Expansion of the Brazilian pulp industry

Impacts and risks

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By Merel van der Mark and Mandy Haggith (EPN Pulp Finance Working Group members)

merel_vandermark@yahoo.com and hag@environmentalpaper.eu

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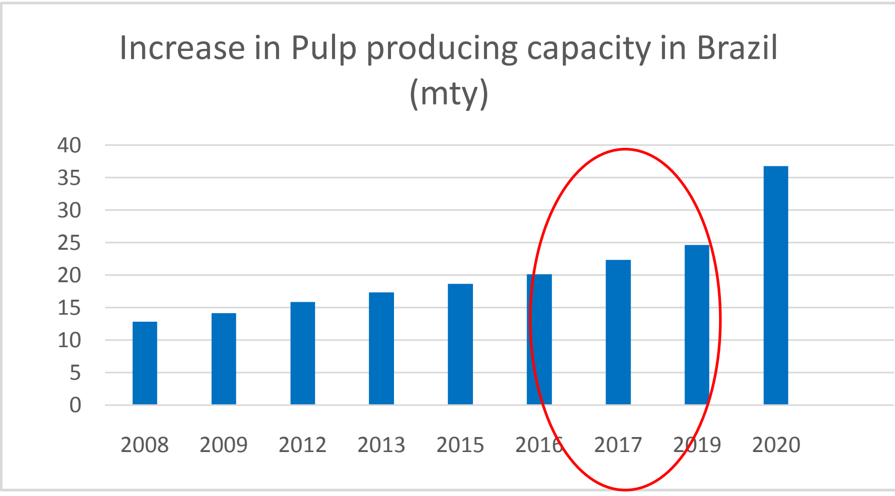
Brazil's production of pulp for paper is growing faster than any other country's. This is a summary of key data and insights into the risks and impacts of this expansion. It draws on a longer, fully-referenced document, available on request from the EPN (Contact hag@environmentalpaper.eu).

Pulp mills can cause significant social and environmental impacts, on the one hand because they require large areas of plantations to feed the mills, and on the other hand because of the chemicals used in the production of pulp. In September 2015, at the FAO XIV World Forestry Congress, EPN published the report *Mapping Pulp Mill Expansion – Risks and Recommendations*.[1] That report provided an overview of worldwide planned pulp mill expansion and it pointed out the possible impacts of these projects on endangered habitats, the environment and local communities. It also provided recommendations for producers, investors, policy makers and large volume paper buyers or retailers who are concerned about climate and deforestation risks.



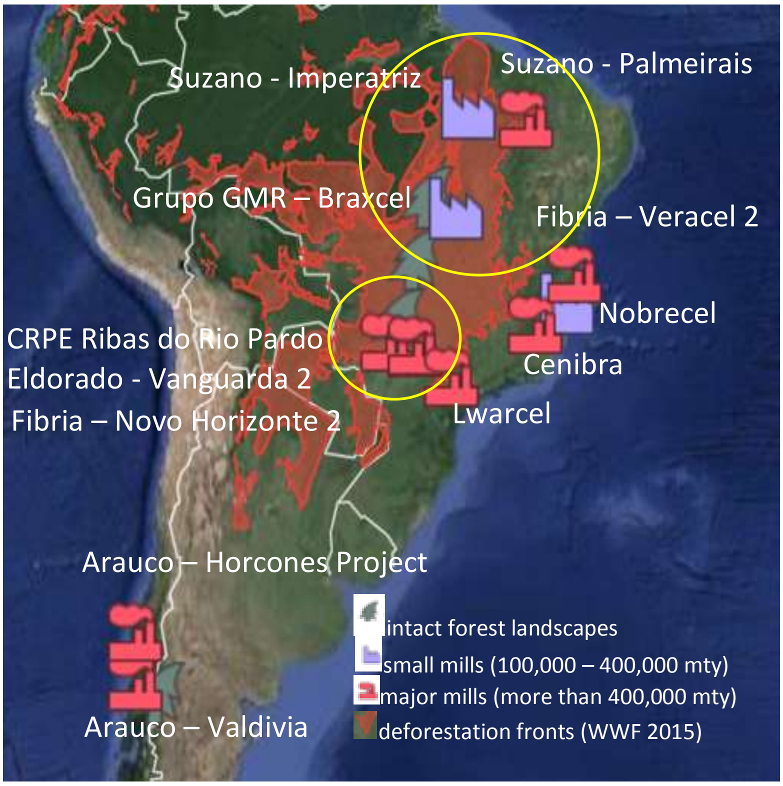
The report also showed that Brazil is the country with the largest expansion rate in pulp producing capacity.Latin America's planned pulp expansion represents around 30% of the worldwide expected capacity increase, and most of this is in Brazil. Over the last 8 years Brazil has increased its capacity by, on average, one million tonnes every year, and it is expected to continue at this rate or higher until 2019. In 2014 it was the world's fourth largest producer of pulp for paper worldwide (behind China, USA and Canada), producing 9% of the world's total production, the majority (64%) of which is exported.

In 2016, Brazil's capacity was more than 20 million tonnes/year, and it had 11 pulp mills with a capacity of more than 1 million tonnes/year. Currently there are two new lines under construction, which will become operational between 2017-2019, adding another 4 million tonnes of capacity.

According to Bracelpa, the Brazilian Association of Pulp and Paper, 100% of Brazil's pulp is made from trees from plantations. The vast majority is made from eucalyptus (86%), and the remaining 14% is made from pinus. An estimated 63% of the plantations are FSC certified. In 2014, Brazil had 9.36 million ha of tree plantations, of which 74% were eucalyptus plantations, 22% were pinus plantations and the remaining 4% were species like rubber and teak.

Eucalyptus trees grow extremely fast in Brazil, being ready for harvest in 5-7 years. This makes Brazil a very popular country for the expansion of the pulp industry. Furthermore, the industry can count on generous funding by the country's development bank, the BNDES. In recent years the pulp industry has become BNDES's prime sector for investment. In addition to this there are tax cuts, in some cases exemptions of the obligation to make Environmental Impact Assessments for plantations, and a parliamentary front that supports silviculture and is determined to loosen up the rules for the sector.

Pulp mill expansion plans - 2016



Economical context

The pulp sector is one of the commodity sectors least affected by the economic crisis in Brazil. Like many of Brazil's commodity sectors, it is largely focused on export and its success has been in part due to the Real's 33% plunge in 2014, a growing demand for pulp, especially from China, higher international pulp prices, as well as low production cost. However, this scenario has started to change since the beginning of 2016 when the Real has regained value. This was mostly related to the increasing certainty that Dilma would be impeached, seen by many investors as a way out of the country's crisis. However, by November 2016, both Fibira and Suzano's shares had lost around 30% of their value, over the previous year, mainly due to the devaluation of the US Dollar.

2015 was generally profitable for Brazil's pulp companies. Fibria had a net income of R$1.89 billion, Suzano of R$0.96 billion and Klabin of R$0.55 billion. Nevertheless, the sector has gone through rough times. Suzano has been heavily indebted for years and Fibria has had a huge debt since it was created from the merger of the troubled Aracruz with Votorantin. The entry of new players on the scene, and the recent construction of new pulp lines, has also put pressure on existing companies. Several projects have been cancelled because of the risk of creating overcapacity.

As creating new capacity may seem economically non-viable at this point, there are rumours that companies might be looking into mergers, in order to grow in other ways. One of the most speculated about is a possible fusion of Fibria, either with Eldorado or with Suzano. Another clear trend is that companies are looking into the diversification of their products in order to become less dependent on the pulp market, including research into biofuels and bioplastics.

As Brazil's economy depends for a large part on the export of commodities, there is a lot of governmental support for the pulp and paper sector, which represents around 4.5% of Brazil's GDP. Part of this support is financial and there is also legislative support, to simplify the licensing process for eucalyptus plantations. The state of Mato Grosso do Sul has already changed its environmental legislation to exempt eucalyptus plantations from environmental licensing. In December 2014, the government launched its Policy to promote Planted Forests, which provides a package of support measures for the industry.In April 2015, the national Biosafety Commission approved the commercial production of Genetically Engineered trees, on Suzano's request.

Public Funding

The government finances the pulp sector through different means. It has provided billions of Reais in the form of loans from the BNDES, it has provided companies with credit through Regional Development Funds like SUDECO, and it invests in these companies through the pension funds of major national companies like Banco do Brasil (Previ), Petrobras (Petros) and the Caixa (Funcef).

Between 2002 and September 2015, the BNDES has provided R$28 billion in credit to the pulp sector. Klabin and Suzano were clear favourites, but Fibria, CMPC, Eldorado and Veracel also received considerable amounts. Almost half of this amount went to the five new mills that came online in the past 7 years: Klabin/Puma, Suzano/Imperatriz, Fibria/Horizonte 1, CMPC/Guaíba and Eldorado/Vanguarda 1. Together, these mills have added a capacity of 7.3 million tonnes/year, which has made Brazil the world's fourth largest producer.

As well as providing credit, the BNDES also holds shares in companies through BNDESPar. In 2015, the pulp and paper sector was the largest sector in its portfolio, representing 20% of its investments. The investment is concentrated in only three companies: Fibria, Suzano and Klabin. BNDESPar owns almost 30% of Fibria,

Social and Environmental Context

In the EPN report *Mapping Pulp Mill Expansion*, several risks were listed regarding the impacts and conflicts that pulp mills can cause. Some of the more prominent conflicts and issues in Brazil concern landgrabbing, labour and migrant issues , lack of transparency of fibre sourcing, pesticides and chemicals, and genetically engineered (GE) trees (Brazil was the second country in the world, after China, to allow the commercial use of GE trees).

In Brazil, social opposition to pulp mill companies tends to focus on the impacts caused by the plantations that feed the mill rather than on the pollution caused by the mill itself. Landgrabbing is the major cause of conflict especially when it involves indigenous or quilombola (African origin) communities, or landless farmers. Examples of these are conflicts between Fibria and local communities in Esprito Santo and Bahia and conflicts caused by Suzano's plantations in Maranhão. But there is also a more general opposition to a development model that is based on 'green deserts' – intensive monocultures which have strong negative impacts on biodiversity, require the use of a high level of toxic chemicals and deplete and pollute water sources and soils.

There are several reports of complaints about bad working conditions in the pulp sector. This is specially the case for employees of third parties. Outsourced companies seem to employ around 75% of the people working for the mills or the associated plantations. Labour laws get stricter the higher the number of employees, so it is an advantage to have several smaller companies, in order to escape these regulations.

In 2003 a group of social and environmental organizations from 16 Latin American countries created the network RECOMA (Latin American Network Against Tree Monocultures) to work together on campaigns against tree plantations. Some important voices of protest in Brazil are the MST, World Rainforest Movement, Reporter Brasil, CPT, CIMI and the Forum Carajás. Of course the hardest battle is fought by the communities on the ground, unfortunately sometimes with the loss of life.

Expansion frontiers

The table below provides a list of Brazilian pulp mills, including their expansion projects and the projects that seem to be on hold or cancelled. It is based on information from Bracelpa and some other sources. It is an attempt to list all pulp producing mills in Brazil, but it may well be incomplete.

Pulp mills in Brazil						
Company	**Mill Name**	**City**	**UF**	**Capacity of mill (mT/y)**	**Total of Existing Capacity of company**	**Status**
Fibria	Horizonte 1	Três Lagoas	MS	1.30	**5.25**	Operating
		Aracruz	ES	2.30		Operating
		Jacarei	SP	1.10		Operating
	Veracel (50%)	Eunápolis	BA	0.55		Operating
	Horizonte 2	Três Lagoas	MS	1.75		Under construction
	Veracel 2 (50%)	Eunápolis	BA	0.7 -1.0		Postponed till 2017
Suzano	Limeira	Limeira	SP	0.34	**3.42**	Operating
		Suzano	SP	0.04		Operating
	Bahia Sul	Mucurí	BA	1.54		Operating
		Imperatriz	MA	1.50		Operating
		Imperatriz	MA	0.22		Under construction?
		Palmeirais	PI	1.50		Cancelled / Postponed
Klabin		Correia Pinto	SC	0.17	**3.09**	Operating
		Otacilio Costa	SC	0.32		Operating
	Monte Alegre	Telemaco Borba	PR	1.10		Operating
	Projeto Puma	Ortigueira	PR	1.50		Operating
CMPC	Guaíba 1	Guaíba	RS	0.45	**1.75**	Operating
	Guaíba 2	Guaíba	RS	1.30		Operating
Eldorado	Vanguarda 1	Três Lagoas	MS	1.70	**1.70**	Operating
	Vanguarda 2	Três Lagoas	MS	2.3		Under construction
CRPE		Ribas do Rio Pardo	MS	2.20	**0.00**	Looking for funding
Cenibra		Belo Oriente	MG	1.20	**1.20**	Operating
		Belo Oriente	MG	1.20		Looking for funding
IP		Luiz Antonio	SP	0.41	**0.81**	Operating
		Mogi Guacu	SP	0.40		Operating
Stora Enso	Veracel (50% of 1,1)	Eunápolis	BA	0.55	**0.55**	Operating
	Veracel 2 (50%)	Eunápolis	BA	0.7 -1.0		Postponed till 2017
BSC / Bahia Pulp		Camacari	BA	0.46	**0.49**	Operating
Jari		Monte Dourado	AP	0.35	**0.35**	Operating
Lwarcel		LencoisPaulista	SP	0.25	**0.25**	Operating
		LencoisPaulista	SP	0.75		Planning phase.
Cocepelco/Nobrecel		Pindamonhangaba	SP	?	**?**	Close to bankruptcy?
Rigesa		Três Barras	SC	0.21	**0.21**	Operating
Trombini Embalagens					**0.38**	Operating
Celulose Irani		Vargem Bonita	**SC**		**0.31**	Operating
Adami		Caçador	**SC**	?	**0.19**	Operating
Papeles Bio bio		Pisa	PR	?	**0.19**	Operating
		Arapoti	PR	0.185		Operating
Iguaçu Celulose		Piauí do Sul	PR	?	**?**	Operating
		Frei Rogerio	SA	?		Operating
Primo Tedesco		Caçador	**SC**	?	**?**	Operating
Eco Brasil Florestas	Araguaína	Araguaína	TO	1.50		Sold plantations
Braxcel		Peixes	TO	2		Postponed till 2021
Portucel Soporcel	Sta Rita do Pardo e Bataguassu		MS	1,50		Cancelled
TOTAL					**20.13**	

Brazil's pulp mills have traditionally been established in the south and south east of the country, close to the coast line. This is generally the most industrialised region of Brazil, it is close to export ports and it is a region of fertile lands. However, expansion possibilities are becoming limited in this area and therefore companies are exploring new regions. The two main focus areas for new expansions are the east of Mato Grosso do Sul and the eastern Amazonian frontier. Both regions are relatively poor which makes land and labour cheap and politicians eager to attract investments. Organized civil society is weak in both regions, which could explain why there has been relatively little protest to the expansion of the pulp mill industry on those areas. But a lack of protest should not be mistaken for a lack of risks and impacts.

Três Lagoas region

Três Lagoas is referred to as "the world's pulp metropolis". By 2019, this region will have gone in just 10 years from producing no pulp at all to having a capacity of 7.25 mty. In 2009 Fibria inaugurated its first 1.2 mty pulp mill in Três Lagoas. Three years later, Eldorado added 1.5 mty of capacity when it inaugurated a mill just 50km upstream from Fibria's. Then both companies announced expansion plans which would more than double their initial capacity and which will come online in 2017 (Fibria) and in 2019 (Eldorado). On top of this, an ex-director of Eldorado created a third company, CRPE, and announced plans to build a fifth mill just 200km to the west. This will add another 2.2 mty capacity to the region, and could come online in the early 2020s, bringing the region's total capacity to almost 10 mty.

These pulp mills require roughly 100,000ha of eucalyptus plantations for every million tonnes of installed capacity and to increase economic viability, they should be planted as close as possible to the mills. This means that there will be a high concentration of eucalyptus plantations in the Três Lagoas region. Mato Grosso do Sul went from having some 150,000ha of plantations in 2007 to 886,000 ha of eucalyptus plantatiosn at the end of 2014, according to Brazil's Statistics Institute IBGE. It is expected to reach 1 million hectares in 2017. This expansion has huge impacts on biodiversity, the quality of the soil and the availability of water. Large amounts of pesticides and fertilizers are also used in these plantations, sometimes by aerial spraying, affecting the environment, the health of people living nearby and the biological agricultural plots. Apart from this, the establishment of these plantations causes a rural exodus, because there is little land left for small scale farmers, and very few jobs are created in the plantations.

The **cumulative impacts of these plantations** are not taken into account during the licensing process. In fact, not even the impacts of the plantations required for each individual mill are taken into account, because the state of Mato Gross has exempted the establishment of plantations on "degraded lands" from requiring Environmental Impact Assessments (EIA). The argument is that they will prevent erosion and help fight climate change. But exempting them from an EIA means that there is no analysis if these claims are indeed real nor on how big the other impacts are that are caused by the plantations. Analysis is needed of the **indirect deforestation** caused by the establishment of the plantations, as it inevitably displaces the cattle sector, possibly to regions that still have natural vegetation. Between 2012 and 2014, cattle ranchers have filed requests to deforest over 76,000 ha in the Pantanal.

Adding to the lack of impact assessments, there is also a **lack of transparency regarding fibre sourcing**. No maps are available for the farms from which the companies source their wood. FSC only publishes a list of the names of the farms, but does not specify their location. The environmental state agency is required by law to publish the georeferenced maps of all farms located within the state, but it has so far failed to do so. This makes it impossible for civil society to control whether environmental legislation is complied with, including the conservation of 20% of each property and the protection of waterways.

Analysis is needed of the **cumulative impacts of 5 large pulp mills in the same hydrographic basins.** The mills of Fibria and Eldorado will discharge directly on the Paraná river, and CRPE will discharge on a small subsidiary of the Paraná river. All mills use, or will use, ECF technology, which is a method of bleaching that does not use elemental chlorine, but does use chlorinated products and does release dioxins into the environment. Dioxin, even when released in miniscule amounts, bioaccumulates as it moves up the food chain, reaching its highest concentration in humans, where it is increasingly linked to cancers as well as endocrine, reproductive, nervous and immune system damage.

As these mills will discharge in a river that flows through several states, and therefore impact more than one state, they should be law be licensed by the federal environmental licensing organ, Ibama. However, this did not happen, as they have all been **licensed irregularly** by the state agency of Mato Grosso do Sul. Furthermore, none of the EIAs for any of the 5 mills are publicly available on the internet and only a summary of the EIAs for the three newest mills can be found.

Workers that operate harvesting machines say there were fired once they started to campaign for better working conditions and teachers at the federal university say they were intimidated both by colleagues and by local government officials, when they pointed outthe impacts of the pulp mill expansion in the region. They were also denied access to the pulp mills to conduct research. Furthermore, the election campaign of the present mayor was funded by the pulp mill companies. Adding this to the fact that there are few job opportunities in the region, this context gives impacted people the feeling that there is no point in protesting, as their concerns will not be heard.

Eastern Amazon/ Cerrado region

Another new area of expansion for the pulp industry is the northeast of Brazil, where the Amazon biome transits into the Cerrado. Suzano was the first company to inaugurate a mill in this area, in 2015, located in Imperatriz (state of Maranhão). It had plans for at least one other mill in the region, in Palmeirais (state of Piauí) and possibly a third one in the east of Maranhão, where it has large plantations, although the latest plan was to build a biofuel mill there. Also two other companies, Braxcel and Eco Brasil had plans to build large mills in this region, both in the state of Tocantins.

Although these new plans all seem to be on hold at the moment, or even cancelled, the region is very attractive for the expansion of the pulp sector as it is a traditionally poor region where land is still relatively cheap. Like the Três Lagoas region, local and regional governments are eager to attract investments and offer large tax cuts. The federal government is also investing heavily in the development of the region's infrastructure, which makes it more attractive for companies to settle there. But unlike the Três Lagoas region, the region is densely populated by rural communities.

Many of these communities are Quilombos, descendants from slaves, who settled here more than a century ago. These and other communities generally have been using their land in a communual way for generations, but often don't have land titles. Due to the general lack of a good central registration system of land titles, **landgrabbing** is a very common practice in this region. Pulp companies run a large risk of getting involved in landgrabbing when they buy land and do not thoroughly check the origin of the papers. This has already created strong conflicts between local communities and Suzano, in the east of the state of Maranhão, where it has many plantations.

Like in the Três Lagoas case, there is **a lack of transparency in the source** of fibre for the pulp mill. The company does not provide maps of where it sources from, and the state authorities do not make georeferenced maps available, as they should by law.

There is also a **lack of transparency in the licensing process, as the EIA is not public**, and like in Três Lagoas, the license was provided by the state authority rather than by the federal authority, even though this mill impacts several states. It also directly impacts three indigenous territories, located on the river Tocantins, down stream from the mill. No **Free Prior and Informed Consent** was obtained from these communities. Suzano is now expanding the capacity of its mill beyond the capacity for which it obtained a license.

Analysis is needed of the **indirect deforestation** caused by Suzano's purchase of plantations that were initially planted for the steel industry. If the demand for steel rises, steel companies will need more timber and might resore to using native forest, or setting up plantations in new areas, which might push the deforestation frontier further into the Amazon.

There is an additional concern regarding Suzano's mill, as the company could start planting Genetically Engineered trees here. In 2015 it was the first company to obtain an authorization to **use GE eucalyptu**s commercially. As with the introduction of all alien species into an environment, it is unknown what the impactsof GE trees will be. Since it seems to be manipulated to enhance growth, it is likely that the GE trees will use more water than the non-GE trees, which is problematic in regions plagued by droughts.

Companies

1 Fibria

Fibria is the world's largest producer of eucalyptus pulp, with a capacity of 5.25 million tonnes/year. It's a Brazilian company which was formed in 2009 from Votorantim Celulose e Papel's bailout of Aracruz Celulose SA. Aracruz Florestal was created in 1968 by Erling Sven Lorentzen, who is married to the Norwegian princess Ragnhild. Aracruz Celulose was established in 1972, with Lorentzen as CEO. Fibria owns three and a half pulp mills: one in Aracruz (ES), one in Jacareí (SP), one in Três Lagoas (MS) and it owns 50% of the Veracel mill in Eunápolis (BA), in a joint venture with Stora Enso. It has 568,000 ha of eucalyptus plantations.

In a joint venture with Cenibra, in which it holds 51% of the shares, it operates Brazils' first specialised port for cellulose exports: Portocel, in Aracruz (ES). International Paper has a long term contract with Fibria's Três Lagoas mill, in which Fibria supplies IP's paper mill in Três Lagoas with liquid pulp through a pipe that connects the two companies.

In 2016 Fibria requested approval for a GE tree test field of 40ha, located close to its mill in Três Lagoas. Fibria has been doing research into GE eucalyptus trees since the 1990s and since 2011 it has started field trials. There are many social conflicts around the land used for its plantations.

Fibria is currently building a second pulp line in Três Lagoas, with a capacity of 1.95 million tonnes/year, expected to come online in 2017. The new pulp line will require 174,000 ha of eucalyptus plantations. Fibria will invest R$8.7billion in the new line. This will be financed with public money from BNDES and from the Midwest Development Fund (FDCO). Fibria has also, for the first time, emitted Agribusiness Receivables Certificates, worth R$ 675 million. In September it secured a syndicated Export Prepayment Facility Agreement (EPFA) worth USD 400 million on the international market. It also obtained a US$ 300 million facility from the Finnish export credit agency Finnvera (Finland), which finances equipment acquisitions in the country. In September 2016 local media reported Fibria might built a third mill in Três Lagoas or elsewhere.

There is also a plan to expand the existing Veracel mill (co-owned with Stora Enso) with a new pulp line that will add an additional capacity of 1.5 million tonnes/year. There have been talks about this project for years.The Veracel mill has been involved in a long standing conflict with the Pataxó Indians.

2 Suzano

Suzano is the world's second largest producer of eucalyptus pulp, with a capacity of 3.42 million tonnes/year. It's a Brazilian company which was founded in 1924 by Leon Feffer. Suzano owns four pulp mills, one in Limeira (SP), one in Suzano (SP), one in Mucurí (BA) and one in Imperatriz (MA). It In 2010 it bought FuturaGene, a UK biotechnology company, which has labs in China and Israel and has been doing research on transgenic eucalyptus since 2001.Between 2012 and 2014, Suzano got heavily indebted and had a low productivity rate.Of the almost R$ 6.6 billion in direct loans that the BNDES provided Suzano with between 2002 and 2015, very significant parts went to the mill in

Mucurí and the new mill in Imperatriz. Suzano has 1,094,000ha of land, of which 550,000ha are plantations and 463,000ha are protected areas, in São Paulo, Bahia, Espírito Santo, Minas Gerais, Piauí, Tocantins, Pará and Maranhão.

Its expansion plans include the expansion of its plantations base and the expansion of its pulp capacity in Imperatriz. In November 2016 Suzano announced it had bought 75,000ha, partially already planted with eucalyptus, to feed its Imperatriz mill. The total project is estimated to cost R$ 1.6 billion and it is planned to come online at the end of 2017. With this expansion project Suzano's total pulp and paper capacity would increase to 5.1 million tonnes/year.

In 2011 Suzano presented plans to build three pellets plants in the Baixo Parnaíba region, in the state of Maranhão. The three plants would each have a capacity of 1 million tonnes/year.

In Baixo Parnaíba Suzano is involved in several land conflicts. Many land titles have been obtained in fraudulent ways, they lack maps, often overlap with other land titles and hardly ever take into account that there are communities living on the lands. One estimate holds that around 70% of Suzano's land in the region results from landgrabs. In Paui, communities also complain that since Suzano has bought large pieces of land, they have lost access to the river and native forest, and there are problems with erosion and large scale use of agrotoxics.

3 Klabin

Klabin is a pulp and paper company ant it's the biggest paper producer, exporter and recycler in Brazil. It has a pulp capacity of 3.09 million tonnes/year. It has 15 industrial units in Brazil, the two biggest in Parana.Klabin is controlled by the Klabin family, who own more than 50% of the shares. It has no known expansion plans, following opening in 2016 of its newest and biggest mill, Puma, located in Ortigueira, in the state of Paraná, with a capacity of 1.5 million tonnes/year. Klabin has 493,800ha of land.Klabin was the first company in the southern hemisphere to obtain FSC certification, in 1998. All its plantations are certified.

4 Eldorado

Eldorado is a Brazilian company with a pulp capacity of 1.7 million tonnes/year, created in 2010 by Grupo J&F, a holding that owns JBS, the world's largest meat processing company. Its industrial complex and its plantations are located in and around Três Lagoas, in the state of Mato Grosso do Sul. Only 10% of Eldorado's production is sold in Brazil. Asia is the biggest market.

Eldorado started to build its first pulp line (Vanguarda) in 2010 and it was inaugurated in 2012. The pulp mill is located in Três Lagoas, on the Paraná river.In 2014 Eldorado obtained a licence for the Vanguarda 2.0 mill, with a capacity of 2.3 million tonnes/year, putting Eldorado's total capacity at 4 million tonnes/year. It is planned to come online at the end of 2018and is expected to cost R$ 8 billion.30% will be financed by its own capital and the other 70% will be financed by long term loans. BNDES is likely to finance up to R$ 1.8 billion. In 2014 Eldorado reported to have 374,000ha of land. Over 200.000 ha of new plantations will be required to feed the new pulp line and for that Eldorado plans to plant 50.000ha/year between 2015 and 2018. The land required for new plantations will be bought or hired from cattle ranchers. Due to a lack of nearby fibres, Eldorado seems already to have been sourcing from faraway places. Local union leaders say that working conditions are worse at Eldorado than at Fibria and there are complaints about labour rights.

Brazil's anti-corruption investigators are looking into alleged wrongdoing by 4 state pension funds involving Eldorado Brasil. According to prosecutors, Eldorado might have inflated the company's value, in collusion with fund managers and at the expense of the funds' investors.

5 CRPE

Celulose Rio Pardense e Energia is a new company that aims to build a pulp mill with a capacity of 2.2 million tonnes/year. It was set up in 2013 by the financial firm BTG Pactual and Márcio Celso Lopes, former director from Eldorado.CRPE is facing financial difficulties which have delayed the launch of the construction of the new mill. In November 2015, André Esteves, the owner the Bank BTG Pactual, (shareholder of CRPE) was arrested on allegations of involvement in the Petrobras corruption scandal.CRPE is also involved in a legal battle with J&F Participações, the holding company of Eldorado. The investment will be of around R$4 billion. Márcio Celso Lopes has been accused of slave labour on his farm Santa Isabel, in Pontanal do Araguaia (MT).

6 CENIBRA

Cenibra was founded in 1973 as a joint venture of Vale (CVRD) and JBP - Japan Brazil Paper and Pulp Resources Development Co. Ltd. In 2001 JBP bought all shares from CVRD. Cenibra also owns 49% of Portocel (with Fibria). Located in Belo Oriente, in the state of Minas Gerais, the Cenibra mill has a capacity of 1.2 million tonnes/year, from eucalyptus. The company has plans to expand and double its capacity, at a cost of R$ 7 billion. Cenibra manages 254,000ha, of which 51% are eucalyptus plantations (130,000ha) and 41% are protected areas. The remaining areas are for infrastructure. If the new mill is built, Cenibra will have to plant an additional 100,000ha of eucalyptus.

7 International Paper

IP is the world's largest pulp and paper company, based in the USA. In Brazil it has two pulp and paper mills which have a joint pulp production capacity of 0.845 million tonnes/year. It also has a paper mill in Três Lagoas, where it buys pulp from Fibria. Furthermore, it has 102,000ha of land. There are no known plans for pulp capacity expansion.

8 Stora Enso

Stora Enso is a Finnish company with 3 pulp mills in Scandinavia and half of the shares of Veracel (see Fibria, above). Stora Enso's share of the eucalyptus pulp is mostly used at its European paper and board mills.There have been speculations about the expansion of the Veracel mill for years. The Veracel mill has been involved in a long standing conflict with the Pataxó Indians.

9 BSC/Copener

Bahia Speciality Cellulose/Copener, or Bahia Pulp S.A., produces speciality dissolving cellulose from eucalyptus, the only company in Latin America to produce this kind of cellulose. It has a capacity of 0.485 million tonnes/year. Its cellulose has applications in textiles, paints, cigarette filters, capsules for medicines, contact lenses, photographic films, ice cream, and makeup, among others.It operates as a subsidiary of Sateri International Group, which bought the mill (called Bracell at the time) from Klabin in 2003. It also bought Norcell, the company that owned the plantations that supplied the mill.Bahia Pulp S.A. exports its products to Asia, Europe, and the United States.It has 150,000ha of land, of which 84,000 have eucalyptus plantations.

10 Lwarcel

Lwarcel is a pulp company with a capacity of 0.25 million tonnes/year.591 It was founded in 1986 and it is owned by Lwart, a Brazilian family company, created by 5 brothers of the Trecenti family. In 2012 Lwarcel obtained a Previous License from CETESB for the construction of a new pulp line. This new line will have a capacity of 0.75 million tonnes/year BEK pulpand the company will invest R$ 3.5 billion in it. The plans for the new line were confirmed in June 2015and again in April 2016, when the company revealed the project should be finished by 2019. In 2013 it had 54,000ha of eucalyptus plantations. It hopes to have 80,000 by 2018, when its new mill should be ready.

11 Eco Brasil

Eco Brasil is a plantation company founded in 2007. Its president, Osmar Elias Zogbi, was the owner of the pulp company Ripasa, which he sold to Votorantim and Suzano, in 2003. Eco Brasil had a plan for the construction of a 1.5 million tonnes in Araguaína to start operating in 2017/2018, estimated to cost R$ 5 billion.But in 2016 Eco Brasil signed a contract worth R$ 400 million to sell 7.5 million m3 of eucalyptus to Suzano's mill in Imperatriz. The deal seems to mark the end of the pulp mill project.

12 Braxcel

Braxcel is a plantation company based in the state of Tocantins. It is a subsidiary of Grupo GMR, which also deals in real estate and in renewable energy.Braxcel had planned to build a 2 million tonnes/year pulp mill in Peixes, in Tocantins, which should have come online in 2018. In January 2014, Braxcel announced that it was postponing plans for a new mill at least until after 2021. The reason given was the over capacity on the market.

13 Portucel

Portucel is a Portuguese pulp company. It has shown interest in developing a 1.5 million tonnes/year mil in the region of Três Lagoas. However, in 2011 Portucel's chairman said that the project for the pulp mill project was cancelled due to the restriction on foreigners buying land in Brazil. Portucel is developing a highly controversial pulp mill in Mozambique, associated with a massive landgrab.

Concluding Questions

1. How can financiers and governments address the cumulative impacts of pulp mill expansions, and broaden consideration of individual projects to ensure sustainability at a landscape level?
2. When will the pulp sector resolve its long term land rights conflicts and avoid landgrabbing?
3. What is displacement effect of pulp plantations? Is plantation expansion making land unavailable for cattle or other agricultural products which then impact on forested areas?
4. How can the pulp sector in Brazil be made aware of the unacceptable risks of this technology?
5. Who is working to ensure the pulp sector ensures better labour rights and social standards?
6. Pulp mill pollution needs to be reduced and the next wave of pulp mills needs to be totally chlorine free. How can this be encouraged?

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[1] http://www.environmentalpaper.eu/2015/09/08/eepn-report-mapping-pulp-mill-expansion/