# VALUING THE AMAZON

## Impacts of soy and soy export infrastructure in the Brazilian Amazon region

*Centro de Monitoramento de Agrocombustíveis, Repórter Brasil*

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# Valuing the Amazon – impacts of soy and soy export infrastructure in the Brazilian Amazon region

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## 1. Assessment of Brazil's rural policies

In recent years, Brazil's federal government has strengthened a series of agricultural public policies and created several new ones, of major importance and impact. They are related to land, the environment and infrastructure.

The core policies for Brazil's farming industry concern credit lines and other policies to support domestic production. Under the ministries of Agriculture and Livestock (*Ministério da Agricultura e Pecuária*, MAPA) and Agrarian Development (*Ministério do Desenvolvimento Agrário*, MDA), those policies aim at two distinct segments: agribusiness, managed by the former, and family-based farming, managed by the latter.

Accounting for a sizeable share of the country's exports in the last decade, agribusiness has received an increasing amount of resources for all stages of the production chain. According to data provided by state banks (BNDES and Banco do Brasil) – the main operators of credit lines for Brazil's agriculture – agribusinesses received 58 billion *reais* in the 2007/08 harvest, 65 billion in 2008/09, 92.5 billion in 2009/10, and 100 billion in 2010/11. On the other hand, the 2010/11 harvest plan provided 16 billion *reais* to family farming – 16% of the total amount given to agribusiness – compared to 15 billion in 2009/10 and 13 billion in the previous harvests.
Data above show that public spending on agribusiness has been disproportionately higher than investments in family farming, especially considering the number of rural establishments in each segment. According to data from the last 2006 Farming Census[1], about 4.3 million rural establishments were classified as family-based, that is, 84.4%. However, they occupy

[1] Censo Agropecuário Brasileiro, http://www.ibge.gov.br/home/estatistica/economia/agropecuaria/censoagro/2006/agropecuario.pdf

an area of 80.25 million hectares, that is, only 24.3% of the total area occupied by Brazilian rural establishments. These data illustrate Brazil's persistent land concentration.

Despite the historical alliance of President Lula's Worker's Party (PT) with social movements struggling for land, land reform processes have not touched Brazil's land structure in this government: land concentration was maintained. Agrarian reform settlements were created, but they were based mostly on purchased land (not in expropriation of large estates, as social movements want) and regularisation of land already occupied by squatters and small farmers in the Amazon region.

Another criticism made by social movements struggling for land is that many families included in government's records on settled farmers were not really excluded from farming or camped by the roads – the Movement of Landless Rural Workers (*Movimento dos trabalhadores Rurais sem Terra*, MST) estimates that 100 thousand families are now waiting for a piece of land. Of 574.6 thousand families that the government claims to have settled between 2003 and 2009, 387.5 thousand (67%) are within the so-called Legal Amazon. Most land ownership titles for areas already occupied by families were granted in that region. In 2009, out of 55.4 thousand families settled, 32.8 thousand (59%) were accommodated in parcels located in that region[2].

According to MST, during the eight years of the Lula administration, the creation of settlements followed palliative lines, 'seeking to solve isolated conflicts without establishing any change to the land structure. That is why settlements were concentrated in Brazil's Northern region, through ownership regularisation or using public land. The government has no policy to face big landowners or a broad and massive Land Reform programme. Those large properties linked to agribusinesses are gaining ground in the South and Southeast, increasing land concentration (farming census)'[3].

The MST also sees 'no change in land concentration rates during the Lula administration. A dispute is under way between two models for agricultural production in the country: agribusiness and small farming/Land Reform. The federal government prioritises the former, which grows with the expansion of large estates and transnational companies over our territory'.

Strengthening agribusinesses over land reform policies has been one of the main vectors for rural conflict and violence. It is true that in the Lula administration, state repression against social movements was lower than in the previous one. However, in recent years, part of the police repressive force resumed its truculence, encouraged by the Judicial Power – the main vector of the increasing criminalisation of social movements.

According to annual reports Rural Conflicts (Conflitos no Campo) released by the Land Pastoral Commission (Comissão Pastoral da Terra, CPT), the general number of conflicts was reduced from 2009 to 2010, but some individual indicators worsened. The study, which has been conducted for over 25 years, is a national survey on land-related conflicts, murder of rural workers and union leaders, death threats to leaders, arrests of rural workers and leaders, conflicts over water, slave labour cases and others.

[2] Folha de SP, 12.02.2010
[3] MST note on government daat on settlements, http://www.mst.org.br/node/9097

About 2009, the CPT states: 'The increment in conflict and violence entered a disturbing national context of increasing criminalisation of social movements, both within the Judiciary and in Parliament, and was highly amplified by the mainstream media. In the Judiciary, the President of the Federal Supreme Court (*Supremo Tribunal Federal*, STF) himself Gilmar Mendes made the headlines. In early 2009, he accused the movements of illegal acts and criticised the Federal Executive for acting illegally by transferring public funds to those who, he says, carry out such acts'.

'Furthermore, over twenty bills and proposals for control were submitted to Parliament in 2009 that directly or indirectly criminalise movements struggling for land or intend to prevent advancements in land-related policies. The first one is Constitutional Amendment Proposition 361 of 2009, which would extend constitutional competences on land policies to States, the Federal District and Cities. Other bills propose transferring competences from the Federal Government to Congress, such as that of expropriating land for social interests or approving land productivity indexes'.

As for rural violence figures, the CPT points out 1,184 cases of conflict in 2009 over 1,170 in 2008, with a sizeable increase in land-related conflicts – 854 in 2009 to 751 in 2008. Regarding violence, the number of murders fell from 28 in 2008 to 25 in 2009.

Other indicators, however, have increased exponentially, according to the Commission. A comparison between 2008 and 2009 shows: attempted murders, 44-62, respectively; death threats, 90-143; and arrests, 168-204. But what is really shocking is the number of victims of torture: 6 in 2008 and 71 in 2009. The number of families displaced from their land increased from 1,841 to 1,884, and there was a significant growth in families expelled from camps and occupied lands: from 9,077 to 12,388 – a 36.5% increase. There have also been more houses and small plantations destroyed. As for rural militia, 9,031 families were threatened by gunmen in 2009, compared to 6,963 in 2008 – a 29.7% increase.

In its 2010 partial report, CPT finds that conflicts have seen a general decrease, but those related to water have grown, as well as violence in the Southern and Southeast regions of Brazil.

Slave labour has been historically concentrated in expanding agricultural frontiers in the North and Northeast. It has now proliferated at the epicentre of Brazil's agribusiness. In 2009, 134 cases were recorded involving 4,241 workers, and 2,819 people were liberated. By July 2010, 107 cases were found, involving 1,963 workers, of which 1.668 were liberated.

In the Midwest, where soybean, sugarcane and cotton prevail, there were 16 cases in 2009, with 259 workers involved and liberated. In the first half of 2010, there were 21 cases, with 526 workers liberated. The state of Goiás stands out, having passed from 6 to 13 cases, and from 259 to 490 workers liberated.

In the Southeast, all states presented slave labour. Cases went from 13 to 16, but with a significantly lower number of workers liberated (1,266 in 2009 and 268 in 2010).

All southern states have also shown cases of slave labour: 12 in 2009, and 8 by July 2010. Despite the decrease, the number of workers liberated has increased nearly threefold: 112 to 319. The main states are Rio Grande do Sul and Santa Catarina. The former went from 1 case in 2009, with 4 workers involved and liberated to 2 cases in 2010, with 29 workers involved and liberated. Santa Catarina went from 3 cases in 2009 to 5 in 2010, with a significant increase in the number of workers involved and liberated: 38 to 223. Data on 2010 will be consolidated in early 2011[4].

***Land regularisation and changes in environmental laws***

In June 2009, Provisional Measure 458 was signed into law by the Federal Government. It provided for land regularisation in the Legal Amazon by granting ownership titles (on illegally occupied public land) to properties up to 1.5 thousand hectares necessarily occupied by December 1st, 2004. The measure was harshly criticised by social movements, environmental NGOs, federal prosecutors and segments of the government itself (such as the Ministry of the Environment), which see it as legalising land-grabbing.

To establish land regularisation of about 67.4 million hectares of public land in the Legal Amazon, the government created programme *Terra Legal*, linked to the National Institute for Colonisation and Agrarian Reform (*Instituto Nacional de Colonização e Reforma Agrária*, INCRA). According to the programme's rules, owners of properties with up to 1 fiscal module, that is, about 100 hectares, will receive their land free of charge. The remaining squatters (with parcels measuring up to 400 hectares, and from 400 to 1.5 thousand hectares) can purchase their land with discounts that might reach 80%.

According to *Terra Legal*'s rules, squatters who receive medium-size parcels can sell them to third parties after three years. In mid-2010, federal prosecutors challenged that procedure for the first time, saying that it could encourage new squatting despite the rule's restricting land regularisation to land occupied prior to 2004. For prosecutors, if the squatter selling a parcel obtained through the regularisation process for prices well below market values, after three years the land will have increased its value – an excellent deal for those who grabbed union's areas or for those who intend to do it.

Such cases would be taking place in the state of Amazonas, where squatters with 500 hectares would be increasing illegal occupied land to 1.5 thousand hectares, as denounced by the NGO Imazon. The organisation also sees a possible connection between the perspective of land regularisation by land-grabbers and deforestation in the Amazon – which helps to consolidate occupied land[5].

Yet another measure – still under discussion – was proposed to the government by the so-called ruralist parliamentary group and will have a major impact on the environment and the country's production structure: the review of the Forest Code. That is a set of laws that regulates the duties of rural estates regarding environmental conservation. Nowadays, the Code mandates that estates keep a certain amount of native vegetation as a Legal Reserve (in the Amazon, that Reserve is 80% of the area, for instance). It established a series of areas as

[4] Data by Repórter Brasil, CPT and Ministry of Labour and Employment.
[5] Paulo Barreto, Imazon, http://amazoniasustentavel.wordpress.com/2010/07/06/eu-ja-sabia-programa-terra-legal-incentiva-mais-ocupacoes-de-terras-publicas-na-amazonia/

permanent preservation areas (which cannot be deforested) and penalties to environmental crimes.

The new Forest Code was approved this year at the Federal Chamber's Environmental Commission, but it still has to pass in Congress and be signed into law by the federal Government. Ruralists' propositions would enact changes as:

1) Reduction of Permanent Protection Areas (PPAs, including gallery forests, mountain tops and sides, water sources and water springs' surroundings, etc). Article 3 reduces mandatory PPA strips and its paragraph 1 allows states and the Federal District to increase or reduce them by up to 50%.

2) Reduction of the Legal Reserve (LR): a) It cancels the mandatory Legal Reserve in all rural estates with up to 4 fiscal modules (about 400 hectares); b) Areas of 4 fiscal modules are excluded from Legal Reserves in rural estates above that limit – which means a similar reduction in the LR of each rural estate; c) It allows the inclusion of PPAs in the LR (article 16) – another reduction in the LR of up to the area of the PPA in question.

3) Transfer of legislative competence from the central government to states and the Federal District: they will be able to increase or reduce the aforementioned PPAs (Article 3, paragraph 1);

4) It pardons owners or persons legally in charge of properties for environmental liabilities regarding PPAs and LRs found until July 22, 2008 (article 27). It cancels fines and allows the owner to keep exploiting the PPA and LR as long as deforestation took place prior to that deadline. That equals a generalised reward to irregularities.

According to the press, the number of deforestation requests, as well as criminal burning rates, increased enormously after parliament signalled that changes could be made to the Forest Code. Even though the most controversial points of the new Forest Code might be vetoed by the government, environmental crimes committed by agribusiness are very likely to increase.

***The post-election scenario***

It is still not possible to know the relationship that the government of Dilma Rousseff (PT), President Lula's candidate elected in a second round in the 2010 presidential election, will have to agribusiness and family farming segments from 2011 on. But voters have sent a very clear message to the prior and the current governments, both run by PT.

As published by the newspaper *Valor Econômico*[6], in the first round (when Green Party's candidate Marina Silva was still running), not even the relative improvement in infrastructure and logistics in states that are major agricultural producers, the renegotiation of their debts, or the aggressive subsidy policy by President Luiz Inácio Lula da Silva were enough to soften rural rejection to his candidate, former minister Dilma Rousseff.

[6]"Beneficiados por Lula, ruralistas rejeitam Dilma", 10.07.2010

Together, 62.6% of Brazil's granary regions voted against PT's candidate: the states of Mato Grosso, Mato Grosso do Sul, Rondônia, Paraná, and Santa Catarina, where Rousseff lost in the first round, as well as Goiás and Rio Grande do Sul, where she won for a difference below the national average, and the state of São Paulo.

In the second round, the vote followed similar lines. Dilma Rousseff lost in Rio Grande do Sul, Paraná, Santa Catarina, São Paulo, Espírito Santo, Goiás, Mato Grosso, Mato Grosso do Sul, Rondônia, Acre, and Roraima. Rio Grande do Sul, Paraná, Santa Catarina, São Paulo, Goiás, Mato Grosso, and Mato Grosso do Sul account together for over 70% of Brazil's production of sugarcane, meat, orange juice, textile fibres, and grains.

In turn, most social movements and organisations working with rural, environmental and human rights issues openly endorsed Rousseff. Several of them were directly engaged in her campaign, such as MST and Via Campesina.

In the days after she was elected, Rousseff made no comment that could signal which sort of relationship she will have with the ruralists – to which she reached out several times during the campaign. But in her first press conference, she said that during her term in office, 'the MST will not be treated as a police issue' and that she shall review land productivity indexes (indicators used to assess whether or not land is productive and if it can be expropriated for land reform purposes). Current indexes date from 1975 and their update – promised by President Lula – is one of the core demands of social movements.

In December, when Wagner Rossi (PMDB) was confirmed to continue as head of the Ministry of Agriculture, the scenario changed. Rossi said he does not intend to review productivity indexes, arguing that there is enough land for land reform. As a sugarcane producer and cattle farmer in Ribeirão Preto, the main sugarcane hub in the state of São Paulo, the minister is a strong advocate of Brazilian ethanol.

The appointed Minister of Agrarian Development is Afonso Florence (PT-Bahia), a historical ally of Bahia governor Jaques Wagner and a member of PT's internal group Socialist Democracy – the same group that has been running the MDA since the beginning of the Lula administration. A congressman elected with over 143 thousand votes, Florence challenged the Minister of Agriculture Wagner Rossi's advocacy of 'extinguishing' productivity indexes. He has a history of involvement with social causes and studies antislave struggles. He was Bahia's State Secretary for Urban Development under Governor Jacques Wagner, when he headed housing programme *Casa da Gente*, and worked in programme *Água para Todos* in the state. He also serves as director of the Centre for Afro-Eastern Studies (*Centro de Estudos Afro-Orientais*, CEAO), where he was a researcher for 18 years. As a servant at Bahia Federal University, Afonso Florence has been deeply involved in labour union organisation and academic life.

## 2. Soybean in the Amazon

Soybean production, the main crop in the Cerrado and the Southern region of Brazil, has been expanding into Amazon states as new frontiers are opened and transport infrastructure becomes available.

***Soybean's historical series in the Amazon***

| *Soybean in the legal Amazon* | | | | | |
|---|---|---|---|---|---|
| *Historical series of plantation area (thousand hectares)* | | | | | |
| **2005/06-2009/10 Harvests** | | | | | |
| **State** | **2005/06** | **2006/07** | **2007/08** | **2008/09** | **2009/10** |
| Roraima | 10.0 | 5.5 | 15.0 | 8.0 | 1.4 |
| Rondônia | 106.4 | 90.4 | 99.8 | 106.0 | 122.3 |
| Acre | - | - | - | - | - |
| Amazonas | 1.9 | - | - | - | - |
| Amapá | - | - | - | - | - |
| Pará | 79.7 | 47.0 | 71.1 | 72.2 | 86.9 |
| Tocantins | 309.5 | 267.7 | 331.6 | 311.4 | 364.3 |
| Maranhão | 382.5 | 384.4 | 421.5 | 387.4 | 502.1 |
| Mato Grosso | 6,196.8 | 5,124.8 | 5,675.0 | 5,828.20 | 6,224.5 |
| **BRAZIL** | **22.749,4** | **20.686,8** | **21.313,1** | **21.743,1** | **23.467,0** |

Source: CONAB

Having historically come after deforestation by timber and cattle industries, soybean plantations in states with higher Amazon forest density, such as Pará, Rondônia, and northern Mato Grosso, have been under increasing pressure by environmental organisations and federal prosecutors because of its involvement with deforestation of native vegetation.

Phillip Fearnside, a researcher with the National Institute for Amazon Research (*Instituto Nacional de Pesquisa da Amazônia*, INPA), says that in early 2000 'soybean expanded rapidly in Brazilian Amazon as a combined result of high prices and indirect government subsidies granted in several ways, including major public spending on transport and waterway structure. After a reduction break in 2005 and 2006, prices increased again after 2007. Soybean-related infrastructure works that are ready or under construction include the waterway of the Madeira River, the Itacoatiara grain terminal, part of the North-South Railway and the BR-333 federal road connecting Maranhão to Minas Gerais. Projects for future construction include the waterways Araguaia-Tocantins, Teles Pires-Tapajós, Rio Capim, Paraguai-Paraná ('The Pantanal Waterway'), the North-South Railway (Anápolis-Açailândia), Ferronorte (the railway linking Uberaba and Santa Fé do Sul to Vilhena, and then to Porto Velho), the construction of a waterway through the proposed dams in the Madeira river leading to Mato Grosso and Bolivia via the Mamoré and Guaporé rivers, pavement of the Cuiabá-Santarém

road (BR-163 federal road) and construction of 'Pacific Road', linking Brazil's Atlantic Coast to the Pacific, at the other side of South America'[7].

In 2006, a Greenpeace report on the impacts of soybean on the Amazon ('Eating the Amazon') encouraged the creation of a pact among civil society organisations, producers' representatives and, later, the Ministry of the Environment. The so-called Soybean Moratorium is an agreement signed between environmental organisations, the federal government and producers that provides for economic sanctions to those who plant soybean in deforested areas within the biome after 2006. It also includes sanctions to soybean farmers who commit deforestation and slave labour crimes in that biome. Four years later, its results are questionable, since 2010 saw major increase in the number of areas planted with soybean on lands which had been recently deforested.

Deforestation in Mato Grosso, Pará, and Rondônia

In 2010, the states of Mato Grosso and Pará were champions of deforestation and burnings in the Amazon. Most fires were recorded in the former state, according to the Burning Databank of National Institute for Space Research (*Instituto Nacional de Pesquisas Espaciais*, INPE), with 63,148 fire seats. Pará comes second with 47.717 seats. The two states are also deforestation leaders according to INPE's System for Real-time Detection of Deforestation (*Sistema de Detecção de Desmatamento em Tempo Real*, DETER), with 308.2 km² and 232.7 km² deforested, respectively.

The state of Rondônia deforested 30.5 km², and its capital Porto Velho is the leader in fires since the beginning of the year 2010– over 3,000 fire seats. The city has also been among the three largest deforesters in the Amazon this year, according to regularly published Deter reports.

***Soybean in deforested areas***

In the 2009-2010 harvest, the area planted with soybean in the states of Mato Grosso, Pará and Rondônia equals 0.25% of all the area deforested in that region. According to data from the Working Group that monitors the Soybean Moratorium, which includes segments of processing industries, exporters and civil society organisations, soybean plantations were found on 6,300 hectares of the 302,149 hectares monitored.

According to the final report, in 2009 soybean was planted in ten properties with deforestation in Mato Grosso – an area of 1,384 hectares. In 2010, 57 properties were found with soybean in deforested areas, totalling 4.6 thousand hectares in the towns of Comodoro, Feliz Natal, Gaúcha do Norte, Itanhangá, Lucas do Rio Verde, Nova Maringá, Nova Ubiratã, Porto dos Gaúchos, Querência, Santa Carmem, Sinop, Sorriso, Tabaporã, Tapurah, União do Sul, and Vera.

The Moratorium shows two properties in deforested areas in Pará in 2009, covering 360 hectares. In 2010, 18 properties were detected with soybean in recently deforested areas – a total of 1.5 hectares in the towns of Dom Eliseu, Santarém, Ulianópolis, and Paragominas. No

[7] O cultivo da soja como ameaça para o meio ambiente na Amazônia brasileira - http://philip.inpa.gov.br/publ_livres/2006/Soja-Amazonia%20500%20anos.pdf

soybean plantation has been found in Rondônia in recently deforested areas in 2009. In 2010, one property was detected with 19.16 hectares in Vilhena.

## 3. Soybean's socio-environmental impacts in Mato Grosso

Mato Grosso, Brazil's third largest state (906,807 km2, 10.59% of the country) and one of the nine states included in the Legal Amazon, has a set of three main ecosystems that distinguish it from the others: in the south, the Pantanal, the world's largest floodplains (10% of the area); the Cerrado, the so-called Brazilian savannah (40%); and forests (50% of the area, including the Amazon Forest and transitional vegetation between the Cerrado and the Amazon in the Midwest. According to the Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística*, IBGE), the state has 12 towns that are totally included in the Amazon biome and 24 that are partially within it – the others are mostly in the Cerrado and Pantanal areas.

Mato Grosso is Brazil's largest soybean producer and used over 6.2 million hectares for it in the 2010/11 harvest, which started to be planted in the second half of 2010. Expansion of plantations, however, comes at a high environmental price. Soybean has been one of the core deforestation vectors in the Cerrado (which lost 85,074.87 km² of native vegetation from 2002 to 2008 to soybean, sugarcane, cattle, and coal). It has also expanded over recent deforestation areas in the Amazon biome, despite efforts such as the Soybean Moratorium.

According to Greenpeace, one of the organisations that proposed the agreement, such growth is partly due to the production cycle of deforested areas in the Amazon. Improper for immediate plantations of soybean, deforested land is firstly used to plant rice and corn – crops that 'soften' soils – and only in a later stage soybean is planted. Therefore, only last year soybean started to be planted in land deforested after 2006, thereby increasing the number of properties breaking the Moratorium.

In the 2008/2009 harvest tracking in Mato Grosso, soybean plantations were found in 10 properties with deforestation, over 1,384 hectares. In 2010, 57 properties were found with soybean over deforested areas, totalling 4.6 thousand hectares in Comodoro, Feliz Natal, Gaúcha do Norte, Itanhangá, Lucas do Rio Verde, Nova Maringá, Nova Ubiratã, Porto dos Gaúchos, Querência, Santa Carmem, Sinop, Sorriso, Tabaporã, Tapurah, União do Sul, and Vera.

According to IBGE, the state of Mato Grosso has 40 towns partially or totally within the Amazon biome, with over 5 thousand hectares of soybean, as shown in the table on the following page.

| **Towns in Mato Grosso with over 5 thousand hectares of soybean** (Source: IBGE) | | | |
|---|---|---|---|
| **Town** | **Within the Amazon biome** | **Soybean area in hectares – 2009** | **Soybean area in hectares – 2010** |
| Alto Paraguai | Partially | 6,500 | 6,500 |
| Bom Jesus do Araguaia | Partially | 39,900 | 42,675 |
| Brasnorte | Partially | 146,440 | 149,000 |
| Cáceres | Partially | 4,078 | 5,000 |
| Campo Novo do Parecis | Partially | 311,500 | 315,000 |
| Campos de Júlio | Partially | 181,193 | 192,000 |
| Canarana | Partially | 90,230 | 100,000 |
| Cláudia | Totally | 28,000 | 32,000 |
| Comodoro | Partially | 34,000 | 34,000 |
| Diamantino | Partially | 279,119 | 279,120 |
| Feliz Natal | Partially | 42,000 | 28,000 |
| Gaúcha do Norte | Partially | 60,000 | 71,450 |
| Ipiranga do Norte | Partially | 161,250 | 171,250 |
| Itanhangá | Totally | 46,000 | 46,000 |
| Itaúba | Totally | 16,800 | 16,800 |
| Lucas do Rio Verde | Partially | 223,500 | 225,300 |
| Nortelândia | Partially | 13,500 | 15,000 |
| Nova Canaã do Norte | Totally | 4,500 | 4,500 |
| Nova Marilândia | Totally | 6,500 | 6,500 |
| Nova Maringá | Partially | 93,666 | 100,000 |
| Nova Mutum | Partially | 330,000 | 335,000 |
| Nova Ubiratã | Partially | 240,000 | 250,000 |
| Paranatinga | Partially | 70,700 | 65,000 |
| Pontes e Lacerda | Partially | 6,500 | 7,300 |
| Porto Alegre do Norte | Partially | 5,760 | 5,760 |
| Porto dos Gaúchos | Totally | 7,550 | 7,550 |
| Querência | Totally | 180,600 | 198,286 |
| Ribeirão Cascalheira | Partially | 9,000 | 14,220 |
| Santa Carmem | Totally | 50,000 | 55,000 |
| São Félix do Araguaia | Partially | 22,935 | 22,935 |
| São José do Rio Claro | Partially | 85,420 | 90,000 |
| São José do Xingu | Totally | 18,000 | 18,000 |
| Sinop | Totally | 105,000 | 105,000 |
| Sorriso | Partially | 590,000 | 590,000 |
| Tabaporã | Totally | 82,000 | 82,000 |
| Tangará da Serra | Partially | 49,648 | 52,500 |
| Tapurah | Partially | 114,714 | 120,000 |
| União do Sul | Totally | 6,000 | 6,000 |
| Vera | Partially | 110,000 | 110,000 |
| Vila Bela da Santíssima Trindade | Partially | 7,400 | 7,400 |

Seven towns in the table are included in the list of the largest Amazon deforesters monitored until July 2010 by NGO Imazon: São José do Xingu, with 68 $km^2$ deforested, Porto dos Gaúchos, 18 $km^2$, Nova Ubiratã, 13 $km^2$, Nova Maringá, 6 $km^2$, Querência, 6 $km^2$, Brasnorte, 3 $km^2$, and Gaúcha do Norte, with 1 $km^2$ deforested.

Despite the large amount of funds given to agribusiness by state sources, economic analysts believe that major soybean enterprises (international and national trading companies) accounted for the funding of about 60% of Mato Grosso's plantations in the last harvest. That is, they signed contracts for advanced product purchase on estimated 3.36 million hectares, which yielded 10.59 million tons.

Those companies certainly play an increasingly important role in driving soybean expansion in the state, but in the case of Mato Grosso – differently from Pará – it is not possible to establish a direct relationship between their presence and environmental crimes in soybean areas. It must be noted, however, that major operators of the soybean market are present in at least five of the seven towns with serious deforestation problems, such as ADM, Amaggi, Bunge, Caramuru (it exports to the Netherlands), Cargill (The Netherlands), Fiagril, Eraí Maggi, and Louis Dreyfus. One or more of those companies are also present in at least 24 towns that are totally or partially within the Amazon biome, as shown in the table on the next page.

**Companies in towns totally or partially located within the Amazon biome**

| ADM | Amaggi | Bunge | Caramuru | Cargill | Fiagril | Eraí Maggi | Louis Dreyfuss |
|---|---|---|---|---|---|---|---|
| Campo Novo do Parecis | Brasnorte | Bom Jesus do Araguaia | Canarana | Bom Jesus do Araguaia | Ipiranga do Norte | Bom Jesus do Araguaia | Canarana |
| Diamantino | Campo Novo do Parecis | Brasnorte | Querência | Campo Novo do Parecis | Lucas do Rio Verde | Canarana | Diamantino |
| Ipiranga do Norte | Campos de Júlio | Campo Novo do Parecis | | Campos de Júlio | | Diamantino | Ipiranga do Norte |
| Lucas do Rio Verde | Diamantino | Campos de Júlio | | Canarana | | São José do Rio Claro | |
| Nova Mutum | Ipiranga do Norte | Canarana | | Comodoro | | | |
| Nova Ubiratã | Lucas do Rio Verde | Diamantino | | Gaúcha do Norte | | | |
| Querência | Nova Mutum | Ipiranga do Norte | | Lucas do Rio Verde | | | |
| São José do Rio Claro | Querência | Lucas do Rio Verde | | Nova Mutum | | | |
| Sinop | Sinop | Nova Mutum | | Querência | | | |
| Sorriso | Sorriso | Paranatinga | | São José do Xingu | | | |
| Tapurah | Tapurah | Porto Alegre do Norte | | Sinop | | | |
| | | Querência | | Sorriso | | | |
| | | São Félix do Araguaia | | Tangará da Serra | | | |
| | | São José do Rio Claro | | | | | |
| | | Sorriso | | | | | |
| | | Tangará da Serra | | | | | |
| | | Tapurah | | | | | |

Source: Sema MT

**Slave labour**

Given the profile of Brazilian soybean – mechanised plantations, low labour intensity – the segment has not presented many cases of slave labour, at least in comparison to other segments like cattle and sugarcane. In 2008 and 2009, four cases were found in Mato Grosso's properties (data on 2010 have not been released by the Ministry of Labour and employment, in charge of fighting slave labour crimes).

***Slave labour in Mato Grosso – 2008 e 2009***

| Year | Town | Farm owner | Name or farm | Workers liberated | Activity |
|---|---|---|---|---|---|
| 2009 | Nova Canaã do Norte | Gerson Biancon taxpayer registration: 975.233.991-34 | Colorado II **Operation 78/2009** | 11 | Root collection/Soybean plantation |
| 2008 | Tapurah | José Maria Bortoli e outros taxpayer registration: 314.622.510-72 | Vale do Rio Verde **Operation 01/2008** | 41 | Soybean and cotton |
| 2008 | Ipiranga do Norte | Sadi Zanatta CPF: 307.640.330-34 | Curitiba **Operation 91/2008** | 6 | Soil preparation/Soybean plantation |
| 2008 | Ribeirão Cascalheira | José Ricardo Selmi Guiss taxpayer registration: 125.666.648-38 | Ribeirão Bonito (Gleba Grotão) **Operation 95/2008** | 4 | Bovine cattle/soybean and corn production |

Source: MPT

One of the main efforts to fight slave labour, formulated and implemented by Repórter Brasil and others, is the National Pact for the Eradication of Slave Labour. It is an agreement signed by several companies committed to not purchasing products from enterprises included in the 'Dirty List' (the federal government's record of entrepreneurs caught in the act using slave labour). Companies like ADM, Cargill, Bunge and Caramuru have signed the pact.

Another agreement that prevents the purchase of soybean from producers included in the Dirty List is the Soybean Moratorium, signed by ADM, Amaggi, Bunge, Cargill, and Louis Dreyfus. According to a Repórter Brasil survey, however, two companies that signed the Moratorium have made purchases from farmers who used slave labour in 2010. Between August and December 2009, the **Amaggi** unit in Ipiranga do Norte (MT) purchased soybean from Olavo Demari Webber, whose name is included in the 'dirty list' of slave labour after the liberation of 14 workers from the Boa Sorte Farm in Porto dos Gaúchos (MT). **Cargill**, in turn, bought the production of the same farmer in the second half of 2009 and in the first half of 2010.

In April 2010, the federal court in Mato Grosso finally indicted farmer Eraí Maggi, considered Brazil's largest soybean producer, for the crime of using slave labour. The 'Soybean king', as he is known, was denounced in April 2009 by federal prosecutors for submitting 41 workers to conditions analogue to slavery. Workers were liberated at the farm located in Tapurah, Mato Grosso, in January 2008, by the Ministry of Employment and Labour's Mobile Group against Slave Labour.

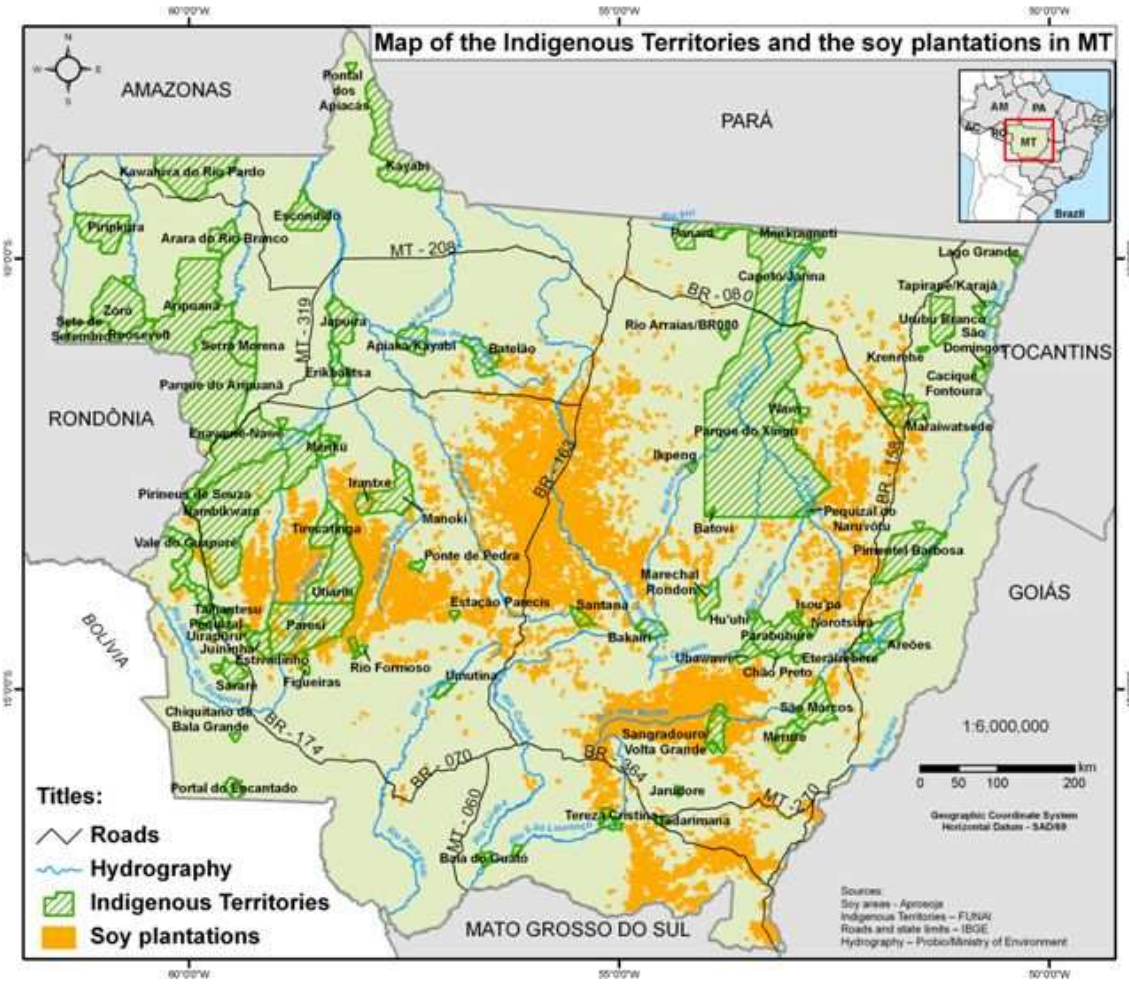
***The indigenous issue***

At least 30 of the 78 Indigenous Lands (ILs) located in Mato Grosso (the state with most indigenous ethnic groups and lands in Brazil), are located in towns with over 10 thousand hectares of soybean plantations.

Particularly regarding Indigenous Lands, soybean has had an impact on several communities in a variety of ways. There are cases, such as the Maraiwatsede IT in Alto da Boa Vista and Bom Jesus do Araguaia (the focus of a study in this report), belonging to the Xavante, where soybean has invaded the Indians' land and has led the rankings of fines for deforestation in the region. In the case of Sangradouro IT, in turn (also of the Xavante), located in the town of Poxoréo, invasions of the indigenous area are small but permanent, as denounced by the Missionary Indian Council (*Conselho Indigenista Missionário*, CIMI). According to Father Luis Silva Leal, who lives in the area, soybean farmers, besides incorporating small 10-20-hectar portions of indigenous lands to their farms every year, have made several attempts to lease larger parts of indigenous areas. 'The last leasing attempt took place in 2009, but the Xavante eventually ended up pulling out. They are not major farmers and they are afraid of being exploited'[8], Leal explains.

As for the environmental issue, the priest reports that the Sangradouro IT has preserved forest areas, which allow the Xavante to keep minimum levels of hunting and fishing activities. 'But the surroundings of the area have all been devastated. With the early rains of the year, poison used by soybean farmers has been contaminating rivers like Sangradouro, Água Azul, and Pindaíba, which get covered by dead fish', says Leal. Finally, he points out that the Volta Grande indigenous village still experiences a land dispute with soybean farmers and occupies only 11 thousand of the 33 thousand hectares that originally belonged to the Indians. 'There is an area under legal dispute. There, farmers plant soybean and eventually pay some money to the Indians, who accept it in order to avoid major conflicts'.

[8] Impactos da soja sobre Terras Indígenas no estado do Mato Grosso - Centro de Monitoramento de Agrocombustíveis, Reporter Brasil, Julho de 2010 - http://www.reporterbrasil.org.br/documentos/indigenas_soja_MT.pdf




Other ethnic groups, such as the Paresi, Irantxe, and Nambikwara, chose to establish partnerships with farmers, raising a complex legal debate on the legality of the agreement and causing several impacts on indigenous groups and peoples.

The close relationship to farmers gave the Paresi knowledge of production processes and western economy that eventually reproduced a certain class division within their communities, with few benefiting from much and many benefiting from little, says André Lopes, an Indian expert working with Operation Native Amazon (*Operação Amazônia Nativa*, OPAN). The institution quit its work with the group in 2004, when the first agreements were signed with the farmers. According to Lopes, the same did not happen to the Manoki, whose adoption of the capitalist model for soybean production is indeed an income source, but, among other reasons, took place as some sort of defence against discrimination and prejudice from part of non-indigenous society and its recurrent discourse that it was 'too much land for too few Indians' or 'why giving so much land to Indians if they do nothing with it.'

What starts to take place in villages is a major impact that soybean brings with its production and consumption model. In that asymmetrical power relationship with the 'soybean society', how do you start building their future perspectives, their 'people project'? There is an internal concern with the effect that this might have on the new generations. Income, if it's not in ac-

cordance to local patterns of social division, might worsen internal conflicts of a community or create new social tensions', wonders Lopes.

The Maraiwatsede Indian Territory, in turn, which belongs to the Akwe-Xavante, was homologated by the federal government in 1998 with 165 thousand hectares, but remains with 90% of its territory illegally occupied by farmers and non-indigenous squatters, mostly cattle farmers and soybean and rice producers. Those activities account for one of the largest deforestations in protected areas in Mato Grosso: 45% of Maraiwatsede's native forest have been destroyed, as pointed out by the 2010 Report of the Special Areas Monitoring Programme (*Programa de Monitoramento de Áreas Especiais*, ProAE), under the Amazon Protection System (*Sistema de Proteção da Amazônia*, SIPAM).

In the latest survey on irregular occupation at the Maraiwatsede IT, FUNAI listed some 70 larger farms, including properties belonging to 'personalities' such as Aldecides Milhomem de Ciqueira, mayor of Alto da Boa Vista, and his bother Antonio Milhomem de Ciqueira; two of the towns' former mayors Mario Cesar Barbosa and Deusimar Dias de Oliveira; the mayor of São Félix do Araguaia, Filemon Gomes Costa Limoeiro; Alto da Boa Vista's town councillor Raimundo Carlos Alves and former councillor Clarindo Barbosa da Silva.

According to FUNAI, IBAMA and Federal Prosecutors, there are two major soybean areas at Maraiwatsede: the Conquista farm, belonging to Claudemir Guareschi (who died in a plane crash last July 18) and the Colombo farm, of Antonio Penasso – known as Branco.


In May 2008, Guareschi was fined by IBAMA for 'clear-cut deforestation of 4 thousand hectares of forest considered of permanent preservation for being indigenous land (the Ma-

raiwatsede Indigenous Territory)'. The area was embargoed and the farm owner was condemned to paying 2 millions *reais* in fines. His name was also included in the list of the one hundred largest deforesters in Brazil in 2008, released by the Ministry of the Environment.

In spite of the embargo, soybean plantations at the Conquista farm went on during the 2008/2009 and 2009/2010 harvests. In July 2009, IBAMA notified farmer Claudemir Guareschi once again, now for breaking the embargo. In April 2010, the second notification was applied for the same offence, this time with product apprehension.

Antonio Penasso, owner of the Colombo farm, was fined twice by IBAMA – in October 2008, when the agency found environmental crimes 'consisting of preventing native forest's natural regeneration on an area of 1,571.20 hectares within the Maraiwatsede TI', and in September 2004, when 2 thousand hectares were embargoed for illegal use of fire (burning to clean the area). Likewise, Penasso, in whose farm soybean continued to be planted, was again fined for breaking the embargo, also suffering a Public Civil Lawsuit by federal prosecutors and having the Colombo farm's production apprehended.

By late March 2010, IBAMA and Federal Police started a search and seizure operation over illegally planted soybean in areas embargoed for environmental crimes in the town of Alto da Boa Vista – the so-called Pirate Soy Operation – and seized about 15 thousand tons of the grain planted in the farms of Claudemir Guareschi and Antonio Penasso.

According to IBAMA, of those 15 thousand tons of soybean seized, 2.4 thousand tons had been produced at Claudemir Guareschi's Conquista farm and 2.52 thousand tons came from Antonio Penasso's Colombo farm – both located within the Indigenous Territory and totalling 3.6 thousand hectares of planted area (almost 4 thousand football fields). The rest of the soybean was seized in other farms belonging to the Capim Fino business group, a property of the Penasso family also embargoed for environmental crimes but not located within the IT (the Capim Fino group, which also includes the Colombo farm, is the champion of fines by Mato Grosso's IBAMA and owes over 58 million *reais* in fines for environmental crimes).

All soybean seized was stored in a silo near the farms, belonging to an enterprise named Company Comércio e Representações Ltda., owned by businessman and producer Valmir de Souza. Souza filed a lawsuit to recover the product, which is under a legal dispute, but, according to IBAMA and Federal Prosecutors, the soybean shall be auctioned and the proceeds of the part seized at Maraiwatsede will go to the Xavante. The rest will be sent to the federal government Hunger Zero programme.

According to employees of Company, the main purchasers of the soybean it trades in the Primavera do Leste area are major trading enterprises like Cargill and Louis Dreyfuss, and animal feed industries, ranches and oil companies. Still according to employees, most of the soybean produced within the Maraiwatsede IT is sold to Granol, a company based in Anápolis, Goiás, and one of the largest grain exporting businesses in Brazil.

# 4. Soybean's socio-environmental impacts in Pará

In the 2009/2010 harvest, the state of Pará planted 86.9 thousand hectares of soybean. Even though it is not one of the largest producers in the Amazon, it has the highest levels of land-related conflicts and problems involving soybean farmers.

By and large, Pará has historically been Brazil's champion of rural violence. According to the Land Pastoral Commission, the state saw the largest number of cases of land conflicts in 2009 – 67 – also involving the largest number of families – 5,837 (data on 2010 have not been closed yet). In 2009, three rural workers were murdered in the state (the same number of Mato Grosso), 24 received death threats, 23 were assaulted and 38 were arrested (figures are well above those of other states). As for slave labour, in 2009 Pará was second only to Goiás in number of workers liberated – 226 to 228, respectively – but it came first in number of slave labour cases denounced and inspected – 85 to 41. Pará was also ahead during that period in terms of deforestation.

Evolution of deforestation in states of the Legal Amazon from August 2008 to July 2009, and from August 2009 to July 2010 (in $km^2$)

| State | August 2008-July 2009 | August 2009-July 2010 | Variation (%) |
|---|---|---|---|

| Estado | Agosto 2008 a Julho 2009 | Agosto 2009 a Julho 2010 | Variação (%) |
|---|---|---|---|
| Acre | 28 | 54 | + 93 |
| Amazonas | 132 | 162 | + 23 |
| Mato Grosso | 435 | 342 | - 21 |
| Pará | 957 | 700 | - 27 |
| Rondônia | 120 | 164 | + 36 |
| Roraima | 79 | 51 | - 36 |
| Tocantins | 14 | 1 | - 91 |
| Amapá | - | 15 | - |
| **Total** | **1.766** | **1.488** | **- 16** |

Source: Imazon

Soybean started consolidating itself in Pará in the early 2000s, parallel to the construction of Cargill's grain port in Santarém (see details below). According to the historical series for soybean plantation in the state, provided by the Brazilian Supply Company (*Companhia Brasileira de Abastecimento*, CONAB), it was recorded for the first time in the state in the 1997/98 harvest, with 2.6 thousand hectares. Only 700 hectares of soybean plantations were recorded in 2000, and the area increased to 2.9 thousand hectares in the 2001/02 harvest, and to 15.5 thousand hectares in 2002/03. That is to say, a year after the consolidation of the port, essential for transporting production, the soybean area grew about 450%. In the 2009/10 harvest, Pará's soybean plantations reached 86.9 thousand hectares.

The BR-163 federal road is also essential to transport Mato Grosso's soybean. It links Cuiabá, Mato Grosso, to Santarém and to Cargill's port, and became one of the focal points for

new deforestations in the beginning of that decade. A 2006 study by Greenpeace on soybean's impact on the Amazon ('Eating the Amazon') generated worldwide debate on soybean plantations in the biome and led to the Soybean Moratorium). According to the study, 85% of all deforestation in 2000-2005 took place within 50 km from that road, on each side. Soybean production along the paved segment of BR-163 in Mato Grosso leaped from 2.4 thousand hectares in 2002 to over 44 thousand hectares in 2005 – a 20-fold increase over three years.

According to the Soybean Moratorium tracking in Pará, two properties were found with soybean over deforested area in 2009, totalling 360 hectares. In 2010, 18 properties were found with soybean on 1.5 thousand hectares of recent deforestation in the towns of Dom Eliseu, Santarém, Ulianópolis and Paragominas. Besides those towns, Pará's soybean is now concentrated in Belterra.

Even though 14 of the 18 properties found by the Moratorium's tracking in 2010 are located in Dom Eliseu, major environmental and social problems have historically happened in the west of the state (the Santarém and Belterra areas) precisely related to Cargill's presence.

According to the latest report by the Rapporteur on Human Rights to Land, Territory and Food of the Dhesca Platform about violations of human rights of indigenous, *quilombola* (slave descendant), and riverside communities in the Arapiuns River, in the area of Santarém 'development plans – which are actually government plans for state investment – especially the debates about paving BR 163 (Cuiabá-Santarém) (...) associated to investments in mining, timber and the expansion of soybean plantations – have increased land prices in the area. One of the consequences is the worsening of land-related conflicts, including taking over land belonging to traditional communities (indigenous and *quilombola*), as denounced by leaders of the Santarém Federation of Quilombola Organisations (*Federação das Organizações Quilombolas de Santarém*, FOQS).

The construction of Cargill's grain port (with infrastructure to transport the production) and available land (for low prices) was the main attraction for soybean farmers. The town became a soybean hub, aggravating land disputes in the region and putting pressure on the state not to demarcate indigenous and *quilombola* territories or create forest parks and reserves'[9].

### *Social impacts in the Santarém area*

Apart from the debate about the size of deforestation directly related to soybean expansion in the region in recent years, there is consensus that the crop is an indirect threat to the environment since farmers are taking over cattle and agriculture areas of families who live closer to routes used to transport the production and urban centres. The result is that small farmers and cattle ranchers are being pushed towards the forest, causing more deforestation.

Areas already used by family farming are soybean producers' main target. Small farmers usually occupy land with irregular documents or even public land, such as settlement areas

[9] Plataforma DHESCA: Violações de Direitos Humanos a Comunidades Indígenas, Quilombolas e Ribeirinhas no Rio Arapiuns
http://www.dhescbrasil.org.br/attachments/186_1.%20Relat%C3%B3rio%20Miss%C3%A3o%20Santar%C3%A9m%202009%20-%20Relatoria%20para%20o%20DHTTA.pdf

established years ago by the National Institute for Colonisation and Agrarian Reform (*Instituto Nacional de Colonização e Reforma Agrária*, INCRA), where dwellers never bothered to ask for the proper documents to the agency.

There are also cases where those groups demand a distinct ethnic identity, such as indigenous groups (three communities from Borari await demarcation of their territory in Santarém) or *quilombolas*. According to the Santarém Articulation of Quilombos, there have been cases of communities in Bom Jardim and Murumurutuba leasing land for soybean plantations, resulting in deforestation and conflicts with families because of intensive use of pesticides.

Specifically in the Santarém area, those groups have not had their territorial rights recognised, being especially vulnerable to economic power and land-grabbers' violence. The Land Pastoral Commission (CPT) points out three micro-regions as those with the highest levels of conflicts[10]:

**Prainha**
The community of Majary, home to the family of Mrs. Maria Raimunda dos Santos. They are fighting in court not to lose their land for soybean producers coming from Southern Brazil.

**The area of Gleba Nova Olinda**
Located in the west of the city of Santarém, between the Amazonas and Tapajós Rivers. In that region, three indigenous villages are threatened to lose their territory for soybean and timber businesses.

**The Plateau area**
This region includes the towns of Santarém and Belterra, located between the BR-163 and PA-370 federal roads. Soybean has seen its largest production in recent years in those towns. It was also in that region that CPT observed major social impact as families were displaced from their houses to make way for soybean fields.

Research studies conducted by CPT in Santarém show the modus operandi of local land-grabbers. The Commission recorded cases of land-grabbing especially after 2004, when the price of one hectare of land proper for soybean (whose relief supports mechanisation) went above 2 thousand reais in the region, while it used to cost less than 100 reais per hectare for soybean farmers arriving at the region three or four years earlier.

There are 14 traditional communities living at Nova Olinda, three of whom are indigenous communities and the others are riverside populations, totalling nearly 600 people. They believe they have the collective rights of ownership to the over 180 thousand hectares now belonging to the Pará state government – mostly still with no certain destination.

'They are taking our land, our timber, our fruit and medicinal plants. Creeks are drying and several water sources have been fenced up', complains the chief of one of the villages, Odair José Borari. 'That land belongs to us, and we want the government to demarcate it as soon as possible, so that we can defend ourselves and our space', he says.

[10] Os Impactos Sociais da Soja no Pará, CPT, 2008 - http://www.observatoriodoagronegocio.com.br/page41/files/soja_para.pdf

Borari has suffered assaults and death threats, allegedly by farmers and lumberjacks, and he even went under protection in a state government programme that provides security to social movements' leaders under risk of being murdered. 'It is true that pressure of indigenous movements on the government is strong, but that of lumber businesses is even stronger', says the cacique.

In 2002, a group of land-grabbers filed a demand for the ownership of Nova Olinda with Pará Land Intitute (*Instituto de Terras do Pará*, ITERPA), followed by a cartographic and georeference study. With the file number – which only means that the demand has been received by the state agency, not that it was examined and accepted or rejected – the group invaded the area, home to 14 farmer communities. Before the invasion, the land was used as communal territory for activities such as hunting, fishing and collection.

Holding a document known as Authorisation to Detain Public Land Property (*Autorização para Detenção de Imóvel Público*, ADIP), land-grabbers obtained management plans provided by the Pará State Environmental Department and started to take timber from the region, after 2005. Only in 2007 were such irregular permissions cancelled by the state government.

In the case of federal land, such as Gleba Pacoval, similar schemes were based on 'ownership statements issued by INCRA. That practice was extinguished in 2004. This year, Federal Police's Operation Far West arrested several suspects of involvement with that scheme in Santarém, including INCRA's head in the state at the time, José Roberto Faro.

According to the local rural workers union, over 500 farmer families have left their land in rural Santarém during the early stages of soybean expansion (until 2005). Given the resistance organised by community members to soybean farmers' harassment, the reaction of the latter has been violent. Leading a campaign to encourage communities to resist, called 'Do not give up your land,' the president of the Union of Rural Workers of Santarém, Ivete Bastos, needed police protection for her personal safety against death threats. Indigenous leader José Odair Borari, from Gleba Nova Olinda, is another threatened leader.

### *Cargill's Port – history*

When multinational company Cargill started to build the grain port over the only urban beach used for leisure by Santarém's residents (the Vera Paz beach) in early 2000, it used an irregular resource to obtain an illegal license for the former State Department of Science, Technology and the Environment (*Secretaria de Estado de Ciência, Tecnologia e Meio Ambiente*, SECTAM), now Environmental Department (*Secretaria do Meio Ambiente*, SEMA).

The construction work was immediately denounced to federal prosecutors, who filed a lawsuit at the Federal Justice for lack of a previous environmental impact study and its report, known as EIA-RIMA. According to prosecutors, a provisional order was issued still in 2000, cancelling the license for the port and forcing the company to conduct the EIA-RIMA.

Cargill appealed the order seven times, losing all appeals over seven years. In Brazilian Justice, appeals might have a staying effect, that is, while they are appreciated, the decision that

is being challenged is cancelled. Therefore, even with contrary court decisions, Cargill got the licenses and built the port.

In 2004, Judge Fabiano Verli, from the Federal Justice in Santarém, examined the merits of the cause and also sentenced Cargill to conduct the EIA-Rima. Against the sentence, the company filed a civil appeal and in 2006 it was sentenced by three high court judges in Brasília to conduct the impact study, but it was allowed to stay active during the procedures.

In March 2007, the Brazilian Institute of Environment and Renewable Natural Resources (*Instituto Brasileiro de Meio Ambiente e dos Recursos Naturais Renováveis*, IBAMA), after a request for inspection by federal prosecutors, closed Cargill's grain terminal, but in April 2007 federal justice Carlos Fernando Mathias, of the 1st Federal Regional Court, ordered its reopening through a provisional decision granted to a court injunction against IBAMA'S action, filed by Cargill. Once again, the judge ruled that environmental impact studies should be conducted while the port is operational.

In 2009, Cargill presented its first version of the EIA-RIMA, which was rejected by the State Environmental Department (SEMA) for lack of information demanded by the reference document, and the company had to commission a new study. According to SEMA, the area covered by the EIA was incomplete and restricted the identification of impacts and measures to mitigate them. The agency argued that the impact area should be re-dimensioned to include both towns whose soybean production leaves through the port and those that, although not using the port, are relying on the road network for transport to and from the port.

In March 2010, Cargill finally filed a second version of EIA-RIMA with SEMA and a public hearing was scheduled for July 14 to examine the study.

Highly troubled, the public hearing led to new challenges to the applicability of the impact study, and federal prosecutors started an investigation on the document because of charges that it contained false data. State and federal prosecutors sustained they 'strongly suspect that information contained in the (impact) studies is not true'. They also said that a new public hearing is needed on the subject.

Now, besides the police investigation to be ordered by prosecutors, a statement by SEMA is awaited, since the agency is in charge of the final evaluation of the EIA/RIMA. If data were tampered with in the study, no license shall be granted to the operation of Cargill's port in Santarém.

In a paper released after the pubic hearing, the Amazon Defence Front – a set of coordinated social organisations, researchers and church groups in Santarém – advocated the permanent closing and removal of the grain port. According to the document, 'the multinational company has violated Brazilian legislation that demands an Environmental Impact Study before any construction work of that magnitude is started. (...). Last year, even with the poor pavement of the road [BR 163], tens of large trucks arrived at Santarém to unload soybean at Cargill's warehouse. That disrupted traffic and indicated troubles to come. Trucks were parked along Cuiabá avenue and, besides traffic disruption, there was encouragement to prostitution, sexually transmitted diseases, and social conflicts because of drugs and alcohol. Now try to imagine the coming years, with the road totally paved, 200-500 trucks parked by the avenue waiting to unload soybean at Cargill's warehouse. There will be chaos similar to that in Para-

naguá and Santos – within the city of Santarém. Such abuse cannot be tolerated as a fait accompli and the port remains where it is.(...) The only compensation possible is for Cargill to remove the port and pay the fines for the damages it caused the city, the Vera Paz beach, and west Pará'.

## 5. Soybean's socio-environmental impacts in Rondônia

In 2010, Rondônia became the third largest soybean producer in the Legal Amazon, only after the states of Mato Grosso and Maranhão (the latter only partially located within the biome). With 122.3 thousand hectares, the soybean area in the state increased by 15.4% over last year, when 106 thousand hectares were planted, according to CONAB.

In Rondônia, the crop expanded mainly in the area of Vilhena, in the state's south cone, near the Mato Grosso border. With over 100 thousand hectares in 2008, the area has been under major economic, social, environmental and land-related changes, which was visited by BWC-Repórter Brasil in April 2009.

Vegetation in Rondônia's south cone is typical of the Amazon biome, also including Cerrado and transition areas. Conditions for soybean plantation are among the best in the country, because of both climate and soil. They are considered by the Brazilian Agricultural Research Corporation (*Empresa Brasileira de Pesquisa Agropecuária*, EMBRAPA) as very good for the crop – Vilhena and neighbouring towns are located in an extension of Chapada dos Parecis, one of the most promising soybean areas in Mato Grosso.

Even though there are many degraded areas and cattle ranching is a very important activity, in Vilhena, Cabixi, Cerejeiras, Corumbiara, Chupinguaia and Pimenteiras do Oeste, deforestation still takes place to open the way for pastures. And deforested areas often become soybean plantations after a few years, even though they are firstly occupied by cattle.

Orlando Silva is the regional director for Environmental Management of the State Department for Environmental Development (*Secretaria de Estado de Desenvolvimento Ambiental*, SEDAM) in the towns of Colorado do Oeste, Cerejeiras, Cabixi, Corumbiara and Pimenteiras. He sustains that about 600 hectares of native forest were cut down around the Corumbiara State Park in 2009, resulting in fines and embargoes. 'People often cut down the forest for cattle, and later plant soybean' confirms Silva. 'That still happens in this region'. According to IBAMA's Ji-Paraná manager Renê Luiz de Oliveira, in 2010 some properties were going to plant soybean in areas under embargo and were fined, but no product was confiscated because nothing had been planted yet. 'Denunciations are usually related to deforestation in general, but most of our operations are a result of satellite identification of exploited or destroyed areas. In 2010, embargoes took place mostly in Vilhena', he explains.

According to René Luiz, the number of deforestation cases has decreased considerably because of new technologies for detecting deforested areas, combined with stronger State presence in several regions. In his words: 'By and large, we can say that soybean and other crops expand in southern Rondônia over areas that have been deforested years ago. Land is deforested for cattle and later they can be used for plantations, mainly grain crops' such as soy-

bean, corn, sorghum, among others. However, he says that 'such tactic has been less common in recent years, since using areas already open, with less regeneration of native species, is cheaper', since it reduces expenses on pesticides.

***Land concentration***

In April 2009, one of the main problems found by Repórter Brasil in the soybean region was pressure by large farms over Land Reform settlements, especially in Corumbiara. The fact was confirmed by INCRA's state office as well as the city's vice-mayor João Amorim. At the time, INCRA sustained that soybean contributed to land concentration in the state, and the city government pointed out the creation of alternatives for local family farming as one of its priorities.

In November 2010, Corumbiara's vice-mayor says that soybean continues to expand in the region, advancing over settlements such as Nova Vitória. Some crops typical of family farming, such as anatto (which is used by several industries) face problems, especially with pests. Discouraged, farmers started leasing their land for major soybean producers, which is illegal.

Besides land pressure, settlers also suffer the impact of pesticides in areas near their plantations. It hits crops directly, as well as water bodies they use to produce. Besides soybean, rice also advances in the region, which has important rivers, including Guaporé (a tributary of Madeira), and its affluents. According to João Amorim, those crops have advanced 'mostly over cattle, which is replaced with soybean'. On the other hand, the vice-mayor says he has not seen major deforestation in the city.

***Regularisation***

While major soybean enterprises expand in Rondônia over cattle or over areas deforested years ago – and, in a smaller scale, over small properties and new deforestations – some state agencies work to recover the environmental liability and impacts already caused.

One of the most important measures is the federal government's programme Terra Legal, which aims at regularising properties in states of the Legal Amazon. Francisco Sales Pinto, head of the Rondônia division for land regularisation of programme Terra Legal, says that the effort 'is going well, smooth, as we expected'.

He says that 100-some properties have been regularised in the state so far. He recognises that the measure opens the possibility of legalising land that has been grabbed. 'There are several owners that we do not regularise because they are in areas of conflict, because their profile does not meet legal requirements, because they own more than one property, for instance'.

The programme seems to have been reasonably successful in Vilhena and neighbouring towns. 'There was massive response, occupants took an interest and showed up, filled up applications', says Sales, adding that right now one of the companies in charge of georeferencing is working in the state's south cone.

As for the environmental issue, Sales estimates that about 95% of properties registered are not regularised at all. That is, almost all properties have problems regarding environmental legislation. 'No legal reserve, no environmental preservation area, none of that is according to

the law'. He explains that, when occupants receive the land ownership document, they commit to environmental regularisation. 'If they don't do that by the legal deadline, they have not met one of the clauses included in the document, and the land remains with the union', he concludes.

The balance sought in Rondônia might see substantial changes in coming years, for two main reasons. First, the expansion of soybean in Mato Grosso towards the state's south cone. The state plants 50 times more than Rondônia. Its producers are pursuing, by all possible means, an agricultural-environmental zoning that allows reducing environmental protection areas and thus, increasing areas allowed for plantations. And second, the construction of the Transcontinental Railway, which will connect Rio de Janeiro's coastline to Bolivia (it later intends to reach the Pacific), with segments linking Vilhena to Lucas do Rio Verde, in Mato Grosso, and the state of Goiás. All those elements together might lead to a fast increase of soybean plantations in Rondônia, for which society and government agencies will have to be prepared in order to guarantee that integration and communication between the two realities are positive, and that impacts do not lead to major destruction of local biomes, family farming in the region, and indigenous peoples living there.

## 6. Amazon logistics to export soybean

The most important ports to export soybean produced in the Amazon are Itacoatiara, Amazonas, and Santarém, Pará – both by the Amazon river –, and the seaport of Itaqui, Maranhão. Through those outlets, 3.65 million tons of soybean were shipped abroad between January and September 2010 – 13.29% of Brazil's total soybean exports. As can be seen in the following table, the opening of the Cargill's grain port in Santarém, in 2003, was crucial to increase the importance of Amazon logistics for Brazil's soybean exports.

**Main ports exporting whole soybean in Brazil (in million tons)**

| | 2010 (Jan-Sept) | 2009 | 2008 | 2007 | 2006 | 2005 | 2004 | 2003 | 2002 |
|---|---|---|---|---|---|---|---|---|---|
| **Santos (SP)** | 8.20 | 8.66 | 7.15 | 4.52 | 6.96 | 7.34 | 5.62 | 5.69 | 5.06 |
| **Paranaguá (PR)** | 4.95 | 4.81 | 4.18 | 4.50 | 4.09 | 5.20 | 5.13 | 5.73 | 5.09 |
| **Rio Grande (RS)** | 4.26 | 4.65 | 3.35 | 5.27 | 3.39 | 0.48 | 2.31 | 3.73 | 1.79 |
| **São Francisco do Sul (SC)** | 2.96 | 2.12 | 2.27 | 2.41 | 3.07 | 2.48 | 1.13 | 0.84 | 0.81 |
| **Vitória (ES)** | 2.14 | 2.80 | 2.41 | 2.48 | 2.71 | 2.84 | 2.20 | 1.64 | 1.05 |
| **São Luís (MA)** | 1.69 | 1.75 | 1.75 | 1.44 | 1.78 | 1.67 | 1.16 | 0.88 | 0.64 |
| **Manaus/Itacoatiara (AM)** | 1.19 | 1.50 | 1.44 | 1.55 | 1.58 | 1.40 | 0.95 | 0.79 | 0.80 |
| **Salvador (BA)** | 1.17 | 1.11 | 0.70 | 0.38 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Santarém (PA)** | 0.77 | 0.93 | 1.08 | 0.83 | 0.95 | 0.78 | 0.45 | 0.28 | 0.00 |
| **Others** | 0.13 | | | | | | | | |
| **Total** | 27.46 | 28.54 | 24.49 | 23.72 | 24.94 | 22.42 | 19.23 | 19.88 | 15.96 |

Source: Brazil's Ministry of Development, Industry and Trade

Examining the destination of soybean exports from each Brazilian port, it is possible to see the importance of Amazon infrastructure for European buyers. Between January and September 2010, 50.19% of the soybean shipped to Europe left from the ports of Itaqui, Itacoatiara and Santarém, precisely those serving Amazon logistics. Those three ports also accounted for 49.50% of the soybean sent to the Netherlands between January and September 2010 (see tables).

**Ports exporting whole soybean to the European Union**
**(in million tons)**

| | 2010 (Jan-Sept) | 2009 | 2008 |
|---|---|---|---|
| Santos (SP) | 0.850 | 1.684 | 1.691 |
| Paranaguá (PR) | 0.467 | 1.428 | 1.342 |
| Rio Grande (RS) | 0.180 | 0.430 | 0.655 |
| São Francisco do Sul (SC) | 0.191 | 0.339 | 0.677 |
| Vitória (ES) | 0.388 | 0.951 | 0.744 |
| São Luís (MA) | 1.106 | 1.078 | 0.930 |
| Manaus/ Itacoatiara (AM) | 0.684 | 1.188 | 1.214 |
| Salvador (BA) | 0.432 | 0.629 | 0.544 |
| Santarém (PA) | 0.777 | 0.933 | 1.088 |
| Others | | | |
| Total | 5.114 | 8.664 | 8.909 |

*Source: Brazil's Ministry of Development, Industry and Trade*

**Posts exporting whole soybean to the Netherlands**
**(in million tons)**

| | 2010 (Jan-Sept) | 2009 | 2008 |
|---|---|---|---|
| Santos (SP) | 0.182 | 0.557 | 0.459 |
| Paranaguá (PR) | 0.151 | 0.692 | 0.507 |
| Rio Grande (RS) | 0.042 | 0.000 | 0.069 |
| São Francisco do Sul (SC) | 0.108 | 0.081 | 0.196 |
| Vitória (ES) | 0.161 | 0.236 | 0.227 |
| São Luís (MA) | 0.197 | 0.255 | 0.000 |
| Manaus/ Itacoatiara (AM) | 0.080 | 0.130 | 0.304 |
| Salvador (BA) | 0.015 | 0.000 | 0.024 |
| Santarém (PA) | 0.379 | 0.412 | 0.623 |
| Others | | | |
| Total | 1.325 | 2.366 | 2.413 |

*Source: Brazil's Ministry of Development, Industry and Trade*

Data from Brazil's Ministry of Development, Industry and Trade (*Ministério do Desenvolvimento, Indústria e Comércio do Brasil*, MDIC) show the origin of soybean shipped from the ports. Pará, for instance, exported 151 thousand tons between January and September 2010, of which 71.5 thousand left through the port of Santarém and 79.9 through São Luís. In the same period, Tocantins exported 627 tons of whole soybean – 605 thousand through the port of São Luís; 6.9 thousand through the port of Salvador; and 14.4 thousand though the port of Vitória. Rondônia exported 348.3 thousand tons of whole soybean, being 223.5 thousand through Santarém and 124.7 through Manaus/Itacoatiara.

Largest soybean producer state in Brazil, Mato Grosso also used Amazon logistics to export part of its output. Between January and September 2010, the state exported 8.402 million tons of whole soybean – 5.091 million through Santos, 1.065 million through Manaus/Itacoatiara, 830.3 thousand through Vitória, 532.0 through Paranaguá, 482.7 through Santarém, 314.6 through São Francisco do Sul, and 85.7 thousand through São Luís. Despite those several routes, the soybean agribusiness in Mato Grosso is highly interested in strengthening Amazon routes, especially because they are based on waterways and railways, which can reduce freight costs by at least 20% compared to the road modal.
Jorge Pasin's study 'Logistics of exporting whole soybean from Mato Grosso'[11], published by BNDES, sustains that by the mid-90s most soybean produced in the state for export used to be embarked through the ports of Santos and Paranaguá. But in a scenario of increasing prices in foreign markets and, consequently, increase of area planted in Brazil, alternative routes were necessary. It was difficult to enlarge the cargo capacity of the railway modal towards south-eastern Brazil and there were conflicts between concessionaries regarding route integration.

One option was the northern route through BR-163 (the Cuiabá-Santarém road). That corridor is now exploited by trading companies such as Cargill, which use the road to get to the port of Santarém, Pará. The other option was the waterway corridor of the Madeira River. In that case, freights take BR-364 to Porto Velho, Rondônia. There, they are shipped in sets of tugboats and barges and taken, through the Madeira River, to the Amazon River, where they are transferred to storage terminals. The next stage is loading the large grain ships, which proceed to the ocean.

According to Pasin, that transport mode has been exploited since 1997 by the trading company Amaggi, through its subsidiary Hermasa, to transport out of northwest Mato Grosso the soybean harvested in the area of Chapada dos Parecis, and Vilhena, Rondônia. The grain goes in barges from the Porto Velho port until Itacoatiara, where it is loaded onto grain carriers. Other trading companies use services provided by Hermasa. Cargill also uses the Madeira River waterway, but barges take the soybean until the port of Santarém, where they are taken to grain carriers. About 95% of the total amount exported by Cargill through the port of Santarém arrives to the terminal by the Madeira River waterway. There, the company has a 60-thousand-ton soybean silo and intends to install a new structure able to raise the capacity to 90 thousand tons.

[11] Pasin, Jorge A. B. A logística de exportação da soja em grãos de Mato Grosso. Revista do BNDES, v. 14, n. 27, 2007.

Another study by BNDES, 'Logistic for Brazilian agribusinesses – what is really needed'[12], published in 2000, discusses measures needed to facilitate transportation of Brazilian soybean to other countries, including through the Amazon region. Four projects are considered important:

1) Enlargement of the Ferronorte corridor, belonging to América Latina Logística (ALL). Part of Mato Grosso's production already goes through the railway to the port of Santos. The plan is to extend rails to Cuiabá, Porto Velho, Uberlândia and Santarém;

2) Improvements in the Cuiabá-Santarém (BR-163) to streamline transportation through the port of Santarém;

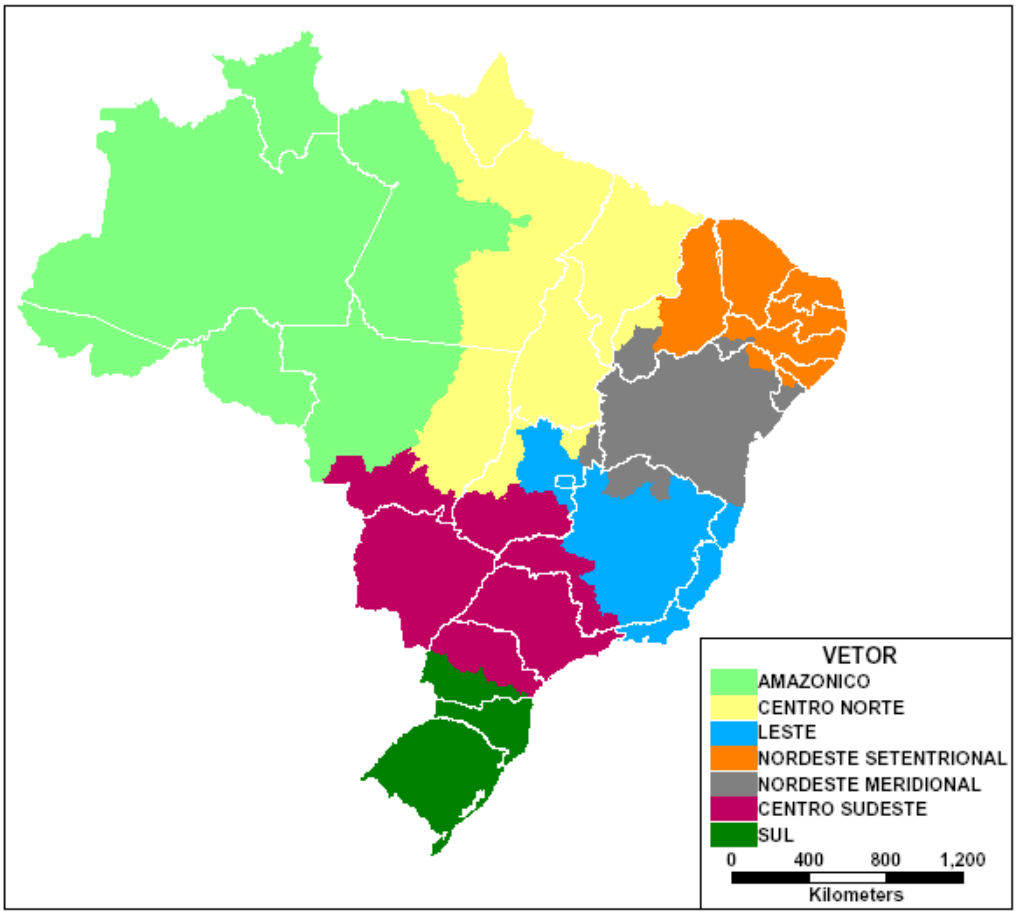
3) Establishing the Araguaia-Tocantins waterway. Soybean would go through the Araguaia River until Xambioá, and from there by road to Estreito, Maranhão. From that town it would go through the Norte-Sul and Carajás railways until the port of Itaqui, Maranhão. But competition of that modal with the ore industry might prevent its exploitation by soybean companies.

4) Construction of the Teles Pires-Tapajós Railway. Soybean produced in northern Mato Grosso would go by road to the Pará state border, and then proceed by the Teles Pires and Tapajós Rivers to Santarém.

Many of those projects are included in the National Logistics and Transportation Plan (*Plano Nacional de Logística e Transportes*, PNLT), launched by the Brazil's ministries of Transports and Defence in November 2009. The PNLT intends to be a medium-to-long-term (2008-2023) reference for public policies in those areas, guiding investments in infrastructure and private enterprise projects. The plan divides Brazil in logistic vectors. Two of them – Amazon and Mid-north – are directly related to the Amazon region, as can be seen in the image on the next page.

[12] Lima, E. T.; Faveret, P.; Paula, S. R. L. 'Logística para os agronegócios brasileiros, o que é realmente necessário'. BNDES Setorial, n. 12, 2000

**Logistic vectors for Brazilian spatial organisation (PNLT, 2009)**




VECTORS: Amazon; Mid-north; East; Upper northeast; Lower northeast; Mid-southeast; South

Some of the PNLT's construction projects that might benefit soybean in the Amazon vector include:

1) Construction of the transoceanic road, connecting the Atlantic to the Pacific, with investments estimated at 10.2 billion reais by 2023, of which 1.02 billion would be actually made by 2011. The railway would have 5,570 km when finished – 55% within the Amazon vector. It crossed Rio de Janeiro's northern coast, Muriaé (MG), Ipatinga (MG), Paracatu (MG), Brasília (DF), Uruaçu (GO), Cocalinho (MT), Ribeirão Cascalheira (MT), Lucas do Rio Verde (MT), Vilhena (RO), Porto Velho (RO), Rio Branco (AC), Cruzeiro do Sul (AC) and reaches Brazil's border with Peru.

2) On waterways, 4.9 billion reais shall be invested by 2023, to establish and improve navigation on rivers Acre (AC), Guamá-Capim (PA), Içá (AM), Juruá (AC), Madeira (RO), Negro (AM), Solimões (AM), and Teles Pires (MT).

3) Investments planned for ports amount to 1.01 billion reais by 2023, in enlargement and modernisation of the ports of Manaus (AM), Santarém (PA), Porto Velho (RO), and Cachoeira Rasteira (MT).

4) In the area of roads serving the soybean route, BR-163 shall receive nearly 2 billion reais in investments, while BR-242, in Mato Grosso, receives at least 460 million. Total investments in roads within the Amazon vector are estimated at 28.39 billion by 2023.

In the Mid-north vector, some important works for soybean agribusiness related to the Amazon include:

1) The North-South Railway, with investments planned at 3.74 billion reais and measuring 2,462 km. It crosses Belém (PA), Açailândia (MA), Porto Franco (MA), Estreito (MA), Araguaína (TO), Colinas do Tocantins (TO), Guaraí (TO), Porto Nacional (TO), Alvorada (TO), Porangatú (TO), Uruaçú (TO), Ouro Verde de Goiás (GO), Anápolis (GO), Rio Verde (GO), Aparecida do Taboado (MS), Santa Fé do Sul (SP), and Panorama (SP).

2) As for waterways, investments planned amount to 4.68 billion reais by 2023, with works in the Araguaia and Tocantins rivers.

3) Port infrastructure should receive investments in Santana (AP), with about 460 million reais, including the construction of a grain terminal, and Itaqui (MA), which will be modernised and expanded, with investments estimated at almost 2 billion.

4) As for the road structure, important points are investments of 400 million reais in BR-158 – crucial for transporting soybean in the area of Ribeirão Cascalheira (MT), and pavement of BR-080, which connects BR-158 to BR-163, whose investments are planned at 465 million reais.

The following maps, released by the National Logistics and Transportation Plan, indicate the potential of those new logistic corridors.

**Multimodal freights (general cargo, no ores) – 2007**

Fonte: Processamento PNLT

**Freights in 2023, with investments (general cargo, no ores)**


Transport modes: Cabotage; Pipeline; Railway; Waterway; Road
Amount (1000 tons/year)

***Infrastructure investments strengthen exports and cause risks of new impacts***

Investments in infrastructure made in 2010 and planned for 2011 in the Brazilian Amazon strengthen the main export corridors existing in the region, creating expectation of strong growth in local sales to other countries and for other soybean producer countries. While they will improve transportation and integration between towns and states in the region, those investments cause risks of new impacts on the Amazon or the increase of existing ones.

Exports through the port of São Luís (MA) will be increased by the expansion of the North-South Railway, whose 1,574 km between Açailândia (MA) and Anápolis (GO) received 1.89 billion reais in 2010. Resources were used mainly in the segment between Palmas (TO) and Anápolis and are related to investments made by mid-November 2010. Data were provided by VALEC, a federal government company linked to the Ministry of Transports that manages construction works on the railway.

In Açailândia, the North-South railway will connect to the Carajás railway, operated by Vale, one of the world's largest mining companies, in a region already facing major impacts resulting from mining activities in Pará. And in Anápolis, the North-South will connect to the Central Atlantic railway, strengthening grain production in Goiás. Later, the North-South shall be prolonged to Belém (PA) and in the south, to Porto Murtinho (MS).

Parallel to the North-South, further West, the Tocantins-Araguaia Waterway received investments of up to 33.6 million in 2010, according to the National Department for Transport Infrastructure (*Departamento Nacional de Infraestrutura de Transportes*, DNIT). That amount shall be increased nearly eightfold in 2011, when improvements in the waterway's navigation canal in the state of Pará will receive 253.6 million reais. The construction work raises concern for its impacts on the Araguaia and Tocantins river basins. The former is still reasonably preserved, and the latter is highly impacted by several hydroelectric plants built along its course.

Perspectives for growth in the soybean industry around the Tocantins and Araguaia rivers are also created by resources applied for paving the BR-158 federal road. In its Mato Grosso segment, from Ribeirão Cascalheira to the border with Pará, through Porto Alegre do Norte, BR-158 received investments of 120 million in 2010. From the total amount planned in the Federal Government's budget, 110 million reais had been committed by mid-November, and 15.2 million were actually used, according to DNIT.

Even though the towns mentioned are not major soybean producers, the region includes a strong hub of the grain – Querência – one of Mato Grosso's deforestation champions. If the relevant agencies and civil society do not enforce controls, the advancement of soybean in the region might increase impacts over the sources of the Xingu River. And the Maraiwatsede Indian Territory, with a large part occupied by soybean and cattle farmers, faces pressures that make it impossible for the Xavante people to live in their territories (see *Soybean's socio-environmental impacts in Mato Grosso*).

Another major construction work in the Amazon is the BR-163 road, one of the federal government's priorities in the region and a crucial link between Mato Grosso and Pará. The segment between Cuiabá (MT) and Santarém (PA) is also a core link to transport Mato Grosso's soybean production, leading to the Santarém port and then to Europe and other parts of the globe. In 2010, the federal government planned to invest about 530 million reais in the segments of BR-163 within Mato Grosso and Pará. By mid-November, according to DNIT, about 408.6 million reais had been committed and 114 million were actually spent.

In Santarém, Cargill's port is the main place to receive and load soybean that comes through BR-163. It faces lawsuits that challenge the environmental impact studies made for the port (see *Soybean's socio-environmental impacts in Pará*).

The federal government also intends to give about 5 million reais in 2011 for studies and projects related to the Teles Pires-Tapajós Waterway. Near that waterway, the government will build a series of hydroelectric plants in the region. After the construction of Belo Monte, in the Xingu River, in Altamira (PA), the basins of the Teles Pires (MT) and the Tapajós (PA) rivers should be the main target of investments and their respective impacts for energy generation in Amazon rivers.

The integration created by the aforementioned investments will be perceived not only in the regions mentioned and in trade to other continents, but it should also be strengthened in South America. A highlight is the project of Transcontinental Railway, which shall go from Rio de Janeiro's coastline to Brazil's border with Peru, in the state of Acre, with over 4.4 thousand km.

The Transcontinental Railway (EF-354) will start between the North-South Railway, in Campinorte (Goiás), and Lucas do Rio Verde (Mato Grosso). To build that first 1,040-km-long segment, the company in charge of construction, VALEC, will invest 4.1 billion reais from 2011 to 2014. The second segment planned will connect Lucas do Rio Verde to Vilhena (598 km), in Rondônia's south cone, with planned investments of 2.3 billion.

In that segment, the Transcontinental will be called The Midwest Integration Railway (*Ferrovia de Integração do Centro-Oeste*, FICO), and the federal government expects it to enhance production of grains, sugar, alcohol and meat. It is also expected to reduce costs of cargo, to open access to ports and to attract investments, thus creating jobs, income and better quality of life in Rondônia, Mato Grosso, Pará, and Amazonas.

Lucas do Rio Verde, an important soybean production hub in Mato Grosso, has areas typical of Cerrado, as well as the Amazon biome and transitional areas between them. And it has problems of destruction of native forest. The construction of EF-354, between Lucas and Vilhena – Rondônia's soybean hub – will certainly enhance local production of soybean and integration of its several facets between important regions of both states. Environmental and land impacts already found, for instance, around Vilhena (see *Soybean's socio-environmental impacts in Rondônia*), also tend to increase.

Major investments will also be made in BR-364 to enlarge communication channels between Mato Grosso, Rondônia, and Acre, and Brazil's Northeast, to neighbouring countries. That road is an important part of the main route between state capitals Cuiabá (MT), Porto Velho (RO) and Rio Branco (AC). In 2010, the federal budget included almost 800 million reais to be invested on the road in the three states. Out of that total, DNIT points out that 675.3 million had been committed and 444 million actually spent by mid-November.

Finally, the Madeira River Waterway is yet another focus for infrastructure projects in the Amazon, directly linked to soybean production. In 2011, the federal government intends to invest 14.3 million reais in that waterway. The venture shall bring important developments to integration between Brazil and Bolivia, Peru, Venezuela and later the Pacific Ocean, while substantially favouring transportation of grains along Amazon rivers towards the Atlantic, the USA and Europe.

The establishment of the waterway is directly related to the construction of major hydroelectric plants in the Madeira River, in Rondônia – Santo Antônio and Jirau. Both are being constructed in a frantic pace, raising concern about impacts on state capital Porto Velho and neighbouring towns. Besides chaotic growth, the two dams have displaced riverside populations from their traditional areas (sometimes with no proper compensation) and threaten several isolated indigenous peoples, among other important social and environmental impacts. Even slave labour was found in the dam's construction work, as denounced in reports by *Repórter Brasil News Agency*.

DNIT, in its report no. 18 (September 2010) published an article called 'Brazil and the Netherlands sign technical agreement to increment waterway transportation'. The article explains the Cooperation Agreement between the Federative Republic of Brazil and the Government of the Netherlands, underscoring that 'Interchange between technicians aims to integrate the

Dutch experience to Brazil's water potential'. That is another indication that governments of both countries have now convergent interests not only in enlarging cargo transportation on Brazilian rivers, but also in producing and exporting soybean and biodiesel made from it.

Cooperation between Brazilian and Dutch ministries of transports started at the Brazil-Netherlands International Seminar on Waterways, held in March 2009 in Brasília. There, Brazilian and Dutch transport authorities, especially related to inland navigation, as well as private enterprises from both countries, debated themes such as regulation and legal system for the use of waterways, monitoring, control, and implementation of waterway terminals, stability of navigation canals, among others.

# 7. Sugarcane: assessment of impacts resulting from expansion and Agro-ecological Zoning

***Introduction***

In recent years, sugarcane monitoring by government agencies and universities confirmed the expansion of the sugar-alcohol industry over areas previously occupied by other farming activities. However, debate is still going on over whether crop replacement has brought (or can bring) damages to food production and consequently threaten the country's food security.

According to the Ministry of Agriculture, despite the increase in the sugarcane area, grain productivity and/or harvests as a whole have remained stable and sometimes grown in recent years, which dismisses, so far, any impact on food production.

In Brazil's northern states (Roraima, Rondônia, Acre, Pará, Amazonas, Amapá and Tocantins), according to the November grain harvest survey by CONAB, the areas with plantations of rice, beans and corn remain the same between the 2009/10 and 2010/11 harvest. The soybean harvest saw a 3% increase this year (planted area increased in Roraima and Tocantins)

In 2010, CONAB stated that the largest increase in sugarcane area took place in São Paulo, Mato Grosso do Sul, Goiás and Minas Gerais. Besides, three new plants started their activities in Minas Gerais, two in São Paulo, two in Goiás and one in each of the states of Mato Grosso, Mato Grosso do Sul and Rio de Janeiro.

The table below shows a comparison of variations in percentage of area planted in the main sugarcane and grain producing states:

| State | Beans | corn | soybean | wheat | Rice |
|---|---|---|---|---|---|
| **Minas Gerais** | +1.4 | -1 | +0.5 | -1.3 | -5.8 |
| **São Paulo** | -13.6 | / | +3 | -27.7 | +16 |
| **Mato Grosso do Sul** | -1,7 | -3,1 | +1 | -9 | +0.5 |
| **Mato Grosso** | +2,1 | -0,1 | +1 | / | -25 |
| **Goiás** | +0.4 | / | +1 | -30 | -2 |

This year's sugarcane area is estimated at 8.1 million hectares in the country – a 10.2% increase over last harvest. São Paulo is still the largest producer, with 53.60% (4.3 million hec-

tares), followed by Minas Gerais, with 8.65% (706.58 thousand hectares), Paraná, with 7.51% (613.67 thousand hectares), Goiás, with 7.34% (599.31 thousand hectares), Alagoas, with 5.37% (438.57 thousand hectares), Mato Grosso do Sul, with 4.92% (401.81 thousand hectares) and Pernambuco with 4.21% (343.51 thousand hectares).

Despite being considered an exclusion area by the Agroecological Zoning, the Amazon presented an increase in areas occupied by soybean in Tocantins (3.638%) and Rondônia (33.9%). Mato Grosso's sugarcane increased 4%, and in Maranhão, partially included in the Legal Amazon, the increased was 15% (see below).

**Box 1 Sugar-alcohol products - Comparison by area, productivity, and output 2009/10 and 2010/11 harvests**

Quadro 1

PRODUTOS DA INDÚSTRIA SUCROALCOOLEIRA

COMPARATIVO DE ÁREA, PRODUTIVIDADE E PRODUÇÃO

SAFRAS 2009/10 e 2010/11

| REGIÃO/UF | ÁREA (Em mil ha) | | | PRODUTIVIDADE (Em kg/ha) | | | PRODUÇÃO (Em mil t) | | |
|---|---|---|---|---|---|---|---|---|---|
| | Safra 2009/10 | Safra 2010/11 | VAR. % | Safra 2009/10 | Safra 2010/11 | VAR. % | Safra 2009/10 | Safra 2010/11 | VAR. % |
| **NORTE** | **17,2** | **41,6** | **142,1** | **57.670** | **101.691** | **76,33** | **991,6** | **4.233,4** | **326,90** |
| RO | 1,8 | 2,4 | 33,9 | 63.000 | 64.000 | 1,60 | 111,3 | 151,0 | 35,70 |
| AM | 3,8 | 3,8 | (1,2) | 55.090 | 74.174 | 34,60 | 211,8 | 281,9 | 33,10 |
| PA | 10,9 | 9,9 | (9,2) | 57.193 | 65.750 | 15,00 | 623,4 | 650,9 | 4,40 |
| TO | 0,7 | 25,6 | 3.638,0 | 66.000 | 123.174 | 86,6 | 45,1 | 3.149,6 | 6.877,4 |
| **NORDESTE** | **1.082,6** | **1.107,1** | **2,3** | **56.049** | **57.516** | **2,60** | **60.677,2** | **63.678,8** | **4,90** |
| MA | 39,4 | 45,3 | 15,0 | 56.090 | 56.700 | 1,10 | 2.209,4 | 2.568,5 | 16,30 |
| PI | 13,6 | 13,2 | (3,0) | 74.600 | 66.300 | (11,10) | 1.014,0 | 874,5 | (13,80) |
| CE | 2,3 | 4,6 | 95,5 | 66.000 | 60.900 | (7,70) | 154,4 | 278,3 | 80,20 |
| RN | 67,0 | 68,7 | 2,5 | 51.799 | 48.900 | (5,60) | 3.472,5 | 3.359,9 | (3,20) |
| PB | 115,5 | 111,4 | (3,6) | 54.700 | 52.220 | (4,50) | 6.320,0 | 5.819,4 | (7,90) |
| PE | 321,4 | 343,5 | 6,9 | 55.400 | 53.525 | (3,40) | 17.805,6 | 18.386,4 | 3,30 |
| AL | 448,0 | 438,6 | (2,1) | 54.700 | 61.000 | 11,50 | 24.504,5 | 26.752,8 | 9,20 |
| SE | 37,9 | 38,3 | 1,0 | 59.360 | 59.100 | (0,40) | 2.249,7 | 2.262,3 | 0,60 |
| BA | 37,4 | 43,6 | 16,5 | 78.800 | 77.500 | (1,60) | 2.947,1 | 3.376,7 | 14,60 |
| **CENTRO-OESTE** | **940,3** | **1.212,2** | **28,9** | **82.354** | **83.037** | **0,83** | **77.435,9** | **100.655,7** | **30,00** |
| MT | 203,0 | 211,1 | 4,0 | 69.195 | 71.820 | 3,80 | 14.045,6 | 15.158,3 | 7,90 |
| MS | 265,4 | 401,8 | 51,4 | 87.785 | 85.300 | (2,80) | 23.297,8 | 34.274,4 | 47,10 |
| GO | 471,9 | 599,3 | 27,0 | 84.960 | 85.470 | 0,60 | 40.092,5 | 51.223,0 | 27,80 |
| **SUDESTE** | **4.832,6** | **5.191,1** | **7,4** | **86.881** | **83.618** | **(3,80)** | **419.857,7** | **434.068,6** | **3,40** |
| MG | 588,8 | 706,6 | 20,0 | 84.786 | 82.300 | (2,90) | 49.923,4 | 58.151,5 | 16,50 |
| ES | 68,0 | 69,7 | 2,5 | 58.933 | 49.900 | (15,30) | 4.009,6 | 3.480,0 | (13,20) |
| RJ | 45,8 | 37,1 | (19,0) | 71.126 | 68.000 | (4,40) | 3.260,0 | 2.524,8 | (22,60) |
| SP | 4.129,9 | 4.377,7 | 6,0 | 87.815 | 84.500 | (3,80) | 362.664,7 | 369.912,3 | 2,00 |
| **SUL** | **537,0** | **615,5** | **14,6** | **84.827** | **79.417** | **(6,40)** | **45.551,3** | **48.877,8** | **7,30** |
| PR | 536,0 | 613,7 | 14,5 | 84.900 | 79.500 | (6,40) | 45.502,8 | 48.786,8 | 7,20 |
| RS | 1,0 | 1,8 | 73,0 | 46.826 | 50.840 | 8,60 | 48,5 | 91,0 | 87,80 |
| **NORTE/NORDESTE** | **1.099,8** | **1.148,8** | **4,5** | **56.074** | **59.117** | **5,40** | **61.668,8** | **67.912,2** | **10,10** |
| **CENTRO-SUL** | **6.309,8** | **7.018,8** | **11,2** | **86.032** | **83.149** | **(3,40)** | **542.844,8** | **583.602,1** | **7,50** |
| **BRASIL** | **7.409,6** | **8.167,5** | **10,2** | **81.585** | **79.769** | **(2,20)** | **604.513,6** | **651.514,3** | **7,80** |

FONTE: CONAB - 2º Levantamento: Setembro de 2010.

Source: CONAB – second survey; September 2010.

***Sugarcane expansion over farming areas***

In the last four years, according to CONAB, the sugarcane area increased 4 million hectares. The agency's director for Agricultural Policy and Information Silvio Porto says that the current area corresponds to 20% of what is used by grain crops in the country, but we should pay attention to the fact that sugarcane is concentrated mainly in the states of São Paulo, Goiás, Mato Grosso do Sul, in the region known as Triângulo Mineiro and northwestern Paraná. That is, he underscores, it is important to bear in mind that this increase took place mainly in five states, precisely those among the country's major grain producers.

The view held by the government and the sugar-alcohol industry that sugarcane expansion will happen mainly on degraded pastures can be a future trend, but according to INPE's monitoring system CANASAT, in the states of Minas Gerais, Goiânia, Paraná, Mato Grosso do Sul, and Mato Grosso, food crops have lost the largest area to sugarcane in recent years (Mato Grosso also stands out for deforesting in order to plant sugarcane. São Paulo, which lost part of its citriculture area to sugarcane, is evaluated separately).

**2008 – Farming and forests areas replaced by sugarcane, in hectares**

| Activity | Minas Gerais | Goiás | Paraná | Mato Grosso do Sul | Mato Grosso |
|---|---|---|---|---|---|
| Agriculture | 91,959 | 108,072 | 55,159 | 38,908 | 17,761 |
| Cattle | 48,284 | 34,514 | 42,336 | 48,465 | 10,555 |
| Forests | 876 | 0 | 0 | 0 | 2,385 |
| **Total** | 141,190 | 143,255 | 97,719 | 87,434 | 30,735 |

**2007 - Farming and forests areas replaced by sugarcane, in hectares**

| Activity | Minas Gerais | Goiás | Paraná | Mato Grosso do Sul | Mato Grosso |
|---|---|---|---|---|---|
| Agriculture | 93,883 | 59,442 | 71,883 | 26,823 | 15,134 |
| Cattle | 25,656 | 25,703 | 35,039 | 18,395 | 8,440 |
| Forests | 739 | 0 | 0 | 1,119 | 1,892 |
| **Total** | 120,306 | 85,559 | 107,350 | 46,446 | 25,524 |

**Sugarcane expansion over farming and citriculture areas in São Paulo, in hectares**

| Year | Agriculture | Cattle | Citriculture | Total |
|---|---|---|---|---|
| 2008 | 268,633 | 371,262 | 19,919 | 661,969 |
| 2007 | 304,625 | 321,119 | 8,997 | 636,814 |

Source: Canasta/INPE

***Sugarcane Agroecological Zoning (AEZ)***

The Sugarcane AEZ – a technical reference that points to areas with better climate, rainfall and soil conditions for sugarcane plantations – was made official by Presidential Decree 6.961/2009 in April 2009. At the same time, the government turned the AEZ text into a Bill (6.077/2009), so that its provisions would be legally binding.

The highlights of the AEZ and the Bill include a ban on increasing sugarcane plantations and the establishment of new ethanol and sugar plants in the Amazon, Pantanal and the Upper Paraguay Basin; primary vegetation areas cannot be deforested to plant sugarcane; and the crop should not expand over land with declivity of 12% or above (where mechanisation is not feasible). Finally, new enterprises will have to obtain a certificate from the Ministry of Agriculture, Livestock and Supply stating that they pose no risk to the country's food security.

Those advancements deserve to be acknowledged. However, while Bill 6.077/2009 is not voted in the Chamber of Deputies and the Senate, its measures are only guidelines to grant rural and agroindustrial credit. But there is high risk of retrocession in Congress, since the

ruralist parliamentary group has already announced their intention of making drastic changes to the proposal.

The Bill, in turn, which was sent to Congress over a year ago, has not been appreciated by the Chamber of Deputies or the Senate, and that is not expected to occur in any foreseeable future. Until it happens, no AEZ environmental protection measure is legally binding.

However, even if Bill 6.077/2009 is approved with no changes and gets to be successfully implemented, with effective monitoring and control, it does not guarantee that the Amazon, Pantanal and the Upper Paraguay Basin are protected against agribusiness's negative impacts. That is because the expansion of sugarcane plantations, even over demarcated areas, will displace other farming activities to the zoning's exception areas. Besides, there is no real guarantee that the other biomes are protected from deforestation and contamination by pesticides. According to the AEZ, most areas considered apt for sugarcane expansion are located in that biome.

From the environmental perspective, when pointing out the potential of several regions for sugarcane, AEZ did not take into account the Ministry of the Environment's Map of Priority Areas for Conservation of Biodiversity, allowing places considered officially strategic for environmental conservation to be targeted by sugarcane monoculture. Furthermore, the Bill does not set restrictions for existing processing plants or for new projects that have obtained an environmental license in exception areas.

***Processing plants in exception areas***

The federal government's discourse on the Sugarcane Zoning is that Brazil can increase ethanol production without destroying Pantanal, the Upper Paraguay Basin and the Amazon. However, a series of ongoing sugar-alcohol enterprises in exception zones can become uncomfortable obstacles to that project.

Projects already established in the Amazon include: the Pagrisa processing plant, in Pará, where the largest liberation of slave labour to date in Brazil took place. In the state of Amazonas, the Jayoro processing plant in the paradisiacal region of Presidente Figueiredo, where there are over 100 waterfalls. And in Rondônia, the Boa Esperança processing plant is operating full-blown in Santa Luzia D'Oeste, an area of rich biodiversity.

There are projects approved in Roraima, Acre, Rondônia, Mato Grosso and Amazonas: Biocapital in Roraima, Álcool Verde in Acre, Curtpam in Cerejeiras and Santa Carmem in Rondônia, Bioenergia in Juara, Mato Grosso.

In Mato Grosso do Sul – a state that is within Pantanal and part of the Upper Paraguay Basin, according to the State Department for Agrarian Development, Production, Industry, Trade and Tourism (*Secretaria Estadual do Desenvolvimento Agrário, da Produção, da Indústria, do Comércio e do Turismo*, SEPROTUR), environmental licenses were under procedure for 69 processing companies, and 21 of them already had a license to establish their facilities.

***Expansion of sugarcane over farming activities***

Sugarcane expansion over areas already occupied by other farming activities is one of the aspects dealt with by the Bill on Sugarcane Agroecologic Zoning (AEZ). That is, seen as a potential threat to the country's food security, crop replacement led the federal government to suggest criteria for controlling it.

The Ministry of Agriculture and Livestock (MAPA) is in charge of granting licenses to replace farming areas with sugarcane, taking into account a national assessment about the impact of reducing those areas over the country's food security. That is, advancement of soybean over corn areas, for instance, will not take into account the local or state reality, but rather the nationwide production of corn.

In a prospective exercise – since the AEZ is above all a technical guideline for sugarcane – two aspects can be considered relevant in this scenario: the total impact of reduction in food production and the displacement of that production to sugarcane exclusion zones – Amazon, Upper Paraguay Basin, and Pantanal.

According to the AEZ, 34 million hectares now occupied by pasture and cattle – an area often degraded or underused due to the activity's low efficiency – can open space for sugarcane. That change, according to the government, could encourage investments in the increase of cattle productivity (cattle heads per hectare). However, considering the historical trend of the relationship between agricultural expansion and cattle, which has created increasing cattle occupation in the Amazon, for instance, there are no guarantees that such scenario will not deteriorate. Nowadays, the cattle industry occupies about 75 million hectares within the biome.

The same could happen with crops such as soybean (it already takes about 1.6 million hectares in the Amazon) and rice, which have also spread over sugarcane exclusion zones.

***Possible impacts of sugarcane expansion over farming areas***

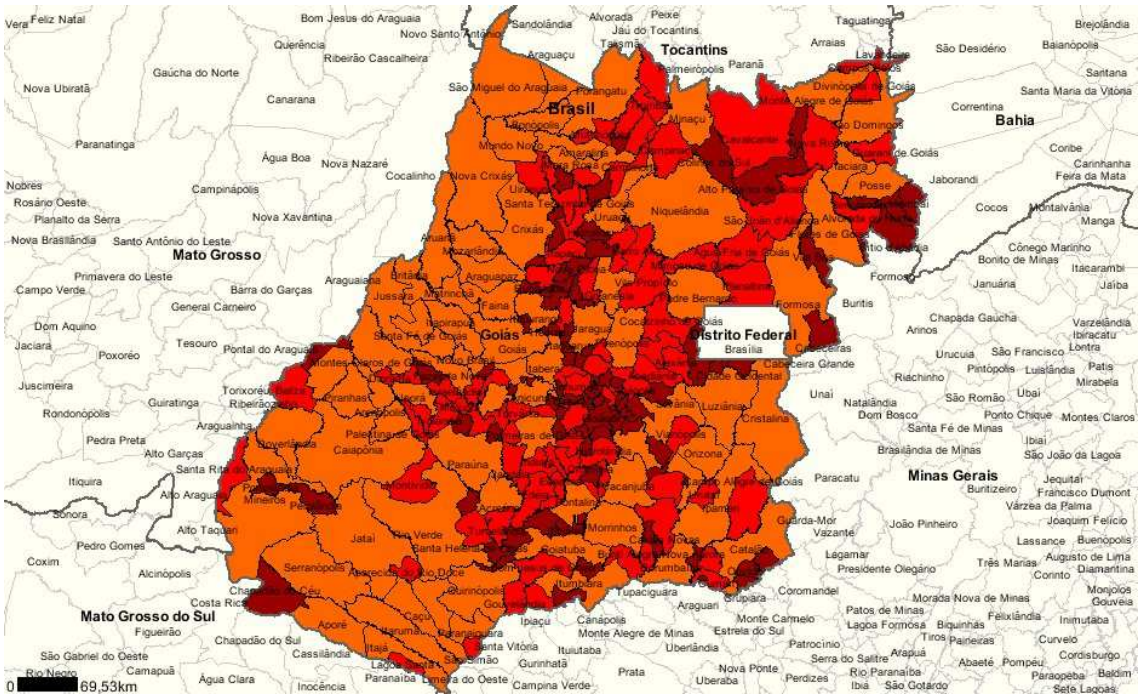
According to the AEZ, states with higher aptitude for sugarcane expansion are Goiás, Mato Grosso do Sul, São Paulo, Minas Gerais, and Paraná, as well as the part of Mato Grosso that is not included in the Legal Amazon.

Regarding cattle, the scenario in those states, according to surveys by the Brazilian Institute of Geography and Statistics (IBGE) in 2007, shows 20.4 cattle heads in Goiás, 25.6 million in Mato Grosso, 20 million in Mato Groso do Sul, 22.5 million in Minas Gerais, 13 million in São Paulo, and 10 million in Paraná.

In spite of AEZ projections that sugarcane shall preferably occupy degraded, low-production pastures, there are no national or state-wide data or surveys measuring the amount of areas in that situation. On the other hand, a comparison of AEZ maps to data from the cattle industry mapping provided by the Automatic Retrieval System (*Sistema IBGE de Recuperação Automática*, SIDRA) points out that pasture areas apt for sugarcane plantation cover towns with high cattle productivity.

Taking the state of Goiás as an example – it has 32 sugarcane companies in operation and 48 projects under way, 15 of which at their initial stage (preliminary analysis), 17 with preliminary licenses, and 16 with installation licenses – at the strip indicated by zoning as pasture area apt for sugarcane in the southern and south-eastern regions of the state (from Limeira do Oeste and Quirinópolis to Doverlândia, Caiapônia, and Piranhas), 2007 data from SIDRA point out the predominance of towns with high concentration of cattle (85-715 thousand heads). From the central region (Goiânia) to the northwest (Nova Crixás), concentration oscillates from medium (38-75 thousand heads) to high.

**Map of cattle production by town in Goiás**




| Variable = Cattle heads | | |
|---|---|---|
| **Year = 2007** | | |
| **Colour** | **From** | **Until** |
| | **620** | **37,000** |
| | **37,800** | **85,450** |
| | **85,890** | **715,350** |

Source: Sidra IBGE

As for food crop areas, a comparison between zoning maps and data from SIDRA on agricultural production shows that, where there are pasture areas, several towns have high production of food crops (1-50 thousand hectares). Taking once again the state of Goiás as an example, where the zoning map shows pasture areas in the southeast, north, centre and northeast regions, there are mainly towns with 1-50 thousand hectares of rice, according to SIDRA. Those with 1-50 thousand hectares of beans also occupy most of the region pointed out by zoning as agricultural in the towns of Jussara and Santa Fé de Goiás, Rio Verde, Santa Hele-

na, Jataí, Chapadão do Céu, Santa Rita do Araguaia, and Niquelândia. Towns with 1-50 thousand hectares of corn make up virtually all area indicated by the zoning as viable for sugarcane. Serranópolis, Itaruma, Quirinópolis, and Gouvelândia, as well as Caiapônia and the region known as Entorno de Goiás, said to be pastures, are in fact heavy corn producers. The towns with the same productivity for soybean, in turn, occupy virtually all the agricultural area pointed out as apt for sugarcane.

An identical scenario can be seen in towns of Mato Grosso, Mato grosso do Sul, Minas Gerais, São Paulo and Paraná.

According to CONAB manager for basic foods Wellington Teixeira, since plantation of sugarcane is directly related to the presence of processing plants – sugarcane grinding must take place right after cutting or at most within 36 hours – the surroundings of a company, regardless of its prior activity, will be turned into sugarcane plantations.

Since soybean production in recent harvests has increased steadily, as well as sugarcane's, the displacement of the crop is already under way, occupying family agriculture areas and creating impacts on more sensitive biomes. On the other hand, adopting a nationwide calculation to measure possible impacts of sugarcane on a food crop might considerably increase prices of crops that lose their areas, since transportation from distant places is one of the main costs included in final prices, says Teixeira. According to him, if it is confirmed that the AEZ points out highly productive farming areas to sugarcane, its aims will have been totally distorted.

***Indirect impacts***

It is still difficult to known whether or not sugarcane expansion in the southeast and midwest has pushed farming activities – particularly soybean and cattle – to other areas such as sugarcane-exclusion areas established by the Agroecological Zoning (Amazon, Pantanal, and Upper Paraguay Basin).

It is a fact that Brazil's North Region saw a 7.9% increase in the area planted with soybean in the 2009/2010 harvest compared to 2008/2009, and of 3% in 2010/2011, according to CONAB's latest grain production survey (November 2010).

According to IBGE's SIDRA, bovine cattle has also seen a significant increase in the North between 2007 and 2008, going from 37.8 million cattle heads to about 39.1 million. In the same period, the cattle industry in the Midwest saw a lower increase, from 68.08 million heads to 68.9 million; while in the Southeast, there was a reduction from 38.5 million heads, in 2007, to 37.8 million in 2008.

As has been said, sugarcane zoning is one of the tools within the government's strategy to stamp a 'green seal' on Brazilian ethanol before the world market, thus hindering deforesting, subtraction of native vegetation, and other impacts on sensitive areas and biomes. The cutting of native Forest in Mato Grosso to plant sugarcane has indeed diminished between 2007 and 2008 – a trend that should be strengthened in the next period.

However, it remains to be known whether environmental impacts will not be 'outsourced', as farming activities displaced by sugarcane migrate to exception zones, or even turn into subtraction of the vegetal cover of areas to be later converted into sugarcane plantations.

# 8. Negotiations of sustainability criteria

Besides the Soybean Moratorium (signed in 2006 between the Brazilian Association of Vegetal Oil Industries (*Associação Brasileira de Indústrias de Óleos Vegetais*, ABIOVE), their members (Cargill, Bunge, ADM, Amaggi), NGOs such as Greenpeace, TNC and WWF, and the Ministry of the Environment – and mentioned in the introduction to this report), which provides for boycott to soybean planted in areas deforested after 2006 or where slave labour has been found and which has already developed monitoring devices, two other forums have been debating socio-environmental impacts of soybean plantations.

After years of difficult negotiations, in 2009 some of the main initiatives for socio-environmental criteria in farming production involving companies and NGO representatives defined rules to make production models more sustainable. That is the case of the international round tables of Responsible Soy and Sustainable Biofuels and the nationwide Brazilian Initiative for the Creation of a Verification System for Farming Activities, ww.iniciativabrasileira.com.br.

By and large, the next step of each initiative is field testing criteria. The aim is to asses whether or not rules are feasible from the production point of view and if they meet sustainability aims for which they were created. That is carried out through pilot experiences. Later, they could be presented to the market as a certification option.

When implementing criteria, however, producers started to place obstacles to the advancement of the process. One of the first blows took place in May 2009, when the Association of Soybean Producers in the State of Mato Grosso (*Associação dos Produtores de Soja do Estado do Mato Grosso*, APROSOJA) left the Round Table of Responsible Soy (www.responsiblesoy.org) because it disagreed with restrictions approved to deforesting and expansion of the crop in the state.

The defection happened after eighteen months of work and three periods of public consultations to formulate rules about abiding by legislation, good business practices, responsible labour conditions, responsible relations to the community, environmental responsibility, and good agricultural practices. According to the guidelines approved, soybean could not be expanded during the field test period in areas deforested after May 2009.

A dissenting voice in a deforestation champion state, APROSOJA advocated the postponement of the debate. As a minority, it preferred to leave and was followed this year by ABIOVE, which also left the Round Table under the argument that proposals were very distant from producers' reality. Despite those casualties, Round Table organizers still believe in the initiative. In 2010, the challenge is to find soybean purchasers that accept to pay the extra costs on behalf of sustainability.

While the Round Table on Sustainable Soy advances – although at a slow pace – the same cannot be said of the Brazilian Initiative for the Creation of a Verification System for Farm-

ing Activities. In November last year, producers' representatives left the process saying that its governance model did not consider the group's opinions.

According to a letter signed by the Brazilian Agribusiness Association (*Associação Brasileira de Agribusiness*, ABAG), ABIOVE, Institute for Responsible Agribusiness (*Instituto para o Agronegócio Responsável*, ARES), Institute for Studies on International Trade and negotiations (*Instituto de Estudos do Comércio e Negociações Internacionais*, ICONE), Organization of Brazilian Co-operatives (*Organização das Cooperativas do Brasil*, OCB), Sugarcane Industry Association (*União da Indústria da Cana-de-Açúcar*, UNICA), and the Brazilian Rural Society (*Sociedade Rural Brasileira*, SRB), the coordinators of Brazilian Initiative presented to public consultation a set of principles and criteria including some items that had not been discussed by the group that gathers producers, environmental NGOs, and labour unions. The Initiative's executive-secretary is a member of NGO Friends of the Earth – Brazilian Amazon.

"It is important to ponder that construction of principles and criteria does not follow a clear decision-making parameter, which hampers the process' governance and transparency (...) the very participation of distinct stakeholders in meetings is not constant (...) Principles and criteria included in the 2nd version will cover only market niches, escaping one of the tenets mentioned in the Initiative's Mission, that is, creating principles and criteria focused on Brazil's production context", says the letter.

Next, the environmental and social sectors, of which Repórter Brasil is a member, sent a letter demanding explanations from producers: "The alleged disagreement with criteria discussed does not point out any specific case; neither does it mention any fact where some of them might have diverged from procedures resulting of discussions in the Working Group". So far there is no decision about the continuity of the process.

Still during the current harvest, the Round Table of Sustainable Fuel also had its troubles. In late 2009, member NGOs were already anxious to begin field testing the 12 agreed principles and criteria. But the biodiesel industry group, especially that segment linked to European companies, started to challenge the process' governance model and demand more representation. In order to solve the imbroglio, a commission was created to review internal decision procedures and changes. According to members linked to NGOs, however, the damage is already done and field tests might be delayed. If no new problems emerge, sustainable production rules are not expected to be evaluated before the end of this year or in early 2011.

In June 2010, RTRS held its fifth conference in São Paulo. Companies such as Cargill and ADM voted against its principles and criteria. Nevertheless, the conference agreed that from now on, producers adopting RTRS rules – including a ban on soybean planted in areas deforested after May 2009 – will be eligible for a seal already at the 2010/11 harvest. Then they will seek to gain market share or even an "award" from the industry because of that certification. In the case of Brazil, the May deadline allows the inclusion of the state of Mato Grosso, the country's largest producer and where farmers started taking over forest land decades ago. But it also prevents the crop from expanding over new frontiers, such as the states of Maranhão and Bahia. Transgenic soybean, one of the RTRS's most controversial points, will be certified, but it will also receive a seal distinguishing it from the conventional grain.

Short before the conference, a group of American and European NGOs and social movements released a letter with harsh criticism to RTRS, saying that "Industrial soy production has caused rampant social and environmental damage in South America, including habitat destruction, deforestation, destruction of local food production systems, degraded soil fertility, exposure of local people to toxic pesticides and the large scale displacement of local communities and small farming systems".

According to those organisations, one of the major problems is acceptance of transgenic soy, mainly because of increase in the use of pesticides related to that variety. "The continuous and indiscriminate application of herbicides resulting from the use of herbicide-resistant crops has severe impacts on the livelihoods and health of communities living around the soy fields. It has also accelerated the emergence of herbicide-resistant weeds, which are a serious problem across thousands of hectares of soy in the US, Argentina and Brazil".

The RTRS's decision to include transgenic soybean in negotiations about "responsibility" or "sustainability" have also generated strong criticism by Brazilian researchers and scientists. In september 2010, a group of nine researchers – including Paulo Brack and Paulo Kageyama, members of the National Biosafety Technical Commission (*Comissão Técnica Nacional de Biossegurança*, CTNBio) – published the study "Transgenic Soy: Sustentável? Responsável?"[13], a "summary of scientific evidence showing that transgenic soybean and glyphosate herbicide, which that soybean variety is engineered to tolerate, are unsustainable from the point of view of agricultural production, the environment, rural communities, human and animal health, and the economy".

According to the document, "In recent years, various bodies have entered the sustainability debate by attempting to define the production of genetically modified Roundup Ready® (GM RR) soy as sustainable and responsible. These include ISAAA, a GM industry-supported group; Plant Research International at Wageningen University, the Netherlands, which has issued a paper presenting the arguments for the sustainability of GM RR soy; the Round Table on Responsible Soy (RTRS), a multi-stakeholder forum with a membership including NGOs such as WWF and Solidaridad and multinational companies such as ADM, Bunge, Cargill, Monsanto, Syngenta, Shell, and BP. In sum, most benefits allegedly related to RR transgenic soy are either short-term (such as simplified and less toxic weed control), or unreal (higher productivity and less toxic weed control). Many of the promised benefits to farmers of GM crops, including GM RR soy, have not materialized. On the other hand, unexpected problems have arisen. The weight of evidence from scientific studies, documented reports, and field monitoring shows that both RR transgenic soy and glyphosate herbicide are destructive for agricultural systems, rural communities, ecosystems as well as human and animal health. The conclusion is that RR transgenic soy cannot be called sustainable or responsible".

# 9. Recommendation to the Dutch government

***Basic points to be observed:***
Social and environmental sustainability of export-oriented farming production is a core precondition for international trade to be a development vector in the country of origin. Sustain-

[13] http://www.gmwatch.org/files/GMsoy_Sust_Respons_FULL_POR_v2.pdf

ability is understood as a framework of practices and measures that, on the one hand, refrain from creating negative social, environmental, economic, labour-related and cultural impacts while fighting them; on the other hand, they propose and encourage positive impacts that benefit the environment, workers, local and regional economy, and society as a whole.

The primary (mandatory) reference for proper production practices are current legislations (on the environment, labour, land, as well as the very Constitution of Brazil, regarding the rights of traditional and indigenous communities or the social role of property, for instance).

Therefore, besides being unsustainable, activities or properties break the law if they:

- deforest illegally;
- break rules regarding Permanent Protection Areas (APPs) and Legal Reserves;
- produce transgenic crops in areas under influence of Conservation Units;
- use forbidden pesticides in plantations;
- contaminate water bodies, soil, and air;
- produce in grabbed land;
- invade or occupy area belonging to indigenous, *quilombola* and traditional communities;
- hire or use labour not in accordance to labour legislation;
- subject workers to degrading conditions;
- use slave labour;
- use child labour;
- evade duties (not retaining/paying INSS, FGTS, ICMS, etc).

Beyond legal rules, however, other points aiming at environmental preservation as well as social justice and wellbeing should be observed or encouraged by producers of commodities who seek to meet socio-environmental standards. They include:

- Avoiding production in areas with new deforestation in all biomes;
- Avoiding production of transgenic crops, even legalised ones, specially when there is risk of contaminating conventional or organic plantations;
- Avoiding overexploitation of water resources that may become scarce and insufficient for other activities and communities;
- Avoiding activities that might interfere in the wellbeing of traditional and indigenous communities, such as using pesticides near rivers that feed them, purchasing or expropriating their land, using precarious labour of those populations, etc;
- Recognising the rights of traditional and indigenous populations over their territories, including those under demarcation procedures;
- Recognising the final ownership and possession of the Union over land expropriated for land reform purposes;
- Recognising the right of workers to organise in labour unions;
- Not punishing social and labour leaders with dismissal;
- Encouraging participation by social organisations in the making of rural policies for Brazil.

***Recommendations on trade relations***

The most recurrent problems with soybean plantations in Brazil are deforestation, laws that are not followed regarding areas of environmental protection and Legal Reserve as well as labour legislation (slave labour and other rules), land related conflicts with indigenous and traditional populations and small farmers, land-grabbing, pesticide contamination of the environment and population, environment contamination by transgenic soy and overexploitation of water resources.

Also to be considered are impacts of construction works and infrastructure projects aimed at meeting demands of the farming industry, which might induce land-grabbing, deforestation, land disputes, and others problems.

Therefore, the Netherlands is advised to cancel all trade operations based on Cargill's grain port in Santarém, which has been illegally built and caused major social and environmental impacts, until a solution is found for the enterprise's environmental liability.

It is also recommended that any investment by the Dutch government in infrastructure for transporting soybean in Brazil (roads, railways, waterways, hydroelectric plants, ports, etc) be preceded by a deep study on potential social, environmental and land-related impacts as well as those on indigenous and traditional populations. A wide consultation should be conducted with civil society organizations working in the area in question. In case the project presents social environmental or land-related risks, refraining from any funding is recommended.

***Criteria***

The Netherlands is second only to China in soybean imports from Brazil. Given the importance of those trade relations, the Netherlands is advised to adopt social and environmental criteria that protect it from potential damage to its image and mainly from charges of encouraging illegal practices committed by Brazilian producers.

Mandatory social and environmental guarantees for the origin of products and the management of production chains constitute a current practice in ***Chain of Custody*** certification processes***, for instance***. Those devices aimed at the traceability of the whole process are widely used in certification of several products in world and Brazilian markets.

In Brazil, some state-driven devices list producers and properties convicted of environmental crimes and slave labour: IBAMA's list of embargoed areas, http://siscom.ibama.gov.br/geo_sicafi/, and the Ministry of Employment and Labour's "dirty list" of slave labour, http://www.mte.gov.br/trab_escravo/lista_suja.pdf, which should be the starting reference for sustainability criteria and be proposed to Brazil's market.

Ideally, criteria that can be proposed to Brazilian soybean's exporters might include points such as:

- Guaranteeing that soybean does not come from properties included in IBAMA's List of Embargoed Areas and in MTE's "Dirty List" of Slave labour;
- Guaranteeing that soybean does not come from a company, farm or producer that has been sued, according to the law, for *flagrante delicto* of slave, degrading or child labour;
- Guaranteeing that soybean does not come from a company, farm or producer that has debts related to INSS and FGTS of their employees;

- Guaranteeing that soybean does come from a property with a Certificate of Rural Estate Registration (*Certificado de Cadastro de Imóvel Rural*, CCIR), proof of dominion, or proof of possession origin, in order to avoid relations with producers in grabbed land;
- Guaranteeing that soybean comes from a property that has presented its environmental license in order to verify that environmental legislation has been followed;
- Guaranteeing that soybean comes from a property that has proved that it kept its Permanent Preservation Areas and Established the Legal Reserve, in order to verify that environmental legislation has been followed;
- As agreed by enterprises and trading companies at the Soybean Moratorium, not purchasing products related or responsible for deforestation in the Amazon and in Cerrado;
- Guaranteeing that soybean does not come from a company, farm or producer occupying indigenous or *quilombola* land under recognition procedures, as long as the anthropological study has been presented and the deadline to challenge it has passed.
- Guarantee that soybean does not come from a company, farm or producer occupying area under ownership litigation;
- Guaranteeing the possibility of immediately severing trade relations in case of illegal practices regarding environmental, land and labour-related laws.

***Proactive actions***

As one of Europe's most important economies, the Netherlands have a contribution to give to improving social and environmental conditions in Brazil's farming and rural sector through investment criteria. Besides refraining from investing in any infrastructure projects that pose threats of social, environmental and land-related impacts and impacts on indigenous and traditional populations, the Dutch government could adopt and support a series of policies that encourage regional development, social justice and Brazil's environmental sustainability, by sponsoring:

- Investments in research and projects aimed at developing technologies for small-scale and decentralised sustainable production that benefits low income localities and populations;
- Investments in job creation in regions and localities where slave or exploited workers came from.
- Policies and legislation enforcing the rights of indigenous and traditional populations;
- National and international measures or legislation against climate change;
- Measures and legislation to protect sensitive biomes, such as the Amazon, Pantanal and Cerrado/Caatinga;
- Investment in and sponsorship of organisations and social and environmental movements developing projects for environmental protection, income generation, social inclusion, as well as advocacy of human rights, labour rights, indigenous and *quilombola* population's rights, traditional populations and those victims of soybean impacts and infrastructure works for transporting production.

**São Paulo, December 2010**