Producing Soy to Save the Planet?

Challenging Sustainable Soy Governance in the Brazilian Amazon and Cerrado.

Jennifer Daisy Gresham

A thesis submitted for the degree of Doctor of Philosophy

Department of Sociology

University of Essex

Date of submission: December 2017

This thesis is dedicated to my father Peter McConnell,
who made sure I grew up open to the many possibilities of life.

This is for you dad.

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Abstract

Collaborations between corporate actors and environmental NGOs are an increasingly common means for agri-food companies to enact sustainability objectives. Taking a comparative case study approach, this research examines two such initiatives from the soy industry, the *Roundtable for Responsible Soy (RTRS)* and the *Soy Moratorium.* Previous literature has assessed both in terms of their success in reducing land use change in the Brazilian Amazon. This thesis takes a different stance, analysing how their design and implementation relate to the agricultural production of soy and its associated consumption patterns.

Based on documentary analysis and qualitative interviews with key stakeholders, the thesis finds that NGO conservation campaigns against soy in the Amazon were the main driver of both case studies, leading them to focus on developing biodiversity protection programmes. However, as this research shows, the consensus amongst stakeholders on this issue is currently challenged on two fronts. Firstly, by splits between actors who advocate greater state involvement and those supportive of continued private interventions, and secondly, between actors who wish to expand biodiversity protection to the Cerrado savannahs and those who favour limiting it to the Amazon. In these evolving dynamics, the proliferation of 'zero-deforestation' agreements are revealed as particularly important to the direction of policymaking.

From these findings, the challenges faced by both alliances are shown to indicate wider sustainability problems that each initiative has failed to address. Employing Thomas Princen's concept of *'distancing'*, this research argues that a *biodiversity bias* in their design means that soy is primarily problematised only as a conservation issue, while its other environmental impacts (particularly its consumption through livestock feedstock) are marginalised. It concludes by reflecting on the limitations of non-state actors, often constrained by supply chain approaches, in tackling the multi-dimensional ecological risks posed by soy production and consumption.

Acknowledgements

My first thanks must go to my supervisor, Mark Harvey, for the opportunity to do this research, his steadfast support, interest, patience, and for helping me to grow as a researcher. I would also like to thank my colleague, Zareen Bharucha, who didn't take me 'under her wing', but instead treated me as an equal and fellow traveller from day one. I learnt so much from Mark and Zareen and enjoyed all our discussions about soy, Brexit, the trials and tribulations of the Labour party, and the contribution of pet food to climate change.

Thanks are due as well to Nigel South, chair of my supervisory board, for his many helpful comments, the sociology office at Essex: Michele Hall, Sue Aylott, Rosa Chandler and Jane Harper, and to the ESRC for financial support. Special thanks also to Jennifer Clapp, who gave generous and insightful advice, Chris Till from Greenpeace who provided invaluable help just when I needed it, and every interviewee for sharing their expertise and valuable time. Our conversations (or "qualitative data generation") were the great pleasure of the PhD for me.

Finally, I would like to thank Jessica Duncan, whom I met when I was doing my masters degree and she was finishing her doctorate. Jessica took the time, which must have been very limited, to listen as I nervously voiced my interest in *"doing a PhD".* Her advice and her example made a lasting impression. Thank you for taking me seriously.

I'd also like to thank:

My mum Marie McConnell, who lived every moment of this as only a parent can, and who passed on the organisational skills and *pure grit* needed to see it through. Also, a big thanks to my cheerleaders back home in Freethorpe, especially my Aunt Irene, and Sue and Rachel.

Kip and Jane Gresham, and Dan, Matt and Tim Gresham - quite simply the best 'in-laws' ever, and great friends. Special love to Matt and Dan for their music, which was the soundtrack to so much of my writing time! Sue and Tony, who always took a keen interest in what I was up to, Inés (aka the other Duchess of Cambridge), and last but not least, my very cool and very courageous nephews and niece, Henry, Ben and Alice - the big ocean is just a small pond.

My fantastic friends, especially Anna and Steph, who are more like sisters, and Craig, Graham, John and Sandeep, who are also more like sisters, and Bethan, Dan, David, Deepika, Gbenga, Hannah, Lydia, Rachel and Xavier. Big love to Noah, Ravi, Isla, Rowan and Maya – the next generation!

My neighbours - Stu and Lorna, Tom and Lučka, Tim and Harri, and everyone at Londis. Your solidarity, especially in the final months of writing up, made a huge difference. Also, a special thanks to Jane Qualtrough for her support over many years, and for her warmth and kindness.

Juno and Maude, my feline 'research assistants' were attentive (and hilarious) everyday companions who understood me in that magical way animals can. When they weren't demanding packets of soy-fed livestock to eat, they were sleeping all over my desk and books, waking occasionally to knock my coffee everywhere. I know they were only trying to help.

Lastly, my husband Nick. We've been together ten years this year, and stand shoulder to shoulder, hand in hand, on this ride called life. It may be a cliché, but I simply could not have done this without you Nick, thank you so much.

List of Abbreviations and Acronyms

ABCD	Acronym used to refer to Archer Daniels Midland (ADM), Bunge, Cargill and Louis Dreyfus, the 4 biggest global agri-commodity traders
ABIOVE	Brazilian Vegetable Oils Industry Association
ANEC	Brazilian National Grain Exporters Association
APROSOJA	Mato Grosso Association of Soybeans and Maize Producers
CAR	The new Brazilian Rural Environmental Registry
CDP	Organisation formerly known as Carbon Disclosure Project
EMBRAPA	Brazilian Agricultural Research Agency
FAO	Food and Agriculture Organisation of the United Nations
GHG	Greenhouse Gas
GRSB	Global Roundtable for Sustainable Beef
GTS	Soy Work Group, the decision-making forum of the Soy Moratorium
HCV	High Conservation Value
IBAMA	Brazilian Environmental and Renewable Natural Resources Institute
INPE	Brazilian National Space Research Institute
IPCC	Intergovernmental Panel on Climate Change
MMA	Brazilian Federal Ministry of the Environment
NGO	Non-Governmental Organisation
OECD	Organisation for Economic Cooperation and Development
RSPO	Roundtable on Sustainable Palm Oil
RTRS	Roundtable for Responsible Soy
TNC	The Nature Conservancy
UNEP	United Nations Environment Programme
WWF	World Wide Fund For Nature

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Chapter One: Eating up the Amazon!

Most people have never heard of this company, but from inside this building Cargill's managers are playing a part in one of the great environmental tragedies of our time. The Amazon is one of the most biodiverse areas on Earth and we need it to stabilize the planet's climate, but this company is trashing the rainforest for chicken wraps and nugget dips. We'll stay here until Cargill bosses give us a clear understanding that they're getting out of the Amazon."

(Greenpeace campaigner Pat Venditti, Surrey Live newspaper, 25th May 2006)

On a rainy Monday in May 2006, John Sauven, chief executive of Greenpeace UK is standing outside the European headquarters of Cargill, one of the world's biggest commodities traders. No one will let him in. Greenpeace activists have dumped several tonnes of soybeans in the company's car park in Surrey, and chained themselves to the entrance gate, forcing staff to finish early for the day. The previous Friday, in the Brazilian town of Santarem, Greenpeace shut down Cargill's South American grain terminal, from where it transports millions of tonnes of soy to international markets every year. The previous month, McDonalds, one of Cargill's major customers, were surprised by Greenpeace activists, dressed in giant chicken costumes, protesting in their restaurants across the United Kingdom. The activists handed out pamphlets depicting the company's mascot 'Ronald McDonald' wielding a chainsaw, telling customers they were eating chicken fed on soybeans (supplied by Cargill) linked to Amazon deforestation. It all came as quite a shock to McDonalds:

"I remember 2006, I was running a magazine on sustainable business, and someone from Greenpeace was sending me pictures as they were happening of their activists dressed as chickens chained inside McDonalds restaurants. I rang McDonalds press office and said, "what do you think about this?" and they said "We've got no idea! What the fuck do they want? What's going on? We don't understand!" I rang Cargill and they had no idea."

(Tobias Webb, Innovation Forum interview, April 2016)

Greenpeace's campaign and their widely publicized report *Eating up the Amazon!* (Greenpeace, 2006) implicated some of the biggest agri-food traders and retailers in the destruction of one of the world's most important regions of biodiversity. Within hours, McDonalds' executives were on the phone to Cargill and Greenpeace demanding a solution to the chaos. It was this pressure that Sauven believes finally persuaded Cargill to talk. Still refusing to let him in the building, negotiations to stop soy-related deforestation in the Amazon began in the rain in Surrey, through a slightly opened door.

The final agreement on the Amazon Soy Moratorium was reached in July of the same year. The four biggest global soy traders, Archer Daniels Midland, Bunge, Cargill, Louis Dreyfus, and Brazil's largest soy processor Amaggi, pledged not to buy soy from the Brazilian Amazon if it had been grown on land deforested after the new moratorium's start date. The original commitment was for two years with the possibility of renewal afterwards on an annual basis. By cutting off international market access to soy producers who continued to deforest, the moratorium had an immediate effect on rates of deforestation, providing an important victory for Greenpeace and the companies they had targeted.

In 2004, two years before Greenpeace's campaign, the WWF arranged a meeting with a group of European companies who used soy in their products. The WWF wanted to develop an industry certification standard for sustainable soy production that could be applied across South America. The new mechanism would be able to 'guarantee' deforestation free supply chains and offer environmental price premiums for soy

producers. The first meeting – a Round Table Conference on Sustainable Soy - took place in the Brazilian town of Foz do Iguaçu, where it faced loud protests from Via Campesina, the South American farmer's association, and a host of local environmental groups. Neither permitted nor wishing to participate in the discussions, these organizations held a 'counter-meeting' outside where they vowed to confront what they saw as the *"false concept of sustainable soya mono crops"*:

"We resolve:
– To struggle and mobilize, jointly with other movements and organizations, against the present model of development, agro exports and the proliferation of transgenic crops, which tragically affect
the peoples of South America, which attack the environment and peasant societies through monocultures:
*– To denounce the false concept of sustainable soya mono crops, officially promoted at the First Round Table Conference on Sustainable Soy… (which is**) …** in the interests of the North and of the agribusinesses, with the scandalous support of some large national and international NGOs;*
– To assert that sustainability and monoculture are fundamentally irreconcilable"

(Via Campesina 2004, quoted in Schouten et al, 2012, pg. 46-47)

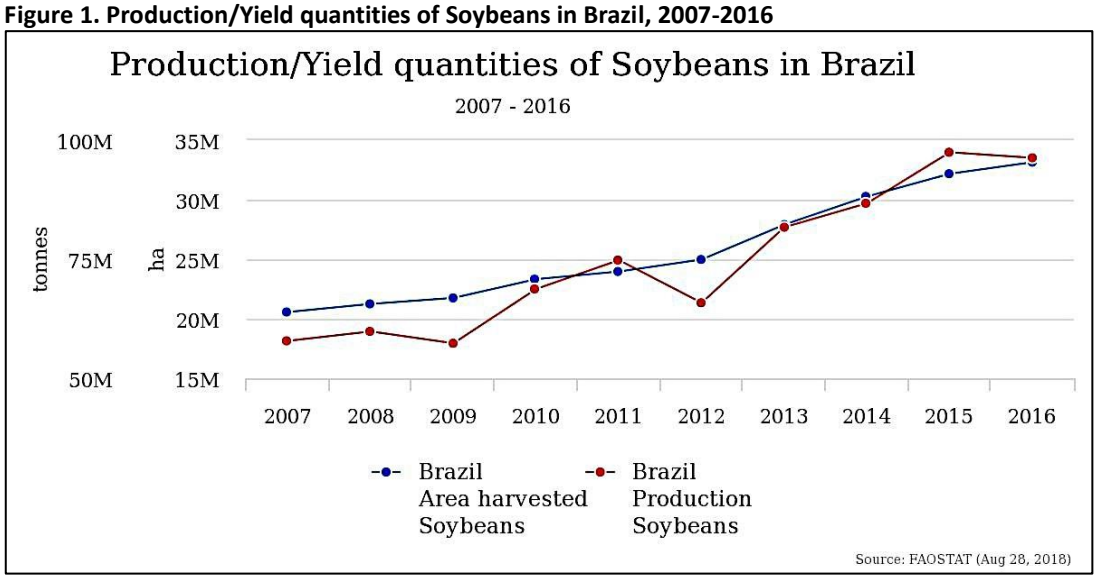
These voices, however loud, were ultimately unheard and in November 2006, a few months after the Soy Moratorium had been agreed, the Roundtable for Responsible Soy (RTRS) was formed. It promised a sustainability 'transformation' in global soy production and more implicitly, a mechanism to help companies avoid the type of unwanted attention visited upon McDonalds and Cargill earlier in the year.

1.1 Defining Research Objectives.

The events of 2006 are at the centre of this thesis. In the ten years that followed, both the area harvested for soy and its total production have increased steadily in Brazil (see figure 1). At the same time deforestation linked to soy has declined significantly in the

Amazon, the moratorium has been renewed annually and RTRS membership has grown across South America. As the following chapters will show, many observers view the initiatives as successful environmental interventions. These verdicts fuelled my first interests in this research. I wanted to understand the governance dynamics in action, particularly the relationships between different actors, and what they meant by *sustainable* soy production.

Figure 1. Production/Yield quantities of Soybeans in Brazil, 2007-2016



Source: FAOSTAT, 2018

I knew at the beginning of this research that governance alliances between non-state actors had become increasingly common in global commodity supply chains, with NGOs often instigating agreements (Bäckstrand, 2006, Schäferhoff et al, 2009, Bexell et al, 2010, Fuchs et al, 2011, Agné et al, 2015). This opening up of policymaking, traditionally the domain of states, has been well documented (Falkner, 2003, 2011, Pattberg, 2005, Perrault and Bridge, 2009), and has proven particularly significant for agri-environmental governance. New norms of sustainable development have explicitly created a space for private actors to play a role in managing natural resources, and where companies are

increasingly held accountable for their effects on the environment (Bernstein and Cashore, 2007). In different ways, both the RTRS and the moratorium are representative of this shift. They provided an opportunity for companies and NGOs to become environmental leaders, constructing and implementing solutions to sustainability problems. Olaf Brugman, president of the RTRS in 2015, explained the organisation's appeal to me like this in an interview:

"I think on the whole, this seems to be a higher consciousness of vulnerabilities in soy supply chains and more and more businesses who say "well, we want to be part of the solution, we do not want to be part of a problem, we do not want to be part of significant adverse impacts, be they social or environmental", Becoming a member of the RTRS, seems to address an increased consciousness."

(Olaf Brugman, RTRS interview, July 2015)

In this context, the actions of Greenpeace and WWF are of particular significance. By targeting and then cooperating with companies with like McDonalds and Cargill, they followed a strategy long employed by environmental NGOS (Dauvergne and Lister, 2012). In doing this, NGOs use the supply chain power and market visibility of big brands as traction to invite, or coerce, companies into acting. In the case of the moratorium, this tactic was particularly crucial in reaching an agreement, as John Sauven reflected in an interview:

"There were thousands of soy farmers but there's only five traders that brought the soy, which was ADM, Bunge, Cargill, Dreyfus and Amaggi. They were providing the capital inputs to the farmers, who were completely over a barrel, because they were dependent on financing, and then they were dependent on selling their produce back to them. So, in a way we only had to convince five companies, and ultimately five people, not thousands of farmers, I mean we couldn't convince thousands of farmers. If we went onto one of these farms,
they'd shoot us."

(John Sauven, Greenpeace interview, July 2015)

Reading this literature led me to consider the 'target' of these campaigns. They weren't calling for an 'end to' soy production or questioning its role in global food systems, their central concern was deforestation. Common ground between all actors in the RTRS and moratorium was found (and leveraged) in a shared understanding of the reputational risk for companies connected to deforestation. The links between agri-commodity expansion and Amazon deforestation are well established and have been the subject of much academic research (Fearnside, 2001, 2003, Hecht, 2005, 2011, Nepstad et al, 2006, 2009, 2014, Barona et al, 2010, Macedo et al, 2012, DeFries et al, 2013). Much of this work has concentrated on how a mixture of public and private governance might strike a balance between conservation and agricultural production in Amazonia. Responsible industry led initiatives that offer biodiversity protections, such as the RTRS and Soy Moratorium, are seen as key strategies in achieving sustainability and economic development.

Reflecting on this work, I was surprised how little attention had been given to soy as a commodity. As the following chapters show, most Brazilian soy is consumed as a protein feedstock for livestock in Europe and China, but at times its characteristics and uses seemed unexplained or irrelevant in this literature. There was, for example, little analysis connecting the drivers of soy deforestation and soy consumption or attempts to situate the objectives of the RTRS and moratorium within sustainability literatures that delineate agriculture's substantial contributions to climate change (e.g. Steinfeld et al, 2006, Garnett, 2008, Rockström et al, 2009, Tilman et al, 2009 Gerber et al, 2013). From these initial observations, I began to form the objectives of my research. I wanted to understand the governance dynamics and environmental impacts of soy production *and*

consumption, and to analyse if the conceptualisations of 'sustainable soy' developed in the RTRS and Soy Moratorium addressed these concerns.

To do this, I set out to assess the RTRS and the Soy Moratorium as globally significant examples of sustainable *agrifood* governance, as opposed to land use or deforestation governance. I wanted to situate both mechanisms in a slightly different context to the academic work that had gone before, using the specific role that demand for soy in global food systems as the unit of analysis. In particular I wanted to develop an assessment of soy's sustainability potential based around its production and its primary consumption in feed for livestock, to connect soy production and consumption patterns. I also wanted to investigate why soy production in the Amazon had been the focus of such concern for NGOs and private companies. The majority of Brazilian soy is actually produced in the Cerrado, a vast savannah to the south of Amazonia. As the centre of soy agriculture in Brazil, the Cerrado has been the site of extensive land use change and environmental degradation linked to soy. It is also a landscape of globally significant but less well-known biodiversity (Klink and Moreira, 2002). For these reasons, the Cerrado struck me as deeply significant for assessing the sustainability potential of soy.

By expanding my research focus to include the Cerrado, I hoped to bring into view the full extent of soy's ecological footprint and develop an analysis of (sustainable) soy governance in the two regions. I also wanted to understand how the inclusion of corporate actors, whose supply chains depend on continued production informed the RTRS's and moratorium's objectives. Moreover, I wanted to analyse how such seemingly

disparate actors as Greenpeace and Cargill could work together, how they viewed their roles and responsibilities. In this sense, my focus would be on 'top level' or 'élite' sustainability governance, enacted by (predominantly) international and powerful actors.

1.2 A Qualitative Strategy.

My research questions and methodology emerged from the objectives outlined above, and from further analysis of the existing literature. It was not a linear process, as I show in figure 2, it was an iterative progression based on reading and reflection, with each new 'piece of the puzzle' helping to guide development. For example, the research methodology needed to be appropriate for answering the research questions but thinking about methodological approaches also helped to form those research questions. Similarly, the move from broad areas of interest into more specific research objectives evolved the more I read until there was a point of convergence between objectives and strategies.

In taking this approach I was influenced by Jennifer Mason's (2002) conclusions on the disadvantages of designing a rigid blueprint for research at the start of work. Mason argues it can be problematic to plan entirely in advance because *"qualitative research is characteristically exploratory, fluid and flexible, data-driven and context sensitive*" (Ibid, pg.24). Mason suggests that researchers needs to think strategically about what they want to achieve and develop a methodological "*logic by which you go about answering you research questions"* (Ibid, pg.30). This logic helps to inform decisions about research

approaches, it is *"qualitative strategic thinking…. a dynamic, active and reflexive process"* (Ibid, pg.32) with the aim of fulfilling the research objectives. Based on these ideas, I developed a methodological plan that was adaptable and encouraged reflection as new knowledge and data became available.

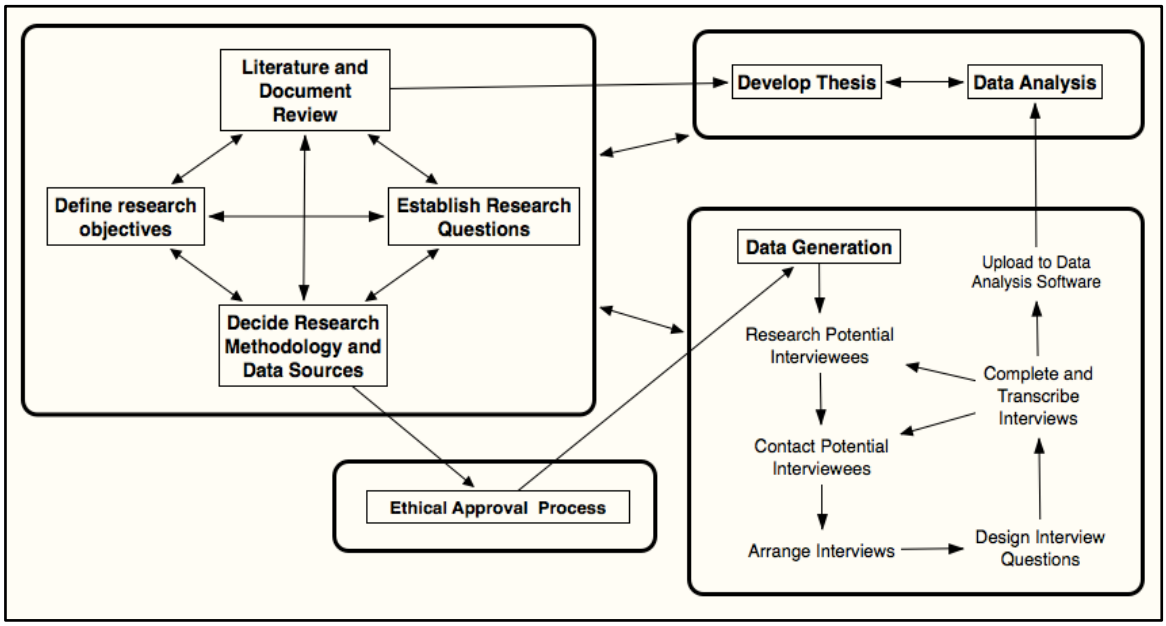
This plan was suited to the qualitative approach I decided to take. Alan Bryman defines qualitative research as social enquiry that *"tends to be concerned with words rather than numbers"* (Bryman, 2012, pg.380). He furthers this distinction from quantitative (*"numbers"*) research by emphasising qualitative work's inductive view of theory and research, seeing theory as being generated from the data gathered in the research (Ibid). Jane Lewis sees qualitative research along similar lines, seeing its value as *"understanding rather than measuring difference… exploring how the reasons for, or explanations of, phenomena, or their different impacts and consequences, vary being groups"* (Lewis, 2003, pg.50). Lastly, Denzin and Lincoln characterise qualitative research as a series of practices (methods and strategies) that "*makes the world visible….. qualitative research involves an interpretive, naturalistic approach to the world. This means that qualitative researchers study things in their natural settings, attempting to make sense of, or to interpret, phenomena in terms of the meanings people bring to them"* (Denzin and Lincoln, 2000, pg. 3, quoted in Snape and Spencer, 2003, pgs.2-3). Although there was a need in my research to use secondary quantitative data on deforestation rates and consumption patterns, my objectives fell within a qualitative approach; I wanted to analyse the *how* and *why* of sustainable soy initiatives, to explore

their workings and build interpretations of them as social phenomena with complex dynamics and processes.

Taking a qualitative approach also meant deciding which methodological techniques to use, and what data sources and methods were accessible and appropriate to my research objectives. I found Mason's perspective on the role of the researcher helpful when thinking about this: *"it's more accurate to speak of generating data than collecting data, precisely because most qualitative perspectives would reject the idea that the researcher can be a completely neutral collector of information about the social world*" (Mason, 2002, pg. 52). The researcher's role therefore is to *"work out how best you can generate data from your chosen data sources"* (Ibid). I wanted the methods I used to allow for the *generation* of new data, as well as for the interpretation of existing available information. I would not be a *"neutral collector",* I would be actively engaged, making decisions about what types of data to gather and how to use it. This can be seen as an interpretivist perspective, acknowledging my inevitable subjectivity (Snape and Spencer, 2003, Bryman, 2012) and reflexive role (Mason, 2002) as a researcher in choosing data sources, methodologies, and analytical interpretations. My research would therefore also be broadly constructionist in the sense I was using data to generate and display "*multiple constructed realities" created by "the shared investigation (by researchers and participants) of meanings and explanations"* (Snape and Spencer, 2003, pg. 12). Referring again to the diagram in figure 2, I understood this as an iterative process of reading and reflecting on existing literatures, data generation

and data analysis, and thesis development. Together these elements all informed each other and acted as the different components of a qualitative strategy.

Figure 2. Diagram of the Research Progress.



Source: The author

1.2.1. Comparative Case Studies.

From the outset of the research a case study approach to the RTRS and Soy Moratorium seemed appropriate, however I was conscious of the barriers I faced. First, I didn't speak Brazilian Portuguese or Spanish, which would make observing meetings and work 'on the ground' difficult. Second, the distance between South America and my location in the UK meant that repeated visits were prohibitive with resources available. More fundamentally, I didn't want to *assume* my research was a case study without justifying why the RTRS and the moratorium were applicable to case study work. This meant I needed to clearly define my units of analysis and the boundaries of what I would cover in my thesis.

Robert Yin's work on case studies has been influential, and he provides a widely used definition of a case study as an empirical inquiry that:

> *"investigates a contemporary phenomenon (the "case") in depth and within its real-world context, especially when the boundaries between phenomenon and context may not be clearly evident."* ***(Yin, 2014, pg.16)***

This definition reflects the explorative and explanatory nature of case study research that Yin believes are their main purpose. It implies multiple sources of evidence and distinctive if not always clearly defined social phenomena. Yin identifies four major types of case study design; the single-case or multiple-case, which can be used in conjunction with what he describes as either a holistic or embedded design (2014, pg.50). According to Yin, these choices have different characteristics or 'rules' for defining a unit of analysis and questions asked, depending on the goals of the research. Yin's typology of case studies has been critiqued in other methodological literature (e.g. Barbour, 2008, Blaikie, 2010), and there is debate about whether they should be regarded as a research method (as Yin suggests) or if they should be thought of more as Robert Stake describes them: *"a case study is not a methodological choice but a choice of what is to be studied"* (Stake, 2005, quoted in Blaikie, pg.187).

I found Stake's work useful, especially his definition of an *instrumental* case study:

> ***"****a particular case is examined mainly to provide insight into an issue or to redraw a generalization. The case is of secondary interest, it plays a supportive role, and it facilitates our understanding of something else. The case still is looked at in depth, its contexts scrutinized, its ordinary activities detailed, but all because this helps the researcher to pursue the external interest….Here the choice of case is made to advance understanding of that other interest"*
> ***(Stake, 2003, pg. 137).***

From this, I took an instrumental case study to be a research strategy that allows for insight into a range of issues and phenomena, and for some generalising to be made from the findings. This fitted with my research objectives that were both particular (the RTRS and Soy Moratorium) and quite broad (agri-food governance of sustainability). I also found Mason's description of the case study as a method of organisation useful. According to Mason, cases form the focal point or context of the study, they are the identifiable *"wholes"* (Mason, 2002, pgs. 166-167) within a number of potential social phenomena. Stake's *instrumental* approach and Mason's idea of *organising focal point* seemed appropriate to analysing ongoing case studies like the RTRS and moratorium. They are both examples of a distinctive social phenomena, but the boundaries between them as the centre of investigation and the wider governance context are unclear and evolving. Using a case study approach provided a clear but flexible structure to the exploration of my research objectives, it allowed me, as Stake suggests, to analyse the individual cases and to explore wider interests of sustainability and governance.

Although it would have been conceivable to focus on *either* the moratorium or the RTRS, similarities in their purpose and memberships and their analogous but distinctive mechanisms for action (certification standards and moratoria), meant that comparison seemed logical. A comparative approach also carried the potential that the cases could help to *"understand social phenomena better when they are compared to two or more meaningfully contrasting cases or situations"* (Bryman, 2012, pg.72), and that "*the findings that are common to the cases can be just as interesting and important as those that differentiate them"* (Ibid, pg.75). From a practical perspective comparison also

made sense. Both case studies operated primarily in Brazil, there was enough existing data available on both, and as many of the same actors were engaged in in both initiatives, there was lots of potential cross-over in the data that could be generated. For all these reasons I felt it would be unnecessarily limiting to concentrate on just one of the initiatives in my study.

However, because it would not be possible to compare all aspects of the RTRS and moratorium in the time frame and scope of a PhD thesis, I needed to make sure the boundaries of my comparison were clear. As Yin suggests, the research objectives and questions should help guide and define the boundaries of case analysis (Yin, 2014, pgs. 31 - 34). My research objectives were based on élite sustainability governance. I was comparing how sustainability was being interpreted and operationalised in the soy supply chain by the groups of actors (traders, retailers, environmental NGOs) with specialist knowledge and power over decision making. I also wanted to use these comparisons in an instrumental way to critically assess the development of sustainable soy governance, and its potential, in the context of the ecological footprint of soy production and consumption. I therefore needed research questions that reflected these objectives.

1.2.2. Research Questions.

Settling on final research questions was a key part of my overall qualitative strategy. Norman Blaikie writes that *"research questions are needed to define the nature and scope of the research*" (Blaikie, 2010, pg. 58). I wanted to develop questions that

reflected my research objectives and were suitable to a comparative case study method. They had to be specific enough to evaluate the RTRS and the moratorium as sustainability initiatives, but explorative enough to develop findings based on data generated by fieldwork. I found Jennifer Mason's description of research questions as expressing "the essence of your enquiry" (Mason, 2002, pg.19) helpful, along with her emphasis on making them coherent and researchable *"vehicles"* that work by *"connecting what it is that you wish to research with how you are going to go about research it"* (Ibid. pgs.19-20). Translating my objectives into research questions that could guide a manageable doctoral project and reflect the 'essence' of my enquiry was a long process that evolved during this research (see figure 2). The three questions below were finalised at the end of the first year of this thesis along with my methodological strategy.

RQ1) How has sustainability been defined and acted upon by stakeholders in the RTRS and Soy Moratorium?

This first question focuses on the case studies themselves, comparing what drove their development, how different actors and stakeholders worked together to create sustainability principles and governance frameworks, and how they have interacted in the process of implementation.

RQ2) How does the materiality of industrialized soy production and consumption enter into discourses on the construction of sustainability?

With this question, I explore how and where soy is produced in Brazil, and what it is used for. I move the analytical lens away from deforestation and towards soy's particular function as a livestock feedstock. This also shifts the analysis from the Amazon to the Cerrado. Building from this, this question enables me to assess how the specific

ecological footprint of soy production and consumption is understood and addressed (if at all) by the case studies.

RQ3) To what extent do the RTRS and Soy Moratorium represent successful interventions in mitigating the ecological footprint of Brazilian soy?

Finally, this question allows me to use the findings from the previous two questions to assess both case studies as sustainability governance mechanisms. From this I can draw conclusions about the effectiveness of privately led partnerships in addressing issues of sustainability, drawing conclusions in the light of growing global demand for soy and livestock products. Each question meets the broad research objectives of the project by focusing on 'élite' governance dynamics, the materiality of soy production and consumption and its environmental impacts.

1.3. Negotiating a Data Sample.

Guided by my research objectives and methodological strategy, I began to think about appropriate methods of data collection. One of the first methods of I employed was an analysis of the documents and website material produced by the RTRS and the moratorium (e.g. downloadable versions of their individual rules and regulations, histories of their organisations, promotional material, annual reports). I would classify these materials as supportive data, what Ritchie (pg.34 -36) calls *"naturally occurring data",* in the sense that I was analysing existing documents to *"understand their substantive content".* Ritchie says this data is *"particularly useful where the history of events or experiences has relevance, in studies where written communications may be central to the enquiry"* (Ibid, pg. 35). I used these documents to build a 'picture' of each case study - their stated goals, key events in their histories - and as a source of statistical

information about their memberships and organisational structures. Other documents, such as the corporate sustainability reports of traders and retailers and NGO campaign literature served a similar function. They were useful for understanding different organisations' strategic sustainability objectives and how perceived their role in the case studies. They were also useful for quantitative data e.g. deforestation rates and soy production levels. To find these documents, I performed systematic searches of the websites of the main organisations I was interested in, as well as using internet search engines.

Beyond the existing documents available, there was a wide range of potential data sources. Ritchie observes that qualitative interviews are *"particularly well suited to research that requires an understanding of deeply rooted or delicate phenomena or responses to complex systems, processes or experiences because of the depth of focus and the opportunity they offer for clarification and detailed understanding"* (Ritchie, 2003, pgs. 36-37). The interview process involves, Ritchie says, interviewees engaging in the *"re-processing and re-telling of attitudes, beliefs, behaviour or other phenomena. The experience, thought, event, behaviour or whatever, is mentally re-processed and verbally recounted by study participants"* (Ibid, pg. 36). Thinking again about my research objectives, interviewing seemed an appropriate choice. It would enable me to generate multiple detailed accounts, based on an individual's professional expertise and experience, about the case studies and the wider governance dynamics of sustainability and soy production and consumption.

From the outset of the project, I had considered that qualitative interviewing would likely form part of research. Because of this, while conducting initial reading, I began identifying key individuals named in the documents I read. Once I decided to pursue interviewing as method for generating data, I began to formalise this ad hoc process. I wanted to target individuals in two main categories: 1) *The soy industry* e.g. producer groups and associations, soy traders and food manufacturers and retailers that buy and use soy in their food products 2) *Environmental NGOs.* The leadership of the RTRS and the moratorium is made up of representatives from these two groups, so I was especially keen to interview people whose jobs included participating in their governing boards[1]. I also hoped to speak to the professionals who administered the RTRS Secretariat (which is different from its governing board), and to representatives from the Brazilian government and academics and journalists who wrote about related issues. Within these categories, I also wanted to pursue a balance of both European and Brazilian perspectives, and for practical and resource reasons, find interviewees who spoke English.

Thinking about strategies for finding appropriate people led me to various online social networking platforms, specifically LinkedIn and Twitter. LinkedIn[2] is a business oriented social platform where individuals can create public profiles detailing their education, work history and memberships of professional organisations. Twitter[3], another social network, provides an online platform for individuals and organisations to send public

[1] In Appendix 1 I have indicated which governing boards each interviewee has been a member of.
[2] https://www.linkedin.com/
[3] https://www.twitter.com

messages or ‘tweets’ commenting on issues of interest to them and their work. Using the information publicly available on these websites, I searched for profiles belonging to individuals and organisations who were or had been connected to the RTRS or the moratorium. I was also able to identify people working in the Brazilian soy industry as well as NGO soy campaigners and Brazilian government policymakers.

I would characterise this initial period of identifying potential interviewees as quite explorative, I ‘cast my net’ to see what I could find. My aims were to generate a sample that would be appropriate for the research objectives, and sufficient in size to make comparisons and draw conclusions. However, aware of the limited time available, I concentrated on the organisations and individuals most instrumental in the development the case studies. I was therefore making strategic choices about people; soy production had to be of key relevance to their job; their work history needed to suggest they had either been in their role in 2006 or were involved in the case studies now; they needed to, where possible, speak English. No other personal characteristic e.g. age, gender, was considered as these were not relevant to the research. My sample choices therefore represented élite or expert interviewees (Bogner et al, 2009), by which I mean individuals with special access to and knowledge about a particular area. They were chosen based on their expertise on the subject matter, ideally also having some influence over decision making processes themselves. In other words, they were governance ‘creators’ who could speak with the appropriate level of seniority and contextual information.

As well as using LinkedIn and Twitter, there was an element of taking a 'longshot' in my approach to finding people. For example, it was through writing to the publicly available email address of Izabella Teixeira (Brazil's environmental minister in 2015) that I was referred to Francisco Oliveira Filho, the Director of Policies to Reduce Deforestation at the Brazilian Ministry of Environment. Mr. Oliveira Filho had recently taken a break from his role to pursue doctoral studies on at Cambridge University, so I was able to meet him in the UK. Finally, there was what could be called a 'gatekeeper' effect of interviewees recommending other interviewees that continued throughout the interview process.

Ethical approval for the research project was granted by the University of Essex in 2015[4] and this formed the rationale of how I approached potential interviewees. I used publicly available email addresses and the messaging functions of LinkedIn and Twitter to initiate contact. I sent a tailored introductory letter accompanied by a participant information sheet which outlined the research project, the interview format and what rights and protections they would have as interviewees[5]. Informed consent was negotiated individually on this basis and confirmed both by an individual's written acceptance to be interviewed, and verbally at the start of each interview. To overcome language constraints, I had the emails I sent to potential Brazilian interviewees translated in Brazilian-Portuguese by a Brazilian friend, but I made it clear that I was only able to conduct interviews in English.

[4] Please see Appendix 2 for a copy of the Ethical Approval Form.
[5] Please see Appendices 3 and 4 for copies of these.

This initial communication was a negotiation between myself and the people I contacted. As shown in the table 1 below, I contacted 65 individuals in total. The majority were from the two categories I wanted to target: I contacted 23 people from the soy industry (in the table, these are split into producer groups, traders and processors and manufacturers and retailers for extra clarity), and 23 people from environmental NGOs. I also contacted 7 people from the Brazilian government, 3 people who held senior positions in the RTRS Secretariat and 9 academics and journalists who researched Brazilian deforestation governance and/or soy. 27 people were American or European and 38 were Brazilian, although most worked for international companies and organisations. From the information I could gather, all the people I contacted could speak English.

Table 1. Interviewee Sample Categories.

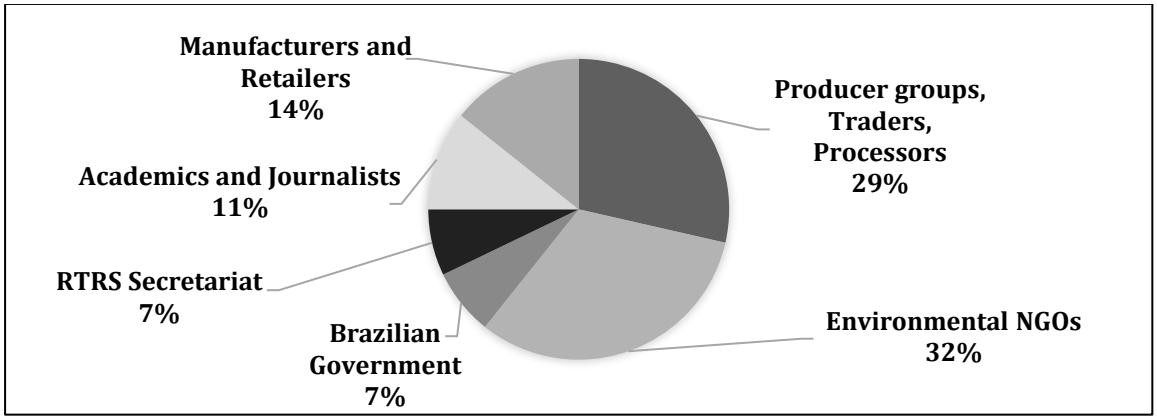
	Producer groups, Traders, Processors	Manufacturers and Retailers	Environmental NGOs	Brazilian Government	RTRS Secretariat	Academics and Journalists	TOTAL
Contacted	15	8	23	7	3	9	65
Declined	7	4	14	5	1	6	37
Accepted	8	4	9	2	2	3	**28**

Source: The author

From the 65 individuals contacted, I secured interviews with 28 people. Two of these interviews were with more than one interviewee at a time[6]. I have categorised as *declined* those people who didn't respond to my email, or said yes but then never managed to be available for interview. Only two people pro-actively refused once I had contacted them. One was from a sustainability consultancy with connections to the RTRS, they declined saying they received too many requests from researchers and would

only participate if there was a commercial benefit to their organisation. The other, a representative from a soy farmers association, told me that they had said *"all I ever want to say"* about sustainable soy. The ambiguity of this remark intrigued me, and I attempt to persuade the individual, but was unsuccessful. As figure 3 below shows, I was able to achieve a relative balance between my two target categories with 43% of interviewees from the soy industry and 32% from environmental NGOs. Of the 28 interviews I carried out, 12 people were American or European and 16 were Brazilian, which meant I achieved my objective of gathering a range of European (or, perhaps more accurately 'western') and Brazilian perspectives.

Figure 3. Completed Interviews by Sample Category.



Source: The author

1.3.1. Capture and Handling.

Once I had arranged the interviews, I designed questions for each interviewee covering the same 5 broad topics (see figure 4) which reflected my research objectives. There were 2 to 3 questions per topic, these were a mixture of broad thematic questions and questions tailored to the individual and their organisation. I would start each interview with introductory remarks about the interview process, reminding interviewees of their

[6] See Appendix 1. Interviewees 9 and 10, and 12,13 and 14 were interviewed together.

rights as laid out in the Participant Information Sheet. I would also them if they had any questions about the process. I would end each interview in a similar way. In the end, only one interviewee requested anonymity and all interviewees agreed to be recorded, which meant I was able to create transcripts to use in data analysis. Although the 5 topics provided a structure for the interview, I was also guided by each interviewee's responses, asking them to clarify or developed their responses. In practice, the interviews were conversational and dynamic, for example interviewees would sometimes answer a question in a way that covered several of the topics at once. The structure was therefore not prescriptive but acted more as a prompt to help keep the interview 'on track' and maintain the flow of the discussion.

Figure 4. **Interview Topics and Example Questions**

TOPIC 1: Interviewee's position in their organisation.
- Can you tell me about your current role and how you first got involved with (organisation)?

TOPIC 2: Their organisation's work related to soy.
- How does your organisation use soy in its products?
- Why is soy a campaign issue for your organisation?
- Can you tell me about structure of the soy supply chain in Brazil?

TOPIC 3: Specific questions about the case studies.
- Why did (organisation) get involved with the Soy Moratorium? How is it engaged in its work?
- (Organisation) is an active member of the RTRS, what does it see as its benefits?
- Can you tell me about why your organisation decided to leave the RTRS?

TOPIC 4: Thematic questions about sustainability and governance.
- What do you think is driving the moves towards more sustainable soy supply chains?
- I'm curious about zero deforestation agreements, why do you think they have become popular?
- How hard is legal compliance with the Forest Code for soy producers?
- Could the environmental impacts of meat consumption could be addressed with regulation?
- How would you define the role of private actors in addressing climate change?

TOPIC 5: The future of the case studies and sustainability governance.
- What do you think will be the biggest issues around soy in the future?
- What do you think will happen with soy production in the Cerrado?
- Where do you see the RTRS being in five years?
- What's the most interesting development in your sector regarding sustainability?
- What do you think will be the most important environmental issues in the future?

Source: The author

I carried out a mixture of skype, telephone and in-person interviews, depending on the interviewees wishes and the practicalities of their location. This process lasted just under a year (July 2015 to June 2016), and included 3.5 weeks of fieldwork in Brazil (August to September 2015). Within this period, the interviews were split into two phases: July to November 2015 and February to June 2016. The two phases were partly accidental, partly by design. When I began to contact interviewees, it was unclear who would respond and whether there would be enough people based in Brazil to merit the expense and time of a fieldwork trip. However, as interviewees began to respond positively, it became clear that visiting Brazil would be viable. At this point I decided that I wanted to begin interviewing before embarking on travel, to test out the questions and to become more confident in conducting interviews so, having set a timeframe of August-September 2015 for visiting Brazil, I began my interviews in July 2015.

On my return to the UK in late September, I transcribed the interviews and analysed the data generated. Some of these first interviewees acted as 'gatekeepers', making recommendations of other people I should speak to. I pursued these leads on my return to the UK and at the same time, some people I had contacted earlier in the summer became available. I therefore continued to conduct interviews until November 2015. From November 2015 to January 2016, I continued to transcribe interviews and carried out further analysis of their content, triangulating this with the findings from my literature and document research. I then carried out a second round of interviews from February to June 2016, again some of these interviews came from leads generated from

interviewees, and some were people I had chosen. In the end, my sample was made up of a combination of targeted individuals and leads that arose organically from the interview process.

I conducted all my interviews in English, with the exception of Elaine Corsini, the Superintendent of Environmental Monitoring at the Mato Grosso Ministry of Environment. I had arranged the interview with Ms Corsini's assistant by email in English and had assumed that Ms Corsini could also speak English. When I arrived, it was immediately clear that she did not speak English very well. Planning for this, she had asked her assistant acted as an impromptu translator. I recorded Ms Corsini's replies in Portuguese and had the recording professionally translated on my return.

Once I had completed and transcribed all 28 interviews, I transferred the transcripts to MAXQDA (version 12), a qualitative data analysis software programme[7]. I had planned to use hard copies of the transcripts as the basis for analysing the data, but the volume (each transcript was between 15-20 pages in length) made this difficult and time consuming. I decide to use the MAXQDA programme on the recommendation of a colleague at the University of Essex. Once uploaded, MAXQDA allows the user to code textual data. They can then search, retrieve and view segments on a viewing screen. The user can choose how many documents to include in a search, so they can select all documents or just certain ones. For example, I could set the perimeters of a search to show me *every* extract by *every* interviewee I had coded as *deforestation*, or every time

[7] https://www.maxqda.com/

one interviewee discussed the topic. Alongside the viewing screen, there is also document browser, so the user can view full transcripts alongside the coded segments of text. This means it's possible to see a coded extract in the context of what was said before and after it. The code system is chosen by the user and can be updated or changed easily, and multiple codes can be applied to the same passages of data.

I created and used codes as identifiers for segments of text. I based these codes on certain topics that reflected my research objectives and questions, as well as codes about key organisations and events. I created around 20 codes in total, these included: *Cerrado, Consumption*, *Deforestation, Forest Code, Governance, Greenpeace 2006 campaign, McDonalds.* Doing this enabled me to organise data on the same topic together efficiently and to 'browse' large volumes of transcripts. For example, it allowed me to see every time any of the interviewees had mentioned the Cerrado in any context. The task of coding was itself very useful for developing analysis. I found it to be an iterative process of close textual reading, code creation and reflection on what I read. The codes also helped me to cross-reference what different interviewees had said, and the software's search function helped me to locate particular phrases or words I remembered from an interview.

Using MAXQDA was not a substitute for textual analysis though, and I did not use the software to draw any statistical or quantitative findings. It was advantageous in the sense that it allowed me to 'get close' and 'get across' large volumes of data, and to explore it in ways that helped to generate ideas. One of the software's potential pitfalls

is that it relies on the researcher correctly applying a code to a piece of transcript. Aware of this, I regularly used the search function to check for things I may have missed. I also had hard copies of each transcript which I used to cross reference with the transcripts on MAXQDA, so I didn't just rely on the software. Overall, I found it to be a very useful tool. I did not use other applications available on MAXQDA e.g. the ideas mapping function, and I just used it for interview transcripts, not for academic literature or documentary data. This is something I would consider doing in further research projects.

1.4. Thesis Structure.

Six further chapters follow on from this one. In chapter two I review the previous research on both case studies, paying special attention to how they are assessed in terms of their governance design, and their effectiveness in tackling sustainability issues. I situate this in the wider context of literature on private governance and sustainable development. I also evaluate the existing research on deforestation and land use policy in Brazil, drawing on literature from both the natural and social sciences. Particular attention is paid to the integrated dynamics of cattle and soy deforestation. For this chapter I made the deliberate decision not to cover the literature on soy and agricultural climate change, apart from when it specifically relates to the case studies. This is covered in chapter three where I provide a brief history of soy production in Brazil, in both the Amazon and Cerrado, and analyse its ecological outcomes.

In chapters four and five, I chart the development of both the RTRS and the moratorium from their formation in 2006 to 2016. I show how they conceptualized and enacted

sustainability, and what the consequences of this have been. In chapter five I pay particular attention to the proliferation of zero deforestation commitments made by corporate actors, and how these have interacted with both the case studies and Brazilian public governance. These chapters are primarily focused on the Amazon, but in chapter six, I turn my attention to the Cerrado and look at the consequences of 'sustainable soy' in this region. I employ Thomas Princen's (1997, 1999) concept of distance in agricultural supply chains to help me understand the dynamic interactions between the Amazon and Cerrado, and more broadly between soy production and biodiversity protection. I end this chapter and use the final chapter to evaluate how the two case studies have developed, and what their implications are for the sustainability governance of agri-food systems.

Chapter Two: Forest Politics.

"Humanity has the ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs.

Yet in the end, sustainable development is not a fixed state of harmony, but rather a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are made consistent with future as well as present needs."

(Brundtland et al, 1987, pg. 16 and 17)

Climate change presents unparalleled complexity and challenges for policymakers. Questions of how economic development can become 'sustainable' have dominated global environmental governance. Definitions of 'sustainable development' vary, but one of the most frequently cited comes from the Brundtland Commission's 1987 report into tackling environmental change. Brundtland's key premise is that sustainability should be defined by non-exhaustive use of natural resources so as to not prohibit their use for *"future generations"*. However, Brundtland was not advocating for a choice to be made between environmental protection and economic growth, she envisioned both were possible. The appeal of sustainable development gained traction in the nineties precisely because it could serve as a means to preserve both the environment and economies, and because it allowed for business to play a role in developing governance solutions (Lang, 2008). In this chapter, I demonstrate how sustainable development is the paradigm that has shaped analysis of both case studies. The chapter is split into two broad sections, the first on governance and the role of private actors and the second on Brazilian deforestation dynamics and policy responses. I have made a purposeful decision to limit this chapter to these two areas, and to discuss the literature on soy production and consumption in the next chapter, where it can be better positioned within the narrative of the arguments there.

2.1. Agrifood and Environmental Governance.

At the international level the United Nations Framework Convention on Climate Change (UNFCCC), adopted in 1992 at the start of the Earth Summit in Rio de Janeiro, remains the central multilateral mechanism for states to address issues of environmental degradation and climate change, and to enact sustainable development policies. In the twenty-five years since, it has produced two binding treaties, the Kyoto Protocol (1997) and the Paris Agreement (2015), that legally bind states to emission reduction targets. Despite these successes and other non-binding agreements, the UNFCCC process has been criticized over its slow progress, insufficiently ambitious targets and low levels of compliance (Bernstein and Cashore, 07). At the time of writing this thesis, the UNFCCC is facing arguably its most major challenge, with the recent withdrawal of the United States from the Paris agreement posing new questions about the ability of nation states to achieve effective levels of cooperation in tackling climate change.

If sustainable development principles have come to signify the broad direction of travel for environmental policymakers, the perceived limitations of public institutions to reach meaningful agreements on how to govern the environment have created a policy space or 'vacuum' which private actors have increasingly been encouraged to fill (Bernstein and Cashore, 2007, McCarthy and Zen 2010, Fortin and Richardson, 2013). The Rio Summit's declaration explicitly linked environmental protection goals with the values of an open market (Principle 12, Annex I, Rio Declaration on Environment and Development, quoted in Bernstein and Cashore, 2007, pg. 352), effectively inviting business and civil society to play a role in shaping environmental solutions. This is reflective of what's been called a *'global megatrend'* (Falkner, 2011) towards governance

that involves the inclusion of actors not traditionally involved in policymaking processes, and the shift in normative values towards market centred solutions to policy issues (Hall and Biersteker, 2002, Bridge and Perreault, 2009).

Pattberg (2006) defined governance as a *"form of socio-political steering in which private actors are directly involved in regulation - in the form of standards or more general normative guidance - the behaviour of a distinct group of stakeholders"* (pg. 591). Lang et al (2009, pg. 75) contrast these governance approaches to regulation in more traditional public policymaking: *"governance implies more indirect, softer forms of direction from the state than command and control, and reflects collaborative outcomes, involving a wide range of actors often from the private sector, as well as from government bureaucracy, as much as deliberate interventions by the state".* Governance, they argue should be seen as *"an interactive process of state and public laws and policy with private interests and actors."* (Ibid, pg. 81). The definitions above describe the collaborative approach inherent in governance, as a range of different actors and interests interact, with each other and with the state, to develop new forms of policy.

One of the clearest themes to emerge is the extent to which the rise of private governance signals a decline of the state's power, or if it is fairer to say it represents a shift in position, with the state acting a distance in these new private governance arrangements, removed from direct regulatory design and implementation but shaping the wider norms and laws in which private regulations are formed (Falkner, 2003, Ponte and Cheyns, 2013). In doing so, it is argued, states avoid potential trade disputes, saves costs and delegate responsibility for complex and often unpopular

policies. Viewed this way the interest of states can actually be helped by private governance rather than diminished.

In governance dynamics, corporate actors are often characterized as motivated into taking protectionist measures against NGO campaigns, and to reduce their exposure to any future mandatory sustainability regulation that could limit their market access (Dauvergne and Lister, 2012). There is debate about the motives behind corporate willingness to adhere to self-regulation and share in collective sustainability goals that could hinder their individual financial performance. There are also concerns about the extent private companies truly see themselves as bound to sustainability standards or whether their participation represents a means for them to maintain their market position (Falkner, 2003, Dentoni and Peterson, 2011, Elgert 2012). This ambiguity is supported by the sense that private interests are privileged in many private governance systems in terms of budgets, resources, memberships and accountability. However, private actors still depend on the structure of the state or states they operate in, and they still have to abide by laws and to cultural values. In this sense, it could be argued that private actor involvement in these new governance mechanisms are a signal of the limitations of their influence rather than of their dominance – especially when you consider the reputational risk that 'big brand' multinational companies face from bad publicity and boycotts lead by civil society groups.

Correspondingly the motivations of civil society groups are discussed in terms of their acceptance of the role of corporate actors in policymaking and their own desire to

develop new avenues to exercise power on the global agenda (Pesqueira and Glasbergen, 2013). For both corporate and civil society actors, there is a need to take control of sustainability issues they view as vital to their interests, and where the state can be an unable or unwilling partner. Lastly, there is much in the literature about how the nature of a civil society groups change when they partner with private interests. The debates focus on whether partnerships represent a compromise of an NGO's values and level of independence, or if involvement strengthens NGOs by offering them a new arena to assert influence on the global agenda (Pesqueira and Glasbergen, 2013). In particular the literature discusses how NGOS play an additional 'watchdog' role, utilizing their global communications reach to pressure companies to sign up to standards, and then continue to pressure them once they have joined. In order to maintain pressure on the agenda, NGOs inside a governance mechanism will sometimes form alliances with NGOs outside the mechanism to coordinate activist campaigns to achieve common goals (Garcia-Lopez and Arizpe, 2010, Schouten and Glasbergen, 2012, Fortin and Richardson, 2013).

Although existing on many levels, private governance often takes place across state boundaries in a global, post-territorial level, across supply chains and industries. In practice, this governance can take many forms, from ongoing multistakeholder partnerships such as the RTRS, to industry standards and agreements like the moratorium, working with governments or without them. Key to all forms of private governance though are ideals of cooperation and collective decision making between actors in a more deliberative process based on areas of utilizing market and policy expertise and influence. At its most positive, this can represent and broadening out of

governance, making it more inclusive, offering a faster more adaptive, pragmatic approach to solving complex social and environmental problems than the traditional model of state governance. States are seen as benefiting from the empowerment of private actors, they can 'share the load' and widen their regulatory reach through other means, without having to intervene in costly and sometimes politically difficult debates. Private governance can be viewed as a faster, nimbler (compared to the state) approach to deal with policy complexity. By including market actors and members of civil society, these initiatives are 'close' to the issues, and can bring technological expertise and financial capital to solving problems, ultimately pragmatic consensus.

At its worst, private governance has been criticized for inhibiting rather than enhancing democracy, as states retreat and special interests, which might not align with the public interest are given more power. The role of NGOs is particularly interesting in private governance. Often seen as proxies for popular sovereignty (Evans, 2012), they can give voice to groups and issues that might otherwise lack the power to reach broader audiences but can also be seen as licensing a continuation of the status quo, becoming open to claims of greenwash. Bexell et al (2010), quoting Keck (2004) argue that *"civil society activists in international institutions represent positions rather than populations, ideas rather than constituencies"* (pg.93).

Looking specifically at the multistakeholder format of the RTRS the literature terms the governance they employ as 'non-state market driven' (NSMD) governance which is defined as *"deliberative and adaptive governance… designed to embed social and environmental norms in the global marketplace that derive authority directly from*

interested audiences, including those they seek to regulate, not from sovereign states" (Bernstein and Cashore, 2007, pg. 348). Common characteristics of NSMD governance include emphasis on their self-organizing, non-hierarchical nature based on a multistakeholder approach, with private actors from the corporate world and from civil society both taking leadership roles in the structure. Their governance structures and processes, such as elections for representatives, are similar to many public governmental organizations. They often seek to create binding agreements through ongoing evolving governance, and in effect, to govern according to norms of public institutions (Falkner, 2003, Bernstein and Hannah, 2008, Schouten and Glasbergen, 2011, Ponte and Cheyns, 2013). Within these structures' decisions are usually reached using a consensus approach, with a lot of effort going into building common ground between the different values of stakeholders. The preference is for is pragmatic definitions of concepts such as sustainability and to find workable criteria that all stakeholders can agree on quickly (Ponte and Cheyns, 2013). Lastly the comprehensive scale of governance mechanisms such as the RTRS, and their efforts to create a permanent, formal governing arena emerges as one of their defining characteristics. NSMD systems like the RTRS are thought to be about creating collective goals that can sometimes be in opposition to short-term interests of particular actors. Bernstein and Cashore talk about how NSMD actors aim to ameliorate global problems, not just maximize profits (Bernstein and Cashore, 2007, pg. 350).

The proposition that multistakeholder governance systems are about the creation of new market norms throws open key questions about the legitimacy and authority of

private actors to govern realms of political and economic activity that are traditionally the responsibility of public policymakers. A lot of the debate focuses on the legitimacy of governance structures that do not involve the state, and whether the self-mandated sovereignty of private actors means they can ever attain the same level of authority as public institutions (Bernstein and Cashore, 2007, Bexell et al, 2010, Schouten and Glasbergen, 2012).The Soy Moratorium and the RTRS are part of a trend towards multistakeholder governance - certification systems and 'green' alliances - that has been particularly common in the agrifood sector (e.g. the RSPO, FSC, MSC, Bonsucro). Much of the literature on both mechanisms has therefore taken 'governance' as its broad analytical framework. On this basis, as I will show below, the moratorium and RTRS have faced many of the common criticisms of in private governance, including questions about their democratic legitimacy, inclusiveness, accountability and power relations between actors.

2.1.1. The Case Studies as Governance Mechanisms.

One of the earliest articles about the RTRS characterized its design as an example of a 'top down' participatory process originating from and serving the interests of international agribusiness and environmental NGOs (Garcia-Lopez and Arizpe (2010). Certain groups such as Indigenous peoples, plantation workers and trade unions were denied the right to participate in the RTRS and are not represented formally in its structure. This has left the RTRS open to accusations off failing to represent all groups involved with and affected by soy production. (Steward, 2007, Garcia-Lopez and Arizpe, 2010, Elgert, 2012, Ponte and Cheyns, 2013) Added to this, Cheyns (2011) argues that the propensity of roundtables to rely on technical and scientific knowledge

bases and 'business style' norms of communication and behaviour, what the author calls *"roundtable speak*" (pg. 20), limits inclusion for individuals and groups who are able to join but who are unfamiliar with these norms. This is of particular importance in the consensus decision-making processes of the RTRS, where the priority is on building common ground between all stakeholders, so agreements can be acted upon quickly. Schouten and Glasbergen (2012) focuses on how governance legitimacy is created in exclusive and privately led organizations like the RTRS. They argue that legitimacy in is realized precisely through their ability reach a consensus, however exclusive in terms of participation.

There is also the issue of what Garcia-Lopez and Arizpe (2010) have called "self-exclusion" (pg. 198). Self-exclusion occurs when NGO groups who are eligible for RTRS membership refuse to do so in protest. A number of South American NGOs refused to become involved in the RTRS, seeing it is threatening the environment and the livelihoods of smallholder farmers they represent, and dominated by corporate interests largely drawn from European companies and international traders. Schouten and Glasbergen (2012) point to the long history of NGO activism in South America leading to more embedded distrust against agribusiness agendas, as well as elongated soy supply chains making it harder for the RTRS to connect with farmers directly (Steward, 2007, Garcia-Lopez and Arizpe, 2010, Schouten and Glasbergen, 2012).

This (self)-selective inclusion and consensus decision making has been shown to lead to a narrower policy agenda. Cheyns (2011) argues that the exclusion of certain groups is necessary for the function of the RTRS. Cheyns says that only by avoiding controversial

issues, and the actors who might represent them, can consensus between different actors be reached, Elgert (2012) goes further, arguing that the need to reach consensus amongst different actors has nullified more radical ideas from taking root in RTRS discussions, resulting in definitions of concepts like sustainability that are overly technical or politically neutral. Cheyns and Elgert note for example, the deliberate decision by RTRS stakeholders to allow the inclusion of genetically modified soy within the remit of RTRS certification as a controversial example of this. Even the word *sustainable*, which was originally in the name ("Roundtable for Sustainable Soy") was seen as too contentious for the RTRS stakeholders, who replaced it with 'responsible' early in negotiations (Garcia-Lopez and Arizpe, 2010). This critique is furthered by Elgert (2012), who challenges claims by RTRS members that it takes a depoliticized and 'managerial approach' to mitigating soy's environmental impacts. Instead, Elgert argues its criteria and standards reflect the relative power of different actors inside the RTRS to decide the definitions of sustainability. Cheyns too notes that the technical neutral approach of the RTRS *"is in no way apolitical"* (pg.23) because of the very real political effects on production and producers.

One of the main debates resulting from the RTRS's narrowed policy agenda and exclusive membership structure has been over the possibilities for reconciling large scale soy production with any concept of 'sustainability'. Actors involved in the RTRS assume that soy can be made to fit into sustainability norms, but authors have argued their definition of sustainability is limited by its need for environmental solutions that can be found within the current agricultural system of soy production. This is shown most clearly by Schouten et al (2012), who identify two discourses at the centre of the RTRS

approach to sustainability; The first is that stakeholders take the view that "*economic growth can go hand in hand with social and environmental sustainability. In this view, large-scale soy production is possible in a socially and environmentally responsible way"* (pg. 46). A second discourse, which builds on this, is that sustainability can and must be profitable in order to be successful. Agreement on this is what links the different actors in the RTRS together in a common agenda. In this sense, the RTRS has been designed as a tool to address environmental concerns and the associated reputational risks for companies, while not posing a threat to economic growth.

From its conception, the RTRS was perceived by many Brazilian NGOs and smallholders as *"a symbol of big agro-industrial companies"* (Schouten and Glasbergen, 2012, pg. 73) and as unwilling to challenge the power of agribusiness firms over their *"imposition of agro-industrial export-based model of agriculture"* (Garcia-Lopez and Arizpe, 2010, pg. 9). These groups see the concept of 'sustainable soy' as essentially illegitimate on social and environmental terms, and the RTRS as another example of agrarian development in South America that legitimizes corporate expansion. Elgert in particular has shown how the RTRS's reformist definition of sustainability has been met with *"blatant resistance"* (pg. 301) from groups outside the RTRS who see 'responsible soy' as *"an utter contradiction"* (Ibid). She quotes the environmental NGO ASEED, who were in opposition to the RTRS as saying in 2006: *"The name, 'responsible production' of large-scale soy is a fallacy, a demagogic expression used to hide the interests of the business sector in alliance with transnational corporations"* (Ibid). Garcia-Lopez and Arizpe (2010), writing about protests against the RTRS in Paraguay and Argentina perceiving the RTRS as *"an attempt to "greenwash" industrial agribusiness and legitimize the existing*

environmentally and socially destructive practices of soy expansion" (pg.202). Those opposed to the RTRS are shown in this literature to have a very different vision of sustainability concerns within soy production, which encompasses agro-ecological approaches, food sovereignty concerns, smallholder rights, land redistribution issues.

There has been less written about the Soy Moratorium in terms of its governance design and approach to defining soy as 'sustainable'. One article by Baletti (2015) takes a view similar to some authors above. Baletti criticizes the moratorium for its exclusion of local actors. She shows how local NGOs left the early moratorium negotiations, in rejection of its marginalization of wider ecological and social issues while larger, often international NGOs such as Greenpeace remained, seeing working with agribusiness as crucial to their priority of tackling deforestation.

Additionally, Baletti characterizes both the RTRS and the Soy Moratorium as mechanisms that effectively stabilize continued soy production in the Amazon, arguing *"they have questionable environmental benefits at best and at worse work to reinforce the hegemony of environmental NGOs, to legitimize agribusiness multinational, and to destabilize strategies of resistance"* (pg. 7). Baletti suggests that the Amazon's rich natural resources – timber, mineral, land – mean that it has always been a region of extractive economic development, the continuation of which has come under threat as conservation concerns grow. In order to preserve economic activities therefore, new forms of governance, in line with paradigms of sustainable development were needed. In practice, they often function, as the extract above suggests, in favour of the 'extractivist' status quo. Baletti sees both the moratorium and the RTRS as

fundamentally tools of business interests, and a means to enhance their market power, rather than curtail it. She also notes that this governance was centred around the frame of deforestation, posing *"limiting deforestation as an apolitical, universal public good*" (pg. 13) but that this deforestation agenda has had the effect of neutralizing debate about wider issues, around what she calls the *"larger contradiction of expanded production and conservation"* (pg. 14).

Brannstrom et al, 2012 take a much more positive view of the potential of the moratorium, characterizing it as a type of *"hybrid governance"* (pg. 357) where private actors are able to fill the governance gap between state capacity and soy producers. This gap, they argue **"***has inspired organizations to occupy this space by brokering deals among antagonistic actors and offering solutions to environmental conflicts."* (pg. 363). Here, the moratorium supports the work of the state in controlling deforestation, but also, as they note, goes beyond what is required by public regulation: "*There is nothing illegal about producing soybeans in the Amazon rainforest, as long farmers have cleared land following state and federal laws. In this regard, the market exclusion policy has jumped well ahead of the state by focusing on one commodity".* (pg. 363) Brown and Koeppe (2013) make a similar point, describing how *"the moratorium made illegal what used to be perfectly legal under Brazilian law"* (pg. 12), in effect constructing a form of illegality that did not exist before. Interestingly, they note however that the moratorium is reliant on the state institutions, such as its satellite monitoring capacity in order to achieve its goals.

Turning their focus to the dynamics of soy deforestation, to be discussed in more detail in the next section, Brown and Koeppe note that "*by focusing in on a single commodity, soy, the moratorium makes deforestation out to be the product of a very simple agricultural activity, masking the complexity of known cropping practices in Amazonian commercial agriculture"* (pg.121). They challenge the effectiveness of focusing on *"a single commodity"* arguing that there is a *"need to govern the agricultural system as a whole, involving the complex relationships between land clearing, livestock and crop production"* (Ibid). Finally, they warn against downplaying the role of the Brazilian state in the success of the moratorium, saying analysis should *"shy away from extreme positions calling only for state-led or market-led intervention. The history of the soy moratorium shows that it is neither; one could not have achieved results without the other"* (Ibid, pg.123).

In both case studies, as Baletti and Brown and Koeppe indicate, the operational site of sustainability solutions is located at the international level, developed by corporate actors and their NGO partners, with *"the possibility of a 'solution' emerging from below was also effectively eliminated"* (Baletti, 2015, pg. 21). This has led, as I have shown, to both studies being critiqued as forms of corporate 'greenwash'. These conclusions, although important, are limited for understanding how companies, within the confines of their economic priorities, have acted to enhance sustainability within their supply chains. This is something that this thesis will add to the debate.

There is also an assumption in a lot of this analysis that the RTRS was trying to be, or could ever reach full democratic legitimacy. There is value in showing how it falls short

of democratic values, but none the key actors in the RTRS are democratically elected or accountable in ways that public policymakers are. They can be held 'responsible' for environmental consequences of their actions by governments and by consumers, by their profits, to their memberships, but analysis on this level will always leave them 'falling short'. Instead, what I take from this literature is that both case studies are deliberative forums of limited debate, where selected stakeholders are able to engage with each other and share decision making processes. Assessing the actors involved it is also clear that the 'object' of sustainability was the international soy supply chain, not soy production itself. In this sense, debates about whether or not they are reformist seem mute, they are created within the supply chain and work within its boundaries. Actors that want a more radical approach have been excluded from the process. The case studies are inherently political, and the power of the actors and their access to resources gives them the ability to do this.

In addition, what I really draw from this literature is the level of shared understanding between actors about their governance roles and responsibilities. In this vision, the environment becomes a kind of natural infrastructure or supply chain to be managed. This management of nature is particularly important in the case of Brazil, as the next section will show, because there is a perception both of a deficit and an unhelpful excess of state intervention; It is seen a country with pioneering public policy on the environment but variable levels of political desire towards enforcement. It is, as I will demonstrate, a policy landscape where the private and public spheres merge into a co-governance in an ongoing interaction between economic, ecological and political systems.

2.2. Brazilian Deforestation Governance.

The drivers of deforestation are varied both in scale and purpose, from timber to mining, mineral extraction to agriculture. Fearnside (2005), for example, lists many of the different actors involved in Amazonian deforestation, from landless migrants, drug traffickers and small farmers through to ranchers and international agribusiness firms, all of whom deforest at different rates and with different degrees of legality.

Hecht (2005, 2011) traces the origin of modern environmental politics in Brazil as emerging largely in response to the economic reforms and infrastructure programmes that were transforming Brazilian agriculture. She links the development of climate research institutes in the Amazon and the new monitoring data they generated to the rise of the environment as a political issue. Environment based policy analysis offered, in her view, a *"powerful critique of destructive Amazon development that had annihilated livelihoods…(and) a sharp environmental appraisal of the effects of clearing on biodiversity, soils, hydrology and climate*" (Hecht, 2011, pg. 5).

There is a sense from Hecht's history of Brazilian environmentalism that deforestation was a particularly volatile part of the debate and has become an almost emblematic issue for environmental campaigners. New data on the magnitude of the damage caused by deforestation and the high-profile violence associated with land clearing, including the murder of forest activists, drew international condemnation in the eighties and nineties. Hecht describes the evolution of the attention on deforestation, which she sees as originally focused on biodiversity loss, as shifting in late nineties to

deforestation emissions as more became known about climate change (Hecht, 2011). The result of such sustained attention has been the development of a global environmental movement, with new actors in the form of conservation NGOs, putting pressure on the companies and policymakers to act on the causes of Brazilian deforestation (Laurance et al, 2001, Lemos and Roberts, 2008, Hecht, 2011, Baletti, 2015).

The literature makes clear that throughout the history of environmental politics in Brazil, there has always been a balancing act between development and conservation forces. Baletti (2015) talks about how the progressive anti-poverty reforms of the Luis "Lula" da Silva (2003 –2010) and Dilma Rousseff (2010 to 2016) governments presented the *"intensification of commodity-based resource extraction as a primary strategy for economic growth with distributive social programmes"* (pg. 6), and how these acted as powerful political forces against the conservation agenda. Lemos and Roberts (2008) characterize policymaking in the Amazon "as something of a see-saw, in which the weight of policy- making shifts from pro-development to pro-environment agendas, and back" (pg. 1897). In my research, I want to argue that the sustainability regulation of soy is being developed within the context of a historical focus on deforestation and in opposition, at least sometimes, to the powerful and popular development agendas of Brazilian politicians.

Deforestation control has long been an emblematic issue for environmentalists and, since Rio 92, a key regulatory concern for global policymakers. Brazil has always been at the centre of such concerns (even the summit itself took place there). Rises in

deforestation rates in the Amazon cause alarm across the world, and there is a long history of research into the importance of protecting its biodiversity and ecosystems (Laurance et al, 2001, Fearnside, 2005, 2008, Hecht, 2005, Gullison et al, 2007, Malhi et al, 2008, Nepstad et al, 2008, 2009). Deforestation control has become a key arena for environmental governance as regulators and private actors seek to develop agriculture and other commodity economies such as timber or mineral in ways that have minimum impact on forest ecosystems and biodiversity. International policy frameworks from Rio 92 onwards have positioned reducing carbon emissions resulting from deforestation as a key pillar of climate change mitigation strategies, linked to sustainable development for forest communities.

2.2.1. Soy Production and Deforestation.

The arrival of soy agriculture in Brazil was fairly late, first emerging at scale, as chapter three shows, in the seventies. Its rise was rapid though, and linked to the land use change, both for cultivation, and for supporting infrastructure such as roads and ports for international export across large swathes of the Amazon and Cerrado (Fearnside, 2001, 2007). Greenpeace's 2006 report (Greenpeace, 2006) argued that cheap credit from soy traders meant soy producers had financial resources and incentives to deforest and guaranteed markets for their harvests. It linked this expansion to supporting infrastructure roads, railway lines and industrial waterways, often funded by traders, stimulating further deforestation. This is what Fearnside called the *"dragging effect through which other destructive activities (such as ranching and logging) are accelerated by infrastructure built for soybeans"* (Fearnside, 2001, pg.23). Expansion for pasture land was the biggest cause of Amazon deforestation in the nineties and early 2000s, with soy

seen as secondary driver (Nepstad et al, 2006) with production taking place on land already cleared for cattle. As I will show below though, research has shown this to be a simplification of the more complex dynamics of soy deforestation. Consequently, one of the biggest debates in recent deforestation literature has been on the difficulty of correctly attributing deforestation linked to soy.

In an article published in the same year as Greenpeace released their report on the effects of soy in the Amazon, Morton et al (2006), showed that while cattle pasture was still the main cause of deforestation in the Amazon, land use change directly for soy production was becoming more common. Focusing on Mato Grosso, the state with the highest rate in deforestation in the legal Amazon, they estimate that between 2001-2004, the area of tropical forest converted directly for soy production increased from 13% to a peak in 2003 of 23%. During the same period, deforestation for cattle, while still larger, was decreasing from 78% to 66%. These changes, they argued, refute the more common picture that soy was expanding only on old cattle pasture, and had become a new direct driver of forest loss as global demand for soy created new incentives for its growth. These findings appeared to support Greenpeace's report that soy was becoming a major cause of deforestation in the Amazon.

This rise in Amazon deforestation linked to soy is further complicated when as Barona et al (2010) show that even when cattle is the direct, or as they call it, the *"proximate"* cause of deforestation, soy might be the *"underlying"* driver (pg.2). Like Morton et al, Barona et al studied Mato Grosso, this time between 2000 and 2006. Analysing shifts in production between different regions within the Amazon, they linked increases in

soy production on land previously cleared for cattle to the high market price soy commanded. They showed how these prices acted as incentives for ranchers to sell their existing land to soy producers, using the profits to expand further into the north of the state, where land was cheaper. This dynamic they argued meant that soy production was effectively displacing deforestation on cattle. This coincided with the fact that much of the recently deforested land can take a few years to recover from the damage caused by deforestation to become suitable for crop production, meaning that the pasture is a good temporary use for land. This is the same finding that Nepstad et al (2006) and Armina et al (2011) reach, arguing that increasing global demand for soy led ranchers to sell cleared land and move where land prices are cheaper. As Nepstad et al (2008) suggest *"the expansion of soya and agro-industry generally must be viewed as a process that is, for the most part, displacing and capitalizing cattle ranching interests"* (pg.1739) with soy production effectively financing cattle expansion.

Gasparri and de Waroux (2015) challenge Barona et al's conceptualization of deforestation displacement, because they, as well as the earlier Morton and Arima conceptualize of soy and cattle as independent drivers of deforestation, whether direct or indirect. They argue that soy and cattle are complimentary, rather than competitive parts of the same process of agricultural expansion. They point to the horizontal and vertical integration amongst beef and soy supply chains, which has brought new links between soy and cattle production. This means that pasture to cropland conversions and the flows of capital between them are 'coupled', and that they either inhibit or promote deforestation for different production sectors and in different geographic locations. They argue that "*Considering this, we argue that soybean- and cattle-induced*

deforestation in different locations, rather than being viewed in isolation, should be seen as particular manifestations of one same regional process" (pg. 2).

Another dynamic of deforestation 'displacement' is reflected in some literature as concern about 'leakage' of deforestation as conversation interventions, such as the RTRS and Soy Moratorium, are introduced in certain regions. Leakage means soy producers moving to less regulated areas and countries, in effect simply moving the problem on to somewhere else (Soares-Filho et al, 2010, Elgert, 2013). There is also the problem of how to attribute deforestation and land use change to what Fearnside (2001) calls the *"dragging effect"* discussed above. Fearnside argues that the measurements of soy deforestation should include more than just the area cultivated but is also the associated land use change necessary for the construction of infrastructure which, once built, stimulates further deforestation as other commodity producers invest in the region and use the infrastructure originally built for soy. Fearnside concludes that the political power of the soy industry in Brazil means it can influence the development of massive infrastructure projects which damage ecosystems, but which are not fully accounted for in the environmental impact assessments because the assessments don't include "dragging effects" (Fearnside, 2001).

All of this suggests that soy in 2006 had become a significant, if indirect, driver of land use change in the Amazon. This makes it more difficult to correctly attribute soy's role in causing Amazon deforestation. It is also clear that the connections between cattle and soy as drivers of expansion are complex and causality is not fully understood, making

it hard to fully delineate soy deforestation patterns in relation to other causes of deforestation. Whether a direct or indirect driver, soy has certainly been and arguably remains a leading cause of deforestation, and as Barona et al (2010) indicate there is a danger that the complexity allows the soy industry to claim it is not a driver of deforestation because the land use change patterns are hard to measure. This emboldens the soy industry, allowing it to claim it was not a driver of Amazon deforestation. *"The phenomenon of ILUC (indirect land use change) brings into question Brazil's 'Soy Moratorium', an agroindustry-led initiative to limit deforestation by stopping direct encroachments of soy fields into closed moist forest."* (Arima et al, 2011, pg. 2)**.** As I will show, this asks questions of the case studies and conservation approaches, show demand as the driver and deforest as the effect. This is particularly important when so much of the work of the RTRS and the Soy Moratorium is based around classifications and monitoring of deforestation associated with soy, and there is a risk of definitions of deforestation becoming blurred, making it harder to develop policy wide enough and also specific enough to capture to different types of deforestation associated with soy production.

2.2.2. Deforestation Policy.

It was the historic highs in Amazon deforestation that provided the immediate context for both the moratorium and the RTRS. The so called "arc of fire" led to international outcry from NGOs, and improved global communications made deforestation visible to more people around the world than ever before. This outcry led to moves by companies implicated to act, but the Brazilian government was also under pressure to act, and in

response made substantial commitments towards controlling deforestation during the first decade of the 21st century.

From 2002 onwards, the expansion of Brazil's Protected Areas programme (PAs) dramatically increased the percentage of the Amazon protected as either national parks, biodiversity reserves sustainable use units, or indigenous lands. In 2004, the federal Action Plan for Prevention and Control of Deforestation in the Legal Amazon (PPCDAM) initiated new levels of cooperation across different parts of government in tackling deforestation. Notably, the National Institute of Spatial Research (INPE) launched a new satellite monitoring system, known as DETER, which offered more detailed monitoring of land conversion. INPE monitoring worked in collaboration with the Brazilian environmental administration agency (IBAMA), who along with the federal police and army were given new personnel and tools to enforce land tenure and deforestation laws. PPCDAM also initiated sustainability incentives for the use of degraded land in agriculture, and working at federal, state and municipal level, and in conjunction with NGOs and expert institutes, it has been heralded as creating new levels of collaborative, coordinated deforestation governance (Assunção et al, 2012, Arima et al, 2014, Nepstad et al, 2014).

PPCDAM was followed in 2008 by federal regulation making agricultural credit dependent on compliance with environmental and land management laws, and by the creation of what has become known as the Municipality Blacklist, which allowed authorities to target areas with the highest deforestation rates, increasing inspections and prosecutions, suspending credit as well as taking the innovative approach of

penalizing whole regions (instead of individual producers) in an effort to spur collective responsibility along supply chains and across industries (Nepstad et al, 2014). At the international level, complimentary mechanisms were beginning to emerge that provided farmer compensation and rural development funding for avoided deforestation projects. In 2007, the UNFCCC adopted the Reducing Emissions from Deforestation and Forest Degradation (REDD) agreement which detailed activities eligible for compensation such as sustainable management and conservation of forests, and reforestation, for the first time making it possible for nations to be paid for forest protection. In 2009, at the Copenhagen Climate Summit, the Amazon Fund, was launched with a $1 billion-dollar donation from Norway, allowed REDD projects to be carried out by governments at national and state levels in the Amazon biome (Gullison et al, 2007, Malhi et al, 2008, Nepstad et al, 2014).

Public governance brought new results (Nepstad et al, 2014) with nearly 650 police operations were carried out between 2004 and 2011, leading to the imprisoning of over 600 individuals and over BRL 7.2 billion worth of fines were issues, although most of these were never paid. Nepstad et al also show that of the 36 municipalities originally on the blacklist, 11 were removed within 5 years for improvements. As a result, deforestation rates in the Amazon began to decrease after 2005, and much research centred on unpicking the different roles played by private interventions, such as the RTRS and the Soy Moratorium, and public policies in creating this decline. There is general agreement that both contributed, along with market forces, specifically the fall in the profitability of beef and soy after the economic downturn in commodities in 2006/7 (Nepstad et al, 2009, Assuncao, 2012, Nepstad et al, 2014).

Writing in 2006, Nepstad et al discuss the *"conservation opportunities"* (pg.5) presented by market pressure on companies *"to reduce the negative ecological and social impacts of their production systems"* (pg.6). Financiers, processors and buyers of soy, they argue could use their market power to demand higher levels of legal compliance with environmental legislation and more responsible agricultural and labour practices, and the restriction of market access could be used for producers who fall outside legal deforestation allowances. They also suggest the implementation of compensation systems that reward producers for financial costs and losses involved in constraining deforestation in their supply chains to sit alongside more traditional command and control policies of the government approach. In a 2009 article, Nepstad et al restate the need for this, highlighting recent positive moves by private actors to penalize illegal deforesters and notable moves to reward responsible producers, saying "*At the core of this market trend is the prospect of breaking the historical antagonism that exists between landholders and the government by facilitating compliance with the law, incentivizing this compliance, and strengthening the connections between forest conservation and the well-being of law-abiding Amazon land managers generally"* (pg.5, supplementary materials).

Two articles (Nepstad et al 2013, Nepstad et al 2014) assess the situation as these interventions have matured. Both cite supply chain interventions by private actors in the RTRS and Soy Moratorium as playing key roles, alongside public governance in reducing deforestation in the Amazon associated with soy. They provide incentives for compliance to counteract demand-pull or the loss of political will. Macedo et al, 2012

characterize the moratorium as *"complementing government enforcement measures, and bolstering existing certification schemes to reward environmentally responsible production"* (pg. 1344). Another article, by Gibbs et al (2015) stresses the high levels of producer compliance with the moratorium as helping with the reduction in deforestation rates in the Amazon, although they caution against its potential loopholes, in particular something they call "soy laundering" where *"soy from properties in violation of the Soy Moratorium could be sold through a property with no violations*" (pg.8, supplementary materials). Similar conclusions were reached by Rudorff et al (2011, 2015), which both show that soy was not a significant driver of deforestation in the Amazon after the moratorium was implemented. I will return to these conclusions, in particular those by Gibbs et al, in chapter five. There is less analysis of how effective the RTRS has been on reducing deforestation rates, with most analysis, as I have shown above, focusing on its governance design. What analysis there is has emphasized the potential of certification schemes to play a role in reduction (Edwards and Laurance, 2012, Hospes, 2014 Meijer, 2015) but questions their effectiveness due to minor position in the global market.

Similar debates about the balance between incentivizing and effectively enforcing conservation policies can be seen in the literature on existing regulatory frameworks in Brazil such as the Forest Code. The Forest Code, first introduced in 1965, stipulates the level of land conversion allowed on private properties throughout Brazil. The Code is revised periodically with the last major revision in 2012.The key issues here are about the proper enforcement of ecological zoning and land regulations, crackdowns on corruption and how to best balance effective environmental policies

against strong development drivers and global demand for Brazilian commodities. There is a tension in the literature about the responsibilities of the state and private actors and about the need to balance policies that promote viable economic alternatives to deforestation with punitive measures and restrictions on the actions of industry. These debates are perhaps best exemplified by the works of Philip Fearnside and Daniel Nepstad, two of the most prominent researchers on the dynamics of Amazon deforestation, particularly as it is linked to soy production. Before I conclude this chapter, I wanted to briefly summarize the differences of approach between Fearnside and Nepstad, as they offer an interesting review of the main debates of the governance of deforestation in Brazil.

Fearnside's work draws out the barriers to improved control over deforestation. His work stresses the political power of the soy industry to influence government conservation policies and the financial supports soy producers receive from the Brazilian state. Fearnside emphasizes the need for land reform, the removal of subsidies for deforestation based development and restraint in the authorization of soy driven infrastructure projects. There is an overriding sense in his work that soy production is dominated by élites of international agribusiness firms who may be acting against the national interest of Brazilians on social, economic and environmental grounds. Fearnside argues that a strong state, in limited and controlled partnership with private interests, must take control and direct agricultural development to protect the Amazon and the livelihoods of all Brazilians (Fearnside, 2001, 2005, 2007, 2008).

Nepstad's work takes a slightly different tone, emphasizing the potential benefits of joint stewardship with private actors. In his work Nepstad talks about the need for global financiers to create pressure on the soy supply chain to influence soy processors and ultimately soy consumers to demand sustainable production. He stresses the need for positive incentives to keep anti-deforestation policies in place, calling them *"precariously dependent"* on the political will of the Brazilian government to enforce rules on a powerful industry (Nepstad 2014, pg. 1121). In his later work Nepstad emphasizes the need to coordinate public and private responses at local, state and federal levels and to align the various deforestation measures and targets to stop conflict, confusion and overlap between domestic policies and the work of private actors. His work indicates much more than Fearnside's that a 'correct' balance of privately and publicly coordinated policymaking is possible (Nepstad et al, 2002, 2006, 2009, 2013a and b, 2014).

Both Fearnside's and Nepstad's work are extremely useful for contextualizing the role of the soy industry into wider issues of environmental governance in Brazil. They reveal that a lot of the existing policy frameworks are focused on measuring, monitoring and redirecting deforestation and on controlling economic development, either with regulatory or partnership approaches. The literature highlights the economic barriers to effective environmental governance and characterizes modern biodiversity protection in Brazil as partly an economic development policy and partly a law enforcement issue. In this context, we can see that trade-offs between market forces and conservation imperatives are constantly occurring. There seems to be a broad consensus that any form of environmental governance will have to balance

these trade-offs and it is made clear that this is a task that will require strong governance and sustained political will (Fearnside, 2001,2008, Malhi et al, 2008, Barona et al, 2010, Soares-Filho et al, 2010, Nepstad et al, 2009, 2013).

In conclusion, we see a myriad of new stakeholders implementing and enforcing deforestation controls, for soy, and more generally. There is a new diversity of stakeholders and new levels of awareness, but debates about broadly punitive and compensative approaches remain. This situation is a continuous iterative process between governance and market forces, illegality and compliance, between rising and lowering rates of deforestation, new commodities, and new methods of measurements. It will always be an ongoing story, while strong economic incentives continue for commodities, deforestation will always remain an option. This dynamic remains because deforestation is driven by economic activity, and fluctuations in prices for commodities and land. The mass of new regulation and enforcement powers increased the institutional capacities of the Brazilian state at every level and signaled a new approach to deforestation control. They provide the immediate institutional context for the case studies. Even measures by a pro-active state had to withstand intense market pressures, this creates a space for market-based mechanisms to compliment public policies.

Chapter Three: The Soy Transition.

"I think, you know, farmers will grow what markets determine, it's not like there's some big God in the sky saying it will be soy today and palm tomorrow."
(Mark Murphy, Cargill interview, August 2015)

The story of soy is one of agricultural and dietary transformation. From relative obscurity (for people outside of Asia), to global agro-commodity, soy's rise to prominence has led it to be compared, somewhat humorously, to the fairy-tale of Cinderella (Du Bois and Mintz, 2008, pg. 300). Like Cinderella down in the scullery, the role soy plays in global food systems is largely hidden, with most of what is produced being consumed through other foods, but it is a crop that both defines and has been defined by twentieth century agriculture. As Harriet Friedmann explains: *"soybeans are by far the fastest-growing crop in world agriculture since 1945. From an Asian food crop, soybeans became the basis for a global transformation of livestock production, linking field crops with intensive, scientific animal production, through giant agri-food corporations, across many national boundaries"* (Friedmann, 1994, quoted in Du Bois and Mintz, 2008, pg. 302).

In the seminal *Agriculture and the State System* (1989), Friedmann and Philip McMichael compared livestock and automobile production, seeing them as key components of *"the mass production and consumption of standardised products that provided the central dynamic of post-war capitalism is advanced capitalist economies"* (Friedmann and McMichael, 1989, pg.106). They described what they called "*the intensive meat complex"* (pg. 105) emerging in the United States and other developed countries after World War Two; Livestock and crop agriculture became more industrialised and foods more manufactured, thanks to new processing techniques that increased the durability

of perishable commodities like meat. Friedmann and McMichael saw this complex being facilitated by large agribusiness firms, who integrated crop and livestock supply chains, and turned crops like soy into specialised inputs for other foods. Returning to their comparison with automobile production, they likened soy to the petroleum needed to fuel car travel (pg. 106).

Perhaps in reference to Friedmann and McMichael's work, Tony Weis describes an *"industrial grain-oilseed-livestock complex"* (Weis, 2015, pg. 298) driven by a *"meatification of diets"* (pg. 296) in certain countries and regions, and fed by the vast production of animal feedstocks like soy: *"This system of agriculture, the industrial grain-oilseed-livestock complex, can be likened to islands of concentrated animals within oceans of corn, soy, and other monoculture crops; it occupies nearly one-third of the world's arable land."* (pg. 298). These evocative descriptions by Friedmann and McMichael and Weis paint a picture of food production that is especially applicable to the transformation in Brazilian agriculture over the last forty years. Today, Brazilian soy is a key regional intersection in globalised feedstock-livestock consumption chains, dominated by the same agribusiness firms that reshaped agricultural production in the United States and Europe. It is linked, as this chapter will show, to particular dietary transformations in China, and to the need for a non-animal based protein source for livestock after the BSE crisis in Europe (Nepstad et al, 2006).

One of the successes of the Greenpeace campaign was to make this globalised feed-meat complex visible to consumers. By linking soy production in Brazil to meat consumption in Europe, Greenpeace drew attention to both multinational supply chains,

and to their consequences for land use change. Crucially however, Greenpeace's report focuses on deforestation, and does not address the wider ecological outcomes of soy production and consumption. In this chapter I want to position soy differently, and examine how the processes involved in soy agriculture in Brazil have interacted and impacted on the environment and natural resources across soy producing regions. Specifically, I pay attention to soy's role in the global *"grain-oilseed-livestock complex"* and the dietary and land use transitions that it has fuelled. This allows me to analyse the multidimensional nature of soy's ecological footprint, or as Weis characterises it, the *"ecological hoofprint"* of meat production (Weis, 2013A, Weis, 2015, pg. 298), beyond the Amazon region. I use this to argue that soy and livestock are intrinsically linked in terms of environmental impacts and need to be understood together when evaluating the sustainability potential of the RTRS and Soy Moratorium.

By taking this approach, I am able to move my analysis to the wider supply chain beyond 'the farm gate' and onto the use of soy in a global food system. As Mark Murphy, the Cargill interviewee quoted at the beginning of this chapter says, demand for certain commodities over others comes from what *"markets determine".* How markets determine what crops are grown is not a linear process. It involves the forces of both 'demand pull' and 'supply push' in generating expanding markets of production and consumption. In the first section of this chapter therefore, I examine the market and its demand drivers, paying particular attention to the two key regions (the European Union and China) where demand for Brazilian soy comes from. In the second section, I chart the development of soy's expansion in Brazil, looking at how increased production for soy was encouraged and facilitated by both the state and private actors. In the third

section, I look at the ecological outcomes of these processes, both in Brazil and more globally**.**

3.1. Soy as 'Flex Crop'.

Until the second half of the 20th century soy, an oilseed legume plant of Chinese origin, was primarily grown as an ingredient in Asian cooking. Whole soybeans provided a source of protein in foods such as tofu, and soy oil was used as a base for sauces. Its production was therefore largely regional. Before 1970, the small amounts of soy grown in Brazil were produced by (mainly Japanese) immigrant farmers, or by Brazilian commercial farmers taking advantage of soy's nitrogen-fixing qualities to use it as a 'green fertiliser' for restoring soils (Oliveira, 2016). Today, most soy is grown outside of Asia. The global harvest of 2013/4 was 284 million tonnes, over 80% of which originated in the United States, Brazil and Argentina.[9] Only 6% of soy produced is consumed directly however, with the remaining 94% crushed by processors, such as Cargill and Amaggi, into two co-products; soy meal and soy oil. (Kroes and Kuepper, 2015 Oliveira and Schneider, 2016). It is these co-products that give soy its appeal to producers, and they are the overwhelming drivers of its expanding global demand, which the FAO predicts to almost double by 2050 to 515 million tonnes (Bruinsma, 2009, pg.6).

Each crushed soybean produces 18% oil, and 80% meal. Soy oil can then be further processed into a form of the fatty acid Lecithin. Both soy oil and soy Lecithin are used in food manufacturing as inputs for numerous products, everything from edible oils to sports drinks, breakfast cereals, dietary supplements, condiments, stock cubes and ready meals. They can also be used in non-food products that range from paints,

plastics, soap and biodiesel (Mintz et al, 2008, HighQuest Partners and Soyatech, 2011, WWF, 2014). Soy meal is the most profitable part of soy for producers, and over 85% of the global harvest is grown for meal. Meal contains more protein, measured per hectare, than any other major crop, with approximately 40g per 100g of beans, which is more than pork. Over 98% of meal produced is further processed into high protein feedstock pellets used in livestock production, meaning that despite its nutritional potential for humans, people consume the majority of available soy protein through eating meat. (HighQuest Partners and Soyatech, 2011, Murphy, Burch and Clapp, 2012, WWF, 2014).

This vision of soy as a crop grown primarily for indirect human consumption aligns with Friedmann and McMichael's description of specialised agro-industrial inputs. The remarkable versatility of soy's co-products and their use across many different markets and supply chains make soy into what Oliveira and Schneider (2016) describe as a *"flex crop"* (pg.168). Soy is used by the companies interviewed for thesis in different ways. Unilever uses soy oil and Lecithin in its dressings and spreads, including brands like Hellmann's mayonnaise and Flora margarine (Unilever, 2017). McDonalds don't directly own the farms and factories that make their products, but their European suppliers use soy meal in their feedstock for chickens and pigs, and soy oil and Lecithin as emulsifiers for various foods, oils and drinks (McDonalds, 2016). It is a similar situation with Marks and Spencer's food business. When asked exactly how much soy they used, both McDonalds and Marks and Spencer expressed the difficulty in both controlling and accurately calculating usage across so many different supply chains:

[9] 91.4 million tonnes were produced by the US, 86.7 million tonnes by Brazil, and 54 million tonnes by

"It's astonishingly and unbelievably difficult to gain an accurate figure for our soy footprint. If you think about chicken breasts, or your basic pint of milk, you can go "yeah, we can manage that, we can calculate our usage in that", but if you think about how much soy is in a risotto or a pizza, where you've got mozzarella cheese, you've got Parma ham, your head just starts exploding…… Another complexity you've got with soy is that you've got beans but then they're broken down into meal and oil, so how many beans do you use to get a litre of oil? or a kilo or meal? Then when it gets to the feed, you don't just feed them soy, you feed a compound feed which is balanced nutritionally for the different life stages of the animal, which will have different proportional percentages of soy within it. It's unbelievably difficult!"

(Fiona Wheatley, Marks and Spencer interview, August 2015)

"We are not a direct buyer of soy. We have it within our supply chain. We don't own any part of our supply chain. We sell those items in our restaurants but we have indirect influence, way down our supply chain, because the majority of soy obviously is used in animal feed which is at least two or three steps, if not more, down our supply chain……..When we are talking about chicken for instance, we buy chicken from companies that produce the nuggets for us, they buy the meat from other companies that raise the chickens, and then depending on the structure, they are buying feed from a number of different places."

(Keith Kenny, McDonalds interview, August, 2015)

This is further complicated when it comes to sustainability, where big companies have to take responsibility not just for their actions, but also for the actions of their suppliers, as this further extract illustrates:

"If you want to literally look at every supply line that will be touched by soy, and deal with these individually, God, you've to got a big task on your hands, you're going to make life very complicated for yourself. What we're doing is prioritising our key feed users, our biggest livestock suppliers, we've got them involved in a wee kind of working group, and we're focusing on working with them to identify what we believe to be the options available in terms of standards for avoiding deforestation and supporting sustainable soy production"

(Fiona Wheatley, Marks and Spencer interview, August 2015)

Despite this multiplicity of soy in supply chains, it is the use of soy meal as a livestock feedstock that I argue has really defined its role in global food systems for the last half

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Argentina (Kroes and Kuepper, 2015 pg.2).

century. It was also this use that was the focus of Greenpeace in its 2006 campaign against McDonalds and Cargill. In the next sub-section, and throughout the rest of this chapter, I will unpack how demand for soy is intrinsically linked to demand for meat.

3.1.1. Soy and Livestock.

In the last 60 years global demand for meat has risen rapidly. Between 1961 and 2011, global meat production quadrupled from 71 million tonnes to 297 million tonnes (Weis, 2013A), and the trend is accelerating. A recent report from Chatham House estimated that compared to a 2005/7 levels, global meat consumption is expected to rise 76% by 2050 (Bailey, Froggatt and Wellesley, 2014, pg. 5). By 2014, 69% of all agricultural land (11% of the planet's total land base) was used as pasture for livestock production, and between 1994 and 2011, 86% of additional demand for land was for livestock (Alexander et al, 2014). Correspondingly, land dedicated to crop production to feed livestock, mainly soy and maize, represents 33% of total arable land (Ripple et al, 2014). Globally, soy production alone covers over 1 million square kilometres, which is equivalent to the size of France, Germany, Belgium and the Netherlands (WWF, 2014). Looking at this land use in different terms, Cassidy et al, (2013) calculate that 36% of the calories produced from crop agriculture are being feed to livestock, and as they point out: *"animal products often require far more calories to produce than they end up contributing to the food system… This suggests using human-edible crops to feed animals is an inefficient way to provide calories to humans"* (pg. 2).

While rising livestock production can be attributed to the need to feed a growing global population, changes in dietary preferences towards more meat consumption are playing

an increasingly dominant role (Kastner et al, 2012, Tilman and Clark, 2014, Westhoek et al, 2014, Alexander et al, 2015). The ultimate destination of Brazilian soy reveals interesting dynamics about where the specific drivers of its production are coming from. In 2011-2012, Brazil produced nearly 70 million tonnes of soy but consumed, either directly or as animal feed, only 18 million tonnes. The remaining 52 million tonnes were exported, the majority of which going to China (25.9 million tonnes) and the European Union (16.6 million tonnes) (WWF, 2014, pg. 26). Brazilian soy production then, is characterised by its function as an input for livestock production in China and Europe.

Shifts in dietary preferences towards more meat consumption are commonly referred to as 'nutrition transitions' (Popkin, 2003). This is often explained by increased levels of prosperity in developing countries leading to higher standards of living, including diets containing more meat. This is linked, in both developed and developing countries, to supposedly in-built evolutionary (and culturally driven) carnivorous preferences of most humans, combined with lower costs of meat products, and the increasing *"meatification*" of food options available to many consumers on a daily basis (Pollan, 2006, Wrangham, 2009, Fairlie, 2010, Weis, 2013B).

China's 'nutrition transition' and in particular its growing consumption for meat has been the subject of much research (Popkin et al, 2001, Du et al, 2002, Schneider, 2011, Garnett and Wilkes, 2014, Schneider and Sharma, 2014, Sharma, 2014). With a population of over 1.3 billion people, China feeds 21% of the world's population on just 9% of its arable land (Schneider, 2011, pg. 22). China's massive economic growth,

the resulting urbanization of large numbers of former agricultural workers, and the emergence of an affluent middle class, have changed its food production and consumption patterns. These changes presented new challenges for the Chinese government, who instigated the development of more intensive animal agriculture in the late eighties to provide cheap meat, particularly cheap pork, as a means to improve food security and satisfy new levels of demand (Bharucha, 2014, Sharma, 2014). In order to achieve the volume of feedstock necessary for industrialized production, the Chinese government was forced to abandon its previous agricultural model of self- sufficiency and engage with global markets.

The Chinese government chose soy as its preferred feedstock and liberalized its soy industry to allow for foreign imports in the nineties, becoming a net importer by 1996. After its ascension to the WTO in 2001, China made several bilateral trade deals with the United States and Brazil to lower tariffs on soybeans and soy meal and by 2005, it was importing over half of global soybean production (Schneider and Sharma, 2014). Soy, particularly Brazilian soy, has become a key part of Chinese food security policy and a tool for overcoming its land and resource finitudes. This driver was acknowledged by many interviewees, as this extract illustrates:

"China, they need soy because they have a big population, they have a poultry and pork system, they need our soy."

(Benito Guerrero, The Nature Conservancy interview, April 2016)

The Chinese government has developed this policy further, allowing its companies to invest in key components of the soy supply chain infrastructure across the world, including in Brazil. Today China imports the majority of Brazil's soy, eating (indirectly)

more Brazilian soy than any other country, and has heavy investments in Brazilian soy agribusiness firms. This distinct political-economic configuration of Brazilian soy production and Chinese soy/meat consumption is often referred to as the Brazil-China *"soy complex"* (Liu et al, 2013, Peine, 2013, Wilkinson and Wesz Jr, 2013, Bharucha, 2014). The dynamics of the soy complex send market signals effecting both the production and consumption drivers of soy**,** informing each other, as Agustin Mascotena, executive director of the RTRS, and a former soy trader, explained:

"We know China, as they get rich, higher standards of lifestyles and they are consuming more chicken and pork, and that's the message that arrives to the producers here. It tells them they need to produce more feed to maintain China's growth in consumption."
(Agustin Mascotena, RTRS interview, July 2015)

The result of China's nutrition transition of the Brazil-China soy complex has been a sizable increase in China's consumption of meat, with pork being the most favoured. In 2016, the Chinese ate 30.8 kg of pork per capita, this is up from 19.8 kg in 1996 (OECD, 2017). Interestingly however, the other main consumer of Brazilian soy is the European Union, which despite China's dramatic increases, still consumed (slightly) more pork than China in 2016 (32.3 kg per capita). As in China, pork is the most commonly eaten meat in the EU, with the second most common in both regions being chicken. In 2016, EU consumers ate 23.9 kg of chicken per capita, nearly double that of China's 12.1kg (OECD, 2017). Feeding pigs and chickens requires a lot of soy. Europe's livestock industry relies on an estimated 13 million hectares of agricultural land in South America to supply its soy feedstock, equivalent to 90% of Germany's entire agricultural land base (WWF, 2016, pg. 86). In the wake of the BSE outbreaks in European livestock herds in the eighties and nineties, the EU became one of the earliest markets for Brazilian soy as

farmers needed feedstocks composed of plant-based protein. Restrictions on the use of carcasses in animal based protein feeds in 1988 and 1994, and the subsequent EU level ban in 2001 created shortages that drove expansion of Brazilian soy production (Nepstad et al, 2006, Bharucha, 2014).

European consumption rather than Chinese consumption was the central target in Greenpeace's 2006 report, which called European agribusiness *"partners in crime"* to Brazilian deforesters (Greenpeace, 2006, pg. 5). China overtook Europe as the leading location of Brazilian soy in the first decade of the 21st century (Wilkinson and Wesz Jr, 2013, Lathuilliere et al, 2014), but levels of consumer interest in sustainability are still perceived to be higher in European markets:

> ***Interviewer:*** *European NGOs are putting a lot of pressure on Brazilian soy producers to be 'sustainable'. What about China? Does it make any sustainability requests on Brazilian soy?*
> ***Paulo Sousa:*** *Cheap! Good quality and cheap.*
> ***Renata Nogueira:*** *That's their concept of sustainability!*
> ***Paulo Sousa:*** *Sustainable for them, it's cheap! 60% of the world global trade goes to China, so they are our major buyers by far.*
> ***(Cargill Brazil interview, August 2015)***

> *"Soybean production has grown so dramatically over the last ten years. Ten years ago, the majority of it was going to Europe where the Europeans were demanding sustainable. Today, a large portion of it is also going to China, where the demand for sustainable is not as great."*
> ***(Mark Murphy, Cargill interview, August 2015)***

This shift towards China as the biggest consumer of Brazilian soy has led some interviewees to worry that European sustainability requirements have become less important, as this extract from my interview with Marks and Spencer indicates:

Interviewer: *Would Brazilians really risk European business by not agreeing to be sustainable?*
Interviewee*: Quite frankly, they could sell most of the soy they're currently selling to the small proportion of the European soy supply chain that actually cares about sustainability issues, they could just sell it to China instead.*
Interviewer: *Yeah?*
Interviewee *We are probably about 15% of their market, that's a vague off the top of my head figure that I'm using in an illustrative manner, but you know, if you look at Europe as a whole, I think Europe is about 15% of Brazilian production, but then if we're honest and look at the companies who actually are actively engaged in expressing demand for sustainability, you'd be lucky if that was 10% of that 15%, so you know, they could think, "is this really worth it isn't it?*
(Fiona Wheatley, Marks and Spencer interview, August 2015)

However, when I asked Amaggi, Brazil's biggest soy trader, whether European markets still had enough power in Brazil to dictate sustainability requirements, the interviewee suggested that they did, and that is was actually good for the industry to have *"more demanding"* clients:

Interviewer: *When you say the market is demanding sustainability, it's mainly the European market?*
Interviewee: *Yes, that's correct.*
Interviewer: *I know that it's a big market, but it's not as big as China. What's to stop you from just ignoring Europe's demand for sustainability?*
Interviewee: *Because Europe is a very important market, even though it's not the biggest market. It's a market that's really important from a logistics and from economics point of view. When Europe makes a stricter environmental demand, we create procedures inside our company to deal with that, so we have better management, and then, when we receive good evaluations from the financial markets. It's good for us to have some clients that are more demanding. Maybe some businesses would say "I don't care about Europe", but we are not here just to provide to one market.*
(Juliana Lopes, Amaggi interview, September 2015)

While lots of the literature rightly links soy demand to China (Peine, 2013, Wilkinson and Wesz Jr, 2013, Fearnside and Figueiredo, 2015, Oliveira and Schneider, 2016), it is important to recognize the role of soy in Europe in fuelling Brazilian expansion. As I have shown above, overall consumption rates per capita of pork and chicken are still higher in

Europe. This can sometimes be lost in the literature on China, Europe must take its share of responsibility in discussions over meat consumption.

These two examples show how the expansion of Brazil's soy production is inextricably linked to changes in European and Chinese meat consumption patterns. Increased livestock consumption is what markets have determined, and soy is key to the ability of markets to meet consumer demand. In the next section, I show how this demand been realized and structured in Brazilian agriculture.

3.2. Soylandia: Soy in Brazil.

Soy has little place in Brazilian culinary traditions. Discussing attempts by EMBRAPA, the Brazilian state Agricultural Research agency, to promote the direct consumption of soybeans, the academic Philip Fearnside remarked, *"Brazilians like to eat rice and beans, not soy"* (Fearnside, 2001, pg. 34). Yet the Brazilian agricultural land base has undergone massive transitions as a result of soy. Du Bois et al (2008, pg.1) compare soy's transformation of agriculture and ecosystems in South America to Crosby's famous *Columbian Exchange* thesis (1972), which conceptualised the exchange of plants, crops, animals (and diseases) between the 'Old World' of Europe and Asia with the 'New World' of the Americas that followed Columbus' landing. In this section, I will demonstrate how the development of Brazilian soy has parallels to the Columbian Exchange, specifically I establish: 1) How soybeans, a crop originating in Asia, came to be mostly grown in North and South America, using production technologies and agricultural research largely imported from United States and Europe. 2) How the Brazilian soy industry is largely controlled by multinational companies, with Brazil's land

and natural resources being exchanged for a crop they export to consumer markets abroad. In showing this, I argue that, as Mark Murphy said in the extract at the top of this chapter, *"markets determine"* the demand for soy, which has fuelled such massive expansion in Brazil.

The first stimulus for expansion in Brazil occurred after 1973 when a reduction in U.S. soy exports created a deficit in the global market. This loss was keenly felt in Japan, which depended on U.S. soy, and in 1974, it funded a programme to develop the Brazilian Cerrado for soy production (de Sousa and Teixeira Vieira, 2008, Peine, 2013). This initial impetus was followed, as I have shown above, by growing demand from Europe and finally China, as they sought new sources of feedstock. The Brazilian state responded by making considerable investments in infrastructure, and state-owned research institutes played a crucial role in the establishment of a new variety of 'tropical soy', suited to the longer photoperiods of sun, higher temperatures and different soils in Brazil. (Oliveira and Hecht, 2016).

The return of democracy to Brazil in 1985 brought further change. Eager to bring back economic growth that had stagnated during the period of dictatorship (1964 -1985), the government initiated waves of political and economic reforms that further opened Brazil to global markets and substantial international investment in agriculture. As a result, Brazilian agriculture went through widespread restructuring towards more export-oriented production. This was supported by private/public infrastructure projects such as 'Brazil in Action' (1996 –1999) and 'Forward Brazil" (2000 – 2003), and by the removal of trade restrictions, banking sector deregulation, and the introduction of agricultural

credit programmes and price subsidies. (Fearnside, 2001, 2003, Steward, 2007, Lemos and Roberts, 2008, Hecht, 2012, WWF, 2014, Oliveira and Hecht, 2016, Wesz Jr, 2016).

Within this context, demand for soy was a key *"motor of change"* (de Sousa and Teixeira Vieira, 2008, pg. 234), both in fuelling agricultural expansion and deforestation. Expansion was particularly encouraged on the vast savannahs of the Cerrado, leading to massive land use change in the region. This is a key dynamic that I will develop further in chapter six. It is also important to note at this juncture that the rapid deforestation that took place in the Cerrado for soy, and in the Amazon, mostly for pasture was an established government policy for agricultural development in Brazil. For a period, the government required, and sometimes even paid, settlers to deforest land as a means to assert legal control over frontiers in the Cerrado and Amazon, often clearing more land than was needed, as this interviewee indicates:

> *"Sometimes it's funny to talk to the producers, they arrive here in Mato Grosso thirty years ago. When they arrive, the government was saying "you have to deforest, otherwise you are going to lose your land". This was the legislation. The banks were asking that you had to deforest three times the size you could produce on, because they wanted the two other deforested parts as a guarantee for expansion for the credit. That was less than 30 years ago. After he clears everything, the producer, he says: "ok, now the bank is ok with me, the government is ok with me". Ten years after, everybody says "you deforested everything, you are a bad guy and you have to reforest". He says: "but I paid everything to deforest, now I have to pay again to reforest?" When you talk to this guy, who has been through so much change, about sustainability laws, he looks at you and he says: "but in ten years someone is probably going to tell me to deforest it again!"*
>
> ***(Juliana Lopes, Amaggi interview, September 2015)***

In conclusion, in the little over thirty years since democracy was restored in 1985, Brazil has transformed into one of the world's major soy producers. Deforestation has played a key role in this, and to many Brazilians, clearing land is a symbol of economic progress.

Crucial to this agricultural expansion has been the international investment encouraged by the economic reforms of the eighties. For soy, that investment quickly came to be dominated by multinational agribusiness firms. Mainly commodity processors and traders, their supply chain expertise and large capital reserves made them perfectly suited to build the complex infrastructure required for soy production and distribution. Of particular importance were the four firms who dominated the North American commodities market,[10] ADM, Bunge, Cargill and Louis Dreyfus, often known collectively as "the ABCDs". Described by Dan Morgan in his book *Merchants of Grain* (1979) as the "ringmasters" of the global food system (pg. 362), these "shadowy and unknown" companies (Ibid, pg. vii), with a popular reputation for being secretive[11], supply most of the world's raw material inputs. If they were powerful in 1979, they are even more so today, but as I hope to show in the following chapters, their emerging leadership roles in environmental governance have made them more open to scrutiny and to collaboration.

Traditionally seen as being in the middle of supply chains, the ABCDs have evolved, as Jennifer Clapp describes, to operate less like 'grain merchants' and *"more like cross-sectoral 'value chain managers' on a truly global scale"* (Clapp, 2015A, pg. 126). They manage huge chunks of the global food business. Cargill for example, which had revenues of $136 billion in 2013 (Clapp, 2015A), operates in 70 countries with a workforce of over 155,000 (Cargill, 2017). *Cereal Secrets* (2012), a report commissioned by Oxfam and written by Sophia Murphy, David Burch and Jennifer Clapp reveals a great deal about the business models of the ABCDs. The report describes the oligopolistic

[10] ADM, Bunge and Cargill control 71% of U.S. soy production (Murphy et al, 2012).

market structure of the global soy industry, dominated by ABCD's with their diversified, and horizontally and vertically integrated supply chains. The ABCD firms are the leading suppliers of soy seeds and agrochemical inputs necessary for production, and they control financial credit lines[12]. They provide crop insurance and agronomic advisory services to soy producers and own most of the grain elevators, storage facilities, processing plants and transportation and distribution infrastructure in North and South America. They also own many of the subsidiary livestock companies who are the main customers of Brazilian producers, and it's notable that it was a Cargill owned poultry factory, making chicken products for McDonalds, that as the next chapter shows, Greenpeace traced Amazonian soy to in 2006. The ABCDs have incomparable power across the soy industry, controlling production, and producers, throughout the whole supply chain.

Looking specifically at the role of the ABCDs in Brazil, a series of mergers and acquisitions, together with the rapid expansion of storage and logistics capacities saw the ABCDs consolidate their control in the nineties. Along with capital investment, the ABCDs brought industrial agricultural methods and technologies originally developed for production in the United States. Today, they own 50% of Brazil's soy crushing capacity, 85% of whole bean trade and exports in South America and 65% of the national fertilizer production (Oliveira and Hecht, 2016, Wesz Jr, 2016). In the capital and input intensive

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11 As Murphy et al (2012) point out, Cargill and Dreyfus are private companies and little public information available about their activities. Dan Morgan's book also contains lengthy descriptions of his frustrating experiences researching the big grain traders.

12 For example, ADM, Bunge and Cargill are responsible for 60% of total financial credit for soy producers in Brazil. In Mato Grosso state it is even higher, there the ABCD firms account for 94% of credit. This is usually repaid in soy, not currency (Murphy et al, 2012, Peine, 2013).

Brazilian soy industry, the ABCDs are, as this interview extract suggests, the dominant players:

"I think that the global soy supply chain, to move grain to this corner of the globe here to the opposite side, that's a heavy capital endeavour, you have to have deep pockets to make it. You know, any vessel loaded with soybeans, that's worth $35 million, and you have keep your working capital tied up for 90 days, so it's a game for big guys."
(Paulo Sousa, Cargill Brazil interview, August 2015)

The transformation that soy has brought to South America in the fifty years since 1970 has been profound. Changes in agricultural production and technologies, and the consolidation of control by transnational actors who were largely inactive on the continent until the nineties, has made a lasting impact. Some literature has characterised this new landscape as operating largely above the territorial control of specific countries, saying it represents a new stateless *"unified Soybean Republic"* (Turzi, pg. 59) or *"Soylandia"* (Oliveira and Hecht, pg.257). In "Soylandia"*,* it is companies, not countries, and markets, not producers, who determine the scale of soy production. The image of capital, technology and input intensive agriculture, myriad supply chains with international networks of production and distribution, is at once both a material set of economic processes, but also, as authors have argued, deeply symbolic of modern industrial agricultural development. (Peine, 2013, Oliveira and Hecht, 2016, Oliveira and Schneider, 2016). It represents the type of mass production that Friedmann and McMichael called *"the central dynamic of post-war capitalism is advanced capitalist economies"* (Friedmann and McMichael, 1989, pg.106).

However, there is a danger in seeing the "Soylandia" of the ABCDs as operating 'above' states. While the soy industry in Brazil could be classified as a monopsony, with traders facilitating demand through their tremendous power over producers and buyers (who have little choice but to sell and buy from them), the ABCDs are not immune to local power structures and struggles. Oliveira and Hecht (2016) describe them operating at multiple levels, responsive to local political realities and remaining *"embedded"* (pg.259) in social and ecological relations in Brazil. As Wesz Jr (2016) explains, these relations between producers and the ABCD traders are also more responsive or 'two-way' than might be expected. Looking at their working relationships, Wesz Jr shows that trust between individual representatives of a trading company and producers is very important, and that ABCD sales people, technicians and managers act very locally, building up relationships with particular farming families. The ABCD companies often reward good producers with gifts and trips to North American soy farms, they support them financially during crises, fund community projects, and even socialize with them. Wesz Jr concludes the ABCDs are *"hybrid organisations"* (pg.305), operating at different scales and deeply involved in the regions they operate in. As I will show in the following chapters, this helps to explain a lot of their actions in Brazil, and their willingness to become involved.

The result of a convergence of outside capital, relaxed trading regulations and increasing global demand for soy and livestock products has been the transformation of Brazil into one of the world's largest soy producers. This places soy firmly in the international food system as part of a *"grain-oilseed-livestock complex",* and central to the development of *"Soylandia"* has been expansion. As I said above, some literature has placed the driver

of this expansion in China, but it's important to understand how much originally came from European markets. Important too, is how much expansion was facilitated by Northern American and European companies who had the capital and the knowledge to open up the land in Brazil. These companies both responded to and helped to create new markets. Soy should be understood as a central pillar of production in contemporary global agriculture. It is a largely invisible input but it is a crop whose versatility has helped to define our contemporary food system, and it is a crop for which demand is only increasing (Wilkinson and Wesz Jr, 2013).

"I think, you know, farmers will grow what markets determine, it's not like there's some big God in the sky saying it will be soy today and palm tomorrow. I mean palm is popular because it's the most productive vegetable oil on Earth if you can grow it efficiently. Soybeans you can grow more of, and more efficiently used, both in oil and in livestock, it's very popular, and our guys will tell you there is no indication that soy is backing off."
(Mark Murphy, Cargill interview, August 2015)

3.3. Soy's Ecological Impacts.

Running parallel to these dietary and agricultural transitions have been environmental transitions in the landscapes and ecosystems used to produce soy in Brazil, with the widespread destruction and degradation of biodiversity and natural resources. As I have shown in chapter two, research has emphasised soy's role in driving deforestation in the Amazon. In this section however, I want to examine the wider ecological outcomes of soy production and consumption, both in Brazil and globally, and to delineate its varied and specific contributions to climate change.

It is widely accepted that agriculture is one of the most significant causes of anthropogenic climate change (Tilman et al, 2001, Foley et al, 2005, IAASTD, 2009, Foley et al, 2011, Beddington et al, 2012, Tubiello et al, 2013, 2015, Godfray and Garnett,

2014, Tilman and Clark, 2014, IPCC, 2014, Gill et al, 2015). 'Conventional'[13] crop agriculture often takes the form of large scale monocultures of production. Greenhouse gas (GHG) emissions and biodiversity degradation related to this are the consequences of the intensive application of agrochemicals and fertilisers, mechanical farm machinery, and carbon release from planting, tillage, and land expansion - whether this involved deforestation or not. Monoculture production methods also have a large natural resource footprint, using vast amounts of land, water and soil which can become degraded and exhausted from over use of chemicals. There are also emissions beyond the 'farm gate' to consider through processing and transportation infrastructure, packaging and waste.

There has also been research emerging recently on the specific contributions of livestock production to climate change (Gerber et al, 2013, Bailey, Froggart and Wellesley, 2014, Chemnitz et al, 2014, Ripple et al, 2014, Machovina et al, 2015, Garnett et al, 2017). The FAO's *Livestock's Long Shadow* report (Steinfeld et al, 2006), was one of the first, and perhaps the most famous, to recognise *"deep and wide-ranging environmental impacts"* of the livestock sector (Steinfeld et al, 2006 pg. xxiv). Amongst other things, the report detailed livestock's vast use of agricultural land and characterised it as the *"leading player"* (Ibid pg. xxiii) in the destruction of biodiversity - estimating that 70% of previously deforested land in the Amazon was used as pasture. It showed how livestock production led to soil compaction and erosion created by grazing (Ibid, pg. xxi), and used huge amounts of fresh water - accounting for 8% of global human water use (Ibid pg. xxiv), a figure increased by water pollution from animal waste and antibiotics (Ibid, pg.

[13] A generalisation meant to exclude non-organic, low-tillage or other forms of smallholder agriculture.

xxii). Today, livestock (both ruminant and monogastric) production alone is responsible for approximately 14.5% of all anthropogenic greenhouse gas emissions, 44% of which are linked to methane from manure and enteric fermentation from ruminants[14], 27% to carbon from land use change and 29% to carbon from fertilizers used in feed crops like soy (Ripple et al, 2014). Together, this quick overview shows the huge ecological impacts of soy and livestock production globally. In terms of specifically Brazilian agricultural contributions to climate change, the 2012 UN Emissions Gap Report estimated that approximately equal amounts of Brazil's GHGs come from agriculture and deforestation (UNEP, 2012). To analyse this, I focus on the two specific geographical regions at the centre of this thesis, the Amazon and Cerrado, looking at the ecological changes that have taken place in these regions as a result of agriculture.

The importance of Brazil's biodiversity is well known. The tropical forests of the Amazon biome are home to over a quarter of the world's animal species and plant life. Amazonia, of which 62% is in Brazil, accounts for 15% of global terrestrial photosynthesis and plays a perhaps unparalleled role in regulating the Earth's climatic systems (Greenpeace, 2006, Soares-Filho et al, 2006, Malhi et al, 2008, WWF, 2014). The Cerrado is the second largest biome in Brazil after the Amazon, covering approximately one quarter of all Brazilian territory. The Cerrado's temperate forests, woodlands and savannahs contain 5% of global biodiversity, including 11,000 plant species, nearly half of which are found nowhere else on Earth. The Cerrado is also an important global source of water, and is the origin of six of Brazil's 12 major hydrological regions. Water from the Cerrado also generates electricity for nine out of ten Brazilians (WWF, 2014).

[14] There are estimated to be 3.6 billion domestic (non-wild) ruminants on the planet in 2011, with

Both the Amazon and the Cerrado have been deeply impacted by agricultural development. In the Amazon, where, as I have shown in chapter two, the main driver of deforestation is conversion to pasture, it is estimated that by 1990, 587,000 km2 of forest had been cleared, representing 15% of the forest's closed canopy (Nepstad et al, 2006, pg. 2). Deforestation rates surged in the nineties during the 'arc of fire', with an average of 19,500 km2 cleared between 1996 and 2005, the majority of which was again for cattle (Nepstad et al, 2009).

While the loss of the Amazon is of course deeply significant, the attention on forest loss should, I argue, be understood in relation to the Cerrado. The Cerrado has seen rates of land use change that dwarfs those of the Amazon. By 2002, 880,00km2, or 55% the Cerrado's biodiversity, had been lost. This is approximately three times the loss to deforestation in the Amazon (Klink and Machado, 2005). Annual deforestation rates in the early 2000s ranged from 22,000km2 to 30,000km2 a year, a figure that is again also higher than losses in the Amazon (Machado et al, 2004 in Klink and Machado, 2005). These losses were happening during the period that Greenpeace was researching soy deforestation in the region, but they were not the subject of its final report and campaign. I will develop this point in the next chapter, where I show how and why Greenpeace made the strategic decision to focus on the Amazon. As with the Amazon, deforestation in the Cerrado has mostly been for agriculture. By 2014, 15.66 million hectares of the Cerrado was devoted to soy cultivation, accounting for just over half of total Brazilian production. Between 2000 and 2014, the planting area for soy in the

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approximately 25 million added each year over the last 50 years (Ripple et al, 2014, pg. 2).

Cerrado increased by 108%, with the land use change associated with this expansion rising from 4.61 million hectares between 2000 to 2006 to 6.05 million hectares between 2007 to 2014. (Rudorff et al, 2015).

Looking at these environmental impacts through a slightly different lens, Kartensen et al (2013) and Lathuilliere et al (2014) examine the various resource footprints of soy production in Brazil and their impact on climate change. Kartensen et al (2013) allocate all GHG emissions from cattle and soybean production in Brazil between 1990 - 2010 to the countries that *consume* these products. They find that 30% of deforestation emissions (29% for soy production, 71% to cattle) related to agriculture were exported out of Brazil (pg. 1). Looking specifically at China, they show that emissions linked to soy exported there increased from 7% in 2000 to 22% in 2010 (Ibid, pg. 4). By doing so they seek to show that international agricultural demand is the key driver of deforestation emissions in the Brazilian Amazon. Furthermore, they link consumption patterns to environmental damage to argue that effective regulation is needed beyond the forest level and throughout the supply chain, concluding that *"Brazil's deforestation cannot be considered in isolation from the global supply chain"* (pg.6).

Lathuilliere et al (2014) take a similar approach in their study, examining the various resource uses and associated emissions of soy production in Brazil. Using five indicators: deforestation, land, carbon, water and fertilizer, they compare differences in the resource footprints of soy grown in Mato Grosso state during two periods between 2000 - 2005, and 2006 - 2010. Interestingly, they again allocate soy's resource footprint to its biggest *consumers,* and show that soy grown primarily for the Chinese market in the

second half of the decade (when it became the biggest importer) has a different resource footprint to soy grown primarily for the European market in the first half of the decade. They found that while deforestation and carbon footprints declined by 70% in Mato Grosso during the period 2006 - 2010 compared to 2000 - 2005, land, water and nutrient footprints increased by 30% (pg. 7) They conclude that changes in production patterns from extensification (deforestation) to more intensive agriculture on existing degraded lands are not actually diminishing the environmental impact of soy production, they are just changing the shape of its footprint.

We know from climate science (Rockström et al, 2009) that the different footprints or consequences of environmental degradation can be highly coupled, locked into ecosystems feedback loops which antagonize and exacerbate their impacts further. Rockström et al's article, cited above, proposed a framework of *"planetary boundaries"* (Ibid, pg.472) to measure and *"define the safe operating space for humanity"* (Ibid). This framework stresses the biophysical capacities of key ecosystem processes, which if crossed, would threaten their ability to regulate themselves and recover, leading to irreversible environmental change. Applying this to Brazil, there is the sense from Lathuilliere et al (2014) that solutions for biodiversity protection, such as limiting deforestation for agricultural production, could make climate change impacts worse if producers simply switch to more intensive methods.

Whereas the focus of much of the literature in chapter two was about the policy consensus around controlling deforestation, this chapter has shown another emerging consensus around interconnected crises of land use, GHG emissions and over-

exploitation of natural resources. What we can draw from Kartensen et al, Lathuilliere et al and Rockström et al, and from the broader literature on agriculture above, is that achieving sustainability in Brazilian soy production is about much more than preventing Amazon deforestation. Definitions of sustainability for soy need to link the environmental crises caused by intensive natural resource use, biodiversity protection and greenhouse gas emission levels across all points of production and regions of consumption. This shows that ecological impacts of soy go beyond production countries and are intrinsically linked to consumer markets. Therefore, a more revealing unit of analysis for measuring sustainability would be one that includes both the production and consumption of both soy feedstock and livestock, and their drivers.

3.4. Soy and Planetary Boundaries.

How to feed the growing global population in the context of climate change is the subject of much research (e.g. Foley et al, 2005, Tilman et al, 2009, Godfray et al, 2010, Hedenus et al, 2014). The role of sustainable intensification of production methods to limit land expansion (Pretty, 2008, Pretty and Bharucha, 2014) is understood as central to these debates and in mitigating climate change. As I have shown in this chapter however, the need for dietary change in countries where meat consumption is high has increasingly become a factor. Recent literature shows the inefficiencies of using finite agricultural land for *"supplying food calories as livestock products"* (Bajželj et al, 2014, pg. 925). This research stresses the need to manage demand as crucial to climate change mitigation, questioning the limits of intensification potential, especially if it is done though processes which are still reliant on continued, even increased levels of resource use. Without demand reduction, cropland could still expand by 5% and pastureland by

15%, resulting in rises of 42% in GHG emissions levels from agriculture (Ibid, pg. 926). Linked to this is research that shows using existing agricultural land to grow crops for direct human consumption (as opposed to feed crops like soy) could increase the number of calories the global food system creates by 70% (Cassidy et al, 2013, pg. 4).

The nature of soy consumption as animal feedstock also raises questions about whether soy is contributing to global food security, or if it is more accurate to say it is answering global consumption preferences for meat. In this context, how sustainable can Brazilian soy be, regardless of how it is produced, if it then fed to livestock in China and Europe? In this chapter, I have introduced and delineated the specific transitions – dietary, agricultural and ecological involved with soy production and argued this should be the lens for analysing the sustainability potential of soy production. The remarkable transition of soy from Asian food to global input has, as this chapter shows, been a transition of diet and nutrition, of agricultural production, of land use and of environment. Soy has, as Friedmann remarked been "the *basis for a global transformation of livestock production, linking field crops with intensive, scientific animal production, through giant agri-food corporations, across many national boundaries".* To this assessment, I would argue that *planetary boundaries* should be added.

In many ways, none of this chapter is new. The power of ABCDs in the global food system is well known. The environmental destruction caused by agriculture, livestock is becoming increasingly well known. What this chapter adds is to really characterise the nature of soy demand and bring soy itself, as a food, into analytical focus. These issues are largely marginalized in a lot of the existing research on the RTRS and the Soy

Moratorium and are further minimized in deforestation literature which characterizes the forces of 'demand' in fairly general terms (e.g. Morton et al, 2006, Barona et al, 2010, Macedo et al, 2012, Galford et al, 2013). In doing this I argue that it is crucial to understand the many dimensions of soy's footprint, and its associated *"hoofprint"* (Weis, 2013) when assessing the sustainability potential of the Soy Moratorium and the RTRS.

In this chapter I have also shown the specific role of market actors in determining what food is produced. This chapter proposes that the global demand for meat, and in particular, demand from Europe and from China, has driven the expansion of soy agriculture across Brazil. This demand has been facilitated by research and investment in 'tropical soy', and by agricultural innovation in the Cerrado. This is linked not only to perceived consumer preferences for meat, but also to political choices made by governments, and is managed by agri-food corporations, notably the ABCD commodity traders, at the heart of global soy supply chain. This demand is multi-dimensional, coming from both developing countries and from countries who have shifted meat consumption into their daily lives. To obscure the nature of soy demand, and the integrated nature of feedstock and livestock supply chains (Gasparri and de Waroux, 2015) is to break the iterative and reinforcing dynamics of drivers of production and drivers of consumption between 'producer countries' and 'consumer countries'. This limits the possibilities for assessing risks to climate change and the security of future food production.

Chapter Four: The Creation of Sustainable Soy.

"The Unilevers, McDonalds and Cokes of the world don't want to do anything to hinder their brands. The reputation risks of being associated with something so iconically horrible, you know, as the demise of the Amazon, or orangutans or whatever."
(Mark Murphy, Cargill interview, August 2015)

Threats to the Amazon are not new. The 'arc of fire' that spread across Mato Grosso in the nineties was just one manifestation of the development forces of companies and successive governments eager to exploit its rich resources. The waves of economic reforms in the eighties and nineties, which paved the way for soy's rise in Brazil, were followed by what has been characterised as the *"tropical Keynesianism"* (Hecht, 2011, pg. 5) of the Brazilian Workers Party under President Luis 'Lula' da Silva. Lula sought to use agro-commodity expansion in the Amazon and the extraction of gold and minerals as means to finance redistributive social policies and programmes of poverty alleviation (Hecht, 2011, Baletti, 2015).

Attempts to protect the Amazon are also not new. The presence of indigenous populations has created a strong moral case for protection, and the Amazon is an emblematic cause for environmentalists, with decades of forest activism[15] by NGOs meaning there is wide public recognition of its importance. The nature of these discourses on forests is framed in part by a wealth of scientific research on the value of their biodiversity and ecosystems (Hecht, 2011, 2014), and in part by what Hannigan (2014) calls a *"poetic discourse"* (pg. 73), based on the emotional responses people have to nature. These provide different motives and starting positions for actors, but they

[15] Dauvergne (2016) notes the rise of NGOs campaigning to protect tropical forests. These include WWF which was founded in 1961, Friends of the Earth (1969) Greenpeace (1971), Rainforest Action Network

give forest protection an enormous symbolic power as an environmental 'good'. In this context, as Mark Murphy suggests in the extract above, their destruction would be viewed by many as "*iconically horrible*". One interviewee explained the Amazon's iconic status like this:

> *"Well the deforestation issue, I think it has its roots in Sting and the rainforest! You know, from the eighties. There is an awful lot of cultural understanding amongst consumers of how important rainforests are. It's an issue that's been around almost as long as CND or Save the Whales. It's one of those classic issues, so I think it's that which gives it a lot of creditability."*
>
> ***(Tobias Webb, Innovation Forum, interview, April 2016)***

Governance partnerships between private and public actors are also, as I have shown in chapter two, not new. Key to the enactment of sustainable development frameworks have been the formation of cooperative partnerships between business, civil society and state actors, trying to balance the forces of development with conservation goals. After the Rio 92 meeting, there was a growing expectation that large companies should take responsibility for their environmental impacts, and that they had a role to play in creating regulatory mechanisms. Another extract from my interview with Tobias Webb illustrates how these dynamics can work in practice. Talking about the effectiveness of NGO campaigns which targeted Nestle over its use of palm oil linked to deforestation in Indonesia, he recalled:

> *Scott Poynton (The Forest Trust President) has got a story about going into Nestle and the receptionist saying to him "are you from The Forest Trust?" and he said "yes" and she grabbed his hand and said, "just please make it stop!" She was crying, saying "we don't want to kill orangutans, make it stop" and he said, "I'm just about to try". And then he told the story to the executives he was meeting, and that was one of the tipping points for Nestle – "even our receptionist is crying, so we've got to do something."*
>
> ***(Tobias Webb, Innovation Forum, interview, April 2016)***

(1985), Rainforest Alliance (1987), Conservation International (1987). Also, one of the first multistakeholder governance alliances was the Forest Stewardship Council (1993).

By the early 2000s then, when both the RTRS and the Soy Moratorium were initiated, tropical forest protection was a clearly established paradigm within global environmental governance frameworks. Against this backdrop, this chapter argues that the meaning of 'sustainability' in the soy supply chain has been constructed around a narrative of forest protection. The role of NGOs was crucial, they utilised the power of that forest protection narrative to create a reputational risk for companies. In doing so, threats to the Amazon were constructed as the problem, and the environmental impacts of soy were purposefully marginalised, in order for NGOs to be able to collaborate with soy production actors.

This collaboration is the crucial dynamic in both case studies. The NGOs involved framed deforestation as a failure of both Brazilian state governance *and* of companies to properly control their supply chains. Brazilian governance was cast as weak and ineffective and the soy industry as irresponsible. This characterization (and provocation) delegitimised the state's role and gave NGOs and companies a mandate, a governmental 'legitimacy' (Schouten and Glasbergen, 2012) to intervene in the Amazon. In this chapter I argue that the resulting agreements in the Soy Moratorium and the RTRS represent an alliance of companies and NGOs to assert governmental control over deforestation, and to create a new narrative of responsible production. Through an analysis of the specific reputational risks posed to the soy industry, and their response, I show how a new narrative of 'sustainable soy' was developed. I argue that to make this narrative work, the conceptualisation of sustainability in the RTRS and Soy Moratorium did not, *could* not include a challenge to soy production. More than this, to make

alliances last between corporate and conservation actors, continued soy production became part of the 'sustainability solution' for companies and was used as a vehicle for achieving biodiversity protection goals by NGOs.

4.1. Creating a Crisis.

The chance to show leadership, and to shape policy, was key to getting corporate actors to commit to both the Soy Moratorium and the RTRS. There was a belief among NGOs and companies that Brazilian government was not able to control deforestation in the Amazon, and specifically that the Brazilian Forest Code was inadequate and ineffective. An early point of unity amongst stakeholders in the RTRS for example, was that the Brazilian government should not be allowed to be involved:

> ***Interviewer:*** *How did the decision to not involve any governments happen?*
> ***Interviewee****: That was something that happened on the very first meeting that I went to, in 2005. I'll never forget the coordinator, I think he was from Unilever, he said "look we have the question of governments, I would like to hear from all the members about whether they are in favour of having government participate". I'll never forget the scene, everybody, absolutely everybody, was against having governments. I mean radical Dutch NGOs, soy traders, the producers, Amaggi, COOP, WWF, the whole lot. It was the one thing everyone agreed on, no government from any country should be a member. Several reasons, one is that government is slow, and likes to interfere in things…. I forget all the reasons but I can assure you it was unanimous."*

When pressed further, the interviewee explained more of the reasons for this:

> ***Interviewer:*** *But did the government ever sit in on your meetings?*
> ***Interviewee:*** *Oh God NO! Oh no! No, no, no. The whole discussion of RTRS was just light years ahead of whatever the Brazilian government was doing at that time, the Brazilian government has moved ahead on these issues but yeah, it was just somewhere too far ahead for them.*
> ***(Founding executive board member, RTRS interview, July 2015)***

Similarly, with the moratorium, interviewees talked about the government as distracted by other responsibilities, and lacking in incentives to properly enforce regulation that could affect economic development, as this extract illustrates:

"The government, they want to grow their economy, they want to grow their production. I've been out there many times now on soy visits, meeting the producers, they have a slightly different take on it in Brazil, they say. "you cut down your forests in Europe years ago and now you're telling us we can't. You had your development, you're trying to restrict our growth, you're trying to keep our people in poverty."
(Keith Kenny, McDonalds interview, August 2015)

In 2006, the Forest Code allowed for controlled legal deforestation on private properties. This meant it was not able to reassure either NGOs or companies that Brazilians had control of deforestation. The Greenpeace campaign, and the NGOs involved in forming the RTRS, used this deficit to create a space to develop their own sustainability initiatives in partnerships with supply chain actors. In this next part of the section, to help the reader to understand how that space was created, I will analyse the specific actions that led to the formation of each case study.

4.1.1. Soy Moratorium.

The original idea for a moratorium came from the success that Greenpeace had with a timber moratorium in the Great Bear Forest in Canada. A moratorium was, according to Greenpeace's John Sauven, who was one of the leaders of their 2006 campaign: *"a softer way of saying 'stop' or 'ban'… a tactic that both sides tend to feel comfortable with because it's not final."* Mr Sauven went on to explain the initial priority for Greenpeace in 2006 was to stop the deforestation that was taking place:

"The important thing was to make sure that there wasn't talking and logging, which is what the industry always wants "we'll talk while we log" and we say, "no we'll only talk if you stop logging". A moratorium allows negotiations to take place, to put things on

hold rather than come to some final conclusion before discussions have been had."
(John Sauven, Greenpeace interview, July 2015)

To get to this point, Greenpeace had spent two years researching soy production in the Amazon. Campaigners monitored deforestation in Mato Grosso and around Cargill's grain terminal in Santarem. They placed cameras on the sides of roads and attached tracking devices to lorries, enabling them to trace soy shipments from the Amazon to Cargill UK ports in Liverpool, and eventually to a Cargill subsidiary chicken production factory in Hertfordshire. Once they had established evidence of the supply chain, Mr Sauven described what they did next:

"One of our campaigners went to the plant pretending to be a teacher wanting to organize a children's tour of the plant. Cargill were happy to facilitate, and then our campaigner started asking "who are your customers?" and there were things in the reception area about who their customers were, and McDonalds came up."
(John Sauven, Greenpeace interview, July 2015)

McDonalds was the key. Greenpeace needed a brand that would be vulnerable to reputational risk. McDonalds was a particularly good choice, in 2006 the company was still vulnerable after the McLibel scandal of the nineties which had damaged its reputation. McDonalds was also a good choice because of its connection to Cargill, who as Mr Sauven explained, Greenpeace wanted to target but who were more difficult for them to reach:

"McDonalds were Cargill's biggest customer, they had huge leverage over Cargill, and one of the problems we faced, when it came to those biggest US traders like ADM, Bunge and Cargill, was that we had no leverage over them. Cargill is owned by a private family, they are right-wing Republicans, there's no way in a million years that we could touch them, but McDonalds is different, McDonalds was probably their most important customer, they couldn't not afford to piss McDonalds off."
(John Sauven, Greenpeace interview, July 2015)

Moreover, as Mark Murphy, one of Cargill's lead moratorium negotiators noted, this approach was not lost on the company at the time:

> *"Greenpeace opened up a campaign against Cargill by going against McDonalds, going after a brand, as Greenpeace was smart enough to realize, that as a privately held trader, our brand was never as visible as McDonalds."*
> ***(Mark Murphy, Cargill interview, August 2015)***

Greenpeace's strategy of targeting big brands is something many NGOs have become known for (Dauvergne and Lister, 2012). Their 2006 campaign explicitly attacked the companies who processed and brought soy grown in the Amazon, drawing on the iconic status of the Amazon in order to coerce them into negotiations. You can see this in Greenpeace's *Eating up the Amazon* report (Greenpeace, 2006), which used a language of environmental crisis: *"the slow death of the Amazon"* (pg. 21) to construct a narrative of corporate misdeeds. The report accused Cargill of *"criminal soya production"* (pg.41), and McDonalds of *"complicity in Amazon destruction"* (pg. 41). Greenpeace, acting as a (self-appointed) proxy for the voices of consumers used the emotional symbolism of Amazon to create a market and reputational crisis for the companies it named. It was effective:

> *"Clearly the campaign that Greenpeace set off in 2006, sort of lit the match, no pun intended! but there was already was a lot of driving issues that were coming in, all pointing at the Amazon. Consumers are paying more attention to where their food is coming from, they're putting more pressure on the food producers and the retailers."*
> ***(Mark Murphy, Cargill interview, August 2015)***

The campaign had a deeply disorientating effect on McDonalds. The company's current vice president of sustainability, Keith Kenny, was one of the key McDonalds personnel in

2006. He explained how he felt on the day Greenpeace 'chickens' arrived in UK restaurants:

"So yeah it was a surprise! And you know, when we investigated, very little soy was coming out of the Amazon, there's very little soy is actually grown in the Amazon biome anyway, but Greenpeace ran a very clever campaign and, brought it to our attention, but yeah, it was an eye-opener!"
(Keith Kenny, McDonalds interview, August 2015)

Mr Kenny also explained how at the time McDonalds already felt they were 'responsible' in their sourcing of soy by stipulating non-genetically modified beans in their supply chains, and that initially, they didn't understand what the campaign was about. Vulnerable, McDonalds were quick to act. Within hours of Greenpeace's actions in their restaurants, they were in talks with Greenpeace and applying pressure to Cargill. They also contacted retail companies identified in the report to encourage them to get involved:

"It was probably one of the first issues where we got together as a joint group, and said "look, we need to use our combined influence to make sure that we get action". Because at the time, Europe was the biggest export market for Brazilian soy, so they (Cargill) had to listen to their customers."
(Keith Kenny, McDonalds interview, August 2015)

Cargill was also under attack. In 2003, the company had already faced legal trouble in Brazil for failing to carry out an environmental audit related to construction of its Santarem port. Their actions had drawn international media coverage and brought their activities in Brazil under new levels of scrutiny (Baletti, 2015). When Greenpeace protesters stopped operations out of the port in 2006, and dumped several tonnes of soy outside their European headquarters, the attention became too risky for Cargill, and they knew they needed to respond:

"Our lead guy in Cargill Brazil went to ABIOVE and said "look, this campaign is against us, McDonalds are going to pull their business, as are other European customers, we need to play or you know, this is going to get really ugly" and then we met with Greenpeace, something we had not done much of, at the encouragement of McDonalds, and the moratorium idea was proposed."
(Mark Murphy, Cargill interview, August 2015)

The priority, Mr Murphy went on to explain, was to "*make sure we are taking care of the supply chain in order to keep the markets open".* To achieve this, Cargill were prepared to talk to Greenpeace, which was something, as Mr Murphy said, they *"had not done much of".*

It's clear from these accounts how risky the association with Amazon deforestation was for McDonalds and Cargill. The threat was not just to their reputations but also for their continued access to key supply chains in Brazil, and key consumers in Europe. Beyond this, by exposing the connections between Amazonian soy and European markets, Greenpeace's campaign also posed a challenge to any soy trader and buyer involved in Amazon deforestation, positioning them outside of the norms of acceptable environmental governance and demanding they change their practices. As I will explain further on in this chapter, this would prompt a coordinated response from the industry. However, it is also important to note that what Greenpeace were hoping to achieve would also mean a very sudden change for thousands of soy producers in Brazil. To many of these producers, the Greenpeace campaign felt like an attack on their incomes and was met with resistance at the time, as these two extracts show:

"I was working in the area that the Greenpeace report is about…. and I can tell you, back then, no one had any idea that what was happening was bad. It wasn't perceived as bad, actually it was perceived as being entrepreneurial, people were fighting for their lives, people selling small farms to buy bigger ones, so it was like a big clash, it was like "hey you guys coming from somewhere else saying that we shouldn't be doing something, we

just trying to make a living."
(Paulo Sousa, Cargill Brazil interview, August 2015)

"(During a trip to Brazil) I remember getting back to my hotel quite late, I got called by reception, they said there's guy here for you, and I thought it was my taxi driver for dinner, but it was a guy with a microphone. He said, "you from McDonalds?" He didn't look like a taxi driver to me! He said, "I'm from Radio Santarem" I thought, ok, didn't realize my visit was that important! He said, "Is it right that McDonalds is refusing to buy soy from this region?" I said, "why are you asking that?" He said, "I'd like you to come on our radio programme and explain why you are denying our farmers a living."
(Keith Kenny, McDonalds interview, August 2015)

4.1.2. Roundtable for Responsible Soy.

The NGOs involved in initiating the RTRS also used the symbolic power of the Amazon, but their approach was less antagonistic towards companies than Greenpeace. Compared to the moratorium, there was also not the same moment of crisis, like Greenpeace's 2006 campaign, to drive momentum forward. Negotiations for the RTRS begun in 2004 in Switzerland, where the WWF, a founding NGO of the RTRS is headquartered. A small group of banks, NGOs and companies met to discuss ways to improve the image of soy production. They looked at how various issues, such as deforestation, damaging agricultural practices and labour violations associated with soy supply chains could be tackled. There was a focus on finding collaborative solutions, situated much more in the context of preventative action, in helping companies avoid future reputational and market access risks. One of its founding members explained that the central idea of the RTRS was to establish a new middle ground, to open dialogue between groups of actors who typically did not engage with each other:

"Until the RTRS was founded, what you had was, if you look at the political spectrum – on the far left, you had radical NGOs saying, "soy is awful, it shouldn't be grown anywhere" and on the radical right, you had your traders and farmers saying "soy is the biggest blessing to mankind, lets cover the Amazon with soy. Obviously, these two extremes could not find a common ground, there certainly was not a forum."

(Founding executive board member, RTRS interview, July 2015)

The RTRS wanted to become that forum. Juliana Lopes, Amaggi's sustainability manager and another founding member of the RTRS, characterized the moratorium as essentially reactive, while the RTRS was designed to be more proactive:

"With the moratorium, people were like, "ok, there is no governance in the Amazon, how can we tell if we are doing deforestation if we don't have any information at all?" The moratorium was something like "ok let's create something that will give us information, that can give us good governance until the government puts the Forest Code in place. The RTRS was a little bit different, it was like "ok we not only want to have the issue of deforestation tackled, we want to know what it would mean to have responsible production". It's totally different, it's not only deforestation, it's good practices, labour conditions that are guaranteed."

(Juliana Lopes, Amaggi interview, September 2015)

This difference is reflected in the scope of the RTRS's ambitions. The moratorium's ultimate goal, as I will show below, was enacting a form of 'zero deforestation' in the Amazon, but it remained essentially uninvolved with methods of soy production. The RTRS on the other hand, wanted to develop a new mechanism for 'responsible' production. It did this in the belief that it would create a new market for producers who became members, envisioning nothing short of market transformation:

"*What RTRS is ultimately aiming for, the very reason of existence of the RTRS, is market transformation"*

(Olaf Brugman, RTRS interview, July 2015)

Influenced by the Roundtable for Responsible Palm Oil and other commodity roundtables, the RTRS stakeholders took a managerial approach to designing this new mechanism, as this further comment from Olaf Brugman, president of the RTRS in 2015, shows:

"Consumers want to know where the product is coming from. The structure of the supply chain for soy is very disconnected. You have producers who deliver to the warehouse, the warehouse delivers to a bigger warehouse or to a port, the buyers may buy from the warehouse or from a port, so there's not much control and transparency on where the soy is coming from, how it was produced. This makes it very difficult to have an overview. Regulations and government and application of the law is very far away from what most parties want, and if there is not a trusted brand or company, how you know about the sourcing and trading and transport? I guess it is very natural to want to have a kind of surrogate system which in this case is a certification system. The soybeans are followed from the production site up to delivery, it's documented, and therefore transparent. This gives some trust."

(Olaf Brugman, RTRS interview, July 2015)

In this sense, the RTRS was much more about correcting the failings in Brazilian state governance than coercing companies into action. As Mr. Brugman suggests, the RTRS was designed to create a transparent *"surrogate system"* of regulation, one that had the capability to bestow environmental credentials on supply chains and reassure companies they were not at risk from NGO attacks or market access problems.

Initial discussions on the RTRS led to a forum on 'Sustainable Soy' being held in London in 2004 to bring actors together. A few months later, WWF and ProForest, another European environmental NGO, released a 30-page document detailing what sustainable production of soy should be comprised of. The *Basel Criteria*, as it became known, included many of the criteria and tools that would eventually be included in the RTRS standard. The criteria suggested soy could be certified using a system of environmental and social indicators that would be verifiable by auditors. It advocated for full traceability with segregated supply chains and a chain of custody documentation for every stage in the process from field to end user. It also suggested that genetically modified (GM) soy should not be classed as sustainable (ProForest, 2005).

While there was some interest, the Basel Criteria failed to get support from many companies. The proposed prohibition of GM soy and supply chain segregation were unpopular and seen as too difficult to implement in practice. An agreement was finally made in November 2006 after the criteria on GM and segregated supply chains were dropped, and the group was renamed the Roundtable for *Responsible* Soy to reflect a more neutral stance on certain sustainability issues. It's founding signatories were the Swedish COOP, ProForest and WWF, along with Unilever, and Amaggi. One of the original founders of the RTRS explained the agreement was based on finding common ground, saying that it had to be:

"something that has (environmental) creditability but that is accessible to many farmers. Open to everybody – that can accept GMO, can also be organic, several flexibilities to allow farmers in different markets to receive certification. So that's the vision and there's no secret about that."

(Founding executive board member, RTRS interview, July 2015)

Altogether, the participants of the new roundtable would take until 2010 to agree a new certification standard. During that time, several Brazilian NGOs left the process on the grounds that the design was too weak. Interestingly, ABIOVE and APROSOJA, two Brazilian producer's associations, also left when they felt what was being created was too strict and did not provide enough compensation guarantees to farmers. The common ground the RTRS hoped to create seemed to be focusing around European markets, not Brazilian production,

The fact that Amaggi was as a founding member of the RTRS is not something that would have seemed believable just a few years before. Blairo Maggi, the company's CEO and a former Governor of Mato Grosso, had been known for advocating deforestation in

his state for economic benefit. A speech he gave in 2003 (when he was the state's governor), had been quoted in Greenpeace's 2006 report. In it, he said that he wanted to triple agricultural production in the state and that "*I don't feel the slightest guilt over what we are doing here… it's no secret that I want to build roads and expand agricultural production"* (Greenpeace, 2006, pg.17).

It was a 2005 campaign, again led by Greenpeace, which targeted Mr Maggi that seemed to be responsible for the company's change of direction:

"We also ran a campaign against Blairo Maggi, he was the governor of Mato Grosso, he had presidential ambitions and his reputation was being trashed. I remember the Independent ran a headline on their front page that called him the "Rapist of the Amazon" or something, and that was reproduced in Brazil in their major newspapers, and of course he was beginning to get stung by this."
(John Sauven, Greenpeace interview, July 2015)

As part of this campaign, Greenpeace gave Mr Maggi its 'Golden Chainsaw Award'. Brazilian television comedians attempted to present the award in person, causing him much embarrassment. This moment proved to be a turning point for the career-conscious Maggi, and it led the company to playing a leading role in the RTRS formation:

"They have a whole department for sustainability in Amaggi. They are really into getting their soy production more sustainable. They did a great transformation, in 2005 they won a prize for being the worst deforesting company in Brazil, and I think after that they had some sort of institutional reform. It shocked them. They really changed the way they produce soy." ***(Daniel Meyer, RTRS interview, July 2015)***

Greenpeace is not a member of the RTRS or any other roundtable, but it seems they unwittingly played a role in its formation. Amaggi, like McDonalds and the ABCD traders, have markets that are largely international so it is perhaps not surprising they would be fearful of reputational risk. In creating and capitalising on these risks, the NGOs in the

RTRS and the moratorium had different approaches, but similar goals around forest protection, as I will show in this next section.

4.2. Creating Solutions.

The different actors in both the moratorium and the RTRS found common ground developing new controls over deforestation in the Amazon. In each of the mechanisms, their different strategic interests aligned, leading to the careful construction of new sustainability principles based on legal compliance and zero deforestation supply chains. This represented a reassertion of control over supply chains designed to reassure European markets. To understand how this was done, it is again useful for the reader to see how each case study constructed soy's environmental problems and their solutions. I argue this was done in ways that enhance the market power and governmental legitimacy of both companies and NGOs, at the expense of Brazilian political sovereignty and the legal rights of producers.

4.2.1. Soy Moratorium.

The original moratorium agreement was signed for two years and had a temporary and experimental feel that made different actors, not used to working with each other, feel comfortable. The agreement was as John Sauven said, a "*tactic*" employed to create a breathing space after the crisis caused by Greenpeace's campaign. Despite, as I have shown in chapter two, many local groups leaving the early negotiations, it was clear from many interviewees that simply bringing such disparate actors together was in itself a major achievement. This extract exemplifies what many other people said to me:

"This agreement between the soy sector meant we were able to identify the real issues that we have to solve. It was the first time that the NGOs and the companies sit together to find some solution."
(Juliana Lopes, Amaggi interview, September 2015)

The moratorium was designed to exclude soy produced in the Amazon from the supply chains of its members, effectively turning the Amazon into a 'zero deforestation zone' for soy. Producers who continued to deforest after an agreed cut-off date could no longer be customers of, or receive any form of financial support from members of the moratorium. The agreement was made between the ABCD traders and Amaggi, acting collectively through their memberships of ABIOVE and ANEC, and was also signed by Greenpeace, International Conservation, The Nature Conservancy and WWF-Brazil. The agreement was reached in a matter of months, and July 24th 2006, the date of signing, was the designated deforestation cut-off date. Since the members of ABIOVE and ANEC (the Brazilian grain exporters association) controlled 90% of the Brazilian soy market (Rudorff et al, 2011) between them, the moratorium instantly cut producers off from international sales channels if they refused to agree.

To implement the agreement, a new 'Soy Work Group' (Brazilian acronym: GTS) was set up in October 2006 to act as a collaborative decision-making platform. The GTS began a programme to educate producers on the rules of the moratorium. It made use of existing Brazilian government data on landholdings and land use in the Amazon to compile extensive "whitelists" and "blacklists" of producers in compliance with the moratorium. To complement this, the GTS developed aerial and satellite capabilities to monitor deforestation linked to soy. Independent field monitors used Geographic Information System (GIS) software, satellite imagery, digital aerial photography from

planes and GPS equipment, supported by regular field visits to track deforestation. The territorial scope of the moratorium was the 'Amazon biome', but the GTS boundary did not match the contemporary municipal demarcation of the Legal Amazon, instead it followed the distinction, first made in the seventies, that separated tropical forests from drier forests in the Legal Amazon. In other words, only tropical forests were included in the moratorium. (GTS, 2008, Rudorff et al, 2011, Brown and Koeppe, 2012). Most of the moratorium's boundaries fell within the states of Mato Grosso, Pará (where Cargill's Santarem port is located) and Rondônia, which together contain 99% of the production area in the Amazon (Rudorff et al, 2011).

The moratorium created a more restrictive operational reality for Amazon soy producers. It embedded zero deforestation principles of governance that went above what was required in the Forest Code. Soy producers in the Amazon were suddenly faced with new regulation that as Brown and Koeppe write "*made illegal what used to be perfectly legal"* (Brown and Koeppe, 2013, pg. 110). Whatever the cost to producers, the moratorium's success lied in the simplicity of this zero deforestation message. In 2008, just after it was renewed for the first time, the GTS described the moratorium as a *"unique initiative sought to curb deforestation related to soybean expansion in the biome, reconciling environmental conservation with economic development through the sustainable use of natural resources"* (GTS, 2008). Crucially, in addition to this, the moratorium presented a new image of companies and NGOs working together to manage the protection of the Amazon.

In 2008 the Brazilian environment ministry became a member of the moratorium. The ministry took this step, even though the moratorium went further than the Forest Code, because it aligned with the new efforts, as discussed in chapter two, of the Brazilian government to tackle deforestation. The moratorium offered the government support for implementation of environmental regulation. The government offered the actors in the moratorium the use of state satellite monitoring capabilities and an increased sense of legitimacy which added to its effectiveness.

From the start, the focus of the moratorium was on creating a regulatory mechanism that could guarantee zero deforestation. At its core, the moratorium sought to reverse the incorporation of the Amazon frontiers into Brazilian rule that had been so crucial to economic development (Hecht, 2005, 2011). In effect, the moratorium separated the Amazon, and further reified its position as a landscape of extraordinary biodiversity value. The moratorium, more than any other initiative, recast the Amazon into a highly monitored production landscape to be managed by international agribusiness and environmental NGOs. In doing so, they acquired a new kind of moral ownership and governmental legitimacy, but this came at the expense of Brazilian producers. The moratorium also asserted huge political and economic power over producers, there was no compensation mechanism or price premium for adherence, they were left with a stark choice between participation in the supply chains of international markets, or being outside of their orbit:

"I think the success of the moratorium was down to many collaborators coming together, but I think it was sort of a jurisdictional approach, a broad approach. You're either in the zone or you're not in the zone, and we're going to monitor from a very high level. It put constraints on farmers, but I think it was actionable."

(Mark Murphy, Cargill interview, August 2015)

In assessing the design of the moratorium, it is important to note three things. Firstly, by limiting its focus to soy in the Amazon, the moratorium does not take into consideration the complex dynamics between cattle and soy as drivers of deforestation described in chapter two. It focused only deforestation directly linked to soy, so it could not control producers who, unable to deforest for soy, might decide to deforest for cattle instead. Secondly, the moratorium did not place any restrictions on existing soy production in the Amazon. Producers and traders were still free to grow and buy as much soy as they wanted in the Amazon, as long as deforestation was not involved. Lastly, the workability of the moratorium's design owes much to the shape of the supply chain, in particular the power of traders, as this interviewee noted:

> *"The moratorium has been effective; the problem is that it's been predicated in a very specific set of circumstances in a very specific moment in time. I think the moratorium is fantastic, but I have concerns when people assume that it can just be replicated in lots of places in the same way because the world doesn't work like that. It was actually very specific stuff about the shape of supply chains at that moment in time, back in 2006. There was relatively little soy farming and logistical development within that region, almost everything was brought by Cargill and fed into their Santarem port for global distribution, so actually, it was feasible to almost put boundaries around the region and create the infrastructure that allowed the moratorium to be so effective. Farmers really didn't have many choices, if they didn't sell to Cargill, they weren't capturing full market value and therefore only had access to local markets. That's a very unusual situation."*
>
> ***(Fiona Wheatley, Marks and Spencer interview, August 2015)***

4.2.2. Roundtable for Responsible Soy.

The goal of the RTRS to create a global *"market transformation"* towards responsible soy production was bold. While they planned to introduce certification across South America, Brazil and Argentina, the two biggest soy producing countries on the continent were selected as starting points. Like many other roundtables, the RTRS had a

governance structure designed to facilitate dialogue and consensus decision making. There is a secretariat based in Argentina whose permanent staff coordinate all operational activities. There is a general assembly, comprised of all members, where all decision making and voting takes place, and finally there is an executive board of 15 people, who are elected to two-year leadership roles by members. The board is designed to give equal representation to three constituencies of RTRS membership; producers, traders and financiers and NGOS. On top of this, there are various technical units and taskforces, made up of groups of members who devise policy in certain areas for the assembly to vote on (RTRS, 2014).

The organizations in the RTRS aimed to design a new mechanism of supply chain governance, and members hoped to demonstrate a market for certified responsibility. In order to do this, they developed two key tools: a standard for certification and a trading platform for producers to sell RTRS certified soy. Like the moratorium, the focus was on producers and farm operations.

The first standard (RTRS, 2010) had five key principles that formed the basis for its definition of responsible production:

1) Legal Compliance and Good Business Practice
2) Responsible Labour Conditions
3) Responsible Community Relations
4) Environmental Responsibility
5) Good Agricultural practice

Each principle was broken down into specific criteria and a certain number of criteria needed to be met in order to qualify for certification. The Environmental Responsibility

and Good Agricultural Practice principles had criteria to help monitor and improve preservation of biodiversity, water, air and soil quality on farms, rules about the responsible application and disposal of agrochemicals, and guides to planting practices that reduced greenhouse gas emissions and improved carbon sequestration (RTRS, 2010).

In terms of deforestation, which fell under the 'Environmental Responsibility' principle, members agreed to temporarily stop all expansion in 2010. During this time members would devise tools to ensure that future expansion would be *"responsible expansion with low environmental impact levels"* (RTRS, 2014B) A taskforce began mapping projects, starting with Brazil, to act as indicators of high conservation value (HCV) areas to avoid, which included almost all of the Amazon. As well as this, the maps would show areas that had expansion potential as long as environmental assessments were carried out first, and other areas that were deemed to be of low environmental value where expansion could be classed as 'responsible'. Just like the moratorium, RTRS soy producers in the Amazon were not prohibited from growing soy, as long as they did not deforest new land to grow it. A distinction between the RTRS and the moratorium was that this mapping process included the Cerrado, and some areas of it were deemed to be of high enough HCV that expansion was either restricted or prohibited there. As with the moratorium, the RTRS rules on deforestation were above what was required in the Forest Code, and this was something the RTRS made as virtue out of:

> *"RTRS stands for no illegal deforestation and no legal deforestation. When you look at certain qualities of high conservation values, doing only what is accepted by the law is not enough, and I think in most cases, maybe a lawyer will tell you, that in most cases, the actual law is running a little bit behind trends and preferences and directions of society."*

(Olaf Brugman, RTRS interview, July 2015)

Producers seeking RTRS certification are required to go through a verification process, carried out by third-party auditors. Accreditation can take up to 3 years, allowing time for compliance with every indicator to be introduced slowly, with producers reaching certified status after completion of 62% of all indicators, as long as they reached 100% within three years. Once certified, annual audits are carried out to monitor performance. It is possible for producers to have several farms under one certification, and a few years after the initial standard was introduced, group certification became possible as means for smaller producers to share certification costs (RTRS, 2014C) The RTRS takes an explicitly neutral stance to production, which means conventional, GM and organic soy can all be certified.

The credit trading platform was designed to create a means for companies "*wishing to support responsible soy production… to... directly reward those certified producers who have shown their commitment to good agricultural practices, environmental care and responsible relationships with communities*" (RTRS, 2014D**,** pg.13). The main purpose of the trading platform was the sale of credits, issued to producers, equivalent to an amount of physical soy they produced (1 credit for one tonne of certified soy). Companies that do this are then entitled to put the RTRS credits logo on their products to signify their support of the RTRS. This trading can be arranged for sale to any potential customer where anyone can buy it, or when producers and buyers agree an

amount that a producer will produce. The credits are sold at a market price with the RTRS take a percentage of 0.3 euro cents for each tone of soy sold.

It is also possible to purchase physical RTRS certified soy. However, this is a lot more complicated as the soy has to be fully segregated throughout the whole supply chain of production storage, transportation and processing, and each part has to be further certified under the RTRS Chain of Custody. This soy can then be sold at a slight market premium to reflect its verifiable certified status. Alternatively, soy from RTRS certified producers can be mixed with conventionally produced soy in monitored conditions. This process, called mass balance, still requires chain of custody certification so that unauthorized blends are not produced. Once completed, the mass balance soy is then sold at market prices (RTRS, 2014D). As I will show in the next chapter, the sale of RTRS physical soy has not proven to be a popular option for many producers and buyers.

The design of the RTRS defined sustainability as transparency in the supply chain, not just in being 'zero deforestation' but also 'responsibly sourced' with producers adhering to a code of production conduct. The certification standard and trading platform at the centre of the RTRS had two big consequences; Firstly, they put the onus on producers to act, in terms of covering the relatively high costs involved in certification. Secondly, they meant that the success of the RTRS relied on buyers signing up to buy credits, or to go through a chain of custody certification process. Unlike the moratorium where producers could depend on the continued custom of ABCDs as long as they followed its zero deforestation policy, the RTRS's design relied on companies actively choosing to purchase RTRS soy over conventionally produced soy. On the basis that certified soy

would have market appeal, it was anticipated that customers would be found. Traders and other companies who joined the RTRS were expected to switch to buying RTRS soy to show their commitment to its principles. It was hoped this support for 'responsible' production would eventually lead to *"market transformation"* where purchasing certified soy would become the norm.

4.3. The Politics of Agreement.

Both the case studies made an attribute of going above what is required by Brazilian law in terms of deforestation control, and both sought to create sustainability mechanisms that emphasised verifiable, transparent supply chains, as a means to ensure continued market access to Brazilian soy. NGOs appealed to the sustainability concerns of consumers in European markets, who had a good understanding of the environmental and cultural significance of the Amazon. They acted as their 'proxies' to compel multinational soy traders and buyers, wary of reputational damage, into action. The design of both case studies therefore reflects how soy production had been problematized by environmental NGOs as an issue of deforestation, and the need for companies to show leadership as forest stewards. Both the RTRS and the moratorium created new tools that asserted this stewardship and control of land use change. They offered an alternative to Brazilian state governance, remaking regulation around criteria that suited European markets, and *"pledged to govern themselves"* (Brown and Koeppe, 2013, pg.110) more effectively than the Brazilian government could. They drew new boundaries on deforestation, asking producers to go beyond what was required by the Forest Code, and giving themselves the governmental legitimacy and the reputational bonus of protecting the Amazon.

In doing so, they enacted a new form of control over producers, who I argue, are perceived in the case studies, both implicitly and explicitly, as the drivers of deforestation by virtue of the fact that they are the ones who actually do the deforesting. Control of producers then, becomes control of deforestation which becomes sustainability. Taken in this light, the case studies are mechanisms to exert new levels of control over producers, to coerce and incentivise them, which as we will see in chapter five, has caused significant tensions.

While NGO activism provided the immediate catalyst for the development of sustainable soy, their actions took place in the context of wider norms in global environmental governance structures. These norms, discussed in chapter two, are what Hecht calls *"the politics of agreement"* around tropical forests (Hecht, 2011, pg. 7). They emerged after Rio 92 and they stressed; 1) The policy imperative of forest protection, underpinned by scientific knowledge of ecosystems value and moral arguments. 2) The suitability of market based deforestation solutions involving leadership from corporate actors and civil society. These two narratives provided a framework, a shared understanding between all actors on their expected responsibilities and roles in finding solutions for environmental problems.

In their design, wider issues around sustainability - genetically modified crops, calls for food sovereignty, challenges to monoculture production – which had caused some organisations to either be excluded or to remove themselves from participation were not problematized. The environmental impacts of soy production beyond deforestation

and its function in livestock production were largely absent in the case studies conceptualizations of sustainability. For corporate actors like the ABCD traders and their customers, and for the soy producers, soy was a source of significant financial capital. In order to find common ground, in order to be able to work together, it could not be challenged by NGOs. For the NGOs then, soy became a useful vehicle to achieve deforestation control objectives.

In Greenpeace's case, the 2006 campaign created a narrative specifically around soy in the Amazon. The campaign used soy to link Amazon deforestation with European fast-food consumers. By doing this, Greenpeace cast European consumers as unwitting recipients of food produced as a result of Amazon deforestation, hoping the power of this connection spurred McDonalds and Cargill into action. It was a strategic choice and opportunistic use of soy, as John Sauven explained:

> *"The biggest driver of deforestation in the Amazon was cattle, but it was also the most difficult, so soy was kind of halfway between a relatively easy campaign around illegal logging and a more complex campaign to run around cattle. We started off with the easiest and went towards the hardest!"*
> ***(John Sauven, Greenpeace interview, July 2015)***

With the RTRS, although it has some problematizing of the environmentally harmful agricultural practices associated with soy, actors were seeking to create a middle ground, to neutralise (or de-toxify) the reputation of soy, to make soy production more aligned with sustainability narratives. Moreover, its construction of sustainability around market transformation explicitly relies on soy's continued production to work. In other words, 'responsible' production is still production. In their use of soy as a vehicle of sustainability, and the reality that corporate actors' involvement was contingent on

continued production of soy, both case studies have made soy the solution, rather than the problem.

A second consequence of this politics of agreement, and key to the workability of zero deforestation requirements of the case studies has been the isolation of soy as an economic driver of deforestation. Absorbing Amazon protection into supply chain costs and controlling producers in an in/out exclusive manner is at the heart of the zero deforestation frameworks created by the case studies. Both case studies are limited in focus to soy, and the Soy Moratorium is further limited to soy production in the Amazon. In doing so, the case studies have severed the links between deforestation for soy and its wider, more complex dynamics with cattle. It is only by isolating deforestation for soy production that TNCs and NGOs are able to make claims about zero deforestation. It is zero deforestation in their supply chains, not zero deforestation *caused by or linked to* their supply chains. The zero deforestation requirements are, I argue, more about the requirements placed on producers, rather than creating a zero deforestation environment in the Amazon or Cerrado.

In this chapter I have examined how the processes and drivers of soy production were understood and framed by RTRS and the Soy Moratorium, and what 'role' soy played in each case study regulation. I argue that soy production is characterised by actors in the case studies in ways that sought to neutralise or marginalise wider environmental critiques of soy agriculture and consumption. Building on the previous chapter, I argue that what constitutes sustainable soy production has been constructed in a very distinct way around forest protection which obscures the wider supply chain soy forms part of. It

is my view that this definition of sustainable soy is very reductive and narrow. Firstly, because the majority of Brazilian soy is not grown in the Amazon region, and secondly because it fails to fully account for the environmental effects of production on land, soil, water and greenhouse gas emissions, and because it doesn't problematize soy's role in global meat transitions and their impacts on climate change. By marginalising this, the case studies assign responsibility for deforestation to soy producers and to ineffective Brazilian governance and seek to define and enact sustainability with greater controls and restrictions on producers and land use change. They frame continued and expanding demand for soy as an inevitable part of development, and something that can be managed through a land stewardship approach to forested areas.

In conclusion, the utilization of the symbolic and political power of forest protection by NGOs, and the avoidance of market risk for companies in regions where sustainability was a more established norm, drove the development of sustainable soy. This drive was enacted within a context of growing normalizing of private governance, of companies taking responsibility, of being leaders, of forming partnerships with environmental NGOs on key environmental issues. Cargill and the companies involved in the RTRS were driven not only by crisis and risk, but also by the opportunity to show leadership. The result of this dynamic, to be discussed in the next chapter, has been what Oliveira and Hecht (2016) characterize as:

> *"the discursive transformation of soy from a key driver of deforestation in the Amazon into the modern embodiment of the solution to the eternal problem in tropical development: combining environmental stewardship with development. The extraordinary attention to this dynamic had a dramatic effect, which we call the 'Amazon swerve'."*
>
> ***(Oliveira and Hecht, 2016, pg. 268)***

They go on to define the *"Amazon swerve"* as:

> *"a process that radically changed the perception of soy within environmental circles (powerfully structured by international non-governmental organizations like World Wildlife Fund) from a leading landscape destroyer to a key tool for conservation, melding the modernist state and agro-industrial project with conservation"*
> ***(Ibid, pg. 269)***

Oliveira and Hecht are quick to note however that conservation in this context means "*conservation of the Amazon, and not the sacrifice zones to its south and east" (Ibid),* by which they are referring to the Cerrado. In this process, it's possible to a narrative emerging in which soy production was becoming if not an outright environmental good, but part of the solution to environmental problems it created. In the next chapter I discuss how the consequences of these narratives, and how the governance offered by the case studies has worked in practice.

Chapter Five: The Amazon Panopticon.

"We are trying to make a change in Brazil. We say that there is no legal deforestation, we call it vegetation suppression, that's the right name for it, because every time that you say 'deforestation', people immediately have a connection to something illegal."
(Francisco Oliveira Filho, MMA minister, interview, October 2015)

A decade on from the founding of the Soy Moratorium and the RTRS, a lot has changed. Although different measurement parameters and tools produce different results, it is broadly agreed that Amazon deforestation rates saw a significant decline after 2006, with estimates of reductions ranging from between 30% to 80%. This has been attributed to a mixture of supply chain interventions across the soy and cattle industries, revised state regulations, renewed law-enforcement and monitoring capabilities, and the vigilance of NGOs and forest activists. (Angelsen, 2010, Macedo et al, 2012, DeFries et al, 2013, Galford et al, 2013, Armina et al, 2014, Godar et al, 2014, Nepstad et al, 2014, Soares-Filho et al, 2014) The deforestation that remains in the Amazon has different dynamics, with much smaller areas of land being cleared, usually below 25 polygons. This is the level which the Brazilian government acknowledges cannot yet be detected by satellite monitoring (Francisco Oliveira Filho, MMA interview, October 2015). The difference in scale suggests deforestation is being carried out by smaller farmers, rather than the larger producers linked to transnational soy supply chains.

At the same time, levels of soy production have risen steadily in the Amazon, nearly doubling from 5 million tonnes in 2006 to 9 million tonnes in 2012 (Nepstad et al, 2014). Intensification leading to higher yields, and expansion occurring on previously cleared land that does not violate the rules of the moratorium or the RTRS. This has led to claims of the successful 'decoupling' of deforestation and soy production in the Amazon

(Macedo et al, 2012). The lack of effective governance exposed in 2006 has been replaced by a multiplicity of new regulatory authorities in both the private and public sphere. The new legal frameworks detailed in chapter two, and the 2012 revision of the Forest Code, have introduced new environmental protections and enforcement mechanisms to ensure much wider legal compliance for all agricultural land users in the Amazon. Alongside the RTRS and the Soy Moratorium, ABIOVE introduced its own sustainability programme *Soja Plus* which, while not a certification system, supports producers in applying the Forest Code to their properties.

This changed governance landscape, which Susanna Hecht describes as a *"new tropical panopticon"* (Hecht, 2011, pg. 10), was something interviewees reflected on:

> *"I'd say the last ten years, there's been this explosion of standards, an explosion of criteria and metrics that the consumer brand companies want to overlay, that may or may not be realistic, to implement in a very granular way across to a farmer in a faraway land."*
> ***(Mark Murphy, Cargill interview, August 2015)***

> *"You can't hide anymore, that's the reality. What we are doing today, it's a completely new environment of information and governance. I think we are in a different position in terms of governance, far from being perfect, but we have tools today. Deforestation is not the same issue that it was 10 year ago."*
> ***(Yuri Feres, Cargill Brazil interview, August 2015)***

This *"explosion of standards"* has made deforestation less appealing, and changes implemented across the soy industry have meant land clearing is no longer seen as acceptable for global markets and could in fact harm producers' businesses. There was also general agreement that Brazilian producers had worked hard to implement changes to their practices, and that the Brazilian government and civil society were much more engaged with the governance of forests, as this extract indicates:

"The Brazilians, the Brazilian government, Brazilian NGOs and civil society have stepped up a lot and are much more collaborative and aligned than they certainly were ten years ago, and leading the way as opposed to be being pushed and having things imposed upon them by, what I'll say are "the Northerners."
(Mark Murphy, Cargill interview, August 2015)

New working relationships and collaborative partnerships between NGOs, producers, traders, buyers and the state are now common, aimed at improving both the production practices and global reputation of Brazilian soy. All of these actions have combined to tell a much more positive story about soy than the one in 2006 and together they suggest a new paradigm of land use management that would have been difficult to imagine ten years before.

Running parallel and sometimes in conjunction to these developments has been the proliferation of zero deforestation agreements signed by *"the Northerners"*. Perhaps most notably, in September 2014, to much media fanfare, Cargill endorsed the U.N.'s Declaration on Forests during its climate summit in New York. Sitting beside U.N. Secretary General Ban Ki-moon in the main assembly room, the C.E.O. of Cargill, David MacLennan talked about how the company's "*unique position between suppliers and distributors, between growers and consumers of food*" meant that it had a *"great responsibility"* to *"do the right thing"*. Deforestation, MacLennan said, was an issue that reached beyond particular commodities or regions, and the required response needed to be global and collaborative, that the private and public sectors should *"join hands to protect forests"* (Cargill, 2014). The symbolism of the moment was a deliberate attempt to position Cargill in a leadership role in international environmental governance, as MacLennan reflected on in a statement after the signing:

"When they write the history book about Cargill…this day will be in it. It's a special moment in our long history to say that we're not just going to be in the middle of the pack on this issue, we want to be a leader."
(Cargill, 2014)

In 2014 Cargill committed itself to zero deforestation in its palm oil supply chains by 2020, and to wider moves towards ending deforestation across all its agricultural commodities by 2030. Key to its achievements (and commitments) in Brazil was the continuation of the Soy Moratorium. What happened in 2014 is important for understanding the direction of future sustainability approaches for commodities. Most notable is the positioning of zero deforestation principles at the centre of commitments, to be implemented in collaboration with NGOs and governments. It shows private governance 'in action' with new levels of transparency and accountability on the global stage. Glenn Hurowitz, a prominent American forest campaigner who helped to negotiate Cargill's 2014 commitment, talked about the visibility with which Cargill projected its commitments after signing the declaration; Cargill ran, he said, *"a huge advertising campaign in the airports here (the United States), it's plastered with billboards about how great Cargill's forest conservation programmes are"* (Glenn Hurowitz, Forest Heroes and Mighty Earth interview, February 2016). This is a very different image of the secretive, unaccountable company described by Morgan (1979), and a world away from 2006. It reflects how quickly norms around deforestation have changed.

The N.Y. Declaration enshrined zero deforestation as a key point of action and agreement and as well as Cargill, other companies have signed zero deforestation agreements. In 2014, 19 major food companies, including Kellogg's and Danone,

adopted zero deforestation policies for palm oil, between January and September (CDP, 2014). In 2015, the 'ABCD' trader ADM committed to zero deforestation in all its palm oil and soy supply chains in all regions, partnering with The Forest Trust NGO to implement the policy (ADM, 2016). Bunge, another ABCD, made similar commitments the same year for its soy and palm oil, again working with The Forest Trust and with The Nature Conservancy (Bunge, 2016). There have even been moves towards zero deforestation for cattle; There is a cattle moratorium – the result of another Greenpeace campaign and report, this one titled *Slaughtering the Amazon* (Greenpeace, 2009), and the development of a Global Roundtable for Sustainable Beef (GRSB). The language of zero deforestation and 'responsible sourcing' for soy can be found in countless sustainability reports and on the websites of many food companies. Soy has become a priority commodity for action, and zero deforestation has become the key tool for implementing change, as this extract from my interview with John Sauven illustrates:

> *"One of the differences between where we were then, and where we are now, now you sit in rooms of all these CEOs of all these big corporations and they are all talking about zero deforestation, you know, getting it out of their supply chain."*
> ***(John Sauven, Greenpeace interview, July 2015)***

In chapter four, I argued that forest protection was the primary point of unity between NGOs and corporate actors and was the key driver in the development and design of both the RTRS and the Soy Moratorium. In this chapter, I assess what these drivers have meant for sustainability ten years after both agreements were reached. I pay attention to how 'sustainable soy' production has been enacted in both case studies and how they have interacted with the Brazilian state's governance of forests. In particular I analyse the concept of zero deforestation and show how and why it has become a policy

phenomenon, and the most important tool in tackling deforestation to emerge in the last decade. Zero deforestation is a very appealing policy goal, seemingly simple to understand (though not as easy to define), and it has proven to have huge political capital for those involved with all commodity production in the tropics. However, as I will argue, it has also become an 'umbrella' term conflated with sustainability, and the primary means for assessing the sustainability, or not, of soy production. I show that the zero deforestation commitments act as powerful new corporate frameworks for meeting sustainability goals, but that in practice implementing zero deforestation in Brazil has led to problems which reveal a complex interaction between the state and market sustainability regulation.

5.1. Zero Deforestation and "Vegetation Suppression".

Broadly speaking, zero deforestation agreements operate by applying hierarchical rankings to particular landscapes or ecological biomes. At the top of this hierarchy are tropical forests such as the Amazon, which are deemed to be of extraordinary biodiversity value, and key to maintaining the resilience of various ecosystems. Zero deforestation agreements like the moratorium place political boundaries around these regions, prohibiting conversion of native vegetation. As a result, economic development in those regions becomes constrained, as in effect, producers and companies absorb the costs of protecting forests into their supply chains, agreeing not to realise any economic potential of land or resources within zero deforestation zones.

The key appeal to companies of zero deforestation agreements is their ability to independently verify a commodity or a supply chain as 'deforestation free', and thus

helping to reduce the risk of reputational damage. This ability to be verified "deforestation free" has appeal beyond risk aversion however. In 2017, the Brazilian banking federation FEBRABAN issued a report called *"Natural capital risks and opportunities for the financial sector"* in which it suggests that firms engaged in agribusiness activities in Brazil have an opportunity to market their zero deforestation (and any other environmental) commitments as an "environmental quality brand" (FEBRABAN, pg. 11). The report argues this will create market advantages as well as reducing legal and reputational risks. The increase in zero deforestation agreements over the last ten years, and the ways companies typically emphasise their participation in these agreements indicates that 'Zero Deforestation' has become a type of 'sustainability brand'. As companies develop their commitments to zero deforestation across their supply chains, it becomes imperative that zero deforestation in the Amazon is guaranteed. This was certainly very important for interviewees at Marks and Spencer, McDonalds and Unilever, who all talked about achieving zero deforestation in their supply chains being the key environmental goal:

> ***Interviewer:*** *Is your goal to achieve 100% RTRS certified soy in all your product lines?*
> ***Interviewee****: Not necessarily, in all honesty, we're still trying to figure out what the end goal is!*
> ***(Interviewee thinks for a bit)***
> *Actually our goal is to eliminate deforestation, the challenge is how do we do that?*
> ***(Fiona Wheatley, Marks and Spencer interview, August 2015)***

Zero deforestation is not straightforward to define (Brown and Zarin, 2013). The term is broadly applied and the methodologies used to calculate and monitor vary, meaning there is debate about what counts as 'zero' in practice, as this extract from another interview illustrates:

***Yuri Feres**: What we have to make our clients be really comfortable about, is how we can ensure that we guarantee that no deforestation goes into the supply chain again.*
***Renata Nogueira:** No illegal deforestation.*
***Yuri Feres:** The devil is in the details! We are talking about legal, illegal, net deforestation, zero deforestation, that's the whole debate now.*
***(Cargill Brazil interview, August 2015)**.*

Tensions over *"the devil in the details",* for example the differences between zero *illegal* deforestation and *zero* deforestation, and how the moratorium and the RTRS interact with Brazilian laws were important topics in my fieldwork interviews. It was clear that different actors were moving at different speeds and scales based on their needs and capacities, and this situation has brought inconsistent benefits and drawbacks to different groups. I found a sense of impatience and frustration on all sides as partnerships and agreements could both overlap and contradict each other. This caused, as I will show, identifiable splits between those actors interpreting full legal compliance with the Forest Code as zero deforestation, and those who felt it could only be achieved by going above the law.

This dynamic is clearest in the divisions over what role the newly mandated Rural Environmental Registry (Portuguese acronym CAR), a key revision in the updated Forest Code (2012), would play in determining future deforestation governance. CAR requires all private land across Brazil to be registered with the government, linking landholders to properties, thus making it possible to connect any land use change to individual producers or companies. It was designed to establish new levels of control and accountability over land use change, and to act as a tool for enforcing the Forest Code. CAR is an ambitious policy, and seen as long overdue, as this extract illustrates:

***Interviewer:** Why is the registration of land so important?*

Interviewee: *Somebody asked me that back in 2005. I said, "can you imagine how, in a city like London, people driving cars that don't have plates or pay taxes? If you are not registered, who is going to control you?" It's the same thing with land. If you don't have the name of the owner, you cannot ensure compliance, you cannot link a deforestation monitoring system to the person who is deforesting. Land registry is probably the most important issue in deforestation control, it will pave the way for developing sustainable agriculture. Once you have the name of the owner, you can do many things, financial, judicial, environmentally, you can take action. You know who you have to talk to. Land registry is the most serious issue in the Amazon.*

(Benito Guerrero, The Nature Conservancy interview, April 2016)

It was also hoped that CAR would provide new protections for companies who want to avoid deforestation in their supply chains, allowing them to access information about individual deforesters. Francisco Oliveira Filho, Director of policies to reduce deforestation at the Brazilian Ministry of the Environment (MMA) from 2012 to 2016, explained the role he believed CAR would play like this:

"We believe CAR is a very important pillar of the new Forest Code, because CAR is going to give us the opportunity to know if every landowner is in compliance with the legislation, and we can monitor them, and there will be a sign saying if he is not in compliance, so if you don't want to buy anything from them, don't buy it."

(Francisco Oliveira Filho, MMA minister, interview, October 2015)

The scope of CAR is huge, with over 5 million properties needing to be registered (Soares-Filho et al, 2014). The original deadline set for all properties to be registered was May 2016. To ensure registration was completed quickly, close cooperation between the environment and agriculture ministries was planned. Mr Oliveira Filho highlighted the role of the now former agriculture minister Katia Abreu in driving implementation, saying:

"She knows exactly where she wants to be in twenty years from now, and she saw, in all the discussions about CAR, she saw that there was an opportunity in the CAR system, as a kind of certification that would be very important for the Brazilian commodities

sector."
(Francisco Oliveira Filho, MMA minister, interview, October 2015)

There was real hope when I conducted interviews in 2015 that CAR would bring new solutions to land and forest governance in Brazil. As the extract above suggests, the interviewee from Brazilian government saw it as providing a new standard, *"a kind of certification"* for the legality of landholders that could serve to reassure buyers of all Brazilian commodities, not just soy.

Progress in implementing CAR has been slow, undermined by political turmoil in Brazil. By 2015 for example, the two states with the highest level of compliance were Mato Grosso, which had only reached 48% registration, and Pará with 65% compliance (Gibbs et al, 2015 pg.377). The interviewees I spoke to as the deadline for registration drew nearer were less optimistic than Mr Oliveira Filho and there was increasing scepticism about the possibility of completing the task on time:

Interviewee: *Another thing that really makes me quite worried is the CAR that everybody is talking about. Everybody talking about the CAR being the "Great Saviour" but we live in Brazil, let's be quite honest, it can be an interesting tool, but it's not really going to be ready. People have already, they are already not talking about this deadline anymore, they are saying they will give more time to implement, when they have already given a year.*
Interviewer: *So, you're saying it's not going to be fully implemented by the deadline next month?*
Interviewee*: Oh yes Jennifer!*
(Terence Baines, Unilever interview, April 2016)

Interviewee: *You will probably hear about the CAR from the persons from the industry, they think this is a kind of panacea that will solve everything.*
I mean, it is a good first step to have. The deadline is May 6th, less than a month, and we have only 70% of farms registered - and a big problem is that this is 70% of the farms that existed in 2006, because that was when the last census for farms in Brazil took place.
Interviewer: *So, there could be more farms now?*

Interviewee: *Probably we will have more, I could list more, 10% or 20% more farms.*
(Romulo Batista, Greenpeace Brazil interview, April 2016)

At the time of writing this thesis, the registration of properties on CAR is still not complete and the date for completion has been postponed until December 2017 (Azevedo et al, 2017).

Despite these delays and problems, the introduction of CAR was seen, by its supporters and detractors respectively, as a new tool to help re-frame deforestation as an exclusively illegal activity. Legal compliance with the Forest Code in the Amazon states that a landholder must leave 80% of their private property reserved for biodiversity (known as a producer's 'legal reserve'), but the remaining 20% can be converted for agriculture or other purposes by the landholder (Soares-Filho et al, 2014, Azevedo et al, 2015). In other words, 20% of each property can be legally deforested. With CAR enabling better monitoring of all deforestation, Brazilian policymakers hoped that the levels of illegal deforestation would decrease, leaving only what was legally allowed. It was then hoped that this legal deforestation could be re-categorised, as this extract from Mr Oliveira Filho demonstrates:

"We are trying to make a change in Brazil. We say that there is no legal deforestation, we call it vegetation suppression, that the right name for it, because every time that you say 'deforestation', people immediately have a connection to something illegal."
(Francisco Oliveira Filho, MMA minister, interview, October 2015)

If *"something illegal"* suggests something undesirable, *"vegetation suppression"* suggests something, if not desirable, then at least more neutral, and importantly, legal. However, this support of legal deforestation by the Brazilian government is in opposition to both case studies and to the zero deforestation agreements outlined at the start of

this chapter, which stipulate that *any* deforestation, legal or illegal is not permitted. When asked about this difference, Mr Oliveira Filho said he believed that what he termed *"absolute zero"* deforestation was impossible to achieve, as this extract shows:

> *"In the UK, would you like to have zero crime? It's impossible. It's Utopian. There is something that is residual that will be there. Of course, this is something that we would like to be as low as possible, that's what's we are working for. But in the end, zero, absolute zero deforestation, it's impossible."*
> ***(Francisco Oliveira Filho, MMA minister, interview, October 2015)***

The distinction between illegal and legal deforestation puts organisations like Cargill, McDonalds and Marks and Spencer in difficult positions. They need to be seen as respecting the rules of Brazilian legislation, but they also need to meet their zero deforestation commitments. It was clear from interviews how hard traders were working to implement the Forest Code in their supply chains, especially getting their producers registered on CAR. Cargill has even introduced a clause stipulating registration in all its sales contracts with growers. As the following quote from Mark Murphy shows, Cargill feels CAR is an important step in Brazilian governance, and hints that the Forest Code could one day mean that the moratorium was no longer needed:

> *"You have to get compliance to the CAR before you can move to implementing the Forest Code, before you can move to implementing a regulatory framework that could perhaps replace or be the backstop to the Soy Moratorium. I think big companies are just expected to do more, and while we work on the civil society side, we are also working with government, encouraging government to step up."*
> ***(Mark Murphy, Cargill interview, August 2015)***

However, it was also clear, as I will show in section three of this chapter, that Cargill and many other soy customers did not think Brazilian governance was there yet.

5.2. The RTRS and Soy Moratorium, 2006-2016.

In this section, I want to analyse how these tensions between zero deforestation and vegetation suppression have impacted with the progress and potential for success of the RTRS and the Soy Moratorium. I also assess how each case study has developed sustainability principles in the ten years since their formation. To help the reader, I have split this section into two sub sections, one for each case study.

5.2.1. Soy Moratorium.

It is in the context of the revised Forest Code that the development of the moratorium is best understood. When I conducted interviews during 2015 many interviewees expressed concerns over the annual renewal of the moratorium in May 2016. Negotiations were not going well, with the main problem being disagreement over what role the moratorium would play in the context of enhanced Forest Code implementation. One view was that the Forest Code, even with CAR, could not offer enough protections against deforestation. These concerns were expressed clearly by McDonalds and Marks and Spencer interviewees:

> ***Interviewee:*** *I have 1% optimism that we will get renewal of the moratorium, unless something major happens.*
> ***Interviewer:*** *Really?*
> ***Interviewee:*** *I mean, yeah. I've been involved in the discussions and getting a renewal this year was stunningly hard work, and we only got that renewal on the basis that it would be the last one. Now, admittedly, part of that agreement was that, we will accept it's the last renewal on the basis that they develop alternative mechanisms to still give us assurances of zero deforestation in the Amazon.*
> ***(Fiona Wheatley, Marks and Spencer interview, August 2015)***

> *"To get to Forest Code compliance, which actually would be a huge step forward for the region, it's not what we want, and probably not what most of the retailers want. We want zero deforestation, not zero illegal deforestation, we're pushing quite hard to see if we can have that".*
> ***(Keith Kenny, McDonalds interview, August 2015)***

These extracts reflect the needs of the two companies for certainty over deforestation control in their supply chains, and their belief that the moratorium continued to be the best means to guarantee this. This was a belief shared, perhaps not surprisingly, by Greenpeace, as John Sauven explained:

> *"All these companies now have zero deforestation initiatives, they are all committed, now they need actual regulations or enforcements or agreements that somehow are going to deliver on that, so the moratorium is one thing that is delivering on that."*
> ***(John Sauven, Greenpeace interview, July 2015)***

Another view, expressed below by ABIOVE, was that the moratorium was no longer helpful useful or necessary in Brazil:

> ***Interviewee:*** *We know the moratorium is a guarantee for part of the industry, but we also know that it is not the only guarantee, so what we think is that moratorium, as the name says, is something transitory, it shouldn't be……*
> ***Interviewer:*** *Ten years old?*
> ***Interviewee:*** *Yes! It shouldn't be ten years old. Now we have the Forest Code being implemented, the CAR is working. For the first time in Brazil we are looking at the properties. We can see where they are and what they are doing on their land. We never had this data before, in a public system, and we are getting better on this governance. We believe that the private sector needs to support the government in the implementation of the legislation, and the moratorium is kind of contradicting the Forest Code, so if we keep the moratorium because of market demand, we are working against our law.*
> ***(Beatriz Domeniconi, ABIOVE interview, September 2015)***

These extracts show that the disagreement was about more than an issue about *illegal* or *legal* deforestation, but also about the sovereignty for Brazilian law, and trust in Brazilian governance to deliver proper deforestation controls:

> ***Interviewer:*** *Does the zero deforestation of the moratorium contradict the Forest Code?*
> ***Interviewee:*** *Yes, that's the problem, we agree to the importance of the moratorium, but we need to find a way to use the moratorium but also respect the law. This is the conflict point. The environmentalists say, "the Forest Code is not enough". Why it is not enough?*

Let's think about this, somewhere else in the world where you have 80% of legal reserve? can you think of anywhere? I don't think so! So why is it not enough? No environmentalists can answer why it is not enough, it's just not enough because the world wants to say it's not enough. I am an agronomist and I know it is enough.
(Beatriz Domeniconi, ABIOVE interview, September 2015)

Interestingly, despite their commitments to the moratorium, this was also a view shared by Cargill Brazil:

"If there is no moratorium today, but you still have IBAMA checking, the minister for the environment checking, police checking, you are going to get the guys who cut. Probably it's going to be two months late, but he's still going to get there and go to jail, or have to pay heavy fines. By this I mean, regardless of the moratorium, we have a legal framework that wasn't present back in 2006. If you end the moratorium, nothing is going to change because that's the legal framework that we have to comply with regardless of the moratorium. The moratorium is very good, it's very symbolic, but we have laws now."
(Paulo Sousa, Cargill Brazil interview, August 2015)

As well as being no longer necessary, the moratorium was felt by some interviewees to be unfairly prohibitive to Brazilian producers. In particular, ABIOVE seemed, as shown above, to feel frustrated at its longevity. The interviewee felt its design did a lot to help the industry, but little to help producers:

"The moratorium is a blacklist, it's difficult for the farmers, it's good for the industry because we can protect ourselves, but for the producers, it's not that pedagogical, I cannot teach him anything with this. I just take him out of the system, and I don't buy his products but I don't say anything to help, there is no good message for him"
(Beatriz Domeniconi, ABIOVE interview, September 2015)

Another Cargill Brazil interviewee had a similar view, arguing that Brazilian producers in the Amazon were already operating under enough restriction from the Forest Code:

"To be in the Amazon, if you want to be a farmer there, now, today, you have to protect 80% of your land. So, it's the same as going to your house and saying, "oh you are going to live in your bathroom".
(Yuri Feres, Cargill Brazil interview, August 2015)

There was a feeling from these interviewees that the moratorium had divided producers into two groups – legal and illegal producers, and left many excluded from the process altogether. This had happened either because they were not suppliers to the ABCD traders, or because they were unwilling to keep within the zero deforestation rules, as these extracts show:

Interviewer: *What happens to producers outside the moratorium?*
Interviewee*: That's the question that we want the answer to. They need to live! They are there legally!*
Interviewer: *And if you exclude them, there is no incentive for good practice at all?*
Interviewee *Yes!*
(Beatriz Domeniconi, ABIOVE interview, September 2015)

"The small producers in the Amazon are the major deforesters today. They are not part of the soy supply chain cos they are so small, usually they plant stuff for their own consumption, or corn or cassava, manioc, but they are the major cause of deforestation these days, so local that no big corporation, no global retailers will act on that. They sell on the streets, on local markets, they sell to local resellers, how you going to tackle that? Beyond our reach."
(Paulo Sousa, Cargill Brazil interview, August 2015)

In her explanation of ABIOVE's *Soja Plus* programme, set up in 2010 to try and help producers, Ms Domeniconi again showed the tensions that were emerging over what to do with producers who had trouble following the moratorium and the Forest code:

"What we try to do with the Soja Plus programme, it's something to directly help the farmer. It's a solution developed to help the farmer to get better. Because sometimes they know <u>what</u> to do, but they don't know <u>how</u> to do this. The law in Brazil has changed over the years, fifty years ago, it was legal to open areas and the government gave money to people to open areas, to occupy the territory. Nowadays it's not legal anymore, and they are treated like criminals, and it's not fair."
(Beatriz Domeniconi, ABIOVE interview, September 2015)

These criticisms of the moratorium; that it is no longer necessary, that it doesn't respect Brazilian sovereignty and that is overly punitive to Brazilian producers, effectively criminalising their behaviour - all came from Brazilian interviewees who represent the

interests of traders. This is very interesting because it is revealing a split in how to approach the problems, how to deal with producers who could or would not adhere to the moratorium. ABIOVE, despite being one of the lead brokers of the moratorium in 2006, and an industry organization made up of the four ABCD traders, Amaggi and other Brazilian traders, appears to be coming out in support of no illegal deforestation, rather than zero deforestation:

"Our intention is to not buy any illegal deforestation anymore, but the moratorium is any deforestation, so we are trying to adjust it…. The moratorium is more than the law, this is something that we do not agree with, we don't agree to just say "no" to all the producers, they need to produce, they need to live!"
(Beatriz Domeniconi, ABIOVE interview, September 2015)

These extracts reveal the split between those who want the Forest Code to be regulatory framework for deforestation control, and companies like McDonalds and Marks and Spencer who feel Brazilian governance isn't able to give them the zero deforestation guarantees they need. This criticism of the moratorium is also very revealing because it shows an emerging split between traders and their industry representative in Brazil, ABIOVE.

Given these difficulties, it was perhaps surprising that the Moratorium was renewed indefinitely in May 2016, or as the wording of the new agreement said, the moratorium will continue *"until it is no longer needed"* (Greenpeace, 2016). The renewal was announced on the same day as Katia Abreu was fired as agriculture minister in Brazil, and the coincidence perhaps suggests the need for continuity and guarantees for businesses in turbulent political times. The renewal also shows the continued power of the market, and of international actors to determine deforestation policy in Brazil. This

extract, from an interview that took place before the moratorium was made permanent, shows that despite improvements made in Brazilian governance, traders like Cargill still put their trust in their own mechanisms, and in the opinions of NGOs, more than in the Brazilian state:

> ***Interviewer:*** *What do you think will happen if the moratorium isn't renewed next year? Do you feel the Forest Code has enough protections in place now?*
> ***Interviewee:*** *Well, erm, that conversation is still ongoing. There are some companies that really want out of the moratorium, but there are several NGOs, including our closest partners like TNC, WWF, Greenpeace, we've talked to them all, and they still believe the government is not ready to step up and take on the burden. I think the conversation has to take place, and will take place in the coming months, about whether we need to extend the moratorium for yet one more cycle. We keep patiently waiting for the government to really show that they can step up and enforce the law We are watching that very closely, and on the one hand, aligning ourselves with industry, we don't want to play the card and say we are against our industry peers, if they believe the government is ready and they want to walk away from the moratorium. On the other hand, we're realists, and we listen to our NGO partners that say maybe it's not ready.*
> ***(Mark Murphy, Cargill interview, August 2015)***

In 2006, the Soy Moratorium was one of the first zero deforestation commitments to be enacted by agricultural traders and producers, and ten years on, it remains one of the longest standing and most successful zero deforestation mechanisms in the world. The moratorium has provided inspiration for many other zero deforestation agreements. Quite simply, the moratorium has worked well for both the market and for NGOs. Ultimately the power of the market, and its demand for deforestation free supply chains has guaranteed the success of the moratorium. In 2015, Gibbs et al wrote that the moratorium that argues CAR implementation is not yet ready to provide enough protections against deforestation. The paper suggests that the moratorium is far more effective than the Forest Code, both in its design and operation, and has a much higher rate of compliance, saying *"even if there was full compliance with Forest Code, legal deforestation could reach supply chains"* and *"only the Soy Moratorium allows buyers to*

ensure zero deforestation supply chains" (Gibbs et al, 2015, pg. 2). They based this conclusion on their analysis of producers complying with the Forest Code and with the Soy Moratorium and found that soy farmers were approximately five times more likely to violate the Forest Code than the moratorium. They concluded the moratorium was more successful for the following reasons:

> *"The success of the Soy Moratorium is due to an array of factors, including (i) a limited number of soy buyers that exert considerable control over soy purchase and finance; (ii) simple requirements for compliance; (iii) streamlined and transparent monitoring and enforcement systems; (iv) simultaneous efforts by the Brazilian government to reduce deforestation; and (v) active participation by NGOs and government agencies. Monitoring and compliance mechanisms established by the Soy Moratorium offer a model for expanding supply-chain governance to other soy-producing regions and commodities."*
>
> ***(Gibbs et al, 2015, pg. 378)***

The moratorium has stabilized environmental concerns about soy supply chains in the Amazon in a way that Forest Code has not been able to do. It has given transnational traders like Cargill and Amaggi the sustainability creditability they badly needed after 2006, and recast them as environmental leaders and forest stewards. They have been very quick to claim responsibility for it, as these two, perhaps slightly amusing extracts, show:

> *"Although we say that the moratorium was developed with the soy processors, with ABIOVE, we really believe that it was our leadership that was sort of the glue to pull them together, but we have always talked about it being an industry collaborative as opposed to just Cargill leading the way because it's more important to talk about the industry than to talk about ourselves."*
>
> ***(Mark Murphy, Cargill interview, August 2015)***

> *"People normally don't know this, but the company that invited Greenpeace to talk about the moratorium, it was Amaggi, it was our C.E.O. He said "ok we have to create something that gives guarantees until we have governance, and so Amaggi starts to talk with Greenpeace to create the moratorium. After that we invited Cargill and we invited*

ABIOVE."
(Juliana Lopes, Amaggi interview, September 2015)

John Sauven however, was clear on who he thought had been the driver of the moratorium:

Interviewer: *Who do you think was the most important in instigating the moratorium?*
Interviewee (Emphatically): *It was McDonalds. Definitely McDonalds.*
(John Sauven, Greenpeace interview, July 2015)

But putting the trader's claims to credit aside, the driver was clearly market pressure, and the organization with the most power to enact this pressure in 2006 was, as Mr Sauven indicates, McDonalds. While the power of the traders in soy supply chains cannot be disputed, I found this further exchange from my interview with Greenpeace very illuminating on the two-way power dynamics between traders and retailers they sell to:

"I remember Cargill hadn't signed the anti-slavery pact. There was a phone call, the head of McDonalds was on the phone to Cargill saying, "I want you to sign this anti-slavery pact now" and, it must have been Friday, and the guy said, "I'll get back to you on Monday" and she said, "If you haven't signed it by tonight, McDonalds will never do business with you again" Just like that. It was extraordinary. It was fucked in that boardroom. You kind of realize then how, 1) the massive risks that McDonalds was running as a business, but 2) the fact that they were really going to get tough with Cargill, force them into acting."
(John Sauven, Greenpeace interview, July 2015)

5.2.2. Roundtable for Responsible Soy.

Compared to the moratorium, the RTRS has suffered from giving neither traders, producers nor the government what they want in terms of verifiable zero deforestation or legalised vegetation suppression. Seven years on from its first certification, two clear

narratives emerged in my fieldwork interviews, one of success, often in unexpected places, and one of failure, also in unexpected places.

One measure of success is to look at the RTRS' ability to make an impact on overall soy production and biodiversity conservation. While the number of tonnes of certified soy and hectares of certified farmland certified has increased every year, in 2016, it's most successful year, there was still only 3 million tonnes of certified RTRS soy produced on just over 956.000 hectares of land across the 8 countries the RTRS operates in[16]. The majority of RTRS sales are in soy credits on their trading platform, with 1,944,949 credits sold in 2016 compared to 95,772 tonnes of physical RTRS soy through the mass balance supply chain. There was no sales through a segregated supply chain. Together though, the total numbers of buyers for all credits and mass balance RTRS soy is 50. Brazil produced the bulk (just over 2 million tonnes) of RTRS soy and there are 143 certified growers in Brazil. Overall from 2011 (when the first certified producers harvested their first RTRS soy) to 2016 the RTRS has produced 14, 703,915 of certified soy and achieved its highest level of soy credit sales in 2015 with 2,118,085 sold. (RTRS, 2016).
These figures are dwarfed by the rates of overall soy production in Brazil which as I have shown in chapter three are far greater than this. The impact of RTRS on both global and Brazilian soy production is very small and represents a tiny portion of the global soy market. It is hard to feel that *"market transformation"* envisioned during the RTRS' creation is anywhere near to being achieved. It was also notable when researching this thesis how difficult it was to find accurate statistics on RTRS production and the number

[16] In 2016, 3,090,661 of certified soy were produced worldwide. Brazil was responsible for 2,204,212 tons. The remaining 886.449 tonnes were produced in the following countries: Argentina (662,445)

of producers. Their website and credit trading platform did not yield as much data as I wished. I was not, for example, able to find statistics on how many producers it had in the Cerrado and how many in the Amazon. This has contributed to my assessment that the RTRS has not been successful in achieving its goals.

A lack of market acceptance across different sections of actors seems to be responsible for this. Focusing first on producers, in the interviews I conducted there were stories of mistrust and openly expressed fear of the NGOs involved in the RTRS. Harry van der Vliet, an RTRS board member who works for the Dutch NGO Solidaridad told me that during his early work in 2011/12 to get Brazilian farmers certified, there was resistance towards sustainability projects and the RTRS from farmers:

> *"In some regions, we (Solidaridad) were seen as a green NGO, and you have to keep distance from green NGOS. That's the result of WWF, Greenpeace activities in Brazil. They have created a severe aversion with farmers for this kind of organizations. We spent quite a lot of time explaining to them that Solidaridad was not an environmental NGO, that we were about sustainable supply sheds, that we wanted to help them to comply with sustainability criteria and principles."*
> **(Harry van der Vliet, Solidaridad interview, September 2015)**

Another interviewee, who works for an NGO based in Mato Grosso, running projects to certify farmers as RTRS, said something similar:

> *"In the beginning, it was very hard because the producers were very afraid of the RTRS certification, because it was known they had a lot of civil societies inside the RTRS, and they thought that maybe there was something against them there… It was hard to convince them it was a multi-stakeholder platform that many producers are part of."*
> ***(Cynthia Cominesi, Clube Amigos da Terra interview, June 2016)***

These extracts reveal that, particularly in the RTRS' early days, there was a lack of knowledge on how to implement the RTRS standard, and a lack of financial capacity and

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Paraguay (64,115), China (62,932), India (54,274), Canada (30,154), USA (8,192) Uruguay (4,337) Source:

institutional support to make changes. These problems all seem inevitable or perhaps expected when introducing a new system, especially given NGO presence and known past campaigns that had threatened production. They also show a general unwillingness amongst producers to make changes when the benefits were unclear and when the risk of NGO attention was well documented.

To some extent these fears were allayed when producers began to see the benefits, but there has still been a big disappointment by the lack of market uptake by European soy buyers. There was a sense of broken promises, that buyers were not buying enough credits of RTRS soy through mass balance channels to stimulate the premium producers received. This was echoed by buyers who had been supportive, like Marks and Spencer, who said it had been very hard to stimulate market demand in Europe, as these two extracts illustrate:

"I'm a really big fan of RTRS, I'm a key stakeholder, but the jury is out as to whether it is actually going to be the solution that we need. There's huge challenges in getting sufficient adoption within Brazil. Actually, if we're honest, we've been deeply unsuccessful in getting enough producers to become certified in Brazil. People are saying, "if you ask for it then more people will buy it". Well, you put that in the context of Marks and Spencer being 4% of the UK food market, we estimate we use 91000 tonnes of soy, it's not a lot in terms of global volumes of soy. Quite frankly, me going out and banging my head against a wall going "I need RTRS soy" is not going to be the answer."
***(Fiona Wheatley, Marks and Spencer interview, August 2015**)*

***Interviewer:** It seems like RTRS producers are saying they can't produce until they've definitely got a market?*
***Interviewee:** There is a bit of a chicken and egg thing going on. From our perspective, from a business perspective, you're not going to get big companies making public commitments to a standard that they might be held, by the short and curlies commercially for! They might go, "right, we're going to buy all that RTRS that's available", and suddenly the price of RTRS goes up 20% because they've got a captive market. They might be criticized for not delivering despite the fact that it's going to be relatively out of their control.*

RTRS, 2016.

(Fiona Wheatley, Marks and Spencer interview, August 2015)

The RTRS has also been constrained by its operational structure which interviewees, even supporters, saw as complex, time consuming and bureaucratic with audits which were sometimes removed from the realities on the ground. Asked what the most difficult aspect of RTRS for farmers was, Harry van der Vliet replied:

"The paperwork. The auditor goes there, and you have to prove what you're saying, and that's the most difficult aspect for farmers, now they have to prove that they have some social responsibility, for example, with the local community. There was one farm, we discovered that the surrounding communities used their small clinic, so, how do you prove it? The auditor was there: "Is there a telephone number? Internet?" but people who are living round there don't have electricity, not even telephone. Then we discovered they communicate with walkie-talkies, but that's not what is in the RTRS."

(Harry van der Vliet, Interview, 2015)

There have been some successes however. One interesting initiative has been multi-crop certification which Terence Baines from Unilever explained to me during our interview:

Interviewee: *We have just managed at the RTRS to pass through a new type of certification that is called multi crop certification. The first crop that has been approved and that we have managed to get the first certification for that last week is corn. Why corn? Because in Brazil when you rotate the soy crop, you rotate with corn, you have a legume and a grass.*

Interviewer: *This is RTRS certification but for corn?*

Interviewee: *Yes, multi crop certification. We buy two products from the factory of a trader, we buy soy oil for our mayonnaise and we buy starches for several projects, so the raw materials that we use for those are soy and corn. We use RTRS for soy, but the same farmer that was selling us soy is also selling us corn. It was starting to get a little bit stupid to say to the farmer "look you have to have two certifications, one for soybean, one for corn", because it's the same farm, the same land, same management system, same everything. We have just managed to get approved last year, a project that we have is multi crop. In the future, we would like to have more crops certified, such as wheat, sunflower, nuts – peanuts. So that's mainly what we're trying, we're trying to make a multi crop certification.*

(Terence Baines, Unilever interview, April 2016)

Another interesting project also led by Unilever has seen the company source soy directly from producers rather than go through traders. Together with some other mainly Brazilian companies, Unilever, financed by Santander, is paying the costs of RTRS certification for a group of producers so they can grow all of its soy for them, that they can then purchase through the credit trading platforms mass balance channel. Mr Baines explained to me that Unilever were pursuing this project because the company had made a pledge in their *Sustainable Living Plan*, first launched in 2010, (Unilever, 2010) to source all of its raw materials sustainably by 2020. Frustrated by the lack of interest in RTRS by traders (to be discussed below), they have decided to source direct. Mr Baines was very clear why they were doing this:

Interviewer: *Why does Unilever want to move to direct sourcing?*
Interviewee: *Because then we can claim!*
Interviewer: *Claim what?*
Interviewee: *On the package…*
Interviewer: *Oh, so you mean your products would be branded?*
Interviewee: *Yes, and also to avoid any NGO risk, them attacking us, something like that. Mass balance gives us a promotional advantage and more safety, because we will know where the soy is coming from, and we will control of the whole chain.*
(Terence Baines, Unilever interview, April 2016)

As these examples show, the RTRS system can work well for some companies as a means to fulfil their sustainability commitments. Marks and Spencer, despite the reservations mentioned by Fiona Wheatley above, also continue to support RTRS and are involved in projects to try and improve European uptake of RTRS certified soy.

There has also been unexpected success for the RTRS in India amongst smallholder co-operatives. There are 32,400 certified RTRS growers in India, with each producer

typically farming on 1-2 hectares (RTRS, 2016). This was not something that had been originally envisioned for:

> *"India turned out to be a success story that nobody expected, it took for different reasons, because farmers learned that if they did those practices they would make more money. It's very simple, it has brought them economic benefit"*
> ***(Founding executive board member, RTRS interview, July 2015)***

It has been outside of the scope of this thesis to investigate further why India has proven to be so receptive to RTRS certification, but its success there shows that RTRS has the potential to be a useful tool for certain organisations and certain types of producer.

However, as hinted above, the RTRS's biggest obstacle in Brazil has been struggling to maintain support from ABCD traders. Despite being characterised in some of the literature in chapter two as primarily serving the needs of industry, the RTRS has proven, with the exception of Amaggi, not to be something that suits traders. While all the ABCD traders are members of the RTRS, when I asked about their role, interviewees from the RTRS secretariat talked about how they were passive members, not filling out annual reports, not contributing, abstaining on votes, as these two extracts demonstrate:

> ***Interviewee:*** *The big traders, they are sceptical about RTRS because it is in conflict with their already established market. When you introduce RTRS, this is something more innovative that needs some structural changes. I'm talking about big traders - ADM, Cargill, Bunge, Dreyfus, these guys have built up their whole market over decades, they are sceptical to RTRS.*
> ***Interviewer:*** *But they are all members of the RTRS?*
> ***Interviewee:*** *Yeah, they are members! Everybody is free to become members, but to take action, that's another thing.*
> ***(Daniel Meyer, RTRS interview, July 2015)***

> *"ABCD, they are always dragging their feet. I'll never forget when it was time to vote for the standard, several of them abstained instead of voting in favour of the standard. I am not wild about their commitment; however, their commitment can only have a certain limit because their consumer is not the end consumer. They have a long chain and their*

customers are looking at price so they don't want to increase costs. So, in a way they reflect what the market wants."
(Founding executive board member, RTRS interview, July 2015)

From the trader's perspective, the RTRS simply does not fit with their supply chain structures or business models. Mark Murphy from Cargill was particularly vocal about this:

"The certification part of the RTRS is what I think people really cringe at, because it requires the auditing. RTRS set the goal too high, it became a niche for a special set of farmers, but there wasn't a premium in the marketplace to pay the farmer and motivate them. You've got to find tools that move the masses to make continuous improvements, as opposed to moving the special élite who are doing everything perfectly…… We are a stubborn member of the RTRS. Farmers are going to be realists, so we have to make approaches that are pragmatic. The RTRS is difficult because it's very expensive, and difficult to implement. We've been involved in both, we continue to be a member of RTRS, but we continue to be a supporter of the moratorium."
(Mark Murphy, Cargill interview, August 2015)

Far from being the trade body representing the interests of industry, Mark Murphy characterizes the RTRS as an environmentalist *"niche".* Analysing Mr Murphy's remarks it's also possible to see that the whole idea of "market transformation" for Brazilian soy is perhaps flawed because it is not in line with the particular shape of the soy supply chain; The market for soy is established and demand is strong, with the main buyer being the ABCD traders. Their lack of engagement with the RTRS does not provide much incentive for producers who sell to them to certify. Unless they can find alternative sales channels, such as through Unilever's projects, they are reliant on end users and retail companies like Marks and Spencer buying credits.

Overall, I think the RTRS's fate is unclear and seems tied to how much it can be seen as a viable and appealing zero deforestation certification in what is an increasingly crowded market. It could be argued that the RTRS has been overtaken by the proliferation of zero deforestation agreements that do not require the same amount of auditing or costs to producers. It has also been overshadowed by the moratorium in Brazil, which is favoured by traders and which gives similar guarantees of deforestation free supply chains. Interestingly the RTRS has introduced a new and more comprehensive zero deforestation standard in its 2016 revision of its standards. The organization seems to make moves towards being even more explicitly zero deforestation, positioning itself as a means to *"bridge the gap between legal compliance and zero deforestation"* (RTRS, 2016).

5.3. A Multiplicity of Authorities.

At the start of this chapter, I talked about the splits between those actors working towards full legal compliance and those working beyond legal compliance. Being beyond legal compliance, specifically moving towards verifiable zero deforestation, has come to dominate sustainability narratives around soy constructed by NGOs and by major soy traders and buyers. For both the Soy Moratorium and the RTRS this is what 'sustainability' has come to mean. This approach though has led to problems for producers in Brazil that cannot reach, or who do not want to reach, beyond the zero illegal deforestation set out in the Forest Code. This has resulted in those producers being viewed by markets and by NGOs as unsustainable, as this extract indicates:

> *"To be sustainable you have to go above the law. That means a lot of money, it means a lot of social problems, it means blocking out entire states from developing. They are saying that agriculture cannot develop because producers cannot deforest 20% of the property. So, I'm not saying that we are in favour because we have a commitment to end deforestation, but the problem is it's not as simple as black and white, as saying legal is*

legal and you have to comply otherwise you are, we not even talk about sustainability if you don't comply."
***(Yuri Feres, Cargill Brazil interview, August 2015**)*

It's interesting that this interviewee reflects both Cargill's commitment to zero deforestation and his own belief that these policies are punitive towards producers. This was the case with many Brazilian interviewees, who seemed torn between the market demands for zero deforestation and a sense of injustice for Brazilian producers.

There was sensitivity to this point, from the Cargill interviewee in America. Conscious of the company's position as a foreign company in the country, Mark Murphy reflected:

"I think that we, who are part of these global organizations that have interests in Brazil, have to be sensitive to the Brazilians and the Brazilian government who have to figure out how this is going work, because imposing it from afar, only means that people will not embrace it and own it, and they have to embrace it and own it in a way that will work within the global role they play."
(Mark Murphy, Cargill interview, August 2015)

This tension between foreign-based market actors imposing governance, and the need for Brazilians to embrace policies as their own, is something that still needs to be resolved within the case studies. Interestingly though, Murphy went on to say shortly afterwards, reflecting on Brazil's central role as a global food producer: "*so, if they're (Brazil) going to be a global actor they have to act like one"*. This suggests that being "a global actor" means going further than the Forest Code currently does, or at least reflecting the new global norms of zero deforestation that global markets demand. For now, the balance seems favoured towards 'imposing' zero deforestation on Brazilians, which in the case of soy, means the moratorium as the only verifiable, market trusted

mechanism. In short, Brazilian regulation has simply not been able to give global soy markets what they need, and so they have constructed mechanisms that do provide this.

This approach, as I have shown, runs the risk of marginalising producers who are not included in the moratorium, who are outside of the reach of its supply chains, but it is an imperative while the global gaze on Amazon protection continues. It has been made possible because soy in Brazil is largely grown for export, and its supply chain is controlled by a concentration of traders, and it is worth noting that the NGOs might not have had the same success if they had targeted a commodity mainly grown with a domestic market in Brazil. Overall, the picture today is of actors moving at different speeds and at different scales, and the creation of a fragmented and overlapping forest governance, which the Soy Moratorium and the RTRS, to different degrees, having played roles in shaping. This fragmentation seems to show the situation to be zero deforestation for producers who can afford to implement it or whose markets demand it, and Forest Code implementation for producers who sell to domestic markets or to supply chains that do not demand zero deforestation. Within this context, the moratorium has achieved a high level of market acceptance, whereas the RTRS falls somewhere in between, providing a useful mechanism for producers and buyers who engage and invest in it, but not achieving the market integration it aimed for.

In conclusion, I argue these tensions reveal the limits of zero deforestation policies to deal with people outside of global supply chains, and the tendency of this approach to externalize not only of deforestation but also producers. In addition to this, zero deforestation's rise to prominence in the ten years since 2006 has been made possible

because the term has become conflated with sustainability, meaning that to many people it means the same thing; zero deforestation is sustainability, therefore companies who agree to it are acting sustainably. The logical next step from this seem to be to make every agricultural landscape zero deforestation, and therefore a sustainable development zone in the eyes of international market actors and their partner NGOs. This chapter has shown however, that in practice, this is much harder to implement than expected, even in iconic forest landscapes like the Amazon. In the next chapter, I show the problems when considering this approach in a less well-known landscape.

Chapter Six: The Cerrado Paradox.

"65% they burn, 35% they keep. It's nearly all gone.
Nobody cares about our biome, they only care about the Amazon"
(Cerrado Tour Guide, personal conversation, September 2015)

While conducting fieldwork for this thesis in Mato Grosso, I took a trip into the Cerrado with a tour guide. The guide was in her forties and had lived in Cuiaba, the capital of Mato Grosso, all her life. She picked me up from my hotel and we drove for about an hour towards the nearest accessible part of the vast savannah. As we drove she told me she worked half of the week as a prison officer and the other half as one of only a handful of registered guides for that part of the Cerrado. Laughing, she said *"I spend half my week in hell and half in heaven!"* On the journey, we drove along long and bumpy unpaved roads. When we arrived at the entrance it was clear this was not going to be a tour as I had imagined it. There was no visitor infrastructure beyond a locked gate, a café that had closed down and some signs about the dangers of falling rocks at the start of a walking trail.

I told the tour guide very little about the purpose of my trip to Brazil, saying only that I was visiting for work. During the journey, we had passed miles of burnt shrubbery by the side of the road, the consequence of fires that were both natural and man-made. I can't remember what prompted my guide to bring up the environmental restrictions the Forest Code placed on private land in the Cerrado – 65% of land on each private property is allowed for agricultural development, 35% has to be preserved for biodiversity - but I do remember being startled by her sense of sadness, that *"nobody cares"* about a landscape she thought of as a *"heaven"*.

The immense landscape of the Cerrado was like nothing I had ever seen. In places, it resembled the giant rock formations of the American Grand Canyon, in others a semi-tropical wilderness. In Brazilian Portuguese *Cerrado* means *thick* or *closed,* and from a particularly high vantage point, I could see many small waterfalls, winding rivers enclosed by large trees and a huge sky undisturbed by anything except for toucans and parrots who flew in the mist of the humid heat. I felt like I had travelled back in time. Reading from a clearly well used conservation book, my guide was extremely keen to tell me about the medicinal properties of the different plants and trees, and the names of the small creatures, mainly insects, that were flying and crawling everywhere. She also loved telling me the stories of *"horrible accidents"* where people had been crushed under falling rocks or got lost and never returned. They were lurid historical tales of tragedy, crime and romance in the Cerrado, and made the landscape and its history come alive in ways I had not imagined before. It was quite a day.

In this chapter, I analyse the consequences of the case studies and the growing zero deforestation policy paradigm for the Cerrado. I argue that the Cerrado is key to understanding and evaluating the sustainability of both case studies, even though it is largely excluded from them, either by design in the moratorium, or in practice through the lack of RTRS certified producers in Brazil. I show how the Cerrado fitted into the development of case studies and into the wider narrative of sustainable soy in Brazil, how it was problematized and in the case studies and I challenge the idea of leakage discussed in chapter two. If, as I argued in chapter four, the case studies defined sustainability as responsible production, and the Cerrado is the most important site of

production in Brazil, it should follow that it would also be the centre of attention for developing more sustainable production practices. I compare the differences in land use change, environmental protections and attitudes towards the Cerrado, and contrast the effects of soy production on the Cerrado with that of the Amazon to show this was not the case.

Furthermore, I argue that the Amazon and Cerrado are intrinsically connected landscapes of production and protection. To do this, as I will show in section two, I use Thomas Princen's idea of distance in agricultural supply chains as a way to understand and theorise these connections. The main conclusions of this chapter follow on from this, and are as follows:

1) Zero-deforestation agendas, particularly those of the case studies, have facilitated agricultural expansion in the Cerrado. In doing so they risk undermining all the environmental benefits of biodiversity protection in the Amazon.

2) This facilitation was driven by international players, specifically the NGOs and companies involved in the development of the case studies, with support from the state.

3) The concept of degraded land in the Cerrado as a solution to the environmental problems caused by soy production is highly reductive from a climate change perspective. From this conclusion, I have developed an argument that challenges biodiversity protection policies as a tool for sustainability. I argue that the environmental gains of the case studies are contingent on continued neutrality of the role demand for soy plays in driving environmental destruction. This, I argue, reveals that the key sustainability issue for soy is not land use change, it's unchallenged demand.

6.1. The Challenge of the Cerrado.

During my fieldwork, I flew over the Cerrado's vast soy plantations on the way to Cuiaba from Sao Paulo. I saw for myself the many farm buildings, agricultural machinery and the small aircraft used in agrochemical application, dotted amongst the huge geometric shapes of the Mato Grosso soy fields, some of the most important and most valuable agricultural land in the world. These landscapes have come to define modern Cerrado agriculture. What biodiversity remains in the Cerrado is far less protected by the federal Forest Code. Brown and Koeppe describe the Forest Code as effectively *"codifying the notion of the savanna as a "sacrifice zone" in Brazil's attempts to develop its vast Amazonian interior"* (Brown and Koeppe, 2013, pg.118). On private lands, as the Cerrado tour guide told me, only 35% of a property must be maintained as native vegetation, compared to 80% of Amazon properties. Also, while 46% of public land in the Amazon is under some form of protection, either kept as biodiversity reserve, national park or protected in some other capacity such as lands belonging to indigenous peoples, in the Cerrado the figure is only 7% (Soares- Filho et al, 2014).

Driving through the Cerrado in the late nineties, a journalist for the Economist described what they saw:

> *"for mile after mile, the flat tableland stretches away to the far horizon, a limitless green prairie carpeted with swelling crops. The monotony of the landscape is broken only by the artificers of modern agribusiness; a crop-dusting plane swoops low over the prairie to release its chemical cloud, while the occasional farmhouses have giant harvesting machines lined up in the yard outside. It could be the mid-western United States. In fact, it is the very heart of tropical South America."*
>
> ***(The Economist, 1999, quoted in Klink and Moreira, 2002, pg. 62)***

This description, which envisions the vastness of the agricultural activity in the region, reveals the "Soylandia" discussed in chapter three. Both the American Midwestern and

Cerrado agricultural systems are agro-industrial landscapes of monoculture production dominated by the international agribusiness firms. The ABCD traders who manage and control soy production in Brazil are the same as those in America and they use many of the same technologies and machinery to grow and harvest the world's soy. In short, the Cerrado is a key location in the global food system, its mass monocultures of soy have facilitated dietary meat transitions and intensive livestock production. By the time calls for more sustainable soy were being heard in the early 2000s, the Cerrado was established in Brazil as a landscape of mass production agriculture.

Contrasted with the globally iconic status of the Amazon, the Cerrado's agricultural history gives the region a very different meaning for Brazilians. Writing in 2005, Susanna Hecht described what she termed as a historical *"forest bias"* amongst many conservationists towards the Amazon's biodiversity and its plight, which has resulted in the Cerrado being seen as *"essentially uninteresting from a biologic standpoint"* (Hecht, 2005, pg. 397). This, she goes onto argue, explains the differences in the environmental protections designated to the Cerrado in the 1988 Brazilian constitution:

> *"This bias toward humid tropical forest had the result that areas such as the Cerrado were not even included in the idea of national environmental patrimony in the 1988 Brazilian Constitution, and thus no provisions were made for their protection. Unlike high forest or transitional forests, Brazilian law does not stipulate the maintenance of a portion of Cerrado lands when converting to other uses. Planaforo, the most elaborated of Brazilian land use planning exercises, was also largely apathetic about the Cerrado."*
>
> ***(Hecht, 2005, pg. 397)***

Although the Cerrado is now allocated some protections in the Forest Code, a lack of recognition for its biodiversity value was clear during my interviews, as these extracts illustrate:

"Unfortunately, the Cerrado, here in Brazil, most people don't know what the Cerrado is. The Cerrado, with regards to the law, it receives much less protection than the Amazon."
(Romulo Batista, Greenpeace Brazil interview, April 2016)

"It's much less easy for an NGO like us to campaign on the Cerrado because we don't get the same interest from the international community, like we have for the Amazon. The Cerrado is not internalised by people, even here in Brazil we don't have the understanding of the importance of the Cerrado."
(Frederico Machado, WWF Brazil, interview, May 2016)

The lack of *internalisation* of the Cerrado's ecological worth that these extracts imply is very revealing, but as the interviewees suggest, it is not just a problem in Brazil. It's hard for campaigners across the world to use the Cerrado's plight as a catalyst for action, it just doesn't have the same status, the same amount of cultural currency, as the Amazon. This, along with the economic gains soy has brought to the regions have allowed land use change, relatively unobstructed and unchallenged, to continue on a large scale.

As the extracts above suggest, and I have discussed in chapter three, the biodiversity of the Cerrado is important, and the processes of agricultural production that take place there, whether they involve land use change or not, have left a massive ecological footprint. The question of what to do about this footprint in the Cerrado is important for understanding how sustainable soy production can actually be. The Cerrado has such a different agricultural context, different legal protections, and is, broadly speaking, subject to different perceptions about the value of its biodiversity. There was a sense

from interviews that these differences mean that applying conservation approaches to the region would not be easy:

> ***Interviewer:*** *How can we ensure enough environmental protections in the Cerrado?*
> ***Interviewee:*** *Well, that's the complicated question. I think it raises the question of how you do effective conservation in a setting that's not as charismatic or as well-known inside or outside the country? Also, you could convincingly argue that it does have a sort of agricultural vocation in a way that the Amazon doesn't. It's pretty flat for most of it, it really reminds you of places the American West that have become the real breadbaskets of the world. So, there are much more intense pressures for development in a setting like the Cerrado. You have like Brasilia right in the heart of it, where you have a world class agricultural research institution that has taken a mission how to make agriculture viable in the Cerrado as part of a grand national project. So, it's really difficult to defend the Cerrado using the same techniques and mind-set that is used to defend the Amazon.*
> ***(David Cleary, The Nature Conservancy interview, November 2015)***

> *"Right now, deforestation in the Cerrado is higher than deforestation in the Amazon……I think we can make it (deforestation control) work on the Cerrado, it's going to be a huge challenge….As a country, we still have lots of problems, and one of them continues to be deforestation, and the challenge is it's moving to the Cerrado, where there is this whole thing of environment and agriculture is more important than in the Amazon region."*
> ***(Francisco Oliveira, MMA minister, interview, October 2015)***

The potential resistance to conservation interventions in the Cerrado these extracts suggest reveal how difficult it would be to overcome its reputation for having an *"agricultural vocation"*, was also made very clear in my interview with Marks and Spencer. Interesting, as Fiona Wheatley's comments below show, the company are moving towards supporting increased protections for the Cerrado:

> *"In Brazil, you'll get people who say "yeah, we get that we have to protect the Amazon, the Forest Code will do that" and then you move into talking about the Cerrado, and they are like "oh, that's not a forest!" But you know, I say to them, "actually it's a high biodiversity landscape which is a globally unique habitat, so we think probably that should be coming under that forest and high conservation value land umbrella" and they're like "ehhh? No! that's our future food production! That's our economic development area".*
> ***(Fiona Wheatley, Marks and Spencer interview, August 2015)***

Companies such as Marks and Spencer, who have made commitments to environmental protection, are beginning to see any links to the destruction in the Cerrado as a reputational risk. The solution, according to Ms Wheatley, is that the Cerrado should be categorised under what she calls the *"forest and high conservation value land umbrella".* In other words, that the Cerrado should be viewed with a similar environmental status as the Amazon. This is very different to how it continues to be seen by many Brazilian producers, who see it as the site of their *"future food production"* and an *"economic development area".*

During the course of this research, concerns about the Cerrado's biodiversity have increased. A 2017 campaign by Glenn Hurowitz's newly launched NGO *Mighty Earth* targets Cargill and Burger King over their connections to land use change in the Cerrado. The report cites the successes in the Amazon as a model for action in the Cerrado:

> *"Even as deforestation has plummeted, the area planted with soy in the Brazilian Amazon has more than tripled from one million hectares to 3.6 million in just ten years. This agricultural expansion without deforestation was possible because of Brazil's abundance of previously deforested lands, where agriculture expanded without threatening native ecosystems by improving yields and by adopting more efficient agricultural practices. This example shows that a more responsible agriculture is possible at a large scale."*
>
> ***(Bellantonio et al, 2017, no pagination).***

Throughout my interview with Mr Hurowitz in 2016, he spoke of his organization's goals of "*eliminating deforestation for commodity agriculture, and more broadly, to break the loop between agriculture and deforestation*". He saw the moratorium as the most successful attempt to date at reaching that goal, saying "*We need that kind of system elsewhere, it's really the only system in the world that I've seen on a grand scale that has*

produced documented reductions in deforestation". Mr Hurowitz felt that the only limitation of the moratorium was its limited geographical scope:

> *"I think the original sin of the moratorium was that it only applied to the Brazilian Amazon. We want to make sure these policies apply universally, across Latin America, Asia and Africa, for every commodity. That's the vision, that's what it's going to take to stop leakage of deforestation across borders."*
> ***(Glenn Hurowitz, Forest Heroes and Mighty Earth interview, February 2016)***

Most recently, in late 2017, a group of Brazilian and international NGOs launched a *Cerrado Manifesto* at an event in London hosted by Prince Charles' International Sustainability Unit and Unilever (Guardian, 2017, RTRS, 2017AB) The manifesto had a stark message:

> *"Brazil destroyed 18,962 km2 of the Cerrado between 2013 and 2015. In other words, every two months during that time, an area of the Cerrado the size of the Greater London disappeared. Deforestation rates of the Cerrado have exceeded those of the Amazon for over 10 years.…The main cause of conversion in the Cerrado is the expansion of agribusiness. Between 2007 and 2014, 26% of agricultural expansion in the Cerrado occurred directly into areas of native vegetation. In Matopiba alone – located in the states of Maranhão, Tocantins, Piauí and Bahia, and considered the main frontier of vegetation conversion – 62% of agricultural expansion replaced native vegetation. Recent analyses suggest that, between 2000 and 2016, 49% of pastureland expansion in Matopiba occurred in the Cerrado. An area that is converted for grazing is often later used for crops such as soy."*
> ***(The Cerrado Manifesto, 2017, pg.1)***

Interestingly, as this extract shows, the manifesto acknowledges the integrated dynamics of deforestation between cattle and soy. It went on to note that *"while enforcement of environmental legislation, including the Forest Code, is important, it is not enough to ensure conservation of the biome"* (Ibid, pg.2). The solution, the manifesto suggests, is to repeat the success of the Amazon moratorium in the Cerrado:

> *"The private sector has learned that it is possible to produce commodities while avoiding supply chains being directly associated with further conversion of natural ecosystems, as*

exemplified by the Amazon Soy Moratorium. Collaboration between different links of the production chain, together with government support and civil society monitoring, was the path taken by the Soy Moratorium, and should now inspire similar solutions in the Cerrado." ***(Ibid)***

Furthermore, it advocates a collaborative effort to enforce new regulatory mechanism that go above what is currently required by the Forest Code:

"Incentives and economic instruments need to be developed by both the government and the private sector to reward farmers' efforts to conserve areas of native vegetation, even when they are eligible for legal clearance. This collective and multisectoral effort will enable production to continue while…. guaranteeing adequate protection of the Cerrado's valuable natural ecosystems." ***(Ibid)***

Signatories to the manifesto include: WWF Brazil, Greenpeace Brazil, The Nature Conservancy, McDonalds, Marks and Spencer and Unilever. The RTRS come out in *"strong support"* of the manifesto (RTRS, 2017AB). Notably absent from this list however are the ABCD traders, as this extract from a group supporting the manifesto shows:

"Unfortunately, companies directly responsible for driving the destruction of these ecosystems - such as Cargill, Bunge, and ADM – have colluded to deny their customers the responsibly produced meat consumers demand. What's especially shameful about these companies' failure to act is that they are just being asked to repeat their own decade-long success through the Brazilian Soy Moratorium, where they have managed to expand soy production by six million acres without deforestation."
(Mighty Earth promotional email from Glenn Hurowitz, 30th November 2017)

As this development occurred so close to completion of this thesis, it is too late for in-depth analysis. Nevertheless, it shows the direction of travel for sustainable soy governance. The Cerrado seems to be slowly becoming a new area of focus for the international community, and the catalyst for action is framed around biodiversity protection. It is notable that the manifesto's sub-title includes 'native vegetation' destruction as well as 'deforestation' – seemingly an acknowledgement of the

importance of the Cerrado's non-forest biodiversity. It is also interesting that the manifesto is drawing the comparison with the Soy Moratorium, asking companies to repeat their achievement there. Speaking to Guardian, Mike Barry, director of sustainable business at Marks and Spencer went further, acknowledging the connection between the success of the moratorium and expansion in the Cerrado:

> *"In some ways, we have been the victims of our own success in trying to protect the Amazon rainforest…Some of the farming, for soy especially, has moved to the Cerrado."*
> ***(Mike Barry, quoted in The Guardian, 2017)***

The Cerrado's biodiversity is also beginning to get more recognition with policymakers in Brazil. Jose Sarney Filho, Brazilian Minister of the Environment, speaking during an event marking the tenth anniversary of the Soy Moratorium in 2016 had this to say about the Cerrado:

> *"Today, deforestation is much higher in the Cerrado than the Amazon. Increasingly, with the climate crisis, we need the forest standing, providing environmental benefits and keeping water safe. We can see how much this path has achieved in the Amazon, and plan for its evolution (into the Cerrado)"*
> ***(Bellantonio et al, 2017, no pagination).***

However, these moves towards more protections for the Cerrado are currently being resisted by many producers in Brazil, notably by ABIOVE who said this: *"There is not a crisis situation that justifies a moratorium in the Cerrado"* ***(Bellantonio et al, 2017, no pagination).*** It is not possible for this thesis to analyse the viewpoints further, but it is interesting to see new conflicts opening up, which perhaps might lead to a revived unity between ABIOVE and the ABCD traders.

The new Cerrado narratives being constructed, and the NGO strategies being employed, especially in the case of Mighty Earth's campaign against Cargill and Burger King, are strongly reminiscent of the narrative created by Greenpeace in 2006. As I want to show in the remaining sections of this chapter, though, this approach is deeply reductive when it comes to sustainability, because it implicitly presupposes that soy production can just be moved elsewhere. I will develop this further in section three of this chapter, but these extracts from Greenpeace and McDonalds are revealing the limitations of this approach:

> ***Interviewer:*** *What about the limitations of the moratorium? It doesn't cover the Cerrado?*
>
> ***Interviewee****: Well, I mean it's true, it's true. There is leakage and I think, well, look, if you wanted to go to the very big picture, about 70% of land globally is used either for animal grazing or for feeding animals, so a very small proportion of land is used actually directly to feed people. Now I think that the issue is that you cannot give over so much global land use to animals or animal feed, and at the same time, protect the forests and biodiversity, it's physically not possible, so if you were responsible for global land use, you would basically have to put a cap on the expansion of meat consumption and the expansion of land that's being given over for meat consumption*.
>
> ***(John Sauven, Greenpeace interview, July 2015)***

> *"The Cerrado is disappearing very fast! I think the biggest question is how sustainable soy is going forward, as the main protein source for animal feed. It's clearly not sustainable. In Europe, meat and bone meal was banned, and they switched to soy, and the production of soy has just been astronomical since then, but long term, I don't think it's sustainable to continue to grow it, if we want to produce the amount of meat that we're told we have to produce by 2050."*
>
> ***(Keith Kenny, McDonalds interview, August 2015)***

The extracts reveal that the challenge of the Cerrado is about more than how to protect its biodiversity, which is how it is being framed in many of the new initiatives. They show it is a challenge to agricultural production, to consumption choices, it is a challenge, in short, to soy.

6.2. Distant Agricultural Landscapes.

These are big challenges. To help understand the dynamics of the interactions between biodiversity protection and soy agriculture in the Amazon and Cerrado, I have been influenced by the concept of 'distance' in international production and consumption supply chains as defined by Thomas Princen (1997, 2002) and further employed by Jennifer Clapp (2015B). In this section, I briefly analyse how Princen and Clapp define distance, and how it can be usefully applied in this study.

In *The shading and distancing of commerce: When internalization is not enough,* (1997), Thomas Princen describes what he calls a *"political economy of degradation"* which focuses on *"the day-to-day decision making of key actors, especially producers and consumers, their interactions, and the environmental impacts of their decisions"* (pg. 235). This approach explains environmental change in terms of the ability of individual actors, such as companies or NGOs, to acquire gains or benefits, which although rational in the immediate context of decision making, *"the collective outcome is suboptimal, even destructive, for all"* (pg. 236). Rather than focusing on the *"nebulous notions"* (pg. 235) of political will, greed or ignorance as explanations for destructive environmental behaviours, or in-action in the face of them, Princen looks at how short-term economic and political costs and benefits, and long-term ecological impacts, are distributed amongst actors involved in decision making. Secondly, he looks at how strategic interactions between actors – to exploit or preserve biodiversity or natural resources - are based on these distributions, which lead to *"displaced of deferred depletion of natural capital"* (pg. 236).

To counter a political economy of degradation, Princen says there needs to be a *"political economy of sustainability"* (pg. 236), which assesses the full range of environmental impacts, and all of their sources, in order not to miss any uncounted causes of degradation, and any unaccountable actors. Crucially he argues that these impacts should not be seen as unintended consequences or side-effects of production, but as key parts of the *"competitive business strategy"* (pg. 236), employed by production actors, and the result of both production and consumption decisions made by actors. This approach begins to reveal how different actors think about ecological outcomes of their decisions, and how political, economic and informational asymmetries of power between actors can contribute to those outcomes.

Princen asserts that for businesses, *"the ideal economy is a frontier economy" (*pg. 236), which he defines as a region or landscape lacking in jurisdictional control or political consequences for actors in their use of the regions resources of that region. He argues that frontier economies are seen as always replaceable by another frontier if that situation changes, say by resources becoming depleted or the political situation becoming less favourable. There is a sense from this definition that ecological outcomes, or perhaps to put it differently, taking responsibility for ecological outcomes, is something that actors operating in a frontier economy rarely, if ever, have to contend with.

Even if physical frontier economies cannot be found, Princen argues their dynamics can be artificially created through political actions, such as a favourable policy environment, and supports like financial subsidies. Secondly, they can be encouraged through

processes which displace or externalise the ecological footprints of production onto different actors, and different regions, thereby giving the appearance of limited ecological impacts. Princen describes this as functioning by *"obscuring the true consequences of such production and separating economic actors"* (pg. 237). Interestingly Princen also states that the construction and functioning of frontier economies are further supported when production activities cross jurisdictional boundaries, such as national borders, because this helps to dis-embed production (and the actors responsible for it), from any regulatory institutions or controls that might seek redress for ecological outcomes found to be unfavourable. Princen suggests however, that operators of jurisdictional control, typically states, might not uphold their responsibilities if they can benefit from, for example, increased taxation revenue or other financial and political benefits of frontier economies . From this analysis, we can see a dynamic where business actors, in implicit or explicit cooperation with states, are drawn to investing in regions where the potential economic benefits of natural resource use are high, and where the consequences, ecological or otherwise, are low.

From a *"planetary boundaries"* perspective (Rockström et al, 2009) frontier economies, either in their physical or constructed form, and their associated ecological resources are not endless, as we live on a planet with finite resources and ecosystems. However, they can appear to be when the full environmental impacts of production choices are not taken into account, and this is crucial to understanding the workings of political economies of degradation. To demonstrate how these workings function in practice, Princen goes on to define *shading* and *distancing* as two dynamics of political economies

of degradation, that can give the impression of both limited ecological impacts related to production, and endless resources on which that production can draw.

Shading is when some environmental impacts of actors seem to be, or are made to be invisible, or shaded, and therefore unaccounted for, usually as a result of supply chain structures, or strategic opportunism of companies. This shading makes it harder to define who is responsible for environmental impacts, or even to understand all the impacts and to distinguish them. The impacts might, for example, only become known and therefore visible in the long term, or they might only impact people who are not in a position to enact any form of redress. Princen explains this as *"due to scientific, cognitive, and cultural lapses, that time might be days, decades, or in the case of fossil fuels and global warming, even centuries. During this time, the costs are real but invisible"* (pg.239). Therefore, there can be a risk of invisible ecological impacts, but visible benefits on company profits, GDP, and I would add, on the environmental reputation of production actors.

All of this can sound, as Princen notes, (pg. 241) like the normal operation of business practices associated with production, driven by economic efficiencies and profits, and seeking strategic advantage in resource use and regulatory environments. The benefits of that production are often enjoyed by a variety of actors, and ecological impacts are sometimes intentional on the part of companies, and sometimes inadvertent. Princen characterises this kind of behaviour as often associated with larger companies, who are horizontally and/or vertically integrated, across different supply chains and in different

regions, and who have the capital and infrastructure ability to move on to the next *"frontier"* when they need to (pg.241).

So far, this approach has focused on the actions of producers and governments, but, as Princen says, political economies of degradation also need to *"account for consumers propensities to externalise costs"* (pg. 243) and the ecological outcomes associated with their consumption choices. Princen suggests that most consumers will be making those choices with access to only incomplete information about the production associated with things they buy, and also, they will be making decisions with financial and other practical or cultural constraints. They are also more likely, he argues *"to be insulated from the consequences of their choices"* (pg.243), and that this insulation partly occurs because of what he defines as *distancing.* Princen defines *distancing* as *"the separation between primary resource extraction decisions and ultimate consumption decisions"* (pg. 243-244). This occurs across various dimensions – geographic and cultural - and is characterised by uneven power relations or bargaining power, usually between multiple actors in elongated supply chains. Similarly to shading, *"the environmental impacts of these consumption and production decisions are not always obvious, intended or even known to decision makers"* (pg. 244).

The geographic element of distancing is often the most obvious to detect. The physical distance between commodity production and its ultimate consumption makes it harder for consumers to understand production practices and their ecological impacts. It is also makes it easier for companies to conceal these conditions in ways they wouldn't necessarily be able to if the physical distance was shorter. This is closely linked to

cultural distance, consumers tend to know less about the lives and conditions of the people who produce the things they buy, and how they are made. These two dimensions of distance, Princen argues, means there is less *"feedback"* (pg. 244) information available for consumers about the social, economic and ecological consequences of their consumption, and higher chance those consequences will be hidden or misrepresented.

Princen also argues that different amounts of bargaining power, and supply chains with a high number of intermediaries contribute to distancing. In a monopsony arrangement, buyers have more power to choose which suppliers they work with, which can pressure producers to make sure their costs are low and therefore favourable to the buyer. This can lead to natural resources being miss-used or over-used in attempts to find efficiencies. In a sense, the buyer is externalising any ecological consequences of this by applying pressure, directly or indirectly, to producers who are the ones who actually make, and therefore can be held accountable for, those resource decisions. Princen believes, this sense of externalising ecological costs is especially applicable in supply chains with lots of intermediaries, such as processors, traders and retailers, who have potentially different levels of informational feedback on the ecological costs of production, and different motivations guiding their production and buying decisions. Put differently, intermediaries may not understand the ecological risks in the same way, and the number of intermediaries in a production chain increases the risk of information, or feedback, being missing or shaded, either from other intermediaries of from consumers. The result is less accountability and therefore the potential of less restraint in resource use. Long chains also make it easier for individual actors to diminish their own

responsibility (externalise) for ecological costs, and for consumption choices to be obscured from production choices. In this context, Princen asserts *"even the most committed environmental altruist or the broadest thinking global citizen cannot know of, or have influence on, production and selling decisions at a distance"* (pg.250).

Princen argues that sustainable production requires effective feedback on all ecological costs associated with production and consumption, and the correct allocation of responsibility on to those actors responsible. It is not impossible to overcome the problems of distance in long supply chains, for examples Princen cites *"the alternative trade arrangements between northern food co-operatives and southern communities of growers"* as examples when distant supply chains have more equal distribution of bargaining power and greater cultural understanding between (self-selecting) producers and consumers. However, in supply chains where this is not the case, and where informational feedback loops are less apparent, and when there are less regulatory consequences for environmentally destructive behaviour, *"firms and states undermine the very material and social basis on which their enterprise rests"* (pg. .251).

In her article, *Distant agricultural landscapes* (2015B). Jennifer Clapp develops Princen's concept of distance to explain specifically about how it applies to the dynamics of agricultural supply chains and food systems. She argues that *"the ecological and social characteristics of agricultural landscapes are profoundly influenced by the food system in which they are embedded"* (pg. 305). Distance for Clapp is both physical and conceptual, and she pays particular attention to how distance constrains feedback mechanisms between producers and consumers, obscuring and externalising the ecological costs

associated with them, creating 'shadows' of consumption, in reference to Dauvergne's (2010) concept, which *"result when consumption activity in one part of the world has a discernible environmental and/or social impact that is experienced in another part of the world"* (pg. 309). This, she believes constrains environmental protection policymaking because certain informational feedback is absent or obscured, which, as she explains:

> *"complicates efforts to draw clear lines of responsibility between a specific ecological cost and specific actors. This inability to be precise about the actors responsible for certain outcomes opens space for competing interpretations about cause, effect and responsibility. This uncertainty enables powerful actors to shape public discourse in ways that cast themselves as the solution, for example, rather than the cause, of certain environmental outcomes. Efforts to improve sustainability of resource use and consumption are especially difficult in these circumstances, because a 'business as usual' approach tends to dominate."* ***(pg.309)***

Clapp is specific about the forms of distance in agricultural supply chains and food systems that have made particular impact - industrialisation, globalisation and corporatization of dominant forms of agriculture have led to detachment from natural growing patterns and seasons, complex sets on inputs, practices and technologies, that all obscured. As Clapp writes *"a tomato on a supermarket shelf does not reveal this information itself, nor do most typical supermarkets provide it to customers"* (pg.309). The complexity of globalized supply chains has brought bigger geographic and cultural distance, and what Clapp calls the *"corporatization"* of agriculture *"has introduced new differentials in bargaining power, as large transnational companies have gained control of various segments of agricultural value chains in ways that give them leverage over others".* This means that *"linking a specific food item to a specific environmental outcome in a particular place and attributing that outcome to a particular actor who might be held responsible, is virtually impossible"* (pg.310). Quoting Iles (2005), Clapp says this has led to a situation where *"the underlying structural causes of environmental*

damage in industrial agriculture are missing because they are too remote for most people, even inside the production system, to visualise or to interact with'' (Iles, 2005, pg. 166).

Finally, Clapp characterizes the politics of sustainability in food systems as deeply influenced by distance and constrained by the complex economic interactions that shape production and consumption decisions in elongated supply chains. I find Princen and Clapp useful for understanding the dynamic interactions between the Amazon and Cerrado. In this next section, I show how they can be used to explain connections between 'sustainability' principles and policies in the Amazon and soy production in the Cerrado.

6.3. Political Economies of Degradation in the Amazon and Cerrado.

As I have shown in chapter two, the dynamic of externalising costs and ecological impacts of soy production is sometimes characterised as the 'leakage' of production into other regions. This is how the problems of soy agriculture in the Cerrado, outlined in section one of this chapter, are commonly understood. What is actually meant by leakage is varied and is often more associated with the moratorium. There is a perception that after 2006, more soy was produced in the Cerrado that would otherwise have been produced in the Amazon, either through expansion by land conversion or through use of already cleared or degraded lands. Thus, a deficit in soy that resulted from the moratorium was fulfilled by more production in the Cerrado.

Leakage can also be used to understand the dynamics between deforestation for cattle and deforestation for soy; that producers in the Amazon, unable to deforest their lands to grow soy switch to other crops or use their land as pasture, as this extract suggests:

> ***Renata Nogueira**: The really interesting issue is that the guys that have deforested, we cannot buy from them because there are out of the moratorium, we can notice that they keep deforesting, it means that they are selling for somebody.*
> ***Paulo Sousa**: That's the thing, what I don't like about the moratorium is that it's exclusive. You are forcing people to become marginalized. If you're forcing them out of the market, so he needs to find other ways to fight for his survival. If he is planting soybeans, he's going to be selling probably to small grain dealers and then, somehow, those beans will end up in China, or he's going to be planting corn to be used domestically.*
> ***Interviewer:** Or switch to cattle?*
> ***Paulo Sousa**: Yes.*
> ***Interviewer:** Or grow another crop?*
> ***Yuri Feres**: That's what they do.*
> ***(Cargill Brazil interview, August 2015)***

As with deforestation, the dynamics of leakage are seen as complex and can vary due to market demand and land prices across the regions. Leakage can be confusing, and definitions rely on the complex relationships between direct and indirect land use change. Certainly, soy production has expanded in the Cerrado since the introduction of the moratorium and the RTRS standard, but it is also worth noting, as I have shown, that soy production in the Amazon has also gone up since 2006, as farmers have intensified on land they already own. However, my research shows that the situation is more complex than this. The centre of soy production in Brazil is the Cerrado, with relatively little *direct* land use change attributable to soy in the Amazon, and any *indirect* land use change caused by soy not being produced in the Amazon being outside of the reach of both the RTRS and the moratorium. Therefore, I argue that the dynamic is not one of leakage, which suggests an unintended consequence, or at least something that is not

the responsibility actors of the case studies, but is in fact, a crucial part of the design and functioning of the moratorium and the RTRS:

> ***Interviewer:*** *There is this idea of leakage of production from the Amazon into the Cerrado. Is that something that you perceive happening?*
> ***Interviewee:*** *Well, that's actually an empirically verifiable question. The moratorium kicked in after 2006, so let's look at the statistics of land cover change in the Cerrado since then. The data is imperfect, it's not a continuous dataset. There isn't a sort of integrated bio-level monitoring system the way that there is for the Amazon, but it's pretty unambiguous and there has not been much leakage. And actually, it's unsurprising that there wouldn't have been much leakage because there was never more than about 3 or 4% of Brazilian soy grown in the Amazon in the first place, so there wasn't much to leak. That's one of the enormous paradoxes of this whole debate, is that soy production in the Amazon has been incredibly visible internationally when it actually is insignificant in terms of overall fraction of Brazilian soy production. The Cerrado always has been and always will be the most important area of soy production, and certainly far outweighing the Amazon. theoretically if soy did expand a great deal in the Amazon then that would be an issue, but all the data suggests it hasn't happened*.
> ***(David Cleary, The Nature Conservancy interview, November 2015)***

Put differently, the creation of sustainable soy programmes in the Amazon *depends* upon continued production and expansion into the Cerrado. This is a key difference. The perception that the Cerrado has simply been "left out" of the case studies is wrong, it is central to their success, and has in this sense, been 'built in' to their design, and along with that, so have the environmental impacts of soy production and consumption discussed in chapter three. Instead of leakage, the interactions between the different regions of the Amazon and Cerrado, and their environmental resources, were intrinsically linked in the process of creating sustainability regulation in the RTRS and Soy Moratorium. What has been created is a political economy of degradation, which is the result of biodiversity protection being used as the key tool or indicator for sustainability in both case studies, and by the neutral approach taken towards soy's wider ecological impacts. In the next sub-section I will explain how this works.

6.3.1. The Case Studies as Feedback Mechanisms.

Both the Soy Moratorium and the RTRS work by forging a narrative connection between soy and biodiversity destruction, particularly in the Amazon. This can be seen both in Greenpeace's campaign linking Amazon deforestation with soy production, and in the framing of soy as primarily a land use change issue around protection of HCV areas in the RTRS. In both cases, it was NGOs who took the lead in forging the connection, on problematizing soy production around deforestation. To use Princen's approach, they designed a "feedback mechanism" which created, firstly, a negative feedback (the Greenpeace campaign was certainly designed to damage the reputations of the companies it targeted) about companies' behaviour around deforestation. Crucially, they then enacted a positive feedback mechanism, in the forms of the moratorium and RTRS agreements, which offered reassurances to buyers and consumers of soy.

In one sense this is of course positive, it is a way to overcome conceptual and informational "distance". NGOs acted as proxies for consumers who aren't able to trace the movements of deforesters in the Amazon. They showed consumers what was being done, and this led to change. In 2006, the environmental impacts of soy in the Amazon were distanced from end consumers, and even from companies further down the supply chain. Greenpeace's campaign worked by linking soy production to the Amazon, by providing "negative feedback" that made producers and traders act. The moratorium was formed as a means to demonstrate positive feedback, or environmental responsibility, in the form of regulation that ensures soy production was no longer harmful, and that the Amazon was protected. Both case studies work by re-establishing

trust in the supply chain along environmental impacts, specifically offering guarantees around zero deforestation. The case studies benefited both NGOs like Greenpeace, which oversaw the successful introduction of forest protection policies that it campaigned for, and for traders like Cargill and their customers, who were able to re-establish trust, and crucially control, in their supply chains. Together they generated a much more positive narrative that provided transparency and showcased their leadership in environmental protection and responsibility.

The key instrument, or 'feedback message' was the guarantee of verifiable 'zero deforestation' offered by both case studies. This was what was acceptable to international markets, to soy buyers like McDonalds and Marks and Spencer, and to the NGOs. This is why the zero *legal* deforestation offered by the Forest Code was not acceptable. "Absolute zero", in Francisco Oliveira Filho's words, was what the market wanted, and what fitted within global governance norms. The message was the successful 'decoupling' (Macedo et al, 2012) of biodiversity destruction from soy agriculture, or as Glenn Hurowitz put it to me, zero deforestation agreements *"break the loop between agriculture and deforestation"* (Glenn Hurowitz, Forest Heroes and Mighty Earth interview, February 2016).

My research shows however that this feedback is inaccurate or operates as highly reductive approach to sustainability. My work shows that the zero deforestation or biodiversity protection approach to sustainability of the case studies only works by, to use Princen's term - "externalising" the costs and wider ecological impacts of soy production. They "shade" the impacts of soy in the Cerrado, which remained, at least

until very recently, largely unknown to most people and was not high on the conservation agenda of environmental NGOs. This means that the ultimate consumers of livestock products fed on soy grown in the Cerrado are still insulated and unaware of the true environmental costs of their consumption. In practice, both case studies have served to 1) distance or externalise ecological impacts of soy supply chain, and 2) placing responsibility, and the onus for action, as I have shown in chapter four, onto soy producers. The positive feedback of zero deforestation has become conflated with producing sustainable soy, and the success of this message has further distanced the wider environmental costs of soy production in Brazil, specifically in the Cerrado region.

In this context zero deforestation becomes a strategic interaction between ABCD traders and their buyers with environmental NGO partners. This dynamic explains some of the scepticism, particularly about the moratorium, that I discovered in my interviews regarding the motivations of companies who got brokered the 2006 agreement:

"My personal opinion is that the moratorium has been a distraction from what has been the highest deforestation rate in Brazil, which is not in the Amazon but in the Cerrado. It was easy for the companies to sign something on the Amazon, because it was not the main region of production for soy, or the main expansion region, the main expansion region was in the Cerrado. By talking about the moratorium, they avoided the discussion on the Cerrado, and that's where we saw the real problem of the expansion of soy."
(Augustin Mascotena, RTRS interview, July 2015)

***Interviewee**: The moratorium actually is a very good example of how the market can really affect production. The soy from Amazon is less than 5% of the total amount of soy produced. It was very easy for the traders to achieve their goal in the Amazon. When we ask them to change to Cerrado, they don't want to talk of all this.*
***Interviewer:** Who doesn't want to talk about it?*
***Interviewee**: The market. The market doesn't want to talk about this because they are afraid that maybe they're not going to have enough soy in this case.*
(Cynthia Cominesi, Clube Amigos da Terra interview, June 2016)

Both interviewees suggest that the agreement on the moratorium was as much about protecting soy production in the Cerrado as protecting forests in the Amazon. By not including the Cerrado, the moratorium did not include the most important soy producing region in Brazil. This made it, according to the second interviewee "easy for them" to achieve a moratorium in the Amazon. Two other interviewees voice similar opinions about the effectiveness of the moratorium to tackle the problems of soy production, suggesting that it was something they agreed to more to avoid reputational damage:

Interviewee: *(talking about the moratorium), so that's what we call here "for English people to see" - para as pessoas Inglesas verem!*
Interviewer: *That's what you call the moratorium?!*
Interviewee*:(laughs) Yes! We say, "oh we do the soy moratorium", and then everybody's like "wow, great, you're doing the soy moratorium!" but in essence, what does it mean? It's just something for people to say. What is the real impact of this moratorium on the whole soy trade? on soy production in Brazil?*
I think it's para as pessoas Inglesas verem!
(Harry van der Vliet, Solidaridad interview, September 2015)

Interviewer: *I think one of the advantages of the RTRS over the moratorium is that it covers the Cerrado as well as the Amazon.*
Interviewee: *Agreed, the moratorium is something that the companies, they did, mainly for covering their derrières! (laughs).*
(Terence Baines, Unilever interview, April 2016)

Taken together, this suggests that instead of production and continued expansion in the Cerrado being seen as a shortcoming, or unintended consequence of the moratorium, it should be seen as integral to its design and success. It is worth noting that each of the four interviewees quoted above have strong ties to the RTRS, which they felt was at least trying to do more than moratorium to protect the Cerrado. How effective it has been at doing that is up for discussion though, as little data exists on how much RTRS

certification has had an effect in the Cerrado. Therefore, zero deforestation has worked to facilitate production in the Cerrado, and with it, the ecological consequences of soy.

Klink and Moreira (2002) discuss how *"the perception of abundant land has driven most of the land use changes in the Cerrado in the last 40 years"* (pg.82). Arguments for the use of degraded land was frequently referenced by interviewees:

> *"When we talk about Latin America, we are talking about 550 million hectares of pastureland, is this enough? Are we using them the best way? I say no. We are underusing the pasture land, that's the focus, planning helps us to see where these areas are and use them in the wisest, the best and the most sustainable way. These remaining areas, these areas that are degraded, could be used for agriculture."*
> ***(Benito Guerrero, The Nature Conservancy interview, April 2016)***

> *"I think that we will continue to produce a lot of soy, it's a country that can produce two and a half crop a year, soy is still, we have all the logistics and all the infrastructure to produce it, good land to produce it."*
> ***(Terence Baines, Unilever interview, April 2016)***

In particular, during my interview with ABIOVE, the interviewee expressed what I found to be fairly typical views on the various demands soy production makes on land. When I asked whether European fears that the removal of the moratorium would lead to a return of large-scale deforestation in the Amazon, this was the response:

> ***"****People fear it but it doesn't make sense, we don't need that area, we don't need it. I worked in the livestock sector before working on soy. We don't need even half of the area we are using for the livestock, we don't need it. If we improve only one step on the yield on the productivity, we can reduce more than half the area of livestock pastures, so we don't need the Amazon area to produce everything we do, we just need to work on the productivity, on the technical systems, on technology application. Brazil doesn't need to open areas to produce, also because agriculture is going to occupy the livestock areas that are not being used anymore."*
> ***(Beatriz Domeniconi, ABIOVE interview, September 2015)***

Here the interviewee is making the argument that deforestation should not be viewed as a risk because Brazilian *"don't need"* the land, something she repeated several times

in the interview. Instead of needing to deforest, the interviewee talked about the potential of agricultural intensification, improved productivity on existing land, improvements in yield and the technological solutions to meet the future agricultural expansion of soy.

Continued production of soy in regions and landscapes where biodiversity protection is not deemed to a priority, is also a solution offered in literature. Gibbs et al (2015) calculated that there were 42.5 million hectares of previously cleared land in the Cerrado alone, which they argued was enough to triple production (pg. 378). However, the arguments for the use of degraded land for soy presupposes that soy's continued production is unproblematic from an environmental perspective, which as I have shown in chapter three is not the case. The ecological impacts of soy production, even when it does not involve deforestation, make significant contributions to global climate change. Secondly, the main purpose of soy production is livestock production, they are intrinsically linked, and this also plays a major role in unsustainable patterns of global meat consumption. This is the problem that both John Sauven from Greenpeace and Keith Kenny from McDonalds elude to earlier in this chapter when they talk about the need to reassess patterns of land use.

To generalise, the conceptualization for sustainability in these arguments is a calculation of biodiversity protection zones, intensification and expansion onto degraded lands equalling sustainability with increased production. This is seen as a win/win. This win/win narrative is embedded with zero deforestation agreements and in both case studies. The fact that soy production has increased is seen as a major marker of their

success. The RTRS in particular has the explicit goal of *"market transformation"* and has created mechanisms of financial compensation for certified production designed to stimulate further production and expansion. The moratorium's design introduces a sustainability verification for soy that does not challenge production outside of the Amazon, or existing production in the Amazon.

Put differently, the win/win narrative is a way to balance high and increasing global demand for soy with biodiversity protections. In this sense zero deforestation principles represent an attempt to control the environmental impacts of demand in particular regions. This win/win approach should be challenged in terms of how to measure sustainability:

1) Degraded land arguments are only viable until areas for expansion start to become valued for their biodiversity, as is happening in the Cerrado. When that happens, more degraded land needs to be found in other regions.

2) Degraded land arguments do not consider the wider environmental impacts of intensive soy agriculture that occur even where there is no land conversion, and they don't problematize the impacts of soy's role in meat transitions.

In short, degraded land arguments feel like a continued attempt to escape Rockström's et al *planetary boundaries*. They don't address the finitudes of land and resources and the tough decisions to be made on what we use land for, as the extracts of interviews with Greenpeace and McDonalds suggest in section two. In both the case studies and zero deforestation policies work by distancing demand, and its associated environmental impacts in regions like the Cerrado, externalising them, so they become increasingly invisible. The Cerrado is, or was, invisible in debates about what sustainability for soy

would mean. If we see the case studies as responses to market threats, they become ways to sustain market access, to sustain demand, and to protect soy actors from reputational damage so they can carry on making these products. They are a strategic tool and the continuation of production in the Cerrado is central to this.

6.4. The Limits of Biodiversity Protection Approaches.

Key to the regulatory design and enforcing structures of both the RTRS and the Soy Moratorium are the fact they are dependent on continued and expansive soy production in order to function. In this sense, I argue they have, as I have shown in chapter four, conceptualised soy production as a 'vehicle' to drive their sustainability objectives. As I have shown in that chapter, the Soy Moratorium functions by withholding market access to producers in the Amazon who do not adhere to its rules. Primarily, it is soy traders who oversee this enforcement process by refusing to purchase soy grown on land deforested in the Amazon. However, their presence in Brazil is dependent upon the financial viability of the industry they represent in the country. This means they are only able to uphold zero deforestation principles in the Amazon because they can profit elsewhere.

A key difference between the moratorium and the RTRS, is that the RTRS does include part of the Cerrado in its high conservation value mapping, but in many ways, it is even more dependent on continued production than the moratorium. The goal to create market transformation and reward certified producers for responsible production" through the credit trading platform puts continued production at the centre of how the RTRS works. Linking back to Princen and Clapp's idea of distancing, the scepticism in the interviews about the moratorium is a result of the distancing of production from claims

about environmental responsibility. Interviewees above perceived that the moratorium is successful because it doesn't include the bulk of Brazilian soy production.

In order to enact zero deforestation principles in the Amazon, the actors in the Soy Moratorium rely on the Cerrado to be unproblematised. This interaction highlights a paradox in the approach of the case studies. Their construction of sustainability around production is contradictory, because the majority of production does not take place in the Amazon. This has happened because forest protection has been used to drive sustainability goals, and in order to make them work, other regions have been marginalised. The case studies have created a political finitude around forests which reifies forest protection in the case study discourses around sustainability which actively ignores agricultural GHG emissions and the environmental impacts of soy's central role in global meat transitions. The result is that we see two landscapes emerging in the structures of the case studies; The Amazon as a landscape of sustainability, the Cerrado as a landscape of demand. Ultimately, this reveals a sustainability paradox: Unsustainable production (and consumption) are built into the zero deforestation regulation of soy agriculture in Brazil. This is further highlighted by the "win/win" of degraded land inherent in zero deforestation principles. That production has actually increased in areas where it is still permitted suggested a very limited approach to sustainability based on preventing deforestation in the Amazon.

For the landscapes covered by zero deforestation agreements, there are unquestionably some environmental gains, but I question those gains in two ways – Firstly, in the case of Brazilian soy, the area protected by zero deforestation (the Amazon) was not the

landscape most at environmental risk from soy. Secondly, there is a risk that any environmental gains achieved will effectively be wiped out as demand rises. In my conclusions, I am sensitive to the perspective put forward by Glenn Hurowitz during out interview:

> *"I don't think we would say that the campaigns against deforestation are going to solve all the problems with agriculture or, as some would want, address all of capitalism's inequities, but you know, if we save forests, that's a good thing in its own right!"*
> ***(Glenn Hurowitz, Forest Heroes and Mighty Earth interview, February 2016)***

Preventing deforestation is undoubtedly a key policy challenge and central to climate change mitigation. What I hope to show however, is the consequences for trying to achieve this goal through agrifood commodity chains.

Chapter Seven: Producing Soy to save the Planet?

Interviewer: *Is soy the best use of your land?*
Interviewee (after a very long pause): *Not……. necessarily.*
(Elaine Corsini, Mato Grosso Ministry of Environment interview, September 2015)

It is now just over ten years since the RTRS and Soy Moratorium were initiated. This thesis has shown that while much has changed, the development of sustainable soy governance is ongoing, and because of this, it cannot provide *final* conclusions about their success. Instead, this research offers a critical investigation of the rationales behind how sustainability was envisioned and acted upon in the case studies. In this last chapter I begin with a review of the previous chapters, then I draw these findings together in order to discuss the 'big picture' of soy governance, the challenges ahead and further avenues for research, as well as my reflections on the research process as a whole.

7.1. Review of Findings.

In chapter two, I showed how policy paradigms of sustainable development have come to dominate global governance of the environment. I demonstrated how implementation of the market-based solutions inherent in this approach have served as an invitation for non-traditional actors, such as private companies and civil society organizations, to enter into policymaking processes. Moreover, as the failings of public institutions in tackling climate change become more apparent, I showed how non-state actors are increasingly taking leadership roles in this area. Finally, I discussed how within this framework, the elimination of tropical deforestation has become a politically powerful sustainability norm and policy imperative.

Splitting this analysis into two sections, I first outlined some of the main concerns found in the literature around the increased role of private actors in environmental governance. I show how the case studies, particularly the RTRS, have been assessed in terms of their ability to operate as broadly participatory institutions with democratic legitimacy in policymaking spaces. As previous research (Garcia-Lopez and Arizpe, 2010, Elgert 2012, Schouten et al, 2012, Baletti, 2015) has revealed, both the moratorium and the RTRS fall short of these measures. Their memberships are exclusive and dominated by certain groups of actors, making them most responsive to the interests of international agribusiness and the strategic goals of environmental NGOs. Much of this literature has concluded that lack of inclusion has narrowed and delegitimized the governance potential of the case studies. They are seen to serve the needs of existing supply chains, and in the process, they marginalize concerns about the social and ecological consequences of soy production in South America.

Despite these negative conclusions, this literature demonstrates there is a growing expectation that companies who operate in international markets will develop and implement sustainability policies. This expectation has been utilized by NGOs such as Greenpeace and WWF, who strategically target 'big brands' like McDonalds and Cargill, putting them under enormous reputational pressure to reduce their environmental impacts. While I am sensitive to the warnings in this literature of the potential for private governance mechanisms to act as corporate 'greenwashing', I found this perspective unsatisfying. The RTRS and the Soy Moratorium exist as governance institutions and have had, to varying degrees, enormous impacts on sustainability narratives around soy in Brazil. I did not want to simply 'write off' their potential. In this

thesis, I took a pragmatic approach to their legitimacy, choosing to focus instead on how they had defined and enacted sustainability, and how much they represent successful environmental interventions.

Lastly in chapter two, I outlined some of the main debates on deforestation policy in Brazil. There is a huge literature in this area, so I limited my focus to understanding the ecological-economic dynamics of soy related deforestation. The literature revealed soy and cattle to be integrated drivers of land use change operating across different landscapes and commodity chains, with relatively little deforestation *directly* attributable to soy taking place in the Amazon. I put this in the context of state deforestation policy in Brazil, specifically the governments interventions post 2000, to reveal a picture of a proactive but sometimes ineffective response that helped to pave the way for private interventions. In this part of the literature, both case studies have primarily been assessed for their effectiveness (or potential effectiveness) in tackling deforestation (e.g. Nepstad et al, 2008, Macedo et al, 2012, Gibbs et al, 2015). The moratorium is seen as having had the greater impact and being more widely accepted by market actors, although this might be because there is surprisingly little data available on how RTRS implementation has affected deforestation rates.

In chapter three, I use the literature analysed in the previous chapter to build an assessment of the case studies from a different perspective. As I explained in chapter one, I wanted my analytical lens to be the materiality of soy production and consumption. Therefore, in this chapter I explore the complex and largely obscured role soy plays the global food system. I show soy's function in supply chains as a *"flex crop"*

(Oliveira and Schneider, 2016, pg.168), putting particular emphasis on its use as an animal feedstock in what has been characterized as a global *"industrial grain-oilseed-livestock complex"* (Weis, 2015, pg.298). I also show how this *"complex"* was developed and facilitated by the 'ABCD' commodity trading companies. I connected the expansion of soy agriculture in Brazil to patterns of meat consumption in Europe and China, showing how soy production is overwhelming driven by increasing demand from livestock production. I also broadened the geographic focus of analysis to include the Cerrado region of Brazil, where, as I show, most Brazilian soy production takes place.

Finally, in this chapter I draw on literature about the interconnected environmental problems of soy monocultures. The intensive agricultural practices involved in soy production have been a major contributor to environmental degradation and a significant contributor to anthropogenic climate change. In particular I argue that soy's use as livestock feed means it is directly connected in the substantial environmental impacts of livestock production, one of the biggest single causes of global climate change (Steinfeld et al, 2006, Gerber et al, 2013). I conclude by showing that the ecological footprint of soy extends beyond Amazon deforestation and argue that the ecological outcomes both of soy production and livestock production should be key considerations when assessing the sustainability potential of the case studies.

I contrast this view in the next chapter with an analysis of how sustainability has been defined and constructed in the Soy Moratorium and the RTRS. I show how the main driver of both was controlling deforestation in the Amazon. For the companies involved, there was a need to mitigate the potential reputational risk of being associated with

deforestation. For NGOs, there was an opportunity to achieve their conservation goals while also extending their regulatory role. To make action possible, NGOs used established norms of forest protection to coerce (Soy Moratorium) and invite (RTRS) companies into acting. However, to establish cooperative partnerships between actors with disparate, potentially opposing interests, a shared agenda needed to be formed. I conclude this chapter therefore by arguing that a *"politics of agreement"* (Hecht, 2011, pg.7) was reached, where the case studies' conceptualisations of sustainability didn't include challenging the wider ecological impacts of soy production. Instead we see soy problematized only in relation to deforestation and biodiversity protection concerns Furthermore, I argue that in both case studies, soy demand has become part of the solution, and that production is a vehicle for achieving sustainability goals, in effect soy utilised as a tool for sustainability.

In chapter five, I bring the situation up to the current day, looking back on how the design of both case studies has been implemented in practice. I draw attention to the proliferation of zero deforestation agreements in commodity supply chains, and I demonstrate how this has become a key area of conflict between international actors. There are some who favour expanded zero deforestation while others want the Forest Code, with its allowance for legal deforestation, to be the primary policy instrument moving forward. This dynamic has also revealed an emerging split between the ABCD traders and ABIOVE, the organization meant to represent their interests in Brazil. This chapter focuses on the Amazon. It shows the changing governance landscape there, with strict controls on deforestation leading to a reduction in land use change that has corresponded with increased levels of soy production in both the Amazon and Cerrado. I

conclude that the interests of international actors, and their preference for zero deforestation approaches are currently determining the direction of travel. Brazilian soy producers, whose legal rights to deforest have been overridden, have been excluded from the process. They are left with a choice between participating in the case studies or operating outside of their remits.

In chapter six, I turned my focus to the Cerrado. Firstly, I showed how biodiversity protection in the Cerrado is becoming increasingly important to certain actors, then I employ the concept of *distance* in agricultural supply chains to show how the ecological impacts of soy production are hidden by the case studies. I do this by arguing they work by providing positive *feedback mechanisms* about Amazon protection that externalize or obscure the full ecological costs. I end this chapter by challenging biodiversity protection as a tool for enacting sustainability in global commodity chains. I argued this strategy has placed the geographic focus for attention on a landscape where the perception of soy production is greater than the reality, where the link to soy, as I argue, is more political than ecological.

The result of this is a political-ecological interaction of environmental protection between the Amazon and Cerrado, with zero deforestation in the Amazon being pursued because of the potential for continued agricultural expansion in the Cerrado. In this sense, the Amazon and Cerrado are linked in the process of creating sustainability regulation. They need each other to work. Taking this further, the case studies have become mechanisms which give license to continued expansion in the Cerrado. Their focus on the Amazon, and on forest protection have externalized and marginalized the

ecological outcomes of production. This led to scepticism, as demonstrated in chapter six, from interviewees over the motivations of companies to act in the Amazon.

In summary, this thesis argues that the actors in the RTRS and Soy Moratorium have utilized soy production as a vehicle to achieve their sustainability objectives. Both case studies rely on the continued production and consumption of soy in order to work. In this sense, demand for soy has been built in to their design. In effect, this has meant that the facilitators of demand are now also environmental regulators and stewards. Their stewardship has given them more moral authority, more legitimacy to act, but it depends upon the continued presence of demand. Added to which, soy's primary use for livestock production makes it hard to see how the case studies have reduced the ecological footprint of soy. Instead, as Kartensen et al (2013) and Lathuilliere et al (2014)'s work implies, biodiversity protection measures change the shape of the environmental footprint rather than mitigating it.

7.2. The Future of Soy Governance.

From this review of findings, it's possible to draw bigger conclusions. The chapters of this thesis have shown that soy governance is characterised by fragile alliances between the different actors, whose multiple agendas are both pragmatic and contradictory. The Brazilian environment ministry for example, is implementing the CAR property registry and the revised Forest Code while also being an active member of the Soy Moratorium. In turn, the moratorium requires its members to go 'above' Forest Code regulations, which some argue challenges state administrative sovereignty. Similarly, traders like Cargill are actively supporting Brazil's application of the new Forest Code even though

they don't believe it to be robust enough to control deforestation. ABIOVE, which represents traders and processor's interests in Brazil, is opposed to the moratorium supported by its own membership. Traders are formally part of the RTRS but are mostly passive, even reluctant advocates of its approach to sustainability, characterising it as little more than an environmental *"niche for a special set of farmers"* (Mark Murphy, Cargill interview, August 2015). This perspective on the RTRS directly contradicts the view it is primarily an agribusiness organisation: *"The RTRS? it's a trade body, and like a trade body, it represents their interests*" (John Sauven, Greenpeace interview, July 2015).

While it was clear from the existing literature (e.g. Garcia-Lopez and Arizpe, 2010, Elgert, 2012, Baletti, 2014) that both case studies faced opposition from *outside* groups, fieldwork revealed they are contested, as shown above, by the actors *within* them. Policy disagreements between traders, manufacturers and retailers, NGOs and the Brazilian state are ongoing as alliances and priorities continue to shift. Different actors have different levels of commitment with a noticeable split emerging between those, such as ABIOVE, who view the revised Forest Code as replacing the need for private governance, and those, such as McDonalds and Marks and Spencer, seeking to extend the case studies regulatory reach. The result is a fragmented, uneven governance - the *"multiplicity of authorities"* described in chapter five - with actors 'hedging their bets' and supporting different ventures. The splits roughly align with different points in the soy supply chain, with producer groups pursuing a more state-based approach, and trader and retailers, with the support of NGOs, looking to continue and extend their governance roles.

My fieldwork revealed these dynamics are particularly apparent when it comes to debates about zero deforestation, where even the meaning of '*zero*' is different for different organisations. Interviewees made clear the strategic importance of zero deforestation policies for many organisations, and I have shown that the concept is the chief way many traders, manufacturers and retailers understand their contribution to responsible environmental governance. Reflecting on the new Forest Code's continued allowance for legal deforestation for example, one Cargill interviewee saw it as the Brazilian state 'failing' to show global leadership, saying *"(If Brazil is) going to be a global actor they have to act like one"* (Mark Murphy, Cargill interview, August 2015). My research has shown the extent to which zero deforestation principles have become the norm in agri-food sustainability governance. They have become, as this thesis argues, conflated with the meaning of 'sustainability' itself for many supply chain actors. In turn, this has put Brazilian producer groups and policymakers in a difficult position, whereby they are trying to meet the zero deforestation demands of global markets, while also supporting producers who cannot meet these requirements.

Currently enough remains to unite the different groups in the case studies, but this research indicates that their future in their current forms is far from clear. The RTRS' certification mechanism can appear in danger of being surpassed by the zero deforestation agreements favoured by companies and environmental NGOs. However, recent developments have shown a flexibility in the RTRS framework that could make it more advantageous to producers. Plans to introduce multi-crop certification show the standard has potential beyond the soy industry and this could win support from farmers, who typically rotate soy and corn in their fields. Secondly, Unilever's new direct sourcing

initiative (in which it pays its producers to certify with RTRS) could also bring new value to the organisation, as well as effectively 'cutting out' the traders' role in the supply chain. If successful, it could provide a challenge to the ABCD dominance. These developments are counter to previous assessments of the RTRS as aligned with agribusiness interests.

In comparison to the RTRS, the Soy Moratorium's zero deforestation guarantee has had more support from traders and retailers. However, it has not always been popular with producers who, if they wish to have continued access to global markets, have little choice about their participation. The proposed enlargement of the moratorium into the Cerrado (the "Cerrado Manifesto") is likely to meet with fresh hostility from producers and interestingly, could also lead to new divisions between traders, retailers and producer associations like ABIOVE. As described in chapter six, ABIOVE opposes the new manifesto and traders have so far been reticent in their support. In contrast, manufacturers, retailers (and their NGO partners) have endorsed it, perhaps wary that as global attention turns towards the Cerrado's biodiversity, their supply chains in the region will be under new scrutiny. The alliance that has dominated the direction of soy governance for over ten years currently seems to be at a crossroads.

The debates about how to better protect the Cerrado really began to emerge in the final year of this research. As yet it is unclear what direction any action will take, and despite the concerns of producers and traders, how much a potential *'Cerrado Moratorium'* would actually affect production. Two things particularly struck me about the Cerrado Manifesto. First, that it is relies on soy expansion into existing agricultural land, similar

to the moratorium: *"The private sector has learned that it is possible to produce commodities while avoiding supply chains being directly associated with further conversion of natural ecosystems, as exemplified by the Amazon Soy Moratorium" (The Cerrado Manifesto, 2017, pg. 2).* Second, that is involves a further extension of private soy governance:

> *"while enforcement of environmental legislation, including the Forest Code, is important, it is not enough to ensure conservation of the biome……Incentives and economic instruments need to be developed by both the government and the private sector to reward farmers' efforts to conserve areas of native vegetation, even when they are eligible for legal clearance" (Ibid)*

These approaches echo findings offered in recent literature. Gibbs et al (2015) calculated that there were 42.5 million hectares of previously cleared land in the Cerrado, which they argued is enough to triple agricultural production in the region (pg. 378). The Cerrado Manifesto is an example of a 'win/win' sustainability solution discussed in chapter six, which combines soy production and zero deforestation. I have argued these interpretations of sustainability wrongly presuppose that soy's continued production is unproblematic from an environmental perspective if doesn't involve the further destruction of biodiversity.

Furthermore, it's reasonable to conclude that any new measures in the Cerrado would lead to stricter monitoring of deforestation than has so far been seen, which could be very disruptive for production for the region. If this happens, questions arise about whether increased protection of the Cerrado's biodiversity will lead to expansion of soy moving to other regions. Whatever happens in the Cerrado however, the bigger picture that emerges from these debates is that soy governance is still deeply rooted in

biodiversity protection principles. In this sense the *forest bias* (Hecht, 2005*)* that guided the creation of the case studies is developing into what I would describe as a *biodiversity bias.* In governance terms, this represents a continuation of the weaknesses inherent in in the RTRS and moratorium. There are several implications to take from this about the effectiveness of the rationales of the NGOs, who served as their central instigators.

This research argues that key to the effectiveness of both case studies has been the strategic partnerships between corporate actors and civil society, with the overarching rationale of production-based solutions to sustainability problems. The result of this, as this thesis has argued, has been the focus on deforestation and biodiversity protection as indicators of success. Based on this rationale, both case studies assert that sustainable soy is possible within existing production and consumption levels, that demand for soy can be harnessed as a tool for creating sustainable soy *supply chains*. As one Cargill interviewee explained to me, their priority when agreeing to the moratorium was *"to keep the markets open"* (Mark Murphy, Cargill interview, August 2015). This strategy has also helped soy traders and retailers to re-assert their control over governance narratives, becoming sustainability leaders and forest 'stewards'. In doing so, I have argued, soy production's role in the environmental destruction in the Amazon is perceived to be bigger than the reality, while its consequences for the Cerrado are marginalised.

This dynamic can be seen as serving the needs of agribusiness, leading to accusations of "greenwashing" or implying the case study agreements were 'easy' to achieve. I find this unsatisfactory conclusion. It was never my intention with this research to cast doubt on

the sincerity of individuals involved in the RTRS or the moratorium, and it was clear in every interview how difficult reaching consensus had been. Instead what I think it reveals is that sustainability partnership strategies are governed (and constrained) by production-based solutions, as this extract shows -

> ***Interviewer:*** *Do you think levels of meat consumption in western countries should be challenged?*
> ***Interviewee:*** *Well I mean, it's challenged all the time. Our priority, what we're focused on is sustainable beef production. We sell a lot of beef. I mean we sell a lot of other products as well, but beef is our single biggest environment impact in the supply chain, whether that's carbon emissions, or water usage or land use, so that's our single biggest focus. So, as I'm sure you know, we're founding members of the Global Roundtable on Sustainable Beef. We're doing a lot of work here in Europe, and in all our other regions in the world. We're engaged in Canada, in the US, in Brazil. For us, that's the biggest focus for our business.*
> ***(Keith Kenny, McDonalds interview, August 2015)***

Mr Kenny is describing McDonalds' attempts to make their beef supply chains more sustainable. It would be easy to be doubtful of these ambitions in light of the environmental impacts of livestock. However, his words reveal McDonalds to be an organization knowledgeable about, and devoting resources to sustainability concerns, but unable to operate outside the perimeters of established supply chains. They have to work within their financial objectives, and so they rely on solutions that don't impede their potential for economic growth. This falls within the category of sustainable development discussed in chapter two, which stresses technological innovation and environmental 'workarounds'. Both case studies rely on high levels of technology – both developed by them and borrowed from the Brazilian government (the satellite monitoring of deforestation for example) - and they both stress the potential of business

innovation to solve environmental problems. This extract below, again from Keith Kenny, is good example of this logic:

> *"I think we have to look at alternatives, we have to do things differently. For sure we can't continue what we do right now. If you can grow feed for land-based animals in the ocean, or in the air, or on food waste. We're going to have to find ways because there's not enough agricultural land, we have to bring non-agricultural land into production. There are great stories; there is one pilot scheme where they've got a fish farm. One of the issues with fish farms, probably Greenpeace told you this! - is all of the fish waste that floats underneath the nets and into the ocean. Well, you can grow algae underneath these nets, which you can then use for feed, and also they're beginning to grow oysters in there, it just needs a bit of innovation."*
>
> ***(Keith Kenny, McDonalds interview, August 2015)***

NGOS are also working within these frameworks, with the resources they can gather for campaigns that are not guaranteed to be successful. They are therefore necessarily opportunistic and tactical in their approach. The strategy taken by NGOs shown in this thesis, of working with businesses and targeting big brands, is based as on making distinctive but incremental changes to existing modes of production:

> *"I am consciously aware that the Amazon moratorium has its limitations. The goal for us was that if we got corporations to agree to a moratorium on soy, and then on cattle and on palm oil, and on pulp and paper, and it really is all the same corporations, then ultimately, we've got them all to agree to zero deforestation. They would all have a policy that they are not going to take a single commodity anywhere in the world that has come about as a result of deforestation. Then, you can see that the soy moratorium was the beginning of something much bigger, much broader. I think it led to quite a paradigm shift within corporations."*
>
> ***(John Sauven, Greenpeace interview, July 2015)***

Similarly, the comment below from Agustin Mascotena illustrates what could be said to be the RTRS's greatest achievement, the shifting of current supply chains towards more environmentally friendly discourses and practices:

> *"You can measure direct impacts of the RTRS, but there are also huge indirect impacts. They are translated into other initiatives towards sustainable soy that appeared after*

RTRS, as a reaction to RTRS. Let's say that the minimum level of sustainability in the game has increased. Whether RTRS or not, people are playing at a higher level, at least discussing a higher level of sustainability in the soy world."
(Agustin Mascotena, RTRS interview, July 2015)

This rationale of reforming existing production frameworks has resulted in creating the paradox of unsustainable production (and consumption) of soy being built into the design of the case studies**.** Put differently, the interventions have created a situation where biodiversity protection objectives are 'pulling against' the wider potential for climate change mitigation. By framing sustainability as *only* about land use change, and not *also* about what land is used for, by problematizing production and not also demand, the case studies miss the connections between the two.

To an extent, some of these findings are specific to soy (as opposed to other agri-commodities) and to Brazilian soy in particular. Firstly, the concentration of actors in the soy supply chain in the Amazon in 2006, discussed in chapter four, made it more practical to implement protection of the region. There were relatively few companies to engage and 'get on side'. Secondly, the significance of the European Union as the target consumer market, where there were high levels of consumer sensitivity to the problems of deforestation, made it easier for NGOs to leverage a reputational threat to the companies. On a related note, Greenpeace's focus on McDonalds, a company vulnerable to activist campaigns after the McLibel scandal, was particularly important in driving the development of the Soy Moratorium.

More generally, soy's use as feedstock has a special relevance. As I have shown in chapter three, it is this direct link to livestock which makes soy's ecological footprint so

consequential. However, other agri-commodities like palm oil and corn are also used as animal feeds, and it would be interesting to compare their environmental impacts to soy. In terms of governance, there are also connections between soy and other agri-commodities. Other sustainability initiatives, for example the RSPO, are trying to implement sustainability certification standards similar to the RTRS in the palm oil industry, and often it's the same companies and even the same individuals involved in these different mechanisms. In my fieldwork for example, many interviewees referred to soy as one of a number of agri-commodities that their jobs encompassed, revealing they spent their working lives engaged in multiple sustainability governance initiatives. Some interviewees were board members of the RSPO, and so they would give examples from both the soy and palm oil supply chains in their answers to interview questions.

Therefore, while soy was (and remains) a distinct sustainability problem, it is also an example of a wider issue. The RTRS and Soy Moratorium are representative of a governance approach that has become increasingly common, and the 'biodiversity bias' they reveal is bigger than one group of actors or any single commodity. Put differently, both case studies are reactions to how the issue of sustainability has been framed by both private and public actors. From this, in the next section, I argue these issues need to be framed in a different way.

7.2.1. Challenges Ahead.

The main message of this research is that current approaches to soy governance fail to properly consider the multi-dimensional nature of the ecological risks posed by soy production and consumption. This view is supported by the fact that the pace of global

demand for soy has been largely unaffected by the moves towards more sustainable supply chains. This means that the environmental gains of the case studies risk being undermined as demand for soy rises and consumption of livestock continues. In other words, despite the achievements of the RTRS and the moratorium, soy remains a significant sustainability challenge for the agri-food system. It follows then, that policymakers need to ask bigger questions - like the one I asked Elaine Corsini in the extract at the beginning of this chapter – what is the best of land? what is the best use of natural resources? what would sustainable food consumption look like?

Reflecting on this, a secondary key message of this research is the limitations of private governance mechanisms to deal with problems of demand and consumption. This thesis has shown how difficult it is for production-oriented sustainable development to tackle these issues. In the following two interview extracts, which talk about reducing meat consumption, both interviewees stress the need for state intervention:

"Meat? I think is going to be a really difficult one, because people definitely perceive limiting meat consumption as being a really big limitation on their (laughs) freedom and rights! Even their ability to express their economic improvement in a weird way, so there's huge baggage there. I think it comes down to business and government to deal with these issues, fundamentally. You can't put it on consumers."
(Fiona Wheatley, Marks and Spencer interview, August 2015)

Interviewer: *To me the problem with sustainable production is that it puts too much blame on producer countries. What about us consumers? Can Greenpeace do anything about that?*
Interviewee: *You would have to tackle it in a different way. You couldn't have a campaign that said, "don't eat meat" because it wouldn't work.*
Interviewer: *Why wouldn't it work?*
Interviewee: *Because even I couldn't do it. I'm not a vegetarian.*
Interviewer: *I'm not either.*
Interviewee: *So, if neither you or I are vegetarians, and we understand the problems, then it's never going to work. You could put environmental warnings on meat. That would make the meat industry go ballistic, so would start a good debate. You could put a*

tax on meat. You could put a tax on global commodities, so that the price of animal feed is much higher. You could only have meat where it was sustainable and self-sufficient within the region, so if Europe wanted to consume meat, it would also have to provide the animal feed for it. Basically, you need to make meat a luxury. If you look at meat consumption now, it's way more than what is healthy, and that has huge knock-on impacts on the health budget. All of these externalities – from the destruction of the rainforest to the health impacts – they are not priced into the product, and corporations do not need to take responsibility, it's all dumped somewhere else. If you just look at the true costs and then price them into the meat, then it would become something you had a couple of times a week, not seven times.

(John Sauven, Greenpeace interview, July 2015)

These extracts show just how complicated these issues are. Both case studies operate with the implication is that it is not *what* is produced that is the problem, but *how* it is produced, ultimately this suggests a flawed vision of sustainability without biophysical limits.

Throughout this thesis I have argued that when assessing the sustainability potential of soy, it is crucial to analyse its role in global agri-food systems, to assess soy as a *food*, not just as a driver of biodiversity destruction. It is of course necessary for everyone to eat, but different consumption choices lead to different patterns of environmental change. Therefore, sustainable agri-food governance needs to ensure that biophysical limits or *"planetary boundaries"* are not exceeded. This means an approach that integrates all regions and landscapes, and values all types of natural resources. It is not possible to remain neutral or to pick and choose. The challenge for policymakers, both private and public, and for many of us as individuals, is one of unsustainable consumption.

7.3. Further Avenues for Research.

From these conclusions, several avenues for future research emerge. Firstly, as both case studies are ongoing, continuing the analysis of their progress is worth pursuing. The potential of the RTRS's multi-crop certification and Unilever's sourcing project seem particularly interesting. Will they work in favour of producers, making the standard more useful for them? Will they challenge ABCD supply chain power? In regard to the moratorium, the development of the Cerrado Manifesto is especially compelling. Questions about its implementation need to be asked. How it will affect levels of soy production in the region? and in turn, how might this affect production in other regions across South America? Answers to these will be crucial for assessing the manifesto's success. It would also be interesting to see how any implementation is viewed by different actors, particularly producer associations like ABIOVE, and how its rules are interpreted in relation to the revised Forests Code.

A comparative analysis of the both the RTRS and the moratorium with their counterparts in the beef industry would also be a suitable avenue for research. The Cattle Moratorium, designed along similar lines to the Soy Moratorium (and again initiated by Greenpeace) was formed in 2009, and the Global Roundtable for Sustainable Beef (GRSB) a sustainable beef certification resembling the RTRS was established in 2010. Comparing how all 4 initiatives define sustainability and how they deal with consumption could tell researchers more about the direction sustainable commodity governance is headed. This would be especially interesting as many of the same actors and institutions are involved in both the soy and beef programmes.

Linked to this are bigger questions of how policymakers, particularly non-state actors, can more effectively address unsustainable patterns of food production and consumption. For example, how can NGO campaigns move away from biodiversity bias to tackle more complex issues related to sustainable use of natural resources? Thinking specifically about Brazil, research could investigate how its pioneering national dietary guidelines[17]interact with state strategies to support the agricultural production. The guidelines, released as a large 152 document from the Brazil's Ministry of Health, contain the following passage about soy and meat consumption that I found especially interesting:

> *"Reduced consumption and thus production of animal foods will reduce emissions of the greenhouse gases responsible for global warming, of deforestation caused by creation of new grazing areas for cattle, and of intensive use of water. It will also reduce the number of intensive animal production systems, which are particularly harmful to the environment……Intensive (animal) production requires vast amounts of animal feed produced by monoculture systems producing soybeans and corn. Like all intensive agriculture, these require intensive use of water, and of chemical pesticides and fertilisers that contaminate sources of water, degrade soil, increase pest resistance and reduce biodiversity"*
>
> ***(Brazilian Ministry of Health, 2015, pg.31)***

How states and other actors address these issues, and how they appear to contradict agri-development policies that support continued soy and livestock production, are vital issues for agri-food governance research.

Lastly, the continued rise of zero deforestation policies in agri-commodity supply chains is noteworthy, and as this thesis has argued, they are one of the preferred sustainability strategies of both NGOs and companies. Despite this, there has so far been relatively little academic analysis of them. Support of biodiversity protection policies as central pillars of environmental governance will only become more important as the effects of

[17] http://www.fao.org/nutrition/education/food-based-dietary-guidelines/regions/countries/brazil/en/

climate change are felt more fully across all regions, and our planetary boundaries become more visible.

7.4. Reflections on the Research Process.

As well as thinking about future avenues for research, there are also some conclusions to be drawn about the research process of this thesis. Having a methodological plan that was exploratory and adaptable meant I could adjust my research objectives to changes in context. This was particularly important considering the developments that occurred over the period of study. In 2014 for example, the UN's Declaration of Forests, discussed in chapter five, really confirmed the importance of zero deforestation policies within global governance frameworks, and the role Cargill played in the declaration was particularly relevant. This unexpected importance of zero deforestation was something that became a key part of my research. Also, the establishment of the moratorium as a permanent agreement in 2016 is not something I could have predicted at the start of the thesis, nor was the increasing attention on the Cerrado, especially the declaration of a Cerrado Manifesto in 2017. I was able to incorporate these developments into my thesis while maintaining my focus on the case studies.

Using a case study methodology to compare the RTRS and the Soy Moratorium proved to be both fruitful and practical given the connections between the two. Many interviewees would organically bring up both case studies in their answers, even if I hadn't mentioned either by name, and they would compare them without prompting.

They were clearly seen as two similar responses to the same issue by many interviewees and I think my research has shown this to be true.

In terms of data generation, because both case studies are ongoing processes, I was aware that the people I interviewed might feel constrained when talking about them. Overall, I was pleasantly surprised by their level of openness. Many spoke to me for longer than the time arranged and most made recommendations for articles I should read and other people I should speak too. It was clear from their answers that the interviewees were comfortable arguing 'their case' and talking rhetorically about sustainability. The result of this was that interviews often felt like two-way debates, with most interviewees as interested in what I thought, which is something I hadn't expected. At the end of my interview with McDonalds for example, the interviewees decided to *"turn the tables"* and ask me about what I thought of their sustainability policies and how they could be improved. In situations like this, I was conscious of not affecting or 'leading' an interviewees own answers, and so I tried to keep my responses quite broad, framing what I said in terms that reflected what I was interested in finding out (as opposed to telling them what I thought). Although this 'debate' dynamic was a surprise to me, I think it strengthened the quality of the overall data and made the interviews more engaging for the interviewees. On reflection, I think most would have been puzzled if it had gone any other way.

Utilising this debate dynamic, at the end of each interview I liked to ask every interviewee an open question about what they thought the biggest sustainability

challenges were. It was a good question to ask at the end because it gave interviewees a chance to reflect and draw together our conversation. When I asked Mr Kenny from McDonalds this question, he replied, as shown below, that he thought the biggest challenge was feeding a growing global population. His answer stands out for me because my response appeared to offend Mr Kenny, who I think interpreted it as a sarcastic reference to McDonald's 'corporate' business image:

> ***Interviewee:*** *The biggest challenge is to feed the growing population, and then you can factor everything else into that. Where are we going to get the food from? That's why I question if soy can really be sustainable for animal feed, we've got to look at alternative sources. But as I said, feeding the growing population has to be the lens.*
> ***Interviewer:*** *The biggest challenge for McDonalds is how to feed the growing population?*
> ***Interviewee:*** *No, not as McDonalds, but me as a human being! I care!*
> ***(Keith Kenny, McDonalds interview, August 2015)***

I felt (and still feel) very bad about this, which is why I remember it so clearly, but I think it shows how the dynamics of élite interviewing, although based on someone's professional expertise, still contain an element of the personal. It taught me to remember I was interviewing people, not 'faceless' organisations.

Another example of this "element of the personal" was particular clear in my interview with Cargill Brazil. In this interview, I spoke to three people at once (this had been their choice) and it was interesting to observe the difference this made. The interviewees spoke to each other with a familiarity that seem to come from working closely. They teased each other, they complimented each other, they decided amongst themselves who was best placed to answer a question. During the interview there was a power cut

to the office. This prompted the following remarks from the interviewees, which indicates some of the other concerns competing for their attentions:

> ***Paulo Sousa:*** *You see, welcome to my country, we have different concerns here!*
> ***Interviewer:*** *We have power cuts in the UK too!*
> ***Renata Nogueira:*** *Yes, but it's the third time today.*
> ***Paulo Sousa:*** *Brazilian society, it's a different state of development. Is this your first time in Brazil?*
> ***Interviewer:*** *Yes it is.*
> ***Paulo Sousa:*** *Ok, well, probably by the end of the week you will know what I mean! I mean just the drive from the airport, you look around, you see that filthy river, you see the kind of slums and favelas that we have, the smog, people begging on the streets.*
> ***(Cargill Brazil, interview, August 2015)***

Similar remarks were made by other interviewees in Brazil, who tried to contextualize sustainability within the country's wider governance priorities. I was surprised at how many Brazilian interviewees asked me to remember that Brazilian regulation and governmental mechanisms were very inefficient and bureaucratic compared to Europe, and that the country had many more social problems. They asked (or implied) that all progress should be assessed with this in mind.

Reflecting back on the process, my research experience was partly one of a structured academic project, and partly that of a creative endeavour benefiting from good fortune. Many of the interviewees were recommended to me, many of the developments in the case studies were unexpected, and many of the decisions I made worked out well, without any guarantee of doing so. One personal regret I have is that I didn't see any soy plants growing in the ground in Brazil. During my trip to Mato Grosso, I saw signs of soy everywhere; the enormous geometric silhouettes of agricultural land, the machinery used to harvest it, the structures built to store it, the roads paved for transporting it, and

the imposing headquarters of the companies who control the whole vast enterprise. However, when I was there the fields had been harvested and ploughed up. Soy clearly played a pivotal role in shaping the landscape, both ecological and socio-economic, but I never actually saw any beans. They were so important but remained elusive, obscured from view, much like they are in the global food system.

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Appendix 1: Interviewee Sample

***(PTP)** = Producer groups, Traders and Processors. **(M+R)** = Manufacturers and Retailers*

	Name and Position(s)	Category	Organisation	Date and Format
1	**Daniel Meyer** Brazil Manager, RTRS Secretariat	**RTRS Secretariat**	RTRS	1st July 2015, via Skype.
2	**Agustin Mascotena** Executive Director, RTRS Secretariat	**RTRS Secretariat**	RTRS	2nd, July 2015, via Skype.
3	**Olaf Brugman** Sustainability Manager *President, RTRS Executive Board.*	**Industry (PTP)**	Rabobank	3rd July 2015, via Skype.
4	**Laureen Elgert** Academic Researcher	**Academics and Journalists**	Worcester Polytechnic	6th July 2015, via Skype.
5	**Gert van der Bijl** Livestock Programme Coordinator *RTRS Executive Board Member*	**Environmental NGO**	Solidaridad	10th July 2015, via Skype.
6	**John Sauven** Executive Director *Soy Moratorium GTS*	**Environmental NGO**	Greenpeace UK	16th July 2015, in person.
7	**RTRS Founding Executive Board Member**	**Industry (PTP)**	Trade / Finance company	31st July 2015, via phone.
8	**Fiona Wheatley** Sustainability Manager *RTRS Executive Board Member* *Soy Moratorium GTS*	**Industry (M+R)**	Marks and Spencer UK	21st August 2015, via Skype.
9	**Keith Kenny** Vice President, Sustainability *Soy Moratorium GTS*	**Industry (M+R)**	McDonalds Europe	25th August 2015, in person.
10	**Alenja von Winterfeld** Sustainability and Corporate Social Responsibility Assistant	**Industry (M+R)**	McDonalds Europe	25th August 2015, in person
11	**Mark Murphy** Global Head of Corporate Responsibility and Sustainability *Soy Moratorium GTS*	**Industry (PTP)**	Cargill USA	26th August 2015, via Skype.
12	**Paulo Sousa** Business Unit Leader, Grain and Oilseed Supply Chains	**Industry (PTP)**	Cargill Brazil	31st August 2015, in person.
13	**Yuri Feres** Corporate Responsibility and Sustainability Manager	**Industry (PTP)**	Cargill Brazil	31st August 2015, in person.
14	**Renata Nogueira** Sustainability Coordinator	**Industry (PTP)**	Cargill Brazil	31st August 2015, in person.
15	**Harry van der Vliet** Soy and Livestock Manager *RTRS Executive Board Member*	**Environmental NGO**	Solidaridad	2nd September 2015, in person.

	Name and Position(s)	Category	Organisation	Date and Format
16	**Beatriz Domeniconi** Sustainability Coordinator *Soy Moratorium GTS*	**Industry (PTP)**	ABIOVE	4th September 2015, in person.
17	**Juliana Lopes** Sustainability Director *Vice-President, RTRS Executive Board* *Soy Moratorium GTS*	**Industry (PTP)**	Amaggi	8th September 2015, in person.
18	**Elaine Corsini** Superintendent of Environmental Monitoring	**Brazilian Government**	Mato Grosso Ministry of Environment	9th September 2015, in person.
19	**Francisco Oliveira Filho** (Former) Director of Policies to Reduce Deforestation *Soy Moratorium GTS*	**Brazilian Government**	Federal Ministry of Environment, Brazil	12th October 2015, in person.
20	**David Cleary** Director of Agriculture	**Environmental NGO**	The Nature Conservancy	30th November 2015, via Skype.
21	**Glenn Hurowitz** Deforestation Campaigner	**Environmental NGO**	Forest Heroes /Mighty Earth	10th February 2016, via Skype.
22	**Mindi Schneider** Academic Researcher	**Academics and Journalists**	Erasmus University	25th February 2016, in person
23	**Benito Guerrero** Sustainable Agriculture Specialist	**Environmental NGO**	The Nature Conservancy	12th April 2016, via Skype.
24	**Terence Baines** Sustainable Sourcing Manager *RTRS Executive Board Member* *Soy Moratorium GTS*	**Industry (M+R)**	Unilever Brazil	13th April 2016, via Skype.
25	**Tobias Webb** Founder, Journalist	**Academics and Journalists**	Innovation Forum	15th April 2016, via Skype.
26	**Romulo Batista** Forest Campaigner *Soy Moratorium GTS*	**Environmental NGO**	Greenpeace Brazil	20th April 2016, via Skype.
27	**Frederico Machado** Public Policies Specialist	**Environmental NGO**	WWF Brazil	24th May 2016, via Skype.
28	**Cynthia Cominesi** Director of Sustainability *RTRS Executive Board Member*	**Environmental NGO**	Clube Amigos da Terra	21st June 2016, via Skype.

Appendix 2: Ethical Approval Form

Application for Ethical Approval of Research Involving Human Participants

This application form should be completed for any research involving human participants conducted in or by the University. 'Human participants' are defined as including living human beings, human beings who have recently died (cadavers, human remains and body parts), embryos and foetuses, human tissue and bodily fluids, and human data and records (such as, but not restricted to medical, genetic, financial, personnel, criminal or administrative records and test results including scholastic achievements). Research should not commence until written approval has been received (from Departmental Research Director, Faculty Ethics Committee (FEC) or the University's Ethics Committee). This should be borne in mind when setting a start date for the project.

Applications should be made on this form, and submitted electronically, to your Departmental Research Director. A signed copy of the form should also be submitted. Applications will be assessed by the Research Director in the first instance, and may then passed to the FEC, and then to the University's Ethics Committee. A copy of your research proposal and any necessary supporting documentation (e.g. consent form, recruiting materials, etc) should also be attached to this form.

A full copy of the signed application will be retained by the department/school for 6 years following completion of the project. The signed application form cover sheet (two pages) will be sent to the Research Governance and Planning Manager in the REO as Secretary of the University's Ethics Committee.

1. Title of project: "The Environmental Governance of Brazilian Soy Production"

2. The title of your project will be published in the minutes of the University Ethics Committee. If you object, then a reference number will be used in place of the title.
   Do you object to the title of your project being published? Yes ☐ / No ☒

3. This Project is: ☐ Staff Research Project ☒ Student Project

4. Principal Investigator(s) (students should also include the name of their supervisor):

Name:	Department:
Jennifer Gresham	Sociology
Professor Mark Harvey (supervisor)	Sociology

5. **Proposed start date**: January 2014

6. **Probable duration**: 3 years

7. Will this project be externally funded? Yes ☒ / No ☐

8. What is the source of the funding?

   ESRC studentship

9. If external approval for this research has been given, then only this cover sheet needs to be submitted

External ethics approval obtained (attach evidence of approval) Yes ☐/ No ☒

Declaration of Principal Investigator:

The information contained in this application, including any accompanying information, is, to the best of my knowledge, complete and correct. I/we have read the University's *Guidelines for Ethical Approval of Research Involving Human Participants* and accept responsibility for the conduct of the procedures set out in this application in accordance with the guidelines, the University's *Statement on Safeguarding Good Scientific Practice* and any other conditions laid down by the University's Ethics Committee. I/we have attempted to identify all risks related to the research that may arise in conducting this research and acknowledge my/our obligations and the rights of the participants.

Signature(s): .....

Name(s) in block capitals: .....

Date: ……

Supervisor's recommendation (Student Projects only):

I have read and approved both the research proposal and this application.

Supervisor's signature: .……..

Outcome:

The Departmental Director of Research (DoR) has reviewed this project and considers the methodological/technical aspects of the proposal to be appropriate to the tasks proposed. The DoR considers that the investigator(s) has/have the necessary qualifications, experience and facilities to conduct the research set out in this application, and to deal with any emergencies and contingencies that may arise.

This application falls under Annex B and is approved on behalf of the FEC ☐

This application is referred to the FEC because it does not fall under Annex B ☐

This application is referred to the FEC because it requires independent scrutiny ☐

Signature(s): .....

Name(s) in block capitals: .....

Department: ……

Date: ……..

The application has been approved by the FEC ☐

The application has not been approved by the FEC ☐

The application is referred to the University Ethics Committee ☐

Signature(s): .....

Name(s) in block capitals: ….....

Faculty: ……

Date: ……

Details of the Project

1. **Brief outline of project** (This should include the purpose or objectives of the research, brief justification, and a summary of methods. It should be approx. 150 words in everyday language that is free from jargon).

My PhD forms part of an ESRC project, led by Professor Mark Harvey, that aims to develop a sociological understanding of the triple crisis or *trilemma* of climate change, food security and resource depletion, currently facing societies across the world.

I am focusing on the environmental governance of soy production in Brazil. I am researching the development of two groundbreaking sustainability initiatives, *The Roundtable for Responsible Soy* and the *Soy Moratorium*. Both initiatives take a multi-stakeholder approach with civil society and the private sector in leadership roles. I am developing a socio-political analysis of these initiatives, and the wider factors driving policy to develop in this way. I am particularly interested in how the three components of the *trilemma* are being addressed in the Brazilian context, and in the role of private actors in policymaking.

Participant Details

2. Will the research involve human participants? (indicate as appropriate)

Yes ☒ No ☐

3. Who are they and how will they be recruited? (If any recruiting materials are to be used, e.g. advertisement or letter of invitation, please provide copies)

Participants will be representatives from the key governance institutions involved in Brazilian soy production. They will be recruited by word of mouth and by individually tailored emails.

Due to their position of authority, participants will be able to determine the terms and conditions of the interview.

None of the participants will be vulnerable adults or children.
None of the interviews will ask questions of a personal nature.

Will participants be paid or reimbursed?

No.

4. Could participants be considered:

(a) to be vulnerable (e.g. children, mentally-ill)? Yes ☐/ No ☒

(b) to feel obliged to take part in the research? Yes ☐/ No ☒

If the answer to either of these is yes, please explain how the participants could be considered vulnerable and why vulnerable participants are necessary for the research.

N/A

Informed Consent

5. Will the participant's consent be obtained for involvement in the research orally or in writing? (If in writing, please attach an example of written consent for approval):

Yes ☒ No ☐

How will consent be obtained and recorded? If consent is not possible, explain why.

Participant consent will be negotiated on an individual basis, either orally or in writing. Participants will be able to set the terms and conditions of the interview as they feel appropriate, prior to our meeting. Participants will be interviewed in their official capacity as representatives of their organization. No questions related to their personal life and circumstances will be asked.

Please attach a participant information sheet where appropriate.

Confidentiality / Anonymity

6. If the research generates personal data, describe the arrangements for maintaining anonymity and confidentiality or the reasons for not doing so.

The participant will be offered organizational and/or personal anonymity and confidentiality for the whole or part of the interview. They will be offered a choice as to whether they want the interview to be recorded in audio format.

The interviewer will seek no personal data from any participant, and all participants will be able to determine the scope of the interview and can refuse to answer a question or part of a question.

Data Access, Storage and Security

7. Describe the arrangements for storing and maintaining the security of any personal data collected as part of the project. Please provide details of those who will have access to the data.

All the digital recordings of the interviews will be stored in non-proprietary Open Document Format. My data and any related transcripts and notes will be stored alongside data for the wider research project, on the University of Essex's file server which is backed up nightly. The University's computing network is protected from viruses by a firewall and the Sophos anti-virus program. All digital recordings will be transferred to a password protected PC kept in the lockable offices of the Principal Investigator and Senior Research Officer. The recordings will be backed up daily on a password protected external hard drive, to be kept in locked filing cabinets within the respective offices, to ensure that only the team members have access. The digital recordings on the memory cards will be erased. Notes and summaries of the interviews will be kept under the same conditions of security.

It is a requirement of the Data Protection Act 1998 to ensure individuals are aware of how information about them will be managed. Please tick the box to confirm that participants will be informed of the data access, storage and security arrangements described above. If relevant, it is appropriate for this to be done via the participant information sheet ☒

Further guidance about the collection of personal data for research purposes and compliance with the Data Protection Act can be accessed at the following weblink. Please tick the box to confirm that you have read this guidance (http://www.essex.ac.uk/records_management/policies/data_protection_and_research.aspx) ☒

Risk and Risk Management

8. Are there any potential risks (e.g. physical, psychological, social, legal or economic) to participants or subjects associated with the proposed research?

Yes ☐ No ☒

If Yes,

Please provide full details and explain what risk management procedures will be put in place to minimise the risks:
N/A

9. Are there any potential risks to researchers as a consequence of undertaking this proposal that are greater than those encountered in normal day-to-day life?

Yes ☐ No ☒

If Yes,

Please provide full details and explain what risk management procedures will be put in place to minimise the risks:
N/A

10. Will the research involve individuals below the age of 18 or individuals of 18 years and over with a limited capacity to give informed consent?

Yes ☐ No ☒

If Yes, a criminal records disclosure (CRB check) within the last three years is required.

Please provide details of the “clear disclosure”:

Date of disclosure:
Type of disclosure:
Organisation that requested disclosure:

11. Are there any other ethical issues that have not been addressed which you would wish to bring to the attention of the Faculty and/or University Ethics Committees

No.

Appendix 3: Example Interviewee Introductory Letter

Dear *(name),*

I'm a PhD researcher at the University of Essex. I'm part of an Economics and Social Sciences Research Council project investigating the different pathways societies across the world are developing in response to sustainability concerns.

My work is on sustainability governance in Brazilian soy commodity chains. As part of my research, I'm interviewing people from organizations involved in sustainable soy programmes, and *(Organisation's name)* activities in this area have really caught my attention. Your pioneering work with the RTRS and the Soy Moratorium, as well as your organisations internal programmes have been crucial to moving the debate forward on sustainability. If you can spare the time, I'd love to get your thoughts on the development and implementation of sustainable supply chains, and on *(Organisation's name)* ambitious sustainability goals.

I'm UK based and able to conduct interviews in person, via phone or using Skype. All interviews are strictly confidential and for academic research purposes only. Your name and *(Organisation's name)* name do not have to appear in the final thesis unless you want it to. I have attached a brief overview of the project and the interview process, and I'd be happy to answer any questions you might have.

The research aims to shed new light on the governance of sustainability issues in soy, which we hope will be of value for policymakers, producers, retailers and civil society organizations in the future. If you are able to talk, I know that your insight would be immensely valuable to our work.

Yours sincerely,

Jennifer Gresham
(contact details)

Appendix 4: Example Interviewee Information Sheet

The Research Project

My PhD is part of a research project funded by the Economics and Social Sciences Research Council. The project is investigating the different pathways societies across the world are developing in response to sustainability concerns. The research team at the University of Essex, led by Professor Mark Harvey, are using key agricultural crops in Brazil, Germany, China and India to analyse sustainability governance across different national contexts.

My Research

My PhD focuses on the sustainability governance of soy commodity chains in Brazil. Primarily an animal feed in livestock production, soy has been linked to deforestation and environmental degradation in the Amazon and Cerrado regions. I am charting the development of two innovative sustainability initiatives, *The Roundtable for Responsible Soy (RTRS*) and the *Soy Moratorium*. Both initiatives take a multi-stakeholder approach, with civil society and the private sector in key leadership roles.

Key areas of concern in my research include:

1) The history of the RTRS and the Soy Moratorium and the development of their sustainability principles.
2) The different factors driving the soy industry towards more sustainable production.
3) The role of the private sector and civil society in sustainability policymaking.
4) The impact of the Brazilian government's environmental policies on soy production and sustainability issues, e.g. Brazil's Forest Code.
5) How strong consumer demand for Brazilian soy, particularly from China and the European Union, influences sustainability policymaking and soy production.

Project Results and Impact

The main outputs of the PhD research and ESRC Project will be academic. The team will write working papers and academic journal articles, and there will be a monograph towards the end of the project. There will also be presentations at workshops and seminars, aimed at engaging academics and other relevant stakeholders in our findings.

Modes of Interview and Interviewee rights

Interviewees have the following options and protections regarding their participation:

- Interviews can be carried out in person, by email or using Skype.
- Interviewees can check any part of the PhD text that refers to their interview for accuracy.
- Interviewees are free to have their answers, or parts of their answers, removed from the interview transcript and disregarded by the interviewer.
- Interviews can be recorded or not, depending on their preference. Any recording would be for the researchers use only and would not be shared or made public in any way. Recordings would be stored in compliance with University of Essex guidelines on data protection.
- Interviewees can decline to answer questions or withdraw from the interview at any time.
- If they wish, the interviewee's name and/or the name of the organization they represent can be made anonymous in the final text of any published material.