FROM BRAZILIAN FIELDS TO NORWEGIAN FARMS

Socio-environmental challenges in the soy production chain

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INDEX:

EXECUTIVE SUMMARY 4
1. FROM BRAZILIAN FIELDS TO NORWEGIAN FARMS: HOW SOY IS PRODUCED 5
2. SCOPE AND METHODOLOGY 6
3. A CLOSER LOOK AT THE BRAZIL-NORWAY PRODUCTION CHAIN 7
3.1. Soy in Brazil 7
3.2. The Soy Production Chain from Brazil to Norway 8
3.3. Denofa's Ownership Structure 9
4. DENOFA'S TRACEABILITY SYSTEM AND CERTIFICATION SCHEMES 10
4.1. The ProTerra Certificate 10
4.2. The Round Table on Responsible Soy (RTRS) 11
4.3. Gap Between Certificates and Reality On Site 11
5. THE CHALLENGE OF PESTICIDES IN BRAZIL 12
5.1. Misuse of Pesticides Lead to Resistant Weeds 13
5.2. Pesticides Sprayed Close to Houses and Villages 13
5.3. Pesticides and Non-GMO Soy 14
6. SOY PRODUCTION AND DEFORESTATION IN MATO GROSSO 15
6.1. Relation Between Soy Production and Deforestation 15
6.1.1. Fire as an Indicator of Land Conversion 16
6.2. Forest Legislation Applicable to the Area Where Soy Exported to Norway is Produced 18
6.2.1. "Consolidated Areas" 18
6.2.2. "Small Property" 19
6.3. Environmental Surveillance and Control 19
7. SOCIAL IMPACTS 22
7.1. Corporate and Land Concentration 22
7.2. Pre-financed Soy and Production Agreements 23
7.3. Lack of Jobs 23
7.4. Impacts on Indigenous Peoples 24
8. CONCLUSION AND RECOMMENDATIONS 25

EXECUTIVE SUMMARY

- Brazil has a Federal Constitution and consolidated legislation that provide for the protection of the environment, health and welfare of workers in rural areas.
- The large-scale agricultural export model used in Brazil, i.e. the state of Mato Grosso and particularly in the region where the soy exported to Norway is produced, has been causing severe social and environmental impacts.
- Although Norway is a relatively small player in the global soy market, it has been a leader in the effort to fight deforestation of tropical forests and ensuring good sustainability standards throughout global production chains.
- Denofa, through its Brazilian partner Amaggi, is responsible for most of the soybeans imported from Brazil to Norway; despite Denofa's good efforts to maintain best sustainability standards throughout its production chain, important challenges still remain to be addressed.
- Openness and transparency of the entire supply chain are key elements to corporate social responsibility. Denofa possesses detailed information on suppliers and cargoes shipped from Brazil to Norway. However, the company has so far refused to disclose such information based on business sensitive reasons that are not entirely clear.
- Denofa relies on comprehensive certification schemes managed by Amaggi to ensure the highest possible sustainability standards in the soy production chain. However, there are certain limitations related to such certificate schemes that may jeopardize the traceability vis a vis the actual situation on the ground. Lack of autonomous third-party verification and full confidentiality clauses are limitations that represent a breach in standards of transparency.
- Interviews with local farmers during the field trip evidence that a departure from Brazilian laws and certification standards may exist in the following areas:
  - Use and spraying of pesticides close to houses and villages, which even if compliant with local regulations, represent an unacceptable risk to the health of residents and workers in the areas where the soy exported to Norway is produced.
  - Failure to comply with federal and state forest laws by suppliers;
  - Concern that Denofa may be importing soy planted inside indigenous lands, in violation of the Constitution.

Recommendations to Denofa and other Norwegian purchasers of Brazilian soybean and derived products:

- Publicly disclose information about the suppliers of the soy exported to Norway;
- Engage in dialogue with ProTerra, RTRS and other certification bodies to discuss improvements and solutions for the existing limitations in the certification system, particularly the issues related to third-party verification and confidentiality;
- Pesticides: Respect minimum distances, and require a phase-out and eventually ban of the pesticides prohibited in Norway and the European Union in the supplier farms;
- Deforestation: make sure that all the supplier farms comply with the forest legislation in Brazil and Mato Grosso (all farms registered, licensed and with recovery plans publicly available);
- Refrain from buying soy directly or indirectly from indigenous areas, or which in any way violates indigenous legislation.

1. FROM BRAZILIAN FIELDS TO NORWEGIAN FARMS: HOW SOY IS PRODUCED

Brazil has, in recent years, become one of Norway's strategic commercial partners. In 2011, the Norwegian government published a written strategy paper, the so-called "Brazil Strategy", which outlines key principles for strengthening the bilateral relations between both countries in various segments. The strategy states that the Norwegian government expects Norwegian businesses in Brazil to respect the environment, human and workers' rights, as well as to keep an eye on whether corporate social responsibility is being applied in the supply chain[1].

> Today, all companies with activities in or that use suppliers in countries where the legislation does not meet internationally accepted standards, or is not properly enforced, have to take the whole supply chain into consideration.
>
> Norwegian Parliament's White Paper n. 10 (2008-2009), Corporate social responsibility in a global economy

Advocating and overseeing transparency and accountability in supply chains have been priorities for Framtiden i våre hender (FIVH) and Norwegian Church Aid (NCA) for several years. FIVH and NCA expect Norwegian businesses abroad to respect social and environmental standards, as recognized in Norway. This includes full transparency and accountability, responsible management of natural resources and respect for human, workers' and indigenous rights. RFN works to ensure that Norwegian policies, investments and consumption patterns are consistent with rainforest protection and the defense of indigenous rights. RFN has therefore supported this report.

The soy production in Brazil is well known for being one of the major drivers of deforestation and for its negative impacts on the environment and local livelihoods. The 2006 soy moratorium[2] has partially decreased the pressure on the Amazon Region. However, deforestation has migrated to the Cerrado region, the main Brazilian tropical savannah biome, which spans more than two million square kilometers in central Brazil and is one of the few global biodiversity hotspots[3].

Several civil society organizations have documented soy production as one of the factors driving deforestation in Brazil[4]. The soy production chain, as a large-scale agricultural model, raises numerous concerns such as the excessive use of pesticides, deforestation, water depletion and land conflicts, given that the interests of the large farms often override those of local communities and indigenous peoples[5].

This production chain is moved by an increasing global demand for soy, spearheaded by China, which consumed 72.1 million tons of soy in 2011-2012, 60.8 million tons of which were imported[6]. Brazil alone exported 25.9 million tons in the same period to China. In this scenario, Norway plays a relatively small role as compared to other major soy importers.

Despite being a small market player, Norway has been one of the leading countries in the effort to fight tropical deforestation and establish socio-environmental standards for its production chains. Examples of Norway's engagement are its membership in the recent Tropical Forest Alliance 2020[7], a public-private partnership aimed at reducing commodity-driven deforestation, and Norwegian Parliament's White Paper n. 10, "Corporate Social Responsibility in a Global Economy". The Norwegian private sector has also taken the lead in Europe in adopting certification schemes for controlling production standards at all levels in order to ensure sustainability in their production chains.

During 2012, FIVH and NCA held several meetings with Norway's largest importer of soy for animal feed, Denofa AS (RFN participated in some of these meetings). The aim was to obtain information about the conditions under which the soy imported to Norway is produced. The reason that Denofa has Brazil as its major soy source is that Brazil today is the only country able to supply large quantities of non–GMO soy, and this enables Norway to meet its animal and fish feed production requirements. Denofa has made it clear that its major concern is the traceability of genetically modified (GMO) soy, which is currently forbidden in Norway, and has assured us that its Brazilian owner, André Maggi Group, is one of the leading companies in responsible soy production and sustainability. Denofa relies on Amaggi's certification schemes, which claim that the soy imported to Norway is produced in a sustainable manner.

1 Norwegian Ministry of Foreign Affairs: The Norwegian Government's strategy for cooperation between Brazil and Norway: New perspectives on a long-standing relationship, p. 13: "The Government attaches importance to all aspects of CSR, including respect for human rights, the environment, workers' rights and the fight against corruption. Norwegian businesses are expected to take a precautionary approach. Companies engaged in the extraction of natural resources must respect the rights of indigenous peoples and local communities, and all companies must also pay attention to CSR in the supply chain".
2 The Soy Moratorium is a governance program aimed to avoid the trading and financing of soy planted in deforested areas in the Amazon Biome. It is a commitment entered into by companies and civil society to boycott soy grown in deforested areas in the Amazon biome, after evidence of the link between soy and deforestation was revealed in a Greenpeace report in 2006.
3 http://www.conservation.org/where/priority_areas/hotspots/south_america/Cerrado/Pages/default.aspx

4 http://www.ucsusa.org/publications/catalyst/fall11-the-root-of-the-problem.html
5 It is worth noting that, despite its shortcomings, this "green revolution" model is praised by the Norwegian government, in its "Brazil Strategy", as a model that could be exported to other African countries; although this would probably lead to the same, or even worse, socio-environmental problems than in Brazil.
6 O Crescimento da Soja: Impactos e Soluções, WWF report, 2014, in http://www.wwf.org.br/?uNewsID=38423#
7 http://www.tfa2020.com/

However, that alone is not enough. Denofa has so far denied disclosing information about the farms in Mato Grosso that deliver soy to the identified warehouses (see map). Therefore, civil society organizations have been unable to get an overview of the supply chain, including suppliers and sub-suppliers, or to check to what extent the mechanisms elected for ensuring responsible management of natural resources are actually working.

Using the information provided by Brazilian civil society organizations and unions on the impacts of soy production as a starting point, FIVH and NCA decided to make a field visit to investigate the situation in the area where the soy exported to Norway is produced, in Mato Grosso (RFN was not able to participate in the field visit).

Our guiding questions were:

- What are the mechanisms Denofa has in place to ensure that its production chain is sustainable from social and environmental perspectives? Are these satisfactory and adequate?
- Do farms delivering soy to Norway use pesticides in a responsible way?
- Do farms delivering soy to Norway comply with the environmental and forest laws in Brazil and the state of Mato Grosso?
- To what extent are human and workers' rights ensured within the supply chain?
- Are there any other social and environmental problems in the production chain of the soy exported to Norway?

2. SCOPE AND METHODOLOGY

This field report focuses on the import of soy for animal feed. It does not look at the import of soy protein concentrate used in fish meal in Norway[8]. The report is based on (i) information gathered during meetings with Denofa in Norway, and (ii) information gathered during visits to farms and from semi-structured interviews with soy producers in the municipalities of Mato Grosso where the soy exported to Norway is planted, as well as in the state capital, Cuiabá. Together with representatives from Denofa and Amaggi, the team visited one of Amaggi's own farms (Fazenda Tucunaré) and two other farms that deliver soy to Amaggi. Furthermore, the team interviewed several farmers and held meetings with civil society organizations and social movements without the presence of Amaggi or Denofa.

Through public information available on export trade[9], our team was able to track and identify the five municipalities from which Norway has imported soy over the last five years. At the time of the field trip, these were Sapezal, Campo Novo de Parecis, Campos de Julio, Diamantino and Brasnorte[10]. The team chose to visit a number of randomly selected farms and producers in these municipalities.

Altogether the team visited eight farms and interviewed 13 soy producers. Information was also obtained through a full-day meeting with the sustainability team of Amaggi at its head office in Cuiabá. Meetings and interviews were held with environmental and solidarity organizations, indigenous organizations, social movements and unions in Cuiabá and in the various municipalities the team visited. Local politicians were also interviewed.

8 The three largest companies in the salmon feed industry in Norway; Ewos, Skretting and Biomar imported around 350,000 tons of soy protein concentrate (SPC) in 2012.
9 http://www.comexbrasil.gov.br/

10 Further information about Denofa's soy imports from Brazil was not possible due to the company's refusal to disclose its suppliers. Denofa affirms that it does not currently buy soy from Brasnorte.

3. A CLOSER LOOK AT THE BRAZIL-NORWAY PRODUCTION CHAIN

3.1 SOY IN BRAZIL

The globalization of eating habits, along with the increased consumption of meat, has prompted a greater demand for the soybean used to make animal feed. Meat consumption is estimated to increase from 38.2 kg per person in 2005 to 42.6 kg in 2020. Soybeans are the chief source of protein for the world's livestock, accounting for ¾ of high-grade protein animal feed[11].

Soybeans was brought to Brazil by the first Japanese immigrants in 1908, but was introduced officially in Rio Grande do Sul in 1914. However, the expansion of soy plantations in central-west Brazil only began after the '70s, following an increasing demand for soybeans on the international market[12]. This expansion was particularly intense in Mato Grosso. Since the '70s the area corresponding to the state of Mato Grosso had been subject to an aggressive land occupation policy sponsored by the military government during dictatorship. Nationalist discourses on the need to safeguard the Amazon as Brazilian territory inspired gigantic infrastructure and colonization projects. The state of Mato Grosso distributed titles to federal properties for private use through colonization projects, with promises of handing out cheap and vast parcels of land to immigrants.

Soy Export Route from Mato Grosso to Norway. Source ISA, 2013.

The model adopted for introducing soy production on a commercial scale in Brazil, inspired by the Green Revolution, is a package that includes high-yielding crop varieties, irrigation infrastructure, full mechanization, and distribution of hybridized seeds, synthetic fertilizers and pesticides to farmers. In Brazil this policy has relied on strong government support in the form of subsidized credit. In 1973, the agriculture research center EMBRAPA (Brazilian Agriculture and Livestock Research Institute) was created. Today, EMBRAPA is considered a major agriculture research center, with branches such as EMBRAPA-Soy and EMBRAPA-Cerrado operating since 1975[13].

EMBRAPA and several private seed companies have developed modern soy varieties adapted to different ecosystems. Habitats that were previously considered unsuitable for soy production were turned into productive soy fields. Increased productivity has been achieved through improved technical employment of planning, mechanized agriculture and the intensive use of fertilizers. The reduced costs of production became essential to offset the high soy transportation costs in pioneer areas of the Cerrado, on boosting farming profits.

On the other hand, the socio-environmental costs of such a model are extremely high. In the '70s, Mato Grosso was home to dozens of indigenous peoples which had nearly no contact with the outside world at all. Colonization projects - many of them illegal (as state authorities often granted private titles to federal properties) - as well as infrastructure projects such as roads, led to land grabbing, and the extermination or eviction of such groups from their territories, as well as environmental degradation (deforestation and water pollution). Destroying the forest was the strategy used for claiming private ownership over public lands, which often encompassed ancestral indigenous territories. As such, deforestation was more of a tool for land grabbing, with the connivance (and even incentive) of the State. This situation has often evolved into disputes over territories inhabited by indigenous groups that had been forcibly dislodged to other areas during this period.

From 1988, when the National Institute for Space Research (INPE) began measuring the deforestation rates, to 2013, 137,251 km² of forest were destroyed in the state of Mato Grosso[14]. In such a complex historical context, the shared responsibility of all the stakeholders involved must be acknowledged. Although state and federal governments were greatly accountable in the past for the land occupation of Mato Grosso, the private sector must also acknowledge its share of responsibility, particularly as of the '90s, when the global commodities markets began to emerge and large-scale deforestations paved the way for commodity crop plantations.

11 Schlesinger, Sergio. Soy and Human Rights. Process of Articulation and Dialogue (PAD). Rio de Janeiro, 2007. www.pad.org.br
12 Mueller, Charles C. and M. Bustamante (2002). Análise da expansão da soja no Brasil. Brasília (DF): Banco Mundial. Accessed from http://www.worldbank.org/rfpp/news/debates/mueller.pdf
13 3 Schlesinger, Sergio. Soy and Human Rights. Process of Articulation and Dialogue (PAD). Rio de Janeiro, 2007. www.pad.org.br

14 http://www.obt.inpe.br/prodes/prodes_1988_2013.htm

3.2. THE SOY PRODUCTION CHAIN FROM BRAZIL TO NORWAY

According to the Norwegian Farmers Union, if the ships carrying the soy from Mato Grosso failed to arrive as scheduled in Fredrikstad, pig and chicken farming in Norway would be severely affected[15]. Indeed, soy has become pivotal to Norway and is actually the most important source of protein in animal feed. The use of high-protein feed has become crucial to meet market expectations globally. In Norway, soy represents 57% of the entire protein used in animal feed in 2011, as opposed to 28% in 1997[16]:

Norwegian soybean imports for animal feed have remained relatively stable over the last decade. On average Norway has imported between 350,000 and 400,000 tons annually

Year	2008	2009	2010	2011	2012
Imported soybean from Brazil to Norway (ton)	388.158	406.461	353.860	357.907	364.325

since 2008[17].
Note: These figures do not include soy protein concentrate imports for fish feed.

One of the major importers of the Mato Grosso soy is Denofa AS. The company has a strong position on the Norwegian market. Denofa's head office and main production facility is located in Fredrikstad. It produces soybean meal, soy oil and lecithin[18] for the Norwegian and European animal feed and food industry. The annual turnover in 2011 was approximately NOK 1.48 billion (US$ 250 million), and the company had 68 employees[19].

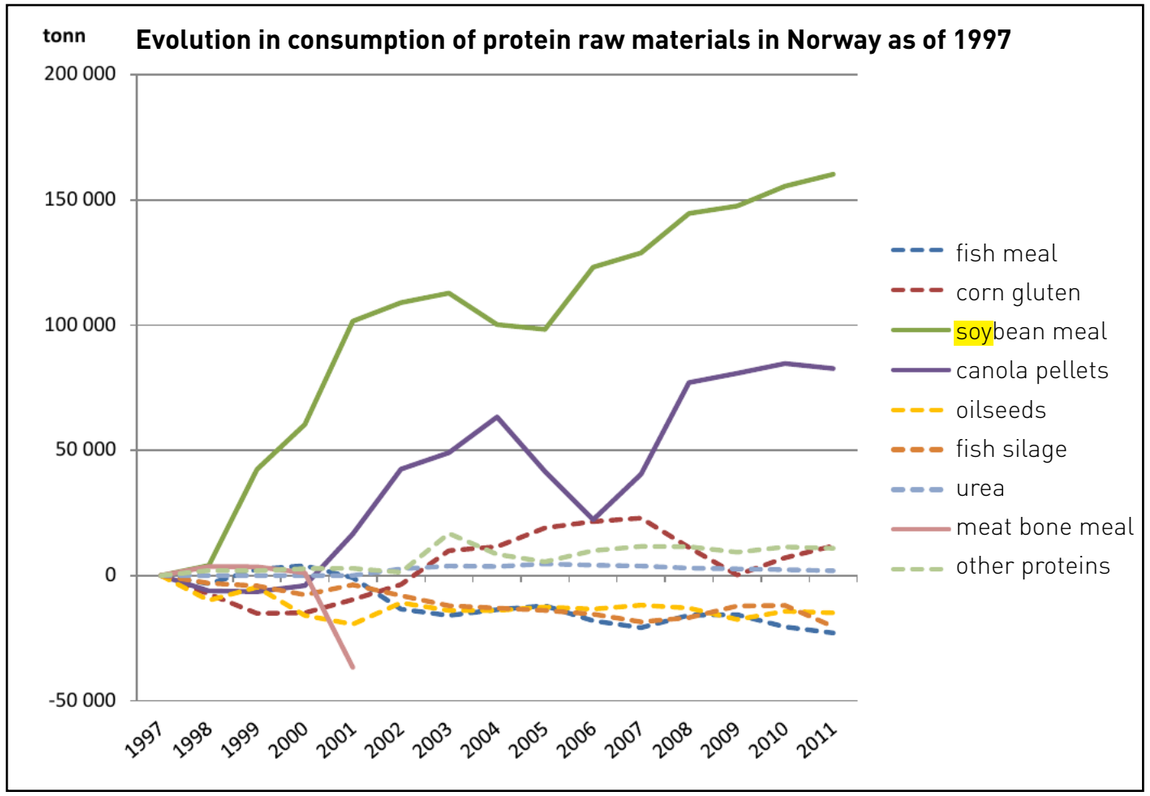
In 2013, 77% of Denofa's overall soybean imports came from Brazil, 71% from Mato Grosso, the third largest state in Brazil[20]. Soy production is one of the main businesses in the state of Mato Grosso, which alone accounts for 8% of the global soy production[21]. Amaggi's headquarters are located in the capital city of Mato Grosso, Cuiabá. When the field trip was made to Mato Grosso, the soy exported to Norway came from nine warehouses located in the municipalities of Sapezal, Campo Novo de Parecis, Campos de Julio, Diamantino and Brasnorte. Denofa affirms that it currently does not buy soy from the municipality of Brasnorte. The team was unable to ascertain exactly which farms deliver soy to the warehouses, since Denofa refused to disclose the supplier list.

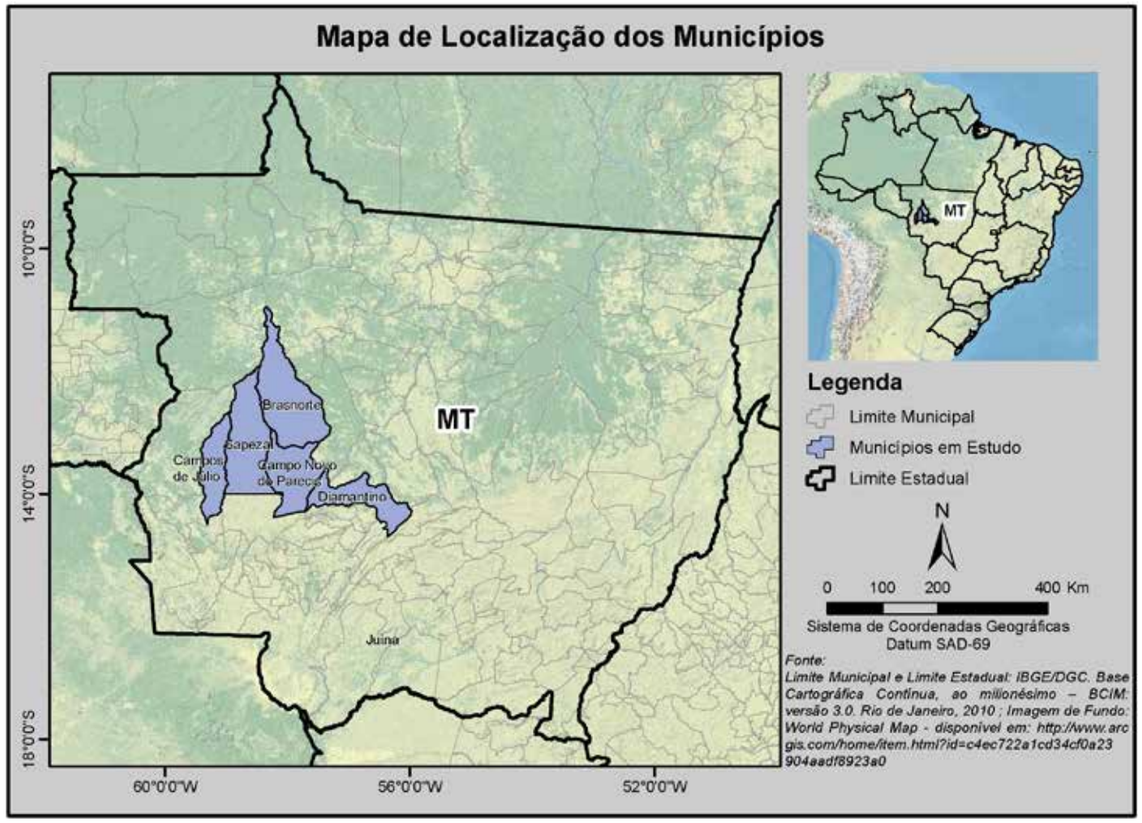
The soy imported by Denofa from Mato Grosso is sold to several customers in Norway and other countries. The Norwegian Agricultural Purchasing and Marketing Co-operation (Felleskjøpet) is the largest customer of Denofa AS. There are also other players on the Norwegian market that import soy protein concentrate for fish feed.

15 Yngve Ekern, «Båten som berger oss». 05.Mar. 2013 : http://www.aftenposten.no/nyheter/iriks/Baten-som-berger-oss-7137776.html#.UcrYURXgyJM
16 Statens Landsbruksforvaltning, apud Felleskjøpets "Prosjekt Norsk Korn i Kraftfôr, Sluttrapport mars 2012")

17 Statistics from Statistisk Sentralbyrå (SSB) www.ssb.no

18 Lecithin is used in the food industry for producing emulsifiers and stabilizers.
19 Register of Business Enterprises, Brønnøysundregistrene.
20 Communication, Bjarne Rask Thomsen/Denofa
21 According to Aprosoja, Mato Grosso produces 8% of the world's soy.





Location of municipalities where soy exported to Norway is produced

3.3 DENOFA'S OWNERSHIP STRUCTURE

Up until 2009, the Norwegian trade and investment corporation Norgrain and the Brazilian soy trade corporation Agrenco were listed as the owners of Denofa. Norgrain and Agrenco owned 60% and 40%, respectively, of Denofa. In 2009, its ownership structure changed: the Brazilian corporation Amaggi entered into an agreement with Agrenco to buy the latter's shares in Denofa, plus another 11% of the shares owned by Norgrain. The total price of the transaction was USD 17 million[22].

Up until September 2013, Amaggi owned 51% of the shares and Norgrain owned 49%. According to the shareholders' agreement, Norgrain was granted the option to sell its remaining shares to Amaggi during 2013, at a pre-defined price. Subsequently, Denofa's other shareholder, the Norwegian corporation Cermaq, declared its intent to sell its 49% stake to Amaggi, so that currently the Brazilian trader holds 100% of Denofa AS[23].

The André Maggi Group (Amaggi) was established in 1977, and has since the '90s been under the control of André's son, Blairo Maggi. Blairo, himself a major soy producer, is the former CEO of Amaggi, as well as a former governor of the state of Mato Grosso. He has been severely criticized by civil society organizations in Brazil for fostering the strong expansion of the monoculture to the detriment of the Amazon rainforest. In 2005 he was awarded the Greenpeace "golden chainsaw" award, for being the state governor during whose administration the highest deforestation rates in history were recorded. Blairo Maggi currently serves as senator in Brasilia[24] and presides over the Environment Commission in the Brazilian Senate.

Amaggi is one of the largest soy traders in Brazil. It employs more than 3,400 people and in 2012, reported gross revenue of USD 3.7 billion. Its current CEO is Waldemir Ival Loto, who also chairs Denofa's board of directors.

The group is organized into four business divisions: the trade division (Amaggi Exportação e Importação Ltda.); the agriculture division (Divisão Agro); the shipping and transportation division (Hermasa); and the energy division (Amaggi Energia). In recent years, the corporation has also opened offices in Europe and Argentina. In 2011, the corporation also started planting soy in Argentina[25].

In 2011/2012, Amaggi produced a total 441,545 tons of soy[26] and is involved in all the stages of the entire production

22 «Salg av kontrollerende eierandel i Denofa AS», 13. July.2009: http://www.cermaq.com/portal/wps/wcm/connect/cermaqno/home/press/news/salg+av+kontrollerende+eierandel+i+denofa+as
23 "Cermaq ASA: Cermaq streamlines its strategy - divests Denofa AS": http://www.finanznachrichten.de/nachrichten-2013-05/26953596-cermaq-asa-cermaq-streamlines-its-strategy-divests-denofa-as-399.htm

24 "Soya King wins Golden Chainsaw award": http://www.greenpeace.org/international/en/news/features/soya-king-wins-chainsaw/
25 Information at: http://grupoandremaggi.com.br/relatorio2011/wp-content/uploads/2012/07/Relatorio-de-Sustentabilidade-2011.pdf
26 Information at Amaggis website: http://www.grupoandremaggi.com.br/?page_id=4549

chain, including in the funding of farmers, production of seeds, buying and selling of fertilizers and pesticides, and transportation.

Amaggi has also been active in promoting sustainability in the soy production chain. The group has actively participated in several multi-stakeholder initiatives for sustainable soy production, including the process for developing the Basel criteria for Sustainable Soy Production, which evolved into the Round Table on Sustainable Soy (RTRS) and the ProTerra certificate. Amaggi is also an active member of the Dutch Sustainable Trade Initiative (IDH), which aims to ensure that 10% of the soy imported to Europe is RTRS certified in 2015.

4. DENOFA'S TRACEABILITY SYSTEM AND CERTIFICATION SCHEMES

In an increasingly complex trade environment, certification schemes are an important tool to seek sustainability throughout the entire global commodities production chain. Global production chains involve several countries with different environmental, health and social standards and laws. Certification schemes allow companies, civil society and national governments to set voluntary and harmonized social and environmental standards of production, moving the entire sector gradually towards greater sustainability. In the case of the soy production chain, the development of certification schemes such as the RTRS and ProTerra has been an important step towards ensuring a more reliable chain of production.

4.1. THE PROTERRA CERTIFICATE

The ProTerra certification scheme for responsible soy production was developed in 2006, based on the Basel Criteria established by WWF and the Swiss division of COOP, as guidelines for safeguarding environment and human rights in the agricultural sector. The Basel criteria comprise aspects of soy production such as legal compliance, environmental concerns, forest conversion and workers' rights, and include a verification process to be carried out by external auditors.

Together with the Basel Criteria, international human rights and environmental conventions and standards are built into the ProTerra Certificate. ProTerra certifies only non-GM soy and provides for a large set of standards including on health & safety, employment, social responsibility, environmental impact, genetic modification, pollution & waste management and product traceability, among others. Furthermore, ProTerra does not accept soy that is cultivated on land that was illegally deforested after 2004 in either the Cerrado or the Amazon Region. For soy cultivated in areas illegally deforested in the 1994 – 2004 period, the standard requires reforestation of a certain portion of the land[28]. Amaggi is certified under the ProTerra standard as an economic operator for both the production (farms) and custody chains (warehouses) in Mato Grosso.

The ProTerra Certification Program was created by the certification company Cert-ID, which previously owned the program. Due to criticism over its ownership structure, Cert-ID transferred the ownership and responsibility over the ProTerra Certification Program to the ProTerra Foundation[29]. Currently, the only certification body approved by the ProTerra Foundation is Cert-ID[30].

Despite its wide coverage, ProTerra has limitations. Although the certification is supposedly neutral, the scheme is not subject to independent verification by third parties, as Cert-ID is simultaneously the initiator and the verifier[31]. Besides, ProTerra does not require producers to publicly disclose the names and locations of their suppliers, although such information must be made available to the certification body under confidential terms. In ProTerra, confidentiality agreements govern all relations between employees, producers, auditors, contractors and consultants, as well as whatever service they provide to Cert-ID[32].

According to the president of the ProTerra foundation, Augusto Freire, the issue regarding the transparency of the ProTerra certification scheme will be open for discussion by the stakeholders for the purpose of redefining the third version of the standard.

28 ProTerra 2.9.5, English version, principle 10.1.2

29 Information at ProTerra website: http://proterrafoundation.org/index.php/en/who-we-are-2/our-history
30 Information at ProTerras website: http://www.proterrafoundation.org/index.php/certification-2/managing-proterra-certification/approved-certification-bodies, accessed 21. August 2013
31 Information extracted from report from Both Ends: http://www.both-ends.org/uploaded_files/inlineitem/In_search_of_responsible_soy_Final_report.pdf, page 27
32 Information received from the president of Pro Terra Foundation by email on the 31 October 2012.

Denofa claims to have full control over its entire production chain by using such certification schemes as ProTerra and RTRS. According to the company's website:

"Denofa requires complete traceability and correct documentation from all suppliers. Each vessel is accompanied by a book containing the full traceability documentation for the beans on board, presenting farmers, warehouses, trucks, barges, control activities and certificates for the actual cargo"[27].

27 Information at Denofa's website: http://denofa.no/Default.aspx?ItemID=1179

4.2. THE ROUND TABLE ON RESPONSIBLE SOY (RTRS)

Part of the soy imported by Denofa is also RTRS certified. The Round Table on Responsible Soy (RTRS) was established in 2006, as a multi- stakeholder initiative aimed at making soy production economically viable, socially equitable and environmentally sound[33]. RTRS certifies both GMO and non-GMO soy. The standards were finalized in 2010, and the first RTRS-certified soy was produced in 2011. Like ProTerra, RTRS includes standards for agricultural practices, use of chemicals and energy, workers' rights and respect for local communities and indigenous peoples. Moreover, RTRS has a complaint mechanism. Together with Cordaid, COOP, WWF, Fetraf-Sul and Unilever, Amaggi took part in the committee responsible for developing the RTRS certification scheme. As of 2013, RTRS boasted a membership of 150 organizations and companies, including Denofa[34].

33 http://www.responsiblesoy.org/index.php?lang=en
34 Information at : http://www.responsiblesoy.org/index.php?option=com_content&view=article&id=269&Itemid=178&lang=en visited 15 January 2013

One of the limitations of the RTRS scheme is that the certification does not guarantee that the actual soy bought by customers is RTRS-produced, but only that a corresponding amount of soy is produced according to the standards (book-and-claim). While it is easier for market players to carry on business as usual, given that soy trade is not hindered by the certification business, this approach completely isolates the certificate documentation from the actual soy purchased. In other words, under the book-and-claim approach, it is not possible to certify that a given soy cargo purchased was really produced according to sustainable standards; it is only possible to certify that a corresponding amount of soy was produced under RTRS standards, but not necessarily that purchased.

4.3. GAP BETWEEN CERTIFICATES AND REALITY ON SITE

The openness and transparency of the entire supply chain and production processes is pivotal to assuring stakeholders that Amaggi and Denofa have suitable procedures in place to manage the social and environmental impacts of their business practices. The adoption of the ProTerra and RTRS certification is certainly a positive step in this direction. On the other hand, certification schemes should not pose a mere exercise on paper underpinning the conduction of business as usual; certification should prompt real change on the ground.

However, do the certificates really reflect what happens on the ground? Considering the limitations mentioned above and the experience from the field trip to Mato Grosso, there is a gap between what is registered in the certificates and what actually goes on on the ground. We have thus far been unable to determine to what extent this gap jeopardizes the efforts to build up trust on certificate systems. Civil society organizations, citizens and consumers in Norway are provided no access to information about whether Denofa's declared standards are actually complied with by farmers and producers.

Both Amaggi and Denofa base the sustainability of their production on the certificates issued by ProTerra and RTRS. They control detailed information on every soy cargo available on board all vessels departing from Brazil and arriving in Norway. However, when called upon to disclose such information, Denofa has repeatedly refused to do so, arguing that the information is business-sensitive[35].

In meetings with Norwegian civil society organizations, the company not only claimed this as business-sensitive information, but also that the farmers themselves would object to such openness. However, all farmers interviewed were quite frank about soy deliveries to Amaggi, and raised no objection to disclosing this information in Brazil or Norway.

35 Denofa Meeting, FIVH, NCA 29 May 2012 and meeting with FIVH, NCA, Denofa and Amaggi 27 November 2012.

The application of the standards on the ground is another challenge that may widen the gap between that registered in the documents and the reality found on site. Although Denofa and Amaggi argue that a comprehensive and detailed verification process is undertaken periodically at each and every farm, several of the farmers interviewed said that Amaggi had control over the certification, and the actual procedures were superficial, mostly consisting of deskwork. According to one of the farmers, the certifier's representative reassured him during the field visit that he would be subject to no further verification on account of the confidentiality agreement. Questionnaires were filled out, but no effective changes were demanded on the ground[36]. Other standards, including environmental standards, were not considered at all[37].

Denofa has invested considerable efforts to pursue that environmental and social standards are upheld in its production chain through the use of certificates. However, the information gathered on the field trip and the company's lack of transparency regarding its supply chain raise concerns about the reliability of such systems.

36 Anonymous source.
37 According to João Shimada, employee at Amaggi.

Two workers from Amaggi wearing protective equipment when mixing the highly toxic pesticides and insecticides that is used to protect the soy crops from weeds, diseases fungi and insects. Photo: Anne Kari Garberg/Framtiden i våre hender

5. THE CHALLENGE OF PESTICIDES IN BRAZIL

Pesticides are chemical products developed to prevent, mitigate or control pests in crops and soil. In the agricultural sector it is mostly used to protect crop from damaging influences such as weeds, diseases, fungi or insects. Two of the most commonly used pesticides in soy production are paraquat and glyphosate. Paraquat is a highly toxic herbicide which is banned in the EU because of uncertainties regarding its negative health effects on animals and humans, as well as its potential link to Parkinson's disease[38]. Glyphosate is not banned in the EU, and is less toxic than paraquat. However, the application of glyphosate is subject to strict safety measures.

According to data supplied by the Brazilian National Health Surveillance Agency (ANVISA), Brazil has since 2010 become the world's key consumer of pesticides, accounting for 19% of the overall worldwide use of pesticides.
While the global average sales rate for pesticides in the world has increased 93% from 2000 to 2010, Brazilian sales have skyrocketed 190% in the same period[39]. Brazilian laws on pesticides are more liberal than in Europe and North America, and several pesticides banned in these regions are still allowed in Brazil.

38 Press Release: http://curia.europa.eu/en/actu/communiques/cp07/aff/cp070045en.pdf
39 "Mercado e Regulação de Agrotóxicos, Brasília". A Power Point Presentation dated 11.April.2012 http://portal.anvisa.gov.br/wps/wcm/connect/b064b7804c1890a395ccd5dc39d59d3e/Semin%C3%A1rio+ANVISA+Mercado+e+Regula%C3%A7%C3%A3o+de+Agrot%C3%B3xicos+2012+%5BSomente+leitura%5D.pdf?MOD=AJPERES

In 2008, ANVISA included glyphosate among the 14 pesticides that should be reviewed, but this reevaluation has not yet been concluded. That same year, the residue limit of glyphosate allowed in soybeans increased tenfold[40]. As broad-spectrum herbicides such as glyphosate and paraquat are often sprayed just before harvesting, the probability of leaving residues in the grains increases. The health consequences of the increased legal threshold are as yet uncertain.

Civil society organizations in Brazil have launched a long-term campaign against the use of pesticides, advocating the banning of those pesticides already banned in other countries[41]. According to the research conducted by the campaign, each Brazilian citizen consumes an average 5.2 kilograms of pesticide yearly[42]. Furthermore, a recent study conducted by Wanderlei Pignati, researcher at the Federal University of Mato Grosso (UFMT), showed traces of herbicides in the blood and urine of 76% of the farm workers[43].

40 ANVISA Resolution 33, published on 17.February.2004
41 Information at http://www.contraosagrotoxicos.org/
42 Consumption of pesticides in the 2010/2011 crop (source An visa) broken down by population (source IBGE)
43 Interview with Prof. Wanderley Pignati, Federal University of Mato Grosso (UFMT), 26.November.2012

5.1. MISUSE OF PESTICIDES LEAD TO RESISTANT WEEDS

The introduction of GMO soy was justified by the need for reducing the use of herbicides. Unfortunately, the result has been the opposite[44]. Studies show that farmers in Brazil are increasingly using herbicides[45]. Consequently, weeds have developed resistance against herbicides, which prompts their more intensive use over shorter periods, resulting in a vicious circle[46].

Several of the interviewed farmers were worried about the negative spiral that leads them to use progressively higher doses of glyphosate – which increases production costs and decreases productivity – due to weed competition and dirtier harvesting. Irineu Parmegiani, a soy farmer in Campos de Júlio, says *"the weeds become stronger by the day; we have to use higher doses every day, making more applications and mixing various herbicides*[47]*"*.

Brazil has approved 366 chemical agents for use in the agricultural sector to control weeds or pests. Glyphosate is still considered efficient in Mato Grosso, but glyphosate-resistant weeds have already been found in southern Brazil[48].

44 Interview with Dr Pignati, December 2012
45 Information at: http://www.bion.no/temaer/genmodifiserte-planter-og-mat/ - retrieved 22 March 2013
46 Confirmed through interviews and information at http://www.bion.no/2012/06/bruker-mer-sproytemidler-med-gmo/

47 Interviewed 4.December 2012
48 "Farmers Cope With Roundup-Resistant Weeds", by Willian Neuman and Andrew Pollack: http://www.nytimes.com/2010/05/04/business/energy-environment/04weed.html?pagewanted=all&_r=0 retrieved 24 June 2013

5.2. PESTICIDES SPRAYED CLOSE TO HOUSES AND VILLAGES

To minimize negative effects on the environment and human health, the application of crop pesticides is regulated. One of these regulations is the minimum safety distances from human and animal dwellings and water sources. Compliance with minimum safety distances for the use of pesticides is not only a legal requirement, but also part of the certification schemes. Up until September 2012, the minimum safety distances in Mato Grosso state were as follows:

- at least 300 meters from villages, towns, neighborhoods and water supply sources for public consumption;
- at least 150 meters from water supply sources for isolated households and animals;
- at least 200 meters from permanent or seasonal water springs[49].

As of September 2012, this minimum distance was reduced to 90 meters by the state government[50]. The minimum distance applies to all situations. However, the team found that not all farmers complied with even the minimum safety distances. At the Amaggi-owned Tucunaré Farm, for example, the spraying distance from employee's houses was only 60 meters. According to Amaggi, this noncompliance was corrected in 2013[51].

The consequences to human health from contact with pesticides are devastating, according to professor Wanderlei Pignati[52]. His studies show that pesticides contaminate the groundwater, and that some pesticides are carcinogenic and neurotoxic. They are also found to cause depression, irritability, miscarriage and malformation of fetuses.

49 Mato Grosso State Decree 2283, of 9 December 2009, http://www.legisweb.com.br/legislacao/?legislacao=133502
50 Mato Grosso State Decree 1362, of 13 September 2012, revoked by State Decree 1651 of 11 March 2013, currently in force, http://www.legisweb.com.br/legislacao/?legislacao=252231
51 Comment by Juliana Lopes/Amaggi, 19 February 2014
52 Interviewed December 2012.

Ivandra Delasery, the daughter of a farmer in Campos de Júlio, who was six months pregnant at the time of the interview, expressed her concern with pesticide spraying near her house in the city of Campos de Júlio. The doctor advised her to avoid proximity to soy crops during pesticide applications, which causes her to leave her home whenever pesticides are applied nearby.

> "When they are spraying any kind of pesticides I stay away from the field. I take this precaution because we know of cases in this area, and there are reports of miscarriages. I have friends who have experienced several miscarriages, they left the area to stay in other states during pregnancy. I am worried."
> **Ivandra Delassery, resident in Campos de Julio/MT, pregnant at the time of interview.**

The reduction of the minimum distances in Mato Grosso and the extremely permissive legislation in Brazil indicate that the mere adhesion to Brazilian laws is not enough. In the case of pesticide use in soy production, there is a clear need to go beyond Brazilian legislation and set higher standards. There are several certification initiatives already in place that demand more stringent standards for use of pesticides than those required under Brazilian legislation, such as the Rainforest Alliance, FairTrade and GlobalGAP[53].

53 Reducing Hazardous Pesticide Practices in Coffee Supply Chains, Pesticide Action Network UK Food&Fairness Case Study, http://www.pan-uk.org/archive/Projects/Fairness/documents.html

Use and handling of pesticides are not always appropriate and can lead to contamination.

5.3. PESTICIDES AND NON-GMO SOY

It is a common misconception that farmers use less herbicide on non-GMO soy than on GMO soy. The farmers who were interviewed said that non-GMO soy also requires substantial amounts of pesticide. Just before harvesting, farmers apply glyphosate to dry out the plants. They also apply paraquat, which is banned in the EU, and currently under reevaluation by ANVISA[54].

In order to control weeds, farmers have to apply pesticides not only more often during the growth period, but also in larger quantities. According to the owner of Fazenda Santo Ângelo, they apply pesticides on non-GMO soy four times during the growth season, whilst in the case of GMO-soy, they only spray twice, although the doses are up to ten times higher. Romero José Chiocietta, owner of Morena farm, says that there is no relevant difference in the use of pesticides for GMO and non-GMO soy.

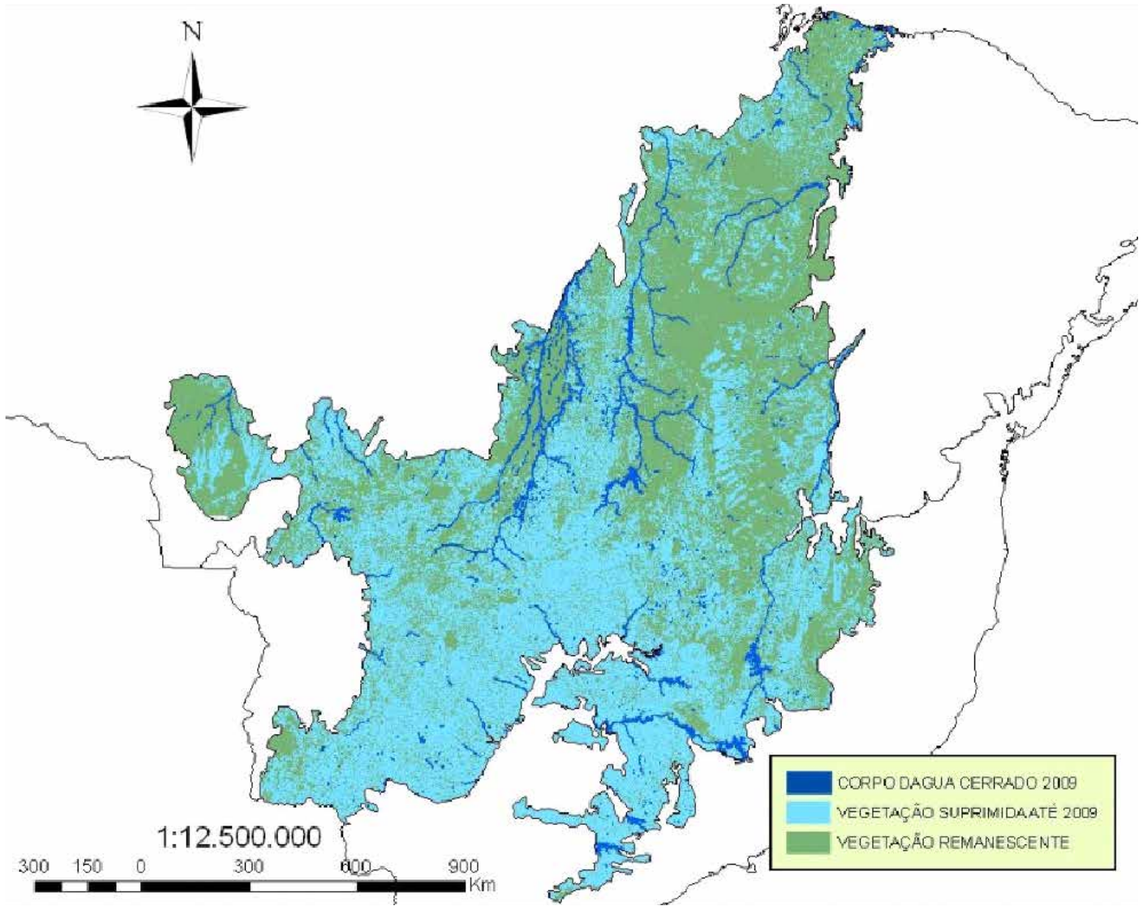
The alternating between GMO and non-GMO crops in the same fields has also been a strategy to enable farmers to control weeds and pests, as it allows them to combine different pesticides and doses during the crop season. This complicates the operation of GMO traceability systems and increases the risk of contamination.

When higher production costs do not result in higher prices, many of the interviewed farmers said that they were turning more and more to GMO soy[55]. Some of the farmers indicated that the production costs of non-GMO soy are estimated to be 10% higher than those of the GM soy. However, they only collect an average 5% premium on the market price[56].

54 Information at: http://portal.anvisa.gov.br/wps/content/Anvisa+Portal/Anvisa/Inicio/Agrotoxicos+e+Toxicologia/Assuntos+de+Interesse/Reavaliacoes+de+Agrotoxicos/W+Reavaliacao+de+Agrotoxicos++Resolucao+RDC+n+10+2008

55 Interview at the Tucunaré Farm, November 2012.

56 Interview with Oneide Adão Rodoy and Eduardo Gabriel Cordeiro, 4 December 2012.



Deforestation in the Cerrado biome. Green are remaining forests, light blue is deforestation up to 2009. Source Brazil's Ministry of Environment

6. SOY PRODUCTION AND DEFORESTATION IN MATO GROSSO

From 1990 to 2009 soy production in Mato Grosso increased by 600%. The soy imported to Norway by Denofa is grown where two biomes meet: the Cerrado and the Amazon rainforest. The Cerrado is one of the world's biodiversity hotspots, boasting the richest flora among the world's savannahs, with a great number of endemic species[57].

Over the last 35 years, more than 40% of the Cerrado has been converted into grazing land and also used for large-scale farming. The transition area between the Cerrado and the Amazon where the soy exported to Norway comes from suffered an intense expansion in soy crops between 2001 and 2010.[58]

57 Klink, C.A. and R.B. Machado. 2005, Conservation of the Brazilian Cerrado, Conservation Biology, Pages 707–713 Volume 19, no. 3.

58 WWF-report: Produção e Exportação de Soja Brasileira e o Cerrado 2001-2010. WWF Brazil, 2012. http://d3nehc6yl9qzo4.cloudfront.net/downloads/wwf_soja_cerrado_web.pdf

6.1. RELATION BETWEEN SOY PRODUCTION AND DEFORESTATION

In 2006, Greenpeace revealed the direct link between the expansion of soy plantations in Brazil and the deforestation of the Amazon Region. This led to a moratorium on soy purchasing from newly deforested areas of the Brazilian Amazon, the so-called "Soy Moratorium"[59].

Although the soy moratorium has mostly been effective in stopping deforestation in the Amazon, an unintended effect has been increased deforestation of the Cerrado biome. Soy plantations in the Brazilian Cerrado increased from 6.2 million hectares in 1995, to 14.6 million hectares in 2005[60]. This phenomenon has been regarded as a "deforestation leakage" from the Amazon into the Cerrado. A study presented by federal research institute IPEA[61] also confirmed the expansion of soy plantations into areas

59 Information at: http://www.greenpeace.org/international/en/campaigns/forests/amazon/threats-and-solutions/soya-moratorium/

60 Information at: http://commodityplatform.org/wp/wp-content/uploads/2008/12/dsc-factsheet-1-defo-cerrado-final-december-2008.pdf

61 Instituto de Pesquisa Econômica Aplicada

previously used for cattle ranching[62]. According to the study, municipalities where soy production is dominant experience a decrease in livestock raising, while in neighboring areas the pressure to expand cattle ranching escalates.

The areas most vulnerable to deforestation (called the "deforestation arch") lie in the transition area between the Cerrado and the Amazon forest, mainly in the South of the state of Rondônia and East and Central of the state of Mato Grosso[63], which include the areas from which Denofa imports soy. Amaggi has removed all farms located inside the Amazon biome from its list of soy suppliers to Norway, giving preference to producers located in the Cerrado biome (but still inside the Legal Amazon Area[64]).

In 2007 the civil society network FBOMS (Fórum Brasileiro de ONGs e Movimentos Sociais para o Meio Ambiente e o Desenvolvimento) and ISA (Instituto Socioambiental) released a report on the relationship between soy production and deforestation. Commissioned by the Brazilian Ministry of Agriculture, the report evidenced for the first time the link between increased soy production and increased deforestation in the *Cerrado*, and documented that soy was being planted in areas previously occupied by livestock[65]. Soy is the natural successor of livestock in the new agricultural frontier, creating a barrier of crops immediately behind the "deforestation arch"[66]. Previously, the approximate term of the deforestation to mechanization conversion cycle was five years, but this is now dropping to two-three years[67].

With time, this intensification on the pattern of land use change led to positive results with a sharp decrease in deforestation rates. Areas degraded by cattle ranching were being converted to soy at a faster pace, sparing new forest areas from further degradation. From 2006 to 2010, deforestation in Mato Grosso actually decreased to 30% of its historical average (1996–2005), while soy production increased[68].

In 2013, however, deforestation began to rise again for the first time since 2009[69], probably as an indirect reflection of the new forest code, approved in 2012. Another factor that may signal an inflexion towards more deforestation is the end of the Soy Moratorium in December 2014. Once the moratorium is over, it is expected that soy production will advance over large tracts of land inside the Amazon biome.

62 Brandão, A. et al. (2005). Crescimento agrícola no Brasil no período 1999-2004: explosão da soja e da pecuária bovina e seu impacto sobre o meio ambiente. IPEA: Rio de Janeiro.
63 FBOMS/ISA (2007). Relação entre cultivo de soja e desmatamento: compreendendo a dinâmica. FBOMS/ISA: São Paulo.
64 Legal Amazon is the largest Brazilian socio-geographic division, it contains all 9 states in the Amazon Basin. The region was created in 1948 based on studies of the Brazilian government on how to plan the economic and social development of the Amazon region. Although called Amazonia Legal the region has three different biomes: all the Amazon rainforest biome within Brazil, 37% of the Cerrado biome and 40% of the Pantanal biome.
65 FBOMS/ISA (2007). Relação entre cultivo de soja e desmatamento: compreendendo a dinâmica. FBOMS/ISA: São Paulo. FBOMS - Forum Brasileiro de Organizações e Movimentos Sociais – FBOMS; ISA - Instituto Socioambiental.
66 Nepstad, Daniel (2006). Globalization of the Amazon Soy and Beef Industries: Opportunities for Conservation. Conservation Biology 20 (6): 1595-1603.
67 DOMINGUES, Mariana Soares and BERMANN, Célio. O arco de desflorestamento na Amazônia: da pecuária à soja. Ambient. soc. [online]. 2012, vol.15, n.2 [cited 2014-05-26], pp. 1-22 . Available from: <http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1414-753X2012000200002&lng=en&nrm=iso>. ISSN 1809-4422. http://dx.doi.org/10.1590/S1414-753X2012000200002
68 Marcia N. Macedo et alii, Decoupling of Deforestation and Soy Production in the Southern Amazon During the Late 2000s. 2012 ; published ahead of print 9 January 2012, doi:10.1073/pnas.1111374109
69 http://www.obt.inpe.br/prodes/index.php

6.1.1. FIRE AS AN INDICATOR OF LAND CONVERSION

Fires are a good indicator of the speed of land-use conversion from forest to mechanized agriculture. Fire is used extensively in almost every step of the process, from the beginning of clear-cut deforestation to the "cleaning" of roots and debris, formation and maintenance of pastures.

Although effective as an agriculture practice, forest fires in tropical regions result in a heavy climate footprint. Researchers expect that deforestation, based on slash-and-burn techniques and the use of fire for land management, will intensify the impact of droughts associated with natural climate variability or human-induced climate change. Longer droughts can significantly increase the number of fires in the region even with decreased deforestation rates, thus creating a vicious climate cycle[70].

The map on the next page shows deforestation and fire occurrence in the area where soy exported to Norway is produced (warehouses identified as colored balls) between June 2011 and May 2013:

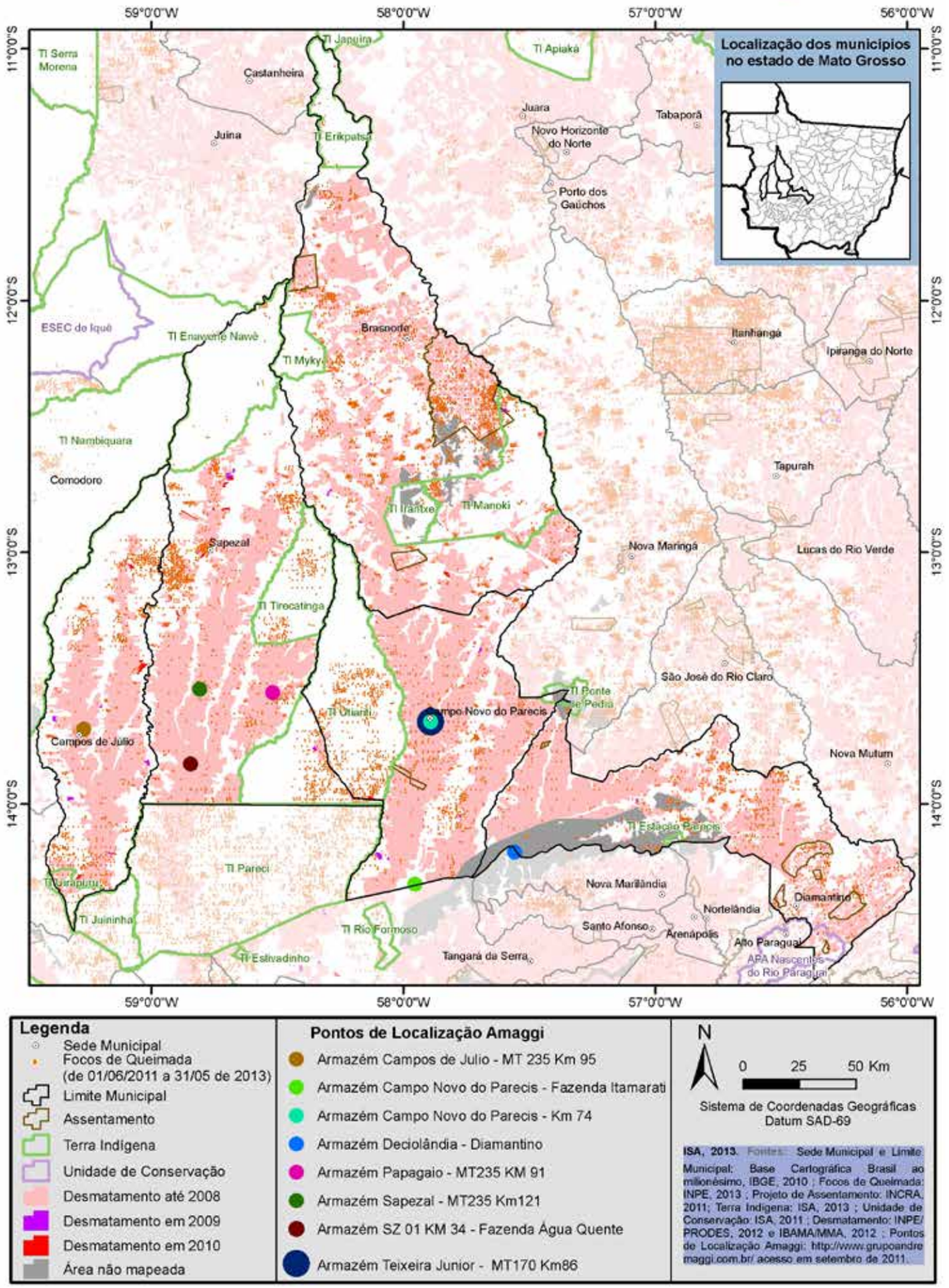
70 Aragão et. al., Interactions between rainfall, deforestation and fires during recent years in the Brazilian Amazonia, 2008. http://rstb.royalsocietypublishing.org/content/363/1498/1779.full

Deforestation and climate change: emissions from the Cerrado may be higher than from the Amazon

Deforestation and degradation of tropical forests is currently one of the major sources of greenhouse gases, accounting for an estimated 25% of all global emissions. Much of the research so far has focused on the climate footprint of deforestation in the Amazon biome. More recently, based on official data available on carbon emissions in Brazil up to 2005, and considering the pace of deforestation and degradation (particularly use of fire) in the Cerrado biome, researchers have since inferred that emissions from the Cerrado may currently have surpassed those from the Amazon biome[1].

1 WWF, Soya and the Cerrado: Brazil's forgotten jewel http://assets.wwf.org.uk/downloads/soya_and_the_cerrado.pdf#page=22&zoom=170,6,716. See also MCT, 2nd National Communication to UNFCCC, 2010. Summary, Table 2.1, p137. http://www.mct.gov.br/index.php/content/view/326984.html.

DESMATAMENTO E FOCOS DE QUEIMADA



Deforestation and fire occurrence between June/2011 and May/2013. Red patches are deforestation, orange dots are fires. Source: ISA, 2013

6.2 FOREST LEGISLATION APPLICABLE TO THE AREA WHERE SOY EXPORTED TO NORWAY IS PRODUCED

Brazil has a long tradition of good environmental and forest legislation. Laws regulating the use of forests inside private lands date back to the '30s, rooted in the need to protect environmental services such as soil and water protection, as well as valuable timber reserves[71]. Up to 2012, legal use of forests on private land had been regulated by the 1965 Forest Code, whose core values were much inspired by its older version. This Code was amended several times during the '90s in political response to deforestation peaks. However, there has been increased pressure for flexibilization of the 1965 Forest Code by the so-called ruralists, a political group anchored on old rural oligarchies, which defend the interests of large soy producers, among others. This has led to a polemic reform of the Code, approved in 2012, after much struggle between the the big land owners, the ruralists, and civil society organizations[72]. Mato Grosso also has its own state forest legislation, the model and trailblazer for the recent revision of the 1965 Federal Forest Code[73].

The Forest Code (in whatever version it existed between 1934 and 2012) relies basically on two legal institutions to ensure forest conservation in private areas: the permanent protected areas (APP) and the legal reserves (RL). APPs are vulnerable areas where forest cover is needed to protect soil and water, such as riparian forests, tabletops, steep slopes, water springs, dune vegetation and others. As a general rule, these must always be preserved, but there are details and nuances on how large they should be and how to recover past deforestations. The legal reserve is a delimited area of forest inside a rural property designed for sustainable economic use, rehabilitation of ecological processes, conservation of biodiversity and wildlife. The RL is defined based on a percentage of the total area of the rural property. According to the 2012 Forest Code, the size of the legal reserve for each region of the country is:

Legal Amazon Area	Rest of the country
80% in the rainforest biome	20%
35% in the Cerrado biome	
20% in general fields (Campos Gerais)	

This means, for example, that a farm that produces soy exported to Norway located in the *Cerrado* biome in the Legal Amazon Area, must set aside 35% of its total area for forestland by way of the legal reserve, besides ensuring the conservation of its APPs. This figure may vary depending on the laws in force at the time deforestation took place. As access to information on the farms was denied by Denofa, we were unable to check the history of deforestation in the farms that actually deliver soy to Denofa. According to the map above, most of the area where the soy exported to Norway is produced seems to have been deforested before 2008.

This does not mean that these rural properties are free from environmental liabilities and obligations with regard to forest protection. On the other hand, the 2012 Forest Code has loopholes providing for situations of amnesty, which overall represent a 58% reduction in Brazil's environmental debt, consisting of the APP and RL areas illegally deforested before 2008, which under the previous forest code would have required forest recuperation at the landowners' expense[74]. This represents around 29 million hectares of illegally destroyed forestland that does not need to be recuperated in Brazil.

Some of these loopholes may apply to the rural properties in the area where the soy exported to Norway is produced. Two especially are worthy of mention: the concept of "consolidated areas" prior to 2008 and the concept of "small property".

71 Art. 4º, Decree 23.793, 1934, first Brazilian Forest Code
72 Federal Law 12.727, October 17, 2012. http://www.planalto.gov.br/ccivil_03/_Ato2011-2014/2012/Lei/L12727.htm
73 State Law 9.523/2011

74 Soares-Filho, Britaldo et alli, Cracking Brazil's Forest Code, Policy Forum, Science Magazine, 25 April 2014: vol. 344 no. 6182 pp. 363-364, DOI: 10.1126/science.1246663

6.2.1. "CONSOLIDATED AREAS"

The 2012 Forest Code makes a distinction between deforested areas before (called "consolidated areas") and after 2008. This point condenses one of the main political disputes between environmentalists and ruralists, since many areas illegally deforested before 2008 were in practice granted amnesty for these violations.

"Consolidated areas" are areas inside rural properties subject to "human occupation" prior to July 22, 2008[75]. Within the so-called "consolidated areas", legal requirements to recover degraded legal reserves and APPs are eased or nonexistent, leading to amnesty in many cases. In practice, sanctions for illegal deforestation are eventually canceled and no real recovery efforts are made.

However, it has been illegal to deforest APPs and RL for a long time. Under the 1934 Forest Code, farmers were required to set aside 25% of their property as legal forest reserve, besides any areas considered vulnerable to erosion. In 1965, due to the then existing doubts, the Forest Code established which areas were considered vulnerable (riparian forests, steep slopes, water springs, etc.), and the objective measure standards, which were subsequently increased in 1986. In 1996, in response to deforestation peaks in the Amazon, the delimitation of the legal reserve was also amended for the Legal Amazon region (increased from 50% to 80% in the Amazon biome, while reduced from 50% to 35% in the Cerrado biome).

As much of the deforestation in Sapezal, Campos de Julio, and the other municipalities that deliver soy to Norway is previous to 2008, and probably even previous to 2004, some illegal deforestation that may have taken place then is probably no longer punishable under the 2012 Forest Code.

75 http://www.planalto.gov.br/ccivil_03/_Ato2011-2014/2012/Lei/L12651.htm. July 22,2008 is the date of publication of the second federal decree (6.514/08) that regulates criminal and administrative sanctions for environmental violations, including a sanction for not registering the legal reserves in the notary registry. The decision on the date was a political agreement between the government and ruralists.

6.2.2. "SMALL PROPERTY"

Another loophole in the 2012 Forest Code is the concept of "small property". This is any rural property under four rural modules[76], as defined by the land reform agency, INCRA. In the area where the soy exported to Norway is produced, properties under 400 hectares are considered small. Under the 2012 Code, these areas are exempted from the obligation to recover legal reserves, regardless of how/when these were deforested. As far as APPs are concerned, recovery requirements for "small properties" were dramatically eased.

One of the problems with this concept is the possibility of dividing a large rural property into several "small properties" with different enrollment numbers. Dividing up a farm into different enrollment numbers is a common practice and is done for several reasons: a farmer may be unwilling to pay notary's fees for registry reunion, or may wish to keep his assets divided for succession or tax purposes.

Another problem is that, besides INCRA, there are several other land registration databases at federal and state levels. The state of Mato Grosso's environmental agency SEMA/MT, for example, manages its monitoring system based on the extension of the whole farm and not on enrollment numbers. Field checks are not possible and the agency must rely exclusively on information given by the owner. This generates uncertainty on how to determine the requirements for recovering APPs and legal reserves, and may be cause for future questioning of the law at court level.

76 Small properties are those under four rural modules, a value unit defined regionally. In the municipalities of the area where soy exported to Norway is produced, four rural modules are equal to 400 hectares. http://www.infoteca.cnptia.embrapa.br/bitstream/doc/949260/1/doc146.pdf

6.3 ENVIRONMENTAL SURVEILLANCE AND CONTROL

The environmental situation of private rural properties in Mato Grosso is monitored by SEMA. This monitoring basically consists of two tools: the environmental register (CAR) and the unified environmental license (LAU).

CAR is initially a self-declared register that gives rise to the licensing process of a rural property, and is a prerequisite for entitlement to credit facilities. The LAU license includes authorization for deforestation, delimitation of the Legal Reserve and APP, and a recovery plan for illegally deforested areas, where applicable. Once a farm obtains the CAR register and the LAU license, it must then draw up a plan for the recovery or compensation of degraded areas, complying with the conditions established in the plan.

Several of the farmers interviewed said that environmental control has been slack and inefficient, and blamed it on the lack of resources. Fernando Paim, secretary of Agriculture and Environment in Sapezal, explained that farmers often provide transportation for SEMA agents to conduct the field inspections that precede the licensing processes, as the state government does not provide enough resources for the monitoring activities.

We visited a recovery project in a certified farm owned by Amaggi in Sapezal. Although some of the licenses, with a mandatory recovery plan, had been issued as early as in 2007, implementation had just begun and only non-Cerrado species were being replanted.

Amaggi forest recovery project.

Farms have often less riparian forests than the minimum required by the forest code.

The area where the soy exported to Norway is produced is located where the Amazon and Cerrado biomes meet. However, there is no clear-cut division between the Amazon biome and the Cerrado biome. For instance, we observed several remnants of transitional forests in the region. All farmers we visited in Sapezal consider that they are located in the Cerrado biome, even though we could clearly identify ecological features of the Amazon biome. Fernando Paim[77] reported that some farmers pay for technical reports to certify that the vegetation on their farms is not classified as either Amazon rainforest or transitional forest species, in order to dodge the more stringent requirements for obtaining the LAU license.

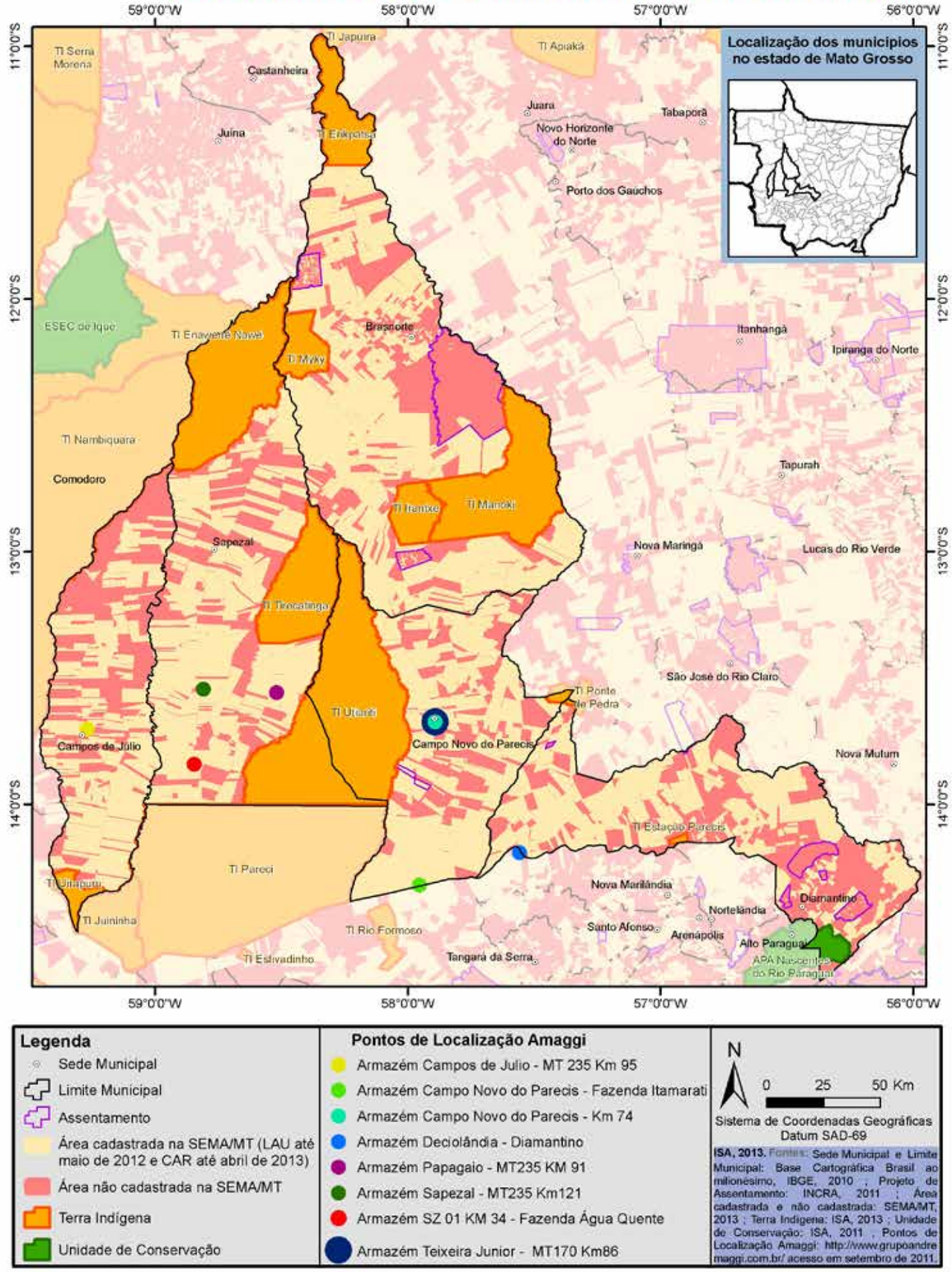
In some cases, the absence of a legal reserve in one farm can be compensated with another forested area, provided that the proposed compensation area is located within the same biome. However, at Fazenda Porta do Céu, one of the certified farms that supplies soy to Amaggi, we found that the farm located in the Cerrado biome legally compensated its required legal reserve with an area situated approximately 2,000 km away, in the Amazon biome.

77 Secretary in charge of Agriculture and Environment of Sapezal, personal interview.

As shown in the map below, many of the farms located in the area where the soy exported to Norway is produced have not even obtained the CAR register. This was confirmed during the interviews. Several of the farmers asserted that the registration process was either superficial or not in place.

Brazil's laws governing this matter are complex and contain several loopholes, and public authorities lack the resources to properly monitor and enforce the requirements. The farmers interviewed confirmed that the loopholes were frequently resorted to. Both Denofa and Amaggi have an obligation, both due to the legal requirements and voluntary certification, to declare and evidence through documents that their entire production chains comply with these requirements. However, we were unable to determine whether and how Denofa suppliers deliberately avoid complying with such requirements, given the company's unwillingness to disclose any further information on its production chain.

ÁREAS PROTEGIDAS E ÁREAS CADASTRADAS NA SEMA/MT



Protected areas (orange) and properties registered at the state environmental agency. Red patches are properties lacking register as of April 2013. Source: ISA, 2013

7. SOCIAL IMPACTS

Soy is one of Brazil's most economically valuable export products, and has been a major driver for economic growth. However, Brazil is still one of the countries that report one of the highest social inequality rates in the world - half of the population earned less than the national minimum wage in 2010[78] - and unequal distribution of land and property contributes to these inequalities.

78 Information at: http://www.ibge.gov.br/english/presidencia/noticias/noticia_visualiza.php?id_noticia=2019&id_pagina=1

7.1. CORPORATE AND LAND CONCENTRATION

The five largest soy corporations in Brazil and Mato Grosso are Bunge, Louis Dreyfus, Cargill, Daniels Midland (ADM) and Amaggi. Together, these five groups hold a quasi-monopoly over the soy industry. They control 63% of the total soy exports and 90% of the soy distribution capacity in Mato Grosso[79].

This corporate structure has been a key driver to land concentration in Brazil. The federal land reform agency INCRA[80] statistics show that between 1998 and 2008, the number of rural properties in Brazil owned by corporations (national and foreign) rose from 67,000 to 131,000. Total areas controlled by corporations in the same period increased from 80 million to 177 million hectares[81]. Land concentration in Brazil in general and in Mato Grosso in particular is expected to continue in the future.

A study made in 2010 by the Mato Grosso Institute of Agriculture and Livestock Economy (IMEA), the research arm Mato Grosso Federation of Agriculture and Livestock (Famato), shows that whereas in the 2004/2005 crop the 20 leading soy producers accounted for 9% of the total planted area of this state, five years later this figure had reached 20%[82].

Western Mato Grosso, where the soy exported to Norway comes from, is spearheading this concentration trend, according to IMEA. Whereas in northern Mato Grosso the average size of farms is around 1,000 hectares, in Sapezal, a standard soy farm measures around 2,500 hectares[83].

Another factor that causes land concentration is the increased extension of land under farm lease by medium and small producers. Due to low profitability, these producers cannot afford to compete with the large agriculture conglomerates. In Mato Grosso, 50% of productive lands were under farm lease in 2010[84]. According to Glauber Silveira, president of the Mato Grosso Soybean Producers Association (Aprosoja), 2,000 farms in Mato Grosso have either been closed or leased, due to steadily rising production and logistics costs[85]. In many cases, the farmers that are driven out of business must migrate in search of other areas to occupy, thereby indirectly fostering the expansion of deforestation in other regions.

Heloisa Olivera Queiroz, who has been working on the certification of soy farmers in Campos de Júlio for two years, claims that the land concentration process, whether from land purchasing or leasing, has been going on for some time[86]. The competition is strife. Several farmers have limited access to capital and are dependent on credit extended by large traders to purchase seeds, fertilizers, equipment and other inputs. As a result, they become increasingly indebted to such traders, which often charge abusive interest rates.

Other producers shared their frustrations on the unequal power distribution between producers and traders. Gilmar Gelatti, from Campos de Júlio, does not have to rely on loans or pre-financing from any of the large traders, but has an ongoing loan system at a private bank to finance equipment. According to him, the large traders are given loans and credits at lower interest rates, as well as volume discounts on seeds, fertilizers, machinery and other equipment. Gilmar's remarks were confirmed by a number of other soy producers to whom we talked in Mato Grosso, as well as by statistical data sourced by IMEA. The institute reports that rural properties with over 10,000 hectares get as much as a 20% discount on equipment and other inputs, as compared to the smaller properties[87].

Storage is also a problem for medium and small soy producers. According to Heloisa Olivera Queiroz, several of these producers in Mato Grosso are totally dependent on large traders for storing the soy they harvest. There is currently a shortage of warehouses in Campos de Júlio. Medium and small producers cannot afford to build or buy their own silos, and are therefore forced to pay for storage at trader warehouses. From the moment the soy is stored in Amaggi's warehouse, it becomes too expensive for a farmer to move the soy to another warehouse.

GMO-segregating costs as well as payment of royalties for intellectual property rights to the seeds and genes also step up the overall prohibitive cost of soy production for small and medium farmers[88].

79 Information at: http://campohoje.net.br/sites/default/files/livros/arquivos-download/Livro4.PDF
80 Instituto Nacional de Colonização e Reforma Agrária – INCRA.
81 Information at: http://www.agrolink.com.br/noticias/NoticiaDetalhe.aspx?codNoticia=117280
82 Report "Concentração de áreas para cultivo de soja", IMEA, 2010. http://www.imea.com.br/noticias.php?id=217 http://www.imea.com.br/index.php
83 ibid
84 http://www.intermat.mt.gov.br/html/noticia.php?codigoNoticia=1582
85 Interview, December 2012
86 Ms. Queiroz was employed by the Nature Conservancy in Mato Grosso
87 Information at: http://www.imea.com.br/noticias.php?id=217 and http://www.cpac.embrapa.br/noticias/artigosmidia/publicados/359/
88 Interview with Sergio Link, December 2012

7.2. PRE-FINANCED SOY AND PRODUCTION AGREEMENTS

One of the soy producers interviewed in Sapezal[89] had done business with Amaggi over a period of time through so-called pre-financed production agreements. This credit arrangement involved the supply of seeds, fertilizers and/or pesticides in return for a certain percentage of the next harvest. Measuring only 2,800 hectares, this farm is considered relatively small but has been in the family since the '80s. The farmer was strongly dependent on this type of pre-financed production agreements with Amaggi, which constitutes a typical situation experienced by the farmers in this region. According to him, these pre-financed agreements are disadvantageous to the farmers, because the price paid for the harvested soy is low or interest rates are high. In principle, the farmer is free to sell whatever output exceeds the value of the pre-financing agreement to any trader, but in practice the pressure to sell to Amaggi is high. The agreements can include clauses demanding that the producer obtain written consent from Amaggi to sell the surplus output to other traders. Independently of the type of agreement, the surplus crop cannot be sold before the end of the season, which increases the producer's financial risk. According to Amaggi, such practices are standard operating procedures in agribusiness[90].

89 The farmer did not want to be identified in the report as he feared consequences of openly criticizing Amaggi
90 Comment Juliana Lopes, Amaggi

7.3. LACK OF JOBS

Soy production is not labor intensive. The intensive capitalization and mechanization of soy production have reduced the number of jobs available, resulting in a negative relation between soy production and employment[91]. Soy production is based on large-scale farming and is, according to the Brazilian Institute for Geography and Statistics (IBGE), the culture that least involves family farming, but rather depends on large farms and capital-intensive farmers[92]. While tomato production, for example, generates 245 jobs per 100 hectares, soy production generates only two[93]. In Mato Grosso, this trend is even more acute. While in southern state of Paraná, there is one job to 15 hectares of soy produced, in Mato Grosso the same job covers an area of around 200 hectares[94].

91 Information at EMBRAPA: www.cnpso.embrapa.br/download/publicacao/documento_233.pdf
92 Information at: http://www.ibge.gov.br/home/presidencia/noticias/noticia_visualiza.php?id_noticia=1466&id_pagina=1
93 Information at: EMBRAPA. www.cnpso.embrapa.br/download/publicacao/documento_233.pdf
94 ibid

The environmental impacts of soy expansion in the Denofa area is jeopardizing the traditional livelihood several of indigenous peoples in Mato Grosso. That worries Jamaxi Myky, leader of the Myky indigenous people. Photo: Laercio Miranda

7.4 IMPACTS ON INDIGENOUS PEOPLES

In 1988, indigenous peoples in Brazil were given constitutional rights to land and natural resources. Mato Grosso is home to several indigenous peoples that have been living in the area long before the European colonization. In western Mato Grosso, where the soy exported to Norway is produced, the different groups have different contact levels with the outside communities. Some groups, such as the Paresi and Nambikwara, have had contact with outsiders since 1700, while others,, such as the Rikbaktsa and Myky, were first contacted in the '60s and '70s, respectively.

Modern industrial agricultural practices pose a recent transformation for several of these indigenous peoples. The environmental impacts of soy expansion in the area where the soy exported to Norway is produced, including deforestation, erosion, fires, mortality of wildlife, pesticide spray and water contamination, is severely jeopardizing the traditional livelihood of these groups[95].

> "Today, everything has stopped here in Brasnorte. At first, big trucks came and took away timber. Today there is nothing left; it all ended because there was no control. They cut down all the trees, even the smallest ones, until there was nothing left to grow. Now the situation is the same: they are cutting down the trees and there is no water left for either the people nor the animals. Everyone needs water, but nobody can find it. That worries me."
>
> **Jamaxi Myky,**
> **leader of the Myky indigenous people**

The changes brought about by the new soy economy have also impacted their cultures. Faced with racism and exclusion by settlers and farmers that come from southern Brazil, these indigenous groups are experiencing the dilemma of finding new ways of surviving given that their traditional livelihoods are under threat.

Some indigenous groups have adventured into large-scale farming themselves. They lease their lands to farmers and have a share in the harvest profits. The leasing of indigenous lands is illegal, but for several of the groups it is their only form of earning income.

Between 2004 and 2006, the indigenous groups Paresi, Manoki and Nambikwara entered into an agreement for co-production of soy in partnership with local farmers. Nineteen agreements were signed with individual and corporate farmers, involving 41 indigenous villages, for the co-production of soy in areas measuring between 50 to 1,000 hectares inside indigenous lands. The agreements lasted until 2012. According to these agreements, the indigenous communities had to provide land and labor, while farmers provided capital, inputs and machinery, and the profits made from the crops were divided equally between the parties[96].

The Federal Public Prosecutor Office (MPF) has ruled such agreements illegal. The 1988 Constitution establishes that the Brazilian State is the owner of the indigenous lands and the indigenous peoples their exclusive beneficiaries. Any profit generated in areas declared indigenous land should go to the indigenous peoples that live on that land.

Many interviewees affirm that the large traders are buying soy, through intermediaries, that is being illegally planted inside indigenous lands. Although this is suspected, due to Denofa's unwillingness to disclose further information on their production chain, it could not be confirmed.

95 For an overview of indigenous groups living in the area where the soy exported to Norway is produced, see: http://ti.socioambiental.org/pt-br/#!/pt-br/regiao/15

96 Interview with the Paresi leader of the Paresi Indigenous Land, Campo Novo dos Parecis/MT

8. CONCLUSION AND RECOMMENDATIONS

The challenges to overcome the social and environmental problems created by large-scale soy production in Brazil are huge. Although Norway's role in the global soy market is relatively small, we welcome the efforts made by Denofa in taking responsibility to seek sustainability in the production chain through the use of certificate systems.

At the same time, we must recognize that there is a gap between the information contained in documents and the on-site situation of the farms that deliver the soy that is exported to Norway. As long as confidentiality remains the governing rule over the relations between producers, purchasers and certificate/verification bodies, the lack of transparency will remain.

Under the veil of confidentiality, departures from both the law and voluntary standards may remain concealed, undermining the credibility of the system. Judging from the limited experience gained on the field trip, such may be the case with possible misuse of pesticides, illegal deforestation or purchase of soy from indigenous lands.

With this in mind, we would like to invite Denofa and other Norwegian purchasers of Brazilian soybean and derived products to adopt and promote the following recommendations:

- Publicly disclose information about the suppliers of the soy exported to Norway;
- Engage in dialogue with ProTerra, RTRS and other certification bodies to discuss improvements and solutions for the existing limitations in the certification system, particularly the issues related to third-party verification and confidentiality;
- Pesticides: Respect minimum distances, and require a phase-out and eventually ban of the pesticides prohibited in Norway and the European Union in the supplier farms;
- Deforestation: make sure that all the supplier farms comply with the forest legislation in Brazil and Mato Grosso (all farms registered, licensed and with recovery plans publicly available);
- Refrain from buying soy directly or indirectly from indigenous areas, or which in any way violates indigenous legislation.

(Footnotes)
1 Tropical deforestation and climate change / edited by Paulo Moutinho and Stephan Schwartzman. Belém, Pará, Brazil : IPAM - Instituto de Pesquisa Ambiental da Amazônia; Washington DC - USA : Environmental Defense, 2005.
2 WWF, Soya and the Cerrado: Brazil's forgotten jewel http://assets.wwf.org.uk/downloads/soya_and_the_cerrado.pdf#page=22&zoom=170,6,716. See also MCT, 2nd National Communication to UNFCCC, 2010. Summary, Table 2.1, p137. http://www.mct.gov.br/index.php/content/view/326984.html.
3 Personal interview

Norwegian Church Aid works with people and organisations around the world in their struggle to eradicate poverty and injustice. We provide emergency assistance in disasters and work for long-term development in local communities. In order to address the root causes of poverty, we advocate for just decisions by public authorities, businesses and religious leaders.

Framtiden i våre hender is Norway's largest environmental organization, and works for a fair distribution of the world's resources. We think that the sustainability of nature and the climate is more important than growing the consumption and economy of rich countries. We work to make government and business facilitate green and ethical choices. Framtiden i våre hender is committed to the global environment and a globally fair distribution of wealth. We believe the two are inseparably linked, in a way that requires us to work on both subjects in an integrated way. The organization has about 22.000 members in Norway.

Rainforest Foundation Norway (Regnskogfondet) fights to preserve the world's rainforests and ensure the rights of indigenous peoples and forest dependent communities, in cooperation with more than 100 local indigenous and environmental organizations in Southeast Asia, Central Africa, Oceania and the Amazon. In Norway we work on raising awareness about the rainforest and preventing Norwegian politics and business interests from contributing to rainforest destruction.

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i våre hender

Regnskogfondet
RAINFOREST FOUNDATION NORWAY