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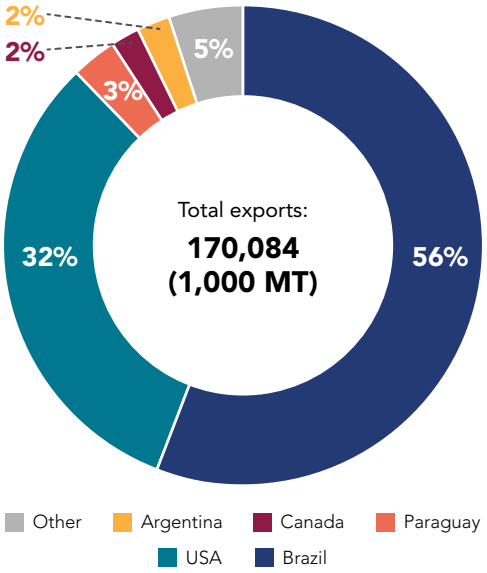
# Soy Briefing Note

# Overview of the Global Soy Supply Chain

Brazil and the United States are the leading producers of soybeans, accounting for 42% and 31% respectively of global production in 2022 (Figure 1). These two countries also lead in global soybean exports, with Brazil alone accounting for over half of global exports in 2022 (Figure 2). Over the past two decades, the production, consumption, and international trade of soybeans have surged, driven by rising incomes in developing countries and global population growth (USDA, 2024). The total value of international soybean trade increased sevenfold from 1995 to 2019 (De Maria et al., 2022). In 2022, China dominated the global soybean import market, with a 61% share, followed by the European Union and Argentina at 8% and 6% respectively (Figure 3).

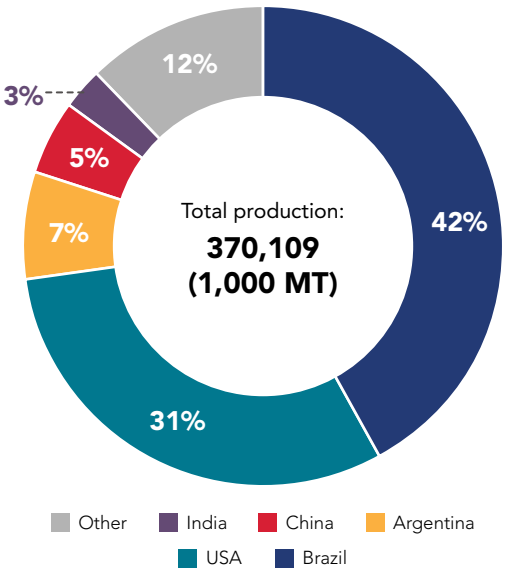
Soy production is a major driver of deforestation, particularly in South American countries such as Brazil and Paraguay. From 2001 to 2015, soy cultivation led to the conversion of 7.9 million hectares of forest, ranking behind cattle and palm oil in terms of

FIGURE 2 • **Global Soybean Exports in 2022**



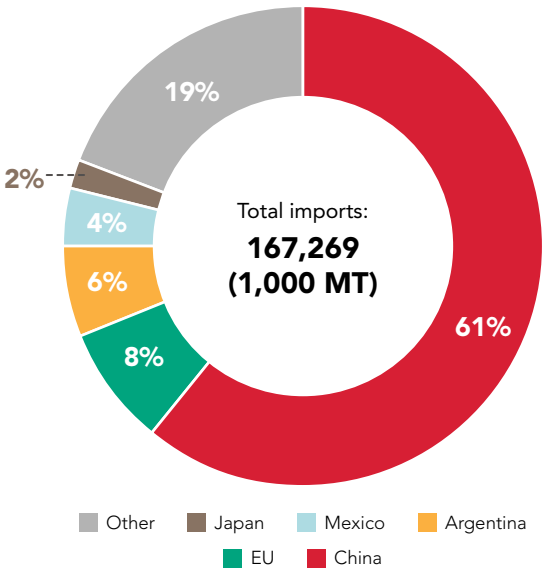

*Source:* USDA, 2023

FIGURE 1 • **Global Soybean Production in 2022**




*Source:* USDA, 2023

FIGURE 3 • **Global Soybean Imports in 2022**



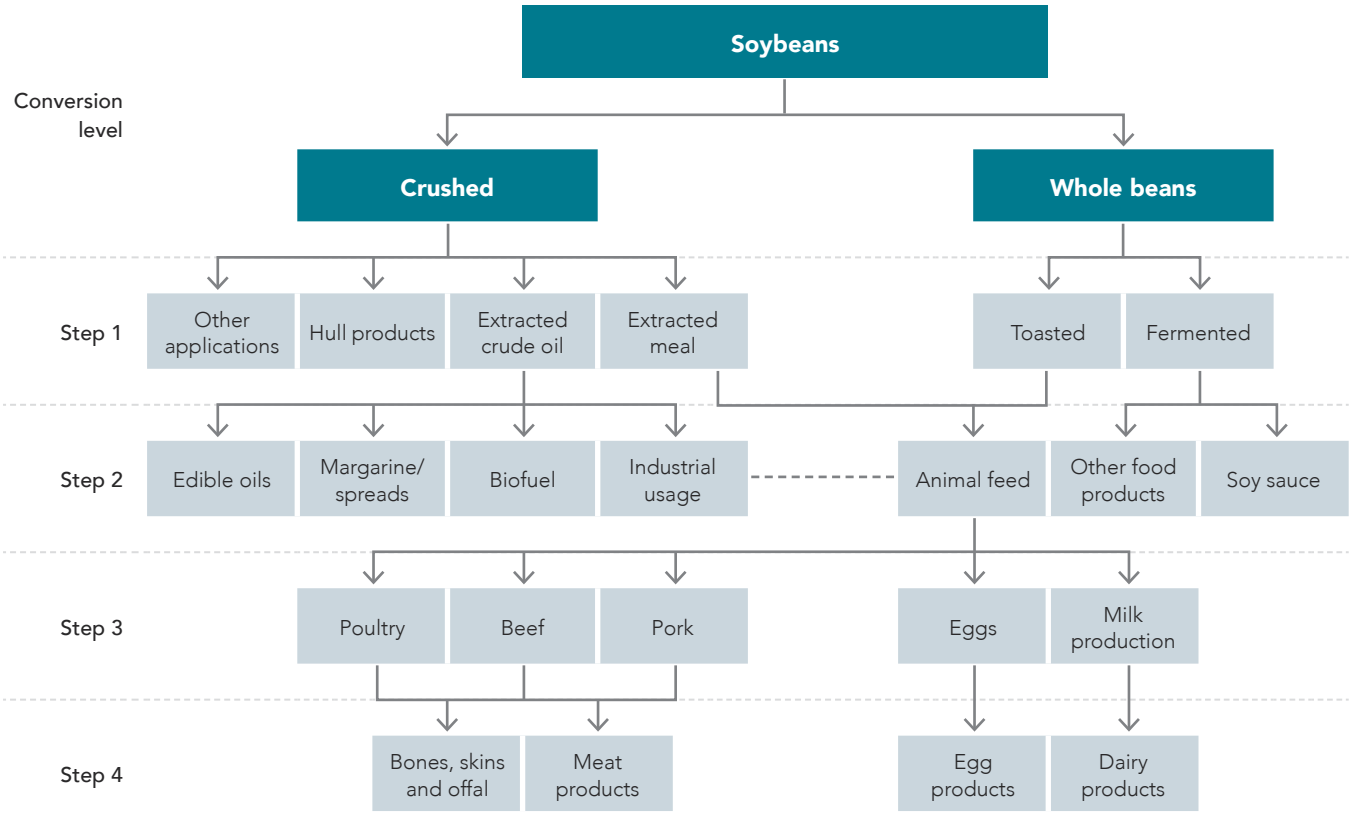

*Source:* USDA, 2023

deforestation impact (Weisse and Goldman, 2021). Despite increasing private sector efforts to address deforestation in the soy supply chain, the sector lags behind other commodities in terms of commitment scope and traceability (WWF, 2021). Additionally, soy and cattle are interconnected in South America's deforestation dynamics, as soybeans are frequently planted on former pastures initially cleared for cattle production (Kimbrough, 2021).

Soy can be embedded in compound feed for animal products or used directly as a product or an ingredient in food and non-food products (CGF, 2016). It is the largest source of protein for animal feed and the second-largest source of vegetable oil globally after palm oil (Kimbrough, 2021). Like palm oil, soy production is concentrated in a few geographies, and trade is dominated by a limited number of upstream players (CGF, 2023). The soy supply chain is complex, involving a diverse range of actors and multiple levels of transformation across different countries (Figure 4).

*Photo:* Bo Li/WRI

FIGURE 4 • **Example of the Soy Supply Chain**




*Source:* CGF, 2016

# Existing Theories of Change Regarding Halting Deforestation in the Soy Supply Chain

Various initiatives have emerged to combat deforestation associated with the soy supply chain (Appendix I). While some have developed complete Theories of Change (TOCs) while others have laid out objectives and activities in efforts to reduce deforestation and conversion in the soy supply chain. As a major soybean producer and exporter, Brazil has become a focal point for many supply chain initiatives.

## Multi-stakeholder partnerships

The Round Table on Responsible Soy (RTRS) is a multi-stakeholder initiative promoting certification schemes, dialogue, and communication with various stakeholders to achieve sustainable soy production. The UNDP's Green Commodities Programme (GCP) in Brazil brings together stakeholders to develop a national commodity platform and action plan for soy. The Innovative Finance for the Amazon, Cerrado, and Chaco (IFACC) Initiative, a partnership between The Nature Conservancy (TNC), Tropical Forest Alliance (TFA), and the United Nations Environment Programme (UNEP), supports banks, companies, and investors in promoting deforestation- and conversion-free soy and beef in these ecosystems. Additionally, the Brazilian Coalition on Climate, Forests, and Agriculture, a coalition of companies, financial institutions, research institutes, and civil society organizations in Brazil, launched a Traceability and Transparency Task Force to design national traceability and transparency policies for the beef and soy supply chains.

Landscape and jurisdictional approaches are also gaining traction in the soy sector, aiming to align interests and needs of various actors within specific geographies. The Cerrado Working Group and the Amazon-centered Soy Working Group are examples of civil society organizations, government actors, and private sector entities collaborating on landscape-specific policies to achieve deforestation- and conversion-free (DCF) supply chains. Mato Grosso's subnational "Produce, Conserve, and Include" (PCI) strategy is another initiative that seeks to maximize commodity production while reducing deforestation.

## Producer country policies and initiatives

Current TOCs incorporate agricultural and environmental policies, forest laws, and agreements between governments and private sector actors. Brazil's Forest Code is a key policy tool for halting deforestation linked to agricultural production, including soybeans. However, the effectiveness of the law depends on its implementation and enforcement across different regions of Brazil (Brock et al., 2021). The Amazon Soy Moratorium, one of the most critical initiatives, is a sectoral agreement under which traders avoid purchasing soybeans from areas deforested after 2008. Similarly, the Green Grain Protocol of Pará is a voluntary agreement between the Federal Public Prosecutor's Office, the Pará government, and trading companies to prevent sourcing soy from illegally deforested areas. Paraguay's zero-deforestation law prohibits new forest clearing in eastern Paraguay (Trase, 2020). In Argentina, VISEC is a monitoring platform ensuring deforestation-free soy supply chains with full traceability from the origin to export ports.

## Consumer country policies and initiatives

Like cattle and palm oil, consumer countries are increasingly adopting policies and initiatives to address deforestation in soy supply chains. The European Union Deforestation Regulation (EUDR) came into effect in June 2023 to prohibit commodities and products linked to deforestation and forest degradation, including soy, from being sold in the EU market. Similar regulatory measures have been proposed in the U.S. and UK to eliminate illegal deforestation from the supply chains of "forest risk" commodities including soy. The Amsterdam Declarations Partnership works with private sector and producer countries to achieve deforestation-free commodity supply chains including soy.

## Private sector commitments and initiatives

Major soybean traders such as ADM, Amaggi, Bunge, Cargill, COFCO, LDC, Olam Agri, and Viterra have made voluntary commitments to DCF supply chains. However, assessing the implementation and effectiveness of these commitments is challenging due to the self-defined nature of the pledges (Garrett et al., 2019). Initiatives such as the Consumer Goods Forum (CGF), the Soft Commodities Forum, and the Agriculture Sector Roadmap to 1.5°C are developing guidance for companies to address deforestation and conversion in the soy supply chain. These efforts include aligning standards on transparency and monitoring, defining reporting measures, and implementing landscape approaches. The Retail Soy Group (RSG), a group of international retailers, promotes sustainable and responsible soy sourcing by collaboration with suppliers and alignment of framework of DCF soy supply chains. The UK Soy Manifesto is an industry commitment to ensuring all soy imported into the UK is DCF, with a cut-off date of January 1, 2020. The Responsible Commodities Facility provides financial incentives to farmers to produce soy in existing lands to avoid deforestation in the Brazilian Cerrado.

## Civil society initiatives and tools

Civil society initiatives and tools supporting DCF soy supply chains focus on providing aligned guidance on definitions and norms, as well as improving traceability and transparency. The Accountability Framework initiative (AFi) aligns clarity, consistency,

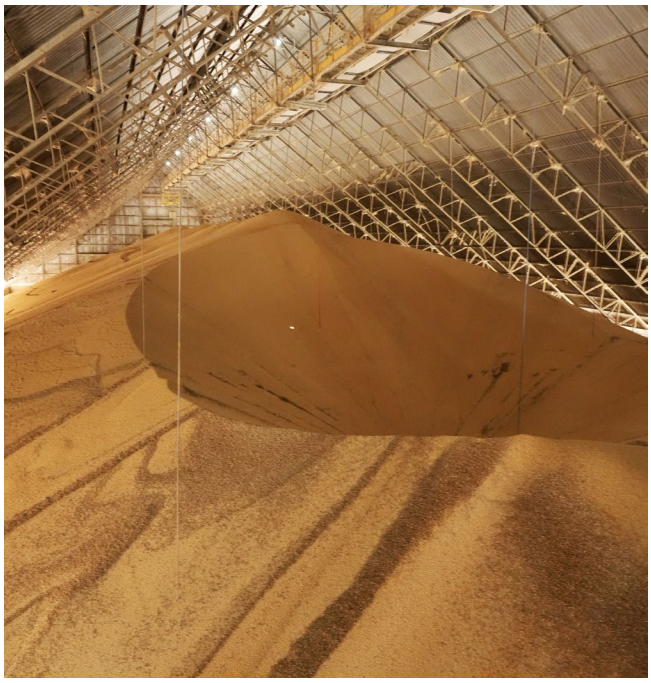


*Photo:* Bo Li/WRI

and accountability and helps private sector actors to develop strong guidelines, action frameworks, and progress metrics in deforestation-free and conversion-free supply chains. The Finance Sector Roadmap for Eliminating Commodity-Driven Deforestation and TNC's Environmental Framework for soy outline best practices for lenders and investors to develop DCF financial products and manage deforestation risk in the soy supply chain. Platforms like Trase and Global Forest Watch Pro generate datasets on trade flows and deforestation risk for soy and other commodities, making information publicly accessible. The Soy Toolkit offers companies guidance on responsible soy sourcing. Additionally, the Soy Traders Scorecard and CDP Forests Questionnaire promote transparency in the implementation and reporting of DCF commitments. Soy on Track, a platform by Imaflora, shares data on the implementation of the Amazon Soy Moratorium, the Green Grain Protocol of Pará, and other deforestation-free initiatives in the sector.

## Certification schemes

Certification schemes such as RTRS, ProTerra, and International Sustainability and Carbon Certification (ISCC) are the main schemes for certifying sustainable and responsible soy production. Despite their growing adoption, voluntary third-party certification still plays a limited role, with only 3% of global soy production certified in 2020 (Ritchie and Roser, 2021).

# Gaps in TOCs

## Lower coverage among private sector actors

Existing TOCs often focus on specific actors or stages of the soy supply chain, such as producers or traders. Not all soy producers and traders are part of these initiatives, and voluntary commitments may not reach the actors most involved in deforestation. The market demand for sustainable soy is still limited. According to Global Canopy's Forest 500, only 40% of companies have made deforestation commitments. This number is significantly lower than commodities like palm oil (72%). Addressing deforestation requires a comprehensive approach that encompasses the entire value chain, including farmers, processors, retailers, financiers, and consumers. Gaps in coverage allow deforestation-linked soy to enter the market through unmonitored channels or alternative supply chains.

## Limited attention to demand-side factors

Many TOCs focus primarily on supply-side solutions, without sufficient attention to the role of demand-side factors, such as consumer preferences, consumer country policies, and trade agreements. Strong DCF signals, along with technical and financial support from demand markets and companies making commitments for sustainable sourcing, are needed to incentivize sustainable soy production. As markets like the EU are beginning to regulate the import of forest-risk commodities including soy, TOCs need to study how to implement demand-side measures through engagement with producer countries. In addition, there's also a gap in DCF signals and support from other major soybean markets such as China.

## Lack of effective engagement with the financial sector

While some initiatives begin to work with the finance sector to establish DCF requirements, TOCs need to map out more effective engagement strategies. Less than 20% of the financial institutions in the Forest 500 have deforestation policies covering soy (Global Canopy, 2022). Moreover, the reporting and implementation of these policies remain low. It is important for TOCs to work effectively with financial actors to recognize the risks of exposure to deforestation and adopt best practices for addressing these risks.

## Geographic and sectorial limitations

TOCs that focus on specific geographies or commodities risk causing "leakage," where deforestation is not eliminated but simply displaced to other regions or sectors. In Brazil, for instance, the Soy Moratorium has reduced deforestation in the Amazon but has led to an increase in soy-related deforestation in other biomes, such as the Cerrado. This has prompted the development of new initiatives to address soy production in these areas. When interventions in TOCs limit production and demand is not met by alternative means, leakage is likely to occur (Lambin et al., 2018).

## Lack of uptake among indirect suppliers

Major soy traders have committed to eliminating deforestation and conversion from their supply chains and have established their own traceability systems. However, tracing and monitoring supplies from indirect farms remains a challenge, as intermediaries, such as cooperatives, may not share data with their downstream buyers for commercial reasons. Although many TOCs recognize this issue and are working to address it through collective efforts of engagement with suppliers and intermediaries, the effectiveness of these efforts remains to be seen.

# Assumptions in TOCs

## Effective cooperation and collaboration

Many TOCs assume that different stakeholders – including businesses, governments, NGOs, and local communities – can effectively collaborate to achieve a common goal. The assumption is that through dialogue and cooperation, these actors can overcome differences to address deforestation. While multi-stakeholder cooperation is highlighted as a key component of these TOCs, achieving it in practice is often challenging. Different stakeholders may have diverging interests, unequal power dynamics, or differing perspectives on what is DCF soy and how to achieve sustainable production. To ensure success, pathways for effective cooperation and collaboration need to be carefully studied and tailored to each specific context.

## Economic viability

TOCs often assume that sustainable soy production can be economically viable for producers. For instance, in Brazil, it is assumed that converting pastureland to soy production is more favorable than converting native vegetation in the Cerrado. However, significantly lower land prices for native vegetation, along with the potential for legal deforestation on existing purchased land, could incentivize farmers to clear native vegetation (TNC, 2019). To design more effective TOCs, it is essential to conduct a thorough analysis of the economic viability of DCF soy production in specific geographies. This analysis should consider factors such as initial investment costs, soy prices, market access, soil and climate conditions, and other relevant economic variables.

## Voluntary behavior changes

Another common assumption in TOCs is that actors across the soy supply chain – from farmers to traders to consumers – are willing and able to change their behaviors voluntarily, motivated by economic incentives, reputational risk, or ethical considerations. However, changing behaviors is often challenging and time-consuming. For example, farmers may be reluctant to alter their cultivation practices due to high economic gains, cultural factors, or perceived risks. It is crucial to study the factors that influence local actors' decision-making processes in specific geographies. Research suggests that greater regulatory stringency and enforcement may be more effective in influencing soy farmers' decisions in Brazil's Cerrado (Aragão et al., 2022).

*Photo:* Bo Li/WRI

# Recommendations

## Uptake among companies and financial actors

TOCs should improve the adoption and alignment of DCF commitments across the soy supply chain, including global and domestic retailers and brands, traders, meatpackers, producer groups and financial institutions. Achieving deforestation-free soy requires participation from all actors, with civil society organizations providing tools and resources to address gaps in awareness, monitoring, and traceability. However, alignment on definitions and scope among stakeholders remains crucial. While initiatives focused on DCF requirements in the financial sector have started to emerge, financial mechanisms that support sustainable soy production need to be scaled and accelerated.

## Demand-side measures

TOCs should address gaps in global demand for sustainable soy. Consumer awareness, public procurement policies, and trade agreements are vital tools in tackling deforestation associated with the soy supply chain. Since soy is often used as animal feed and vegetable oil, it lacks the visibility of other commodities, such as beef, in sustainability discussions. Therefore, enhancing consumer understanding of soy's role in supply chains is necessary. Additionally, the role of trade agreements in driving the transition to sustainable soy should be explored in future TOCs. Demand-side measures should also emphasize targeted supply-side engagement strategies that support sustainable soy production, ensuring that smallholder producers are not excluded from the market.

## Traceability systems including indirect suppliers

TOCs should focus on creating incentives and developing approaches to include indirect suppliers, particularly small and medium-sized enterprises (SMEs), in soy traceability systems. One key challenge is addressing data privacy concerns among intermediaries and cooperatives. TOCs should tackle these challenges by emphasizing the roles of governments, companies, and civil society organizations. Producer-country governments should set standards for traceability systems, while downstream soy traders should gather information and build up traceability systems, disclosing information where appropriate. Civil society organizations can play a critical role in convening stakeholders to drive alignment on traceability and encourage data sharing among key actors in soy supply chains (Schneider et al., 2024).

## Communication and coordination among different types of initiatives

TOCs focused on reducing deforestation and conversion in soy supply chains need to align definitions and standards, promote transparency, and address potential leakage issues. Actors in the soy sector often operate with differing definitions of DCF soy, so future TOCs should prioritize clear communication of these concepts and alignment of efforts among stakeholders. As more private sector actors pledge to end deforestation, public policies should complement and reinforce these commitments to improve the success and scale of supply chain initiatives (Lambin et al., 2018). Additionally, TOCs focused on DCF soy supply chains should coordinate closely with those addressing cattle supply chains, especially in regions where the two commodities overlap. The strategy of expanding soy cultivation on previously cleared pasturelands, coupled with intensified cattle ranching, warrants further study (TNC, 2024).

# Looking Ahead

Supply chain initiatives are increasingly adopting a more holistic approach to sustainability in global soy supply chains. For example, the Good Growth Partnership (GGP) has implemented an integrated strategy that connects interventions at global, national, and subnational levels. By engaging multiple levers and actors across commodity supply chains, GGP tackles sustainable production, demand, and transactions in a systematic manner. Public-private partnerships, such as the Amazon Soy Moratorium and the Green Protocol of Grains of Pará, have demonstrated success in curbing land conversion for soy production. As these efforts evolve, landscape and jurisdictional approaches will continue to be vital in addressing deforestation and conversion within the soy sector.

On the demand side, policy measures are emerging to eliminate deforestation linked to soy supply chains. The EUDR requires companies to conduct due diligence to ensure that commodities, including soy, entering the EU market are free from deforestation and forest degradation. China, as the largest importer of soybeans—accounting for 75% of Brazil's soy exports—is actively engaging in bilateral cooperation with Brazil to combat illegal deforestation. In April 2023, both countries issued a joint statement committing to tackle climate change and eliminate global illegal logging and deforestation (Xinhua, 2023). Clear signals from China demanding deforestation-free soy and discouraging the conversion of native ecosystems could play a pivotal role in advancing efforts to combat deforestation in the soy supply chain.

*Photo:* Kelly Sikkema

# Appendix I

## Examples of initiatives halting deforestation in the soy supply chain

| Types of Initiatives | Examples | |
|---|---|---|
| Multi-Stakeholder | • Good Growth Partnership<br>• UNDP Green Commodities Programme (GCP)<br>• Innovative Finance for the Amazon, Cerrado and Chaco (IFACC)<br>• Cerrado Working Group | • Soy Working Group<br>• Produce, Conserve and Include (PCI) Strategy<br>• Farmer First Clusters Initiative<br>• The New York Declaration on Forests (NYDF) |
| Private Sector | • CGF Forest Positive Coalition of Action Soy Roadmap<br>• Agriculture Sector Roadmap to 1.5°C<br>• Soft Commodities Forum (SCF)<br>• Retail Soy Group (RSG) | • Soy Transparency Coalition<br>• The UK Soy Manifesto<br>• The Responsible Commodities Facility (RCF)<br>• Individual Company Commitments |
| Producer Country | • Brazilian Forest Code<br>• Amazon Soy Moratorium | • The Green Grain Protocol of Pará<br>• VISEC |
| Consumer Country | • EU Deforestation Regulation<br>• UK Environment Act<br>• France's National Strategy to Combat Imported Deforestation | • U.S. FOREST Act<br>• The Amsterdam Declarations Partnership |
| Civil Society | • The Soy Toolkit<br>• The Accountability Framework initiative (AFi)<br>• Soy on Track<br>• Trase<br>• Global Forest Watch Pro | • WWF DCF Implementation Toolkit<br>• Soy Traders Scorecard<br>• CDP Forests Questionnaire<br>• Finance Sector Roadmap<br>• The Environmental Framework |
| Certification | • The Roundtable on Responsible Soy (RTRS)<br>• ProTerra | • International Sustainability and Carbon Certification (ISCC) |

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