



Greening The Bean?

An assessment of Danish corporate commitments to zero deforestation in the context of the Brazilian soybean production

A Master's Thesis by Maria Ulsig
Global and Area Studies, Aarhus University
Spring semester 2022

**GREENING THE BEAN?
AN ASSESSMENT OF DANISH CORPORATE COMMITMENTS TO ZERO
DEFORESTATION IN THE CONTEXT OF THE BRAZILIAN SOYBEAN
PRODUCTION**

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Cover photo by Adriano Gambarini / WWF-Brasil *“The loss of vegetation cover in Cerrado biome from August 2018 and July 2019 was 648,400 hectares”* © Adriano Gambarini

Abstract

Since 1996, Brazil has increased its annual soybean production from 15 million to a projected 145 million tons for the 2021/22 harvest, spurred by a soaring demand from the EU and China, leading to extensive deforestation and environmental degradation in the two main production regions, the Amazon and the Cerrado. Although private, sectorial initiatives such as the Amazon Soy Moratorium implemented in 2006 and still in force today have shown to be effective in curbing deforestation, the pressure of international demand coupled with changing legislation and the explicitly pro-agriculture Bolsonaro government in Brazil has been pushing deforestation rates upwards since 2013. This tendency has called for new measures by stakeholders in the soy supply chain, among these the zero-deforestation commitments made by the Danish Alliance for Responsible Soy.

Using a conceptual framework designed on the basis of Gary Gereffi's theory on global commodity chains, the French *filière* approach and William Friedland's concept of a commodity hierarchy, I analyze the strategies contained in the commitments of the Alliance in relation to the different actors in the soy supply chain in Denmark and in Brazil. My findings lead to the conclusion that the corporate sustainability commitments undertaken by the Alliance members are not sufficient to ensure that the soy imported and used in their production is deforestation-free. Brazil's environmental legislation allows up to 80% of certain regions in the country to be cultivated, and as the major part of the soy imported into Denmark follow the guidelines of the European Feed Manufacturers' Association which adheres to local (Brazilian) legislation, the soy cannot be guaranteed to be produced deforestation-free. Although the companies in the Alliance attempt to offset their calculated soy footprint through the purchase of online credits issued by the Round Table of Responsible Soy, this does not imply in importing actual deforestation-free soy, but rather any shipment of conventional soy.

Additionally, the research uncovered that the goals and strategies of the Alliance are significantly impacted and shaped by powerful actors in the supply chain, both in Brazil as well as in Denmark. An in-depth analysis of the two major certification agencies likewise revealed their biased organizational structure towards global food and feed corporations that have no intentions of cutting down on soy consumption. At the same time, data interpretation from the homepages of RTRS and ProTerra show strong fluctuations in the supply of certified soy as well as a diminished growth rate since 2018, indicating that certification activity is in no way able to keep up with the pace of the soy expansion in Brazil and globally.

Overall, the results demonstrate that it is highly unlikely that soybean cultivation can in fact proceed without either direct or indirect deforestation taking place, indicating the need for a united, EU level approach to zero-deforestation in connection with soy imports from Brazil. Such imports would need to be based on stringent zero-deforestation criteria and only permit the import of physically segregated certified soy negotiated through long-term commitments among all actors in the supply chain.

Abbreviations and acronyms

ABIOVE – Associação Brasileira das Indústrias de Óleo Vegetal – Brazilian Association of Vegetable Oil Industries

AFI– Accountability Framework Initiative

ASM – Amazon Soy Moratorium

CAR Cadastro Ambiental Rural – Environmental Rural Register

CSR – Corporate Social Responsibility

DAAS or the Alliance - Danish Alliance for Responsible Soy

DLG – Dansk Landbrugs Grovvarerelskab

EMBRAPA – Brazilian Agricultural Research Corporation

EU – European Union

FEFAC – European Feed Manufacturers’ Association

GCC – Global Commodity Chains

GDP – Gross Domestic Product

GMO – Gene Modified Organism

GTS – Grupo de Trabalho de Soja – Brazilian Soy Working Group

HDI – Human Development Index

IBGE – Instituto Brasileiro de Geografia e Estatísticas – Brazilian Institute of Geography and Statistics

INCRA – Instituto Nacional de Colonização e Reforma Agrária - Brazilian Institute of Colonization and Agrarian Reform

INPE Instituto Nacional de Pesquisas Espaciais – Brazilian Space Research Institute

MATOPIBA – frontier soy producing region made up of the states of Maranhão, Tocantins, Piauí and Bahia

MERCOSUR – trade bloc consisting of Brazil, Argentina, Paraguay and Uruguay

NGO – Non Governmental Organization

RTRS – Round Table for Responsible Soy

UN – United Nations

UNDP – United Nations Development Program

WWF – World Wildlife Foundation

Acknowledgements

I would like to thank my supervisor, Vladimir Pacheco Cueva, for valuable guidance and feedback during the conception and writing process of this thesis. I would also like to thank my professor from Brazilian Studies and Global and Area Studies, Georg Fischer, for inspired teaching and engaging academic discussions about Brazil and environmental history during the courses.

Table of contents

1. Introduction and research question	7
1.1 Scope and limitations	9
2. Literature review	10
2.1 Introduction – State of Research	10
2.2 Monitoring and quantifying deforestation in Brazil	14
2.2.1 Soy-related deforestation into the Cerrado	17
2.3 Corporate deforestation-free commitments, soybeans and sustainability policies	19
2.4 Situating the research question within the literature review	21
3. Background	22
3.1 Brazil: demographics, economy and politics - an overview	22
3.2 A history of extractivism	24
3.2.1 Early colonization and the boom-and-bust cycles	24
3.2.2 “Conquer the land, dominate the water, subjugate the forest” – the adventure of the 20 th century	25
3.2.3 The new soy frontier	27
3.2.4 The Amazon Soy Moratorium	28
3.3 The soy supply chain in Brazil	30
3.4 Soy in Danish meat and dairy production – an overview	30
3.5 Soy sourcing guidelines, standards and certification schemes	32
4. Investigation of relevant theories	33
4.1 Introduction	33
4.2 Global Commodity Chains, the Filière approach and Friedland’s value hierarchy	35
4.3 Sustainability as a driver in the global commodity chain	39
4.4 Theoretical framework design	40
5. Methodology	42
6. Case study – The Danish Alliance for Responsible Soy – Part One	43
6.1 Introduction – history and background of the Alliance	43
6.2 Producer-driven vs buyer-driven commodity chains	46
6.3 The supply chain approach – sectorial and corporate strategies	49
6.4 The Value Hierarchy and “cultural apparatus” generated by soy	54
6.5 Partial conclusion – Part One	56
7. Case study – Part Two: Cross-analysis and discussion	57
7.1 Introduction: implications of partial conclusions vis-à-vis soy production in Brazil	57
7.2 Hybrid supply chain – where does the power lie?	57
7.2.1 The Brazilian environmental legislation as an actor	58
7.2.2 Brazil’s pro-agriculture government and the Rural Lobby	60
7.3 The truth about certification: who, where, how?	62
7.3.1 The Pro-Terra Foundation	62
7.3.2 The Round Table for Responsible Soy – RTRS	65
7.3.3 Fluctuations in the market for certified soy	67
7.4 Cultural apparatus vs. value and the discourse of nationalistic farmers	68
8. Discussion of findings	70
9. Conclusion	72
Referenced literature	74
Attachment I – Plans of Action of the Alliance	

“We need to make decisions that really effect changes in all aspects of our lives. Both in relation to energy, how we produce and the way we consume, and how we get from one place to another. In all aspects of our lives. This is not yet happening.”¹

Patricia Espinosa, Executive Secretary of the United Nations Framework Convention on Climate Change (UNFCCC),

1 Introduction

On February 22, The Inter-governmental Panel on Climate Change - IPCC - released the second part of its annual report on climate changes², concluding that climate changes are pacing up and that we are nearing a point where it will no longer be possible to revert the temperature increase. The burning of fossil fuels is leading to unprecedented increases the levels of CO₂ and methane gas, and industrial and human activities such as overfishing, overconsumption and intensive agricultural are provoking deforestation, loss of biodiversity, draughts, flooding and extreme heat in many of the world’s most vulnerable natural biomes, such as the tropical rainforests, tropical savannas and coral reefs (IPCC 2022). Meanwhile, there is less talk of reducing our huge consumption of natural resources and even less on the topic of how we obtain our main commodities, among these, the soybean.

Global soybean production has soared over the last 20 years and is intrinsically linked to the topic of deforestation of tropical rainforests and savannas. Deforestation is regarded as one of the main contributors to the rising CO₂ levels, which in turn generates global warming. This makes soybean production one of the most important issues when discussing policies for mitigating climate change which in turn makes it a common cause for environmentalists, politicians, corporations and the general public alike. It is therefore also an important part of the talks during the annual global climate summits (Conference of the Parties - COP), and mainly, it is a topic that is addressed regularly in the news media around the world (Richard et al. 2010, 104).

The Brazilian Amazon rainforest has been in the spotlight for over two decades and is regarded as one of the main hotspots of deforestation globally. A Brazilian pro-agribusiness and export oriented policy since the 1990s, coupled with the soaring demand for beef and soy from, mainly, China and the EU, has led to an unprecedented increase in soy and beef production, and as a consequence, to soaring levels of deforestation (Amaral et al. 2021).

¹ Interview published in Danish online media DR.dk on 12.05.22 - <https://www.dr.dk/nyheder/viden/klima/saadan-svarer-fns-klimachef-paa-spoergsmaalet-om-verdens-ledere-kan-loese>

² <https://www.ipcc.ch/report/ar6/wg2/resources/press/press-release>

Farmland with soybean cultivation has more than tripled between 1990 and 2015, and production has gone from around 15 million ton to 96 million ton in the same period (Amaral et al. 2021, 1296). In 2006, a moratorium on soy from deforested areas in the Amazon was imposed, effectively cutting deforestation rates of the Amazon region from 2.7 million hectares (2004 figures) to 0.5 million hectares in 2013 (Gollnow et al. 2018). Furthermore, Brazil increased public governance of the region and implemented surveys and surveillance schemes alongside with the creation of various environmental agencies (Amaral et al. 2021).

Despite these measures, deforestation remains a serious threat, not only to the Brazilian Amazon, but also to another, equally fragile biome, the Brazilian savanna region known as the Cerrado, which is now becoming the new soy frontier (Gollnow et al. 2018). Another player on the scene is the EU - Mercosur free trade deal³, which is currently undergoing a ratification process by the signatory countries. When it is eventually implemented, increased meat production in Brazil is projected to lead to renewed deforestation (Arima et al. 2021). However, deforestation is not only a problem onto itself, with immediate and visible impacts in forest cover and loss of animal habitats; it also has far-reaching consequences in terms of rainfall, soil degradation, biodiversity and, ultimately, for the balance of the ecosystems involved, the potential implications of which are only starting to be understood.

In Denmark, the media focus has been on the relation between the Danish industrial pork production and the use of soy beans as feed. Headlines such as "*Danske svin æder sig igennem regnskoven*" (Danish Pigs are eating their way through the Rainforest - WWF 06.02.20), "*Regnskoven må lade livet for soja til danske grise*" (The Rainforest is dying because of soy for Danish pigs - Politiken 23.04.20), "*Skov bliver ryddet for at skaffe foder til danske svin*" (Forests are being cleared to obtain feed for Danish pigs - Information 02.10.18) have contributed to underlining the link between deforestation of the Brazilian Amazon and the feeding of a Danish pig.

As a consequence, several major Danish corporations that directly or indirectly either use or trade in soy, such as the retail business, food service, feed producers, industry and food manufacturers, formed an alliance in 2020 called the Danish Alliance for Responsible Soy (Dansk Alliance for Ansvarlig Soja, hereinafter referred to as DAAS or the Alliance), undertaking the commitment of only using imports of deforestation-free soy by the year 2025.

The 8 member companies of the alliance have laid out their pledge in individual plans of action (*handlingsplan*), detailing the importance of this commitment and how they are

³ Free trade deal between the Mercosur countries and the European Union.

implementing it, as well as which tools and strategies they are making use of. On the surface, the commitments seem to include a ban on both illegal as well as legal deforestation, showing a strong intention to participate in measures that could effectively curb deforestation in tropical environments.

Despite the intentions demonstrated in the plans, it should be understood that soy-related deforestation is not a simple process that may be put down to the need for soy for meat production, be it in Brazil, the EU or China. Soy production in Brazil is entangled with governmental development policies, strong rural lobbies, poverty, land grabbing and the country's extensive, but also faulty and continuously challenged environmental legislation. The companies that commit to Zero Deforestation mostly rely on third party verification of the soy they receive, and these agencies in turn need to navigate the complex scenario of the Brazilian soy business.

There is therefore an urgent need for more research of the basis of the aforementioned corporate commitments, to uncover how these play out against the current scenario for deforestation-free soy production. If the complex nature of the ongoing deforestation taking place in Brazil is not sufficiently analyzed and understood, the Zero Deforestation Commitments of the DAAS, as indeed those of many other industrial organizations in the EU will not have the intended impact, rendering such plans of action void and tentative at best.

The research problem can therefore be formulated as such:

- ***In which way does the current scenario for Brazilian soybean production affect the zero deforestation commitments made by the Danish Alliance for Responsible Soy?***

Supporting questions:

- *How do external and internal factors impact the production of deforestation-free soy from Brazil?*
- *What are the environmental consequences implicated in the legal framework under which the Brazilian soy producers operate?.*
- *What is the role of the certification agencies for ensuring deforestation-free soy production?*

1.1 Scope and limitations

As already mentioned above, the issue of deforestation is complex and therefore not restricted to discussions on the interactions of its supply chain. As may be seen in the literature review below, deforestation has and is receiving a great deal of attention from the environmental sciences, that have attempted to quantify and qualify the amount of deforestation

and its unintended consequences. However, deforestation has ramifications that stretch into far beyond the simple clearing of natural vegetation: it puts enormous biomes and fragile ecosystems at risk, causes the death and extinction of thousands of animal and insect species and greatly impacts the social and economic lives and livelihood of the people living in the affected areas (Garrett and Rausch 2016). Large-scale mono-crop agriculture, based on intensive, mechanical and pesticide-rich farming techniques have brought about enormous changes in the Brazilian socio-economic landscape, negatively affecting the subsistence farming of the poorer, rural population's way of life, its land possession, food security as well as cultural and family traditions (Eloy et al. 2016). Furthermore, illicit activities such as land grabbing and violence are also heavily associated with large-scale agriculture and deforestation. Although a vitally important part of the debate about the soy-related deforestation taking place on the agricultural frontier of Brazil, it is not the object of this thesis to account for the aforementioned impacts. Such impacts will therefore not be a part of the analysis, whose primary objective is to highlight the strengths and weaknesses of the corporate pledges undertaken by the DAAS in relation to the existing conditions of Brazilian soybean production.

2 Literature review

2.1 Introduction: State of Research

The literature review/state of research will focus on the aspects and concepts that make sense for investigating the topic of this thesis. Given the limitations established in the introduction, the review will not emphasize research that focuses narrowly on secondary impacts of soy-related deforestation on nature, biodiversity, indigenous or traditional populations and food security. It should be noted, however, that many of the authors referenced in the literature review section have investigated the rate, extension or causes of deforestation as a part of an argument that focuses on such impacts, as for example Ludvine Eloy, who uses deforestation data to investigate how environmental politics have been used selectively to marginalize traditional populations in the Cerrado (Eloy et al. 2016)). Neither does the review include debates on the co-relation between a perceived positive socio-economic development and Brazil's neo-extractivist economic policy (Burchard and Dietz), of which soybean production is an integral and essential part. This is a contentious topic and previous research done in connection with my bachelor thesis has indeed shown that this type of neo-liberal

development policies may lead to negative socio-economic side-effects for certain types of traditional farmers and local communities⁴.

There is a vast literature on the topic of soy related deforestation available from various sources. Scholars and researchers derive from areas spanning agriculture, biology and geography and the environmental sciences in general, to history, anthropology and other areas within the humanities. This is of significance for a literature review as there are no traditional nor obvious databases related to this field of study. It means that a literature review of the topic of deforestation will depend heavily on the subject area involved. In the case of this thesis, the subject area is the relation between deforestation and soy production, which will then rule out databases that are more narrowly focused on either biological or agricultural sciences.

Though searches within databases such as BioOne and Scopus, and also in the Directory of Open Access (in Portuguese) were also conducted, most of the articles that were relevant for the research topic are published in English via the AU library or Google Scholar in journals such as the Journal of Peasant Studies, Latin American Studies, Science, Nature, Forestry Conservation Letters, International Forestry Review, Sage and others.

However, while the debate may be happening in English, a large portion of the contributions stem from Brazilian and Latin American scholars. Thus, a search with the keywords “deforestation and soybean production” in the Danish university database kb.dk returned 4547 peer reviewed articles whereas the same search using the words in Portuguese turned up 161 articles, which may be a better indication of the amount of collaborations made from Brazilian scholars, as the articles are spotted on the basis of the abstract in Portuguese.

The same search for Portuguese language articles in the Directory of Open Access under the subject areas “agriculture”, “environmental sciences” and “geography”, using the keywords “desmatamento” (deforestation) and “soja” (soy) turned out a mere 10 articles. When only applying the keyword “desmatamento”, the directory came up with 268 articles, mainly published by Brazilian universities, however, the results were mostly narrowly connected to the specific subjects areas and not to the link between deforestation and soy production.

The other main contributions come from American and European scholars. Significantly, though, a similar search with keywords in Danish in kb.dk only returned 1 (one) article (Olsen and Hansen 2019), while the same search in BioOne and Scopus returned none.

⁴ Bachelor project by Maria Ulsig - “Social, economic and environmental impacts of large-scale agribusiness on the traditional farming communities “Fundo e Fecho de Pasto” in Bahia”, submitted at Aarhus University in August 2019.

Thus, the subject area of this thesis – deforestation - and deforestation related to soybean production has been more frequently discussed in international academia than in the Danish research environment. As we shall see later on, the debate in Denmark on deforestation, its causes and its effects, is limited to its relation and significance for the Danish agricultural production, to trade and economic relations and, more recently, to corporate responses to the growing awareness on the part of consumers as to the burning of the Amazon forest. Rather than an academic debate, these aspects and notions are part of a public debate, the venue of which is mainstream and specific media, as well as social media and NGO campaigns.

In this chapter I will attempt to give an overview of the themes that have been most dominant within the debate on deforestation in Brazil over the last 20-25 years. The review has been divided into two separate yet related areas. The first and largest section deals with soybean cultivation as a direct or indirect driver of deforestation in Brazil and the difference in monitoring and protection between the Amazon and the Cerrado region. The second section turns the attention to how global environmental concerns have found their way into sustainable/green/responsible corporate policies and led to zero deforestation commitments made by players in the global supply chain.

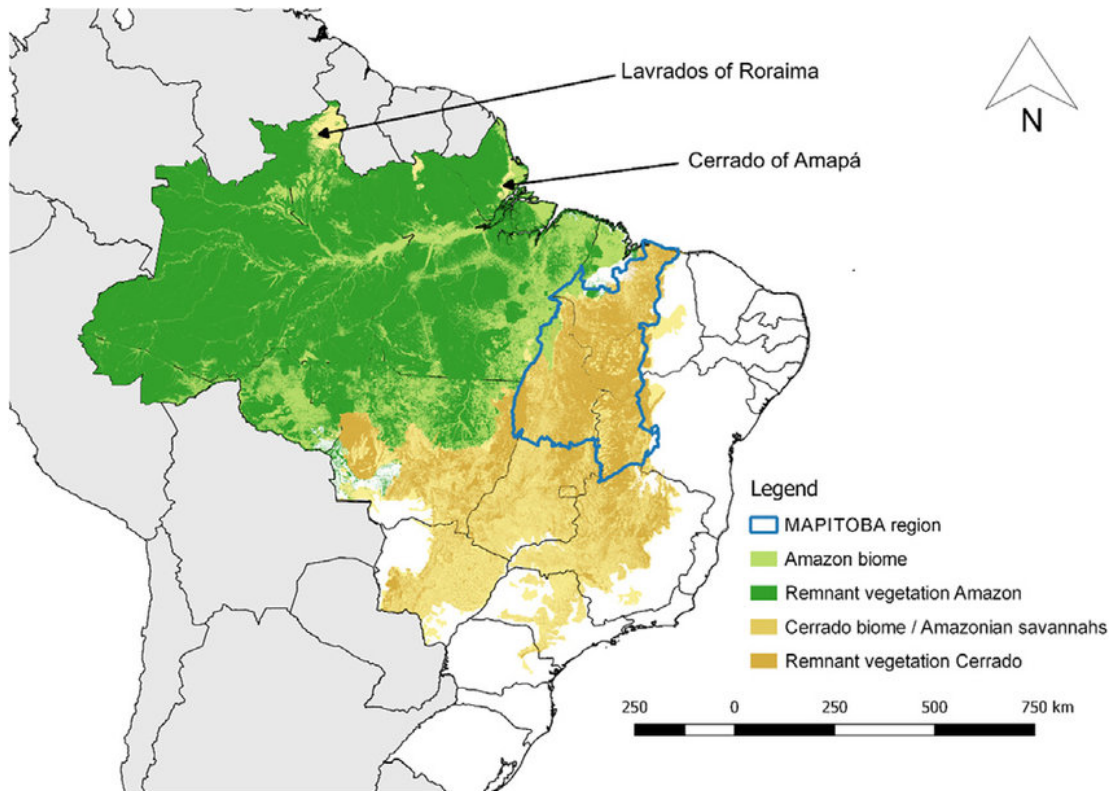


Fig. 1. Map of Brazil with Amazon and Cerrado biomes and MATOPIBA region.

Before embarking on the literature review, however, a few explanations are necessary concerning the use and the meaning of the words **region** and **biome**. The Amazon region covers several states in the central-north part of Brazil (Fig 1) and the Cerrado covers another part of central and north-eastern Brazil. The dominant vegetation in the Amazon biome is tropical rainforest and in the Cerrado region it is tropical savanna (Lisa L. Rausch et al. 2019). However, the biomes, that is “a major community of plants and animals with similar life forms and environmental conditions.. and one dominant type of vegetation..” (Britannica Science) overlap between the two regions, meaning that there may be a Cerrado type biome in a Amazon region state and inversely, a tropical rainforest biome in a Cerrado state, and also that one state may have several biomes within its boundaries, as is the case with the state of Mato Grosso. This distinction is not of any major consequence for the literature review and the terms ‘biome’ and ‘region’ will be used interchangeably. Additionally, the designation “Legal Amazon” is also used frequently and refers to an area made up of 9 states, covering almost the entirety of the Amazon biome, part of the Cerrado biome and also part of the Pantanal (wetland) biome (Fig. 2). This term will be used whenever it is specifically referred to in the related literature, as it may be used throughout the thesis paper, whenever relevant for the understanding of the topic or discussion at hand.

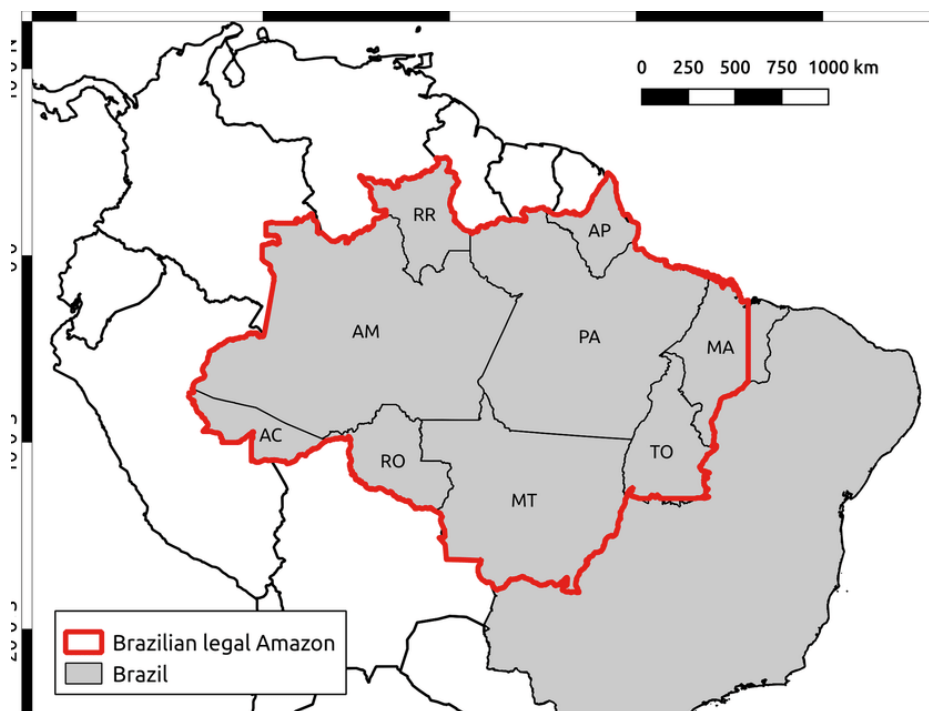


Fig. 2. Map showing the 9 states comprising the Legal Amazon region.

2.2 Monitoring and quantifying deforestation in Brazil

The bulk of the literature on deforestation is concerned with monitoring and recording the physical, spatial and measurable aspects. Therefore, it is largely based on satellite images and geographical surveys that combined with other statistical data and official records are capable of providing a better understanding of the extent of deforestation, its location and nature, i.e the land use change. All satellite data is provided by the Brazilian Space Research Institute (Instituto Nacional de Pesquisas Espaciais– “INPE”), and is referenced as one of the main sources of information by most researchers.

Thus, Fearnside (Philip M. Fearnside 2005) refers to it in his article on the extent and rate of deforestation in the Amazon; Matricardi (Matricardi et al. 2018) emphasizes the utility of remote sensing techniques based on INPE satellite data, coupled with models developed with advanced software to not only monitor the deforestation and the change in land use, but also to be able to project the future deforestation in a specific area.

Song (Song et al. 2021) shows how soybean cultivation has caused extensive deforestation not only in the Amazon, but mainly in the Cerrado, by using elaborate map techniques over a period of 19 years to record the expansion of the soy frontier, through the tracking of the conversion from pasture land to soy cultivation through data obtained from the INPE. Barona (Barona et al. 2010) also bases her survey on INPE data to show the link between pasture and soy related deforestation in the Amazon, allowing her to develop the concept of “displaced” deforestation.

Yet other researchers make use of public property registries to assess both deforestation and land use change. Lisa Rauch (Lisa L. Rausch et al. 2019) combines data from Brazil’s recent rural property registry (“CAR”) and the older National Institute of Colonization and Agrarian Reform (INCRA) to assess if land in the Cerrado region is being cleared in excess of the legal limits established in the Brazilian forest code from 2012, concluding that only 15% of farmers had infringed the law. However, 51% of such farms were soy producers. On the other hand, Schneider (Schneider, Biedzicki De Marques, and Peres 2021), argues that the CAR register lacks validation and that it may potentially be used by squatters “to claim land regularization”, as it is based on self-declaration, and therefore not reliable as a source of data for determining the extent of cultivated land.

Phillip Fearnside, who since the beginning of the 1990s has been one of the main contributors and producers of knowledge related to the causes and extent of deforestation in the Amazon, uses data on biomass and CO₂ emissions in his 2009 article (Philip Martin Fearnside et al. 2009) to perform a kind of inverse tracking of deforestation due to land use

change in the states of Rondonia and Mato Grosso, which are two of the main contributors to CO₂ emissions. Fearnside is also one of the first researchers to draw attention to the fact that data on deforestation and land use change for the Cerrado regions (of which Mato Grosso is a part) not as well monitored as the Amazon region.

The INPE, in its capacity as a research institution, also publishes its own findings online, as for example, in the FAQs section (INPE 2022). Using Landsat satellite images, INPE has monitored the Amazon biome and the area known as Legal Amazon since 1988, estimating that approximately 729.000 km² of forest and native vegetation in the Amazon biome has been cleared. As this biome makes up nearly half of the 8.5 million km² of the Brazilian territory the loss therefore translates into nearly 10% of Brazil's total area.

Nepstad (Nepstad et al. 2009) observes that the average annual deforestation rate between 1996 and 2005 was 19,500km², peaking at around 27,000km² in 2004, and Boucher (Boucher, Roquemore, and Fitzhugh 2013) explains how soy production moved up towards the Amazon in the 1990s, growing at such a fast pace that it was accountable for almost ¼ of all deforestation at the beginning of the new millennium.

Schneider, Biedzicki De Marques, and Peres points to the acceleration in the deforestation rates in the Amazon region in the years 2019 and 2020, up from an annual average of 6494km² between 2009 and 2018 (Schneider, Biedzicki De Marques, and Peres 2021). However, although the authors state that more than half of the total loss of forest/original vegetation occurred “in this century alone”(Schneider, Biedzicki De Marques, and Peres 2021, 2), this result is obtained from looking at the combined deforestation of both the Amazon and the Cerrado region.

In actual fact, Lisa Rauch (Lisa L Rausch and Gibbs 2016) and Heilmayr (Heilmayr et al. 2020) argue that since 2006, the deforestation in the Amazon region fell to lower rates than ever before in this century. Rausch (Lisa L Rausch and Gibbs 2016) point to the establishment of the 2006 Soy Moratorium as the main reason for the drop in deforestation after 2006. The Soy Moratorium was an agreement entered into by producers, traders and exporters that soy produced in the Amazon biome could only be sold if it had been produced “deforestation-free”, i.e. not produced on any areas that had been cleared after 2006⁵.

Heilmayr (Heilmayr et al. 2020) emphasizes a report by Greenpeace (“Eating up the Amazon”) as instrumental for the creation of the Soy Moratorium, in which the NGO establishes the connection between three big US soy commodity traders - Bunge, Cargill and

⁵ Please refer to section 3.4.1 for a more detailed explanation of the Soy Moratorium and its significance

ADM - with extensive deforestation in the Amazon, while Boucher (Boucher, Roquemore, and Fitzhugh 2013) mention that the Greenpeace report also stressed themes such as global warming, water pollution and the use of slave labor. And in a case study report for the WWF (L. Rausch 2021), Lisa Rausch underlines the immediate response by “consumer facing companies” to demand deforestation free soy from the traders in their supply chain following the publication of the report.

However, although the Soy Moratorium is viewed by the above authors as largely successful, some criticism has developed over the years. Thus, Rauch (L. Rausch 2021) who is writing after the Soy Moratorium has been made permanent (the 2006 agreement only foresaw duration of the moratorium until 2016) acknowledges that soy related deforestation in the Amazon can only be linked to around 2% of total deforestation in 2018/2019, but addresses the concern that soy is now increasingly responsible for deforestation in the Cerrado region.

Heilmayr (Heilmayr et al. 2020) emphasizes the combined effort of the Soy Moratorium agreement and the soy working group (Grupo de Trabalho de Soja – GTS), made up by NGO’s, traders and government agencies and asks the question of how much supporting strategies in the form of environmental legislation, rural registers and NGO advocacy have in fact meant for the success of the moratorium, arguing that there is a need to understand this relation to ensure the continued success of the moratorium.

Likewise, in recent years, the media has also started to report increases in deforestation rates. An article in BBC Brazil ("Desmatamento na Amazônia tem a maior taxa em 15 anos" 2021). describes how deforestation has shown a steady upward trend since 2016, topping last year with satellite data showing a total of 13255 km² of land cleared in one year, the largest amount annual amount since 2006.

Finally, Barona (Barona et al. 2010), using official geographical and statistical data on the Legal Amazon, concludes that the increase of soy production in the state of Mato Grosso has pushed deforestation further up into the Amazon, thereby highlighting an important aspect of another indirect manner of soy related deforestation. The indirect deforestation occurs when native vegetation is cleared for other purposes than soy cultivation, but in reality is a consequence of a conversion of earlier pasture land into soy cropland. Thus, although technically no land was cleared specifically for cultivating soy, the conversion of pasture land into soy cropland is essentially the reason that new land had been cleared for pasture, making the case for what is named “displaced deforestation” (Barona et al. 2010, 1).

2.2.1 Soy-related deforestation into the Cerrado

In contrast with the strong emphasis on Amazon region deforestation which is highlighted in connection with the debate on the Soy Moratorium, soy related deforestation in the Cerrado region has only started recently to attract attention from academia: a quick search with the keyword “Cerrado deforestation” in AU library database for the period 1985-2005 turns up around 500 articles and 3 books; conversely, the same search for the period 2005-2022 revealed more than 4500 articles and 25 books.

This notable difference in results is not due to any absence of deforestation in the Cerrado region prior to 2005. On the contrary, as early as 2001 (Philip M. Fearnside 2001), that is, prior to the Soy Moratorium which only covers the Amazon region, Fearnside notices that most of Brazilian soybean cultivation in fact takes place in the Cerrado, arguing that the fragile savanna biome is heavily affected in terms of water shortage, soil degradation and loss of biodiversity (Philip M. Fearnside 2001, 27). In 2009, Fearnside observes that the deforestation of the Cerrado biome and the region of the cerrados (savannas) was actually at its height during the 1980 and 1990s (Philip Martin Fearnside et al. 2009). Others again, like for example Schneider (Schneider, Biedzicki De Marques, and Peres 2021) speculate that the Cerrado has not managed to attract the same attention nor protection as the Amazon due to a cultural bias towards the kind of vegetation that dominates the savanna: they argue that the grassy and sparse vegetation of the Cerrado would not be regarded as important as the green canopy forests of the Amazon.

But sparse vegetation is not an indicator of environmental importance, as shown by Klink and Machado (Klink and Machado 2005) who emphasize that the region is Brazil’s second largest biome (after the Amazon), home to more than 7000 known plants and therefore potentially the richest tropical savanna in the world. Nevertheless, the author stresses, historically, it has faced a much higher deforestation than ever in the Amazon region; the annual deforestation rate in the Cerrado between 1970 and 1975 has been measured at 40.000 km², which was “1.8 times the deforestation rate for the Amazon from 1978 to 1988” (Klink and Machado 2005, 708). According to the authors, although it is considered one of the most bio-diverse regions in the world, in 2005 over 55% of its area had been cleared in connection with agriculture or other human use.

Despite the Cerrado’s importance as a bio diversity reserve, Rausch (Lisa L. Rausch et al. 2019), highlights the fact that the Cerrado biome, which is present in 10 states altogether, is not a part of the Soy Moratorium from 2006. Rausch also emphasizes that it is subject to a more lenient environmental legislation than the Amazon biome, which means that only 20%

of its vegetation must be kept intact, as opposed to 80% in the Amazon biome⁶. Additionally, as noted by Rausch, research has revealed that soy farms in the Cerrado region are much more liable to violate the environmental legislation than other types of farms. A study by the authors uncovered that 51% of the soy farms had exceeded the legally established limits as opposed to around 10% of other farms. The research also showed an annual increase of between 24 and 46% in areas deforested for the purpose of soy crops in the period 2003-2014.

Viera (Vieira et al. 2018, 434) on the other hand, indicates the total loss of the original vegetation of the Cerrado biome at 46%, arguing that even if the deforestation is done within the limits established in Brazil's 2012 environmental legislation (Forest Code), it would not protect the Cerrado region from extensive deforestation as the Forest Code only requires 20% of private lands for conservation purposes, concluding that a full 80% of the Cerrado region could potentially be lost to agriculture.

Ludvine Eloy identifies 2009 as the year in which the Cerrado “emerged as a political and environmental issue” (Eloy et al. 2016, 8). At the 2009 COP in Copenhagen, Brazil presented a plan to among other measures, reduce deforestation in the Cerrado by 40% compared to 1999-2005 period, and according to the author was instrumental in showing the gravity of the deforestation happening in that region. The author puts total clearing at 48.4% (986,247 km²) of the total Cerrado region in 2008, as opposed to “only” 18 percent of the Amazon region, which in conjunction with the findings of the two previously cited authors indicate that there are statistical inconsistencies and or reporting inconsistencies in the data for the Cerrado.

Within the Cerrado region, the most notable expansion of the soy frontier has happened in four states, known as the MATOPIBA region (made up of Maranhão, Tocantins, Piauí and Bahia). Silva Silva (P.S. Silva et al. 2020) argues that this area currently accounts for the largest production of soybeans in all Brazil and also some of the highest deforestation rates in recent years. Spera (Spera et al. 2016) also highlight the MATOPIBA area as the main soy producing region, noting that soy planted cropland doubled between 2003 and 2013, while also pointing out that the Brazilian government only started to grant official development support in 2015.

⁶ The Forest Code requires 80% of all vegetation to be kept intact inside the area defined as Legal Amazon, which also includes parts of the Cerrado biome. In other parts of the Cerrado biome, the protection is only between 20 and 35%, such as the states of Piauí, Bahia, Minas Gerais and the larger part of Maranhao. Please refer to the maps in Figures 1 and 2.

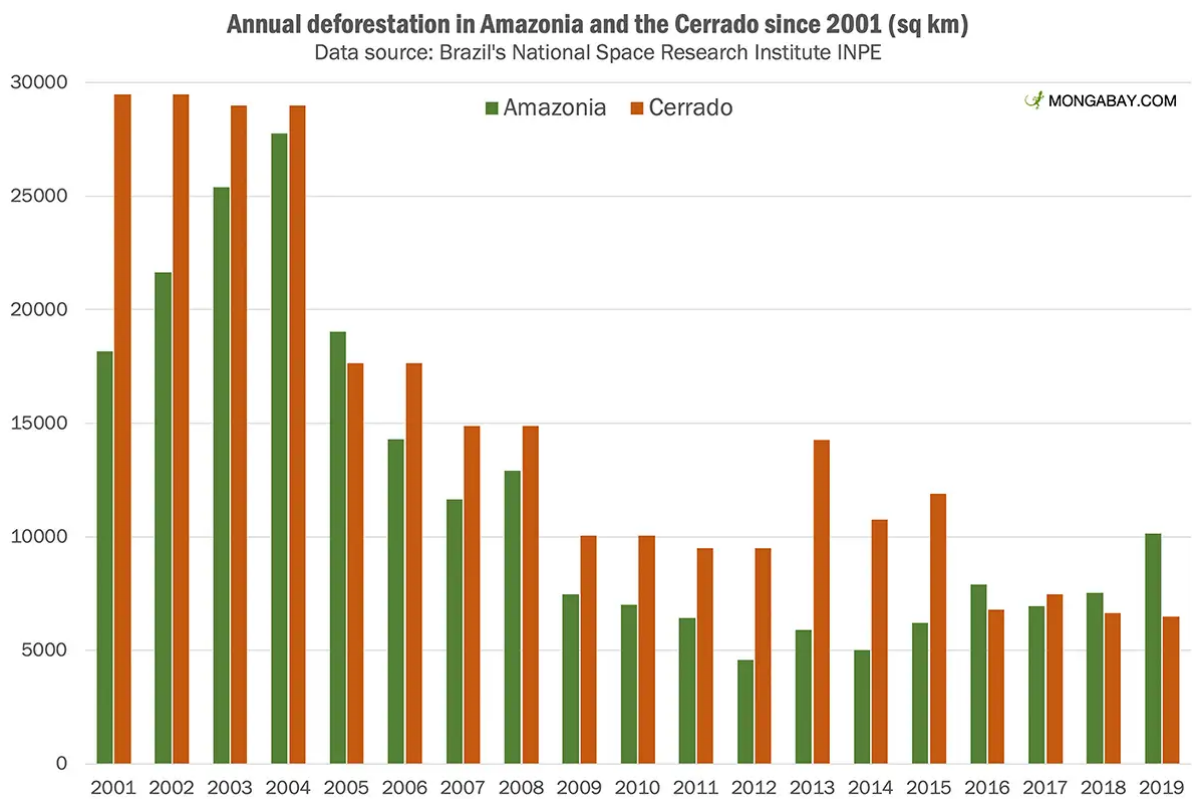


Fig. 3. Deforestation rates Amazon/Cerrado – 2001 to 2019

Despite the recent date for designating the Matopiba area of the Cerrado an official development area, the Brazilian historian Cleiton da Silva (C.M.d. Silva 2018) demonstrates how internal migration coupled with US soil technology and new fertilizing techniques were responsible for the start of developing the Cerrado as a farmland already in the 1970s. Cleiton da Silva is corroborated by Schneider (Schneider, Biedzicki De Marques, and Peres 2021) who argues that the MATOPIBA underwent a “rapid transformation from small scale, low productivity farming to intensive, high-yield, irrigation-dependent modern mechanized agriculture” (Schneider, Biedzicki De Marques, and Peres 2021, 3), making it extremely well suited for large scale agriculture.

2.3 Corporate deforestation-free commitments, soybeans and sustainability policies

The establishment of an alliance such as the DAAS among Denmark’s biggest soy importers and industries for the purpose of defining policies on deforestation-free soy does not stand alone in the corporate world: Virah-Sawmy (Virah-Sawmy et al. 2019) has written about market governance in the soy-meat sector and how it follows a tendency among major soy producers, traders, importers and industries to incorporate environmental concerns into their company mission statement. The author points out how an instrument such as a zero-

deforestation commitment (i.e. The Soy Moratorium) may inadvertently lead to new agricultural frontiers in a less protected region, as is the case with the Cerrado. Another of Virah's conclusions is that different actors along the supply chain chose different policy instruments depending on the type and level of perceived including pressure from NGO's and customers.

This conclusion is mirrored by Guerrero (Guerrero et al. 2021, 127) who argues that although sustainability policies such as deforestation-free soy are voluntarily entered into, such commitments are often the result of outside pressure, for example through intense NGO campaigning, or as a response to market pressure. Guerrero also claims that while the sustainability policies may be written into the company's CSR, they often lack concrete measures or timelines, which may be rooted in the internal motivation of the company to effectively push through with its measures.

Ermgassen (zu Ermgassen et al. 2020) argues that the policy measures often fail to deliver the expected result as they are linked to external factors such as lack of transparency and traceability in the supply chain. This aspect of corporate commitments is key to understanding not only how the soy supply chain incorporates and executes the measures designed to prevent deforestation in a given company's product, but also for assessing the likelihood of success of such measures. Zu Ermgassen also finds that the lack of transparency and traceability is higher for the Cerrado region than for the Amazon region, where the Soy Moratorium has been in place for over 15 years.

Guerrero (Guerrero et al. 2021) also identifies certification schemes such as the RTRS and Pro Terra used by traders and buyers as a means to guarantee the sustainability, including zero deforestation, of the soy they deal in or use in food or feed production. However, research by Garret (Garrett et al. 2016).has shown that such schemes have structural and operational shortcomings that does not guarantee the premise of deforestation. Schilling-Vacaflor (Schilling-Vacaflor et al. 2021) further explains that the reliance of certification schemes such as the RTRS has led to the widespread practice of purchasing RTRS credits to offset unsustainable soy imports, thereby enabling companies to use such credits in their sustainability strategy for deforestation-free products.

In general, however, the review of corporate zero deforestation policies related to soybean production suggests the same bias in relation to focusing on the Amazon as the problem area in detriment of the Cerrado.

2.4 Situating the research question within the literature review

This literature review has shown that deforestation is not limited to the Amazon biome and that the current soy frontier has moved towards the Cerrado biome, which is not covered by the Soy Moratorium. The review also suggests that extensive and thorough research into the monitoring of deforestation and conservation measures has been carried out, especially in regard to the Amazon region. However, despite the monitoring and despite some advances in environmental legislation in conjunction with both global and local initiatives to curb deforestation, the literature review demonstrates that deforestation in the Amazon and the Cerrado is once again on the rise and that soybean production is likely to increase.

Within the literature on corporate commitments related to deforestation-free soy, research has mainly focused on what instruments are available for verification and certification of deforestation free soy throughout the supply chain, and less on how the various industry and trade associations on the consumer end develop their policies. More importantly, there seems to be a lack of research into the sustainability – *Sensu Stricto* - of the zero deforestation commitments of such associations: Are the commitments that the associations and individual companies undertake realistic in view of the conditions under which the soy is produced? And what is the significance of the different protection of the Amazon and the Cerrado biomes in relation to how such commitments are elaborated?

My research will therefore focus on the intersection between these two aspects of the debate on deforestation-free soy from Brazil: the connection between the corporate commitments and the conditions underlying the basis on which they are developed. My choice of a Danish trade association for the case study aims at making the research of the thesis locally relevant, while at the same time contributing to a global debate on sustainability and *greening* policies in the corporate world.

Note to the research question: since the planning and start of this thesis in January 2022, a new IFRO⁷-commissioned report by Aske Skovmand Bosselman has been published – “A road to import of traceable, responsibly produced and deforestation-free soy. Perspectives of Danish and European stakeholders”. In chapter 5, pp 14-16, the commitments undertaken by the DAAS are analyzed briefly, including the results of a questionnaire answered by the members of the Alliance regarding the challenges they are encountering in obtaining their goals. While such report findings have not been included in this literature review, or elsewhere, the fact that the authors chose to include the Alliance and discuss the challenges of their commitments underlines the growing significance of corporate actions in the debate on deforestation and the environment.

⁷ IFRO – Department of Food and Resource Economics of the University of Copenhagen, Denmark.

3 Background

3.1 Brazil: demographics, economy and politics - an overview.

Brazil is the largest country in South America and fifth largest country in the world in terms of geographical extension. Its 8,510,345.538 square kilometers border with 10 countries (IBGE 2021) and in 2021 its population reached 213 million⁸. Brazil integrates the trade bloc “of the Southern Cone”, the Mercosur, together with Argentina, Uruguay and Paraguay, all of which have raw material and resource extraction as the basis for their economy. Brazil’s official language is Portuguese, and it has the largest economy of the region: in 2020, its GDP was USD 1.445 trillion, ranking in 12th place of all economies in the world, and amounting to an average GDP per capita PPP of USD 14,835⁹.

Considering the size of its economy, it is debatable whether Brazil should still be considered a developing country, its per capita income certainly classifies it as a middle-income country. However, its human development index (HDI) in 2019 of 0.765¹⁰ would still just narrowly place it together with the developing countries of most of the global south (the threshold is 0.80), a position that may be explained through its income distribution: the richest 10% of the population hold a 42% share, whereas the poorest 40% hold only 10,4% of total income, making Brazil one of the most unequal countries in the world, with a Gini coefficient of 53.5¹¹ (2019). The Gini coefficient measures inequality; the higher and closer to 100 that a country’s value is calculated, the more unequal it is considered, and the closer to 0 that a country’s value reaches, the more equal it is considered. Brazil’s social welfare program *Bolsa Familia* currently benefits a full 50 million people, i.e. one fourth of the population, with unemployment reaching 12.1% of the total population.

In its first 300 years of existence, Brazil was a colony, ruled from, and for Portugal. However, in an unprecedented historic happening, in 1808, the Portuguese emperor Dom Joao VI, fleeing the Napoleonic invasion, moved himself, his family and entire court as well as the administrative apparatus, to Rio de Janeiro, effectively running Portugal from its main colony (Fausto 2014). In 1822, Brazil became independent, however, constitutionally it continued as a monarchy until 1889, at which time the country declared itself a republic, drew up a constitution based on the ideals of the United States, and instituted presidentialism as a form

⁸ <https://agenciabrasil.ebc.com.br/economia/noticia/2021-08/populacao-brasileira-chega-2133-milhoes-de-pessoas-em-2021>

⁹ <https://databank.worldbank.org/data/download/GDP.pdf/>
<https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD?locations=BR>

¹⁰ <https://hdr.undp.org/data-center/specific-country-data#/countries/BRA>

¹¹ <https://data.worldbank.org/indicator/SI.POV.GINI?locations=BR>

of government (Fausto 2014, 141). It was also at this time, in 1888, that Brazil, as one of the last slave nations in the world, finally abolished slavery.

Since then, Brazil has seen its form of government change many times, as military coups and de-facto dictatorships have shifted between periods of relatively more democratic governments (Avritzer 2018). The last dictatorship lasted over 20 years and ended in 1985, with free elections having been held since then. From 2003 through 2016, Brazil was ruled by the left wing workers party – PT – *Partido dos Trabalhadores*, spearheaded by populist president Luis Ignacio da Silva – widely known as Lula - during the first 8 years.

The PT continued the neo-liberal economic policy set in motion by their predecessor, president Fernando Henrique Cardoso, but expanded it by promoting reforms within all sectors, from health care, education, renewable energy and oil extraction to agriculture, environmental protection and cash transfer programs. During the first two terms of the Workers' Party, there was a marked reduction in poverty and unemployment, and a significant growth in the GDP, with huge investments in infrastructure, energy projects and export based agriculture. The minimum wage rose 70% between 2003 and 2020 and the large trade surplus meant that the government was able to extend loans and provide cash transfer such as the Bolsa Familia to poor families. (Saad-Filho 2020; Hunter and Power 2019). Favored by the strong upswing in global commodity prices, Brazil concentrated its development policies on the exploitation of natural resources, focusing especially on export commodities such as oil, minerals and soybean and beef.

The exploration of natural resources was no novelty in Brazil, as it has constituted the very fabric of the Brazilian society for centuries. However, the difference in the economic model introduced under the Lula government was that the revenues from the exports this time were used to fuel social and economic reforms in the country, reverting then into benefits for the poorer and majority of its population. Such neo-liberal economic model based on raw material extraction and export has been named neo-extractivism, or neo developmentalism, in reference to the developmentalist policies that steered the economic development of Brazil between the 1940s and 1970s (North and Grinspun 2016; Burchardt and Dietz 2014). But whereas the developmentalism of the 1940s was an attempt to build industry and infrastructure to counteract Brazil's century-long dependency on raw material extraction making it vulnerable to cyclic booms and busts on the commodity market, neo-developmentalism is based on a raw material and resource export economy, but with the state in charge of regulating the activities, and, more importantly, of channeling revenues back into social progress (North and Grinspun 2016).

After Lula's two government periods, Brazil's first woman president Dilma Rousseff was elected for two consecutive periods, but the political and economic conditions had changed and her administration had to deal with falling trade and rising inflation, coupled with a general decline in global demand. At the same time, several political scandals had appeared, the most well-known one being the investigation into a widespread scheme of corruption of former president Lula and his political allies, known as "Operation Car Wash" (Saad-Filho 2020, 20). Rousseff lost both popular support as well as the support of PT's parliamentary base, and was removed from office in August 2016 through an impeachment process resulting from a political power struggle, considered controversial by many or, indeed, a plot to overthrow her (Saad-Filho 2020, 20).

General elections were held in October of 2018, electing the religious and far right-wing, former military officer Jair Bolsonaro as president (Hunter and Power 2019). In the first 3 years of his government, Bolsonaro has eliminated and renamed several departments of the environmental ministry, banned the use of the word **climate** from its administrative structure and done away with a specific department dedicated to combatting deforestation (Escobar 2019). Bolsonaro also denies climate crisis, claiming that it is a left-wing "dogma" and has even appointed cabinet ministers with biased interests, such as Ricardo Salles, a far-right lawyer with ties to the rural lobby¹², appointed minister of the Environment in 2018 (Escobar 2019). and Blairo Maggi, CEO of one of the biggest agricultural conglomerates in Brazil, the Grupo Amaggi, who was made minister of Agriculture in 2019 (P. Fearnside 2018, 9).

3.2 A history of extractivism

3.2.1 Early colonization and the boom-and-bust cycles.

In the year 1500, the first Portuguese ship arrived on the coast of Brazil, and shortly after, a trading consortium licensed by the Portuguese crown started exploring the territory, which had been defined in the Tordesillas agreement 6 years before, in 1494. (Roed Nielsen et al. 2012). The agreement, drawn up between Spain and Portugal, two rivalling and seafaring nations, established that Portugal would be able to claim all land east of an imaginary line that went from a point east of what today is the Amazonian town of Belém, straight south until a point approximately 100-200 km northeast of the coastal town on Santos (Roed Nielsen et al. 2012, 13). Spain would claim the much larger tract west thereof. Whereas the Spanish "conquistadores" quickly discovered gold and silver in the territories they explored, Portugal

¹² "Bancada Ruralista" a powerful lobby in the Brazilian Congress made up of stakeholders in Brazil's big agri-business.

engaged in barter trade with the large coastal indigenous population (Roed Nielsen et al. 2012; Fausto 2014). The first commodity was Brazilian redwood, *pau-brasil*, a red, hard wood, very sought after for furniture-making and ship construction in Europe, and also considered to be the origin of the country's name.

In 1535, the Portuguese crown divided the colony into large strips of land, from the coast and inland until the Tordesilhas line (Roed Nielsen et al. 2012, 11). These large plots were called "captainships" (*capitanias*), and were donated to tradesmen, bankers, bureaucrats and low-ranking noblemen to explore, however, not to own. The crown retained most rights to the land, and levied heavy taxes on all production, mainly the insipient sugar production, which Portugal had already been experimenting with on the island of Madeira (Fausto 2014). The production expanded with the first arrival of African slaves in the Northeastern coastal states of Pernambuco and Bahia in 1570. Again, Portugal built on their earlier experience; Portuguese traders had been engaging in slave trade on the west coast of Africa since the 15th century, and had already shipped a considerable number of slaves to work in sugar plantations on Madeira and other islands in the Atlantic (Fausto 2014, 23-24).

The sugar cane cultivation and sugar mills represented the first big commodity production in Brazil, lasting until the end of the 17th century. In the next centuries, gold, cotton, coffee and rubber production followed, which jointly with Brazil's intensive slave trade integrated the country in the world's triangular trade. In the late 20th century and beginning of 21st century, the soybean became the sought-after commodity, forever changing the forest and savanna landscapes of Brazil.

3.2.2. *"Conquer the land, dominate the water, subjugate the forest"¹³ – the adventure of the 20th century.*

In the 1930s, Brazil's industrial production was concentrated in the states of Rio de Janeiro (at that time the country's capital), Sao Paulo and Rio Grande do Sul. These were also the states that had received almost all of the European immigrants coming into the country since the abolition of slavery in 1888 (Fausto 2014). However, despite the influx of qualified labor and the increase in manufacturing industries such as the textile sector in Sao Paulo, Brazil was still overwhelmingly an agricultural country, with only 13.8% of its workforce employed in the industry, as opposed to almost 70% still in agriculture (Fausto 2014, 159). Moreover, the

¹³ "Conquistar a terra, dominar a água, sujeitar a floresta", Vargas, Getúlio. 1940 – from a speech given by Brazil's president Vargas - known as the "Discurso do Rio Amazonas." Source: Fundação Getúlio Vargas

bulk of the country's cotton and coffee production also took place in the state of Sao Paulo, thus further concentrating the economic power to the Southern region. Apart from the rubber boom in the Amazon, which had modernized the city of Manaus providing it with electric power, piped water and telephone services (Fausto 2014), the Amazon region and central Cerrado was largely undeveloped in terms of cities and infrastructure. The region was very sparsely populated, home to indigenous populations and traditional subsistence farming communities, and largely intact in terms of forest and other vegetation.

The global financial crisis in 1929 and growing, internal dissent, partly owing to the difference in economic and social development between the northern and southern part of the country, led to an unstable political situation during which right wing dictator Getulio Vargas rose to power, aided by a military coup. Vargas centralized the running of the country and relied on US investments and aid to increase the country's industrial output (Roed Nielsen et al. 2012). However, the question of developing the hinterlands, the regions of Mato Grosso, Goiás and further up into the Amazon still remained. The region was ideologically perceived as "empty" (Oliveira and Hecht 2018, 101), and, therefore, capable of being occupied or conquered.

In 1938, Getúlio Vargas announced a nationalistic program known as The March to the West (*Marcha para o Oeste*), which aimed at integrating the sparsely populated central and northern inland with the rest of the country, constructing roads and resettling small farmers. The heading of this section is a famous quotation made by Vargas, while presenting his visions to the local government of the city of Manaus on the margins of the Amazon river (Andrade 2010; Vargas 1940). Although one may discuss whether the program in reality aimed more at going north than west, the notion of the West should be seen in relation to the original colonization which happened at the coast and westwards.

One of the main projects within the program was the Roncador-Xingu expedition (1943-48), a 1300km long expedition from central Goias, through the central part of Mato Grosso's closed forest and indigenous territory, and further up north into the Amazon region. The objective of the expedition was to clear landing strips, establish military bases and radio communication points, to serve as location points for airline routes, as well as to carry out surveys for farmland. Around 40 small towns were established in the wake of the expedition, and hitherto uncontacted indigenous tribes were eventually removed to the large Xingu reservation (Orlando Villas Bôas 2012), thus allowing for the start of immigration and cultivation of the region.

Less than 20 years later, in 1956, Vargas' vision of bringing the country together was completed under President Juscelino Kubitschek, with the start of the construction of an entirely new capital in the middle of the central plateau in Goias. The new capital, Brasilia, was inaugurated in 1961 and the political and administrative power of the country moved from Rio de Janeiro to the hinterlands (Roed Nielsen et al. 2012). The road infrastructure continued to be expanded, new highways were built, paving the way for new settlers, who started to clear the forest, raise cattle and grow crops.

3.2.3 The new soy frontier

Not coincidentally, the development of the Cerrado region started at the beginning of the 1960s. The dry and acid land was to be cultivated, using all available means, which in this case meant applying new fertilization and land management techniques, resulting from cooperation and research carried out with support from US development agencies and Brazilian research and credit institutions (C.M.d. Silva 2018). The Cerrado soil was, and is, essentially not fertile, it is high in acidity and lacking in a series of basic nutrients. The transformation into productive cropland therefore meant “constructing a non-existing fertility” (C.M.d. Silva 2018, 418), rather than simply improving or regenerating the soil. The knowledge produced by the research also meant that new types of pasture were planted which in turn incremented the traditional cattle ranching in the region.

The introduction of the soybean as a commercial crop in the Cerrado was the result of a combination of both regional as well as global factors. First of all, Japanese immigrants had been cultivating soy as a subsistence crop in the southeastern part of Brazil since the beginning of the 20th century. In the 1940s, due to its due to its nitrogen-fixing properties, it began to be grown as a fertilizer crop by commercial wheat and maize farmers in Rio Grande do Sul (Oliveira and Hecht 2018). After WW2, soybean was increasingly being used for feed for livestock and the production of edible oil (Oliveira and Hecht 2018, 104) and from then on, commercial production of soy started to expand. By 1954, Brazilian production had reached 100,000 metric tons, and in 1969, one million metric tons.

At this time, the Japanese government through its international cooperation agency – JICA - initiated several cooperation agreements with Brazil to expand soy production in the Cerrado; the PADAP – Program of Direct Settlement of Alto Paranaíba, and subsequently the PRODECER – the Japanese-Brazilian Cooperation Agreement for the Development of the Cerrado. The development of such programs was “built on personal connections that reached back to the early days of Japanese migration to Brazil” (Oliveira and Hecht 2018, 106). It did,

however, also benefit and attract a large number of other emigrants of European descent, primarily Italian or German settlers from the South, who were looking for new land and favorable credit conditions (C.M.d. Silva 2018, 428).

From this time onward, the Brazilian production of soybeans accelerated rapidly, based on increasingly more advanced use of modern farming methods, modern machinery and use of pesticides. This research was supported and led by the Brazilian Agricultural Research Corporation – EMBRAPA - which developed new soy variants adapted to the Cerrado climate and soil conditions, and new soil management techniques (C.M.d. Silva 2018; Eloy et al. 2016). Between 1980 and 2015, the share of Cerrado cultivated soybeans in the overall soybean production in Brazil went from 14% (amounting to 2.1 million tons) to 61%, amounting to nearly 60 million tons (C.M.d. Silva 2018, 439). The devaluation of the Brazilian currency in the 1990s combined with the reduction of China’s import tariff further benefitted Brazil’s position, increasing its share in the global soybean production from 18 to 31% in the period 1990-2014 (Oliveira and Hecht 2018).

In 2021 the global production of soy beans reached 362.947 million tons, with Brazil as the biggest producer in the world, responsible for 135.409 million tons¹⁴. The big driver for soy beans is its dominant use for meat production globally, with China, the EU and other regions and countries increasing their production to accommodate the demand of their growing populations. Brazil’s exports to the EU amounted to nearly 13 million tons in 2018¹⁵. Commodity prices for soybean fluctuate on the world market, however, the general trend has been upward over the last 25 years, supporting and justifying the Brazilian investment in this commodity¹⁶.

3.2.4. *The Amazon Soy Moratorium (ASM)*

Significantly, and also a testament to the environmental concern that has been present in Brazil for many decades (despite the vast deforestation) the satellite monitoring system in place over the Amazon since 1988¹⁷ was instrumental in showing how deforestation rates went from relatively stable, albeit high rates during the 1990s to rapid increases in the first 4 years of the new millennium (Fig 1). In 2006, the world’s biggest environmental NGO, Greenpeace, published a report called “Eating up the Amazon”, pointing to findings revealing that in just

¹⁴ <https://www.embrapa.br/soja/cultivos/soja1/dados-economicos>

¹⁵ https://supplychains.trase.earth/flows/data-view?toolLayout=1&countries=27&commodities=1&selectedColumnsIds=0_16-1_25-2_11-3_10

¹⁶ <https://tradingeconomics.com/commodity/soybeans>

¹⁷ <http://www.obt.inpe.br/OBT/assuntos/programas/amazonia/prodes>

one year, an area the size of Belgium had been lost to deforestation. Having actively monitored the region since 1998, the organization blamed the expansion of soy production for being a major driver of deforestation in the Amazon. The report also named US based corporations ADM, Bunge and Cargill as the key players involved in the Brazilian soy business, as well as emphasizing the responsibility borne by European feed and food industry¹⁸.

The report prompted a quick response from civil organizations, particularly the European Consumers Soy Group, which put pressure on Brazilian traders and producers, resulting in the agreement now globally known as the Amazon Soy Moratorium. The agreement, at first only signed by the Brazilian Association of Vegetable Oil Industries (ABIOVE) and the National Association of Grain Exporters (ANEN) stipulated a complete stop for producing and buying soybeans originating from within the area comprised by the Legal Amazon as of the agreement date (24 July, 2006)¹⁹. A multi-stakeholder group was set up to lead and negotiate the terms and monitoring of the moratorium, and as of its first renewal in 2008 the Brazilian government also became a signatory. Although the cut-off date has since been changed to 2008, the Amazon Soy Moratorium is still considered the most important of all agreements made with respect to halting deforestation, both in terms of impact, as well as in terms of reference, as most certification standards use the ASM cut-off date as their reference.

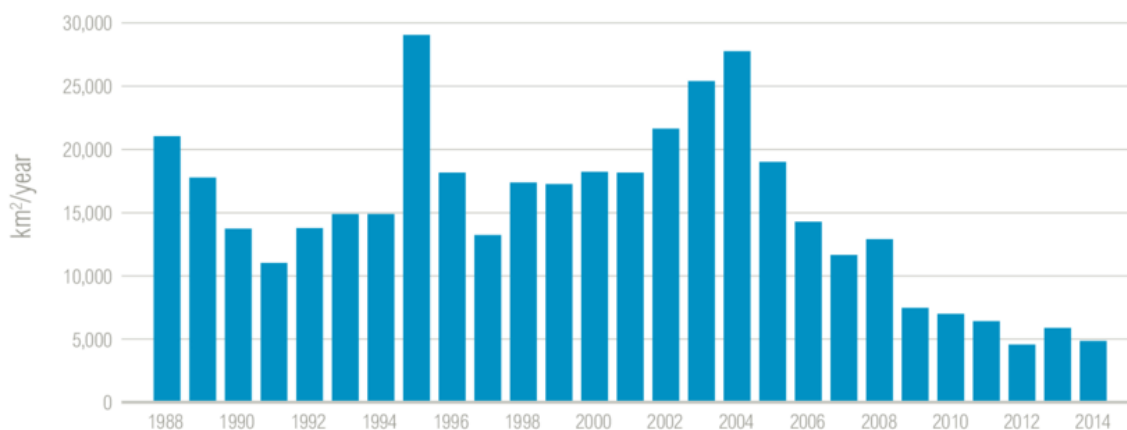


Fig. 4. Annual deforestation rate in the Legal Amazon 1988-2014²⁰

¹⁸ “Eating Up the Amazon” <https://www.greenpeace.org/usa/wp-content/uploads/legacy/Global/usa/report/2010/2/eating-up-the-amazon.pdf> accessed on 20.06.22

¹⁹ <https://www.mercadosagricolas.com.br/inteligencia/o-que-e-a-moratoria-da-soja/> and

<https://www.imaflora.org/public/media/biblioteca/IMF-10-years-of-soy-moratorium-WB.pdf>

²⁰ https://www.researchgate.net/figure/Annual-Deforestation-Rates-in-the-Legal-Amazon-1988-2014_fig1_282021142/download

3.3 The soy supply chain in Brazil

The soy production in Brazil is controlled through domestic and overseas supply chains which are dominated by global food conglomerates such as Cargill, Bunge, Louis Dreyfus, ADM, along with Brazilian players as Amaggi (Schilling-Vacaflor et al. 2021, 4; Garrett and Rausch 2016, 469). These companies often integrate production, transport, sale, export and import, as well as having their own certification agencies. They therefore in effect constitute monopolies on the soy market, providing little leeway for independent verification of deforestation free soy and thus rendering the market less transparent (Schilling-Vacaflor et al. 2021). In 2018, of a total 117.9 million tons, the EU imported 12.9 million tons, with the Netherlands and Spain the main ports of entry, respectively 3.862 million and 2.426 million tons. 18.344 million tons go to domestic consumption while China was by far the biggest importer, receiving 67.718 million tons²¹ (TRASE 2022). Denmark accounts for around 540,000 tons²², i.e. only a fraction of Brazil's overall exports, - a fact that may influence its leverage when seeking to exert pressure on Brazilian suppliers to switch to more sustainable production.

The EU does not levy any import tariffs on the import of soy beans. Beef, on the other hand, is subject to tariff, and if the new Mercosur-EU free trade agreement is ratified, it will open up for a 33% increase of beef, in turn leading to increased deforestation resulting from clearing of pasture land as well as increased production of soy as feed for cattle in Brazil (Kehoe et al. 2020; Heyl et al. 2021; Fritz 2020). While it may well have an indirect impact in the dynamics of the soy supply chain, it lies beyond the scope and possibility of this thesis to discuss the implications of such a scenario in relation to the debate on deforestation-free soy.

3.4 Soy in Danish meat and dairy production – an overview

Denmark is one of Europe's most intensively cultivated countries, with agriculture occupying nearly 60% of the total area of the country. Currently, nearly 80% of the country's agricultural area is used exclusively to grow crops used for feeding its enormous dairy and pork production, making Denmark the country in the world with the biggest meat production per inhabitant: 330kg/inhabitant (Holmstrup 2018). At the same time, Denmark imports approximately 1.7 million tons of soybeans every year, of which approximately 44% comes

²¹ <https://supplychains.trase.earth/explore>

²² The figure represents Denmark's direct and indirect soy imports from Brazil – please refer to page 25 below for a breakdown.

from the Brazilian soy production, either directly, or through re-export from third party countries such as Germany, the Netherlands and Belgium.

Export country		2020	
Germany	577,070		(32.1%)
Argentina	504,797		(28.1%)
Brazil	228,839		(12.7%)
Netherlands	105,168		(5.9%)
Paraguay	80,424		(4.5%)
Russia	75,368		(4.2%)
UK	9,481		(0.5%)
ROW	225,474		(12%)
Total		1,797,139	

Fig. 5. Danish import of soybean and soybean meal by country²³. Source: DAAS Status Report 2020.

For comparative purposes, the biggest importers in the EU are the Netherlands (3,862,734 tons) and Spain 2,426,309 tons)²⁴, however, given the extensive re-export within the EU, these figures are not representative of the individual countries' soy footprint. Thus, although direct import from Brazil only amounts to 12.7%, the re-exports from non-soybean producing countries (e.g. Germany and the Netherlands) means that total imports into Denmark from Brazil have been calculated at 539,082 tons, whereas Argentina is responsible for 581,230 tons²⁵. The bulk of the Danish import is used for feed for its intensive pig and cattle and production: 56% of the total import is used in the industrial production of pork meat, whereas 35% supplies the dairy production (Gustav Esmann, Morten, and Aske Skovmand 2020).

Whereas global pig meat production rose from 24.75 million tons in 1961 to 120.88 million tons in 2018, i.e. nearly a five-fold increase, the production of pig meat in Denmark went from 614,300 tons to 1.58 million tons in the same period, i.e. less than three times as much (Roser 2017). Globally the use of soy in animal feed has risen with the increase in confinement of livestock, in turn connected to the search for increased output and productivity; soybeans have a high protein content and contain essential amino acids that cannot be supplied in the same scale through traditional sources such as grass, barley, corn sugar beets (Holmstrup 2018). Although Denmark grows most of the grain and other types of plants used in the production of pigs and for feeding the dairy and beef cattle, it has come to rely increasingly on the use of soymeal to complement the feed mixture required to continuously increase the yield

²³ <https://www.dieh.dk/dyn/resources/Rightboxes/file/4/74/1638968246/status-report-2020.pdf>

²⁴ TRASE EARTH
https://supplychains.trase.earth/flows?toolLayout=1&countries=27&commodities=1&selectedColumnsIds=0_1_6-1_24-2_11-3_10

²⁵ DAAS Status Report 2020 - <https://www.dieh.dk/dyn/resources/Rightboxes/file/4/74/1638968246/status-report-2020.pdf>

per pig/cow. Currently, soy represents between 8 and 15% of the feed compound in pig poultry and dairy production.

In recent years, however, the dependency on import of soy for meat and dairy production has come under scrutiny, partly owing to the ongoing public debate on deforestation in soy producing countries, such as Brazil. Research with other types of pulses such as peas and beans protein rich crops is incentivized at the same time as industry reports on Denmark's soy imports and the impact on deforestation have started to circulate (Gustav Esmann, Morten, and Aske Skovmand 2020; Bosselmann 2020).

3.5 Soy sourcing guidelines, standards and certification schemes

The large trade organization, the European Feed Manufacturers' Federation – FEFAC - has formulated sustainability policies regarding the import of soy and recently updated their “Soy Sourcing Guidelines” which serve as the standard for many soy importers, including some to the companies that make up the DAAS. FEFAC claims that 80.4% of EU soy imports in 2019 “originated from low-risk deforestation areas” and that “42.2% of EU28+ soybean meal consumed in 2019 was compliant with FEFAC Soy Sourcing Guidelines 2015” (FEFAC 2021). However, one of the main controversies within such guidelines is the fact that FEFAC guidelines accept soy related deforestation as long as it is done within the law. As already noted in the literature review chapter, current environmental legislation in Brazil allows for up to 80% of the Brazilian Cerrado to be cleared for agriculture (Bosselmann 2020, 4). As the FEFAC guidelines are one of the standards referred to in the plans of action of the DAAS, it follows already at this point of the thesis, that there is a problem with the basis for the zero deforestation commitments of, at least some of, the corporations that make up the DAAS.

The certification schemes, on the other hand, have clear criteria for soy-related deforestation. The Round Table for Responsible Soy (RTRS) and the ProTerra certification standards are considered the most stringent (Schilling-Vacaflor et al. 2021), and, as will be seen further ahead in the thesis, they are also those most often referred to in deforestation-free soy commitments made by the DAAS, in addition to the FEFAC guidelines. Meanwhile, one of the main criticisms of this type of certification scheme is that the supply chain logistics often render traceability impossible, as certified soy is traded on a digital platform that does not track the point of origin (Schilling-Vacaflor et al. 2021, 140). The most common method of adhering to the deforestation commitments is to engage in the purchase of credits, which in no way guarantees that the imported soy is deforestation free, but only that the producer of certified

soy will receive the amount equivalent to the production that he/she has proven to have (Bosselmann 2020).

4 Investigation of relevant theories

4.1 Introduction

The choice of an appropriate theory for a thesis may in some cases be a simple process in which the topic itself lends itself in an obvious manner to a specific theory. If for example, I were to examine the particular aspect of land grabbing as one of the indirect drivers of deforestation, I might look to Marx' theory of primitive accumulation/accumulation by dispossession, as also further developed by David Harvey (Harvey 2003, 145-179). Or were I to look at the rhetoric and message contained in the mission statement of the RTRS, I would most likely apply some form of discourse theory.

However, this thesis is concerned about looking at deforestation in Brazil through the particular combination of a global commodity desired by a group of companies in Denmark (and elsewhere), and the different players along the long production chain. I.e., the desire/intent to only import deforestation-free soybeans into Denmark matched with the factual conditions of soybean production in Brazil. The plans of action drawn up by the Danish companies reflect this intent, which may be seen as a response to end-consumer pressure, or pressure in general from authorities in Denmark concerned with sustainable production and adherence to the UN sustainability goals. In this case, it would make sense to consider the plans as a part of the companies' Corporate Social Responsibility (CSR) policies. Likewise, on the producing end, soy farms responding to pressure from their traders, or as a result of increased demand for soy produced in a responsible way could also be looked at from the point of view of CSR.

Despite being an integral aspect of most businesses, CSR is not easy to define. It may mean the ethical treatment of a company's employees, as it may just as well refer to the effort a company puts into maintaining a good relationship with the community it is a part of. At the same time, CSR is increasingly seen as an instrument whereby a company can obtain a competitive advantage (Wan-Jan 2006). David Baron (Baron 2001) makes a distinction between CSR actions that have an immediate financial response in the form of an increased demand, and the CSR action that respond to society's interest. Whereas the first type of action is deemed by Baron to be a "strategic CSR", applied solely for the purpose of increased earnings/profit, the second type could both be regarded as a positive – and therefore possibly truer expression of corporate social responsibility – response to the vindications of groups or

individuals, but it could also simply be a company's response to a threat, such as campaigns by environmental groups, e.g. the Greenpeace campaign mentioned herein.

In either case, the social responsibility is "exemplified by a company's reaction to an event or its actions in general, and not how the market reacts to actions taken by the company" (Wan-Jan 2006, 177). Choosing this definition means that the main focus of such a theoretical framework would still fall within the corporate structure itself. Whereas CSR may adequately explain many of the choices, including commitments in favor of a more sustainable production or product made by the different players along the supply chain, and therefore can act as a supporting theory for analyzing the conditions of Brazilian soy production, it still weighs heavily on the internal motivation of corporations, rather than applying a more multi-faceted view of all the stakeholders involved in the process.

While corporate actions and commitments to sustainability may well be seen as a form of strategic CSR, the choice of a theoretical framework that will help expose and analyze more than just the company's relation to its employees and customers is key here, as it is not so much the CSR of the companies making up the DAAS alliance that are the object of this thesis as it is the entire chain of producers, traders, exporters, importers and the legal and regulatory framework they work under, in short the supply chain as a whole. Therefore, for the purpose of answering the research question of this thesis, a framework based on theories relating to global commodity chains has been deemed more adequate. Also, in addition to the classical literature on commodity chains, recent years have seen the emergence of a branch of the theory dealing more specifically with the concept of sustainability and green economy within commodity chains, and even specifically with regard to soybean supply chains²⁶, in turn making it even more relevant in the case under analysis in this thesis.

In the following sections I shall first briefly provide a context relating to the main theories for commodity and supply chains. Subsequently, I will turn to the more recent theories that deal with the soy market and the topic of sustainability. I will end the chapter by explaining which parts of the theoretical framework are more relevant to my analysis and how they will be applied. This last section will be further expanded in the methodological chapter (Chapter 5).

²⁶ The majority of literature refers to commodity chains or value chains, however, especially when focusing on the aspect of sustainability, the concept supply chain is common.

4.2 Global Commodity Chains, the Filière approach and Friedland's value hierarchy.

The study of commodity chains is a relatively new research area which emerged in the 1980s. Originally loosely defined by Wallerstein as a “network of labor and production processes whose end result is a finished commodity”, the theoretical approach behind this idea originated from Wallerstein’s own World Systems Theory (Joonkoo 2010; Raikes, Friis Jensen, and Ponte 2000), but has since undergone significant changes both in the way commodity chains are perceived, as well as in the type of theoretical approaches that are involved in their analysis. I here wish to focus my attention on Gary Gereffi as an representative of a theoretical line of thinking that highlights the distinction between producer-driven and consumer-driven commodities (Gereffi 1996, 1994), as well as on the thoughts of William Friedland who defends that the study of agricultural commodity systems are a part of “the sociology of agriculture”, taking the theoretical approach from a purely economic or systems-based one to the fields of sociology and the actor-network theory (Friedland 2001).

Gereffi describes global commodity chains (GCC) as a production system that is both international in scope, i.e., the networks are transnational in scope, geographically spread over many countries and continents, but also globalized in their organization, i.e., functionally integrated within different, geographically dispersed activities, the purpose of which is to “develop, manufacture, and distribute specific commodities” (Gereffi 1994, 96). Gereffi initially defined three different dimensions of the global commodity chain: input-output structure, territoriality and governance structure (Korzeniewicz, Gereffi, and Korzeniewicz 1994, 97), but added the fourth and important dimension of institutional framework later on, on which other theoreticians have elaborated a wider definition, as will be shown below.

According to Gereffi, the governance structure may be divided into producer-driven and consumer-driven chains which are similar insofar as the above definition goes but differ with respect to the where the power, or rather the main driving force, lies. Thus, in the producer-driven commodity chains the production of components that will make up the finished product is centrally controlled by the transnational corporation’s headquarter., i.e. an automobile or computer manufacturer. Consumer or buyer-driven, on the other hand, may be exemplified by chains in which independent subcontracted manufacturers supply a finished product to the transnational corporation under an agreement, i.e. toys or footwear manufacturers (such as Mattel or Nike). The latter type is “typically located in Third World

countries” as it is labor intensive, whereas the former is more technology or capital-intensive and not necessarily outsourced to developing countries²⁷.

An important point to include in the discussion about global commodity chains is that the actors, or economic agents, as Gereffi prefers to call them, operate in a political context, that is, they “respond to political pressure from the state” (Korzeniewicz, Gereffi, and Korzeniewicz 1994, 100). The authors find that buyer-driven GCCs are associated with export-oriented economies²⁸, where the state is a major actor working through selective instruments of subsidies, export credit arrangements, tariff regulation and infrastructure building to help facilitate the country’s export. The authors do not enter into the specific question of legal instruments, hereunder environmental law, and neither do they discuss the importance of the state’s role in the importing countries, except from mentioning tariff and other protectionist barriers. However, it would be safe to assume that environmental law and other legal provisions may be included under state policies in this theoretical framework, both in the case of the exporting, as well as in the importing countries.

In the perception of Gereffi, the distinction of producer driven vs buyer driven helps assign agency and power to the different players along the chain, i.e. governance in a GCC; however, one of the problems with this type of division is that some commodity chains may not be exclusively producer or buyer- driven, and that the power dynamics may shift over time (Raikes, Friis Jensen, and Ponte 2000). Furthermore, the above model applies mainly to manufactured consumer goods, and less to agricultural commodities that are exported in bulk, such as the grain industry, of which soy is a part. Agricultural products may fit the concept of a buyer-driven commodity with respect to the geographical characteristics: soybeans, palm oil, cotton, coffee, rice and so forth are traditionally located in the Global South, however, their production is often not carried out by sub-contracted parties, but rather by individual farmers, farmer cooperatives or even national conglomerates, which in turn partially control their own production system and integration into the commodity chain. In addition, another characteristic feature of buyer-driven GCCs is supposedly that the producing countries are at the low end of technology, value adding and quality, which is not always the case, as for example, in the soy industry.

²⁷ The author uses the term ”Third World”; I prefer “developing countries”, or, depending on the context, the expression “(countries in) the Global South (as opposed to the Global North).”

²⁸ Brazil did conform to Gereffi’s example of an import-substituting industrialization (ISI) in the 70s and 80, however, the market liberalization reforms that came about towards the end of the latter decade have precisely turned Brazil into a prime example of an export-oriented industrialized state.

It seems then, that agricultural products (especially those traded in bulk) are subject to different organizational networks than is the case with the manufacturing industry. The global commodity chain for agricultural products may possibly be better understood through the “*filière*” approach, which is an empirical research method that “maps out actual commodity flows and identifies agents and activities within a *filière* (single system)” (Raikes, Friis Jensen, and Ponte 2000). Although the *filière* system is mainly used for studying local or domestic systems²⁹, it may still offer other insights into some of the other dimensions that may influence the global agricultural commodity chain, such as the concept of **coordination**.

The coordination concept stems from more recent inputs from the convention school (Raikes, Friis Jensen, and Ponte 2000, 18), arguing that markets only function if there exists a common language among the participants (actors), which over time leads to a common set of quality criteria, in turn leading to different forms of coordination³⁰. One of these types of coordination specifically addresses characteristics of the soy commodity chain: **the civic coordination**, where “the identity of a product is often related to its impact upon society, such as fair trade coffee” (Raikes, Friis Jensen, and Ponte 2000, 19). Although one might think of this type of coordination also belonging to the traditional GCC approach, given the GCC’s emphasis on key agents within the chain, i.e. the producer vs buyer driven paradigm, the civic agency ultimately receives a relatively small role in that tradition.

The civic coordination is especially interesting for the purpose of discussing sustainable and/or deforestation-free agricultural production, as it could be argued that civil coordination is the main driver of a commodity chain specializing in, in this case, deforestation-free soy (hence the criticism of exclusively producer or buyer driven chains). On the other hand, the civic coordination does not fully account for the kind of influence that civil society may have on the identity of a product. Thus, expanding on the *filière* approach William Friedland argues that for a commodity to be analyzed, it “must be studied historically and its spatial and social relations dimensions must be examined” (Friedland 2001, 94). This represents a departure from a purely systematic approach of looking at a commodity chain as a flat structure or diagram or as a “flow regulated by public institutions” (Raikes, Friis Jensen, and Ponte 2000). Friedland’s approach is far more comprehensive because it goes beyond the commodity itself and analyzes

²⁹ The *filière* tradition comes from France and was originally used for developing export commodities in its former colonies (Raikes, Friis Jensen, and Ponte 2000).

³⁰ The four types mentioned are domestic coordination, industrial coordination, market coordination and civic coordination. For a fuller description, pls refer to (Raikes, Friis Jensen, and Ponte 2000, 19)

the various social and spatial conditions that are either present as of the production of said commodity or generated by it.

As an example, when examining a commodity such as grapes, Friedland considers the grape farmers, the seasonal workers, the factory workers, retailers and buyers, showing that for each use of the grapes, i.e. fresh grapes, raisins or wine, the spatial and social proximity of the communities involved will vary, rendering such communities more or less well defined and coherent as group. Friedland proceeds to discuss the symbolic meaning of grapes, and the ability of a given commodity to generate culture, and, more importantly, how some commodities are able to generate a very rich culture. The culture generated from the use of grapes in wine, to Friedland, is exceptionally high: grapes and wine are associated with art, history, architecture, literature and so forth. Other commodities may generate conflicting symbolic meanings, such as broccoli, seen as healthy by some consumers, e.g. mothers whose belief system can make healthy foods a part of their social capital by showing that they take good care of their family, and simply as necessary by others, without generating a culture of value attached to the vegetable. This, Friedland argues, means that the value we attribute to a commodity also means that we have created a “hierarchy of commodity statuses”.

In general, agricultural products such as lettuce, tomatoes and others rank at the bottom of the scale as the interest and the culture generated by these commodities are very low. The question is, however, not only to discuss why the commodity ranks high or low on the hierarchy, but rather to examine “the degree to which commodities generate cultural apparatuses”, and as a consequence, to assess the significance of such culture. In the case of soybean production, the culture generated may be considered low at a first glance; however, if analyzed in the context of the Danish agricultural tradition, soybeans as a staple import for the pig and dairy industry does have a significant impact, because it has been instrumental in raising productivity in all types of animal husbandry. On the other hand, as it has become increasingly associated with deforestation and environmental destruction, I argue that it may also be said to generate a *counter-culture*, generating significant attention and interest from multiple stakeholders and thus generating conflicting “cultural apparatuses”.

4.3 Sustainability³¹ as a driver in the global commodity chain

More recent theories involving the importance and the influence of the global commodity chain on sustainable production refer to both the *filière* concept of civic coordination as well as pointing back towards some of Friedland's concepts and methodological approaches. The supply chain approach to deforestation, which relies on "the tracking of forest clearing activities of millions of individual farms and ranches" (Nepstad et al. 2014, 1123) focuses heavily on the producers, while other theoretical frameworks consider the issue of governance within the supply chain, arguing in favor of considering agri-food chains as predominantly buyer-driven, when "... retailers such as Tesco, Walmart and Carrefour" are present (Heron, Prado, and West 2018, 31). Both approaches, however, ultimately rely on the figure of the certification schemes/processes when labeling their product as sustainable to their end customer, underscoring the growing importance of certification agencies and standards such as RTRS, Pro-Terra and Soja Plus (Jia et al. 2020) becoming a key player within the supply chain of deforestation-free and sustainably produced soy.

Yet it is hard to agree on a specific governance model in the case of soy; the Brazilian Amaggi group both owns farms, processing facilities and exports soy from Brazil, making it an exception to a buyer-driven model, as do many of the other dominant retailers in Brazil. Other frameworks do not look exclusively at the supply chain or the governance model, but instead apply a multi-thronged approach, describing the combined sum of factors that affect the companies' decision to "invest in sustainable supply chains". Rueda et al (Rueda, Garrett, and Lambin 2017) defines these as 1) *the environmental pressures and opportunities relating to the places where the raw materials come from*, 2) *the company's own leverage in the supply chain*, 3) *market opportunities for their products*, where the environmental pressures may derive both from civil society or governments.

Leverage touches on the same discussion as the one mentioned by Heron, Prado and West above, regarding the hybrid nature of the governance model in the Brazilian soy production, because if "companies are able to exercise control on the supply, their standards can be more enforceable" (Rueda, Garrett, and Lambin 2017), making it a worthwhile point to clarify to which extent the soy commodity chain is in fact buyer or producer driven. Another analytical approach has shown that traders who consistently "stick" to the same geographical

³¹ Sustainability is an extremely open and not very precise concept that may be applied in many contexts. In the case of soybean production it often refers to the entire cycle of production, involving land rights, labor rights, use of pesticides, community relations, farming practices and others. If deforestation is permitted within the law, a sustainable production may include cutting down trees and other vegetation.

producing areas and sources are not only the largest traders, e.g. Bunge, but also the ones most likely to sign zero deforestation commitments (Reis et al. 2020).

Similarly, Lambin (Lambin et al. 2018) categorizes company strategies as either individual or collective/sectorial: ”1) *collective aspirations by stakeholder groups that go beyond the direct control of individual actors*, 2) *company pledges that express a company’s commitment in their operations or supply chains*, 3) *company codes of conduct that define specific production or sourcing practices*, and 4) *sectorial practices, including principles, criteria and forms of verifications agreed on by several stakeholders within a sector to foster alignment among actors*”.

The advantage of applying the categories established by Lambin is that they cover almost all the stakeholders in a agri-food supply chain such as the soybean. It is also worth noting that Lambin’s fourth criteria is very close to the concept of industrial coordination originating from the convention theory of the *filière* approach. The industrial coordination is the benchmarking of products whose “quality is uncertain”, through “testing and verification by an external party” (Raikes, Friis Jensen, and Ponte 2000). However, neither Lambin, nor any of the above supply chain approaches are sufficiently concerned with the role of the regulatory framework under which the soy producing companies operate. In the case of Brazil, the environmental legislation from 1996 and its updated version found in the 2012 Forest Code³² is of paramount importance for assessing the extent to which deforestation-free soy production is feasible, as it both restricts new clearings of agricultural land in some regions and at the same time allows for substantial deforestation in others³³. The regulatory framework is thus one of the main actors in the upstream of the supply chain, as it establishes the ground rules. This conclusion closes the loop with the original GCC theory by Korzeniewicz and Gereffi regarding the state’s role in GCCs, and foregrounds one of the key aspects of modern agricultural commodity chains for understanding why deforestation continues to take place despite a multitude of global and private pledges to combat it.

4.4 Theoretical framework design

The specific knowledge required to undertake a full analysis of the soy commodity chain following either Gereffi’s traditional methodology or Friedland’s more sociological approach does not fall within the scope of the pre-requisites for this thesis. The intention herein

³² http://www.planalto.gov.br/ccivil_03/ato2011-2014/2012/lei/l12651.htm

³³ In addition to providing different limits for clearing of vegetation in the Amazon and Cerrado, the Code requires that 20% of any property be reserved in its natural state.

is not to map all the different actors and stakeholders in the soy supply chain, and neither is it to carry out an investigation into the different socio-economic layers of material, labor or culture generated by the production and moving of soybeans. On the other hand, the more recent theoretical frameworks that have emerged on account of the sustainability paradigm (and the topic of deforestation) are of course a result of continuous developments and new theories building on these traditional theories from the 80s and 90s.

The soybean industry is undeniably a classic example of a global commodity and as such could be diagrammed and its flows from Brazil to Europe and China mapped. There are sources that already perform this task, such as TRASE³⁴, whose interactive webpage allows a full and detailed view of the flow of soybean from producer to importing country, through trading companies, in tons or value, per year or decade. This thesis, on the other hand, is concerned with finding out which parts of this long chain of stakeholders may possibly hold the key to assessing the feasibility of ensuring deforestation-free soybean production in a Brazilian context. An investigation that will need to rely on an interpretation of a theoretical framework that may elucidate the practical implications of the regulatory framework under which such stakeholders function, as well as their day-to-day practices and policies.

To this end, the analysis will cover the theoretical aspects that deal with the question of *a) producer vs buyer-driven commodity chains and the question of governance and power* to shed light on the political power and policies that impact the Brazilian soy production both in Brazil and in Denmark (this theoretical angle also touches on the question of civic coordination); *b) the supply chain approach*, i.e., the tracking of forest clearing (which includes sourcing practices, both sectorial and individual company initiatives); and *c) the "cultural apparatus" generated by a commodity*, because it covers the culture generated by the use of soy in Denmark and the significant cultural apparatus it creates in the producing countries, in addition to exposing the counter-culture appearing in the wake of the negative environmental and social consequences caused by soy expansion.

In addition to providing a framework to analyzing the Plans of Action (*hereinafter also referred to as the "Plans"*) of the companies of the DAAS, this approach will then allow me to apply the conclusions from the case analysis and connect them with the corresponding areas/actors in Brazil, thereby arriving at a more in-depth understanding of the political, legislative and environmental culture that dominate the soy producing sector in Brazil. In the subsequent chapter, the methodology will be laid out in more detail.

³⁴ TRASE Earth - For more details see <https://supplychains.trase.earth/about>

5 Methodology

The analysis will depart from the plans of action of the 11 members of the Danish Alliance for Responsible Soy. The companies are located downstream³⁵ in the soy supply chain as either importers, producers of livestock for the food industry, or retailer chains. Their stated intention is to reduce their soy footprint³⁶ over the next four years, partly by making demands from their upstream supply chain partners, such as export and trading companies, and partly by attempting to incentivize conditions in which more soybean farmers producers will change to a sustainable production. As a condition of their active membership, participating companies are required to submit a plan containing goals as well specific actions/initiatives to “ensure progress towards the vision (of the Alliance)”, i.e. the Plans of Action, within 6 months of entering the alliance.

The analysis is divided into two parts. In the first part, the theoretical framework as set out on page 41 (a, b and c above) will be applied to the Plans of Action of the member companies, including the overall strategy and goals of the Alliance and its political context. The analysis will highlight important connections and power relations within the agricultural and feed sector in Denmark and the EU, in addition to clarifying individual and sectorial zero-deforestation and sustainability strategies. Part c of the framework will help expose the culture generated by soy in the Danish agricultural sector in addition to providing insight in the “counter” culture.

The second part of the analysis will consist of a cross analysis and discussion departing from the conclusions reached on Part One. These conclusions will be analyzed and discussed against their background. Thus, the question of power in the supply chain will be looked at from a wider angle, drawing in Brazilian actors; the sourcing practices will look into the role and standards of the most important certification agencies, and how these play out against Brazilian farming practices; and the cultural apparatus will analyze the value attached to soy production in Brazil.

By dividing the analysis up into two, connecting parts, I will be able to, first of all, lay out the strategies of the DAAS and draw conclusions regarding their structure, preferred strategies, challenges and entanglements with Danish and European actors, and second, compare these findings to the Brazilian soy production, thus making it possible to arrive at a

³⁵ Upstream are at/close to the commodity producers, while downstream is closer to/at the end consumer.

³⁶ Soy footprint: the calculated or estimated amount of soy used in the production/imported by a specific company

conclusion to my research question of how the current scenario for Brazilian soybean production affects the commitments made by the DAAS.

The companies' websites as well as websites of certification agencies, trade organizations and other relevant actors are included as complementary sources for contextualizing the Plans. This is clearly indicated whenever used in the analysis. In addition to the information contained in the Plans, I have also engaged in e-mail correspondence with the Pro-Terra Foundation, with key persons from member organizations, as well as with the umbrella organization DIEH whenever the information on the DAAS webpage needed clarification. Such e-mail exchanges are clearly indicated whenever used in the analysis.

The analysis will open with a general introduction to the Alliance and its stated purpose (vision), along with a description of its structure and goals.

6 Case study – The Danish Alliance for Responsible Soy – Part one.

6.1 Introduction – history and background of the Alliance

The Danish Alliance for Responsible Soy consists of 11 member companies and 11 supporting companies/agencies/institutions³⁷.

The participating members are, as of the last status report of 1 Dec. 2021, the following³⁸:

Dansk Landbrugs Grovvarereselskab – DLG

Dagrofa

Salling Group

Coop Danmark

Aldi

Rema 1000

Lidl

Danpo

Rose Poultry – HK Scan

Let's Sushi

Danish Crown

³⁷ All data on the DAAS used in this introduction may be found on their website

<https://www.dieh.dk/projekter/dansk-alliance-for-ansvarlig-soja/>

³⁸ Denmark's biggest dairy producer, Arla, has since joined, however, no plan of action has yet been submitted.

Of the above companies, DLG is the biggest importer of soybean/meal³⁹, representing approximately 50% (around 900,000 tons a year) of all soy used in agriculture, i.e., as feed for farmed animals such as cattle, pigs and poultry. Aldi, Lidl, Coop, Salling Group, Rema1000, Dagrofa are grocery retailers, who sell products containing soy, as for example soymilk, as well as products with an embedded soy footprint, as for example chicken and dairy products. Dagrofa describes itself as a supplier of different product lines to Danish smaller retail chains such as Min Købmand and Spar. Danpo and Rose Poultry both produce, sell and market chicken to a series of supermarket chains. Let's Sushi is a large sushi restaurant chain, operating mainly in and Copenhagen and Danish Crown is the biggest slaughterhouse in Denmark, annually slaughtering around 19 million pigs (20/21 figures).

The supporting entities include authorities such as the Danish Ministry of Foreign Affairs, Danish Ministry of the Environment, Ministry of Food, Agriculture and Fisheries, the biggest trade union for skilled and unskilled labor 3F, the Danish Chamber of Commerce, the business organization Danish Agriculture and Food, the thinktank Concito, the NGOs WWF and Preferred by Nature, and the Danish trade organization for grains and feed products - DAKOFO.

The involvement of authorities in the Alliance is emblematic of the significance that deforestation-related imports and production in Denmark has come to represent. In its background information, the Alliance mentions that that Denmark is a signatory of the New York Declaration on Forests⁴⁰ agreed upon during the 2014 UN Climate Summit, and it also refers to Denmark's involvement in pushing for a joint response within the EU in 2018 to reduce deforestation. The creation of the Alliance is, thus, a consequence of a series of actions and tendencies that have intensified over the last 5-10 years. Furthermore, as will be seen subsequently in the analysis, the question of the role of political power and state policies within the commodity chain is heavily embedded in the emergence of the Alliance: many of the CEOs of the various member companies are very active in the different Danish trade and industry organizations, and in 2020 the CEO of DAKOFO, Asbjørn Børsting, was appointed president of the European Feed Manufacturer's Federation which ultimately has the power to represent the interests of 23 countries in the EU.

³⁹ DAAS does not make any distinction between soybean meal (crushed) and raw soybean imports.

⁴⁰ a "non-binding political declaration to cut half deforestation by 2020 and end it by 2030" Source: <https://forestdeclaration.org/>

The Alliance came about as a result of the experience and knowledge accumulated by a working group established in 2017 by the Danish Ethical Trading Initiative (DIEH⁴¹), of which it is a part, and included representatives from both the current 11 members as well as from the supporting entities. One of the findings from the working group was that Denmark's share of deforestation soy imports in 2019 was still around 20%, contributing to the "need to accelerate the desired development towards the use of responsibly produced soy in Denmark"⁴².

The stated purpose of the Alliance is to "...bring together relevant Danish actors in a binding cooperation to ensure progress towards responsibly produced soy". By joining the Alliance the members commit to its vision of "*all soy imported into Denmark is responsibly and legally produced, and does not contribute to deforestation or conversion of other natural vegetation.*"

The wording in this vision is thus not precise in terms of the timeframe; on the other hand, it is clear on the issue of ensuring that deforestation does not take place in connection with the production of the soy imported and used by its members. Nonetheless, the members of the Alliance all have 2025 as their deadline for becoming 100% deforestation free in their soy imports. This date was set prior to the official announcement made in September 2021 by the Ministry of Food, Agriculture and Fisheries of Denmark, which launched a "Plan of Action against Deforestation", establishing 2025 as the deadline. However, whereas the Alliance has established the vision and purpose for working towards the goal of making the Danish soy imports one hundred percent deforestation-free, it is up to each member to define their individual strategies.

In the following subsections, the plans are analyzed according to the theoretical framework set out in the methodological chapter, meaning that not every detail of each plan will be scrutinized, but rather that overall themes and tendencies will be examined. The website of the Alliance provides complementary and necessary information to the Plans which will be included whenever relevant for the analysis. At the end of Part One of the analysis, a partial conclusion for each of the At the end of this part (one) of the analysis, the main conclusions will be summed up. These conclusion will then be cross-analyzed and discussed in detail from a Brazilian perspective, highlighting some of the key problematics in connection with ensuring a soy production that is deforestation-free.

⁴¹ "DIEH is a nationwide organisation whose purpose is, through cooperation between different stakeholders, on a non-profit basis, to promote international trade that respects human- and labour rights, environmental considerations and contributes to global sustainable development by strengthening members' efforts in ethical trade". <https://www.dieh.dk/about-dieh/>

⁴² <https://www.dieh.dk/projekter/dansk-alliance-for-ansvarlig-soja/om-alliancen-p2/baggrund/>

6.2 Producer vs buyer-driven commodity chains

The members of the Alliance are all at the buyer (downstream) end of the supply chain and have varying roles in it; a large grain importer like the DLG⁴³ is responsible for importing around half of all the soy used in the Danish feed and food industry, and supplies soybean/soymeal to some of the other members of the alliance. An email exchange with Danpo confirmed DLG as a supplier of soy and other grains, along with Danish Agro (not an Alliance member). Likewise, a representative of Rose Poultry/HK Scan confirmed DLG and Danish Agro as the “main suppliers” of the soy for their chicken production. DLG is therefore located further upstream than Danpo, Rose Poultry and the retail chains Salling, Lidl, Rema1000, Aldi and COOP, a condition which most likely sets its strategy apart from the theirs.

DLG intends to work towards creating “a greater understanding” among Danish stakeholders (NGOs, regulators, retail chains and food companies) and its South American soy suppliers and launch experiments with producers in South America, to “ensure a competitive supply of segregated soy ..[and] ...establish a common starting point for the work to ensure responsibly produced soy”. DLG sees itself in a position to influence both upstream, i.e. exporters and producers, as well as downstream, i.e. retail chains and food producers in Denmark. However, despite being “aware of the responsibility that comes with (importing half the soy used in feed solutions in Denmark”, DLG only commits to “not exacerbating” deforestation and refers to FEFAC sourcing guidelines for soy imports. Furthermore, the detailed strategy establishes that DLG’s criteria for deforestation-free soybean production must not cause deforestation nor conversion of natural habitats (e.g. the Cerrado savanna) at the same time as the production must abide by the “relevant legislation” in the country of production (which in the case of Brazil, allows deforestation). On the other hand, DLG is aware that this criterion is problematic, promising to work to ensure that “both legal and illegal deforestation” is covered in the FEFAC guidelines.

Nevertheless, the contradictory criteria applied in DLG’s strategy and the lack of specific deadlines for all actions and strategies make its Plan less transparent, and also has the effect of questioning DLG’s commitment as a deforestation-free soybean supplier to its downstream partners, notably Danpo and Rose Poultry/HK Scan. From this angle, it would seem that DLG holds an important position in the supply chain, able to determine an overall

⁴³ DLG was founded in 1899 and trades in soy and other grains, mainly with a view to supply its partners and subsidiaries in the Danish pig, beef and dairy production. In the last 15 years DLG has expanded from a only-Danish cooperative owned by farmers to a multinational – the DLG Group - with subsidiaries in 8 countries, and an annual turnover of EUR 7.93 billion.

strategy (the use of FEFAC soy sourcing guidelines) and to replicate this strategy further down the supply chain to its partners, and ultimately to the end-consumer in the supermarket.

Although Danish Agro is not a member of the Alliance, it too has committed to importing a growing part of deforestation-free soy and to become 100% deforestation-free by 2025. Danish Agro is the second-largest importer of soybeans to Denmark⁴⁴ and it may be reasonably expected that they represent a large proportion of the soy used for both feed and food production. Like DLG, Danish Agro follows FEFAC's soy sourcing guidelines, again raising the question of legal vs illegal deforestation. Danish Agro does not admit having been "pressured" by DLG⁴⁵, but refers to the trade organization DAKOFO as the idealizer of these policies.

The fact that the two biggest soybean importers in Denmark both refer to soy-sourcing guidelines that allow soy-related deforestation when permissible according to local (Brazilian) legislation underpins the power of such importers within the supply chain. Additionally, as already mentioned in the introduction of this chapter, the trade organization DAKOFO wields significant power through the presidency of its CEO, Asbjørn Børsting, of FEFAC. Ultimately, this may also mean that DAKOFO will tend to carry on and promote the guidelines that FEFAC has established, making the question of governance an EU affair, despite the Alliance being expressly Danish.

The strategies of the retail chains on the whole reflect the fact that their power is somewhat limited in terms of making demands to their suppliers further up. Retail chains, e.g., Salling group, Rema1000, Aldi, Lidl and Coop who all carry private labels have designed strategies that require the suppliers of such products guarantee that these are deforestation-free whenever the soy content is above certain limit, commonly around 40% or 50%. As the retail chains also carry a vast selection of other company brands, ensuring that such products are deforestation-free is a complex process reflected in the fact that most of them have chosen to buy credits to make up for their perceived or calculated soy footprint. On the other hand, none of the Plans of Action of the retailers make specific mention of the question of legal versus illegal deforestation, but instead use the wording "does not contribute to deforestation" or "is produced in a responsible manner". While it may be an academic discussion to focus on whether the plans (and indeed the certification standards mentioned later in this chapter) make a clear distinction between illegal and legal deforestation; nevertheless, for the implications

⁴⁴ Article published on 18.12.20 in <https://agriwatch.dk/Nyheder/Andelsselskaber/article12634055.ece>

⁴⁵ in <https://agriwatch.dk/Nyheder/Andelsselskaber/article12634055.ece>

already mentioned of legal deforestation in a biome like the Brazilian Cerrado, this distinction should be included if the plans are to carry weight and constitute a clear message to the consumers.

On the other hand, despite the embedded nature of soy in most of their products, the Plan of Lidl specifically highlight their responsibility towards Brazilian farmers (Attachment 5g), and Aldi's Plan of Action recognizes that soy production is leading to loss of biodiversity in regions such as the Brazilian Amazon and Cerrado as well as in the Chaco (Paraguay). This awareness of consumer pressure to carry sustainably produced products reflects the effects of the civic coordination, i.e. the case of the identity of a product being related to its impact on society. In the case of the two aforementioned companies, it is noteworthy that despite most of soy used in the products carried by the retail chains being "hidden", the constant mobilization of media, NGOs and other campaigns most likely have caused the specific mentioning of regions and producers, as opposed to just "South-American soy", or soy production, as is the case in the other plans of action.

As a general consideration, a logical conclusion is that all the Plans do indeed reflect the fact that civic coordination has exerted growing pressure over the last 10 years, influencing the actions of public agencies, authorities and international bodies, and in turn leading to the creation of the Alliance. Trade organizations such as DAKOFO, FEFAC, along with Danish authorities then "negotiate" the terms of such pressure, establishing alliances and partnerships, and recommending strategies and guidelines.

The above analysis of the power relations and governance among the actors in the soy supply chain points towards the concept of a hybrid chain, neither exclusively producer nor exclusively buyer driven, but instead a complex mixture of Danish and EU policies, driven by powerful trade and industry organizations. The presence of Danish authorities as supporting members of the Alliance indicate the awareness on their part regarding the UN sustainability goals and the deforestation debate. Likewise, Brazil's long tradition of raw material and produce export oriented economic policy and the extensive soybean production taking place in the country is, at least in part, the result of a producer-driven supply chain. This strategy has been the preferred economic instrument for many decades for Brazil's insertion into the global commodities market, in turn reinforcing the concept of a hybrid commodity chain for soy produced and exported from Brazil.

Classifying the soybean supply chain from Brazil to Denmark as hybrid affords a more nuanced understanding of the factors at play when companies devise their sustainability and soy footprint strategies. Apart from recognizing the enormous drive for agricultural expansion

which exists as a part of the Brazilian economic and historic tradition, the sheer amount of its production make the soy-producing farmers and conglomerates a force to be reckoned with. At the other end, powerful organizations such as FEFAC may effectively dictate the criteria for deforestation-free soy. The implications of the hybrid governance will be brought up again in Part Two of the analysis.

The following section will look at the kind of instruments the Alliance members aim to make use of to reach their goals of becoming deforestation-free. It is covered by some of the more recent theoretical framework on the role of supply-chain initiatives in reducing deforestation, such as “company codes of conduct that define specific production or sourcing practices”, as well as “sectorial practices, including principles, criteria and forms of verifications agreed on by several stakeholders within a sector to foster alignment among actors”, as formulated by Lambin (Lambin et al. 2018).

6.3 The supply chain approach – sectorial and company strategies

Initially, it is necessary to clarify that the entire concept of the Danish Alliance for Sustainable Soy is a supply chain approach in itself. The Alliance is an initiative that has been launched as a result of the debate on deforestation cause by soy production in tropical rainforests and other natural ecosystems, and the mission and the individual Plans of Action of each company reflect both sectorial practices as well as individual codes of conduct aimed at remedying this negative impact. That said, despite the core principle of the Alliance, to cause zero deforestation generated by soy imports by 2025, there are significant differences among the various Plans, especially with respect to the approaches by major soy trader DLG compared to the other companies, but also among the retailers themselves.

On its homepage, the Alliance makes available a list of the certification agencies and systems whose sourcing and certification practice are acceptable according to the principles and goals of the Alliance. These are: the RTRS (including the credits sold by this agency), Pro-Terra, EU Organic (EU Økologisk), the Donau Soja and Europe Soya Standards, ISCC Plus or IFOAM. The Accountability Framework Initiative (AFI) is listed as the reference to ensure that “the production does not contribute to deforestation or conversion of other types of natural vegetation of high conservation value”; however, the AFI is not a certification standard, but rather a benchmarking standard⁴⁶. The certification and regular inspections is carried out by

⁴⁶ Benchmarking standard: (here) a point of reference /best practices for avoiding deforestation, whereas the certification standard is what the producers must comply with to obtain the various certificates.

the agencies on site, that is, at the farms that produce the soy. Fig. 5 below provides a summary of the companies' certification strategies.

Company	Certification standards							
	RTRS credits online	RTRS credits - targeted	RTRS mass balance	Pro-Terra	FEFAC	EU Organic	Donau Soja/ Europe Soy	ISCC+ CRS BFA ACT
DLG					x			
Dagrofa*	x			x		x	x	x
Salling ***	x		x	x	x			
Coop*	x			x			x	
Aldi* / **	x			(x)				x
Rema	x							
Lidl		x						
Danpo					x			
Rose Poultry**	x				x			
Let's Sushi	x			x				
Danish Crown	x							

Fig. 6. Certification standards referred to by the Alliance members.

* the company's Plan states that these standards are "accepted" or "recognized".

** the company states using RTRS credits, but obtains its soy from DLG or Danish Agro, therefore presumably the standard is the FEFAC guidelines.

*** the company follows FEFAC guidelines, but claims to buy RTRS credits as well as soy mass balance and segregated.

() The company states that it uses ProTerra Credits, however, ProTerra only supplies physically segregated soy.

Unlike the DLG, the retailer chains, Danish Crown and the restaurant chain (Let's Sushi) have defined clear strategies to ensure that a part of their soy footprint will be deforestation-free by 2025, by choosing to refer to standards established by certification agencies that stipulate more stringent criteria on deforestation in general, as well as conversion of natural vegetation. The most commonly referred certification is the RTRS and ProTerra, although some of the other types mentioned on the DAAS list are also sometimes mentioned.

As mentioned in section 6.3, the retailers chains are overwhelmingly focusing on tracing the supply chain initiatives related to their private labels, as the traceability of other, hundreds of brands and products is a complex and not always feasible process. Thus, retailers have established two different criteria for certification requirements: typically, products

containing more than 3 or 5% soy as a primary ingredient (e.g. soymilk, tofu etc.) and products with an embedded soy footprint (e.g. beef, poultry, pig and dairy products) where the meat/animal content is more than 40 or 50%⁴⁷ must be compensated for through the purchase of credits, either by the retailer itself or as a requirement made to its suppliers. Lidl specifically mentions having an embedded soy footprint of 5,000 tons while Salling Group has calculated theirs at 32,000 tons. The other companies simply refer to having calculated this footprint without specifically informing it.

Danish Crown currently uses RTRS credits to offset the soy footprint of the pigs supplied by Danish farmers and partners, but have an ambitious goal of transitioning completely to a traceable supply chain, capable of supplying certified deforestation free soy by 2025. Like the DLG, Danish Crown are critical of the lack of a clear legal and illegal deforestation criterion by FEFAC, and expect to see it implemented by 2025. The RTRS 2020 Management report lists Danish Crown as one of the global top organizations offsetting their soy footprint through credits, responsible for 115,00 tons certified soy equivalent credits. Another major Danish company making use of the RTRS credits is the dairy producer, Arla, responsible for 330,000 tons, meaning that these credit purchases by these two companies represent one fourth of Denmark's overall soy imports

In 2020, the RTRS was responsible for certifying 4,750,162 tons of all certified production globally, while the ProTerra standard certified 3,032,172 tons. The RTRS standard operates with different types of certification: mass balance, segregated soy or credits. With credits, the companies may choose to buy soy on an online platform where the first (certified) seller to accept the conditions of the buyer will get the credits. Meanwhile, it is also possible buy from a specific farm, and thereby chose to support specific regions or producers. Buying credits does not mean getting actual deforestation-free/certified soy from the seller, as it is mixed along the supply chain, i.e. the traceability is not ensured.

ProTerra only accepts an entirely GMO⁴⁸ free soy production in their certification system, which also means that all soy must be traceable all the way through the supply chain, and consequently only operates with segregated certified soy. Notwithstanding, some of the Plans of Action specifically refer to ProTerra credits and mass balance, demonstrating that the complexity of the certification schemes may lead to misunderstandings in parts of the supply chain. In fact, both the RTRS standard guidelines as well as the ProTerra guidelines are

⁴⁷ The percentages vary among the Alliance members

⁴⁸ GMO Soy – Genetically Modified Organism – soy plants which have been modified to better withstand pests and/or pesticides

complex and contain detailed descriptions and instructions informing the criteria by which a farmer/supplier/trader must comply, frequently making use of general and vague terms, that are not easily to see through⁴⁹.

Many of the retailers mention this complexity and lack of transparency as a hindrance to acquiring physically segregated soy and therefore opt for acquiring credits instead. Of all the members of the alliance, Lidl is the only one that has sought out and chosen specific farms in two MATOPIBA states – Maranhão and Piauí - from which they purchase equivalent credits⁵⁰. However, Salling and Rema specifically mention that they intend to transition to a modality of 100% physically segregated certified soy by 2025. It is significant that the retailers are aware that the use of credits to offset their soy footprint is insufficient to ensure a long lasting impact in the industry. However, with the major portion of certified soy being sold in the form of credit – of a total amount of 4,750,162 tons of soy certified by the RTRS in 2020, only 634,759 tons were delivered in the form of certified mass balance⁵¹, with no indication of a segregated supply, it is difficult not to speculate whether this is a realistic goal. Indeed, the global top 20 organizations that uptake RTRS certified soy do so through credits, except for three companies, two of them Brazilian⁵².

The certification systems/criteria adopted by the retail business vary in scope, method and standards. The RTRS and ProTerra mention the Amazon Soy Moratorium as a cut-off date for deforestation, i.e. 2006 (2008), meaning that soy planted in the Amazon biome (please refer to Map in attachment 4) on areas deforested subsequent to this date is not accepted. In the meantime, a closer look at the RTRS criteria reveal 2009, and not 2008, as a cut-off date for tropical forest clearance, and 2016 for other vegetation types, described loosely as “conversion of natural areas”⁵³, which according to the Glossary section covers “grasslands, , savannahs, prairies and woodlands” and therefore includes the Cerrado.

Whereas the RTRS does not refer to this or any other biome in their standards, the ProTerra, on the other hand, specifically mentions the Cerrado as a problematic region in a separate policy paper on certification in the Cerrado, emphasizing that their 2004 cut-off date is earlier than any of the other certification agencies (2004) and even prior to Brazilian

⁴⁹ RTRS and ProTerra criteria will be analysed in detail in Part Two of the analysis

⁵⁰ Dagrofa uses RTRS and ProTerra as standards, and furthermore European certifications such as EU Økologisk (organic), Europe Soy/Donau Soja, as well as addition to the ISCC Plus and CRS by Cefetra.

⁵¹ The mass balance standard uses a Chain of Custody with separate accounting systems, whereby RTRS delivered certified soy corresponds to the equivalent volume entering the unit of the operator
<https://responsiblesoy.org/certificacion#produccion>)

⁵² RTRS Management Report 2020 - https://issuu.com/rtrs/docs/ig_2020_eng

⁵³ RTRS criterion 4.4.2 “After 3rd June 2016, no conversion is allowed in any natural land (see Glossary), steep slopes and in areas designated by law to serve the purpose of native conservation and/or cultural and social protection”.

legislation. Meanwhile, in the same paper, they are clear about their intention to support an increase in soy production through the recovery of “degraded land”⁵⁴, which once again underlines the overall agenda of the certification agency as a promoter of the soy business.

The RTRS is by far the biggest supplier of certified soy in Brazil; in 2020 the country’s output was 3,677,721 tons, followed by Argentina with 653,886, and India, Paraguay, China and Uruguay representing volumes below 250,000 tons each. Whereas the amount produced by Brazil and Argentina – the two largest exporters of soybean to Denmark – would suffice to meet Denmark’s total demand for certified soy of approximately 1.7 – 1.8 million tons, it would fall very short of the total demand for certified soy of the EU as a whole, whose total imports were 34 million tons in 2019⁵⁵. Even if the Danish Alliance for Responsible Soy is vested in ensuring sustainable imports in Denmark, its connection to a larger EU market through its cooperation and alignment with the sectorial goals of FEFAC means that the amount of certified soy currently produced and verified by the RTRS is insufficient to meet the demands of the agricultural and feed industry of Europe, potentially resulting in disputes over such soy, if and when all importers effectively opt for RTRS sustainable soy on the trading platform.

It is also worth mentioning that since Brazil provides less than one third of Denmark’s total soy imports, and the RTRS is the main certification standard used in Brazil, and, at the same time, responsible for 83%⁵⁶ of all certified soy globally, or 4.6 million tons (2020)⁵⁷, it is difficult to assess how much of the remaining soy imports are certified deforestation free, as soybeans from Argentina and, particularly, the US, have a much lower percentage of certified soy. The fact that the DLG, which uses standards that do not ensure deforestation-free soy, is responsible for half of all soy imports, means that an educated guess would range the share of certified/deforestation-free soy imports to Denmark as very low. On the other hand, the RTRS 2020 Management report lists Danish Crown as one of the global top organizations, responsible for 115,00 tons of certified soy-equivalent credits. Another major Danish company making use of the RTRS credits is the dairy producer Arla, responsible for 330,000 tons, meaning that the credit purchases by these two companies alone represent one fourth or 25% of Denmark’s overall soy imports.

⁵⁴ <https://www.proterrafoundation.org/wp-content/uploads/2017/01/11-1-2017-ProTerra-Certification-in-the-Cerrado.pdf>

⁵⁵ https://fvm.dk/fileadmin/user_upload/FVM.dk/Dokumenter/Foedevarer/Handlingsplan_mod_afskovning.pdf/

⁵⁶ There are conflicting figures in the reports by the RTRS and that of ProTerra. While the absolute numbers are not in question, the fact that the RTRS has claimed to be the supplier of 83% of the world’s certified soy production does not match the global production of both certifiers

⁵⁷ <https://responsiblesoy.org/global-production-of-rtrs-certified-soy-continues-to-grow-around-the-world?lang=en>
<https://maissoja.com.br/raio-x-da-soja-certificada-no-brasil/>

6.4 Value Hierarchy and the "cultural apparatus" generated by soy

The cultural apparatus generated among the actors in the soy supply chain, including the end consumer, is significant for understanding the emergence of the Alliance, as well as for enabling an assessment of the likelihood of any changes in it – such as the transition from conventional soy to deforestation-free/responsible soy – in the producing countries. In this chapter, only the implications of the generation of a cultural apparatus pertaining to Denmark is discussed, however, the enormous significance of soy in the Brazilian economy, its influence on political decisions, on infrastructure such as highways and ports and as a symbol of national pride and expression of Brazil's significance on the international commodity market is of paramount importance for understanding soy production in Brazil. These aspects will be analyzed in more detail in Part Two of the analysis, below.

Taking a short step back to Friedland's theory, in which he used grapes as an example, it is noteworthy that part of the rich culture generated consists in the historic, symbolic and artistic significance of grapes (e.g. wine making, paintings, literature on wine, and so forth). This is not the case with a crop like soy, which, although ranking highly in the culture of, for example Japan and the Japanese immigrants in Brazil, has not been able to generate this kind of "secondary" cultural apparatus in the relative short time it became popularized in the rest of the world. In fact, the "apparatus" generated is more a question of **materiality**, i.e. the large, physically visible presence of soy farms and fields, crushing facilities, highways, ports, warehouses and enormous cargo ships, all generated as a result of the exponential growth of the soy industry and global meat production.

Friedland makes a distinction between low-ranking commodities, in his example, lettuce and tomatoes, because they generate little interest and culture and the high-ranking grapes. There is no question that a commodity such as the soybean generates an enormous amount of culture, which we may possibly re-name materiality. On the other hand, this does not mean that it ranks high on the value hierarchy; on the contrary, as already established, the cultivation and use of soybeans are increasingly attracting negative attention and criticism. It seems to be the case that the idea of a counter culture, or negative valued culture, may be necessary to complement the theory of Friedland.

It is clear from reading the different Plans of Action as indeed the websites of the members that the import and use of soy in animal/meat production has gained a negative connotation. If on the one hand some of companies make efforts to present the use of soy in their products or production as an important ingredient for production of meat, poultry and

dairy, ensuring a “protein rich and unique grain” (DLG, Rema1000, Aldi), others are more neutral and matter of fact, preferring to highlight its potential environmental risk (Coop). One company, Lidl, even highlights the significance of soy for the economic progress of Brazil, Argentina and Paraguay, claiming that it “constitutes the sole source of income for the soy farmer”, and that working with certification such as the RTRS means that Lidl is improving the livelihood, environment and competitiveness of Brazilian farmers, in an attempt to push it “up” the hierarchy.

All of the companies, however, make it clear that they are aware that the import of soy constitutes a dilemma, which must be addressed. Thus, the place that soy has occupied for a long time on the value hierarchy in the context of Danish agriculture is changing. While it before would be predominantly associated with a healthy (vegan) alternative to meat, and, at the same time, be the ingredient that has contributed to the increasing productivity of Danish meat and dairy production, it now carries the negative weight of being associated with environmental havoc in tropical forests, CO₂ emissions and climate change. For the retailers and distributors in question, the intention is clearly to generate a positive image, elevating the ranking of soy and thereby staving off criticism and possible loss of revenues. Even if soy is not directly mentioned, the plans of action clearly demonstrate that the connection between meat production and soy consumption is becoming apparent. Indeed, meat consumption is showing a general reduction in Denmark (and Europe), with consumers alleging climate and animal welfare as their main reasons⁵⁸. However, if one carries out an analysis of how a potential switch to certified and physically segregated soy would impact the culture and interest generated, the picture is quite different.

Takin the example of the DLG, whose position of the DLG as trader means that soy is a vital part of its total imports, implicating in a “community” of port and warehouse operators, who also operate a number of different grain imports from around the world. The culture generated in the DLG itself, by soy is, presumably, not affected by the status of the soy, i.e. whether it is certified or not, and its place on the value hierarchy not impacted environmental concerns. In the meantime, this is only true as long as the certified soy is being imported in the form of credits; in the moment more physically segregated certified soy starts to arrive in Denmark, the entire chain of custody needs to be certified, meaning separate accounting systems, separate warehouses and a clear traceability throughout the commodity chain, all the way until the table of the consumer. The new system will create different connections and

⁵⁸ <https://www.akademikerbladet.dk/magasinet/2019/magisterbladet-nr-3-2019/klimadebatten-faar-flere-til-at-droppe-koedet>

generate different cultural apparatuses, from the team of office workers engaged in ensuring the documentation, to the dock workers handling the shipments and the drivers taking care of further transport to DLG's customers.

At the same time, as a part of its CSR and general sustainability policies, the DLG will likely promote the fact that they are receiving certified soy. Proving the case in question, DLG was quick to announce the arrival 53,000 tons of certified soy in the port of Aarhus on June 4, 2021, stating that this was a significant step to reach its partial goal for that year of importing 200,000 tons of sustainable and deforestation-free soy. Unfortunately, neither DLG's homepage nor its Plan of Action seem to have been updated since then, creating doubts as to whether DLG in fact reached its goal for 2021 and also to which extent it will reach its 2022 goal of 400,000 tons of sustainable and deforestation-free soy imports.

As a side note, it may be expected that the culture generated by physical certified soy imports will also be high on the agenda of environmental NGOs such as Greenpeace and NOAH, who are already extremely vocal in denouncing the conventional soy trade between South America and Europe, often engaging in activist actions, as the recent one involving a major cargo ship sailing from Brazil to the Netherlands with 60 million kilos of soy⁵⁹. In the meantime, the position of NGOs such as the above mentioned is that the import of RTRS certified soy should not happen at all, as it "leads to a consolidation and legitimization of the present excessive soy consumption"⁶⁰.

6.5 Partial conclusion of Part One:

The soy supply chain is characterized as being hybrid in the sense that drivers exist both in Brazil in the form of an economic model based on neo-extractivism, as well as due to the high demand for the soy commodity in Denmark and Europe, where imports and trade are dominated by certain countries. Power is mainly exercised through big importers trade and at EU level by trade associations such as FEFAC. At the same time, relevant authorities in Denmark are also engaged in pushing for a stricter legislation of the use of forests and natural areas on EU level.

The strategies employed by the DAAS members to ensure import of deforestation-free soy overwhelmingly consist of buying credits from the RTRS for the calculated soy foot print of their private label, in an attempt to incentivize the cultivation of deforestation-free soy in Brazil. Half of the imports are carried out through the DLG, and the other half presumably

⁵⁹ <https://www.feednavigator.com/Article/2022/05/13/greenpeace-blocks-soy-cargo-ship-at-dutch-port-for-18-hours>

⁶⁰ <https://noah.dk/node/572>

through Danish Agro, which is not a part of the Alliance. It is difficult to estimate how much overlap there exists among the credits acquired by the various members, as it has not been possible to find reliable figures. In any case, the members are aware that purchasing credits is not a long term solution.

Finally, the use of soybeans in feed for Danish agriculture has become a controversial topic, as its negative environmental impact has received considerable attention. The creation of the Alliance and the proposed switch to 100% physically certified segregated soy imports by 2035 corroborate the concept of a commodity value hierarchy, on which soy is currently negatively rated, and the proposed strategies constitute an attempt to “push” soy higher up on the scale. The issue of zero deforestation ranks at the top of the sustainability scale, and although the RTRS and ProTerra certification standards are about much more than just avoiding clearing of forest or other natural cover, the main issue for the Alliance is to reach their zero-deforestation goals by 2025.

7 Case study – Part Two: Cross-analysis and discussion

Implications of partial conclusions vis-à-vis soy production in Brazil

7.1 Introduction

The second part of the analysis depart from the conclusions reached on Part One. First of all, in subsection 7.2, the conclusion regarding the significance of powerful players will be cross-analyzed by examining the actors present in Brazil. In subsection 7.3, the structure and sourcing practices of the two main certification agencies, Pro-Terra and RTRS will be analyzed and subsequently their sourcing practices will be scrutinized from the point of view of compliance the regulatory framework under which the soy is produced in Brazil. Finally, subsection 7.4 examines the importance of the cultural apparatus generated by the soy agribusiness in Brazil and discusses the notion of ranging a commodity as soy on a value hierarchy versus the cultural apparatus it creates. The chapter will lead on to a short discussion summing up the main issues and controversies in Chapter 8, before reaching a conclusion (Chapter 9).

7.2 Hybrid supply chain in the soy industry – where does the power lie?

The first partial conclusion from the case study above shows that at least half the trade and import of soy to Denmark takes place according to guidelines established by Europe’s biggest feed industry association – FEFAC. Additionally, the analysis also revealed that one of

the main actors in the Alliance, the CEO of the Danish trade organization for grains and feed products - DAKOFO – is also the president of FEFAC. With annual imports from Brazil of 12.9 million tons in 2018 to the EU, this economic bloc is still only accountable for a little under 10% of Brazil’s total soybean production. When it comes to Denmark, the leverage that may potentially be exercised by Danish soy importers/meat producers/retail businesses is even more insignificant, as its direct and indirect imports make up a fraction of Brazil’s production.

At the same time, demand for soybeans is historically high and Brazilian farmers now produce more soy than any other country in the world. In a favorable position to choose its partners and buyers, the remaining 90% of Brazil’s production is either used domestically, or exported to countries such as China, Thailand, Iran, South Korea, Indonesia, Vietnam or Turkey. The EU, and Denmark especially, carry less weight in the overall picture. If we consider the soy commodity chain to be hybrid, with power being exercised at both ends of the chain, the demand for certified and responsibly produced soy will have to be negotiated with Brazilian farmers, rather than presented as a demand. And this negotiation is impacted by important actors that hold significant power over the decisions made by the soy producing farmers, as will be detailed below:

7.2.1 The Brazilian environmental legislation as an actor.

The Brazilian Forest Code was introduced as early as 1934, at that time simply determining that up to ¾ of a rural property could be cleared of its original vegetation. In 1965, i.e. around the same time as the new capital Brasilia was opening up the central west of Brazil, the law was changed, establishing a 50% protection of the Amazon and 20% in all other parts of the country. However, with the intense deforestation of the Amazon and expansion of agriculture into the states located in the Cerrado biome⁶¹, the law was again changed in 1996⁶², providing for an increase to a 80% “legal reserve” in the Amazon forest, but reducing the limit to 35% in the states comprising the Legal Amazon, including two of the MATOPIBA states, Maranhão and Tocantins, and 20% in the other regions of Brazil, including the other two states of the MATOPIBA region, namely Piauí and Bahia (Fig. 1).

In 2012 the “New Forest Code” ratified the 1996 version but established the figure of a national environmental register – the CAR. This requires self-reporting of all relevant data for a rural property – including the areas available for maintaining the Legal Reserve, as well

⁶¹ Please refer to Fig. 1 in Chapter 2.

⁶² <https://www.gov.br/agricultura/pt-br/assuntos/camaras-setoriais-tematicas/documentos/camaras-setoriais/hortalicas/anos-antiores/cartilha-codigo-florest>

as the Permanent Preserve. If the owner has removed vegetation in excess of the legally established limits, such areas must be recovered in accordance with the Environmental Regularization Program (PRA) which is interpreted differently in each state⁶³. The point of the register, as indeed the controversy surrounding it, is that by entering the data pertaining to a property, the owner is theoretically regulating its fiscal and legal situation. However, several studies have shown that this potentially means that illegal land-grabbing is computed, and also that, since it is based on self-reporting, in certain states, more land is recorded than in fact is available, leading to the bizarre situation that the CAR currently has recorded 10% more rural property area than the areas established in a rural census in 2006⁶⁴. In addition, the 2012 version created a special, and less stringent requirements for small properties (below 4 fiscal units – see Section 7.3.1 for details) in addition to any areas that qualify as “Areas of Permanent Preservation”⁶⁵.

In addition to the above changes, several Brazilian scientists from the biological and ecology area carried out studies to assess the impact of the 2012 changes. Their conclusions are synthesized by two researchers from two of Rio’s federal universities, who conclude that the legislation established so many setbacks in terms of protection (decreases or removal of protective belts around waterbodies, lakes, rivers as well as hilltops and slopes, in addition to removing lowland and flooded forests from the category of Area of Permanent Preservation) that the combined effect of the new law would result in “22 million hectares of unprotected forest areas” (Novaes and de Souza 2013).

The constant adaptation and modification of the legal basis for agricultural activity is a clear example of how the law may act to either restrict or facilitate deforestation. Although not traditionally considered an actor in the supply chain, the legislative framework in the country of production can wield significant power. Gereffi already identified the state as a decisive actor in export driven economies, arguing that the commodity chains would respond to political pressure from the state (please see Chapter 4.2). Without entering into the question of pressure, as the legislation in the case of soy production seems to be more of a facilitator, it is unquestionable that the Brazilian state, through the modifications of its environmental laws has shaped the use of the different regions, among these, the Amazon and the Cerrado, succeeding

⁶³ <https://www.embrapa.br/codigo-florestal/entenda-o-codigo-florestal/perguntas-e-respostas>

⁶⁴ <https://ipam.org.br/scientists-map-land-grabbing-in-public-forests-in-the-amazon/> / https://www.em.com.br/app/noticia/gerais/2018/03/30/interna_gerais.947857/problema-brota-do-que-seria-solucao.shtml

⁶⁵ Legal Reserve – percentage of a rural property in which the original vegetation must be maintained; Area of Permanent Preservation– areas in a rural property that are critical to ensure the preservation of its ecosystems, i.e., river banks, springs, lakes, wetlands, sandbanks, hilltops, steep slopes and mangroves.

in halting deforestation in some regions while causing an expansion into other areas with a less privileged environmental protection.

With only a 20-35% limit of protection in the Cerrado, farmers may remove vegetation and expand both soy plantations and cattle farming entirely within the law. Between 2019 and 2020, deforestation in the region increased by 13%, whereof 28.3% is estimated to be linked to soy expansion⁶⁶. Furthermore, between July 2020 and July 2021, 5227.32km² (61.3% of the total area deforested in the Cerrado in that period) took place in the MATOPIBA region, making it the highest on record since 2002⁶⁷. With the legal potential for deforestation established in the legislation, soy related deforestation is not only very likely, it is almost sure to happen, as the above numbers confirm.

7.2.2 Brazil's current pro-agriculture government and the Rural Lobby

While the current Forest Code was enacted during the second term of leftwing president Lula, the current government in Brazil is led by the far-right President Jair Bolsonaro, a former military and pro-arms, pro-agriculture and religious president, politically and ideologically aligned with one of the biggest and most powerful lobbies in the country, the "*bancada ruralista*", or rural lobby⁶⁸. Voting as a closed block the *ruralistas* are regarded as the most influential congressional lobby in the discussions and negotiations that take place in Brazil's legislative power. Its members either are, or have close ties to, big landowners or agri-business companies. Their main focus is modifying the current environmental legislation to permit expansion and utilization of protected areas in agricultural regions, by removing the requirements for issuing an environmental license (compulsory for any kind of commercial activity which may harm the environment). This would include construction of new highways and roads, ports and even expansion of cattle farming⁶⁹.

The Rural Lobby also works towards putting a stop to, or even revert some of, the demarcation of indigenous land. Indigenous lands are not part of the legal reserve, but have a singular status in the Forest Code. However, a study from 2021 shows that if agricultural expansion were to be allowed on indigenous land, the potential deforestation could range from

⁶⁶ <https://chainreactionresearch.com/report/cerrado-deforestation-2020-soy-beef/>

⁶⁷ <https://ipam.org.br/matopiba-bate-recorde-historico-de-desmatamento-no-cerrado/>

⁶⁸ In 2019 the Rural Lobby made up 257 of the 513 federal representatives in the congress - <https://deolhonosruralistas.com.br/2019/03/22/nova-frente-parlamentar-da-agropecuaria-reune-257-deputados-e-senadores-com-25-psl-de-bolsonaro-so-fica-atras-de-pp-e-psd/>

⁶⁹ <https://guiadoestudante.abril.com.br/coluna/atualidades-vestibular/o-poder-da-bancada-ruralista-no-congresso/>

19.3% in the Amazon to 79% in the Cerrado, or 202,000km² and 66,330km² (Schneider, Biedzicki De Marques, and Peres 2021).

The power of the rural lobby has been strengthened since the election of President Bolsonaro in 2018. Just in March this year, a bill proposing the exclusion of Brazil's biggest soy producing state, Mato Grosso, from the Legal Amazon area was introduced in the Chamber of Deputies by a federal representative of that very state. If passed, it would mean that Mato Grosso – situated in the Legal Amazon, but made up of three different biomes, i.e. the Amazon, Cerrado and Pantanal (wetland) would only need to maintain legal reserves between 20% and 35%. The potential deforestation has been calculated at 100,000km² - in a state that has had the second-highest deforestation rate since the satellite monitoring started in 1988⁷⁰.

Although there are voices in Brazil warning about the negative effect this bill could have on the perspectives of the EU-Mercosur deal, currently pending only a few countries' final ratification, as well as be an obstacle to future exports to the EU, in view of its proposed Green Deal⁷¹, it is debatable whether the powerful lobby of the *ruralistas*, in conjunction with a pro-agriculture Brazilian president would take such concerns seriously.

In addition to pushing for a more lenient legislation in the environmental area, the agribusiness sector is also extremely powerful and vocal in another area. Through their lobby in the congress they have successfully managed to obtain tax breaks and exemptions, which in 2021 amounted to R\$36.67 billion (R\$1.00 = USD 0.2 as of June 2022), or more than 10% of all tax-breaks given in that year, as estimated in an government report (Costa 2021). Less official sources and non-mainstream media has claimed that the wide range of tax incentives in the form of reduced tax rates levied on for example imports of pesticides, seeds and machinery, coupled with export tax exemptions, VAT exemption, and reduced rates on social and labor taxes mean that the sector has an unusually privileged position in the country⁷². One newspaper claims that the loopholes in the law used by the agribusiness leads to an exemption of the 30% export tax, in actual fact meaning that the entire agribusiness sector virtually pays no export tax at all!⁷³

⁷⁰ <https://infoamazonia.org/2022/03/18/proposta-tirar-mato-grosso-amazonia-legal-autoriza-desmatar-area-tamanho-pernambuco/>

⁷¹ “The proposed new rules would guarantee that the products that EU citizens buy, use and consume on the EU market do not contribute to global deforestation and forest degradation. The main driver of these processes is agricultural expansion linked to the commodities soy, beef, palm oil, wood, cocoa and coffee, and some of their derived products.” From: https://ec.europa.eu/commission/presscorner/detail/en/ip_21_5916

⁷² <https://www.sindifisco.org.br/noticias/agronegocio-espera-isencao-permanente-de-icms/>
<https://mst.org.br/2021/03/16/bolsa-agrotoxico-isencao-fiscal-e-pandemia-de-coronavirus/>

⁷³ <https://www.brasildefato.com.br/2020/12/08/agronegocio-pagou- apenas-r-16-3-mil-em-imposto-de-exportacao-durante-todo-2019>

Irrespective of the size of the tax breaks, the fact remains that the Brazilian soybean (and beef) producers wield significant power through their representatives in the Brazilian congress, and it may be expected that they will continue to do so, irrespective of the outcome of this year's presidential elections in November. Their influential position in the supply chain therefore potentially creates obstacles for the proposed corporate deforestation commitments, as well as for their proposed deadline in 2025.

7.3 The truth about verification and certification: who, where, how?

The analysis in Part One revealed that the Danish companies either rely on the guidelines of FEFAC or on the certification of the imported soy carried out through a certification agency. Whereas the implications of relying on the guidelines by FEFAC have already been shown to be problematic due to the acceptance of legal deforestation by this organization, the certification carried out by the RTRS, as that carried out by Pro-Terra have so far been regarded as more consistent, albeit there are several issues related to the use of credits and to the transparency of ensuring a deforestation free supply chain. Meanwhile, both the RTRS and the ProTerra network are big organizations, each one of them founded and run in different ways, and with different objectives. In the following subsections, I will first analyze and discuss the implications their organizational structure and mission, including some of the relevant certification criteria and how it applies in a Brazilian context. Subsequently, I will look at the development of certified soy over the last couple of years and discuss some of the reasons for the recent slump in ProTerra non-GMO soy production and stagnation in the RTRS production which has been observed.

7.3.1 The Pro-Terra Foundation.

ProTerra was created in 2006, registered and established in the Netherlands. The Netherlands are also, as seen earlier, the biggest importers of soy in Europe. The ProTerra certifies non-GMO produced soy in 13 countries besides Brazil, in addition to sugar cane in 18 countries globally. Unlike the RTRS, the Pro-Terra is not an NGO, but structured as a foundation, with a Board of Directors and a Stakeholders' Council. The Board of Directors is comprised by representatives from the Netherlands, Switzerland, Brazil, the US and Norway, all of whom have "experience in sustainability and food and feed supply chains".

Significantly, the national interests of the Board are almost mirrored in the Stakeholders Council: thus, this is made up of representatives from Cargill (US) Barry-Callebaut (US),

Amaggi (Brazil), Cetefra (BayWa Agri Supply & Trade - Holland), and Skretting, a global aquaculture feed company, headquartered in Norway and present in 18 countries. The list of countries is complemented by MEGA Tierernährung GmbH & Co, Germany's largest poultry feed company, and Denmark (Global aquaculture BioMar, with operations in Europe, Asia, South and Central America). While most of the representatives occupy positions in their respective companies as sustainability, communications or quality coordinators, the representative of MEGA Tierernährung GmbH & Co is its managing director.

The importance of having representatives of large multinational companies in an organization such as the Pro-Terra, indeed, the fact that the foundation was founded and is overseen by important stakeholders in the food and feed industry cannot be underestimated in the connection with analyzing the mission and the philosophy behind it. Although its overall purpose is to “promote a sustainable environment and social responsibility of organizations in private and public sectors, including companies and governments in favor of public interest”, at the same time, its articles of foundation reveal that it is much more than a certification standard: thus the Foundation may engage in several types of economic and financial activities, including, but not limited to buying and selling real estate, leasing building and land, lending money, act as a guarantor and provide credit, and so forth⁷⁴. With a Board of Directors and a Stakeholders' Council representing important actors in the global feed business, it must be assumed that the not so clearly stated purpose of the foundation is to ensure that the production of soy continues to increase, and that it does so in a manner that will continue to benefit the companies it represents.

Notwithstanding the bias in the organizational structure of Pro-Terra, there can be no doubt that the foundation's certification standards are much more stringent than, for example, the RTRS, as they only allow non-GMO soy. This also means that the entire supply chain is physically segregated from other soy. However, the Pro-Terra still allows the use of pesticides unless the production is also classified as organic. Through email exchanges with the secretariat of ProTerra, I was informed that their GMO free soy production in Brazil accounted for 2,646,594.74 tons in 2020, but only 1,513,626.82 tons in 2021. Globally, the numbers were, respectively, 3,032,171.39 tons and 1,881,240.20, making it clear that the bulk of their soy certification activities are tied to the Brazilian market.

⁷⁴ Source: https://www.proterrafoundation.org/wp-content/uploads/2020/10/deed-of-amendment-to-the-articles-of-Stichting-ProTerra-Foundation-2016-08-29-TRANSLATION_v2.pdf

Just as the RTRS, the Pro-Terra standards contains a number of criteria, ranging from workers' rights, pesticide use and land conflicts to the concept of land conversion/deforestation. However, whereas the Pro-Terra standards require medium and large sized farms to comply with the Brazilian legislation that provides for the recovery of areas degraded prior to 2008 - to effectively maintain the Legal Reserves and Permanent Protection Reserves in the percentages applicable to each biome – ProTerra operates with different criteria for smallholders. Defining smallholders as farms owned by an individual or a group of individual (as opposed to industrial farming, ProTerra does not set a limit on size, claiming that the “standards apply globally and whereas a 2 ha farm in India is considered a smallholder, in Brazil the limit may be 40 ha⁷⁵”. While this may be true, it is also true that not only do smallholders account for 330 million hectares of Brazil’s rural properties, “10 times the size of Germany⁷⁶”, but as they are legally defined as measuring between 1 and 4 fiscal units (*unidades fiscais*), that in turn may vary in size from 5 to 110 ha depending on their location⁷⁷, it means that a smallholder property in Brazil may actually be up to 440 ha.

The point here is that that when the Brazilian smallholders are allowed by ProTerra, “to ensure that land use conversion to agricultural area is aligned with the governmental regulations (at “initial certification – entry level”), it means that they may produce on farms that are exempt from one of the most important environmental restrictions that apply to larger rural properties – the maintenance of a minimum legal reserve. According to the Forest Code, a small property does not need to recover natural vegetation in the amount necessary to make up the legal reserve required for the biome in which it is located (i.e. 80%, 35% or 20%) if the vegetation was removed prior to 2008⁷⁸. Even if they are not allowed to engage in expansion that could lead to deforestation after 2008, or after becoming certified, it still means that ProTerra may potentially be accepting soy from farms that have no original cover left, at all, and that are under no obligation to recompose it or in any way promote biodiversity. From the point of view of ensuring a sustainable production, this criterion is critical and thus, for the purpose of certification, a somewhat problematic one.

⁷⁵ ProTerra Smallholders' Standard p. 2 – accessed through <https://www.proterrafoundation.org/the-proterra-standard/>

⁷⁶ <https://www.to.gov.br/naturatins/noticias/car-com-beneficios-para-pequenos-produtores-e-prorrogado-ate-2017/117pw73ci3xz>

⁷⁷ http://www.planalto.gov.br/ccivil_03/_Ato2004-2006/2006/Lei/L11326.htm#art3 and <https://www.embrapa.br/codigo-florestal/area-de-reserva-legal-arl/modulo-fiscal>

⁷⁸ <https://ibijus.jusbrasil.com.br/artigos/782508777/reserva-legal-a-regularidade-ambiental-em-pequenas-propriedades-rurais>

7.3.2 *The Round Table for Responsible Soy – RTRS*

The RTRS was established as a NGO non-profit in Switzerland in 2006, following the implementation of the Amazon Soy Moratorium. The multistakeholder negotiations lasted 4 years before arriving at a first RTRS standard. Describing itself as a “global, multistakeholder, consensus-based, decision-making roundtable”⁷⁹, the fact of the matter is that the RTRS was founded by the Brazilian agribusiness powerhouse - the Amaggi group, as well as the global food giant Unilever, the NGOs WWF, Fetrauf-Sul, Solidaridad and COOP, and that its current executive board has a marked overweight of members representing soy producers or industry and trade. The same conclusion was reached in a study published in 2020, looking into the certification practices and impacts of the RTRS, which also noted that already during the initial meetings in Brazil, affected communities, grassroots organizations and social NGOs were “underrepresented”, very likely in view of the fact that such meeting were conducted in English – a language not spoken by the layman/farmer and rural dweller in Brazil (Schilling-Vacaflor et al. 2021).

As already mentioned earlier on in this thesis, the RTRS is by far the largest certification agency in Brazil. In 2020, the RTRS supplied credits or sold certified soy corresponding to 3,677,721 tons⁸⁰ out of a total of 138 million tons of domestic soy production and a global production of 366.22 million tons⁸¹, contrasting with the certified production of 2,646,594.74 tons by ProTerra. The RTRS certification standards are different from ProTerra’s, starting with the fact that they mostly certify conventional GMO based production, including use of pesticides, and that most of their certified production is channeled through the purchase of credits on a global, online platform, making traceability non-existing. They do, however, impose limits on expansion through their ban on deforestation after a cut-off date, but the main issue with this criterion is that the cut-off date for the Cerrado (and other biomes except the Amazon) is as late as 2016 (see Section 6.3).

The RTRS certification criteria consist of 5 different principles, covering all aspects of a responsible production, from compliance with the country’s law to upholding responsible labor conditions, community relations and minding environmental responsibility. Generally, the yearly audits are carried out by firms that more than often either have ties to the farms themselves, or to the large trader, thus making their independence and objectivity questionable (Schilling-Vacaflor et al. 2021), The same author also points out that the very nature of the

⁷⁹ <https://responsiblesoy.org/nuestra-gestion?lang=en#informes>

⁸⁰ RTRS Management report 2020 p.15 - https://issuu.com/rtrs/docs/ig_2020_eng

⁸¹ Both figures from <https://www.statista.com/statistics/263926/soybean-production-in-selected-countries-since-1980/>

RTRS as representing the “large corporate actors” means that it does not aim for systemic change of the way soy is produced” (Schilling-Vacaflor et al. 2021, 6).

The dominance of the RTRS in the soy certification market has led to them being regarded as a reference (in their own words). In Brazil, they have certified chains of custody of several main traders such as Amaggi, Bunge, Cargill, Unilever, including three non-GMO certified chains belonging to Cataratas do Iguacu Produtos Organicos. The soy traded through these chains is either segregated certified soy, or soy supplied via the so-called mass balance system. The latter means that the trader uses an accounting system ensuring that the volumes of RTRS certified soy they deliver through such chain corresponds to the volume of certified soy “or derived products” entering their systems, which in turn means that the soy delivered as certified may be conventional, as such producers usually trade in both types. Although the standard operates with both segregated and mass-balance certification, it is clear from reading the 2020 RTRS management report that the only soy passing through such certified chains of custody is the mass-balance⁸², which curiously seems to ensure the traceability of the soy exported to Europe, but does not ensure that the soy delivered is in fact the RTRS certified soy as it is usually mixed with non-RTRS certified soy during transport⁸³.

Meanwhile, by far and large the biggest bone of contention of the RTRS production is its heavy reliance on the issuing of credits. The RTRS issues credits (1 ton of certified soy corresponds to 1 credit) to the farmer, which are subsequently registered on an online platform. The companies in Europe, such as those that make up the DAAS, are then able to buy credits to make up for their soy footprint, but the actual soy is sold as non-certified soy through traditional platforms. When companies engage in the purchase of such credits they may potentially be supporting the maintenance of farms in the certification system, however, they cannot claim to be importing deforestation-free soy, and nor will this strategy help them to attain their goals of becoming one hundred percent deforestation-free in 2025.

In addition to the issue of credits, there are other challenges in the RTRS production. Thus, in an article on the occasion of the 10 year mark for the establishment of the first RTRS standard, Solidaridad, one of the founding members of the RTRS, concluded that although the RTRS has grown its certified production, the overall impact has been very limited. As far as halting deforestation, one of the conclusions was that the premium on RTRS certified soy which is only approximately 0.5% of the price that conventional soy is traded for on the

⁸² RTRS Management report 2020, page 16 - https://issuu.com/rtrs/docs/ig_2020_eng

⁸³ <https://responsiblesoy.org/material-rtrs?lang=en#creditos>

commodity market does not compensate for not engaging in legal or illegal forest clearing or conversion. And that therefore the farms that have converted to RTRS production are likely those who “did not have active plans to do so anyhow [engage in deforestation]”⁸⁴.

7.3.3 Fluctuations in the market for non-GMO and other certified soy

To conclude the section on the certification agencies, it is important to note some recent trends in that market. As mentioned in 7.2.2, the Pro-Terra certified volumes have undergone a significant decrease between 2020 and 2021 (down from 2,646,594.74 to 1,513,626.82 tons). At the same time, while the RTRS management report shows that the growth curve for soy certified under this standard grew by approximately 1 million annually ton between 2014 and 2017 – each year either doubling or increasing the production by more than 30 or 40% - since 2018, the production increases have been much lower, with percentages ranging from around 10% to 16%, and even with a decrease of around 10% in 2019⁸⁵.

I contacted the Pro-Terra secretariat to inquire about the possible explanations for their production plummeting between 2020 and 2021. According to information available in a webinar⁸⁶, there are several reasons, however two aspect were highlighted: the issue of time/long-term planning, and the question of premium and costs. Insofar as the time issue is concerned, specifically in the case of non-GMO production, farmers need at least two years and GMO seed suppliers at least three years to plan ahead. However, buyers only plan one year ahead, meaning that the downstream actors of the supply chain will have engage in long-term commitments if a stable non-GMO production is to be ensured. At the same time, the huge demand from regions such as Asia means that farmers prefer to keep to conventional production because there will always be a market for their soy. The premium on certified/non-GMO soy also fluctuates, resulting in lack of incentive to convert to such production, which is already a costly investment that entails several restrictions with regard to expansion (i.e. potential deforestation/conversion), as well as lower yields in the case of organic soy.

The above conditions highlight some of challenges for maintaining or increasing the supply of certified soy. It is debatable whether such structural problems can in fact be addressed, given the complexity of supply chain and the high global demand for soy which is expected to continue to increase.

⁸⁴ <https://www.solidaridadnetwork.org/news/responsible-soy-10-years-on/>

⁸⁵ RTRS Management report 2020, page 14

⁸⁶ “The volatility of the soy market and the sustainability impact of changing prices and premiums” – accessed on 08.06.22 through <https://www.proterrafoundation.org/capacity-building/>

7.4 Cultural apparatus versus value – the discourse of nationalistic farmers in Brazil.

In stark contrast to the kind of negative value that has been attached to the import and use of soybeans in Denmark, the growing of soybeans in Brazil is associated with export revenues, wealth, progress and development. Notwithstanding the ongoing debate about its negative impact which have continued to take place since Greenpeace launched their campaign against it nearly 20 years ago, the business is still mostly portrayed as positive in both mainstream media as well as in the many online platforms and channels that cater for the agrobusiness sector. The forthcoming 2021/22 harvest is already being celebrated as the biggest one ever in Brazil, and plans are constantly being made to increase productivity and expand cultivation areas. Among these, an “agricultural innovation plan” for the state of Minas Gerais (located in the Cerrado⁸⁷), as well as continued technological innovations to increase productivity or to recover degraded areas without incurring in deforestation.

The biggest, most powerful and vocal trade association in the sector is the Association of the Soy Producers - APROSOJA (Associação dos Produtores de Soja), who maintains an online news site that not only informs members and the general public about news, innovations and commodity prices in the soy sector, but also has its own agenda with regards to interpreting criticism and actions that go against the soy business. Although I do not intend to carry out an in-depth analysis of the rhetoric and discourse of the different articles and news items, I wish to mention a few of them that underline the philosophy and business culture of APROSOJA.

The first is an article denouncing the request by the Brazilian Coalition for Climate, Forests and Agriculture (*Coalizao Brasil, Clima, Florestas e Agricultura*) to limit rural credit to producers operating in embargoed/banned areas as “a backdrop for wanting to obstruct any and all conversion of land into crops”. The article then argues in favor soy production in such areas, alleging food security for low-income population, and finishes with the proclamation that “deforestation done for the purpose of producing food is marginal, and does not threaten any biome”⁸⁸. The second example is an “official statement” with the headline “It’s commercial protectionism disguised as environmental concern”. Here the association criticizes EU’s intention to cut down on commodity imports to protect the environment, claiming that Europe should take care of its own nature first and stop thinking that they can treat Brazil like a colony.

⁸⁷ <https://aprosojabrasil.com.br/comunicacao/blog/2022/05/15/embrapa-reune-produtores-e-lanca-projetos-de-agroinovacao-no-cerrado/>

⁸⁸ <https://aprosojabrasil.com.br/comunicacao/blog/2022/02/21/coalizao-brasil-mais-uma-vez-tenta-prejudicar-direito-de-acesso-de-populacoes-de-baixa-renda-a-alimentos-mais-baratos/>

In their words, the EU's failure to respect the fact that the environment in Brazil is perfectly protected through its forest code is akin to meddling with Brazil's affairs and constitutes "an insult to Brazilian sovereignty"⁸⁹.

Whereas the two above examples may be quite illustrative of the kind of sentiment harbored by the soy producers in Brazil, it is more debatable whether they constitute a generation of a cultural apparatus, as per Friedland's theory. Or indeed what kind of value one may attach to this. Suffice it to say, though, that the production of soy has a very strong position in the overall exports of the agricultural sector (all product, including meat production), accounting for a 30-35% share, depending on the year. However, despite these figures, and despite the fact that the soy business is promoted as a creator of wealth and development, the kind of culture generated is very different from, for example, that of the grapes in Friedland's example.

Trade organizations such as APROSOJA, pesticide producing corporations such as Syngenta and Monsanto along with a long list of other actors in the soy business appear on websites under such names as *maissoja*⁹⁰ (more soy), *graodireto*⁹¹ (direct grain), *cesbrasil*⁹² (describing itself as a forum for maximum productivity for soy), Canal Rural⁹³ (rural channel). All of them emphasize the benefits of Brazil's agribusiness, among these the creation of 1.4 million direct and indirect jobs, as well as its major contribution to the trade balance. However, recently, some of the country's more critical media are questioning this narrative, following the publication of an analysis of a wide range of socio-economic indicators in the soy producing municipalities.

Thus, an article in the *Estadão* newspaper citing the publication concludes that the major problem with the soy business is that it does not ensure income distribution (per capita income is lower than in non-soy producing municipalities) and neither does the presence of the large farms ensure a better infrastructure or availability of public services. Mechanized farming processes mean reduced need for labor, and not only are the extreme poverty indices higher than in other regions, but the fall in infant mortality has not kept up with the other regions. In short, the idea that the negative environmental impact from soy production will be outweighed by its positive socio-economic effects is not true; the wealth generated does not

⁸⁹ <https://aprosojabrasil.com.br/comunicacao/blog/2021/11/23/e-proteccionismo-comercial-disfarcado-de-preservacao-ambiental/>

⁹⁰ <https://maissoja.com.br/>

⁹¹ <https://campanha.soubrasilsouagro.com.br/>

⁹² <https://www.cesbrasil.org.br/>

⁹³ <https://www.canalrural.com.br/projeto-soja-brasil/>

circulate in the producing municipalities as the owners often live somewhere entirely different than the rural regions⁹⁴.

So what kind of cultural apparatus does the enormous soy business generate in Brazil? Well, for one, it is clear that the sector makes an effort to promote and portray itself as paramount for the importance of generating export revenues, claiming a strong connection to the development and progress of Brazil. But as already noted in the paragraph above, this notion is questionable. Even if the agribusiness claims to be a generator of jobs, wealth, business, trade, infrastructure (roads and ports, mainly), such impacts do not trickle down to the poorer part of the population. When Friedland talks about communities of grape pickers, raisin factory workers, winemakers, specialized wine magazines and depictions of grapes in paintings and the significance of wine tasting and wine culture, he is definitely placing a positive value judgement on grapes. One might even say that Friedland's classification is a form of romanticizing this commodity, because the notion of manually picked grapes and sophisticated wine connoisseurs remotes to a time when farming was less intensive and society was less concerned with the potentially destructive impacts of large-scale farming. Instead of cultural apparatus, it seems, then, that modern-day large-scale, industrial farming creates more of a physical, material imprint in the landscape than a cultural apparatus per se.

It is however unquestionable that the self-promotion of the sector, together with its ties to the country's president and the powerful rural lobbies means that it has a strong online presence and the attention of mainstream media and government agencies. This underscores the strong standing of the Brazilian agribusiness also verified in the two foregoing sections, and makes for the conclusion that the steps taken by the EU and DAAS to restrict deforestation by not accepting soy from areas that are legally deforested may not find resonance among the resolute, capital strong and self-aware Brazilian producers.

8 *Discussion of findings*

The findings in the analysis reflect some of the important discussions and facts about the causes, nature and extent of deforestation already touched upon previously in this thesis. Thus, the academic debate surrounding the differentiated protection given in the Brazilian forest code to the two major biomes home to the soy industry, the Amazon and the Cerrado biome (page 17) is exemplified by the kind of guidelines that a major actor within the European feed industry is recommending: by allowing legal deforestation, FEFAC is automatically

⁹⁴ <https://summitagro.estadao.com.br/noticias-do-campo/producao-de-soja-no-brasil-nao-gera-qualidade-de-vida/>

endorsing the Brazilian environmental politics that establish the Cerrado biome as a “lesser” environment, with only 20-35% of its area under protection.

Likewise, the enormous loss of vegetation in the Cerrado and the soaring deforestation rates in the new soy frontier, the MATOPIBA region, described by several authors (p.16) is corroborated in the analysis by the active choice of selective support for farmers in the states of Maranhão and Piauí by the retailer Lidl (The Pro-Terra Foundation has also demonstrated concern for the Cerrado in a specific policy paper).

Another important aspect is the steep increase global demand for soy, driven by the entry into the market of major consumers such as China, and supported and fueled by the meat production in Brazil and in the EU. This debate has so far concentrated on the fact that increased demand leads to increased production and, hence, increases in the areas deforested or cleared for soy production (p. 26). In the meantime, my analysis also shows that not only does the soybean production increase, but the big availability of eager buyers means that the incentive to switch to certified soy production is smaller, as the farmer is able to sell his/her product regardless. The slump in the 2021 production of certified soy shown in the analysis of ProTerra and RTRS exemplifies just how big an influence the huge demand for soy has on the permanence and “sustainability” – *Sensu Strictu* – of the market for certified soy.

In the meantime, the reliance on certified production, which constitute the basis for all Plans of Action of the Alliance, is more complex than choosing one of the many certification schemes available currently. As we have seen, the two major certifications or guidelines indicated by the companies (Pro-Terra, RTRS and FEFAC) have structural and operational shortcomings, as well as questionable motives. Their shortcomings are rooted in the fact that they often follow the Brazilian environmental legislation, in the case of FEFAC, or they subscribe to some version of it: thus the RTRS has established a cut-off date for the Cerrado biome as late as 2016. However, not only has the Cerrado been exposed to higher annual deforestation rates than the Amazon, but the last three years prior to this cut-off date it exhibited some of the highest rates in the decade (Fig. 3). In addition, through the analysis of their organizational structure, it has become clear that stakeholders are unevenly represented and that the stated purpose of both organizations is to see that “business as usual” continues.

Insofar as the system of purchasing credits of the RTRS as opposed to actually importing certified soy is concerned, the Alliance members are challenged by the long supply chain and lack of transparency. Although they aim to demand physically certified soy imports from their upstream suppliers, this would require a long-term commitment with such suppliers, who in turn would need to enter into long-term commitments with traders or farms in Brazil –

one of the main challenges brought up during the Pro-Terra webinar. This explains the strong reliance on RTRS credits by the Alliance members, and at the same time demonstrates that even in the case that members were actually able to reach 60 or 80% of deforestation-free soy imports through credits, this would in no way mean that the soy imported or used in Denmark had been produced under such conditions.

However, the major concern with the strategies of the Alliance members is still that all intentions rise and fall with the political and environmental policies and actions of the Brazilian government. The Brazilian state is an active promoter of agricultural export products, and soy ranks on the top of the list. The government is backed by a powerful rural lobby in Congress, which will likely continue to attempt to influence the environmental legislation regardless of this year's presidential elections (in October 2022). The discourse of the soy producers channeled through their trade association APROSOJA is indicative of their critical attitude towards the interference in Brazil's domestic affairs by bodies such as the EU, a fact that potentially means that legislation could continue to decline in detriment of the environment and in favor of opening up yet more agricultural areas, and thus making zero-deforestation commitments even harder to keep.

9 Conclusion

This thesis has demonstrated how Brazil's modern soybean production is intertwined with its own colonial and internal migration history and closely linked to global technological and agricultural advances in the 20th century. It has also highlighted how the increased demand stemming from the EU and China has worked as a primary driver of recent global soybean production which has transformed Brazil into the number one soy bean producer in the world. Furthermore, it has shown that the soy frontier in the recent decades has moved from the central part of the Amazon biome towards the northern and eastern part of the Legal Amazon area, and into the Cerrado biome, where the environmental protection is much more lenient, raising the question of how much legal deforestation may actually be embedded in some of the guidelines on the market, notably those of the European Feed Manufacturers' Association.

Throughout the thesis I have argued that the main issue with the commitments of the Alliance members is their indirect acceptance of legal deforestation, which potentially could lead to the removal of up to 80% of the original vegetation of Brazil's second biggest biome, the Cerrado. At the same time, I have pointed out the weaknesses in the certification concept, concluding that the predominant use of RTRS credits does not mean deforestation-free imports

and neither does this modality contribute to the desired transitioning to a certified and physically segregated soy import. The analysis of the plans of action of the Danish Alliance for Sustainable soy turned up a plethora of soy sourcing guidelines and certification agencies which very different criteria for eliminating deforestation from the supply chain. Furthermore, the members of the Alliance generate a soy footprint through the embedded use of soy in their products that are often manufactured by third party producers, with little transparency as to which importer is used, leading the members to "buying absolution" through RTRS credits. The complexity of the supply chain means that transparency is hard to achieve, an essential criterion for executing the future plans of transitioning to one hundred percent physically segregated and deforestation-free imports. At the same time, the powerful APROSOJA continues to influence lawmakers and politicians in favor of a more lenient environmental legislation which will lead to more "legal" deforestation in already heavily deforested states such as Mato Grosso and in vulnerable indigenous land.

More importantly, though, is that my analysis has made a significant contribution to the debate on corporate commitments based on the use of certification schemes by revealing how the instability of the market for sustainable soy is rooted in the lack of long-term planning on the part of all actors of the supply chain. If long-term agreements were in place, they would ensure more stable conditions for the upstream producers, in turn fortifying their position in the market and supporting their presence in the agricultural landscape in Brazil. Thus, if the goals of the Danish Alliance for Responsible Soy are to become more than the greenwashing of a destructive commodity, all actors in the supply chain will need to enter into mutually binding, long-term business arrangements, eliminate the use of credits and follow stricter criteria, such as those stipulated by the Pro-Terra Foundation, which do not accept any form of deforestation.

While the thesis has concentrated on investigating the feasibility of the commitments made only by the Danish Alliance for Responsible Soy, the conclusion is that the strategies need to be carried out through a joint EU level effort, and that therefore the strict deforestation-free criteria (neither legal nor illegal) should be included in the clauses of the forthcoming EU-Mercosur trade agreement.

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Website data: all websites and pages were accessed between January 20 and June 30, 2022.