



The Greens | European Free Alliance
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Trends and Risks of Deforestation in the Brazilian Amazon

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Contested former forestland in Santarem, Para, Brazil. The land is now controlled by a Brazilian soy farmer who migrated to the Amazon. The land is also claimed by nearby traditional communities.

Summary

This Study discusses deforestation trends and risks in the Brazilian Amazon. Despite a 71% reduction in annual deforestation between 2004-2016, deforestation in the Brazilian Amazon continues. Between 2012-2016, deforestation in the Brazilian Amazon increased 75% to 7989 km² in 2016. Much deforestation for agriculture (mainly cattle, also soy), as well as much logging remains illegal. These forest crimes are often associated with (serious) crimes such as violence and corruption. Some criminal networks can be considered as organized crime or white-collar crime. Since the 1970s, Infrastructural developments have been facilitating and driving deforestation. The newly planned Centre-North Corridor (CNC) is likely to cause more deforestation, crime, and conflicts.

Introduction

The Amazon forest, also known as one of the lungs of our planet, is under attack, again. Last summer there were many reports about the Brazilian government opening the RENCA natural reserve for mineral mining companies, a part of the forest as large as Denmark. And now this report points to a plan for a newly planned Infrastructure project called the Centre-North Corridor (CNC), which covers an area much bigger than RENCA natural reserve (for a map see page 10). This gigantic project concerns the planned construction of a complex soy transport corridor, a so-called multimodal and synchromodal transport system. In practice it will involve the construction of a network of railroads planned to cut through the Amazon Rainforest. The network is mainly planned in the state of Para. The infrastructure is needed to be able to transport the planned expansion of GM soy cultivation, towards mainly Europe and Asia.

This project is likely to cause more deforestation, crime, and conflicts. Logging and (illegal) land conversion regularly lead to (violent) disputes over land tenure. In the Brazilian Amazon it is quite common for loggers and farmers to hire gunmen to use violence, or threaten to do so, against people or communities when disagreements over land tenure occur. Since the late 1980s, more than **1,150 people have been killed** in the Brazilian Amazon in disputes related to land conflicts. Only 100 cases have gone to court. In the first 3 months of this year alone, there have been 17 murders registered in the state of Para connected to land conflicts. It is likely that these new plans will make matters worse.

It will increase the current level of Amazon deforestation of 20% to 30% or more, which can have drastic climate effects. If 30% to 40% of the forest cover of the Amazon were to be removed, scientists fear a tipping point is reached, which may push the Amazon into a permanently drier climate and even transform big parts into a savannah. As Tom Lovejoy, the internationally renowned Amazon scientist, stated in the Financial Times (20/9/2017) on what he considers to be the greatest threat to the Amazon: "The intersection between uncoordinated infrastructure and the hydrological cycle." It is widely accepted that these changing climate effects in Brazil could have effects on global climate phenomena.

Europe (and in this case particularly The Netherlands) are contributing to this in several ways. For example via (international) trade agreements (for example the Blair House agreement and the ongoing EU-Mercosur negotiations). But also the imported soy dependency of the livestock sector plays a huge role. Total EU protein crop production occupies only 3% of the Union's arable land, it supplies only 30% of the protein crops consumed as animal feed in the EU, with a trend over the past decade towards an increase in this deficit. Around 70% (45 million tonnes) of the protein crops consumed in the EU today, especially soy beans, are imported, mainly from

Brazil, Argentina and the USA, the bulk of them being used for animal feed. The Netherlands alone import 9 million tons of soy each year. These imports represent the equivalent of 20 million hectares cultivated outside the EU, or more than 10% of the EU's arable land, which in some countries has led to unsustainable farming on sensitive grassland and deforestation of rainforest areas, with negative effects such as soil erosion and the depletion of water resources and biodiversity. In other words, European consumers contribute via eating too much meat, that is being produced thanks to relatively cheap soy imports.

While the Brazilian government is planning (with a little help from European friends) new large scale destruction in the Amazon, there seems to be a growing awareness in the EU that this destructive production and consumption patterns need to be changed.

On July 23 2017 the European soya association Donau Soja announced that 14 EU agriculture ministers, including those of Italy, France, the Netherlands, Austria, Romania, and Finland, signed the European Soya Declaration spearheaded by Germany and Hungary: "The objective of the declaration is to take Europe one step closer towards the Sustainable Development Goals (SDGs) put into place by the United Nations (especially with regard to objectives 2 and 15). These focus on improving the world's food supply and using natural resources in a sustainable way. European agriculture has the potential to become more sustainable with the cultivation of protein plants such as soya, peas, and broad beans on European soil. At the moment, however, only a few farmers cultivate these so-called leguminous crops. With the signing of the European Soya Declaration, EU agriculture ministers are now calling for further cultivation of these nitrogen fixing plants."

In the meantime EU Commissioner for agriculture Phil Hogan has last week announced that "the Commission confirms its intent to review by December 2018 the supply and demand of protein crops and develop a strategy in an economically and environmentally sound way." And in December 2015 many governments signed the so called 'Amsterdam Declaration' which aims at "Eliminating Deforestation from Agricultural Commodity Chains with European Countries".

Indeed, we need to reconsider lifestyle changes, we need to make our production and consumption more healthy and sustainable. It is possible and there are alternatives. But to achieve that our governments should not only show political will, be consistent and start to deliver urgently.

Our collective contributing to the destruction of the Amazon should stop.

1. Discussing Deforestation in Brazil

This Policy Brief summarizes some of the recent as well as planned developments in the Brazilian Amazon with regard to deforestation and its drivers. The Brazilian Amazon forms two-third of the total Amazon Rainforest; by far the planet's largest tropical rainforest.¹ Around 80% of all deforestation in the Amazon occurred in Brazil. Of the Brazilian Amazon, around 19% has been deforested (762,979 km²);² a process that mainly started around 1970. This area corresponds to twice the size of Germany or Japan.

There are two images with regard to Brazil and the Amazon Rainforest. On the hand, Brazil and its Amazon Rainforest is known for the high illegal deforestation rates. Combined with the recent corruption scandals and political chaos, it represents a negative international image of Brazil.

There is also another, positive image of Brazil and its Amazon rainforest. It is the success story of Brazil in strongly reducing annual deforestation in the Amazon. For example, in a 2016 report for UNEP, the UN Environment Programme, it is stated that at national level, "perhaps the biggest single success achieved on combating environmental crime was the Brazilian sector wide Plan for Protection and Combating Deforestation in the Amazon (PPCDAM), reducing deforestation in the Amazon by 76% across only five years".³

Brazilian politicians and officials tends to emphasise Brazil's success in reducing deforestation. Their usual way of presenting Brazil's deforestation situation and policy is by focusing on the much smaller areas that are currently being deforested per year as compared to 2004, which was the year with the highest deforestation rate of the last two decades. In 2004, 27,772 km² of Amazon Rainforest disappeared in Brazil. (This corresponded to an area almost the size of Belgium, which is 30,000 km²). A Brazilian governmental website shows that deforestation between 2004 and 2016 decreased by 71%: from 27,772 km² in 2004 to 7989 km² in 2016.⁴

While the annual size of deforested rainforest in 2016 has indeed impressively decreased 71 per cent as compared to the peak year 2004, this is not the complete picture. A more accurate description is that annual deforestation in the Brazilian Amazon first decreased (very) substantially after 2004, but only until 2012, when deforestation started to increase again.

¹ The Amazon Basin is nearly twice the size (6.8 million km²) of the Congo Basin (3.7 million km²), the second largest river basin in the world M. Goulding et al. 2003. *The Smithsonian Atlas of the Amazon*. Washington & London: Smithsonian.

² A.D. Nobre. 2014. The Future Climate of Amazonia. Scientific Assessment Report. Articulação Regional Amazonica (ARA), São José dos Campos. Online at: http://www.ccst.inpe.br/wpcontent/uploads/2014/11/The_Future_Climate_of_Amazonia_Report.pdf.

³ C. Nellemann et al. 2016. *The Rise of Environmental Crime. A Growing Threat to Natural Resources, Peace, Development and Security. A UNEP-INTERPOL Rapid Response Assessment* (UNEP Norwegian Centre for Global Analyses), p. 12.

⁴ <http://www.mma.gov.br/mma-em-numeros/desmatamento> (website consulted on 29 June 2017).

Between 2012 and 2016, deforestation in the Brazilian Amazon increased 75% (from 4571 km² to 7989 km² in 2016).⁵ A more important question is that will happen in the (near) future, especially in context of infrastructural plans, such as the Centre-North Corridor (CNC).

This Policy Brief has a particularly focus on the Lower Amazon, such as the state of Para, which has developed into one of the **new deforestation frontlines** in the Amazon.⁶ The heart of the Amazon, along the Amazon River, has been increasingly affected by deforestation for cattle and soy, which is often combined with illegal timber exploitation and trade. In Para, an estimated 80% of all logging is illegal, as indicated a recent Policy Brief by INTERPOL.⁷ Para also has a notorious reputation in terms of violence and threats committed against environmental/land and human rights defenders.

The map in the following figure shows which parts of the Brazilian Amazon have been deforested. The (red) deforestation frontier has been steadily moving upwards.

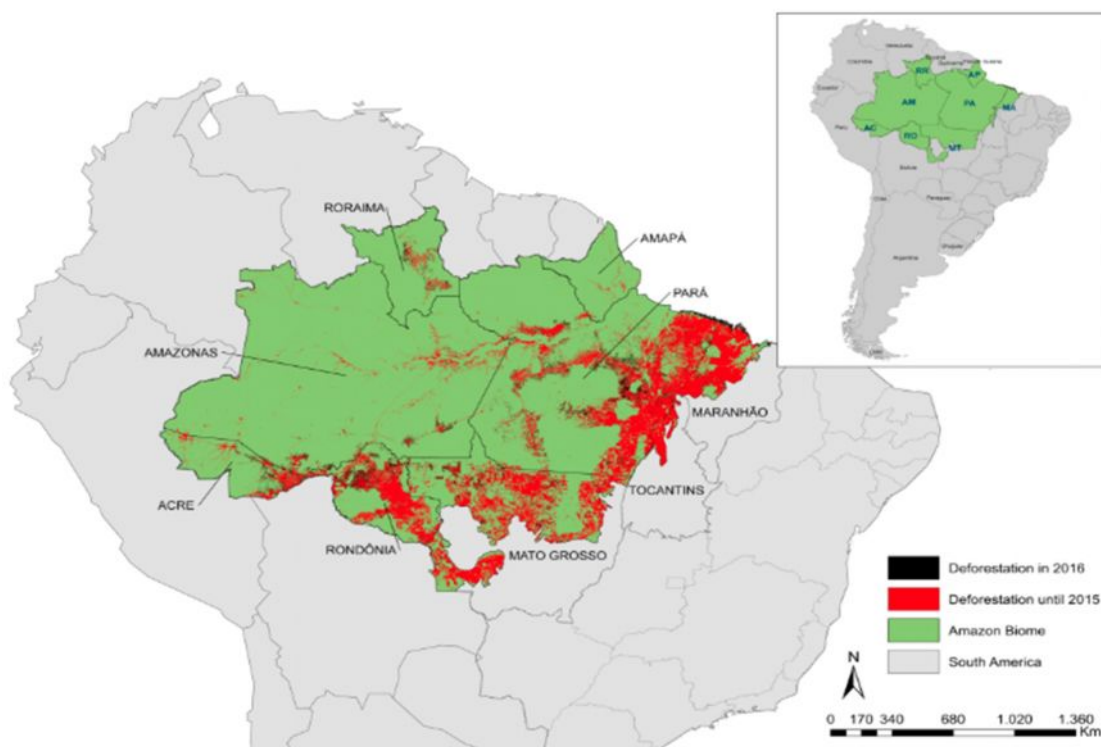


Figure 1: Amazon deforestation rates evolution from 2015-2016. (Source: PRODES 2016)

⁵ To be precise, the measurements of deforestation in Brazil are made in July and August. The most recent figure of a 29% increase in deforestation between 2015 and 2016 are thus based on the period August 2015-July 2016, as compared to the year before (August 2014-July 2015).

⁶ In order to know where recent deforestation is taking place (anywhere, not only in the Amazon) one can consult the interactive map of www.globalforestwatch.org, which allows for showing deforestation (trends) in recent years.

⁷ INTERPOL. 2017. *Project Leaf. Global Forestry Enforcement*, p. 12 (Lyon: INTERPOL)

2. Deforestation Trends

Large-scale deforestation in the Brazilian Amazon started in the 1970s. Loggers and (cattle) farmers were the first who started clearing forest on a large scale. A common method was that large land holders burned rainforest at the end of the dry season. Deforestation was facilitated and driven by the construction of two roads that would cut through the rain forest. During the late 1970s and early 1980s deforestation grew exponentially to annual forest loss of several tens of thousands of square kilometres.

1987 and 1988 were the worst years in terms of the size of deforested areas, as well as in terms of forest fires (over 350,000 in 1988). To some extent during the 1990s, but especially in the first few years after deforestation peak year 2004, Brazil managed to substantially reduce annual deforestation rates. Deforestation in the Brazilian Amazon decreased from 27,772 km² in 2004 to 4,571 km² in 2012.

But as mentioned, since 2012 there has been an increase again to 7,989 km² in 2016. This implies that in the period 2012-2016, deforestation in the Brazilian Amazon increased 75%.

In more detail, the deforestation trends in the Brazilian Amazon since the late 1980s have been as follows. Deforestation first slowed down until 1991 (11,030 km²), but then increased again to peak in 2004 (27,772 km²). After 2004 there was a gradual annual decrease in deforestation until 2012 (4,571 km²). Since 2012 however, deforestation has shown an (gradual) increase again.

While annual deforestation remained around 5,000 km² between 2012-2014, it increased to 6,207 km² in 2015 and to 7,989 km² in 2016. From 2014 to 2015 deforestation in the Brazilian Amazon increased 23%. From 2015 to 2016 it increased another 29%. So far, the decreasing trend seems to have been reversed around 2012. Since four years, deforestation in the Brazilian Amazon **is on the increase again**.

A general geographical trend that can be observed is that during the 1970s, deforestation started in the western part of the Brazilian Amazon such as the states of Acre and Rondônia. In general terms, the deforestation frontier has moved to the east and northeast, such as to the states of Mato Grosso and Para. During the last few years, **around 60% of all deforestation occurred in Mato Grosso and Para**. It is no coincidence that these two states are also states with high levels of violence against environmental and land defenders, such as documented by the Pastoral Land Commission CPT.⁸

⁸ The Pastoral Land Commission (Comissão Pastoral de Terra, CPT) is a well-respected NGO, affiliated to the Catholic Church. It also publishes yearly reports on violence and land conflicts in Brazil. For the 2016 report, see <https://www.cptnacional.org.br/index.php/publicacoes-2/destaque/3727-conflitos-no-campo-brasil-2016>

3. Causes and Crimes

Land conversion for creating cattle farms has been responsible for 70% of deforestation in the Brazilian Amazon (Malhi et al. 2008: 169).⁹ Around the turn of the century, a second agricultural activity was added as driving deforestation: the mechanized cultivation of soybeans. The soy is mainly destined for two markets in Asia and Europe where it is for the largest part used as animal feed. Brazil's soy production has grown impressively and soy export have become an important source of revenue for Brazil.

In the Brazilian Amazon, land conversion for cattle or soy is usually combined with, often illegal, exploitation of timber. For example, a timber trade first takes out valuable timber species out of an area before a large landholder sets fire to a piece of forest at the end of the dry season, the only period during the year when the forest is dry enough to burn.

It is generally acknowledged that most deforestation for agriculture (mostly for cattle or soy) was illegal at the time of deforestation.¹⁰ According to several estimates, **between 60% and 90% of all deforestation in the Brazilian Amazon was illegal**. However, Brazil's new Forest Code of 2012 granted amnesty to some illegal deforestation prior to 2008. This makes it difficult to say how much deforestation can now be considered illegal.¹¹

It is also generally acknowledged that most logging in the Brazilian Amazon is illegal. Brazil remains one of the world's main sources of illegal timber. The 2016 report of the Global Forest Expert Panel on Illegal Timber referred to the involvement of well-organized criminal timber networks in the Brazilian Amazon. Some of them can be considered organized crime networks.¹²

INTERPOL increasingly pays attention to timber and forest crimes, emphasizing that the global illicit trade in timber is worth between 51-152 billion.¹³ Eventually, most illegal timber ends up in the 'regular' timber business. INTERPOL estimates that corruption in the global timber represents around 30 billion.

Awareness about soy cultivation developing into being the second and more recent driver of deforestation in the Amazon is increasing. The role of soy in general however is much less known- than the role of palm oil (which is also increasingly grown in Brazil).

⁹ Y. Malhi, et al. 2008. Climate Change, Deforestation, and the Fate of the Amazon, *Science* 319 5860: 169-192.

¹⁰ For an overview of sources see S. Lawson & L. MacFaul. 2010. *Illegal Logging and Related Trade. Indicators of the Global Response* (London: Chatham House), or see S. Lawson. 2014. *Consumer Goods and Deforestation: An Analysis of the Extent and Nature of Illegality in Forest Conversion for Agriculture and Timber Plantations* (Washington: Forest Trends).

¹¹ S. Lawson. 2014. *Consumer Goods and Deforestation: An Analysis of the Extent and Nature of Illegality in Forest Conversion for Agriculture and Timber Plantations* (Washington: Forest Trends). T. Boekhout van Solinge. 2016. Deforestation in the Brazilian Amazon. In: *Biological and Environmental Hazards, Risks, and Disasters*, edited by R. Sivanpillai (Elsevier's Hazards and Disasters Series), 373-395.

¹² <http://www.iufro.org/science/gfep/illegal-timber-trade-rapid-response/report/>

¹³ <https://www.interpol.int/News-and-media/News/2017/N2017-082>

One can often hear or read that deforestation for soy in the Amazon would have (almost) stopped as a result of the soy moratorium. However, the study on which the alleged success of the soy moratorium is based, published in *Science*, only considered deforestation in so-called primary rainforest.¹⁴ It did not look at deforestation in other (secondary) rainforest.

Combined with the fact that direct deforestation of secondary forest has been observed at various locations in the Amazon Region,¹⁵ it is likely that the increase in deforestation in recent years is also explained by continued land conversion for soy.

While the creation of cattle farms has been, by far, the main cause of deforestation, the role of meat production as a driver of deforestation in the Amazon is not so much discussed as compared to timber trade. Brazil's cattle herd, which in numbers now is larger than Brazil's human population, has especially expanded in the Amazon. There is no doubt that much of the expansion of cattle farms was illegal. Much of it was however de facto decriminalised with the new forest code of 2012.

The recent JBS Scandal of contaminated meat exports from Brazil (which was consequently banned by the EU) led to increased media attention for what is known as the world's largest meat company. While the contaminated meat issue got by far most media attention, not much attention was given the fact that Brazil's Federal Environmental Inspection Agency IBAMA had started looking into the suppliers of JBS in connection to illegal deforestation in Para.

In an article of 12 March 2017, it is stated that JBS, the world's largest meat company, has some 70,000 suppliers. "Of those, 40,000 are in the Amazon. There's a difficulty, however, in that parts of the region are connected to cattle industry-linked deforestation".¹⁶ On 31 March 2017 it was reported by Reuters that JBS became target of an investigation by IBAMA, which alleged that "JBS has for years knowingly bought cattle that were raised on illegally deforested land, turning a blind eye to regulations meant to protect the Amazon rainforest".¹⁷

A recent series of article on Mongabay highlights issues from the Amazon, and explains well the mechanism of deforestation, land grabbing for agriculture.¹⁸

¹⁴ H.K. Gibbs et al. 2015. Brazil's soy moratorium. Supply-chain governance is needed to avoid deforestation. *Science* 347 (6220), 377. Gibbs informed the author of this Policy Brief that her team only looked at what they defined as primary forest. Hence, their study does not say anything about deforestation for soy in general, such as outside so-called primary forest (a concept which is a subject of scientific discussion, especially forests like the Amazon which are inhabited by humans for so long).

¹⁵ T. Boekhout van Solinge. 2014. Researching illegal logging and deforestation. *International of Justice, Crime and Social Democracy* 3 (2), pp. 35-48.

¹⁶ <http://brazzil.com/cattle-industry-is-big-driver-of-amazon-deforestation-but-is-doing-little-to-change-this/> (published 12 March 2017, consulted 25 June 2017).

¹⁷ <http://www.reuters.com/article/us-brazil-environment-cattle-idUSKBN172201>

¹⁸ See e.g. <https://news.mongabay.com/2017/03/crime-and-not-enough-punishment-amazon-thieves-keep-stolen-public-land/>

A Violent Deforestation Frontier

Logging and (illegal) land conversion regularly lead to (violent) disputes over land tenure. In the Brazilian Amazon, Brazil's 'Wild West', it is quite common for loggers and farmers to hire *pistoleiros* (gunmen) to use violence, or threaten to do so, against people or communities when disagreements over land tenure occur. Violence or threats by hired *pistoleiros* is usually directed towards community leaders.

Since the late 1980s, more than **1,150 people have been killed** in the Brazilian Amazon in disputes related to land conflicts. Only 100 cases have gone to court. While 80 hired gunmen have been convicted, only 15 people who ordered killings have faced charges. In Brazil's Pará state alone, **772 human rights and forest activists have been murdered** between 1971 and 2004. Only three of their killers were brought to trial. Many people are also living with fear under the threat of murder.

The report *Deadly Environment* by Global Witness (2014) showed that worldwide, 900 environmental or land defenders were killed in one decade. About half (448) of those identified murders occurred in Brazil. These murders are concentrated in the Brazilian Amazon, and particularly the states of Para and Mato Grosso stand out as being particularly violent. It is no coincidence that these are the Brazilian states which, for several years, also have the highest deforestation rates (of the nine Brazilian states that are found in the Amazon biome). Global Witness (2014) noted that 25 years after the murder of Chico Mendes, **Brazil is the most dangerous place to be an environmental and land defender.**

The concept of frontier helps to understand some of the violence in the Amazon. The frontier is a notion that mostly known of the American Frontier, the westward expansion and settlement in North America by European settlers. The American Frontier was particularly violent during the 19th century, when the frontier of European settlers collided with the original, indigenous population, the first Americans.

Today, a frontier can be observed in the Amazon. It is the general northward expansion and encroachment of 'development' based on deforestation. Brazilians from regions outside the Amazon settlers as colonists into the Amazon and 'develop' the land. From a dominant Brazilian perspective, they turn the relatively and seemingly 'unproductive' rainforest into 'productive' agricultural land.

As the Amazon Region is inhabited by many people, this encroachment of agricultural 'development' in the Amazon region, often driven and dominated by Brazilians of European descent, meets resistance by the human populations who were already living in the Amazon region. In total some 25 million people are living in the Brazilian Amazon region alone.

5. Deforestation, Climate and Droughts?

Today, almost 20% percent of Amazonia has been deforested. If 30% to 40% of the forest cover of the Amazon were to be removed, scientists fear a tipping point is reached which may push the Amazon into a permanently drier climate (Verweij et al. 2007: 32).¹⁹

It is possible that Brazil is already experiencing some of these negative consequences of Amazon forest loss. In 2014 and 2015, serious water crises occurred as a result of unusual low rainfall. The droughts led to a scientific and public debate about the possible causes. One study, by Antonio Nobre of Brazil's Centre for Earth Systems Science, was often mentioned in Brazil's (social) media. Nobre argues that deforestation in the Amazon is a major cause of the droughts. He bases his argument partly on the theory of the biotic pump of Makarieva and Gorshkov, according to which land with extended natural forests, which have high levels of evaporation, attracts much more moisture from the sea than land without these forests.²⁰

The rain that falls in the Amazon is brought by clouds from the Atlantic, carried by eastern winds. Of all the rain that falls in the Amazon region, only 41% of it eventually makes it to the sea; 59% of it is recycled back into the atmosphere through evapotranspiration (Goulding et al., 2003, 24). Nobre applies the theory of biotic pump of Makarieva and Gorshkov (2007) to the Amazon Rainforest: clouds from the Atlantic Ocean bring rain to the eastern Amazon, and this water is consequently recycled back through evapotranspiration several times before reaching the western Amazon, and afterwards other, southern parts of the continent. In this sense, the eastern Amazon represents the first phase of a series of water cycles of the Amazonian water pump. From this perspective, especially deforestation in the eastern and Lower Amazon could have serious and long-term repercussions for (a) much larger area(s).

Much deforestation over the last years has been taken on the eastern side of the Amazon, in the states Para and Mato Grosso. There are indeed indications that the Amazon is drier than it used to be as a result of less rain (see Hilker et al., 2014).²¹

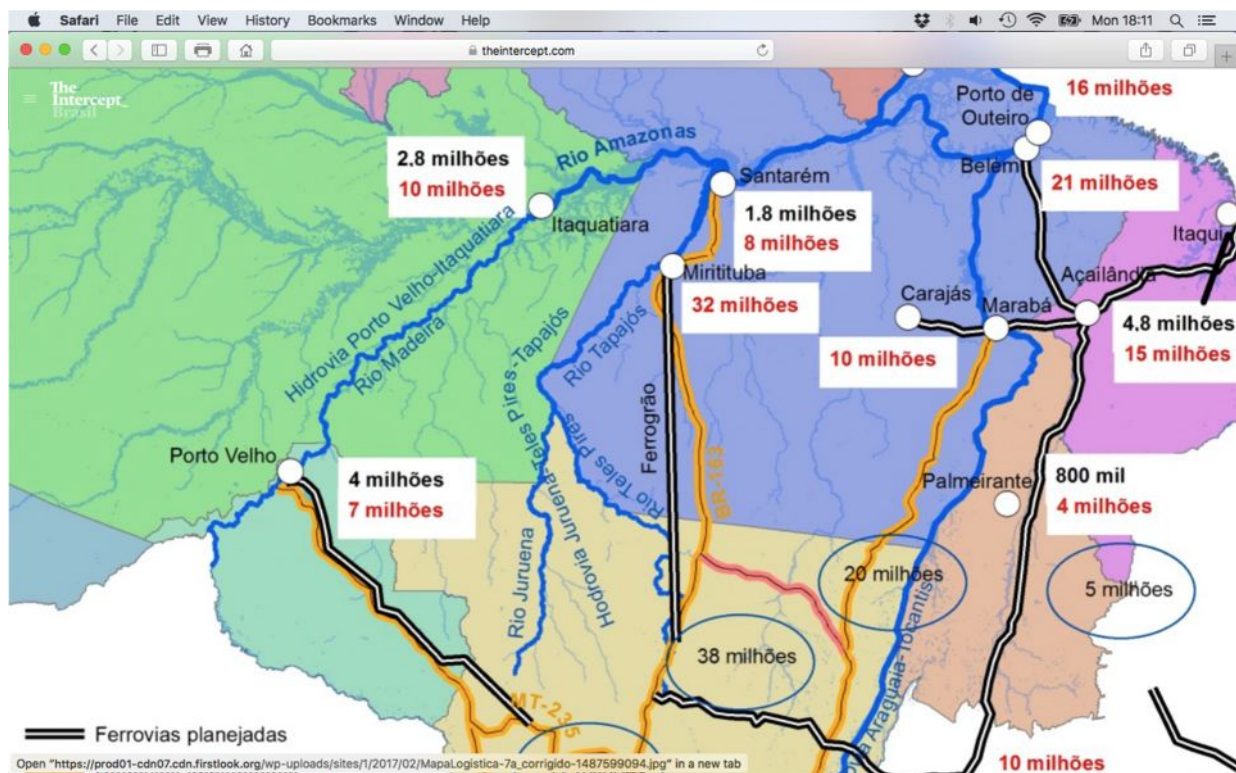
¹⁹ Verweij et al. 2007), *Keeping the Amazon Forests standing: a matter of values* (Zeist: WWF Netherlands).

²⁰ A.D. Nobre, A.D., 2014. The Future Climate of Amazonia. Scientific Assessment Report (Ibidem); A.M. Makarieva & V.G. Gorshkov. 2007. Biotic pump of atmospheric moisture as driver of the hydrological cycle on land. *Hydrol. Earth Syst. Sci.* 11, 1013e1033.

²¹ T. Hilker et al. 2014. Vegetation dynamics and rainfall sensitivity of the Amazon. *Proc. Natl. Acad. Sci. U.S.A.* 111 (45), 16041e16046. <http://dx.doi.org/10.1073/pnas.1404870111>.

4. Soy Trains through the Amazon?

Since a few years, preparations are underway for the construction of a new infrastructure through the Amazon, the so-called *Corridor Norte*, or **Centro-Norte Corridor** (CNC). It concerns the planned construction of a complex soy transport corridor, a so-called multimodal and synchromodal transport systems. In practice it will involve the construction of a network of railroads planned to cut through the Amazon Rainforest. The network is mainly planned in the state of Para (see screenshot from article in footnote).²²



The Corridor Norte is aimed to getting soy, mainly produced in landlocked central Brazil, to reach one of the many planned ports on the Amazon River, its tributaries, and sea. From the Amazon River, ships with soy can directly reach their destination markets in China and Europe (where it is mainly used to feed farm animals).

Dutch state and private actors are aware of their expertise and experience (e.g. port of Rotterdam, HvA, PIB, etc.) in the relevant field of so-called multimodal and synchromodal transport systems.²³

²² A map of the planned soy corridor can be found in a recent article on Mongabay.

<https://news.mongabay.com/2017/02/getting-there-the-rush-to-turn-the-amazon-into-a-soy-transport-corridor>

²³ <https://www.nederlandwereldwijd.nl/landen/brazilie/nieuws/2015/07/02/handelsmissie-transportsector-noord-brazilie>

In 2013, a Dutch Partnership for International Business (PIB) was formed for multi and synchro-modal corridors in Brazil. The involved partners were, besides the **Dutch Ministry of Foreign Trade and Development Cooperation**: Panteia, TNO, EICB, STC-GROUP, and connect (available on request). It appears that the Dutch consortium produced reports for the Brazilian Ministry of Infrastructure. In 2015, Dutch state officials and agencies started to publicly promote Dutch business interest for the soy corridor.²⁴ In 2016-2017, Dutch and Brazilian officials exchanged views about possible collaborations for the soy corridor. Studies for the Brazilian government (Ministry of Infrastructure) were prepared by members of the PIB.

The CNC will involve a network of trains, ports, and hydro-electric dams (sometimes for making rivers navigable for sea ships). Considering the influence of infrastructure on forested landscapes, a large infrastructural investment such as this corridor is likely to have various negative impacts, most directly on forests and biodiversity, as well as on various traditional and riparian communities. It will lead to a further encroachment of the Frontier in especially Para state, which has a human population of ten million.

Today, most deforestation and logging is illegal in Para state. Para has a notorious reputation as a conflict state, where the rule of law is weak. Large infrastructural developments such as a soy transport railroad network are most likely to lead to environmental degradation, deforestation, and more human rights violations.

The challenges are big however, as several strong commercial and institutional key players are involved in the process, from ABCD companies - the four dominant agricultural trading firms (ADM, Bunge, Cargill and Louis-Dreyfus) have a long history dating back to the 1800s and early 1900s - to countries and construction and engineering companies that are ready to make a contribution to a huge and potentially destructive infrastructural project in the Amazon.

²⁴ Ibidem; <https://twitter.com/hanpetersbrasil/status/616664021215936513>

5. Future prospects

What is the prospect for the (near) future? What can be predicted for the next year(s)? Is it possible to notice a policy change or change of practice that may suggest that the current upward tendency will be reversed?

The agricultural lobby, the most powerful lobby in Brazilian politics, is quite content with the Temer Presidency and with “soy king” and former Governor of Mato Grosso, Blairo Maggi, as Federal Minister of Agriculture.²⁵

In a sense, Brazil’s economic development model has been based on an agricultural model that inherently implied deforestation. A Brazilian point of view is that in order to compete on the global market with (subsidized) agricultural products from Europe and North America, Brazil has to use its relatively unused forested landscapes.

With annual deforestation figures rising, the pressure is on Brazil, especially with Norway which agreed to pay a billion dollar in exchange for reduced deforestation^{26 27}. In June 2017, Norway has threatened the Brazilian government to ask back some of the money²⁸.

In the context of economic recession and political crisis, IBAMA, Brazil’s Environmental Protection Agency, has been experiencing serious budget cuts. It makes some of IBAMA’s law enforcement teams relatively weakly equipped against illegal logging networks and illegal land conversion for cattle or soy. A recent *New York Times* article mentions that since 2013, IBAMA’s budget was slashed by about 46 per cent.²⁹

As no substantial new policy (measures) have been implemented, it cannot be expected that the current trend of increased deforestation, will be reversed. It can actually not be excluded that the deforestation will rise again as in the late 80ies.

²⁵ See also <http://www.reuters.com/article/us-brazil-indigenouspeople-idUSKCN18C2UM>

²⁶ <https://www.regjeringen.no/globalassets/departementene/kld/kos/colombia-joint-press-release-cop21-003.pdf>

²⁷ <https://www.tnp.no/norway/panorama/5084-norway-pays-one-billion-dollar-to-brazil-for-reduced-deforestation-in-the-amazon>

²⁸ <https://www.theguardian.com/environment/2017/jun/22/norway-issues-1bn-threat-brazil-rising-amazon-destruction>

²⁹ See the large article in the *New York Times*. <https://www.nytimes.com/2017/04/06/world/americas/special-ops-with-a-studious-bent-fight-destruction-of-brazils-amazon.html>