation and were instead involved in other, more profitable production systems like horticulture and vermiculture. Rice cultivation was done mainly for household consumption purposes, and in the case of my key informant, to preserve rice crop genetic diversity, with around 300 varieties of rice being preserved. Rice cultivation, whether *joibo* or *rashayonik*, or in between, was limited to 4 main varieties. CR-1017 (*Dharitri*), *Rajendra Masuri*, *S. Shankar* and *N. Shankar*. The latter two varieties are the rice grown in summer, the *boro* rice. While generally credited with raising the productivity of rice cultivation in West Bengal, they have come under increased scrutiny in recent years for their resource hungriness, particularly for water. Rice prices are declared each season by the state government, which quotes an official minimum support price (MSP) available at its purchasing centres. However, small farmers rarely get this MSP, choosing instead to sell it to middlemen who offer around half of the MSP as immediate payment in exchange for coming to the doorstep of farmers. This system is also portrayed by some farmers as a way around the issue of ownership of land, as official papers proving ownership of the land are required when selling to these government centres.

The main motivation across the three categories for adopting *joibo* practices seemed to be a desire to reduce costs. The costs for fertilizers was ballooning, sometimes costing double at the end of the year what it had cost when the same year had begun. An

acceptable yield was one that came at the least expense of resources and labour with the least possible inputs. *Joibo* practices maintain resource flows within the farm and thus avoid waste. Ploeg (2014) identifies this as an integral part of a farming style known as farming economically.

Ownership of seeds enabled *joibo* farming as well. Keeping their own seeds helped push down costs involved in agriculture, and allowing them to cultivate a wide variety of crops. Unsurprisingly, *rashayonik* farmers were more inclined to buy seeds, but this strategy was not without its pitfalls. One respondent explained that he was not interested in keeping rice seeds at home because it involved too much work to protect it from mice and insects, so he preferred to buy it in order to get the best product. At the same time, the rice he bought in the stores was suspect, as the rice he wanted to buy and the rice he got at the store was different.

### *7.4.1 Issues of Space in Agriculture*

The ability to govern a space is key to the implementation of any form of agriculture. *Joibo* farmers emphasize the need to have in close proximity the various components of the farm: The flow of resources between different sites of production makes it inevitable. Conversely, the large distances between scattered fields makes it almost impossible for *rashayonik* farmers to supply the requisite amount of fertilizer in the form of bulky cow-dung or farmyard manure, making them reliant on the more compact chemical versions. An unfortunate limitation that was highlighted was the difficulty faced by farmers in protecting valuable livestock. Goats are attacked by stray dogs, ducks are stolen by thieves, fruits are picked without permission, storms destroy cowsheds. Stray cattle wander in, bulls and goats in particular. This makes it difficult to achieve systems where there is close integration of production systems.

Figure 8 shows an aerial perspective of one of the villages studied. The houses are concentrated in the middle of the image, and are surrounded by a patchwork of fields, each one mostly 0.05 ha or less in size. The boundaries between fields is often contentious. Within the village, trees compete for light with home gardens, trees belonging to neighbours cast unwanted shadows making it difficult to realize high

yields. But proximity allows for relatively high-value production. Out in the rice fields, which are some of the most productive areas of land, the lack of boundaries makes it difficult to keep out unwanted pesticides, fertilizers and water. In areas where summer rice (*boro*) is cultivated, one can do little but cultivate the same summer rice as everyone else; any other crop will drown in the copious amounts of water applied. The mustard oilcakes that are an important organic input tend to float away under these situations, or gets eaten by snails. This makes it difficult to implement organic practices. Some

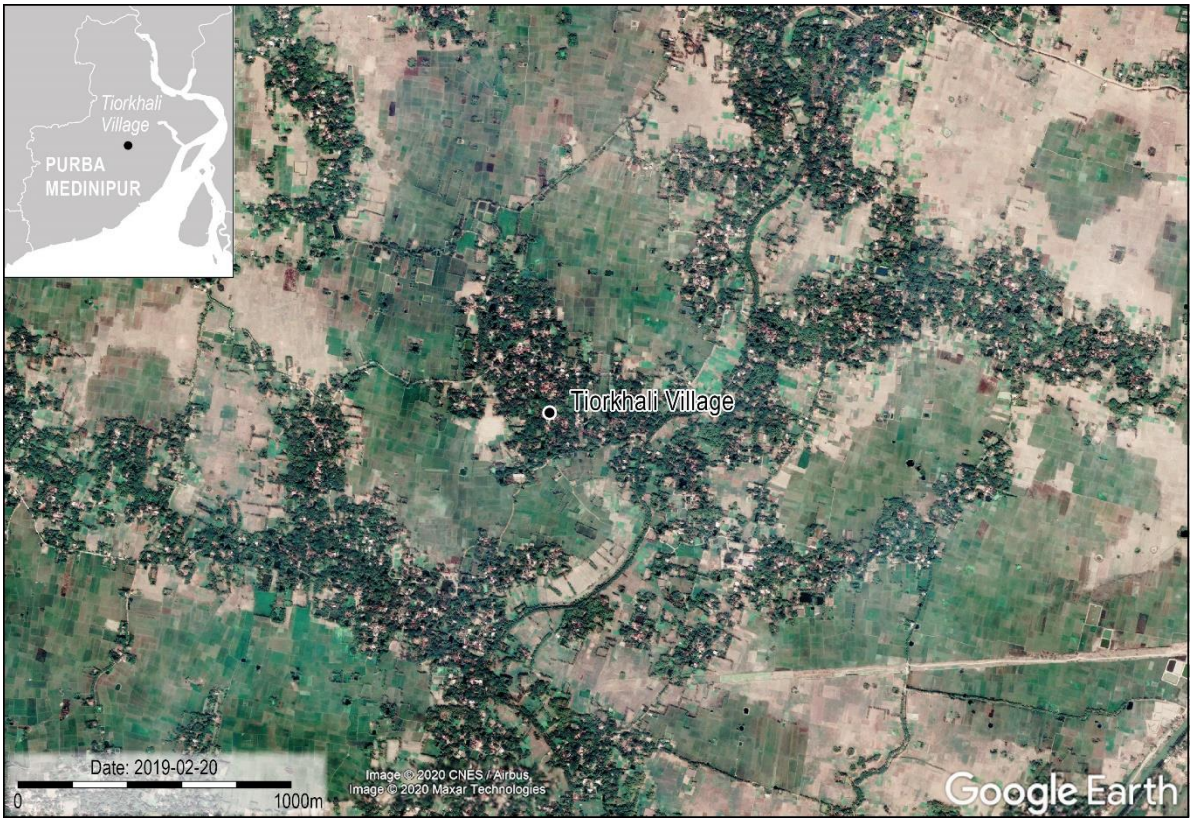



*Figure 8: A satellite view of the village of Bajkul, West Bengal (source: Google Earth).*

*joibo* farmers observe that the flow of water between fields was not always unwanted; before chemicals were intensively used, indigenous freshwater fish used to swim between fields and acted as an important source of nutrition (Bhakta & Bandyopadhyay, 2008; Mogalekar et al., 2017). A need to adhere to the farming schedule also forced farmers to give up otherwise lucrative crops. One farmer explains how he grew mung (*Vigna radiata*) pulses, but was unable to harvest the full crop because he needed to start planting the rice in tandem with other farmers before all the beans could ripen and be harvested. Land for rice cultivation is often rented by landless farmers at a price of INR 4,000 per bigha (0.134 ha) for a cropping season. This means that they have to produce enough to pay off the owner of the land at the end of the cropping season,

forcing them to grow rice as a cash crop, and not being able to follow up on a rice cultivation season with the leguminous *khesari* (*Lathyrus sativus*), or mustard (*Brassica nigra*).

The relative elevations of the paddy fields matter as well. Some fields dry quicker because they are higher, allowing for a quicker transition to the next crop; this is not possible in the low-lying fields, which can then support only two cropping seasons. One of the exemplary *joibo* farmers has carried out landshaping on his paddy field. Using labour paid for through the MGNREGA (Mahatma Gandhi National Rural Employment Guarantee Act), he has raised the dikes around the 670$m^2$ piece of previously low-lying land, reducing the area of rice cultivation by half but getting a pond and a home garden in the process. This allows him to diversify his production, growing not only rice and potatoes but also many trees along the periphery and vegetables in 48 beds. It also allows him to exert control to some extent on what flows in and out, although some ducks have been stolen.

Land use is best described using the German term *kleinteilig*, a compound word of *small* and *part*, that is often translated as small-scale agriculture, but also includes the nuance of being intricately managed, something central to the peasant mode of agriculture. Farmers seek to increase the productivity of the total surface area by combining various plants, or by using open spaces like roads and erecting frames over other plants. They try to utilize every piece of land available. Vertical surfaces, like fences and trees, are used to host climbers. Areas over ponds are covered with a bamboo scaffolding to support creeping plants. Empty cement bags are filled with soil and vermicompost, set alongside walls, and various rhizomatic plants are planted in them. *Joibo* farmers plant different crops together, combining at least three layers of crops together in knowledge and labour-intensive combinations but increasing nutritional yield.

Land for rice is converted rather easily. Rice may become too expensive to grow when a family member moves out to seek a job elsewhere, making the family reliant on expensive hired labour. As a result, what was a paddy field till the last growing season may be converted into arable land for the current season. Or it may become a pond to cultivate freshwater fish, the rich soil transported elsewhere to top up depleted nutrients.

Place matters in crop selection as well. Crops of the Brassicaceae family, or mustards, are very popular. Unfortunately, they are also not suited to the agro-climatic conditions here, being crops suited more to temperate regions. They can only be grown in the winter season; a relatively short period. This makes the crop susceptible to wildly fluctuating prices as glut production occurs. Most farmers agreed that cabbage, kohlrabi, cauliflower were all difficult to grow without chemical pesticides and fertilizers because they are susceptible to various pests. However, no effort is being made to promote indigenous alternatives. In fact, the local agriculture extension office is asking farmers to grow a new crop, broccoli, touting it as the "most nutritious vegetable". If they manage to grow this "green cauliflower" organically, a farmer explains to me, the agricultural office will set up a supply chain that will take the broccoli all the way to the five-star hotels in Kolkata. However, while many farmers knew about this crop, not many seemed enthusiastic about growing it, probably wary of these dubious promises. It must be mentioned that *joibo* farmers and conversion farmers also grow vegetable amaranths, and various species of spinach alongside mustards. At the same time, farmers also worry that "organic" produce will not be as attractive to consumers in the local markets. They feel that the produce will not be as large and colourful if grown organically. While they acknowledge that they feel that it is better to eat organic produce, they worry that the produce will not sell well in the market when competing against "chemically produced" vegetables.

## 7.5 Conclusion

The adoption of local organic practices makes it difficult to clearly differentiate between the three groups proposed by my informant. Yes, the chemical farmers use chemical inputs, but they are mindful of ecosystem services as well. They are interested in reducing chemical use because they want to reduce expenses. Some farmers employ organic practices only on certain crops, reverting to chemical usage on a different crop but on the same piece of land. Neither group shuns the other; they exchange information, and compare relentlessly. Far from the exacting requirements of certification, where organic fields are separated from fields where different chemicals are used, the farmers here have a more flexible understanding.

The ambiguity of the status of non-formal organic from the farmers' perspective makes it a very fluid space, affording newcomers the space to experiment and cautiously implement new ideas.

One such successful new idea was the practice of no-till straw mulching of potatoes introduced by a local NGO. Known locally as *alu-kada-chash* (potato-mud-farming), this method was introduced 3 decades ago and is now almost the norm on the smaller fields in this area. It entails the planting of seed potatoes into soil that is still moist from the previous rice crop, instead of waiting for it to dry out and then tilling the soil. The soil is then covered with a layer of farmyard manure and ash, and mulched with a layer of straw. All the elements are available in a typical village setting, explaining the popularity of this practice. Where possible, farmers cultivated potatoes, given the relatively low levels of drudgery involved. Another practice that seemed widespread was the utilization of diverse rotations, at least in the home gardens. Whether learned from the local NGO or through trial-and-error, all the home gardens were heavily cropped.

These *techniques that work* pique the interest of the farmers, many of whom then become interested. The strength of the pull is not enough however, a *joibo* farmer observes, to overcome the tendency of fellow farmers to look for *ready-made solutions*. "Nowadays everyone wants everything ready-made" he says, referring specifically to poultry systems where farmers are little more than hired caretakers of vast rearing operations, with companies providing all the capital and feed required. Knowledge-intensive organic production, he observes, is being replaced by more extensive and exploitative systems, where cheap labour from the tribal populations of the neighbouring district of Paschim Medinipur is brought in to work on *boro* rice fields, on cashew plantations, or the previously mentioned poultry farms.

This fluidity of the idea of organic can be interpreted as a pragmatic approach to the question of sustainability in farming. While aided by increasing consumer demand, the interviews show that the process of learning and experimenting are vital for the spread of organic practices, as farmers come to trust these techniques and adopt them.

# 8. Constructing New Markets: Organic Agriculture as a Nomadic Assemblage

## 8.1 Introduction

The functioning of agri-food markets is a key issue within the wider context of agri-environmental governance, given their potential to "significantly alter the routines and the outcomes of farming" (van der Ploeg et al., 2012, p. 134). SHF participate both as consumers and producers in the market, and these markets have been identified as a promising area of intervention to promote more sustainable forms of agriculture and drive the processes of rural development (Fayet & Vermeulen, 2014; A. Loconto et al., 2016). In response to the need for more sustainable forms of agriculture, farmer populations in West Bengal and across India are dedicating part of their time, energy and resources to the design and production of new goods and services that differ from conventional agricultural outputs (Alvares, 2010; Khadse et al., 2018; Thottathil, 2014). At the same time, these markets reinforce many of the drivers that contribute to the precarity of the farmers in the first place (Gupta, 2017), with rising prices upstream and decreasing downstream returns producing a *double squeeze on agriculture* (van der Ploeg, 2008). Considerable added value is often appropriated by other actors within the existing marketing channels. Another problem is that existing trading companies and other intermediaries might not even be interested in commercializing these new products or services. As a way to counter these problems, multifunctional farmers, often helped by NGOs and socially responsible businesses start to construct and/or to strengthen their own outlets, their own channels to reach consumers and to sell their products. Some of these markets build on long, historically deeply-rooted experiences, such as the local periodic markets (*haats*); others are relatively new constructions, making use of internet marketing platforms, or WhatsApp messaging and direct home delivery. These heterogeneous actors come together to form assemblages that span various geographical scales and arrange the material world in new, often experimental, settings. The emphasis also shifts from individual contributions to joint efforts to construct new value chains around the needs of SHF. This chapter thus starts with a

different abstract machine. The animating question here is: What does a market that works for farmers and moves them to practice sustainable agriculture look like? These inquiries follow the lines of flight[8] that arise in response to the existing assemblages, whether territorial, state or capitalist. Building on Deleuze and Guattari's claim that "[a]ssemblages can only come into existence through the creative capacities that lines of flight expose" (Thornton, 2018, pp. 13–14), I provide descriptions of each initiative in the results section. The Nested Market theoretical framework proposed by Hebinck et al. (2014) is used to help sharpen the understanding of this response assemblage. "According to the nested markets perspective, alternatives to the mainstream agri-food model emerge from interactions between the established local/cultural practices and processes (based on relocalization and reconnection) and the conventional mechanisms of governance" (Schneider et al., 2016, pp. 4–5).

*Table 5: A comparison of Niche and Nested as types of market segments.*

| **Characteristics** | **Types of Market Segment** | |
|---|---|---|
| | **Niche** | **Nested** |
| **Boundaries** | Relatively fixed. | Relatively flexible. |
| **Barriers to Entry** | High, Non-permeable. | Low, Permeable. |
| **Distribution** | Marketed through existing channels. | Marketed through distinctive channels. |
| **Type of resources** | Privately owned. | Emphasis on public good/shared commons (Common Pool Resources). |
| **Mechanism of improvement** | Rent generated is re-invested by owners, better compliance with regulations. | Improvement through better utilization of resources (otherwise hidden, scattered, or underutilized), rent generated is re-invested in productive capital. |
| **Type of trust** | Trust in and through certification. | Mutual understanding of consumers and producers. |

Nested markets arise as a response to failures arising from the conventional markets. In other words, it can be understood as a response assemblage arising when "traditional food markets are affected and transformed by processes of globalization and by the

[8] Lines of flight are "those parts of the assemblage that escape the structure of which they are part and serve to connect such an assemblage to that which is outside itself" (Thornton, 2018, p. 12).

flows and patterns of interaction they impose" (Ploeg, 2014). The *Nested Markets* idea builds on the notion that all markets are institutionally embedded and governed, and not just any generic market. Consequently, the making of new, nested markets is also about constructing new forms of governance. Nested markets are markets driven by ethical and social values, related to the quality of products, human relationships, the development of the territory and environmental protection. Nested markets are a segment of a larger market that emerges from economic as well as social and political motives, and presents peculiarities such as unique infrastructure, with an aim to transform the global system (Hebinck et al., 2014) . Nested markets are neither necessarily small nor limited to the local. Although they are specific market segments that are nested in the wider commodity markets for food, they have a different nature, different dynamics, a different redistribution of value added, different prices and different relations between producers and consumers. That is to say, nested markets embody distinction vis-à-vis the general markets in which they are embedded. Finally, a key feature of nested markets is that they have a distinctiveness that allows them to fill structural holes or voids. These voids are breeding grounds for innovations, the development of novel arrangements and the specification of nested markets. These voids allow novel elements to be designed, tested and improved, precisely because there are no rules. All this newness represents a deviation from *the standard*, allowing for new answers to the question of how to improve the sustainability of agricultural systems.

Nested markets are thus a form of rhizomatic, AT. Understanding the role of these newly formed markets as a way of "by-passing or bridging" gaps in existing markets can be expressed as the reterritorialization of new markets in response to currently existing markets being deterritorialized by various failures to meet the needs of its participants. Nested markets represent "lines of flight" and may lead to promising new solutions for adapting to the changes brought about in the Anthropocene.

As part of the research project, I also organized a closing workshop to which select participants were invited to participate in a focus-group discussion. The workshop was a direct interaction on my part in an attempt to bring together the concrete assemblage – the "specific elements that are arranged in these relations" (Nail, 2017). I was interested in how these nested markets create distinction and improve common-pool

resources (Ploeg, 2014) in the quest helping farmers to become more sustainable. This point will be elaborated on in the second section discussing the workshop.

## 8.2 Results

### *8.2.1 Village Level Periodic Markets – Nadia Haat*

Periodic markets are a key example of a Bottom of the Pyramid (BoP) informal market, serving as the focal point through which rural populations interact with the wider economy (Satyam & Aithal, 2018). Known as *haat* in Bengali, periodic markets are

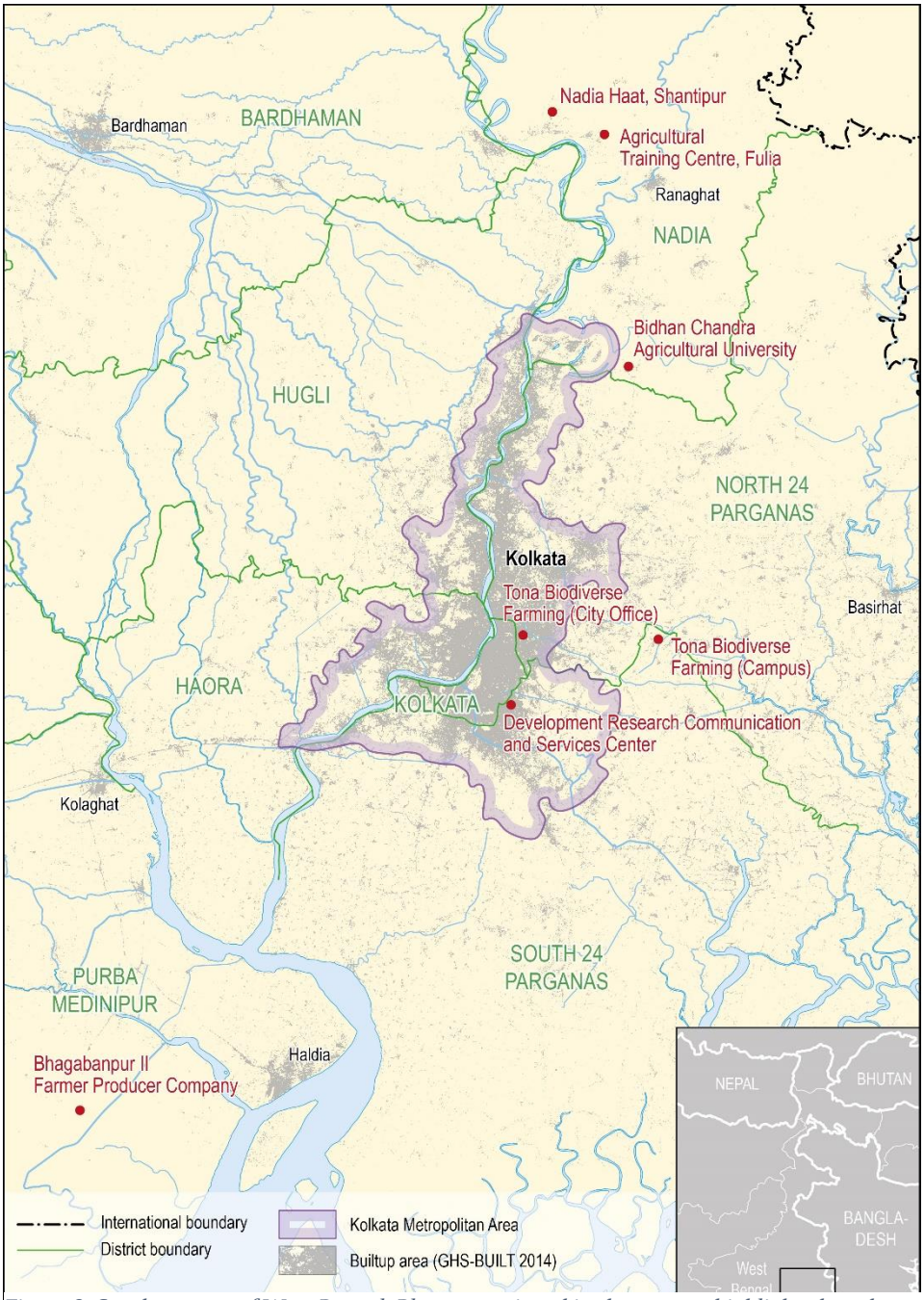



*Figure 9: Southern part of West Bengal. Places mentioned in the text are highlighted on the map (Layout: Shantonu abe , Cartography Regine Spohner).*

opportunities for local exchange or retail of goods, and for aggregation at the rural level. The mobility of vendors and the periodic nature of the markets are key characteristics (Velayudhan, 2016). Apart from economic transactions, social exchanges take place as well, making the markets integral to the social life of rural areas. Attributing their existence to the "friction of distance", academic research predicts that periodic markets will become increasingly irrelevant as permanent retail outlets become more prevalent as infrastructure improves (Velayudhan, 2016). Despite these predictions, it is estimated that there are over 47,000 periodic markets in India (Satyam & Aithal, 2018), and this number may keep increasing. Here, I look at Nadia Haat, a new market nested within a periodic market.

Shailen Chandi is the key figure behind Nadia Haat (see Figure 9 for location), and he explained how it was an integral part of how he got other farmers interested in organic production. In 2019, he was awarded a Plant Genome Saviour Farmer Reward by the central Ministry of Agriculture for his work on propagating Bengal aromatic rice varieties, most notably the *Radhatilak* variety. Besides organic or "herbal" [*bheshoj*] rice production, he also helps create a market for organic produce grown alongside or in rotation with the rice. At the workshop, Shailen Chandi explained briefly the history of the formation of Nadia Haat. His interest in organic agriculture started when NABARD sent him and other farmers to Ramakrishna Mission for a six-day training course in organic agriculture in 2010. This was part of a wider initiative by NABARD to help form two dozen Farmers' Clubs in Shantipur Block of Nadia district, West Bengal state. After implementing what he learned there in his own village, the District Development Manager (DDM) was pleased with his work, and asked him to compile a list of other possible candidates to receive similar training. Working together, they sent around 55 farmers to receive this six-day training between 2010-2013. Around the same time, Shailen Chandi joined the *Kishan Swaraj Samity*, where he learnt more about issues like seed rights and land rights (included under the broader concept of food sovereignty). This increased his interest in organic agriculture, and also helped to get other farmers interested.

One problem they ran into quite early on was of fragmentation. Land belonging to an individual farmer is often not continuous, making it difficult to control what gets into

the land. They started strategically selecting fields that were somehow separated from other plots (by roads, waterbodies, or wild shrubs). Farmers were asked to cultivate without chemical inputs in these fields, mainly for household consumption. Anything left over could be sold. Around 2014-15, quite a lot of farmers were practicing this form of agriculture. But a question was raised: where shall we sell this produce? This led to a discussion between the farmers, DRCSC (which had field staff in the area) and Kisan Swaraj Samity about what could be done. In January, 2018, Shailen Chandi attended the Safe World festival organized by DRCSC and BhoomiKa in Kolkata. Their group was invited to bring their organic produce for sale. This event got him started thinking about verifying whether there was sufficient local demand in Shantipur to support organic production. Motivated by this thought, they started their own "poison-free food market" [*bishmukto khadyo bazar*], Nadia Haat, in June of the same year. The *Haat* sits twice a week, with more than 60 regular customers. He also actively contacted local newspapers, and asked them to visit farmers from their group, to investigate how poison-free agriculture was being practiced. They were also asked to go to the market and ask the consumers why they wanted this food so much. One of the most common responses they got was "the food is different from what you get on the market".

The market sits in the afternoon from 4 p.m. till 6 p.m. This particular farmers' group does not have to pay the regular market fees – they get a place for free on the premises of the small temple adjacent to the marketplace. The temple owner is a friend of Shailen Chandi's, and approves of the work that they are doing as a social welfare organization. Buyers start lining up as early as half an hour before this time in eager anticipation. The four or five sellers for the day (representative farmers), having collected vegetables from the other farmers, arrives at around 3:45 p.m. on their bicycles, at which point there is a general hubbub as the buyers start claiming the vegetables that they want. Indeed, on some days, the seller does not have to lay out the vegetables for display because they are all claimed. Once this process is over, the customers line up again to pay for their purchases. Prices are rarely haggled over; the customers want what they have claimed, whatever the price. The accounts are maintained by a student hired for this purpose by the farmers. Where they previously paid several middlemen around 10% of the price to aggregate the produce, they now aggregate it themselves and pay this student to

maintain records. This allows them to skip two or three intermediaries, thus realizing a better price for the farmers, while keeping the prices the same as produce sold elsewhere in the market (aggregated by middlemen). According to their calculations, they experience increases of up to 40% in profit. Once all the money owed by the buyers is collected by the student, it is paid back to the farmers. All records, including which farmer brought what produce and which customer bought which product, are maintained in a paper notebook. This helps keep accounting transparent, and any errors (over- or under-charging) can be solved easily. Sales amount to around INR 8,000 (A little less than EUR 100) per week, as around 120 kg of produce is sold.

A key question is how they gain the trust of their consumers that their produce is indeed produced without artificial inputs. Shailen Chandi explains that he asks customers to buy a small amount and test it for themselves. Customers can experience for themselves that the produce does not rot as quickly as something bought elsewhere, or that the taste is different. It is meaningless, he asserts, to say that something is "poison-free" without asking customers to experiment and see it for themselves. He admits that there are no inspections of production systems by a third party, and that their organization is unable to arrange for training in skills like compost-making or liquid fertilizer-making. Farmers rely on the knowledge gained during the six-day training, as well as exchanging information amongst themselves. However, he says that yields have remained relatively stable, and because the members see the various benefits of cultivating organic rice and vegetables, they persist in doing so.

### *8.2.2 Block Level Farmer Producer Companies – Bhagabanpur II FPC*

Producer Organizations (POs) are legal corporate entities formed by producers in the primary sector with the goal of encouraging collectivisation. They can assume one of four forms: cooperatives, producer companies, societies or public trusts (NABARD, 2015). In recent years, the Government of India has been keen to encourage farmers farmer producer companies (FPCs) in order to improve the organizational capacities of farmer groups (Trebbin, 2014b). Envisioned improvements would include more bargaining power, better aggregation capabilities (clustering), value addition and

perhaps even elimination of many of the intermediary actors operating in the procurement process (Govil et al., 2020). This would help achieve increased vertical coordination within the agrifood sector as a whole. In the context of certified organic agriculture, it would enable "access to new markets by establishing flexible linkages to highly specialized demand" for organic produce (NABARD 2015). Apart from improvements downstream, FPCs would open up access to financial and non-financial inputs, services and technologies that would have been previously inaccessible (MANAGE, 2018). Incorporation, the legal process of forming a corporate entity, is one of the key processes within the capitalist system as it allows for access to larger amounts of capital. No wonder, then, that DAC&FW has identified such FPCs as "the most appropriate institutional form of aggregation of farmers…especially small farmers in the country" (MANAGE, 2018).

However, literature regarding what FPCs actually do and how they are set up is lacking. The most comprehensive research into FPCs came only in early 2020, with Govil, Neti and Rao publishing a report on the past, present and future of FPCs nearly two decades after they were first proposed as a way to improve the functioning of rural value chains. They found that there are 7,374 producer companies involving over 4.3 million small producers (5%) in India (Govil et al., 2020). A key problem they identify blocking the successful spread of FPCs is a "result of incongruities in stakeholder imaginations of the purpose of producer companies" (Govil et al., 2020, p. 9).

While conducting my fieldwork, Amit Bera, my informant, told me excitedly that they were planning to set up an FPC. Apparently, in discussions with DRCSC, he had learnt of the potential of FPCs to organize a group of farmers and get the official recognition (waybills) required to transport farm produce over long distances. He told me about workshops that DRCSC was organizing in order to help the SHF to set up FPCs. I got in touch with Sujit Mitra, the person in charge of these workshops, and asked if I could attend one of these meetings. I was curious to know what was discussed, and how difficult it would be to actually set up one of these much-vaunted FPCs. Before

Amit Bera and his fellow FPC members work in Bajkul, Purba Medinipur. He started working on sustainable agriculture in 1998, when he was employed by Kajla Janakalyan Samity. Receiving training from Ardhendu Chatterjee at DRCSC, and at *Bidhan Chandra*

*Krishi Viswavidyalaya* (Bidhan Chandra Agricultural University, see Figure 9 for location), he initially worked with around 15 indigenous varieties of rice as a welfare society PO. Later, learning from the famous rice conservationist Debal Deb, Amit expanded his collection to over 230 indigenous varieties. One of the key aims of this society was to preserve indigenous rice varieties, and they managed to raise funds through the manufacture and sale of vermicompost to interested government departments and to DRCSC. Through the profits generated, they invested in the cultivation and transport of vegetables and aromatic rices. They generated revenues of around INR 300,000 (EUR 3600) annually. A recurrent problem that hampered their system was that the police would stop their truck and ask for a *challan* (a waybill), or ask for other documentation that they could not provide because of their informal situation as small farmers and as a welfare society. In order to overcome these problems, they decided to formalize and form an FPC in 2018, and approached DRCSC for advice. With DRCSC's help, they managed to get registered in January, 2019. They had issued 200 shares and collected around INR 170,000 (EUR 2000).[9] Amit Bera already had a social network comprising people who would take indigenous rice seeds, and he wanted to use this network as a basis for the formation of the FPC. The main products they had decided on would be four aromatic rices: *Dudheswar*, *Radhatilak* and *Gobindobhog,* and *Kabiraj*. They also started work on mushroom spawn production, and they would also try to sell the vermicompost locally instead of sending it to Kolkata. Increasing processing capabilities through purchase of equipment like small-scale rice mills or machine-operated rice pounders is another avenue they are seeking. However, running the FPC posed several problems. He was not sure how to deal with the bureaucratic procedures of administrative work, especially the audits. he was unsure of how to use the funds collected in a way that the shares would yield dividends. There was also conflicting advice, as the Agriculture Development Officer encouraged them to collect as many members as possible, while DRCSC advocated a more prudent approach in choosing members. In mid-2019, they were approached by a *Krishi Vigyan Kendra* (Farm Science Centre, KVK) based at BCKV and sponsored by the Indian Council of

[9] To provide context, Govil et al.(2020, p. 58) report that early stage FPCs require around INR 2 million (EUR 24,000) to successfully commence operations.

Agricultural Research (ICAR) to help run a 150 *bigha* [20ha] agroecological farm training centre. The KVK was impressed by their success with indigenous rice varieties and their efforts to set up an FPC, this offer was made to them. The FPC thus acts as an interface through which institutional actors can be engaged. Making use of the fact that FPCs do not have to be certified organic, Amit Bera seeks to bring in farmers spread across four neighbouring development blocks who are trying to farm in an integrated manner but have not managed to completely shift to organic farming. By making them shareholders, the FPC hopes to extend training support to help increase farm-level productivity. They also hope that government involvement will provide access to marketing channels for rural-to-rural products. At the moment, they sell through a shop called Krishija in a Kolkata mall. They noticed that the rice they sell for INR 60 per kg is being sold for INR 90 per kg, and feel that they can get a higher share of the final price if they sell in the local market, where they feel that demand for products like chicken, vermicompost and mushroom spawn is increasing. According to Amit Bera, the FPC must replace the functions of the middleman, replacing several layers of intermediaries with one intermediary that is beneficial for the shareholder farmers. Their added value is the application of organic farming principles. They want to help disseminate ways in which we can move beyond the use of synthetic inputs and instead make use of ecosystem services. They would also try to make rural employment more profitable so that young people, especially young women, do not have to leave the village for employment. One of the key problems they recognize is that the price of synthetic inputs is rising and will most likely keep rising, while the price they get at the farmgate keeps at the same level or even falling. By capturing a higher share of the final price, they hope to be able to reinvest at production level as well as in the distribution network. Many farmers were apprehensive of joining the FPC when first approached because of problems in the past with chit funds in West Bengal (*All about the Saradha Chit Fund Case That Triggered CBI-Mamata Row*, 2019). A chit fund is a form of rotating savings more accessible to "marginal" investors than conventional banks, similar to what microfinancing institutions try to accomplish. At the same time, the Self-Help Groups (SHGs) funded by the government are a potential group with which the FPC can find ways of working in a mutually beneficial manner. Amit Bera has worked with these

SHGs before to give them training about ecologically integrated farming techniques and nutrition gardens, and is thus well-connected and respected.

During the workshop on FPCs organized by DRCSC, I sat and listened with board members from two FPCs, one from the drier regions in Bankura district, and one of which Amit Bera was a member. Dharmendra Kumar, an accountant invited for the information session, made a presentation outlining the structure of members of an FPC. The presentation was often interrupted by the attending farmers (the prospective board of directors) who were encouraged to ask for clarifications to make sure that everything was understood. The meeting started with the description of what an FPC is. One key feature explained first was that as a private limited company, liability in the event of a bankruptcy is limited to the assets of the companies. The liability for the individual shareholder is thus limited to the shares held in the company. There is no need to fear that individual assets will be taken away, even for the members of the board. After elaborating on this point, Dharmendra Kumar laid out a lengthy list of FPC requirements, listed in Table 6 below.

*Table 6: Key Farmer Producer Company Requirements*

| | **Key Farmer Producer Company Requirements** |
|---|---|
| 1. | Only farmers can be members; Access to land is a must. |
| 2. | Each member has a single vote irrespective of number of shares held. |
| 3. | NABARD gives assistance only for FPCs meeting the following requirements: |
| a. | A minimum of 500 farmers must join in the first year. |
| b. | INR 250,000 (EUR 3000) in shares must be raised in the first year. |
| c. | Minimum share price of INR 500 (EUR 6), for a total of INR 250,000 (EUR 3,000). |
| d. | 1000 shareholders within 3 years with minimum capital of INR 500,000 (EUR 6,000). |
| 4. | One FPC per development block is preferred by the local government. |
| 5. | A bank account has to be opened as soon as possible. |
| 6. | A board of directors must be appointed within 30 days. |
| 7. | Board of directors must meet at least 4 times a year. |
| 8. | Record-keeping at meetings is a must; Minutes and attendance has to be taken. |
| 9. | All transactions must be recorded, in the form of a paper trail of cheques and receipts. |
| 10. | Cash transactions must be avoided as much as possible. |
| 11. | No income tax has to be paid for 5 years. |
| 12. | Unlike cooperatives, trusts and societies, FPCs are allowed to turn a profit. |
| 13. | Each decision must be passed as a resolution. |
| 14. | No Goods and Services Tax (GST) will have to be paid for a turnover less than 20 lakhs. |
| 15. | A licence for GST collection is needed if turnover exceeds 20 lakhs per year. |
| 16. | The FPC will receive a PAN card. A trade licence from the panchayat is required. |
| 17. | For export, an Import Export Code (IEC) registration is required. |

What quickly becomes apparent is the need to become familiar with bureaucratic procedures, and the need to keep a record of everything. “Bureaucracies are, for better or for worse, the dominant actor of public and private affairs in the modern world” (Lederer & Höhne, 2019, p. 2). As Kumar put it, “all transactions must be recorded (*white* transactions). Unrecorded (*black* transactions) must be avoided at all costs”. It would require farmers to change the way they had been doing business thus far. Shareholding was one key example of this need for more record-keeping. The company issues a share certificate to anybody who owns a share. Shareholders (*Ongshidhar*) who bought a share would get an appropriately formatted paper issued with a legal stamp that acknowledging the transaction. This paper signifies that the bearer will be paid the value mentioned on the piece of paper by the company— it is evidence that the bearer is a shareholder. The certificate lists the name of the shareholder, the address of the shareholder and the number of shares you are taking. It has to be stamped with the company’s common seal. Documentation helps maintain transparency of operations and clarity of what belongs to whom.

The need to maintain documentation also exposed problems, some of which led to lengthy delays. Documents required to identify the board members included the Permanent Account Number (PAN) card for tax purposes, Voter Identification cards for identity, and the Aadhaar card as proof of residence. The Aadhaar card is a 12-digit unique number assigned to Indian residents, and is linked to biometric information of fingerprints, iris, and photograph. Collecting the documents of the 15 farmers who were going to be the first board members, a prerequisite for the start of the FPC, turned out to take more than three months. I asked Amit Bera why it took so long. He sheepishly explained to me that some of the names had not matched across the document types, and that time was taken up in getting this issue fixed. This is a common error when Indian vernacular names are transliterated into English (“Aadhaar Failures,” 2015). A changed vowel here, a dropped middle name there, and soon the cards become inconsistent – they fail to match, causing a bureaucratic mess with real consequences (Ghosh, 2019, p. 872). This problem is pervasive; the spelling of Aadhaar as Aadhar in some journal articles is a case in point. In the course of day to day life in the village, this

inconsistency was not a problem; it was only when the FPC was going to be set up that this problem came to light. Forming an FPC involves a far more pervasive form of bureaucratization, where the farmers themselves have to organize into a bureaucratic organization. On top of complying with production requirements laid out by standards, they have to navigate the unfamiliar world of audits, compliance and shares, by getting financially literate. Failing to do so results in prompt fines, inability to access loans and ultimately, the failure of the company. The original goal of reducing transaction costs is thus replaced by a need to strengthen institutions to facilitate bureaucratization (Lederer & Höhne, 2019).

Access to funds was also discussed in the workshop, in response to a question asked by Amit Bera. What happens when the FPC wants to procure a large amount of produce (like pigeon pea) right after harvest time, and the FPC would need a large amount of money, for example EUR 3600 to purchase the desired amount but it only has EUR 2000 as share capital? Dharmendra Kumar provided several options. The FPC could seek to get a bank loan, which would require approval of the bank and would possibly take a few months before any money could be made available. It could also sell more shares to members to finance the purchase. Forming an FPC opened up other potential sources of income. Foreign Direct Investments (FDI) and Government contracts (for things like infrastructure development or training facilities) could be sought, and would constitute another way of doing business. After the information-packed presentation, Dharmendra Kumar tried to encourage the farmers by telling them “once you start working on the FPC, you will see that it becomes easier, and that you will gain motivation”. The reluctant smiles on the farmers’ faces acknowledged this encouragement. He went on, “Once you start generating profits, people will naturally come to you to provide services (for accounting or management) but the main thing is that you will need to be aware that you are in charge”. The intended scale of the FPC also poses problems for bottom-up organized FPCs. The farmer I was interviewing was considering an FPC with around a hundred members. But the incentives in place for FPCs envision groups with at least a thousand members within five years, a ten-fold increase.

The report by Govil et al. (2020) suggests that understanding and complying with the bureaucratic requirements is just the first step in running a successful FPC. They point

out in their report the danger posed by a lack of business acumen among the farmers themselves but also in the Producer Organization Promoting Institution (POPI). The POPI is any individual or institution involved in promoting and hand-holding the Producer Organization (PO), "using their own resources out of goodwill or with the noble objective of socio-economic development of producers" (NABARD, 2015, p. 2). The prospective list of organizations to provide this support include NABARD, SFAC, Government Departments, Corporates and Domestic and International Aid Agencies, and NGOs. Perhaps one of the most important functions expected of the POPI is to provide "professional and managerial assistance" in the initial years (NABARD). The FPC model is by design expected to include non-farmers who can navigate the requirements of business. One of the key provisions mentioned in the workshop was that the chief executive officer (CEO) of the FPC must be a someone with at least a bachelor's degree in business administration, and will be responsible for the execution of the wishes of the board. In return, the CEO will be paid a fixed salary. He or she will be in charge of the whole business, and answerable to the board. Govil et al. (2020) suggest that many of the promoters, being NGOs or socially-oriented promoters, severely underestimate the requirements of running and FPC, resulting in large losses or even bankruptcy. However, it is turning out to be difficult to find financially literate people willing to work with farmers (Amit Bera, personal communication), starving FPCs of "surrogate entrepreneurship" (Govil et al., 2020, p. 80). It is also difficult to assume that the risk-averse peasant mode of farming will be used in making business decisions as an FPC if the CEO is not someone with experience in having farmed. The report suggests one way out of this dilemma: to have "an assured buyer or a proven operation blueprint" (Govil et al., 2020, p. 80). Another complementary action suggested is to implement policy interventions that create a conducive regulatory framework for business. These suggestions, while addressing pertinent questions about the immediate survival of FPCs, fail to address a larger question that hangs over FPCs: How will they contribute to the remediation of the *speculative climate* that Akhil Gupta identifies as the key factor behind the precarity of the conditions for farmers in India? (Gupta, 2017). Gupta identifies the three key factors that make farming a speculative activity. The first factor is the need to take out loans to start the cycle of production, which means the farmer is forced to speculate on a successful harvest. The second factor,

on which the success of the harvest is contingent, is the increasing uncertainty surrounding the monsoon rains, which seem to be becoming increasingly erratic (McElwee, 2019; V. Mishra et al., 2020; D. Singh et al., 2014). The third factor is prices, especially global commodity prices. Any fluctuation affects the value of the final produce, and this factor too, is beyond the control of the farmers, contributing to uncertainty. In response to these pressures, DRCSC proposes a special mandate to farm in an ecologically sensitive way, based on integrated farming systems.

The FPC as a line of flight thus comes with its own potential pitfalls. The bureaucratization of the processes involved in the transactions for production might strangle the "free expression of creative energies" that is vital to the experimentation required to innovate within agroecological farming systems (Graeber, 2015, p. 192). This figurative strangulation happens not because of malicious intent, but rather because the uncertainty inherent in experimentation is felt to be too open-ended. Bureaucratization seeks to impose order and make its participants visible and legible to the rest of the supply chain. In order to impose order, it requires "the imposition of impersonal rules and regulations…[which] can only operate if they are backed up by the threat of force" (Graeber, 2015, p. 32). Despite this ominous definition, bureaucracies can be harnessed for the realization of impossible visions, and therein lies their value (Graeber, 2015). Using Ploeg's distinction between the entrepreneurial mode of farming vis-à-vis the peasant mode of farming, we can understand some of the potential pitfalls of FPCs. The FPC is designed not be environmentally sustainable, but rather to be profitable. While environmental imperatives can be made an important part of the business plan, it requires an effort to do so. Why is it important to explore this issue? It demonstrates that the FPC is a highly malleable institution. It requires a lot of effort to organize and set up, and requires a level of knowledge of corporate that may not be realistic without a considerable increase in effort to provide the necessary environment conducive to entrepreneurship. If the goals are too narrowly defined, the FPC may not succeed in empowering the farmers either.

Summarizing the discussion so far, we find that FPCs are not, by their nature, predisposed to enable one form of agriculture or another. While sustainable agricultural processes are advised (NABARD, 2015, p. 8), they are not an explicit requirement. Using

it to serve the purposes of organic agriculture requires the support of knowledgeable farmers who either understand the need for sustainability in agriculture or have been trained over a period of time to grasp this need. The FPC has the potential to be a useful tool for the farmers to gain more autonomy, but it could just as easily lead to their disempowerment. There is an asymmetry of knowledge and power between a potential group of SHF and the POPIs, or even potential clients. A professional manager, a CEO, is supposed to be appointed by the board of directors to help manage the FPC. This CEO is supposed to be a graduate from a recognized management course to come from outside the village or region where the FPC is organized, and to manage it. There is a risk, in other words, that organizing an FPC is reduced to nothing more than a bureaucratic exercise to form a group of farmers that is more visible and easy to exert control over.

### *8.2.3 Urban-Rural Integration —TONA Organic Farm*

TONA Organic Farm is a model farm of Bio-Diverse Farming Private Limited, and is located 40 km to the east of Kolkata (see Figure 9 for location). The foundations for TONA were laid in 1999, and the company was officially incorporated in 2003. The TONA "campus" is around an hour and a half's drive from Kolkata, and is a walled area with 1.6 ha of land. A large circular pond of 0.4 ha is in the middle of this land, with the various structures surrounding it, and are themselves surrounded by the fields and vegetable beds. The village surrounding it, Tona, is small, with roughly 80 ha of land with around 200 households. A group of investors with different specialisations came together to set up a processing facility, with the initial objective being to grow herbs for manufacturing basic drugs for herbal and homoeopathic medicine. They avoided allopathic medicine because the initial capital investment is very high for similar basic drugs. Their model, they reasoned, would be a low-cost management system where expenses for plant cultivation would be the main expense. When the equipment (such as autoclaves and vats) was not being used for manufacturing the herbal extracts, they were used to process fruits to make various products like jams, cordials, pickles and chutneys. Gradually, they also expanded into livestock rearing with poultry, sheep, and goats through interaction with the surrounding village. Most of the manure generated was returned to the on-site fields in order to fertilize the fields where fodder was being

grown. However, the fodder produced was not enough to meet their needs; in order to support the increased number of livestock, they reasoned that they needed to have cow manure as fertilizer. This led to the next step where they started cattle rearing. Additionally, they started growing rice for human consumption, and using the leftover biomass to feed the cows. The rice grown in the paddy fields is an aromatic indigenous variety called black rice, which after planting in July requires 145 days of growth till harvesting. Normally, rice is left to grow for the whole season, without any cutting. However, in this case, the rice grass is cut every month for 4 months to be used as feed. The grass can grow as high as two metres, representing a considerable source of biomass. The livestock was being sold live, meaning they would buy young animals, feed and fatten them, before selling them. They realized they were unable to create any distinct identity from selling live animals, so they decided to get a licence to process meat on site. This allowed them to get a higher price than selling live animals, and also allowed them to diversify into exotic meats, as listed in Table 7. Most of the waste generated in meat processing (blood, offal, bones etc.) is either crushed and fed to the fish (listed in Table 7) in the pond, or is boiled and juiced and fed to some of the livestock to increase protein intake. Pretty soon, they found that there was a demand for fresh vegetables and that it was a good way to increase their consumer base. They established perennial beds for leafy vegetables "on-campus", and asked the "off-campus" villagers to grow the bulkier vegetables like gourds and tubers. In selecting crops, they aim to grow indigenous varieties, and also aim to try to provide for all the products required in a typical Bengali household.

*Table 7: Livestock types on TONA farm.*

| | **Livestock Type** | **Stocking Rate** |
|---|---|---|
| 1 | Turkey | 500 |
| 2 | Chicken | 1000 |
| 3 | Duck | 500 |
| 4 | Quail | 500 |
| 5 | Goat* | 100 |
| 6 | Rabbit | 200 |
| 7 | Sheep* | 100 |
| 8 | Cow | 20 |

| | **Types of Fish** | **Scientific Name** |
|---|---|---|
| 1 | Rui | *Labeo rohita* |
| 2 | Katla | *Catla catla* |
| 3 | Tilapia | *Oreochromis mossambicus* |
| 4 | Bata | *Labeo bata* |
| 5 | Mourola | *Amblypharyngodon mola* |
| 6 | Pangasius | *Pangasius bocourti* |
| 7 | Golda Chingri | *Macrobrachium rosenbergii* |
| 8 | Bagda Chingri | *Penaeus monodon* |

The system is designed in such a manner that the pond acts as the interface of many systems on the farm. In order to maintain a favourable environment for the fish, nutrient-rich water is first pumped out from the pond to irrigate the various crops. Fresh water is then introduced, pumped in from a well but raised to a height of around 5 metres in order to aerate the water. This cycle ensures that enough oxygen is in the water at all times to encourage phytoplankton and fish growth, and the introduction of freshwater ensures that the pH balance is kept, removing the need for liming, which is otherwise a common practice in aquaculture. Wild fishing birds like herons are allowed to prey on the fish, constantly keeping the fish moving to escape being eaten. In order to save space and reduce evaporation, all the buildings are on concrete stilts over the water. This also creates a shaded environment for the fish underneath. Water hyacinth and *azolla* also grows over one-fourth of the pond surface, and is used as a source of fodder, as well as a natural filter. In this way, the management of the pond tries to mimic a natural ecosystem, although modified to produce more food.

A key innovation is their method of livestock management based on five principles mentioned in Table 8. Several aspects correspond to requirements of organic certification, but some are unique to TONA. The cleaning of stalls using smoke and ash instead of water is a case in point. The structure is designed in a way that the livestock can be moved around so that hot ash can be spread, killing pathogens physically through heat and through chemical changes in the acidity. The ash also absorbs urine,

*Table 8: Principles of livestock management and herbs added to the feed of animals as prophylactic.*

| | **Five Principles of Livestock Management** |
|---|---|
| | |
| 1 | Maintaining appropriate temperature in livestock living areas |
| 2 | Cleanliness maintained using smoke and ashes instead of water |
| 3 | Feed must be as fresh as possible |
| 4 | Use of prophylactic herbs to avoid use of vaccination and antibiotics |
| 5 | No artificial insemination |

| | **Herbs** | **Scientific Name** |
|---|---|---|
| 1 | Tulsi | *Ocimum tenuiflorum* |
| 2 | Kalmegh | *Andrographis paniculata* |
| 3 | Kulekhara | *Hygrophila auriculata* |
| 4 | Mentha | *Mentha × piperita* |
| 5 | Pudina | *Mentha spicata* |
| 6 | Shojne | *Moringa oleifera* |
| 7 | Ulotkombol | *Abroma augusta* |
| 8 | Papaya | *Carica papaya* |

keeping the stalls dry. Smoke is used to repel parasitic insects like mosquitoes. Water is avoided as it often creates conditions conducive to the growth of harmful microorganisms. The addition of a mixture of prophylactic herbs to the feed is also credited with reducing the need for antibiotics. All these herbs are grown "on-campus" and mixed into the feed which also contain weeds and rice straw. Temperatures in livestock areas are kept low by growing trees to shade the building, or by practising rooftop gardening. My interviewee, Uday Bhanu Ray points out that design in agriculture is not only at the agronomic level, but must also include building plans, plumbing and even electricity supply. Without this, it is not possible to compete on the market on the basis of prices, he opined. At TONA, they are experimenting with hydroponic systems as well as roof-top gardening, as they try to make use of every possible area. While TONA has been a certified organic processor since 2011, he does not consider certification to be a key driver of the changes they have implemented. Rather, it is the rigorous application of the principles of tight linkages of production systems and waste management that have driven success. TONA has 28 shareholders, with an average gross profit of around 40%. Turnover for 2017 was around INR 77,600,000 (EUR 925,300).

Regarding marketing, Nirmalya Ghosh explained at the workshop that the key challenge was the need for the enterprise to be profitable for the farmers, as well as affordable for the consumers. These two needs are diametrically opposed, and the important role that TONA plays is to keep this in a sustainable balance. TONA started out by trying to sell at several malls and hypermarkets in Kolkata. This strategy quickly ran into problems, however, as the employees of these malls responsible for stocking the shelves would leave TONA's meat and fish products outside the refrigerator overnight, severely reducing the quality of the products. Uday Bhanu Ray surmised that it was an underhanded ploy by his competitors to tarnish TONA's brand image, and decided to withdraw his products from this particular supply chain. They worked hard on building their own customer base, eventually working with 18 different stock points and outlets, mostly located within Kolkata reaching around 3000 customers. For orders above INR 2000 (EUR 25), home delivery services are possible. Orders are placed mainly through WhatsApp, a social messaging service, as well as through the website or by phone. This

reachability gives consumers a sense of community built around the interest of "affordable and good food", culminating in the formation of a cooperative society by the consumers, which will be looked at in more detail in the next paragraph. They do not have a budget for advertising, relying on word-of-mouth to get more consumers. The TONA Campus is also kept accessible at all times, and is a popular destination for picnics in the winter time, or workshops on urban rooftop gardening. Groups of consumers are invited to spend a day relaxing and seeing the place where their food is produced and processed. The farmers who work at TONA are shareholders, and also work in multiple and varied roles. They have the opportunity to work not only in production but in processing and budgeting, and as consultants for other farmers [NIR.GHOSH]. In order to encourage farmers to step beyond the production stage, they have emphasized the need for education initiatives. They collaborate with the West Bengal State government's *Utkarsh Bangla* initiative, which aims to provide short-term skill training sessions across the state. TONA provides technical training for organic production through this programme. TONA also partners with the University of Burdwan to organize a course where undergraduate students can work with local farmers to better understand problems facing organic agriculture and work together to solve these problems. Though this is a pilot project, they seek to expand the programme to other universities as well. Ultimately, the goal is to teach an integrative approach to agriculture and the supply chains around it. This education also helps combat some of the commonly-held ideas about agriculture, namely that it does not require much education to be successful at it. It also exposes students to the possibility of helping with the management of Farmer Producer Companies. In this way, TONA hopes to *scale out* their way of approaching agriculture. They seek to encourage a cartography instead of decalcomania.

Some of the motivated customers of TONA came together to form a cooperative, the *Aponjon Joutho Samabay* (Friends Solidarity Cooperative). Shaikat Sengupta, a representative of this cooperative, explained that unlike producer-centric cooperatives organized by the government, the idea here was to create a platform (a new desiring machine) that allows the consumers to support farmers who practice production and processing methods that they approve of, while increasing profit margins for farmers

and lowering prices for consumers. Although it started with a handful of consumers, it now has more than a 100 members, and plans are in place to encourage other similar cooperatives. One of the key ways in which this cooperative helps farmers is by helping organize documentation for certification with different standards (not only organic). It also helps to change notions of what a good product should be. One example raised was mustard oil, an indispensable ingredient in the Bengali household. Popular advertisements portray a good mustard oil as being pungent enough bring one to tears, but this pungency is only possible through addition of other components. By sharing information about how to identify genuine products, they help ease fellow consumers' fears of adulterated products. Indeed, a lot of the conversations when recruiting potential members is discussion of how one can know the product is indeed organic (*joibo*). Indeed, they have given up on this term (which is associated with certification), preferring words like sustainable (*shusthayi*) or unadulterated (*kono bhyajal nei*) as it makes it easier to visualize what is being offered. They also have to help customers come to terms with the seasonality of the production, which means that some products are not available all the year round from their producers. Getting consumers used to these inconveniences is an important part of the role that the cooperative plays in their educating role.

### *8.2.4 Creating Virtual Linkages: Welthungerhilfe and DRCSC*

Welthungerhilfe (WHH), an INGO based in Germany, has had development projects in India since 1962 (Welthungerhilfe, 2020). Anshuman Das, a representative of WHH, explained at the workshop that they work in several states in India, covering a wide swathe between Rajasthan in the west and West Bengal in the east,[10] where nutrition security remains a key issue. These areas are mostly rainfed, and cover drylands as well as forested areas. Most of the aboriginal peoples of India [*Adivasi*] also inhabit this region. Through their various projects, they work with more than 150,000 households of landless, marginal, and smallholder farmers. Their main focus is on how these households can work towards their own nutritional security by producing and consuming nutritious food throughout the year. WHH provides help through interventions in crop cultivation and animal husbandry. As the households become self-

[10] States covered include Rajasthan, Madhya Pradesh, Chhattisgarh, Bihar, Odisha, and West Bengal.

sufficient, they also start generating marketable surpluses, albeit in relatively small quantities. Helping them sell this produce has thus become a secondary focus for them in recent years. This marketing aspect has not been easy for NGOs however, and has resulted in many failures. Das explained the different reasons for the failure. The first cause was a failure to recognize that there are many actors involved in transforming and getting the food to the table of the consumer. Aggregators of the products, people who collect non-timber forest products (NTFP) like honey, wholesalers, transporters, were just some of the actors they had excluded when trying to improve food systems. The second cause was a failure to acknowledge the diversity of the consumer base. School-going children, middle-class office workers, upper middle-class people with more purchasing power, were some of the categories they overlooked when they assumed they were marketing to a generic consumer. In light of these lessons, WHH identified *Production, Marketing* and *Awareness Building* as the three essential activities they needed to be involved in, and in order to successfully reach consumers, they would need to connect and coordinate between these three aspects. This food systems perspective opened their eyes to the need to understand different kinds of value for the various participants in the system. For example, regularity and reliability of supply was a key value for retailers. Product finishing was considered valuable by consumers, who do not want stone fragments in their rice. The ability to avoid distress sales, where farmers have to sell despite low prices, is of value for WHH. Traceability of the food, and a transparency of pricing are also forms of value. A market has value for the consumer, Das explained, when it can generate this kind of transparency. A key intervention point for WHH was related to mediating between consumers and farmers, and had to do with the characteristics like seasonality and diversity of produce from SHF. They could help the consumer see these things as something positive, to help them use it to add benefit to their lives, instead of seeing these things as inconveniences. Without this transference of values, they reasoned, it would not be possible to create a market. Just as WHH trained farmers, they would also train consumers.

FPCs were identified as a key form of social organization that would help WHH achieve its goals. Activities like branding, communication of value, and price-setting would be part of the role played. A key role of FPCs would be to understand and apply standards

that needed to be met for food production. Although some standards are complex, they can also be empowering as a way to participate in a desired market. However, they also recognize that certification would not be enough to further the interests of a wider food movement, as they do not look at the food system as a whole, and end up certifying only bits and parts of it. They created a framework of "clean, green and fair" principles to coordinate with their partners (See Appendix A for a comprehensive list) at the farm, products, and retail level.

As an INGO, they try to provide a "single window solution" for education services, co-branding and creating new products. They provide information and training to partner NGOs to help PGS certification, FPO formation, and organize workshop for regulatory compliance. Another service they provide is a platform for networking between consumers, producers and marketing. They aim to revive a culture where food is discussed as enthusiastically as politics. As co-branding, they want partner FPCs or companies to their identity, but have shared values with a wider community. And through new products, we would like to take a few selected products to the global market through a collaboration with Slow Food International. In the period 2014 CE-2019 CE, they have managed to scale out to work with 5,000 farmers, helping to set up ten FPCs in collaboration with eight local partners. They have developed a portfolio of 20 products. They also work with around 40 small stores, to help them improve sales. Through these channels, they reach around 500,000 consumers, the majority of whom consume food within 250 km of where production takes place.

DRCSC is one of their local partners, working in West Bengal. Sourabh Ghosh and Sujit Mitra explained that their story followed a trajectory similar to that of WHH. Their main focus was on helping maintain livelihood and nutrition security through agriculture that does not deplete the environment. The emphasis has been on finding the best way to use local natural resources in an effective manner (refer to p.73, "Cross-cutting Case, for more details about DRCSC). In 2003-2007, they were involved in a small project that aiming to gauge the potential of getting food from rural areas to the city. This was followed by another initiative to set up periodic markets where farmers could sell their organic produce. These two initiatives met with limited success, as DRCSC was not that experienced in this area. The third phase, starting in 2010, was when they were involved

in youth skill development. One component of this skill development was teaching youth to develop and make new products from locally available resources, like neem oil. The products needed to be marketed, and this led them to get involved in marketing. Within DRCSC's network, there were around 12,000 farmers in different products with marketable surplus. They had to learn new things related to marketing through a process of trial-and-error, like what quantities would warrant the effort to market, and how to physically transport the produce. One product that they had worked with a relatively long time (since 2010 CE) was Palmyra palm (*Borassus flabellifer*) and date palm (*Phoenix sylvestris*) sugar. These trees, usually growing on common land and on the edges of rice-fields, were a common sight, until they started being replaced by other trees, such as the fast-growing eucalyptus (Raintree, 1996). These palm trees are tapped by itinerant artisans who are skilled at scaling these tall trees to collect the sugar-rich sap (Kamble, 2003). Due to the decreasing number of trees, and of tappers, this was a product assemblage that was in danger of dying out. However, by improving the product quality, it was possible to create a cluster of around 100 producers around this product. Interventions made included upgrading of technology to be able to process larger amounts in one go, and the recommendation to use sustainably produced wood to fuel operations. They encouraged the use of clay pots instead of re-used plastic PET bottles, which improved the presentability of the product to an urban clientele. Efforts were made to ensure that no child labour was involved, an aspect that was important for the NGO to enforce. However, the lack of a central processing unit meant that it was difficult to maintain quality control, so they applied to the Khadi and Village Industries Commission (KVIC)[11] with a proposal to make such a unit in 2016. KVIC came back with various demands, mostly having to do with a scaling up of operations, without offering any material support. With the farmers and DRCSC unable to meet the demands,

[11] Khadi is a fabric handspun from cotton that has a rich ideological history rooted in the Independence movement of India (see Ramagundam, 2018, for a fuller treatment of Khadi). The definition widened in post-Independence India to include cottage industries other than fabrics. The KVIC is "charged with the planning, promotion, organisation and implementation of programs for the development of Khadi and other village industries in the rural areas in coordination with other agencies engaged in rural development wherever necessary. Its functions also comprise building up of a reserve of raw materials and implements for supply to producers, creation of common service facilities for processing of raw materials as semi-finished goods and provisions of facilities for marketing of KVI products apart from organisation of training of artisans engaged in these industries and encouragement of co-operative efforts amongst them" (KVIC & GoI, 2020).

negotiations broke down after two years. Further, despite their efforts in improving the product, the only outlet available was the local wholesale market [*mandi*] where the palm sugar would be sold for as little as INR 30 per kg, irrespective of quality. This led to the search for a different way of organizing the farmers in order to better participate in the market, and FPCs were identified as a promising way forward.

The main motivation for DRCSC to look into FPCs as a way for farmers to organize themselves had to do with legal considerations. As an NGO, they were unable to generate and distribute profits. On the other hand, an FPC would have a bank account, be able to apply for food licences from the FSSAI, and get bank loans as a way to raise capital. A lack of operational knowhow was another issue, with activities like product mapping, quality control and logistics beyond the scope of DRCSC's remit. These limitations applied to all products, including hand-pounded rice, and paddy seed. Efforts to connect farmers to intermediaries who would theoretically connect them to markets largely ended in failure, as the intermediaries began exploiting farmers through actions like non-payment. Finally, FPCs were chosen instead of a co-operatives structure because DRCSC worried that non-farmer actors would step in and hijack the co-operative, an occurrence that has precedent in the literature(Bikkina et al., 2018).

Helping the farmers form FPCs was not easy. Documentation was a problem, as discussed in the case of Bhagabanpur-II FPC, although they adapted to this reality by enrolling farmers who had documentation first, and then adding more members as more personal documents became available. There is a they experienced difficulties in identifying potential farmers with an entrepreneurial spirit who would help lead the company. Helping farmers *prove* that they owned the land they worked on (a key requirement) was very difficult, as transfer of land by inheritance is often not reported for two or three generations in order to avoid the hassle of getting involved in bureaucratic procedures. The role of writing in constituting governance by the state (Gupta, 2012) becomes apparent through these brief glimpses. The capacity to generate capital is also limited because a limited number of members means they do not qualify for support from government schemes. Chatterjee commented that even if the idea behind FPCs was to help farmers become entrepreneurs, the requirements imposed meant that it was often easier for entrepreneurs to "become farmers" (acquire the

necessary documentation) and set up successful FPCs. Solutions were geared towards larger farms, leading back to the original problem: the FPCs, set up to help SHF whose scale of operations were too small, were themselves too small.

Despite these challenges faced in setting up FPCs, DRCSC and WHH have a long-term vision built around these groups. They wish to eventually set up FPCs in every district, and coordinate between them to create a demand for diverse products from integrated farming systems. This larger assemblage of FPCs would help generate demand, and also improve the quantities they could market. Another potential market they plan to tap is demand from local governments, who often prioritize FPCs when purchasing seedlings, seeds and organic inputs for development projects. These virtual linkages, created through a common motivation to produce "clean, green and fair" would thus be the way in which they achieve scale. It seems like other experienced businesses are not part of the business plan for the moment, leaving the question of whether these virtual linkages will be sufficient as an "enabling ecosystem" (Govil et al., 2020, p. 81) an open one.

### *8.2.5 National Level Social Enterprise— EkGaon Technologies*

EkGaon Technologies is a company founded as a for-profit social enterprise. While there is no standard definition for this newly-emerging form within Indian regulatory frameworks,"[s]ocial enterprises are predominantly for-profit private sector small businesses that engage with the low-income population to address challenges of access and affordability in critical needs sectors" (Ganesh et al., 2018, p. 11). EkGaon offers a platform service for leveraging mobile communication technology for encouraging sustainable development of women-self-help-groups (SHGs) and small farmers across India. Through their "OneVillageOneWorld Network" platform, farmers can access farming advice through their mobile phones, and sell their produce through the "ekgaon.com" platform (Ekgaon Technologies, 2016).

Vijay Pratap Singh Aditya explained a key problem he found in the Indian agricultural sector: most governance attempts do not provide a supportive ecosystem for farmers to work in. He thinks that agriculture policy in India is focused on a narrow set of crops (wheat, rice, some pulses, and oilseeds), causing a lack of storage infrastructure for perishable produce, and an even dire lack of value chain financing options. With a

limited number of bodies involved in managing supply chains and a direct result of limited storage capacity at local levels, farmers do not have access to storage facilities, leading to artificially created monopolies and monopsonies of the market. This results in a skewed economics favouring large interstate value chains instead of local value chains. During the workshop, he illustrated this point using the example of potatoes. Potatoes produced in West Bengal are shipped to the neighbouring state of Odisha, and sold there at a lower price than potatoes produced by farmers in Odisha. This means that farmers in Odisha cannot grow potatoes, while farmers in West Bengal keep getting a very low price for the potatoes. Even then, potatoes are considered to be an "economically safe" crop that are backed up by a minimum support price (MSP). Farmers respond to these feedbacks, and keep growing these crops even when they do not yield the highest returns, or require high investment. Aditya observed that if we privilege the needs of the company for an efficient supply chain, we would arrive at a configuration of the supply chain very different from one that would cater to the needs of farmers. He saw conflicting interests in the two perspectives: the company would always be looking to keep costs down to get a cheaper product, whereas the farmer would seek to get more value from the same product. His personal view was that things should always be looked at from the farmer's perspective, as they were the primary point of production. When asked about how he would try to change these value chains, he spoke of his appreciation of the Swiss system of local-centric food consumption, and how it was an inspiration. "Markets must be created locally in order for farmers to benefit from them", he elaborated, saying that he felt farmers don't generally benefit from global markets.

What Ekgaon does is to help fix these market imbalances by trying to create value chains for lesser-known, non-MSP crops. While most companies identify certain villages, and then choose to work with the products already being produced in the village, Ekgaon took a different approach. They identified a geographical region, and then analyzed production patterns over the course of one year (three production seasons). They found that small farmers they work with typically grew two crops per season, a primary crop destined for the market and a *risk-hedging* secondary crop which was grown in smaller quantities and mainly for household consumption. They figured out the crop

distribution across the three seasons, as well as the quality and the quantity of the total amount produced. They also analyzed the performance of the market for these products, and used this information to decide not to participate in the primary crop market, as the government is the main buyer and offers a price against which small companies cannot compete without eating into their own profits. Instead, they valorised secondary crops, whether grown in the same season or as a rotation crop. Millets, flaxseed, chickpea, sesame, turmeric, ginger, black pepper, and large cardamom were some examples. They did this through a practice they called "replacement pricing", where the secondary crop would provide more income than the primary crop. Secondary crops tend to be high-value crops, but whose supply chains tend to be underdeveloped, so they set up clusters, which they defined as a production area that would provide them with a maximisation of a production of their selected crop, allowing them to build economies of scale. Clusters ranged in size from 1,000 to 4,000 farmers. Crucially, the crops are not exotic or new; they were already being cultivated there but the market mechanisms associated with the crops had failed. This means that the crops are suitable to the environment, they do well in the soil type there, and require little irrigation. This, Aditya explains, is *sustainable by default*. They help farmers shift to secondary crops by providing advisories for sowing seasons, and issuing bulletins on critical diseases. For most major crops, the cost of cultivation is around 15-20% of production, and using organic inputs helps reduce expenses. The platform also provides a supply chains for organic inputs, and they also organize farmer field schools.

As an example of value addition at the field-level, Aditya described their grading system with color-coded bags. Steps as simple as this, he explained, are important in adding value to the produce. They use three colours; red, green and black. The red bags are used for the highest quality produce, while the green bag is for secondary quality material. These are the two levels of product quality that Ekgaon buys. The produce in the black bag is to be sold elsewhere, or for household consumption. The sorting is done by farm-level aggregators, who carry around a small mobile lab and smartphones to tag and scan the produce once acquired. This information is fed into the database, and cross-checked with the produce once it arrives at the warehouse. The technology they use to help manage the supply chain efficiently also serves a double purpose of allowing

the consumer "see" where the produce is coming from. Using their own app and barcode system, they provide customers with the opportunity to see information about where the product comes from, which they feel is able to get the same message as the organic label to a consumer without the need of a third-party certifying agency. Through this "know your farmer initiative", Ekgaon hopes to build empathy between consumers and producers. Where possible, however, they also work with state governments to get farmers certified. An example Aditya mentioned was of Mandla District, Madhya Pradesh state, where they work with 25,000 farmers, of which 8,000 are certified with the PGS scheme paid for through government schemes.

When asked why he did not help all the farmers get certified, Aditya explained that market realities always factor into a decision of whether to certify or not. He feels that a lot of companies and organizations working in the organic sector promote a misunderstanding among the farmers that getting certified organic will help them get good prices, sometimes promising them even double the price. This understanding is almost never in agreement with market reality, because of the market mechanism behind procurement. The section responsible for procuring organic produce in a company, the buying house, operates as a cost centre, as opposed to a profit centre (M. Smith & Pretorius, 2003). He argues that the only way a cost centre can generate profit for the company is by buying cheaply. Thus, the incentive for the people working in procurement is not to get the best possible product, but to get the cheapest supplier possible. This also means that large organic companies are susceptible to fraudulent practices, often ending up buying conventional produce and re-branding it to keep up with demand. In contrast, he says that Ekgaon is a benefit corporation, seeking to provide a variety of services to farmers at an affordable rate, and that certification is a secondary issue. The objective for him is not to get certification, but to help farmers get a better income by creating the necessary supporting infrastructure.

### 8.3 Workshop Discussion

One of the main features of the workshop was a discussion on two important aspects of nested markets: Creating distinction and common-pool resources (Ploeg, 2014).

*Creating distinction* or *distinctiveness* of the product depends on dimensions of price, product quality, production mode, social organization of time and space, and availability (Schneider et al., 2016). In order to make the issue more accessible for participants, I used the example of processing as a way to focus the discussion. Common-pool resources (CPR) is a concept based on the works of Elinor Ostrom on governing commons, and is defined as the "commonly shared and well-institutionalized capacity to generate joint benefits and at the same time avoid these benefits being adversely affected by [opportunistic behaviour]" (Ploeg, 2014, p. 62). One key point of this definition is that the CPRs are essentially *non-material*, as they refer to capacities. Another key point is that CPRs *cannot be sold* because "they are intrinsically tied to the collective that is their main social carrier"(Ploeg, 2014, p. 64). CPRs are thus an emergent property of self-organization and self-governance. Within the workshop, I tried to look at the understanding of environmental issues as they were understood within the nested markets.

### *8.3.1 Creating Distinction Through Processing*

Bera started the discussion by asking about the need of attractive packaging. He noticed that customers at the various food fairs he attended were willing to pay much more for well-packaged products. Their FPC was used to selling the rice loose, or in simple paper packets, but got lower prices because of certain preconceptions about the right price for such produce. In response to this point, Aditya explained the need for multi-tier marketing, the need to access separate "tiers" like retail, hospitality industry, and public institutions (like schools and offices). Packaging may be necessary for retail, where the consumer would pay attention to such things, but it was not the only segment accessible. Attempts would need to be made to sell into schools, for example, which may want rice and vegetables at a discounted rate, but would be a reliable and steady buyer. A further consideration would be the quality and price of the product. If it was high value cold-pressed oil, as an example, the retail tier would make more sense to engage in retail. The whole strategy would thus depend on what was to be marketed.

Bera responded that when they tried to take consumers' preferences into consideration when trying to decide what was to be marketed, the crops they would need to grow would be difficult to grow, like aubergines and okras. Things like yams and roselle

(minor crops) were better from a cultivation perspective, but were not so popular among consumers when sent to the city markets when sent to the city markets. Indigenous potatoes [*Deshi aloo*] was perhaps an exception. Das remarked that it was not enough to let things out into the market, it was also important work to make the customers understand the distinctiveness of minor crops. His organization approached this issue by creating brochures and short clips about minor crops like yams.

Chatterjee used the example of tomatoes and the differences in prices in the rural Sundarbans and urban Kolkata. He explained how prices in Kolkata would hover around INR 30, but in the rural regions less than a 100 km to the south in the Sunderbans, the market price for tomatoes was less than a tenth (INR 4), often due to glut production and inadequate transportation facilities. The danger of the produce going bad meant the prices were always lower. He observed that engaging in processing at the village level would be a solution for any FPC that experienced such a situation. Aditya cautioned that the type of processing needed to be carefully selected, as anything too complex would require food licences and the oversight of the FSSAI. That being said, dehydration of vegetables like tomatoes would be possible. Das interjected with the observation that the markets for fresh tomatoes and dried tomatoes would be different, and would require understanding for the dynamics of each market.

Aditya shifted the discussion to explain what he meant by appropriate decisions on processing, recounting his experience working with a turmeric-producing cluster in Odisha. He described a World Bank project that had helped set up this cluster, but had had to abandon it once funding ran out. Ekgaon was approached by the state government to work in a Public-Private Partnership (PPP) to continue work on this cluster. The first step was to assess the amount of capital available, and it was found that around 50 crore rupees was distributed among all the SHGs that were part of the cluster. The first action was to pool this money at the cluster level and to then use this capital to purchase the turmeric from their own SHGs, with the goal of processing them. It was what to do next that proved to be controversial. The members in the project representing the state (public interests) were intent on packaging the produce well, with a well-designed brand logo to sell through the online retailer Amazon. Aditya did not agree; he wanted to do value addition at the farmer level. What this entailed was

improving the practices involved in boiling the turmeric. Before the intervention, farmers were boiling the turmeric in whatever canisters or oil barrels they could get, using wood as fuel. Aditya's plan was to get a boiler machine of INR 600,000 (EUR 7,000) for boiling the turmeric. This machine would be driven from village to village; it would boil the turmeric and then move on to the next village on a tractor-trolley system. This would improve the quality of the final output and increase prices by 5% to 10% on the local market. Another point of disagreement arose: the government officials did not want to use wood to fuel the boiler; they preferred it to be powered by solar energy or by electricity. But these solutions were not technically feasible given the need for a high and steady level of heat. Aditya argued for the continued use of wood, as the system would greatly increase the efficiency. The officials were adamant that wood not be used; it was finally agreed to use diesel. However, given the particular context, wood may have been a better option. Chatterjee helped clarify this point, citing the possibility of improving common property resources to fulfil the need for regenerative biofuels as a form of bio-energy with carbon capture and storage (BECCS). In response to lack of water and increasing areas of wasteland in Purulia and Bankura districts, appropriate trees like *Leucaena leucocephala*, *Vachellia nilotica*, and *Gliricidia sepium* (fast-growing, nitrogen-fixing, well-burning wood) had been selected and planted by the community. Fuel was available to the community as early as 6 months into the project, and from the third year onwards around 10-12 kg of biomass as fuel was available from these trees, generating up to around 30-40 tons per hectare per year. So the wood burnt would be considered as a form of bioenergy, but it is difficult to convince government officials that this is a valid approach, as the common misconception was that wood was an outdated fuel, and should be replaced by electricity or solar energy.

Bernzen asked a question about the need for separate processing areas for rice throughout the supply chain, which are a common requirement of certification. Chandi and Bera said that they had an agreement with their respective rice processors that their organically-produced rice would be processed as the last batch of the day. Before this would take place, a load of bran and chaff would be passed through the machine to clean residues as best as possible. While a far cry from the meticulous demarcation of space that we learnt that large companies were practicing, Aditya observed that this was

possibly the best way to deal with the issue. Under the circumstances, where time is limited and there is not much understanding or interest for adherence to certain standards, it appeared to be good enough for the domestic market. The dearth of processing capability in most locations in India, making it difficult to outsource in a cost-effective way that attains a high level of quality, making the question of "make or buy" a meaningless question. Bera elaborated on the lack of options they experience when processing rice. They currently process rice through husking machines with metal hullers, which lead to broken rice having a reduced market value. They need to process aromatic rice but they do not have access to processors who use rubber hullers, which are comparatively gentler on the rice but tend to wear out faster. The traditional *dheki* rice pounder is not available anymore either. Further, using the example of cowpea [*Biuli*] (*Vigna unguiculata*) grown as a secondary crop, he explained that while farmers sold it at a pittance to processors, they would then buy back the same pulses at the grocery store for a price almost three times as high. His concern, therefore, was whether the FPC should invest in buying processing equipment, like an electric *dheki*, to meet their needs. The decision to integrate processing capabilities would require a careful calculation of the quantities of produce to processed, required to generate a good return on the investment and running costs entailed, perhaps distracting FPCs from the main goal of rice production. Mitra reported that a minimum size electric *dheki* that they got from the agricultural university cost around INR 300,000 (EUR 3,500). Aditya warned that the machine may be cheap but would have require a three-phase connection, which would be more expensive. Referring back to the example of the turmeric cluster, he noted that it was important to calculate strategically if there enough production from a particular production unit to make enough profit to cover the cost of non-use of machine as well, thus alluding both to the cost of acquiring the capital as well as covering operational expenses. The FPC would, in other words, need to operate with financial accounting requirements in mind. At the same time, Chatterjee tried to emphasize that conforming to these financial boundaries did not necessarily imply having to accept that things would have to be done as always. He referred to the issue of electric supply that Aditya had highlighted, and explained the possibility of using pyrolysis of rice hull as a source of energy to generate electricity not only to run the machines but to even power the whole village (S. C. Bhattacharyya, 2014; Ma et al.,

2015). Indeed, similar set-ups have been tried elsewhere in Asian countries, an example being a study by the Mitsubishi Research Institute explored the feasibility of an approach to low-carbon emission societies through an integrated rice mill approach in Myanmar (Mitsubishi Research Institute, 2015).

Some cautious members of the discussion suggested that this was a very impractical and would require larger investments, and a commitment over a long period of time. And indeed, it sounded like something far removed from the current reality that was being discussed. Chatterjee countered that all the elements, including funding and machinery were available, but were not being brought together and harnessed. In other words, no assemblage was coming into existence: the heterogeneous elements remain apart. The components of the gasification plant remain in China where they are manufactured, the funding remains stuck with donors and governments, and the farmers resort to burning the husk as waste, and greenhouse gases keep being emitted into the atmosphere. The need to integrate environmental concerns into the very design of new assemblages, along with their "unrealistic nature" was a key learning point of this workshop.

### *8.3.2 The Environment as a Common-Pool Resource*

Anshuman Das observed that when they launched any products in the Indian market, the first concern of consumers was personal health, and health of their own families. He felt that this was the entry point, the preliminary concern, and not concern for the environment. It was difficult and time-consuming to illustrate the link between decisions at the personal level, like what food was purchased, to things that happen on the scale of the wider environment. These issues were addressed, if at all, once the conversation become deeper. Mitra added that it depends largely upon the person doing the explaining, and most people don't seem to be interested in doing so.

Aditya was similarly sceptical. "If I say to farmers, "Let's save the environment, let's do all of these things', no one will listen to me", he said. The consumers would also be similarly disinterested in eating something different for the sake of the environment. He feels that the way to go about it is to "find an audience and identify what is going to help them in their quest", whether it be better options for healthy food, or for better

income from producing food. Even if people concerned about the environment are convinced and have evidence that agricultural practices like monocropping can lead to ruin, this is not enough to change most people's behaviour in the face of the enormous profits generated. The only way to effect change in the current circumstances, Aditya explains, is to use money to encourage people to make a conscious choice to shift. The care for environment, for people's health, or for a better education: all of these complex motivators have to remain "your own hidden agenda". Regarding desires to change the current system, he remarked "Sometimes, it's better to keep it hidden. Otherwise, if you go as an environmentalist, you do not get the audience that you want". To not use this method has very real consequences, he argued, using the example of water shortages in Tamil Nadu and the Kaveri River Dispute. The government there, seemingly oblivious to the water crisis, promoted a type of rice which would require a lot of water. After a few years, Tamil Nadu is embroiled "in a full-blown crisis with states battling for water, riots breaking out and buses being burnt", and yet the government will still "not go to the farmer and tell them to change the variety of rice they are growing". Given the vested interests around crops like rice, the only real way to bring about change, said Aditya pressing home the point, is through market interventions. Instead of the usual formulation of the trust problem, where farmers and food system intermediaries are the ones who need to demonstrate *trustability*, the discussion suggested that it was the other way when it came to complex issues: it was the consumer who needed to demonstrate that they cared and could be trusted to make the right decision in the face of complex motivators.

This is in contrast to the situation in the EU, Bernzen observed, where any chance to promote a company's environmental consciousness was used to the greatest possible extent, as a form of Corporate Social Responsibility, albeit limited to a market share less than 10%. Aditya responded that although Ekgaon practiced Climate Resilient Agriculture, and had a fair pricing mechanism for farmers, they did not advertise it, as he had found that this did not reach a sufficiently motivated consumer base in India. Das chimed in: "This is not the [main motivating] agenda: our consumers are not educated [in environmental issues] enough, they are not as concerned. Their priorities are their health and their family, and their budgets". Aditya continued that the

consumer base they had built up over the past five years since 2014 was based on the quality of the produce and concern for the farmer. This, he felt was the main reason why consumers stick with Ekgaon's products. He did not want to replace this messaging with issues of the environment, as he felt that such messaging was easily copied by other dishonest companies. He spoke from experience, as other companies had copied their packaging design, even copying photos of the farmers, but could not get to the actual farmers. The sustainability of the buyer's relationship to the company is the highest concern for Ekgaon. Das added that in Bhoomika's campaigns, the main messaging focused on emotional and personal value. They try to bring a personal touch, by referring to tradition, and environmental messaging is very rare for them. Environmental issues are addressed only in special situations, like seminars or awareness building campaigns. While producers engaged in organic production recognized the importance of environmental sustainability and seek to integrate more ecosystem services into their production systems, they did not use this as a way of marketing their product. Instead, the message for consumers is that it will be beneficial for their health, or that the produce is poison-free. A sense of solidarity between producers and consumers was considered to be more important because it could not be easily copied by competitors.

Bera provided a contrasting picture. Whenever he trains other farmers, he starts by citing ecological aspects. He explains how dragonflies and drongos, for example, have steadily disappeared from the landscape. He talks about the need of integrating the ecosystem services offered by these insects and birds into the production system. His talks are usually met with resistance at first, he acknowledges, but once he can get the farmers to calm down and understand the farm as an integrated system, they start to see the potential benefits. Still, many farmers are hesitant because they feel they will lose production and income. Talk about specific problems with pests, or with increasing production, is also thought to be popular with farmers as it is more relatable.

Sourabh Ghosh interjected that the role played by a single farmer for the environment was limited. A large number of farmers was needed to bring about meaningful changes to impact the environment. Everybody needs to be on board with such changes. Mitra gave the example of *boro* rice cultivation. Even if environmentally conscious farmers

tried to cultivate mustard, potatoes or green mulch legume crops, it was simply not possible because the field would become inundated anyway, as everyone else wanting to grow *boro* rice would flood the area. Chandi confirmed this observation, as he ran into trouble trying to grow nigella seeds (*Nigella sativa*). The cultivators of adjoining fields flooded the whole area without warning, and he ended up losing a sizeable area where young plants had come up. But he could not confront his neighbours for this, as that would lead to an even larger loss, that of goodwill.

Chatterjee inquired further about how to generate goodwill for organic, if it was unable to spread across a large enough area. "If we are limited to a smaller space, where we cannot gain [the benefits of the emergent properties], then we have this discussion all over again about how an ecological system works [as a feasible production system]". Diversified and integrated farming systems also rely on ecological services from the wider landscape, depending on them for success. Without having the optimal conditions for showing the efficacy of diversified and integrated farming systems, how was this efficacy to be demonstrated? The issue was further complicated by the fact that certified organic systems have demonstrated that it is entirely possible to have organic farming systems which are not ecologically efficient (Seufert et al., 2017). Organic is also under attack from other movements, like the Zero Budget Natural Farming/Subhash Palekar Natural Farming (ZBNF/SPNF) movement (Khadse et al., 2018). A recent article by Subhash Palekar claiming that organic agriculture was like an atom bomb (Arya, 2019). Another absurd claim made was that ZBNF/SPNF had managed to convert genetically modified seeds into open-pollinated varieties, an attempt at undermining the strong resistance to such seeds within the organic movement and the wider agroecological movement. Aditya also added that ZBNF/SPNF was convenient for the government as it made a case for less investment being made in agriculture. Chatterjee also cast doubt on the form of agriculture being promoted as an end goal, observing that it was the *better-off* farmers, those who have access to water, capital, consolidated land, and growing cash crops, who seemed to be drowning in debt and being driven to suicide.[12] He also argued that the consumers in urban areas would

[12] The question of landholding size risks mischaracterizing the nature of the problem; it is important to keep in mind that the speculative nature of capitalist mode of production is one of the important causes of farmer suicide (Gupta, 2017) A more detailed treatment of the phenomenon of farmer suicides is

begin to realize, or were already realizing, that these resource-intensive forms of agriculture were depriving them of important resources like water. Referring to the issue of water disputes in Tamil Nadu raised by Aditya, he said that while consumers might not make the link between the two issues, the reality of drinking water having to be brought into the city by trains (Daniel Stalin, 2019; Guntoju et al., 2019) would surely make them care about environmental issues. Whether they liked it or not, they were involved in the assemblage. In this context, decisions about which crops should be grown seemed benign and a far-removed issue, but in a water-deprived context, growing a thirsty crop like rice when there are water-efficient alternatives like *ragi* (finger millet, *Eleusine coracana*) (Davis et al., 2018) could affect water supply to households. Aditya agreed, but noted that *ragi* was not known in North India at all, making it a hard sell to change cropping patterns away from rice-wheat systems. They would need to *unlearn* the notion that rice and wheat were non-negotiable, and *learn* that *ragi* was a healthy alternative. In other words, the notion of what was a good staple crop was needed to be *deterritorialized* and then *reterritorialized*. The discussion drew to a close with the issue of who would take up this task of re-educating the public. Chatterjee highlighted the uphill nature of the task, observing that the ecological knowledge required to facilitate such a change was devalued in formal education. As an example, in a small survey comparing the ecological content taught in schools conducted by DRCSC, they found that children in urban settings were hard-pressed to name more than five fish species, while children from tribal regions were able to name and describe the habitats of more than thirty fish species. Unless the call to integrate traditional ecological knowledge into formal curriculums was heeded (Kimmerer, 2002; Rai, 2007), it will indeed be difficult to change attitudes, he argued. "My point is that much of our biodiversity loss is happening because of our education which makes us fail to acknowledge what is around us. We see our country through someone else's eyes. We see our villages through someone else's eyes, not as something that we should see ourselves. We don't see.... we even start doubting our own reality".

available in a report prepared for DAC&FW (Manjunatha & Ramappa, 2017). Contesting arguments exist for taking into account desires to maintain social prestige, defend masculine pride and reputation, and a lack of viable alternative forms of employment as exacerbating factors (Kumar, 2017; Vasavi, 2019) .

# 9. Conclusion

This dissertation has followed the call to contribute to situated understandings of efforts being made to improve food system outcomes. It explores agri-environmental governance (AEG) as a response to challenges of sustainability in agriculture and calls for SHF livelihood improvement and poverty reduction. I have used the exploration of the ontology of organic agriculture in the Global South to better understand the challenges faced by SHF, and how agricultural value chains based around the needs of SHF emerges as an AEG response. The contributions made here focus on the challenges and promises inherent in the process of negotiating the implementation of organic agriculture as a way of achieving a more sustainable food system.

With this aim in mind, I have drawn on AT literature to provide a general framework to draw together literature from agri-food studies, agroecology, development economics, assemblage theory and sustainability studies. Using a Deleuzo-Guattarian *problematics* approach, I explore the notion of organic agriculture. In other words, I ask what problems organic agriculture tries to address and solve. This approach allows me to explore the varieties of organic agriculture that arise a situated response to agri-environmental governance in the Indian context. The use of the AT approach has allowed me to accomplish the following:

1. Understand how organic agriculture in India, both the formal and non-formal type, is operationalized through practices. A combination of different perspectives is presented in the dissertation.
2. An exploration of the relation between the *expression* and *content* of organic agriculture. AT suggests that these two dimensions are not always perfectly corresponding, and require work within the assemblage to be yoked together. Highlighting the points where inconsistencies arise allowed to me explore the limits and possibilities of new configurations. For example, farmers do not receive the *full assemblage* of government policies. While they (sometimes) receive the material benefits, the intent of the government is removed, *decoded,*

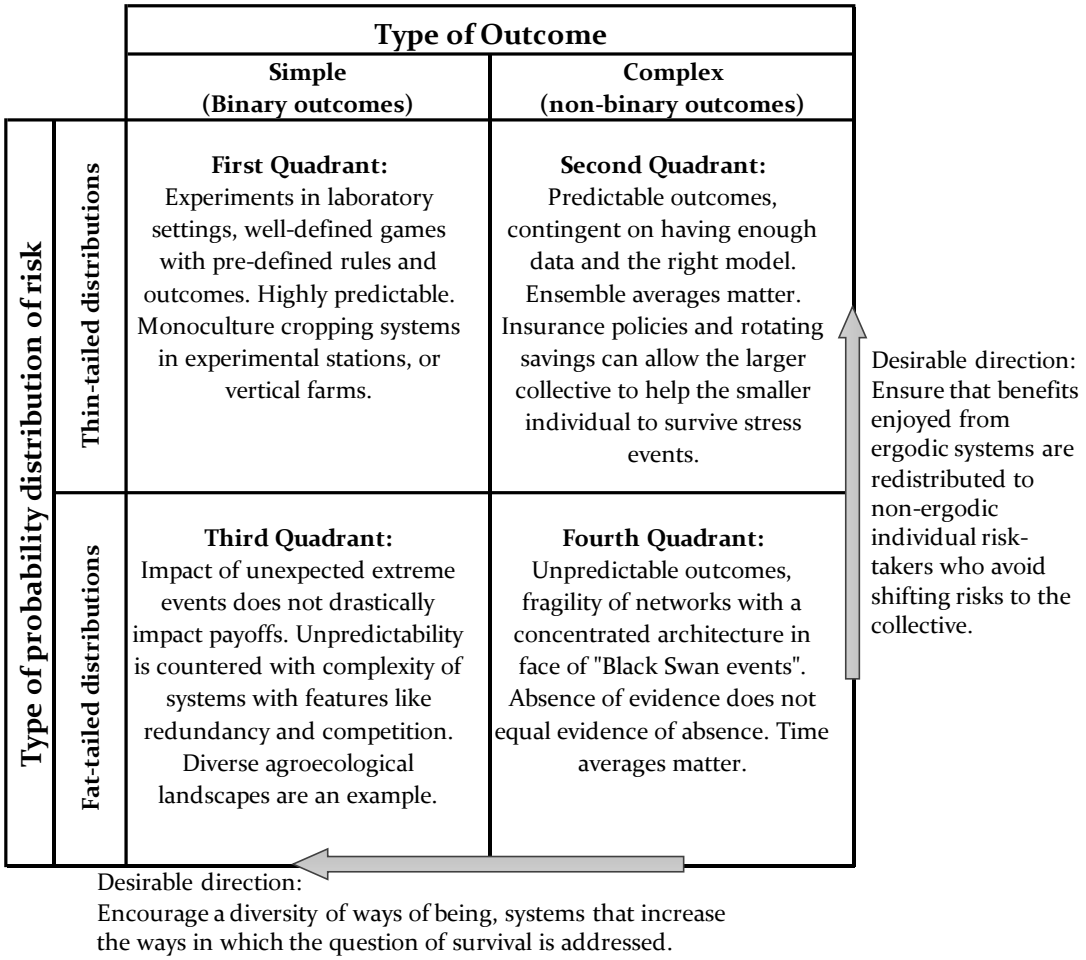
and does not reach the farmer in its entirety, allowing them to recode it for their own purposes.

3. A better understanding of the non-formal, often overlooked, versions of organic agriculture. These forms of organic tend to be driven by producers, emerging from responses to problems faced by farmers. Formal organic systems are responses to specific problems, but may not be the same problems that farmers face. Insights may serve to inform efforts to change formal organic standards to make them more tailored to the needs of producers.
4. Highlight the various possible points of intervention afforded by a more diffuse approach to power within organic production networks. A tracing of a co-assembled form of organic, and the components found to be important within each particular context.
5. An understanding of the organic assemblage as one among many co-existing in one space and at a particular time, emphasizing the efforts required to keep the heterogeneous components together as well as highlighting the potential to recruit new components.
6. An exploration of future possibilities and obstacles for organic agriculture assemblages, as well as learning lessons from assemblages that might have been.

In the Conceptual Framework chapter, the notion of Four Quadrants was introduced to explain the differences in the discourses and reality of risks. Taleb, the author who suggested this heuristic as a way to conceptualize the different types of risk humanity faces, suggests that in order to avoid the problems of Black Swan Events, we will have to move societal systems in the directions of the Second and Third Quadrant, as indicated in Table 9. Moving from the Fourth to the Second Quadrant is presented as a desirable direction, and is made possible by redistribution of benefits from larger assemblages to smallerassemblages. The distinction between the large and small assemblages highlights a key dilemma in agriculture. While the government and companies see things from an aggregatedperspective, averaging outcomes over the total ensemble (of farmers), the farmers view things from an individualperspective, judging choices by value accrued over time to themselves. In other words, the government is more willing to experiment with new schemes and accept the failures, while farmers

need to be more cautious as one wrong step could mean financial ruin and inability to keep farming.

*Table 9: The Four Quadrants Revisited*




The aggregate and individual divide raises the question of how these divergent interests could be reconciled. A tentative answer would be that institutions (larger aggregated assemblages) should be designed to benefit from ergodicity by pooling resources, which reduces risk. The benefits that arise should be distributed to individual actors who are willing to experiment, incurring existence-threatening, non-ergodic risks in the process. Unless institutions operate in such a way, it is necessary for individuals (molecular assemblages) to balance strategies in a way that prioritizes survival. Institutions, in other words, provide a way to move from Quadrant Four to Quadrant Two when they function in a way that softens risks through instruments like insurance and co-investment in FPCs. They can also reward and encourage farming practices by molecular

assemblages that restore and regenerate natural resources, and discourage farming practices that deplete them. When farmers are involved in the process of setting up an FPC, they are experimenting with new possibilities afforded by the identity of an entrepreneurial mode of farming, farmers need to ensure their continued survival as farmers using the peasant mode of farming.

Another interesting outcome of this distinction between aggregate and individual is the question of crop choice, of whether rice should be grown at all. SHF and companies seeking to practice more sustainable forms of agriculture find that growing other crops like millets or vegetables is beneficial. However, these crops may not be desirable from the aggregated perspective of the government, which may be more concerned with a calorie-based conception of food security of which rice is a key crop.

A further desirable direction within the quadrant is to move from the Fourth to the Third Quadrant. This direction can be achieved by exploring diverse ways of being, of seeking variety in the systems which compose our reality. This diversity can be introduced in every assemblage, but may come at the cost of a decrease in efficiency and quantifiable productivity because it creates redundancy and resilience.

The question of desire, or purpose, is an important component of Assemblage Theory, and AT would benefit from using it to analyse issues. Deleuze and Guattari stress the fact that desire is a stimulus that drives production, an affirmative notion, and not a negative understanding of desire as acquisition, a stimulus to fill a lack or need (Buchanan, 2008). A key distinction between the two paradigms of Sustainable Intensification and Agroecological Intensification (as discussed in Chapter Four) can be made using this discussion of desire. SI departs from "agriculture as usual" by positing a desire for sustainable agriculture, but this desire is acquisitional in nature – it describes a lack of capacity of existing systems to generate sustainable forms of agriculture, and relies on external intervention to move towards this desired goal. In contrast, AI describes a productive desire, where sustainability is produced within certain pre-existing systems, and can therefore be increased by creating enabling conditions for these systems.

The lack of an enabling structure for organic agriculture was highlighted. Knowledge about organic production and biologically integrated farming systems was not readily available with block-level extension officers. Components within these farming systems were under placed under the purview of different departments: animal husbandry, fish propagation, vegetable cultivation, rice cultivation, each have their own departments. It was left to farmers to visit each of these departments, and to then mix the knowledge to the best of their ability. Extension officers, usually learning agriculture at university, made recommendations based on information from centralized authorities. For example, during the time I visited, farmers were experimenting with growing broccoli and baby-corn provided by the extension office. These crops, unsuited to the climate and thus requiring use of pesticides and fertilizers, were being tested as there was a high demand for these vegetables in the metropolitan area.
The need for a supportive framework extends beyond a social-institutional one to include the environmental framework. Farmers are also increasingly encouraged to form Farmer Producer Companies, but as I show in my case study, the process is fraught with difficulty and it is not clear how successful the FPC will be, nor how the farmers will be support in the eventuality that the FPC fails. The paid-up capital is low and the bulk comes from the farmers themselves, and it remains to be seen how the FPC accesses the funds necessary to purchase capital necessary for processing of products. The particular skillset of professional management for organic agricultural supply chains is also difficult to find and recruit. In between the desire of the government to get as many farmers into an FPC as possible and the desire of the farmers in the FPC to selectively recruit farmers sympathetic to their cause, the risk of the FPC falling apart and eroding equity and goodwill is ever-present, demonstrating the dangers in opening up a new line of flight.

As explained in Chapter Four, organic agriculture is highly dependent on ecosystem services. Without support for the landscapes that function as common-pool resources that render such services, they get challenged and replaced by other assemblages. The rapid spread of eucalyptus trees grown as raw material for paper mills replacing the date palm trees, the demise of indigenous fish due to extensive use of pesticides, the use of pumped-up underground water to grow rice in summer while preventing the cultivation

of green manure rotation crops are just some of the examples found in the field. Without the promotion of organic agriculture-friendly assemblages, it is difficult to reap the full benefits.

Biological integration of production systems was reported to be a key aspect of non-formal organic agriculture, with key benefits being production cost reduction, waste reduction, and diversification of produce. However, spatial realities often hinder such an integration, making it difficult to implement these forms. Compost is heavy, and cannot be carried out into rice-fields situated far from the road. The low dividers between neighbouring rice-fields is insufficient to prevent inundation, making rice cultivation an imperative even against the wishes of individual farmers. The water brings with it undesired artificial inputs like fertilizer and pesticides which thwart efforts to foster biodiversity within rice fields. In response, individual farmers dig ponds and raise the embankments, seeking to control the flows in the landscape. However, these responses are hampered by the limited areas in which they are effective, and control over larger tracts of land is sought.

The AT perspective also provokes the possibility of new assemblages. Examples from other countries can be used to shed light on possibilities. The example of an integrated rice mill discussed in the workshop in Chapter Eight is one such example. By-products from rice have the potential to power not only the rice mill, but even meet the needs of the village as a whole. Biomass in various forms, which has the potential to be a major pollutant when burnt in the open, is transformed into a resource through the process of gasification. Owning the rice-mill will also allow the local community to benefit from the income generated through the sale of by-products like rice-bran oil and oilcakes traditionally accruing to rice mill owners. Firewood harvested from carefully managed stands using techniques like coppicing and pollarding can serve the needs of processing facilities, instead of locking such facilities into a system reliant on fossil fuel use. Judicious addition of components that promote the use of local resources thus has the potential of improving the prospects of farming communities.

Philosopher Thomas Nail identifies four different assemblages within the works of Deleuze and Guattari: territorial, state, capitalist and nomadic (Nail, 2017). AT approaches can benefit by directing attention to the interaction of these four types of

assemblage (Hennings, 2018). Here, I briefly summarize the features of organic agriculture under each type. Within the territorial assemblage, organic agriculture is presented as a form of agriculture practiced by the forebears. As I found during my interviews, organic agriculture was a way of safeguarding traditions, finding acceptance within the current rise of nationalist sentiment in India. Organic agriculture is perceived as a response to the current dominant imaginary of Green Revolution agriculture, but a response limited to the periphery. The periphery here was explained as the places where GR had not yet reached because of issues of accessibility (places like the North-Eastern states of India), or pristine environments at the foothills of the Himalayas, which, due to the location at the source of the rivers, would be untouched by the polluting effluents further downstream. The periphery included areas that were rain-fed, and therefore places where irrigated agriculture could not be practiced (or had not reached yet). Basmati rice, as a product protected by G.I tag, reinforces the importance of place, with production limited to only a handful of northern Indian states. Organic agriculture reinforces another conventional social norm, namely the direction in which knowledge flows. SHF are perceived as recipients of knowledge about organic farming practices that emanate from centres of knowledge like universities, companies and extension offices, seemingly in contradiction with their role as the safe-keepers of traditional practices. Responsibility for more sustainable food systems was also placed on food producers, as consumers were perceived to be concerned only with their own health. Crop choice is another aspect of this territorial form; organic agricultural practices are moulded around the existing cropping systems. The territorial assemblage also hinders the adoption of agricultural practices that are more mindful of the survivability of other species; a similar form of agriculture was practiced in the past, and that is where it should remain consigned. The *modern* form of agriculture, with rice grown in every cropping season should be maintained, because that is what we are, rice farmers. Within the state assemblage, organic agriculture is tool to bring peripheral areas under the control of the state. Clusters for organic agriculture set up in hitherto remote areas would help justify the costs of setting up new infrastructure. It is perceived as an inroad to global markets, with organic certification adding value to produce and helping the government gain legitimacy by achieving its goal of doubling farmers' incomes by 2022 CE. By investing in infrastructure and certifying agency capacities, organic could be

"produced" as a form of expression without any real investment in rural areas for strengthening farmer capabilities. An elaborate, centralized system to track and trace each consignment of organic produce is maintained, helping to generate trust in the genuineness of each certificate issued. Clustering, whether through FPCs or SHGs, is also useful as it allows for the government to aggregate SHF and ensure benefits reach them directly. These forms of group building compel farmers to undertake the paperwork necessary to make them visible and legible within the bureaucratic system of governance. Another aspect to keep in mind is that the state assemblage does not want to promote organic agriculture at scale; it continues to provide the subsidies that make input-intensive agriculture possible. The capitalist assemblage extracts value from these two assemblages. Well-versed in bureaucratic procedures involved in the governance of agricultural value chains, organic companies are an able collaborator in making organic agriculture profitable. They create a demand for organic produce, buying it from SHF and selling it in urban markets and overseas, making organic produce a globally exchangeable commodity. As a rapidly-growing sector in food markets, they are able to attract significant financial capital. However, in order to maintain profitability, they imbue organic agriculture with strong capitalist features like mono-cropping and a focus on sourcing from large farms. Trust becomes embodied as a certificate, and moved through a system very similar to the banking system for money. There is also an attempt to keep procurement prices low, by relying on government-determined prices as a benchmark, instead of calculating a price that would be beneficial for the farmer. Rice paddy is procured by experts and tested at laboratories for pesticide residues, ensuring that the produce is not contaminated. On the consumer side, organic produce remains higher-priced, and is marketed to the segment which can afford it. The certification schemes for organic in India have increased to accommodate the fluidity of organic as a commodity exchangeable over national borders as well, with an increased number of regulatory bodies involved. India is also having to compete with other producers of organic aromatic rice, like Pakistan, Cambodia, Thailand and Vietnam, to capture a greater share of the global market. The capitalist assemblage reorders relations within the production system as well, and one prominent example from my study is how farmers are encouraged to mimic many of the features of these companies and rearrange themselves into Farmer Producer Companies to participate

on an equal footing and capture more of the value of the produce. While not covered in depth within this study, organic agriculture as a back-to-the-land movement where formally-educated city folk engage in lucrative production builds on a similar ability to frame organic agriculture as a "code that needs cracking" through knowledge of logistics, structured and documented experimentation, or financial accounting (Beelen, 2019; Iyer, 2018). Finally, the nomadic assemblage of organic seeks to reimagine and reassemble the constraints placed by the other three assemblages. Arbitrary limits placed on new combinations that are justified as being "natural" or "hierarchical" are questioned and examined when they hinder the achievement of a new arrangement (Nail, 2017). Efforts to create new markets are emblematic of this desire, as farmers, NGOs and companies seek to shrink the distance between consumers and producers. What constitutes a good farmer is questioned, and an answer based on the ability to biologically integrate production systems is proposed as a way of judging skill, instead of the ability to increase production of rice. The traditional direction of knowledge flow from extension officers to farmers is disrupted and co-opted, as a farmer provides advice to extension officers on how best to promote organic practices. A desire to reduce input costs, another key aspect of non-formal organic, prompts farmers to explore options beyond rice cultivation, engaging in vermicompost, converting rice fields into ponds, or vegetable gardens. The desire to conserve cultural heritage works to legitimize organic agriculture in the eyes of fellow farmers, as does the promise of a past landscape restored. Seeds are freely exchanged and experimented with, and results shared as videos on social media. Companies look beyond the organic certificate as a tool of marketing, and explore the potential of specialty produce and underutilized grains as a way to promote sustainable farming systems. Farms are no longer off-limit, but rather a place to visit, spend time and enjoy new experiences. NGOs identify the value of innovations made by farmers, and envision a future where rural livelihoods are made more economically viable and desirable. The different actors involved recognize that there are potential positive sides to the other three assemblages that can be uncovered when assembled to achieve their own goals. Inspiration is sought in geographically distant places which are brought closer in a topological space made possible by experiences of individuals and knowledge-sharing. In doing so, they also provide inspiration for others, as well as question other ways of being in the context of the Anthropocene.

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Appendix A

| | | | |
|---|---|---|---|
| **Farms** | **Clean** | No synthetic input in production | No chemical fertilizer, No chemical pesticide, growth hormone etc |
| | | Own/local/open source seed/breeds | Non-GMO - seeds/breeds |
| | | Farm waste is recycled | Compost pit, No agri-waste burning, biogas, farmyard manure is covered |
| | | Soil water conservation | No ground water use, Rain water harvesting, mulching, Organic fertiliser, bunding |
| | **Green** | Diversified production system | Crop rotation, mixed/intercropping, integration of poultry-animal-aquaculture-tree-bee leeping |
| | | PGS certified | |
| | **Fair** | Records exists | Farm plan, Farmer's diary, Input-output matrix |
| | | Member of group | Member of FPO/FG/FFS/Cooperative, Farmer trainer |
| | | No distress selling | Surplus going to the market |
| | | Proper animal shelter | Clean, airy, spacious, waste is collected and recycled, floor is labelled |
| | | Fair labour | own labour force, family labour or through community labour exchanges, no discrimination in labour, no child labour |

| | | | |
|---|---|---|---|
| **Products** | **Clean** | No synthetic input in storage or processing | No Chemical preservative, No Chemical Pest controller, No synthetic sweetener, No chemicals like MSG, No colour, No taste enhancer, No adulteration etc. |
| | | Purity | Minimum possible processing, Minimum mixing of raw materials |
| | **Green** | Low Travel distance | Low carbon, within 100km. |
| | | Minimum but safe packaging | No tetra pack, less plastic. |
| | | Renewable energy used in processing and preservation | Solar energy, solar drying, mechanical cooling |
| | | Natural product | NTFP, Wild food, uncultivated food. |
| | | Sustainable harvesting | Seasonal, harvesting principle exists |
| | **Fair** | Label contains all info | PGS, FSSAI, nutritional information, source, traceability, complaint contact |
| | | Transparency in pricing | Clear pricing rule, 60~70% of the profit going back to the farmer, affordable |
| | | Fair labour | no discrimination in labour, no child labour, minimum wage ensured with leave policy etc. |
| | | Production is not buyer-owned | FPO, Farmer cooperative |

| | | | |
|---|---|---|---|
| **Businesses** | **Clean** | No synthetic input/preservatives | No chemical preservatives, no chemical pest control agents, No synthetic sweetener, no chemicals like MSG, no colour, no taste enhancer, no adulteration. |
| | **Green** | Seasonal products | No out-of-season products/recipes |
| | | Proper waste management | No carry bags, segregated dustbins, composting unit |
| | | Low in energy consumption | Natural light |
| | **Fair** | Fair labour | no discrimination in labour, no child labour, minimum wage ensured with leave policy, complaint-handling mechanisms for sexual harassment etc. |
| | | Transparency | Source, Sourcing policy, transparent pricing |
| | | Safe environment for staff and consumers | Fire safety, spacious |
| | | Respectful to local heritage | Traditional products, local products |

**Erklärung zur Dissertation**
gemäß der Promotionsordnung vom 12. März 2020

***Diese Erklärung muss in der Dissertation enthalten sein.***
**(*This version must be included in the doctoral thesis*)**

„Hiermit versichere ich an Eides statt, dass ich die vorliegende Dissertation selbstständig und ohne die Benutzung anderer als der angegebenen Hilfsmittel und Literatur angefertigt habe. Alle Stellen, die wörtlich oder sinngemäß aus veröffentlichten und nicht veröffentlichten Werken dem Wortlaut oder dem Sinn nach entnommen wurden, sind als solche kenntlich gemacht. Ich versichere an Eides statt, dass diese Dissertation noch keiner anderen Fakultät oder Universität zur Prüfung vorgelegen hat; dass sie - abgesehen von unten angegebenen Teilpublikationen und eingebundenen Artikeln und Manuskripten - noch nicht veröffentlicht worden ist sowie, dass ich eine Veröffentlichung der Dissertation vor Abschluss der Promotion nicht ohne Genehmigung des Promotionsausschusses vornehmen werde. Die Bestimmungen dieser Ordnung sind mir bekannt. Darüber hinaus erkläre ich hiermit, dass ich die Ordnung zur Sicherung guter wissenschaftlicher Praxis und zum Umgang mit wissenschaftlichem Fehlverhalten der Universität zu Köln gelesen und sie bei der Durchführung der Dissertation zugrundeliegenden Arbeiten und der schriftlich verfassten Dissertation beachtet habe und verpflichte mich hiermit, die dort genannten Vorgaben bei allen wissenschaftlichen Tätigkeiten zu beachten und umzusetzen. Ich versichere, dass die eingereichte elektronische Fassung der eingereichten Druckfassung vollständig entspricht."

Teilpublikationen:

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# Curriculum Vitae

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| Name | **Shantonu Abe (Chatterjee)** |
| Geburtstag | 22.03.1991 |
| Geburtsort | Auroville, Pondicherry (Indien) |
| Nationalität | Japan, Overseas Citizen of India (OCI-Status) |

## Berufserfahrung

**Universität Vechta, Institut für Strukturforschung und Planung in agrarischen Intensivgebieten (ISPA)**
**Wissenschaftlicher Mitarbeiter**

seit 02/2020
- AG Wirtschaftsgeographie am Lehrstuhl von Prof. Dr. Amelie Bernzen
- Projekt: Standards 2.0? (gefördert von der Deutschen Forschungsgemeinschaft)

**Geographisches Institut, Universität zu Köln**
**Wissenschaftlicher Mitarbeiter**

11/2016-01/2020
- AG Wirtschaftsgeographie am Lehrstuhl von Prof. Dr. Boris Braun
- Projekt: Standards 2.0? Livelihoods of Indian smallholders between global and domestic value chains for organic and fair trade agri-food products (gefördert von der Deutschen Forschungsgemeinschaft)

## Ausbildung

**Geographisches Institut, Universität zu Köln**
**Promotion**

seit 11/2016
- Betreuer*innen: Prof. Dr. Boris Braun, Dr. Amelie Bernzen
- Projekt: Standards 2.0. Livelihoods of Indian smallholder farmers between global and domestic value chains for organic and fair trade agri-food products? (gefördert von der Deutschen Forschungsgemeinschaft)

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**Wageningen University and Research (WUR), Niederlande**
**MSc Organic Agriculture, Schwerpunkt Agroecology**

09/2014-08/2016

- Erste Masterarbeit (betreut durch Prof. Dr. ir. Jeroen C.J. Groot) zu „Choosing to Nourish: A nutrition-sensitive Farm System Analysisof Case Studies in Northwest Vietnam“
- Zweite Masterarbeit (betreut durch Prof. Dr. ir. Tinde van Andel) zu „Crop diversity in 19th century Japan: An Analysis of the Seikei Zusetsu Agricultural Encyclopedia Gifted to Philipp Franz von Siebold”

**International Christian University Tokyo (ICU), Japan**
**BA Liberal Arts, Major Anthropology, Minor Development Studies**

04/2010-03/2014

- Abschlussnote GPA 3,67 (max. 4,00)
- Bachelorarbeit (betreut durch Prof. Dr. Shaun K. Malarney): „I am a Hyakusho: The Values and Ethics of Alternative Agriculture in Japan”

**Ainou Agricultural High School, Mie Prefecture, Japan**

04/2007-03/2010

- Abschluss ähnlich dem deutschen Abitur

**Don Bosco School, Bandel, West Bengal, Indien**

04/1999-03/2007

- Abschluss nach 10 Schuljahren

Köln, den 02.07.2020

Shantonu Abe (Chatterjee)