

Gran Chaco:

THE DEFORESTATION DOZEN

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Twelve traders linked to **deforestation**
causing **USD 2.7 billion** of **CO₂** emissions



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Key takeaways

- **The Gran Chaco is becoming the next deforestation frontier** after the Amazon and the Cerrado due to a lack of protections and international focus, combined with rising soy demand.
- **Wholly avoidable CO₂ emissions from deforestation in the Gran Chaco could be worth USD 2.7 billion.**
- **The price of soy from the Gran Chaco would more than triple** if these deforestation-linked CO₂ emissions were priced in at USD 91/tonne.
- **Twelve soy traders (the 'Deforestation Dozen') control 89% of soy exports from the Gran Chaco but are failing to control deforestation in the region.**
- **Investors funding the Deforestation Dozen are failing to prevent deforestation in the region as a result of weak policies.** None of the banks or equity investors involved have made zero deforestation commitments specific to the Gran Chaco.



Executive summary

The Gran Chaco is becoming the next great deforestation frontier. The Gran Chaco is the largest dry forest in South America and is about a quarter of the size of the entire European Union extending from southern Bolivia into western Paraguay and northern Argentina. The Gran Chaco is suffering deforestation at a rate equivalent to a **20% loss of native vegetation in 15 years** (similar to that occurring in the Cerrado) driven by the expanding production of soybeans. However, deforestation in the Gran Chaco has not received the same attention, by either corporate actors or investors, as the Brazilian Amazon or the Cerrado.

The risk of deforestation has been increased by insufficient legal protection, a lack of funding for enforcement and insufficient progress in removing deforestation risk from the soy supply chain by the traders, food manufacturers and food retailers involved.

Twelve soy traders (the 'Deforestation Dozen') control 89% of the soy exports from the Paraguayan and Argentine Gran Chaco, but they are failing to prevent soy-driven deforestation in that region.

Current deforestation levels create a risk for these traders and other companies in the soy supply chain due to the associated CO₂ emissions. **The price of soy from the Gran Chaco would more than triple if the embedded deforestation CO₂ emissions were priced in at USD 91/tonne** (current EU ETS price).¹ We do not believe this risk is being priced correctly by financial markets. We estimate **CO₂ emissions from deforestation in the Gran Chaco in 2018 amounted to 30 million tonnes (USD 2.7 billion).**

Since the EU is the largest importer of soy² from the Argentina's Gran Chaco the proposed implementation in 2026 of an **EU Carbon Border Adjustment Mechanism presents a material risk to companies' future cashflows.**

Even more serious, **the EU is planning to ban the import of soy linked to deforestation** through its Regulation on Deforestation-Free Products.

Planet Tracker analysed the **debt financiers and equity investors** funding the **twelve commodity traders** that are most active across the Gran Chaco in Paraguay and Argentina. While it is not possible to link specific investments to the activities taking place in this specific biome, the average value of lending to companies operating in the Gran Chaco amounted to USD 52 billion per year over the last ten years.

From an equity perspective, the total value of identified **equity holdings** in the publicly listed soy traders that operate in the Gran Chaco is **USD 32.4 billion.**

This financial support ignored the associated cost of depleting the natural capital base upon which the soy trade depends. By way of illustration, if we assume a 5% yield on the debt provided and use the price of CO₂ emissions as a proxy for natural capital depletion, USD 52 billion of financing would have generated annual **revenues** of **USD 2.6 billion, below the associated carbon cost of USD 2.7 billion** (assuming all the Gran Chaco deforestation is attributed to debt finance).

¹ EU ETS price at 19 Jan 2022

² Soy bean equivalents as defined by Trase (<https://www.trase.earth>)



A review of the policies of the 20 largest equity investors and debt financiers of traders operating in the Gran Chaco showed that **only one of them explicitly recognises the Gran Chaco as a high-risk biome** and **none of them have made commitments specific to this ecosystem** (only half of the twenty largest lenders have forest-related policies that might include the Gran Chaco, the other half do not even have that). However, the situation with equity investors is even more concerning - **none of the equity investors have forest investment policies that include the Gran Chaco**. This means that companies seeking funding will not face the same checks regarding deforestation in the Gran Chaco as they do in other biomes.

However, **the Gran Chaco also presents an opportunity for companies and investors to implement strong policies and address deforestation before this biome suffers significant damage**. Lenders and investors can play a crucial role in supporting this effort through ensuring financing activities are contingent on companies adopting and implementing deforestation and land use commitments and policies. Focusing on the Deforestation Dozen would be an excellent place to start, given their dominance of the Gran Chaco soy trade.



Investor toolkit

Policies

Financial institutions should adopt the following policies regarding deforestation:

- 1 Publicly commit to ensuring zero deforestation risk in their investment/lending portfolios
- 2 Reinforce the commitment by publishing regular, timely action plans and progress updates
- 3 Require portfolio companies to proactively report on deforestation-linked CO₂ emissions in their supply chains.
- 4 Specifically target deforestation-linked emissions in their 'net zero' plans.

Engagement

Investors should look to implement the following regarding the Gran Chaco:

- 1 Actively engage with and support initiatives, such as RTRS³ and IFACC¹, to reduce funding for deforestation linked activities in the Gran Chaco.
- 2 Make the financing of companies operating in the Gran Chaco contingent on comprehensive zero deforestation policies that include time-bound requirements for monitoring and transparency.
- 3 Require trading companies to disclose the location of the soy silos and source farms in their supply chains to aid traceability as a condition of funding.
- 4 Require portfolio companies to purchase only RTRS-certified soy.

Investors should press companies and countries to link their funding to their deforestation commitments (for example, through [Deforestation-Linked Sovereign Bonds](#)).

Gran Chaco investor questions for management

- Does your company's deforestation policy include the Gran Chaco specifically?
- How do you monitor your deforestation exposure from areas which get less attention from the international community such as the Gran Chaco?
- How does the company incorporate carbon emissions from deforestation in its calculations?
- Is the company aware of the World Benchmarking Alliance's Food and Agriculture Index and what is their plan to improve their ranking?

³ Round Table on Responsible Soy – a non-profit organisation promoting the production, trade and use of responsible (deforestation-free) soy)



Three key tables – traders and financial institutions with significant exposure to Gran Chaco deforestation risk

The Deforestation Dozen soy traders and the 20 financial institutions that support them are summarised in Tables 1, 2 and 3. Refer to the relevant sections of this report for explanations of the methodology and analysis.

Table 1: Exports and policies of twelve major soy traders operating in the Gran Chaco

Trader	Exports from Gran Chaco biome (2016-2018) USD million	WWF zero-deforestation assessment score ⁱⁱ	Corporate overarching policy includes Gran Chaco	Progress reports include the Gran Chaco	Reports % of soy traceable to farm in Gran Chaco
Vicentin	556.8	1.5%	NO ⁱⁱⁱ	NO	NO
Aceitera General Deheza	438.5	2.0%	NO ^{iv}	NO	NO
COFCO Corporation	364.6	44.5%	YES ^v	NO ^{vi}	NO
Bunge	344.6	48.5%	YES ^{vii}	YES ^{viii}	NO
Glencore/Viterra	342.0	33.5%	YES ^{ix}	NO	NO
Cargill	275.5	50.5%	YES ^x	YES ^{xi}	NO
Louis Dreyfus	229.7	34.5%	YES ^{xii}	YES ^{xiii}	Partially ^{xiv}
Molinos Agro/Perez Companc	228.2	3.0%	NO ^{xv}	NO	NO
Archer Daniels Midland	80.9	44.5%	Likely ^{xvi}	NO	NO
Asociacion De Cooperativas Argentinas	85.2	0%	NO	NO	NO
Compania Paraguaya De Granos	24.7	0%	NO	NO	NO
Sodrugestvo Group	9.9	0%	NO	NO	NO

Sources: Trase, WWF, Planet Tracker analysis (company scores in brown were assessed by Planet Tracker using the WWF methodology)





Table 2: Lenders and underwriters of soy traders operating in the Gran Chaco

Lenders and underwriters	Total avg financing per year over 10 years (USD million)	Deforestation commitment scope includes Gran Chaco	Recognises Gran Chaco as key deforestation frontier	Made Gran Chaco-specific commitment
Citi	6,043	NO	NO	NO
BofA Securities Inc	5,519	NO	NO	NO
JP Morgan & Co Inc	5,239	YES	NO	NO
Barclays	4,724	YES	NO	NO
BNP Paribas SA	3,506	YES	NO	NO
Deutsche Bank	1,608	YES	NO	NO
Morgan Stanley	1,489	NO	NO	NO
HSBC Holdings	1,462	NO	NO	NO
Credit Suisse	1,261	NO	NO	NO
Mitsubishi UFJ	1,032	NO	NO	NO

Source: Planet Tracker analysis

Table 3: Equity holders in listed companies operating in the Gran Chaco

Equity investors	Total Holdings as of June 2021 (USD million)	Deforestation commitment scope includes Gran Chaco	Recognises Gran Chaco as key deforestation frontier	Made Gran Chaco-specific commitment
BlackRock Inc	6,695	NO	NO	NO
Vanguard Group Inc	6,473	NO	NO	NO
Mistakidis (Aristotelis)	4,947	NO	NO	NO
Badenes (Daniel Francisco Mate)	4,747	NO	NO	NO
State Farm Insurance Co	2,919	NO	NO	NO
State Street Corp	2,350	NO	NO	NO
Capital World Investors	2,256	NO	NO	NO
Dodge & Cox	2,092	NO	NO	NO
Allan Gray (Pty) Ltd	1,839	NO	NO	NO
Glencore Employee Benefit Trust	1,336	NO	NO	NO

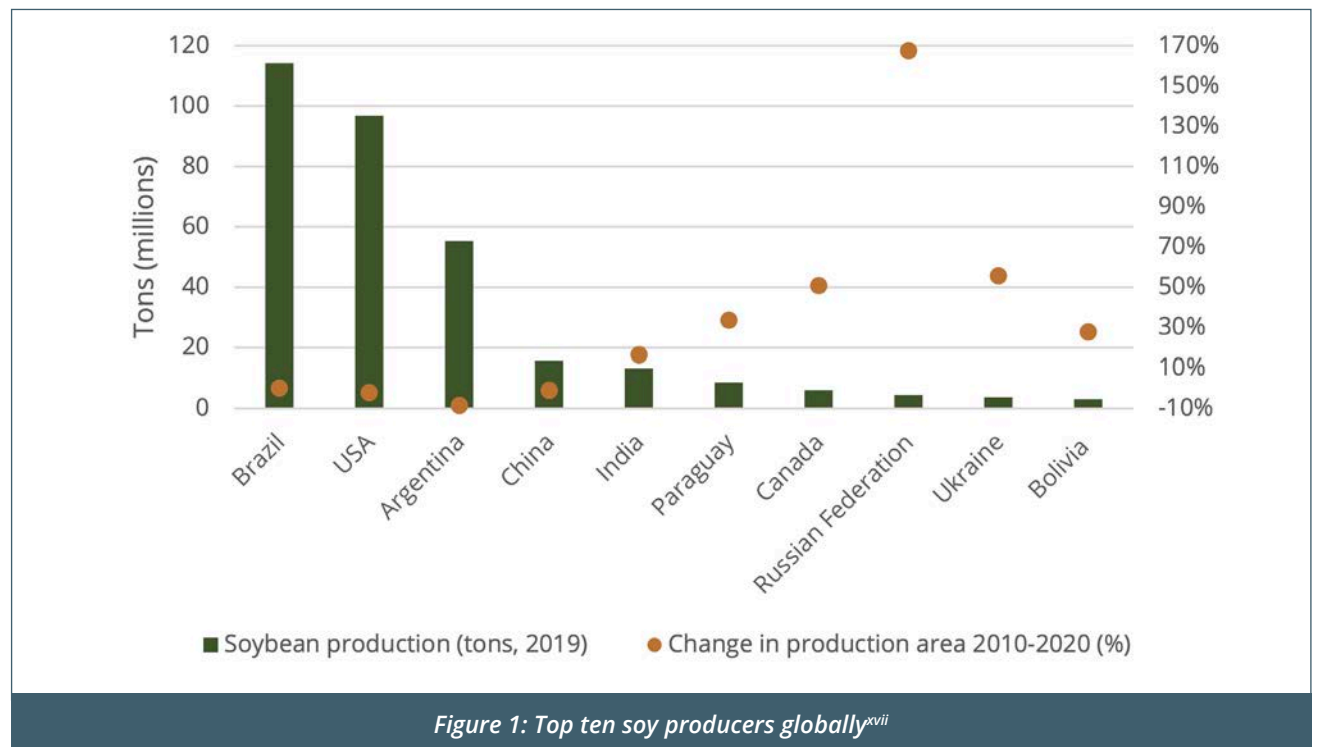
Source: Planet Tracker analysis



The Gran Chaco is the next global soy deforestation frontier

Deforestation in the Gran Chaco is driven by soy

Argentina and Paraguay are amongst the largest producers of soy globally and supply a large percentage of the international market with soybeans for food, feed and industrial uses. The intensification of land use, in both Argentina and Paraguay, is associated with deforestation. This is the case in the Gran Chaco biome that is located in Argentina's Northern provinces, in Western Paraguay and Southern Bolivia - see Figure 1.





The Gran Chaco covers around 1,100,000 km²^{xviii} (about the size of France, Germany and the UK combined) making it the largest dry forest in South America^{xix} and home to numerous endemic and threatened species - see Figure 2.

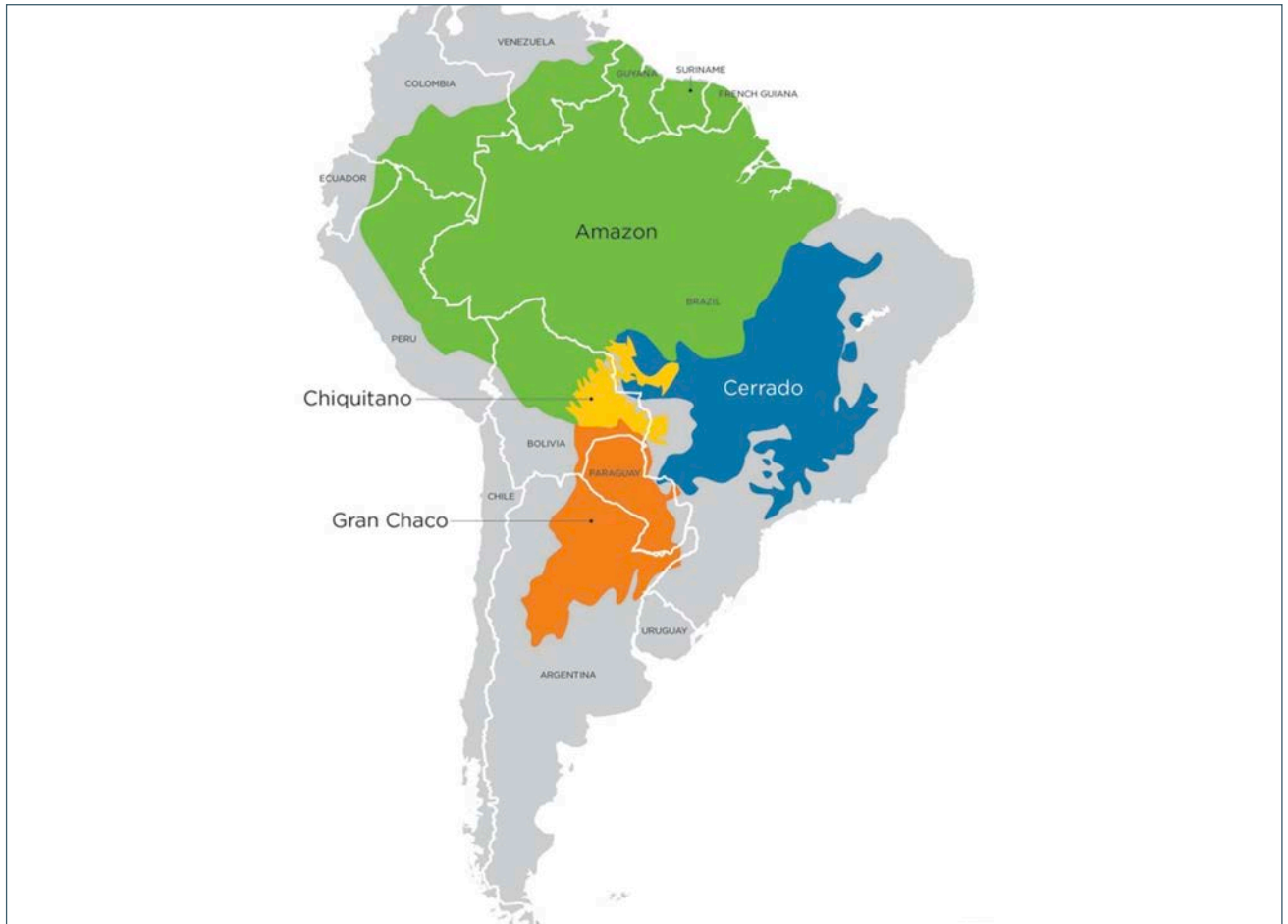


Figure 2: Major South American forest biomes at risk of deforestation^{xx}

Approximately 80% of the vegetation in the Gran Chaco remains, which compares favourably to the just over 50% of vegetation in the Brazilian Cerrado (another soy-related deforestation frontier) - see Table 4.

Table 4: Comparison of deforestation in South American forest biomes

	Amazon	Cerrado	Gran Chaco
Percentage of native vegetation intact	83%	54%	81%
Net loss of native vegetation between 1985 and 2020	-10% -74 MHa	-20% -27 MHa	-20% (-10.6%) -16 MHa (-8.7 MHa)
Increase in agricultural area (1985 to 2020)	+249% +73 MHa	+144% +27 MHa	+335% (+182%) +17 MHa (+9 MHa)

Source: Mapbiomas, Planet Tracker analysis (Gran Chaco figures are for 2000 to 2019 scaled up for comparison, reported figures in italics)



The Gran Chaco is more at risk from soy deforestation than the Amazon

The Mapbiomas Gran Chaco Initiative, which uses satellite remote sensing to analyse land use in the Gran Chaco over time, **measured an 11% decline in natural forest vegetation between 2000 and 2019 (9 million hectares) within the Gran Chaco** matched by a similar increase in the area devoted to agriculture (but representing a reported increase of 182%) - see Table 4 above.^{xxi}

It has been predicted that, if current trends continue, another 4 million hectares of forest in the Gran Chaco (c.6% of current forest) could be lost by 2028.^{xxii} This would broadly equate to 277.2 million tonnes of CO₂.⁴

There is a clear relationship between increases in the area devoted to agriculture and decreases in the forest, but determining the extent to which soy is responsible for this deforestation and comparing the situation in the Chaco to the Amazon and Cerrado are both challenging exercises.

A recent study attempted to compare deforestation directly attributable to soy between the Amazon, the Cerrado and the Gran Chaco between 2001 to 2016.^{xxiii}

The percentage of forest lost to soybean in the Gran Chaco (10.5%) was lower than in the Brazilian Cerrado (18.8%). Despite this, however, the Gran Chaco biome has emerged as an important frontier of deforestation. In total, more than a million hectares of land were planted with soybeans in the Gran Chaco between 2001 and 2016.^{xxiv}

In the Gran Chaco, soy-related deforestation is less than in the Amazon and Cerrado in absolute terms but, as a percentage of total deforestation, soy-related deforestation exceeds that occurring in the Amazon^{xxv} - see Table 5.

Table 5: Forest loss, soybean and soy-driven deforestation rates in three major forest biomes in South America (2001-2016)^{xxvi}

	Brazilian Amazon	Cerrado	Gran Chaco
Total forest loss (ha)	27,766	14,316	9,837
Total soybean gain (ha)	3,294	7,536	1,061
Percentage of forest loss converted to soybean	6.0%	16.6%	10.5%

The study referenced above focused on the direct impact of soy cultivation (land that was once forest and is now used to grow soy), but there is strong evidence that soy has an even greater indirect effect by pushing cattle farmers and other land users away from the most productive land with the result that they use deforestation to create new pastureland.

⁴ We estimate every 1% of forest loss results in CO₂ emissions of 46.2 million tonnes, based on Baumann et al - see later discussion.





A study by Fehlenberg et al (2017) concluded that ‘deforestation in the Chaco appears to be mainly driven by the globally surging demand for soybean’ with complex indirect processes accounting for more of the deforestation than the process of directly converting forests into land for soy.^{xxvii}

In particular, the study found that cattle ranching is often the immediate cause of deforestation in the Gran Chaco, but this results from ranchers who have been displaced by the expansion of soy elsewhere in the country (or even the region more broadly), or from farmers who are using cattle ranching as an intermediate step towards arable farming (often soy), since establishing cattle is a cheaper initial step than going straight to soy cultivation.

The Gran Chaco is less protected than the Amazon or Cerrado

Important differences emerge when comparing the measures in place to prevent deforestation across the three major biomes - see Table 6.

<i>Table 6: Key indicators for deforestation-free soy supply chains from specific biomes</i>			
	Amazon	Cerrado	Gran Chaco
Strength of legal frameworks to protect natural forests	Medium	Low	Low
Mandatory, completed successful and public integration of property boundary registration with conservation areas and deforestation monitoring systems	Medium	Low	Low
Existence and strength of a deforestation moratorium supported by major soy traders operating in the biome	Medium	Low	Low
Existence of biome-related no deforestation cut-off dates by soy traders	Medium	Low	Low
Level of traceability to individual farms within soy trader supply chains	High	Medium	Low
Pressure from consumer country importing companies and governments to not be supplied with soy from deforested areas	High	Medium	Low
Extent to which investors linked to soy traders recognise high-risk areas and are actively supporting no-deforestation pledges	Medium	Medium	Low
Strength of major investors and lender policies exclude funding of companies whose supply chain is linked to deforestation	Medium	Medium	Low

Source: Planet Tracker analysis



Our analysis shows that neither the Argentine nor the Paraguayan Gran Chaco areas are currently adequately protected from soft commodities-driven deforestation. Even though the legal framework that protects the Amazon has been weakened in recent years,^{xxviii} it is still more comprehensive than is the case in the Cerrado or the Gran Chaco.

However, even if the legal framework was enhanced in the Gran Chaco and the Cerrado, this would only make a difference if adequate funding were provided to implement and enforce the laws.

In the absence of sufficient legal protection, the only fall back is the policies (and behaviours) of the companies that import or use soy from the Gran Chaco or Cerrado in their products. Unfortunately, they have not expressed the same level of concern as has been the case with the Amazon where pressure from large corporates was essential in establishing the Amazon soy moratorium.

Our analysis shows **that the Gran Chaco is not covered by zero-deforestation commitments by companies, financial institutions or investors**, who have their focus primarily on the Amazon and on the Cerrado in Brazil.^{xxix}

Furthermore, investor awareness of the impacts of soy on the Gran Chaco appears to be much lower compared to the other two forest biomes.

In 2019, a letter signed by 57 investors, with USD 6.3 trillion in AUM⁵, called for companies to do more to combat deforestation in the Cerrado and Gran Chaco.^{xxx} However, none of the signatories was among the largest investors in the companies operating in the Gran Chaco.

In the Gran Chaco none of the identified preconditions for deforestation-free soy supply chains are currently met.

We analyse the deforestation commitments and policies of the traders operating in the Gran Chaco, and the financial institutions funding them, in subsequent sections of this report. For more details on the current legal protections in the Argentinian and Paraguayan Gran Chaco please see Appendix 3.



⁵ Assets under Management.



Deforestation is increasing the risks of natural disasters

Weather patterns in the Gran Chaco are extreme, with floods and droughts common. Historically these have cycled over decades, but global and local climate change has reduced those cycles to years. For example, in 2013 the lack of rain dried out the Bermejito River, while in 2017, the flood waters were so deep that they reached up to people's waists in the Impenetrable National Park.^{xxxii}

In recent years, it is becoming apparent that intensified production, new agricultural technologies and irrigation are having undesirable environmental impacts. The region's soils have a tendency to compact and surface-seal which reduces infiltration and this is generating increased run-off and flooding.^{xxxiii}

A comparative study conducted by the National Agricultural Technology Institute in 2016 indicates that a hectare of high-quality forest in the Gran Chaco can absorb up to 300mm of rain in one hour. The same surface area absorbs 100mm of water an hour when covered with grass, but only 30mm per hour when planted with soybeans - a 90% decrease in the absorption rate.^{xxxiii}

Studies of the Amazon show a clear link between deforestation and local climate change as discussed in our recent report [No Rain on the Plain](#). Whilst there is limited scientific research on local climate change in the Gran Chaco, it is clear to see the qualitative impacts that land use intensification is having on the region and a **deforestation-linked impact on regional climate must be considered to be a risk.**



Commodity traders in the Gran Chaco soy supply chain

The Deforestation Dozen - twelve soy traders dominate the Gran Chaco

Twelve commodity traders are responsible for the vast majority of commodity exports (including soy) from the Gran Chaco. These traders are also typically involved in production and processing to various degrees and so have a vital role to play in efforts to reduce commodity-driven deforestation.

In order to identify the key commodity traders that operate within the Gran Chaco in Argentina and Paraguay, information from commodity tracking platform Trase.earth was accessed by Planet Tracker. Trase has linked the soy trade in both countries specifically to the Gran Chaco biome.

The twelve largest traders linked to the Gran Chaco biome account for more than 88% of soy exports from the Argentinian Gran Chaco and more than 99% of the exports from the Paraguayan Gran Chaco. In total **89% of soy exports** from the Gran Chaco between 2016 and 2018 are captured by these companies - see Table 7.

Table 7: Top 12 exporters linked to Gran Chaco in Argentina and Paraguay (FOB in USD millions)^{xxxiv}

Company	Argentina Gran Chaco (2016-2018)		Paraguay Gran Chaco (2017-2019)		Argentina and Paraguay combined	
	Argentina exports	% of total	Paraguay exports	% of total	Combined exports	% of total
Vicentin	556.8	17.57%			556.8	16.60%
Aceitera General Deheza	438.5	13.84%			438.5	13.08%
COFCO Corporation	360.2	11.37%	4.4	2.39%	364.6	10.87%
Bunge	296.9	9.37%	47.7	25.87%	344.6	10.28%
Glencore	342.0	10.79%			342.0	10.20%
Cargill	256.9	8.11%	18.6	10.09%	275.5	8.21%
Louis Dreyfus	191.7	6.05%	38.0	20.60%	229.7	6.85%
Molinos Agro/Perez Companc	228.2	7.20%			228.2	6.80%
Archer Daniels Midland	40.1	1.27%	40.8	22.09%	80.9	2.41%
Compania Paraguaya De Granos			24.7	13.38%	24.7	0.74%
Asociacion De Cooperativas Argentinas	85.2	2.69%			85.2	2.54%
Sodrugestvo Group			9.9	5.37%	9.9	0.30%
Top 12 Total	2,797	88%	184	100%	2,981	89%



Soy trader commitments ignore the Gran Chaco

The largest commodity traders, including Archer Daniels Midland (ADM), Bunge, Cargill, COFCO, Louis Dreyfus and Viterra,^{xxxv} are members of trader-led initiatives such as the Soft Commodities Forum, but these initiatives do not yet include reporting on the Gran Chaco.^{xxxvi}

Recently Vision Sectorial del Gran Chaco (ViSeC), a multi stakeholder initiative to address soy production and conservation in the Argentinian Gran Chaco, was launched. A number of soy traders are members of this initiative which includes 'Traceability and monitoring of the entire production and commercialisation chain' as a goal (but not a membership commitment).^{xxxvii}

Zero-deforestation policies and traders operating in the Gran Chaco

In recent years a consensus has emerged concerning the requirements of strong private sector zero-deforestation policies and implementation actions. An example of this is the activities of the **Accountability Framework Initiative**.^{xxxviii} Another is the **World Benchmarking Alliance's Food and Agriculture Index** (discussed later in this report). These have led to an increase in the ability to assess the commitment implementation of actors situated along the forest risk commodity value chains.

Such assessments are not only crucial for upstream supply chain actors themselves, their customers and consumers, but also for equity investors and banks who want to ensure that their financing activities favour companies with strong policies and implementation actions.

In order to assess the readiness of the traders to be deforestation free, a recent evaluation of the activities of major soy traders by **WWF** was carried out.^{xxxix} Nine of the twelve traders linked to the Gran Chaco were assessed by WWF against criteria under five major themes:

- 1 Set and Strengthen Goals (max 30 points)
- 2 Implement Ethical Supply Chains (max 33 points)
- 3 Report Progress (max 20 points)
- 4 Increase Transparency (max 11 points)
- 5 Collaborate for Change (max 6 points)

A summary of the WWF methodology can be found on their website.^{xl} The three additional traders that were not included in the WWF scorecard have been assessed by Planet Tracker applying the same methodology.

Only one of the twelve traders that operates in the Gran Chaco scores above 50%, while half of the companies score below 10%.

Traders score particularly poorly in the transparency sections of the assessment - see Table 8.



Table 8: Exports and policies of twelve major soy traders operating in the Gran Chaco

Trader	USD million exports from Gran Chaco biome (2016-2018)	Revenue (USD million - last available year)	Ownership	HQ	WWF no-deforestation assessment score ^{xii}	Corporate overarching deforestation policy includes Gran Chaco	Member of Vision Sectorial del Gran Chaco ⁶	Gran Chaco deforestation cut-off date	Progress reports include the Gran Chaco	Reports % of soy traceable to farm in Gran Chaco	Discloses soy quantities traded from the Gran Chaco
Vicentin	556.8	-	Private	Argentina	1.5%	NO ^{xiii}	Unknown	NO ^{xliii}	NO	NO	NO ^{xliii}
Aceitera General Deheza	438.5	-	Private	Argentina	2.0%	NO ^{xlv}	Unknown	NO ^{xlvi}	NO	NO	NO ^{xlvii}
COFCO Corporation	364.6	-	State-owned	China	44.5%	YES ^{xlviii}	YES ^{xlix}	NO ^l	NO ^{li}	NO	NO ^{lii}
Bunge	344.6	41,404	Public	USA	48.5%	YES ^{liii}	YES ^{liv}	NO ^{lv}	YES ^{lvi}	NO	NO ^{lvii}
Glencore/Viterra	342.0	142,338	Public	Switzerland	33.5%	YES ^{lviii}	YES ^{lix}	NO ^{lx}	NO	NO	NO ^{lxi}
Cargill	275.5	114,600	Private	USA	50.5%	YES ^{lxii}	YES ^{lxiii}	NO ^{lxiv}	YES ^{lxv}	NO	NO ^{lxvi}
Louis Dreyfus	229.7	-	Private	Netherlands	34.5%	YES ^{lxvii}	YES ^{lxviii}	NO ^{lxix}	YES ^{lxx}	Partially ^{lxxi}	NO ^{lxxii}
Molinos Agro/Perez Companc	228.2	2,463	Public	Argentina	3.0%	NO ^{lxxiii}	YES ^{lxxiv}	NO ^{lxxv}	NO	NO	NO ^{lxxvi}
Archer Daniels Midland	80.9	64,355	Public	USA	44.5%	Likely ^{lxxvii}	YES ^{lxxviii}	NO ^{lxxix}	NO	NO	NO ^{lxxx}
Asociacion De Cooperativas Argentinas	85.2	-	Private	Argentina	0%	NO	YES ^{lxxxi}	NO	NO	NO	NO
Compania Paraguaya De Granos	24.7	-	Private	Paraguay	0%	NO	Unknown	NO	NO	NO	NO
Sodrugestvo Group	9.9	-	Private	Luxembourg	0%	NO	Unknown	NO	NO	NO	NO

Sources: Trase, WWF, Planet Tracker analysis (company scores in brown were assessed by the Planet Tracker using the WWF methodology)

⁶ We have not discovered a public list of ViSEC members so have not been able to confirm membership status in some cases.



Soy trader practices lag far behind those for palm oil

These poor scores are in stark contrast to similar evaluations in the palm oil sector where many companies along the value chain release the names and locations of the crude palm oil (CPO) mills that are located in forest countries, allowing an assessment of deforestation risks based on the distance of CPO mills from forest areas.

The RSPO (Roundtable on Sustainable Palm Oil) certification scheme recently adopted a resolution that requires all of its members to make the list of their supplying mills available and this applies to both certified and non-certified mills.^{lxxxii}

Within the soy value chain, the closest equivalent to CPO mills are silos that store soybeans locally before being transported to larger facilities. Once the beans leave the silos they are transported to soy elevators, crushing plants or ports for export.^{lxxxiii}

No soy traders or downstream companies have been found which currently disclose the location of the soy silos from which they are sourcing in the Gran Chaco, let alone the supplying soy farms.

Traceability to farm level is a precondition to detect and monitor deforestation and to be able to provide assurances of deforestation-free supply chains to downstream customers and to investors.

In addition, certification currently has a very limited role in the soy supply chain. For instance, the **Round Table on Responsible Soy Association** (RTRS) certified around 4.4 million tons of soy in 2020 across Argentina, Brazil and Paraguay,^{lxxxiv} **less than three percent of production.**

When it comes to the traders that operate in the Gran Chaco, it is noticeable that the **companies that are headquartered in Argentina and Paraguay score very low or receive no points at all in the WWF assessments.**





Benchmarking – a tool for progress

The recently announced World Benchmarking Alliance (WBA) Food and Agriculture Index^{xxxxv} benchmarks companies' progress on their contribution to the Sustainable Development Goals. The highest scoring soy trader in the index is ADM which sources a limited amount of soy from the Gran Chaco (less than 3% of USD exports between 2016 and 2018 - see Table 6). It is worth noting that ADM scored 39.6/100 while the leading company (Unilever) scored 71.7. **The average score of the food companies assessed was 23.3/100, highlighting their poor ESG credentials.**

The scores relating to deforestation are even worse. We looked at two specifically relevant categories: 'Protection of terrestrial natural ecosystems' and 'Soil health and agrobiodiversity'.

None of the soy traders scored better than half marks in the first category, which effectively means that **all are aware of the risk of deforestation in a number of their commodity supply chains, but none are able to state that they are deforestation free.** In the second category the scores are worse, with the majority of soy traders only able to provide qualitative evidence on sustainable practices that improve soil health and/or increase agrobiodiversity - see Table 9.

Table 9: WBA scores for the largest soy traders in the Gran Chaco

Company name	Overall ranking (out of 300)	Protection of terrestrial natural ecosystems	Soil health and agrobiodiversity
Archer Daniels Midland (ADM)	37	1	1
Cargill	74	1	1
Bunge	125	1	0.5
Viterra/ Glencore	162	0.5	0
Louis Dreyfus Company	174	0.5	0.5
COFCO	261	0	0

Source: World Benchmarking Alliance – accessed 12/10/21 - Assessing the world's 350 most influential food and agriculture companies (worldbenchmarkingalliance.org). Each indicator is scored on a scale from 0 and 2. This is a five-layer scale (0, 0.5, 1, 1.5, 2). In each case, a score of 0 typically reflects no relevant disclosure and a score of 2 reflects leading performance. Further detail: 2021-Food-and-Agriculture-Benchmark-scoring-guidelines.pdf (worldbenchmarkingalliance.org)

The WBA Food and Agriculture Index provides an easy tool for investors to use to understand particular weakness of companies and how they compare to global peers. We would suggest this benchmark is used to demonstrate to management teams the progress they can make and what standards are required.



COP26 trader commitment - more disappointment?

Ten global soft commodity trading companies announced a ‘Corporate Statement of Purpose’ at COP26 in Glasgow, noting that they ‘have a shared commitment to halting forest loss associated with agricultural commodity production and trade’ and committing to ‘lay out a shared roadmap for enhanced supply chain consistent with a 1.5 degrees Celsius pathway’ by COP 27 (November 2022).^{lxxxvi}

The ‘Statement of Purpose’ makes no concrete commitments with respect to deforestation which is disappointing when compared to the Glasgow Leaders Declaration on Forests and Land Use (signed by Argentina and Paraguay, as well as Brazil) which committed those countries to ‘working collectively to halt and reverse forest loss and land degradation by 2030’.^{lxxxvii}

Five of the signatories are among the twelve soy traders operating in the Gran Chaco that we focus on in this report: ADM, Bunge, Cargill, Louis Dreyfus and Viterro.

The traders included ‘comments about their commitments and progress to date’ in the Statement but, here again, it was disappointing to note how few of these additional comments contained anything of substance - see Table 10.

Table 10: Trader comments about commitments (included with the COP26 Corporate Statement of Purpose)

Companies	Commitment	Measurable	Timeframe
ADM	Eliminate deforestation from all supply chains	Yes	2030
	Preserve biodiversity and water resources	No	No
Bunge	Deforestation free supply chains worldwide by 2025 - indirect and direct	Yes	2025
Cargill	‘making progress’ and ‘working diligently’	No	No*
Louis Dreyfus	Deforestation free supply chains	Yes	No**
	Fair and sustainable food and agricultural production chains	No	No
Viterro	Eliminate deforestation in our supply chains	Yes	No
	Look after valuable and protected areas	No	No

*Source: Corporate Statement of Purpose, Planet Tracker analysis. *Cargill is committed to achieving a Deforestation and Conversion Free (DCF) soy supply chain by 2030 but did not reference this policy. ** Louis Dreyfus announced a commitment to achieving a DCF soy supply chain by 2025 on 9 February 2022.*



The market is not pricing in the CO₂ emissions from deforestation in the Gran Chaco

The carbon released from deforestation in the Gran Chaco is similar to other deforestation frontiers

Scientists have found that tropical dry forests are less carbon-dense than moist tropical forests. However, carbon emissions from land-use change in the Gran Chaco are similar in magnitude to those from other major tropical deforestation frontiers, such as the Amazon.^{lxxxviii} In addition, the above-ground biomass (AGB) in the remaining natural vegetation in the Gran Chaco may contain up to 19 times more carbon than previously estimated.^{lxxxix}

A study by Bauman et al. analysed carbon emissions from deforestation in the Gran Chaco. Between 1985 and 2013, more than 142,000 km² of the Gran Chaco's forests, equaling 20% of all forest, were replaced by croplands (39%) or grazing lands (61%). Of those grazing lands that existed in 1985, about 40% were subsequently converted to cropland. These land-use changes resulted in **substantial carbon emissions**, estimated to total 824 million tonnes between 1985 and 2013 and **46.2 million tonnes for 2013** alone.

The majority of these emissions came from forest-to-grazing-land conversions (68%), but post-deforestation land-use change triggered an additional 52.6 million tonnes (1985-2013).^{xc}

Estimating the soy deforestation carbon footprint for EU imports

Deforestation is a significant cause of CO₂ emissions and so companies should be accounting for these emissions in their Scope 3 disclosures. By linking the deforestation data to carbon emissions and then to the soy export data, we can estimate the CO₂ emissions that are embedded in the soy imported into the EU (used to illustrate the point because it is the largest recipient of Gran Chaco soy according to data from Trase).^{xcii}

According to Trase, just over 700,000 tonnes of soy⁷ was imported into the EU from the Gran Chaco in 2018. The EU imports 24% of all soy produced in the Gran Chaco. The economics of exports to the EU are at particular risk due to potential regulations which we discuss later in this report.

Unlike other soy deforestation frontiers, such as the Amazon or the Cerrado, where the so called ABCD global traders (ADM, Bunge, Cargill, and Louis Dreyfus) dominate exports,^{xcii} in the Gran Chaco the two largest exporters are local companies (see Table 8 earlier in this report). The ABCD traders along with Glencore/Viterra make up almost 43% of exports from the biome and have a 40% share of imports into the EU. The two largest privately listed Argentinian companies account for an additional 33%.

⁷ i.e. soy beans and processed soy meal, oil etc.



We estimate the CO₂ emissions from deforestation in the Gran Chaco as follows:

- According to Baumann et al.,^{xciii} a 1% decline in forest area in the Gran Chaco drove estimated emissions of 46.2 million tonnes of CO₂ in 2013.
- The Mapbiomas Gran Chaco Initiative measured a 6% decline in natural forest vegetation between 2010 and 2019 (4.1 million hectares),^{xciv} which equates to a 0.6% decline per annum.
- We use the CO₂ emission ratio implied by the Baumann study and round it so that an annual 0.6% decline in forest area would equate to **30.0 million tonnes of CO₂ emitted in 2018**, with a **value of USD 2.7 billion**.⁸

Based on the studies referred to earlier in this report we assume soy is the primary driver for this deforestation and thus can be directly linked to CO₂ emissions.

This is obviously a simplification, since soy is not the only product being produced on land in the Gran Chaco, but not an unreasonable proxy since:

- Two-thirds of the Gran Chaco lies in Argentina and the majority of deforestation there is driven by soy production.^{xcv}
- In Paraguay, beef is the primary commodity being produced, but there is evidence that beef production is displaced from cleared land by soy farming leading to new forest clearance for beef production, so attributing indirect responsibility for CO₂ emissions to soy production is a reasonable assumption.^{xcvi}

Using the Trase^{xcvii} data, we can make approximations of which traders are driving the deforestation through demand for soy.

According to Trase, 24% of soy exports from the Argentinian Gran Chaco are to the EU (the largest importer of soy from the biome).⁹ Based on our assumptions this implies 7.3 million tonnes of (wholly avoidable) deforestation-linked CO₂ was imported into the EU in 2018.

7.3 million tonnes of CO₂ is tiny in an EU context,¹⁰ but these emissions are wholly avoidable and as companies and countries look to reduce their carbon footprints, it is these avoidable emissions that will be targeted first (including by food manufacturers and food retailers further down the supply chain). **If the cost of the emissions were added to the soy price it would more than triple**, as we discuss in the next section.

⁸ Using a carbon price of USD 91 – see next section for details (strictly speaking, using a percent figure in our calculation is flawed since the carbon emissions are driven by the absolute amount of deforestation which will fall slightly each year if the percentage rate of decline is kept constant but for this calculation the difference is not material)

⁹ 2018 exports (Gran Chaco Seco + Humeo): 2.9 Mt; EU imports: 0.7Mt

¹⁰ The total carbon footprint of the EU27 was equal to 6.7 tonnes of CO₂ per person in 2019 according to Eurostat, equivalent to c. 3 billion tonnes in total (https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Greenhouse_gas_emission_statistics_-_carbon_footprints)



EU Carbon Border Adjustment Mechanism could impact soy prices

The European Commission has put forward a **Carbon Border Adjustment Mechanism (CBAM)** as part of its green taxation programme, which requires importers to buy digital certificates representing the tonnage of carbon dioxide emissions embedded in the goods they import.

The price of the certificates will be based on the average price of permits auctioned each week in the EU carbon market. It will be phased in gradually and will initially apply only to a selected number of goods at high risk of carbon leakage: iron and steel, cement, fertiliser, aluminium and electricity generation (from 2023). In 2026, it is expected to be fully operational and the EU will consider whether to extend its scope to more products and services - including down the value chain. Given the heavy carbon footprint of deforestation there is a strong risk that soy (and similar imports) will be caught by an expanded CBAM.

Our calculation earlier implied that the 700,000 tonnes of soy imported into the EU carried with it 7.3 million tonnes of deforestation-linked CO₂ emissions - i.e. **each tonne of soy has 10.4 tonnes of embedded deforestation CO₂**.

The current EU ETS carbon price is around EUR 81.3 (c. USD 91) per tonne - see Figure 3 - and soy trades at around USD 413 per tonne,¹¹ so **the soy import price would be increased by USD 946 per tonne (if the full EU ETS price was added on), a 229% increase.**¹²

This regulation is now potentially only five years away and as such should be more actively priced into investment decisions. From our research, we would suggest that this area is under appreciated.



Figure 3: EU ETS Carbon Price since Paris Agreement, sourced from Bloomberg (EECSYR1 TNRG Index)

¹¹ January 2022 average price for soybean meal

¹² We are assuming that the full carbon cost of the deforestation in that year would be added to the soy import price, implying that if there was no deforestation in the following year the price would drop significantly. That does not account for the future carbon sequestration value lost as a result of having no trees going forward.



EU regulation will ban deforestation-linked soy

Companies trading with the EU are particularly at risk due to the EU's plan to introduce a **regulation on deforestation-free products banning the import of deforestation-linked soy** (and beef, palm oil, wood, cocoa and coffee, and some derived products, such as leather, chocolate and furniture).

The regulation will cover legal and illegal deforestation and will impose mandatory due diligence rules on importers requiring strict traceability (including collecting the geographic co-ordinates of the land where the commodities they place on the market were produced).

A benchmarking system operated by the Commission will identify countries as presenting a low, standard or high risk of producing commodities or products that are not deforestation-free or in accordance with the legislation of the producer country. Obligations for importers will vary according to the level of risk of the country or region of production, with simplified due diligence duties for products coming from low-risk and enhanced scrutiny for high-risk areas.

The regulation needs to be approved by the EU Parliament and EU Council, so the effective date is not yet known but the law will apply retrospectively so that deforestation will be assessed from 31st December 2020 onwards.

This legislation represents a significant threat to soy traders operating in the Gran Chaco unless they can demonstrate deforestation-free soy supplies.

What does the EU deforestation regulation require in practice?

The new rules will require operators that place relevant commodities or products for the first time on the EU market to exercise due diligence in order to be able to ensure that:

- a** Those commodities and products have not been produced on land deforested or degraded after 31 December 2020;
- b** They have been produced in accordance with the laws of the country of production.

Not meeting either of the two requirements will result in a prohibition to place those products on the EU market.

As part of their due diligence systems, operators will have to go through three steps.

- 1** Provision of information on the commodity, quantity, supplier, country of production, etc. As a part of this the geographic co-ordinates of the plots of land where the commodities were produced will be required. Combining geolocation with remote monitoring via satellite images will be how the regulation is effectively implemented.
- 2** Companies will need to use the information on the plots of land used for producing the commodities to analyse and evaluate the risk in the supply chain.
- 3** Companies will need to take adequate and proportionate mitigation measures.

EU member states will be responsible for the enforcement.

Source: EU Commission^{xviii}

This proposed legislation will work in tandem with the existing Renewable Energy Directive^{xcix} which regulates commodities used as biofuels (including derivatives of soy and palm oil) to ensure the products used have not been harvested from areas which have undergone deforestation.



Debt and equity financiers of traders operating in the Gran Chaco

Investors in the Gran Chaco are failing to control deforestation in their portfolios.

In order to judge the exposure investors and financiers have to deforestation risks from the Gran Chaco, the equity holdings in passive and active shares of publicly listed agricultural traders active in the Gran Chaco were analysed using Refinitiv Eikon. Where available, debt finance (bond and loan) and equity underwriting services provided by banks to soy traders active in the Gran Chaco across the last ten years were analysed (and averaged per year) under the heading of 'bank finance'. Finally, the investor environmental policy assessments of the Forest & Finance project were consulted in order to assess the strength of soy-related sustainability policies of the top 20 debt and equity financiers.

A review of the policies of the 20 largest equity investors and debt financiers of traders operating in the Gran Chaco showed that **none of them have made commitments specific to this ecosystem and only one of them explicitly recognises the Gran Chaco as a high-risk biome. Only half of the twenty largest lenders have forest-related policies with scopes that may include the Gran Chaco.**

The situation with equity investors is even more concerning - **none of the equity investors have forest investment policies that include the Gran Chaco.** This means that companies will not face the same checks and balances regarding deforestation in the Gran Chaco as they do in other biomes.

Please see Appendix 2 for the detailed analysis.

Bank financiers

Bank financing was identified for 8 out of the 12 soy traders that had exports from the Gran Chaco.

The largest bank financier over the last ten years in the soy traders that are active in the Gran Chaco was **Citi** with just over **USD 6 billion**. This accounted for 11.6% of the debt finance identified for this report. **BoFA Securities** (previously Bank of America Merrill Lynch) provided finance worth **USD 5.5 billion** on average over the last 10 years or 10.6% of the total, followed by **JP Morgan** with **USD 5.2 billion** (10.1%). In total, the **top 20 bank financiers accounted for 78% of the USD 52 billion** worth of financing on average per year - see Figure 4.



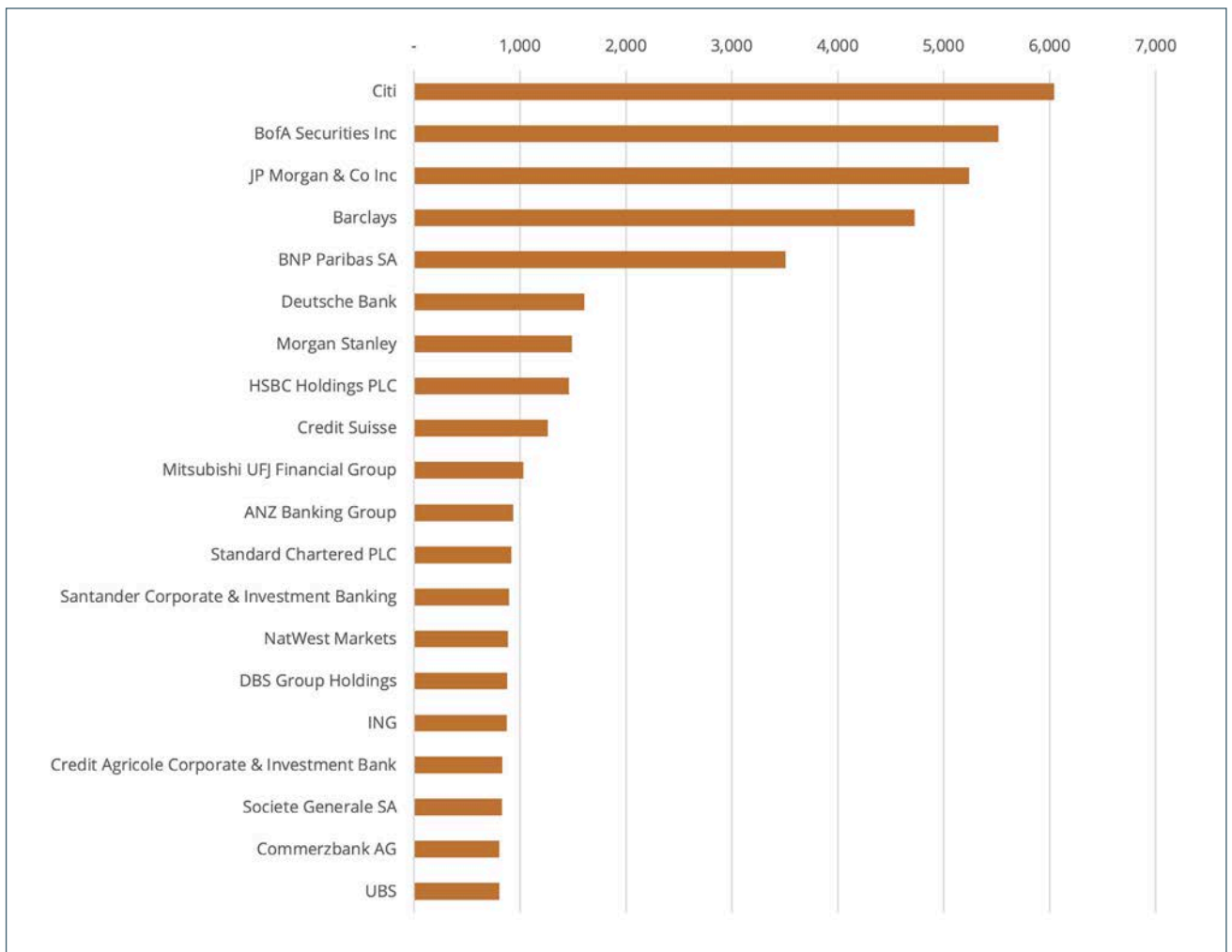


Figure 4: Top 20 financiers of soy traders active in the Gran Chaco by amount underwritten in the last 10 years (average per year, USD mn)^c

We do not have enough information to make a proper comparison between the returns generated by the banks from providing this funding to the soy traders concerned and the deforestation carbon footprint this financing supports, but to illustrate the point:

If we assume a 5% yield then the USD 52 billion of financing would have generated **average annual gross revenues** for the banks concerned of **USD 2.6 billion**. Using the USD 91 carbon price from our earlier calculation (and attributing all the deforestation to debt finance), the **CO₂e cost** associated with generating this revenue in the first year would have been **USD 2.7 billion**.

This simplistic calculation serves to highlight the point that **lending to soy traders associated with deforestation would be far less profitable if banks had to pay for the associated embedded deforestation carbon emissions**.



Equity Holders

Total holdings by equity investors as of 14 June 2021 amounted to **USD 32.4 billion**. The largest equity holders are **Vanguard** and **Blackrock**, which accounted for **USD 6.7** and **6.5 billion** respectively, equivalent to 10.7% and 10.4% of the total holdings identified.

The third and fourth largest shareholders are individuals: **Aristotelis Mistakidis** and **Daniel Badenes**. Both of them made their fortunes working for Glencore and still hold significant stakes in the company (and thus have a stake in Viterro).

More than 70% of the total value was held by the top 20 equity financiers - see Figure 5.

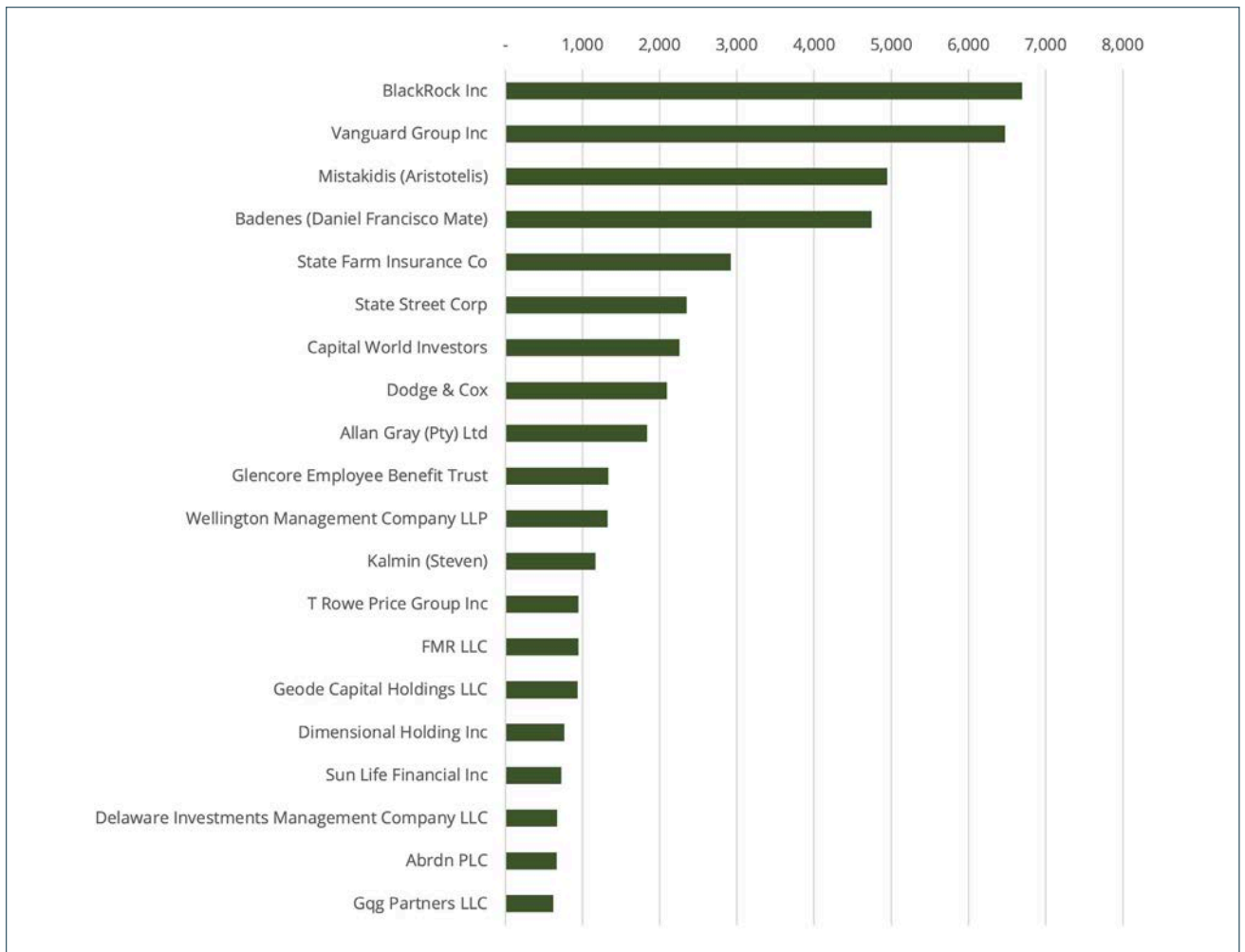


Figure 5: Top 20 equity holders in publicly listed traded soy traders active in the Gran Chaco (USD mn)

For equity investors seeking to reduce the carbon footprint of their portfolios, the CO₂ emissions associated with soy production in the Gran Chaco are likely to become an issue.

Reallocating capital to soy traders with clear zero deforestation policies and procedures would be a simple way to reduce the carbon footprint of the portfolio.



CONCLUSION

The focus on the extent to which financial institutions are funding deforestation is continuing to grow, but progress is still far too slow.^{ci,cii} **63% of 150 of the largest finance institutions do not yet have any Forest Policy.**^{ciii} Not surprisingly, **commitments on the Gran Chaco are even less common.**

There is evidence that, as deforestation in the Amazon decreased, much of it was pushed into the Cerrado, getting less international attention as a result.^{civ} The Cerrado Manifesto was launched in 2017 aiming to combat high deforestation rates in the region. It is supported by a number of finance companies.^{cv} Unfortunately, it appears to have had limited impact, with deforestation trends increasing in 2020 vs 2019.^{cvi}

Agricultural activity is transferring from the Amazon and the Cerrado into the Gran Chaco, driving up deforestation,^{cvi} but the Gran Chaco is receiving even less attention than the Amazon and Cerrado. This, combined with the weak legal protections around the Gran Chaco and increasing global demand for soy, means that **the Gran Chaco is becoming the next soy deforestation frontier.**

Deforestation is a significant contributor to CO₂ emissions. If the cost of CO₂ emissions is included, the price of soy from the Gran Chaco could more than triple, but investors are not pricing this risk into their assessment of the soy traders.

Given that the EU is the largest importer of soy from the Argentine Gran Chaco, **the proposed regulation to ban deforestation-linked soy represents a serious economic threat to the twelve traders operating in the Gran Chaco.** In addition, **the implementation of an EU Carbon Border Adjustment Mechanism presents a material risk to companies' future cashflows.**

Twelve soy traders dominate the Gran Chaco but their weak deforestation-related policies suggest they are doing little to protect the natural resource contributing to their profits.



The World Benchmarking Alliance's Food and Agriculture Index provides a simple mechanism to measure and facilitate change among the quoted traders, but they are a minority in the Gran Chaco.

At present, financial institutions funding the Gran Chaco traders cannot be relied upon to disincentivise deforestation. Neither the group of largest lenders nor the equity investors exposed to the Gran Chaco have strong enough policies in place to avoid deforestation in the Gran Chaco.

An analysis by Planet Tracker shows that while half of the lenders to the twelve major trading companies operating in the Gran Chaco have policies that could apply to the Gran Chaco, **only one of them demonstrates awareness of the risks to this biome** (including it in its list of high risks locations). None of them provide specific risk or exposure analysis for the Gran Chaco.

Considering that the forest landscape in the Gran Chaco is still comparatively intact, there is an opportunity to act before deforestation rates increase. However, to achieve this, **it is necessary that financial institutions work in co-operation with companies to ensure the timely adaptation and implementation of policies and commitments that prevent large-scale deforestation in the Gran Chaco.**





APPENDIX 1: Key Financiers of soy traders of the Gran Chaco – methodology

Investment and finance data

All data used to identify the investment and lending volume was sourced via Thomson Reuters, with the exception of Private Entities Ownership for which Orbis was used.

Equity ownership data is a snapshot as of 14th of July 2021.

For Financing, Planet Tracker interrogated the Thomson Reuters database for equity and fixed income issuances executed by the company universe between 01.01.2011 to 30.06.2021. A unique list of bookrunners involved in the financing of the universe was first compiled. For simplicity, the portion of each deal underwritten by each Financing Institution assumes an equal weight among participants.

Investor policies

Three Gran Chaco-specific assessments were carried out in addition to the existing policy assessments done by Forest & Finance and Forest 500. Specifically, they were:

- 1 Whether a financier's commitment scope includes the Gran Chaco. Any commitments by financiers needed to specifically include soy or soft commodities and mention the Gran Chaco or all natural forests, High Carbon Stock (HCS) landscapes or requesting companies to be aligned (across all soy operations) with certification standards that have strong no-deforestation requirements.
- 2 To recognize the Gran Chaco as a key deforestation frontier, finance companies needed to specifically mention the Gran Chaco in either Paraguay or Argentina in their commitments or include some of states and provinces that make up the Gran Chaco.
- 3 Finally, for Gran Chaco-specific commitment, finance companies would have to provide detailed information on how they address deforestation in the Gran Chaco in their loan and investments portfolios, similar to that carried out for the Brazilian Amazon or the Cerrado.



APPENDIX 2: Deforestation policy commitments of top 20 banks and equity investors

Table 11: Top 20 banks funding soy traders operating in the Gran Chaco^{cvi}

Financiers	Archer-Daniels-Midland	Bunge	Cargill	Louis Dreyfus	COFCO	Asociacion de Cooperativas Argentinas Coop	Glencore	Molinos Agro	Total avg financing per year over 10 years (USD mn)	Forest & Finance Soy policy Score ^{dx}	Forest 500 Soy policy score*	Supporter of Cerrado Manifesto ^{cx}	Commitment scope includes Gran Chaco	Recognises Gran Chaco as key deforestation frontier	Made Gran Chaco-specific commitment
Citi	27,169	720	17,073	645	-	-	14,828	-	6,043	4.0	2.8	NO	NO	NO	NO
BofA Securities Inc	25,169	-	16,528	-	-	-	13,490	-	5,519	-	1.7	NO	NO	NO	NO
JP Morgan & Co Inc	27,169	720	16,426	75	-	-	8,000	-	5,239	4.4	4.8	NO	YES ^{cxii}	NO	NO
Barclays	25,325	-	13,854	-	-	-	8,057	-	4,724	-	4.8	NO	YES ^{cxiii}	NO	NO
BNP Paribas SA	2,160	720	17,718	587	-	-	13,877	-	3,506	5.5	7.3	YES	YES ^{cxiii}	NO	NO
Deutsche Bank	2,313	-	5,387	-	-	-	8,382	-	1,608	5.8	6.6	NO	YES ^{cxiv}	NO	NO
Morgan Stanley	-	-	-	-	-	-	14,885	-	1,489	-	3.1	NO	NO	NO	NO
HSBC Holdings	1,815	-	4,339	469	-	-	8,000	-	1,462	3.9	4.7	NO	NO	NO	NO
Credit Suisse	-	-	150	394	-	-	12,069	-	1,261	-	5.6	NO	NO	NO	NO
Mitsubishi UFJ	1,156	720	1,922	-	-	-	6,523	-	1,032	2.1	4.2	NO	NO	NO	NO
ANZ Banking Group	-	-	1,023	-	-	-	8,332	-	935	-	3.3	NO	NO	NO	NO
Standard Chartered	-	-	1,023	100	-	-	8,057	-	918	-	5.9	NO	YES ^{cxv}	NO	NO
Santander	-	-	899	-	-	-	8,057	-	896	3.0	3.8	NO	YES ^{cxvi}	YES ^{cxvii}	NO
NatWest Markets	-	-	875	-	-	-	8,000	-	887	-	5.6	NO	NO	NO	NO
DBS Group Holdings	-	25	666	100	-	-	8,000	-	879	-	5.6	NO	YES ^{cxviii}	NO	NO
ING	-	233	59	309	-	100	8,057	-	876	4.7	6.7	NO	YES ^{cxix}	NO	NO
Credit Agricole	-	-	-	285	-	-	8,057	-	834	-	0.0	NO	NO	NO	NO
Societe Generale SA	-	-	59	232	-	-	8,000	-	829	-	5.5	NO	YES ^{cxix}	NO	NO
Commerzbank AG	-	-	-	-	-	-	8,057	-	806	-	2.3	NO	NO	NO	NO
UBS	-	-	-	-	-	-	8,057	-	806	-	5.2	NO	YES ^{cxix}	NO	NO

* Soy-related scoring has been converted to a scale from 1 to 10



Table 12: Top 20 equity holders in listed soy traders operating in the Gran Chaco

Investor Name	Archer-Daniels-Midland Co	Bunge Ltd	Glencore PLC	Molinos Agro SA	Tot. Holdings (USD mn, June 2021)	Forest & Finance Soy policy Score	Forest 500 Soy policy score*	Supports Cerrado Manifesto	Commitment scope includes Gran Chaco	Recognises Gran Chaco as key deforestation frontier	Made Gran Chaco-specific commitment
BlackRock Inc	2,161	793	3,741	-	6,695	1.0	0.0	NO	NO	NO	NO
Vanguard Group Inc	3,227	1,047	2,199	-	6,473	0.2	0.0	NO	NO	NO	NO
Mistakidis (Aristotelis)	-	-	4,947	-	4,947	-	-	NO	NO	NO	NO
Badenes (Daniel Francisco Mate)	-	-	4,747	-	4,747	-	-	NO	NO	NO	NO
State Farm Insurance Co	2,919	-	-	-	2,919	-	0.0	NO	NO	NO	NO
State Street Corp	1,834	323	193	-	2,350	0.7	0.0	NO	NO	NO	NO
Capital World Investors	1,677	579	-	-	2,256	-	-	NO	NO	NO	NO
Dodge & Cox	-	-	2,092	-	2,092	-	-	NO	NO	NO	NO
Allan Gray (Pty) Ltd	-	-	1,839	-	1,839	-	-	NO	NO	NO	NO
Glencore Employee Benefit Trust	-	-	1,336	-	1,336	-	-	NO	NO	NO	NO
Wellington Management	1,111	133	81	-	1,325	-	0.0	NO	NO	NO	NO
Kalmin (Steven)	-	-	1,167	-	1,167	-	-	NO	NO	NO	NO
T Rowe Price Group Inc	51	834	61	-	945	-	0.0	NO	NO	NO	NO
FMR LLC	118	578	248	-	944	-	-	NO	NO	NO	NO
Geode Capital Holdings LLC	548	138	249	-	935	-	0.0	NO	NO	NO	NO
Dimensional Holding Inc	262	273	230	-	765	0.5	0.0	NO	NO	NO	NO
Sun Life Financial Inc	605	2	119	-	726	-	0.0	NO	NO	NO	NO
Delaware Investments Management	668	2	-	-	670	-	-	NO	NO	NO	NO
Abrdn PLC	31	22	611	-	664	-	-	NO	NO	NO	NO
Gqg Partners LLC	0	1	620	-	621	-	-	NO	NO	NO	NO

* Soy-related scoring has been converted to a scale from 1 to 10



APPENDIX 3: Legal frameworks to prevent deforestation

Argentina

There is a significant concentration of land ownership favouring large landowners in Argentina. Agricultural censuses from 1952 to 2008 in Argentina show a sharp decline in farms that are owned by individuals while the size of farms owned by large landowners and other significant actors in agriculture investment such as transnational companies increased. In the 2002 census, the 936 largest landowners had control of 35.5 million hectares of land compared to 137,000 producers owning a total of 2.2 million hectares. Just four landowners had roughly the same amount of land as all the small producers combined.

Deforestation in the Argentinian Gran Chaco has resulted in about 5 million hectares of forests destroyed in the first two decades of the 21st century.^{cxxii} Expanding farmland is considered the main driver of deforestation in the provinces of Santiago del Estero, Salta, Gran Chaco and Formosa that make up much of this region in the country.^{cxxiii}

Deforestation from soy in the Argentine Gran Chaco is occurring despite the passing of a Forest Law that was designed to reduce deforestation. Law No.26.331 of Minimum Standards for the Environmental Protection of Native Forests (the Forest Law) was enacted in late 2007 and requires each province to approve their own implementation, without which no deforestation can be authorized. However, it was found that the Argentine Gran Chaco region has 23 million hectares of potential high conservation value forest areas that were not included in any legislation map and around 10 million hectares of forest can still be legally deforested despite the Forest Law.^{cxxiv} Furthermore, analysis has shown that in 2016 over half of the deforestation in the Salta province in the Gran Chaco region was illegal.^{cxxv} In total, 5.6 of the 6.5 million hectares (87%) of forest loss in Argentina between 1998 and 2018 occurred in the Gran Chaco.^{cxxvi}

One of the shortcomings of judicial activities when it comes to deforestation is the lack of funding for the enforcement of implementation activities of the law. The financial proposal in 2019 for instance, earmarked just 595 million pesos (around USD 16 million) for the protection of more than 50 million hectares of native forest (USD 0.32 per hectare). This represents only 4.75% of what is stipulated by the Law of Forests.^{cxxvii}



Paraguay

Soybean production in Paraguay is highly industrialised and mainly grown on medium/large farms. Approximately half of the land of medium and large producers belongs to foreigners.^{cxxviii}

Federally there is legislation (Law 422/3) that regulates the use of forests and forest land, prohibiting its clearing and establishing that it cannot be used without authorization from the enforcement authority.

Furthermore, there are decrees that stipulate that environmental impact assessments have to be carried out for the use of native forests on farms and properties of more than 500 ha in the Eastern Region and more than 2,000 ha in the Gran Chaco region in the West. In addition, farms are required to maintain at least 35% of the forests on their land.^{cxxix, cxxx}



In the Eastern region of the country, Law 2524/04, known as the “zero-deforestation Law”, was passed in late 2004 and prohibits the change of land use of natural forest surfaces. This Law has been extended a number of times.^{cxxxix} Despite the law and policy being in place since 2004, it has been shown that more than 40,000 hectares of land were deforested during the year 2013 alone.^{cxxxix} Recently scientists also determined that deforestation rates in North-western Paraguay are gathering speed.^{cxxxix}

It has been estimated that even when complying with zero legal deforestation efforts, seven million hectares can be legally deforested in the Paraguayan Gran Chaco, the equivalent of half of the remaining forest area and 29% of the Gran Chaco land area in Paraguay.^{cxxxix} As is the case in Argentina, there is also significant illegal deforestation in the Paraguayan Gran Chaco. The Forest Authority recently published a study indicating 20% of deforestation in the Paraguayan Gran Chaco is unlawful and today the region has one of the highest rates of deforestation in the world.^{cxxxix}

Limited budget for enforcement is one of the key problems identified in Paraguay. Where implementing institutions do not have sufficient capacity to apply the laws due to their budget restraints. Furthermore, there is a lack of rangers in national parks to deter illegal deforestation and there is a risk that the existing laws relating to protected sites and species are not enforced by relevant authorities.^{cxxxix, cxxxix}



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ABOUT PLANET TRACKER

Planet Tracker is an award-winning non-profit financial think tank aligning capital markets with planetary boundaries. Planet Tracker engages directly with financial institutions to modify environmentally unsustainable capital flows using break-through analytics, supported by practical dashboards and toolkits, to reveal the role of capital markets in the degradation of our ecosystem and show the benefits of driving a transition to a zero-carbon, nature positive economy.

Our current focus is on Food System Transition across both land & sea-based food production and supply chains and Materials Management Transition for Plastics and Textiles, both of which are generating unacceptable levels of waste and pollution on land and in the oceans.

ABOUT OUR FOOD SYSTEM TRANSITION PROGRAMME

As part of our overarching Food System Transition Programme, Food & Land Use Tracker changes the behaviours and business practices of global food system companies indirectly, by applying pressure on the financial institutions that provide their funding so that they pass that pressure on to the companies themselves. We provide them with information about the investment risks and opportunities that the transformation of the global food system will create, and we highlight the related reputational and operational risks that they themselves will be exposed to.

ACKNOWLEDGEMENTS

Authors: Ewan Mitchell, Peter Elwin, Mario Rautner

Reviewers: Hiral Patel, Matthew Courtnell

WITH THANKS TO OUR FUNDERS



This report is funded in part by the Gordon and Betty Moore Foundation through the Finance Hub, which was created to advance sustainable finance.





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