Combating deforestation linked to the soy industry

The role of traders and banks involved in the Brazil-China soy supply chain.

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This report is a summary of Julia Sigles Robert's dissertation for the MSt in Sustainability Leadership at Cambridge University[1], where a more detailed justification of the observations summarised in this report can be found if required.

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List of Abbreviations

ABC Program	Brazil's "Low-Carbon Agriculture" program
CAPEX	Capital Expenditure
CAR	Cadastro Ambiental Rural (Brazil's National Environmental Registry of Rural Properties)
EU	European Union
FIP	Forest Investment Program
GHG	Greenhouse Gases
KPIs	Key Performance Indicators
PCI	Produce, Conserve and Include
RTRS	Roundtable on Responsible Soy
SLLs	Sustainability-linked Loans
US	United States (of America)
WTO	World Trade Organisation

Glossary of terms

Sustainability linked loan (SLL): financial product that incentivises the borrower to achieve predetermined sustainability performance targets measured through specific key performance indicators (KPIs)[2]. For traders, SLLs are typically a one to five-year revolving credit facility (RCF) whereby several banks put together a specific amount of capital. This capital is available to the trader if/when they need it, and such loans are not necessarily linked to a specific investment or use of proceeds. Generally, one bank leads the loan coordination and negotiation with the trader. A series of sustainability-related targets (henceforth referred to as SLL-KPIs) are set and linked to the loan interest rate through a discount proportional to the achievement of the targets. The discount can depend on the number of targets met or on the degree to which a target is met.

Upstream refers to the part of the supply chain that, from an international trader's perspective, moves towards the producers.

Downstream refers to the part of the supply chain that, from an international trader's perspective, moves towards the end-consumers.

Production intensification, in the context of this study, it refers to a more intensive soy cultivation which can be achieved either by replacing pasture with cropland or by increasing soy productivity per hectare on existing plantations. If the second option is to be adopted, it should ideally be achieved by sustainable practices such as regenerative agriculture and good agricultural practice not involving an overuse of chemical inputs.

Executive Summary

Around 13 million hectares are at risk of conversion in Brazil due to the ongoing expansion of soy production driven by the increasing demand from the Chinese soy market[3]. China is globally the largest consumer of soy[4] and Brazil is its largest soy source[5]. While the increase in soy production and exports might be a positive trend for Brazil's economy in the short term, instability in temperatures and rainfall resulting from deforestation associated to soy production[6] could reduce Brazil's growing area suitable for soy production by up to 28% by 2030[7] and, in turn, put at risk China's food security[8].

The study summarised in this report aimed to identify mechanisms with potential to enable Brazil-China soy traders to meet increasing demand while reducing deforestation. As a first step, the factors undermining the efficacy of current corporate anti-deforestation commitments and associated implementation mechanisms were reviewed[1].

Key limiting factors included: 1) The lack of schemes to incentivise long-term behavioural change in key actors and, 2) The lack of access to finance to implement key in-field mechanisms to reduce deforestation (such as production intensification and enhanced supply chain traceability). Therefore, our research focused on exploring the potential of sustainability-linked loans (SLLs) both to incentivise the acceleration of traders' anti-deforestation action and to facilitate farmers' access to finance with deforestation conditionalities. We also considered the opportunities for international traders and banks to influence Chinese soy buyers.

Relevant professionals were interviewed from major Brazil-China soy trade companies and the banks that finance such companies. Collectively, the traders who were interviewed represented over 54% of Brazil-China soy exports in 2018 and over 60% of the total deforestation-risk linked to this trade flow.

We found that to increase and accelerate the effectiveness of anti-deforestation action in the Brazil-China soy supply chain, a series of challenges need to be addressed and a series of opportunities leveraged by coordinated action from traders, banks, and other stakeholders.

First, when exploring the potential of sustainability-linked loans (SLLs) to incentivise the acceleration of traders' anti-deforestation action, some of the challenges identified were:

- None of the SLLs agreed or being discussed by participant banks and traders have been linked to a specific KPI on deforestation reduction.
- The economic incentive of SSLs was not considered to be attractive for traders.
- The lack of incentives for traders' treasurers to embed sustainability considerations into their decision-making was considered a barrier for greater SLLs uptake.
- Both investor capital and financial products with less sustainability conditionality were identified as competing options.

Secondly, when exploring whether there is an opportunity to embed sustainability conditionality within the finance that traders offer to producers, it was identified an interest from banks in collaborating with traders to offer finance to producers. This is a potential opportunity for traders and banks to offer producers more attractive finance that incentivises forest preservation.

Thirdly, evidence showed that traders' efforts can only be effective if the actions and priorities of other key stakeholders align with those of traders. Non-supportive regulatory

frameworks in Brazil and China aside, results highlighted that farmers' lack of engagement with anti-deforestation initiatives is the major limiting factor requiring urgent attention.

Finally, a preliminary analysis suggested that it can be very challenging for individual Brazil-China soy traders to enforce anti-deforestation standards to Chinese soy buyers through market conditionalities. However, if the majority of Brazil-China soy traders were able to agree on a common strategy to influence Chinese soy buyers, it might be possible to leverage their dependence on international suppliers. Additionally, we argued that international banks and traders should join forces and collaborate to influence Chinese soy buyers through sustainability-linked loans that incentivise the demand for zero-deforestation soy.

The study concluded with a series of recommendations.

Brazil-China soy traders should:

- Incentivise their treasurers to contract financial products linked to anti-deforestation considerations.
- Agree harmonised anti-deforestation targets and measurement criteria for the soy industry.
- Agree a joint strategy to engage Chinese soy buyers in supporting traders' anti-deforestation efforts.
- Use traders' already existing platform Covantis[9] to coordinate joint efforts (including the enhancement of soy traceability to the farm level).

International banks should:

- Make sure that specific SLL-KPIs on deforestation are set in new and renewed SLLs. Additionally, set SLL-KPIs on traceability to the farm and production intensification.
- Promote the use of a common framework to set anti-deforestation targets and measurement criteria among borrowers in the Brazil-China soy supply chains (e.g. by using the Accountability Framework[10]).
- Enhance the attractiveness of SLLs to traders by making sure the offered capital interest discount covers, at least, associated monitoring costs.
- Enhance traders' eligibility for SLLs by incentivising their first steps towards setting sustainability targets and associated monitoring mechanisms too.
- Enhance SLLs' potential to accelerate change by embedding sustainability conditionality to the financial products covering most of traders' financial needs.
- Invite relevant Chinese banks financing soy to join them in offering SLLs with anti-deforestation conditionality to Chinese soy buyers.
- Come together to put pressure on financial regulatory authorities to establish a minimum threshold of anti-deforestation conditionalities that any financial institution must require of any borrower in the soy supply chain.

Brazil-China soy traders and international banks in partnership should:

- Foster conciliatory conversations with producers' associations to engage them in the co-definition of solutions to increase production while reducing deforestation.
- Offer soy producers long tenor SLLs that incentivise long-term forest preservation and production intensification.
- Offer Chinese soy buyers SLLs that incentivise demand for zero-deforestation soy.

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1. Introduction

Soy plays a pivotal role in ensuring global food security. While it is present in food products, oilseed, and biofuels, over 75% of the global soy supply is used as feed in the livestock and farmed fish industries[11]. It is therefore linked to the booming meat, fish, dairy, and egg industries and yet its trade presents a number of pressing controversies that still need to be addressed to promote further sustainable soy[12].

As the world's largest pork and egg producer and second-largest poultry producer, China is the largest consumer of soy[4]. Soy imports are in fact vital to China's food security as they account for over 85% of its domestic consumption[8].

Brazil, currently the largest soy exporter in the world[13], is China's largest soy source[5]. While the increase in soy production and exports might be a positive trend for Brazil's economy in the short term, instability in temperatures and rainfall resulting from deforestation associated to soy production[6] could reduce Brazil's growing area suitable for soy production by up to 28% by 2030[7]. Additionally, deforestation has great negative impact on biodiversity[14,15]. Brazilian soy imported by China is in fact linked to 50% of the total deforestation-risk of Brazil's soy exports[16,17].

In the context of a weak anti-deforestation regulatory framework in Brazil, international action led by the private sector has become critical. Within the private sector, companies trading soy between Brazil and China can hold a significant influencing role due to the high concentration of soy-volumes they manage. Several academics argue that time-bound anti-deforestation commitments adopted by traders could be enforced upstream and downstream and thus accelerate change if implemented effectively[18,19].

Five major traders account for 52% of Brazil-China soy trade[20] and have direct commercial links with around 200,000 mid or large-sized Brazilian soy producers[21]. Involving and empowering local stakeholders is essential for the success of any initiative pursuing the conservation of ecosystem[22]. For traders, the most relevant local stakeholders are soy producers because without their engagement traders will be unable to achieve their anti-deforestation commitments. A key barrier found in the initial literature review, was the lack of scalable incentive-schemes that compensate producers for the opportunity cost of not deforesting[16,23–27].

As many of the mechanisms reviewed (e.g. certification schemes) were seen to be ineffective because the appropriate incentives were lacking, this study seek to explore the potential of sustainability-linked loans (SLLs) to incentivize the acceleration of anti-deforestation action across the Brazil-China soy supply chain when adopted and promoted by traders.

Sustainability linked loans (SLLs) are a kind of financial product offered by banks that incentivise borrowers to achieve a series of pre-agreed sustainability targets[2]. For the trade sector, several banks put together an agreed amount of capital that is made available to the borrower if/when they need it (as opposite to green bonds, SLLs are not necessarily linked to a specific project or use of proceeds). One bank leads its coordination and negotiation with the borrower. The agreed sustainability targets are measured through specific key performance indicators (henceforth referred to as SLL-KPIs), the achievement of which is linked to a discount in the loan interest rate. The discount can be proportional to the number of targets met or to the degree of achievement for each target.

While Brazilian banks have already tried for a decade to incentivise sustainable production practices through the ABC Finance Program[28], its adoption has been limited due to barriers encountered when attempting to develop a market for Brazilian producers. This study focused instead on exploring the potential of sustainability-linked loans (offered by international banks to international traders) to incentivise traders to act on and enforce their anti-deforestation commitments upstream and downstream.

International banks have an overarching presence in the soy supply chain as they can finance all actors. Furthermore, according to the World Trade Organisation (WTO)[29], 80-90% of global trade relies on finance, so international banks are well positioned to influence and incentivise traders to act on their anti-deforestation commitments.

Given the interdependencies between actors in the Brazil-China soy supply chain, anti-deforestation strategies leveraged by traders and banks could facilitate the promotion of mechanisms and associated metrics across the whole supply chain.

This report summarises the research approach (Section 2), the main insights and best practices mentioned in interviews with traders and banks (Sections 3, 4, and 5), and the concluding observations and recommendations (Section 6).

2. Research approach and objectives

The study was undertaken in the form of qualitative research through semi-structured interviews as the method to collect data. Relevant professionals working at the major Brazil-China soy trade companies and at the banks publicly identified as financing such traders were targeted as interviewees[17,30,31]. A total of 13 interviews to 16 interviewees representing 6 major Brazil-China soy traders and 6 banks were completed. The trade companies they collectively accounted for over 54% of soy exports from Brazil to China in 2018 [32] and for over 60% of the total deforestation-risk linked to this trade flow in 2018 [33].

Interviews were designed to last approximately 1 hour. However, there was no strict time limit or a closed set of questions. The questions aimed to obtain information about:

1. Potential of banks' sustainability-linked loans (SLLs) to incentivize the acceleration of traders' anti-deforestation action.
    - Level of uptake.
    - Drivers and barriers affecting their uptake.
    - Extent to which SLLs are driving further sustainability action.
    - Extent to which SLLs are addressing prevention of deforestation within their targets.
        - How SLL targets addressing deforestation are defined.
2. Potential of traders' financial divisions to influence producers to prevent deforestation.
3. Perceived barriers that traders and banks encounter that affect the efficacy of their anti-deforestation efforts.
4. The potential of traders and banks to influence Chinese soy buyers to include deforestation considerations in their demand specifications.

The content of the interviews was analysed inductively and common themes emerging from the data were identified as the analysis progressed[34]. NVivo was employed to facilitate a rigorous and structured analysis of the data [35].

3. The potential of SLLs to incentivise traders' anti-deforestation action

The first part of interviews explored aspects relevant to the potential of SLLs to incentivize Brazil-China soy traders to accelerate anti-deforestation action:

- Extent to which SLL-KPIs currently address deforestation.
- Degree of ambition of SLL-KPIs.
- Degree of SLL uptake.
- Attractiveness of SLL incentives to traders.

3.1. Current SLLs for traders are not linked to specific KPIs on deforestation

The first step required to employ SLLs as an anti-deforestation mechanism would be to link SLLs to targets that specifically quantify borrowers' progress in deforestation prevention.

None of the SLLs agreed or being discussed by participant banks and traders have been linked to a specific KPI on deforestation reduction. By contrast, they focus on energy efficiency, GHG emissions, and traceability.

Traceability to the farm-level was commonly mentioned as a prerequisite to then enable deforestation to be monitored. While two major Brazil-China soy traders have already set SLL targets on traceability, which prepare the way for SLL KPIs on deforestation in the near future, in some cases such commitments do not including indirectly sourced soy and therefore do not cover the unresolved challenge of tracing indirectly sourced soy.

Several participants stated that SLL-KPIs are linked to existing corporate targets instead of encouraging new or more ambitious targets, which suggests that setting new SLL-KPIs on deforestation will involve a proactive and innovative approach from both banks and traders.

> '*we didn't adapt, we just linked the finance to what we were doing already*'. (trader)

Several banks made the point that SLLs are more accessible and flexible than for example green bonds. They said that compared with green bonds, an SSL doesn't require the use of proceeds (a predetermined statement defining how the capital will be spent).

> 'for trading companies that's [green bonds] a little bit harder because there's, at the moment, not enough use of proceeds that is identifiably green or sustainable'. (banks)

While this suggests that SLLs are more generally applicable to traders, SLLs could be less demanding than green bonds.

3.2. Several adjustments are needed to encourage broader adoption of SLLs

SLLs could have greater uptake and therefore impact if banks and traders made appropriate adjustments to overcome the limiting factors identified in this study.

Several traders affirmed that banks' finance is vital for them and that SLLs motivate a faster achievement of the associated sustainability targets.

> *'finance is really the lifeblood of our business, […] having access to adequate finance and funding is really key for us […] so relationships with the banks are paramount'. (trader)*

> *'having this commitment [SLL KPIs] […] have put a very tight schedule […] this has definitely provided a positive motivation […] to fulfil our sustainability objectives'. (trader)*

However, both traders and banks acknowledged the low uptake of SLLs from traders and mentioned several factors limiting its adoption.

Mentioned by traders:

- The economic incentive of SSLs was not considered to be attractive for traders as associated costs for third-party verification of SLL-KPIs' progress can be higher than savings.
- It was perceived that, among eligible companies, SLLs can be more rewarding for companies performing badly (as they have more cost-effective opportunities for improvement) than for companies already performing well (as incremental improvements are likely to involve greater efforts and costs).
- Traders with different ownership structures can have different levels of interest on banks' finance.

Mentioned by banks:

- Adopting a SLL requires an existing sustainability agenda with mechanisms in place to measure progress on specific KPIs, which means that traders beginning their sustainability journey are not be eligible and thus cannot be incentivized through this mechanism.

> *'many of the customers […] don't have clear sustainability performance indicators we can link [to] a banking facility'. (bank)*

- The lack of incentives for traders' treasurers to embed deforestation considerations into their decision-making.

- Both investor capital and financial products with less sustainability conditionality were identified as competing options which could make it difficult to scale SLLs and, as a consequence, diminish their potential to accelerate change.

> *'if you do not provide the [traditional] loans, they will just go to the other [banks] that are happy to provide the loans'. (bank)*

3.3. How banks could make SLLs more attractive

Some traders said they would be interested in greater capital interest discounts that cover at least the extra costs associated with the required measurement and reporting of SLL-KPIs and other said they were particularly interested in supply chain finance, a longer tenor and risk-sharing.

While it was confirmed that sustainability conditionality could be embedded in any financial facility, some banks questioned the viability of offering higher discounts unless Central Banks facilitate cheaper capital for such transactions, or the associated risk is low or otherwise shared.

> *'[the] bank it's not getting any cheaper financing […] we are giving discounts out [of] our pockets and, also, we are managing someone else's money. […] I don't know whether providing a lot more discount is even viable for us.' (bank)*

The Banking Environment Initiative[36] already suggested in 2016 that Central Banks, Multilateral Development Banks, Export Credit Agencies and government funds should facilitate access to cheaper capital and/or share risk for sustainable finance purposes. While Brazil's Treasury pays for the difference between the market interest rates and the discounted interest rates offered through rural credits to promote sustainable agriculture[37], this only applies to Brazilian banks and producers. A more widely applicable solution for international banks to raise cheaper capital that incentivises anti-deforestation action implemented by international companies is required.

The Forest Investment Program[38] (administered by the World Bank and implemented with four other Development Banks) finances public and private investments designed to reduce deforestation and forest degradation in developing countries. International banks could potentially collaborate with the FIP to facilitate the provision of greater incentives to soy supply chain actors reporting progress in deforestation prevention.

Regarding the possibility of offering supply chain finance as an incentive, one bank stated that they facilitate access to up to a 100% of the capital expenditure (CAPEX) required for the sustainability investments of their Chinese customers' suppliers. Additionally, they reward their suppliers' sustainability improvements. For instance, they 'provide cash repays', which are granted either in the form of 'a longer tenor, a higher loan value ratio or a lower interest rate.' It was highlighted that in China having access to up to 100% of the required CAPEX is already an incentive as loans there will generally only cover up to 70% of a project's CAPEX.

In Brazil, another bank offers producers committing to forest preservation and restoration a special fund that grants a longer tenor as well as a capital interest discount. According to the participant statement, in Brazil banks would offer up to seven-year loans (and more typically annual loans to finance production), but the fact that this special fund grants up to ten-year loans it is in itself an incentive.

4. Potential to influence producers' anti-deforestation behaviour through traders' financial divisions

As explained some soy producers are financed through traders' financial divisions, the second set of interview questions explored whether there is an opportunity to embed sustainability conditionality within the finance that traders offer to producers.

4.1. International banks and traders could together incentivise no-deforestation soy production

If proper sustainability conditionality and incentives are included in the finance they offer to producers, traders in partnership with banks could offer them better financial options and incentivise forest conservation. For instance, loans with a longer tenor could incentivise long-term forest preservation.

While traders stated that as producers are increasingly eligible for bank financing they are finding themselves financing fewer producers, several sources state that in the Cerrado traders provide 16-17% of the total capital used in soy production[28,39], which accounts for 27.5% of the total capital needed to finance producers in these regions. It is certainly not a negligible proportion.

Some international banks acknowledged their low appetite for financing producers due to the small size of loans producers require, their disperse locations and the high risk of such operations. This was consistent with the literature, which revealed that private banks only financed a 10.8% of the financing needs for soy production in the Cerrado in 2016/2017 [28].

Surprisingly, several banks recognised their interest in collaborating with traders to offer finance to producers. One bank stated:

> *'to make it bankable […] we [banks] need the traders to be willing to do that demand aggregation for the bank'. (bank)*

Desk review and reporting were commonly mentioned as the way banks review the progress of their SLL customers.

> 'it's not really down to the bank to measure the progress of our customers' sustainability performance. [..] it's actually really down to the customers to disclose their progress to the bank'. (bank)

By contrast a minority of banks took a more proactive approach by employing technical assistance that visit all the farms and fulfil scoring checklists or verifying thousands of loans per year through satellite photos together with government databases.

4.2. Blended finance would help traders and banks incentivising insolvent producers too

The Chinese government could support the incentivisation of Brazilian soy producers for forests preservation.

It was noted by traders that partnerships with banks had proved challenging in the past and that blended finance (a combination of public and private finance) might be required to make it work. One stated:

> *'public money needs to step in further to either take the first loss or provide guarantee to help reduce the risks'. (trader)*

At a time when it is undermining its Environmental Agency to support agricultural expansion[40,41] and farmers associations' are putting pressure on it to abolish the Amazon Moratorium, the Brazilian government is unlikely to fund the incentivisation of zero-deforestation initiatives.

China, by leveraging its position as a leader in green finance and its investments in South-South cooperation initiatives, it could switch capital to land-based solutions to mitigate climate change (currently receiving only 3% of funding)[42]. China's food security is dependent on Brazil's ecosystems as over 85% of China's soy consumption depends on imports mainly supplied by Brazil.

4.3. The risk for producer dependency still needs to be managed

Producers' welfare should be guaranteed by involving an arbitrary third-party organisation (e.g. relevant civil society representatives).

With reference to an existing 10-year loan programme offered by a bank and a trader working in partnership, a participant stated that

> *'one of the requirements is that the farmer has to sell to [the trader] for the entire term of the [credit] line'. (bank)*

While a requirement of this kind is likely to be positive in terms of incentivising long-term forest preservation if proper conditionality is set, it also makes producers vulnerable by placing them in a potential relationship of dependency.

5. Factors requiring urgent solutions to facilitate anti-deforestation efforts

In the course of the interviews the traders and banks mentioned a series of barriers, and necessary enablers, influencing effective implementation of anti-deforestation efforts. These were captured to enrich the contextual understanding and have been summarised.

5.1. The regulatory framework does not support traders' efforts

Conflicts between private sector zero-deforestation initiatives and Brazilian and WTO regulations protecting the market access of soy linked to legal deforestation were mentioned by participants and identified by the literature as a limiting factor[18]. A bank representative revealed that:

> *'farmers are trying to find a legal way to force those trading companies to buy from them because they say: "I'm doing everything according to the regulation, I do respect your [Brazil's] legislation, and there are these companies that are not buying from me so we have to penalize them" '. (bank)*

This could explain why traders did not sign a letter in which 84 companies asked Bolsonaro to keep the Amazon Moratorium after soy producing associations had asked him to abolish it. Key Brazil-China soy traders have not endorsed the Cerrado Manifesto either[43,44].

5.2. Brazilian soy producers need to be involved in devising solutions and compensated through long-term incentive schemes

There is still a need to design ongoing incentive-schemes that guarantee the long-term preservation of forests. The design of new solutions must involve and empower producers from the beginning. They could combine continued access to attractive sustainability-linked loans (that incentivise forest preservation and production intensification) with payments for ecosystem services.

It was mentioned by participants and is widely reported in the media that producers are against zero-deforestation initiatives and attempt to frustrate them by appealing to the legality of their producing practices. Furthermore, traders revealed that there is an anti-trader rhetoric among farmers and pressure on them to disengage from the Amazon Moratorium[41].

The importance of involving producers right from the start of any initiative was stressed by several participants, who highlighted that many initiatives and commitments are set at a high level without taking account of producers' realities and behavioural drivers.

Another key unresolved aspect is the lack of fair and long-term incentive-schemes compensating producers for the opportunity cost of preserving native vegetation they could otherwise legally convert. The relevance of incentivising producers to facilitate anti-deforestation action in Brazil was highlighted by numerous authors in the literature review [16,23–27].

Currently, there are a number of initiatives which seek to incentivise Brazilian soy producers to preserve forest they could legally deforest in their farms. For instance, the Cerrado Working

Group raises capital from major retailers to compensate farmers[45] and WWF's Agribusiness Receivables Certificates offer 'low-cost' credits to producers[28]. However, these represent temporary rather than long-term solutions.

One bank stated that they are exploring solutions to pay farmers for ecosystems services by calculating the carbon sequestration of preserved areas and generating carbon credits to be sold in the carbon market. They stated that they have evidence that the income collected would be attractive enough for producers to not deforest. The key question here is whether these payments for ecosystems services will annual and continued or whether they will be temporary or just punctual.

5.3. Lack of alignment between traders' targets

As Garrett et al.[46] suggests, for anti-deforestation commitments to be really effective, the global market for a particular commodity needs to use aligned implementation and verification mechanisms.

Although several traders have joined the Soft Commodities Forum, which promotes a common framework for reporting in soy sourcing areas [47], there is a lack of alignment between traders in setting and measuring corporate anti-deforestation targets.

As one of the trader participants stressed:

> *'in soy, we [traders] are aligned on the end goal […] of ending conversion in the shortest time possible […] but we are not aligned on the how'. (trader)*

If future deforestation commitments and SSL-KPIs are harmonized among soy traders and include the features recommended by relevant experts, they are likely to have greater on-the-ground impact. Some of the recommendations include: ambitious zero-deforestation and forest descriptions, immediate implementation deadlines, harmonisation of deforestation targets across regions and commodities, applicable to any supplier, quantitative science-based[47] targets to monitor progress, and sanction-based mechanisms combined with incentive-schemes [4,19,25,27,48–50].

For instance, the Accountability Framework[51] could help to ensure that corporate commitments, activities, monitoring systems, and reporting practices reflect common and agreed-upon norms and specifications.

5.4. Production intensification and anti-deforestation targets need to go hand by hand

Banks' SLLs should also include KPIs that focus on incentivising the intensification of soy production and traders' anti-deforestation strategies should include actions to promote and support more intensive production among their suppliers. More intensive soy cultivation can be achieved either by replacing pasture with cropland or by increasing soy productivity per hectare on existing plantations.

Although agricultural intensification in Brazil has been promoted and incentivised through rural credit schemes for some years now[37], it appears that in the case of soy the opportunity to increase yields and so reduce the amount of land converted to production has not been fully

leveraged. Strassburg et al.[49] found that current productivity of Brazilian cultivated land is 33% of its potential and that by increasing productivity to 50% it will be possible to meet demand for meat, crops and biofuels until 2040 without further deforestation.

It is surprising that 'intensification' was only mentioned by two participants as it is the in-the-field solution to the problem of meeting growing demand while reducing deforestation[49].

5.5. Soy traceability to the farm is still pending

Covantis could be leveraged to coordinate joint traceability and anti-deforestation action among Brazil-China soy traders.

Traceability at farm-level was highlighted by most participants and the literature review[19,48] as challenging but, at the same time, essential to the achievement of any supply chain anti-deforestation target. This is a key unresolved barrier and both digital technologies and supply chain partnerships[52,53] appear to be potential solutions that require further exploration, investment and incentivisation[36,54].

Since 2018, major Brazil-China soy traders have co-led an initiative aiming to digitise commodity post-trade (legal paperwork) to optimise costs, times and resources[55]. The initiative recently became a Swiss legal entity co-owned by six major Brazil-China soy traders under the name Covantis[56]. It focuses on grain and oilseed commodities exported from Brazil, but its scope does not include digitisation of upstream operations, so it does not involve enhancing traceability at farm-level[57].

For now, Brazil's registry system CAR, which tracks compliance with Brazil's Forest Code at the individual farm level[58], can help traders verify whether direct suppliers are deforesting within their farms. Although the Forest Code allows some legal deforestation and CAR has some weaknesses[1], traders can use CAR's information to verify whether a farm is legally deforesting, whether it is preserving more forest than legally required, or whether it has been linked to illegal deforestation. In addition, satellite imagery systems and mobile technology that could enhance traceability in soy supply chains are being developed.

5.6. There is a need for more effective partnerships

Banks and traders could encourage their Chinese soy buyers to take part in initiatives that link forest preservation with access to the Chinese market (like the PCI does with the EU market).

A number of interviewees stressed the need for more effective partnerships at different levels: at the jurisdictional level, internationally across supply chain actors, within sectors and between the public and private sectors. According to Caplan (2013) three key success factors for complex multi-stakeholder partnerships are (1) being "fit for purpose", (2) adopting a systemic approach that creates and demonstrates clear impact, and (3) using accountable governance mechanisms.

These recommendations are combined with the involvement of local stakeholders and an appreciation of the interdependencies among commodities in initiatives such as Produce, Conserve and Include (PCI), which is designed to address deforestation and forest degradation in the Brazilian state of Mato Grosso and aims to incentivise more intensive production by facilitating access to EU markets for responsible soy[59]. The PCI initiative

involves soy and beef local actors, the local government, and NGOs, it raises capital from EU companies and it publicly reports key KPIs in an online dashboard [60].

6. Potential of traders and banks to exert influence downstream

The last interview question explored the argument by Folke et al. (2019) that traders could also enforce their sustainability standards downstream. Although this question was formulated with traders in mind, banks were also asked so that their perspective could be captured.

6.1. The power of influence of main traders on Chinese soy buyers it is not evident

If the majority of Brazil-China soy traders were able to agree on a common strategy to influence Chinese soy buyers, it might be possible to leverage the dependence of these Chinese buyers on international suppliers. Further research is needed to provide evidence on the specific measures that would have to be put in place to enable traders to enforce the adoption of anti-deforestation standards among their soy buyers.

All traders said that Chinese buyers do not demand deforestation-free soy at all, and most of them stated that their power of influence downstream was limited to raising awareness through existing initiatives and informing buyers about their product options (e.g. RTRS certified or zero-deforestation soy). By contrast, although they do not provide evidence, Murphy et al.[61] argue that traders can decide where the soy is shipped, and Folke at al.[18] state that traders' power of influence allows them to impose sustainability standards on their buyers.

The fact that China imports over 57% of the soy traded globally, and that no other country imports more than a 4%[62], suggests that it would be very challenging for Brazil-China soy traders to enforce anti-deforestation standards through market conditionalities. Disengagement or pricing conditions might work with other soy supply chains or commodities, but it would be very difficult for Brazil-China soy traders to shift part of their Chinese demand elsewhere as there is no comparable market. Europe, for instance, imports only 13% of global soy [62].

On the other hand, Chinese buyers are heavily dependent on imported soy. As mentioned earlier, over 85% of Chinese soy demand is imported [8], a staggering figure, and this could perhaps prove to be China's Achilles heel, particularly in view of the fact that most of the imports are shipped by non-Chinese companies[32] and Chinese companies have less control over productive land in Brazil (China's largest supplier) than US and EU companies[63]. In other words, the business continuity of Chinese buyers depends on the soy production and shipment of non-Chinese companies.

6.2. Banks and traders can join forces to influence Chinese soy buyers

It can be argued that international banks and traders should join forces and collaborate to influence Chinese soy buyers through sustainability-linked loans that incentivise the demand for zero-deforestation soy.

While the literature highlighted that the Chinese soy industry do not have sufficient margin to pay a premium price[64] for soy, if they committed publicly to demand a gradually increasing proportion of zero-deforestation soy this would send a clear market signal that the largest importer of Brazilian soy will no longer accept soy linked to any kind of deforestation in the near future and potentially influence producers' practices.

As interviewees suggested that banks have more opportunities than traders do to influence Chinese soy buyers (by requiring anti-deforestation reporting, promoting certified soy, incentivising, penalising or even disengaging), international banks in collaboration with traders could potentially influence Chinese soy buyers' demand. Traders have direct connections with Chinese soy buyers and banks have sustainable finance budgets they could use to incentivise the demand of zero-deforestation soy.

As three Chinese banks (Bank of China, Industrial and Commercial Bank of China and Agricultural Bank of China) provide 62% of loans in the Chinese soy sector[20], international banks could engage with them to create joint SLLs for Chinese soy buyers. It would be strategic if they focused on the Chinese feed industry as this is the largest consumer of soy (especially the pig industry) and currently not subject to market or governmental pressure.

6.3. The Chinese government can play a key role in the conservation of Brazil's forests

Further research is required to build a business case that leverages China's dependence on imports of soy by using quantitative evidence to demonstrate that failure to prevent deforestation in soy-producing countries will adversely affect the Chinese economy and pose a threat to Chinese food security in the long term.

Traders pointed out that Chinese companies will only take action if the Chinese government mandates them do so and stressed the need to build a business case that links forest loss in their sourcing regions with Chinese food security.

> *'it's hard for them [Chinese buyers] to understand why they should bother because it's just something happening in another country'. (trader)*

> *'we need the Chinese government to really understand the implications of conservation for their own food security in the long term and, on that basis, hopefully some policy guidance will be out there that will be ultimately helpful to mobilize the Chinese soy sector'. (trader)*

Civil-society experts working on the main soy initiatives in China were also consulted and made the same points, but they acknowledged that to date they have not come across a business case based on the link between the degradation of overseas ecosystems and the risk of soy shortages in China, or at least one that is sufficiently convincing to Chinese stakeholders.

7. Conclusions

7.1. Concluding summary

The study showed that there is no single mechanism that can alone drive the required change, but rather a range of them that need to be combined and coordinated by multiple stakeholders. At the same time, the research findings suggest that, if SLLs are adopted by the majority of Brazil-China soy traders, to cover a relevant proportion of their financial needs, and linked to harmonised and well-defined deforestation targets, this particular mechanism can act as a catalyst and significantly accelerate anti-deforestation action (indirectly involving enhanced soy traceability to the farm level to monitor deforestation). Additionally, the findings uncovered a series of factors that should be addressed by banks. Addressing them in the right way would potentially increase traders' uptake of SLLs and therefore enhance the overall anti-deforestation impact of SLLs. However, evidence showed that traders' efforts can only be effective if the actions and priorities of other key stakeholders align with those of traders. Non-supportive regulatory frameworks in Brazil and China aside, results highlighted that farmers' lack of engagement with anti-deforestation initiatives is the major limiting factor requiring urgent attention.

It is argued that joint action by international traders and banks has the potential to incentivise upstream and downstream anti-deforestation action that aligns with traders' anti-deforestation strategies. Upstream, traders and banks could jointly offer producers SSLs that incentivise forest preservation and production intensification. Downstream, they could offer Chinese buyers SSLs that incentivise the demand for zero-deforestation soy. However, further research is needed to explore this downstream opportunity in more detail.

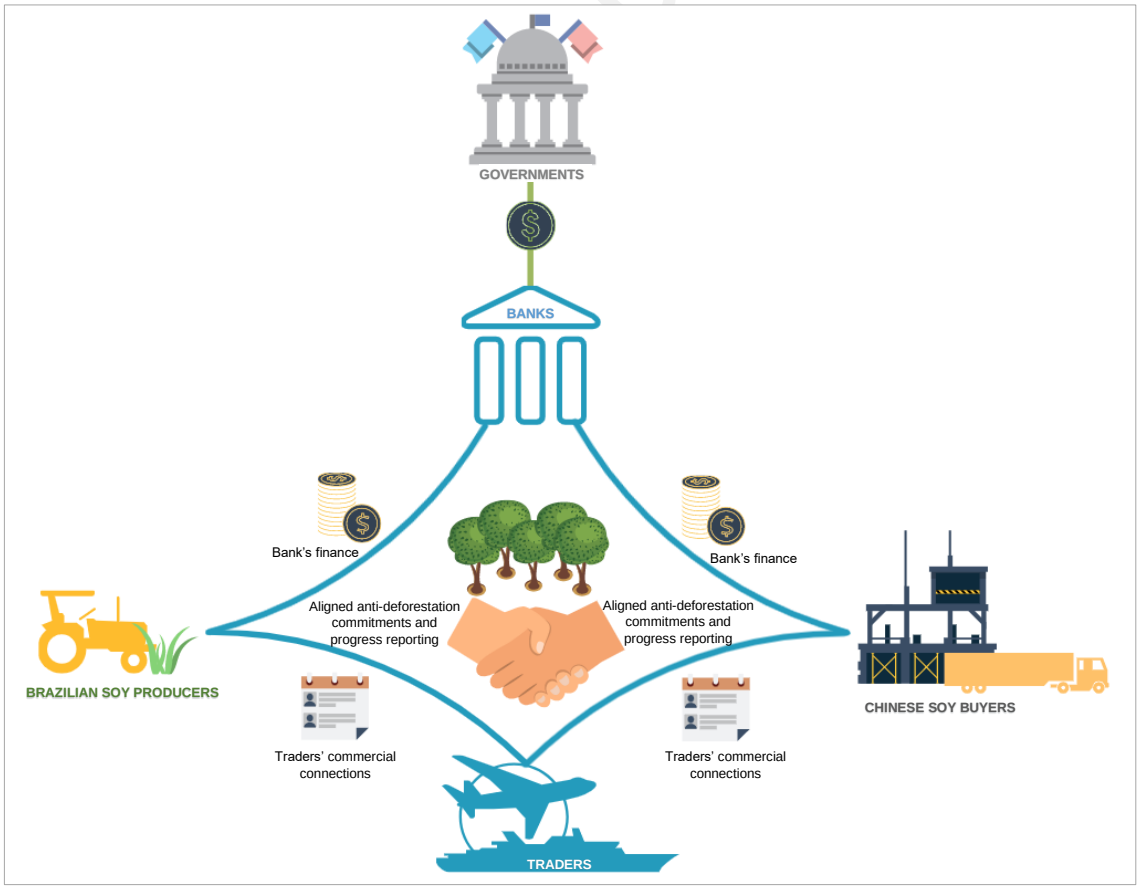

Figure 1- Joint action by international traders and banks could incentivise upstream and downstream anti-deforestation action.

7.2. Recommendations

In the context of incentivising multiple actors through SLLs, the following recommendations summarise the actions required of different stakeholders in order to enhance the impact of traders' anti-deforestation efforts.

Brazil-China soy traders should:

- come together to agree a common framework to define harmonised anti-deforestation commitments, targets and measurement criteria. The framework should include factors identified in this study that enhance in-the-field impact.
- work together to extend the scope of Coventis to employ the new technologies they are developing to enhance traceability of soy to the farm level and share deforestation-related data to facilitate real-time decision-making in accordance with their anti-deforestation policies.
- agree a joint strategy to engage their Chinese soy buyers to publicly commit to increasing their demand for zero-deforestation soy and to support traders' anti-deforestation efforts.
- link their treasurers' remuneration packages to targets that promote the contracting of SLLs with deforestation considerations.

International banks should:

- join forces to put pressure on financial regulatory authorities to promote the establishment of a minimum threshold of anti-deforestation conditionalities that any financial institution (including investors and asset managers) must require of any borrowers in the soy supply chain.
- link specific SLL-KPIs that measure progress in deforestation prevention to SLLs adopted by any actor in the Brazil-China soy supply chain.
- promote the use of common SLL-KPIs and monitoring criteria among different borrowers in the Brazil-China soy supply chain.
- address the factors identified in this study that are limiting a more widespread adoption of SLLs among traders and apply sustainability conditionality to the financial products covering most of their financial needs.
- invite major Chinese banks financing the Chinese soy industry to join them in creating SLLs for Brazil-China soy supply chain actors.

Brazil-China soy traders and international banks in partnership should:

- offer soy producers long tenor SLLs that incentivise long-term forest preservation and production intensification.

- foster conciliatory conversations with producers' associations to engage them in the co-definition of solutions to increase production while reducing deforestation.
- offer Chinese soy buyers SLLs that incentivise demand for zero-deforestation soy.

Civil society initiatives such as the TRADE HUB (with researchers in Brazil and China) could foster collaboration among national governments, private sector actors, banks and academia and assist in the definition of the required regulations, corporate policies and targets.

International Central Banks and Multilateral Development Banks should support banks by providing cheaper capital and risk-sharing for SLLs that incentivise deforestation prevention and soy production intensification.

The Chinese government should:

- enforce sustainable soy guidelines for the Chinese soy industry (based on Solidaridad's work) that include overseas deforestation prevention.
- require the Brazilian government to halt deforestation as a conditionality linked to their trade agreements.

The Brazilian government should guarantee the enforcement of the Forest Code and the CAR and address their weaknesses.

The Brazilian and Chinese governments should:

- support initiatives that incentivise Brazilian soy producers to increase yields, intensify production and prevent deforestation.
- support traceability initiatives in the Brazil-China soy supply chain.

(from both economic and regulatory perspectives)

Chinese soy buyers should send a clear market signal that the largest importer of Brazilian soy does not accept soy linked to any kind of deforestation.

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