IMPROVING SUSTAINABLE COMMODITY SUPPLY CHAINS IN AMAZONIA

©abadonian

Decoupling agricultural commodity supply chains from deforestation in Amazonia

Agricultural commodity supply chains - such as beef, soy and palm oil - are a multi-billion-dollar segment of the global economy, driving development in many tropical forest jurisdictions[1]. However, the production of these commodities is linked to significant social and environmental impacts and risks.

Key points

- Safeguarding and sustainably managing natural resources in Amazonia is a complex issue that will require marshalling coalitions of public and private actors that have a shared stake in responsible management of the same production landscapes.

- Complex and obscure supply chains mean that key upstream actors who need to be engaged and accountable remain hidden.

- By building effective coalitions of supply chain actors who can work together alongside regional and national governments in producer nations, it becomes possible to lower costs and distribute responsibilities more fairly and appropriately.

- There is an opportunity to advance transparency in the face of improved supply chain modelling instruments and increasingly sensitive markets and finance institutions demanding better environmental and social performance of key commodity supply chains.

- Increased transparency and accountability in supply chains can support the transition to more sustainable production systems in Amazonia, but ultimately this requires strong and closely aligned leadership from both the public and private sector.

In the case of Amazonia, where commercial agriculture expansion is responsible for over two-thirds of deforestation and forest degradation[2], the loss of forests and the vital ecosystem services that they provide have widespread implications for the longer-term prosperity and resilience of the region. It is predicted that large-scale deforestation, beyond driving GHG emissions and biodiversity loss, could reduce rainfall by up to 21% in Amazonia by 2050 and affect the basin's vital role in purifying and regulating water flows on which agricultural and energy production, transportation, as well as health and livelihoods of millions of people depend on.[3] Such threats overlap with many different areas of policymaking and private sector activity.

As the global demand for agricultural commodities continues to grow[4], private sector companies and financial investors will play a central role, alongside government, in determining the fate of tropical forests. Private sector actors are already gaining a stronger understanding of the reputational, legislative and operational risks of exposure to deforestation, and the business case for the transition to demonstrably legal and sustainable commodities in their procurement, supply chains and investments. This is reflected by the multitude of government- and industry-led[5] policies and commitments, such as the New York Declaration on Forests and the Brazil soy moratorium, that seek to decouple agricultural production from deforestation impacts. However, these commitments are fragmented across different jurisdictions and actors, falling far short of the kind of unified and more systematic approach needed to transition to more sustainable production landscapes.

This brief draws on innovative trade-flow modelling and analysis for three key agricultural supply chains in the Amazon region – soy in Brazil, palm oil in Peru and beef in Colombia - alongside multi-stakeholder interviews and group discussions to: (1) explore the role of supply chain transparency modelling tools in transforming agricultural commodity production; and (2) discuss some of the challenges (trade-offs and barriers) and opportunities for implementing more sustainable productive landscapes in the Amazon region.

Increasing supply chain transparency in production landscapes

Ensuring and measuring progress towards sustainability is linked to the capacity to monitor and track commodity production and supply chain flows. The visualisation of international supply chains presented here provides a snapshot of a novel approach linking specific jurisdictions in Brazil, Colombia and Peru to a variety of actors along the supply chains. It combines[6]:

1. Consistent country-wide data on commodity production at the sub-national (e.g. municipal);

2. Per shipment customs data detailing the involvement of all traders;

3. Bilateral trade matrices to describe trade flows of a given commodity covering all companies and production regions within that country.

This approach enhances monitoring capacity by identifying - to the level of municipalities – where traders are sourcing their given commodities from, and allows us to view the connections between different actors and locations across broad regions like the Amazon.

The trade-flows shown in Figures 1-3 illustrate, for the first time, the connections between individual regions of production (municipalities in the case of Brazil and departments for Peru and Colombia), via specific named exporters, importers and ports of import to the country of first consumption (after accounting for re-exports). Different colours illustrate the material flows of soy, beef, and palm oil that were produced in the different regions (also see map in Figure 4.), with each flow being comprised – depending on the commodity and region - of hundreds to hundreds of thousands of individual supply chain links.

The central innovation of this approach is to identify, and start to unlock the potential for, a "middle-ground" approach to assessing the sustainability of commodity supply chains[7]. This middle-ground approach balances detail and scale of supply chain transparency information to prioritize understanding the connections between downstream actors and jurisdictions of production for the entire trade in a given commodity, such as soy or palm oil, rather than zooming in on a specific supply chain at the expense of understanding the bigger picture.

Innovations in supply chain modelling, coupled with the growing availability of trade and deforestation datasets, have the potential to dramatically improve transparency and accountability across supply chains in the Amazon by making visible the full consortium of actors and beneficiaries in the production of agricultural commodities, essentially demystifying associations between producers and source jurisdictions, and key downstream actors, such as traders and retailers.
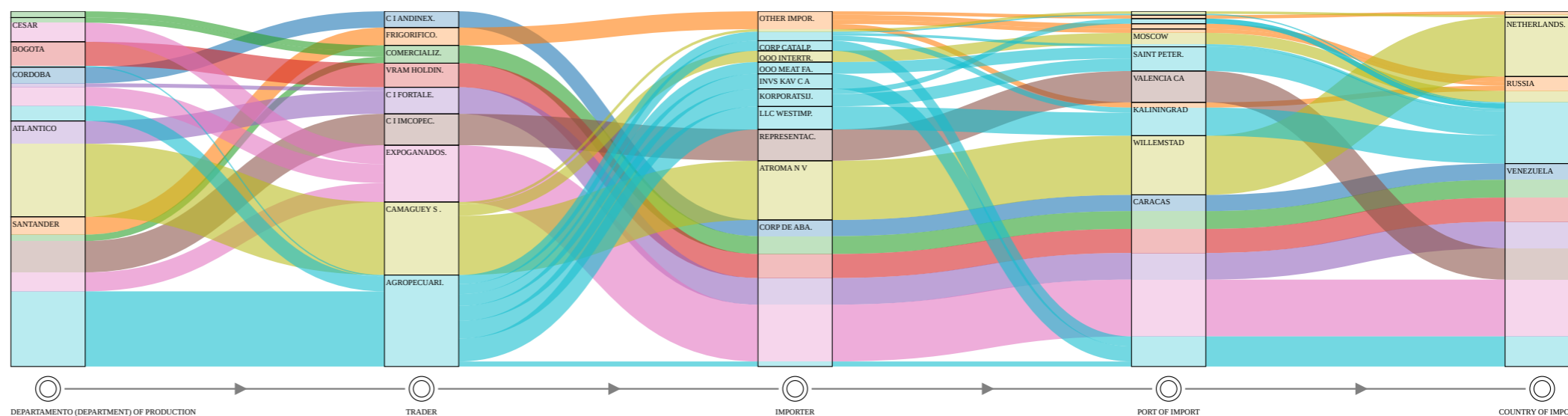
Figure 1. Beef trade flows from Colombia
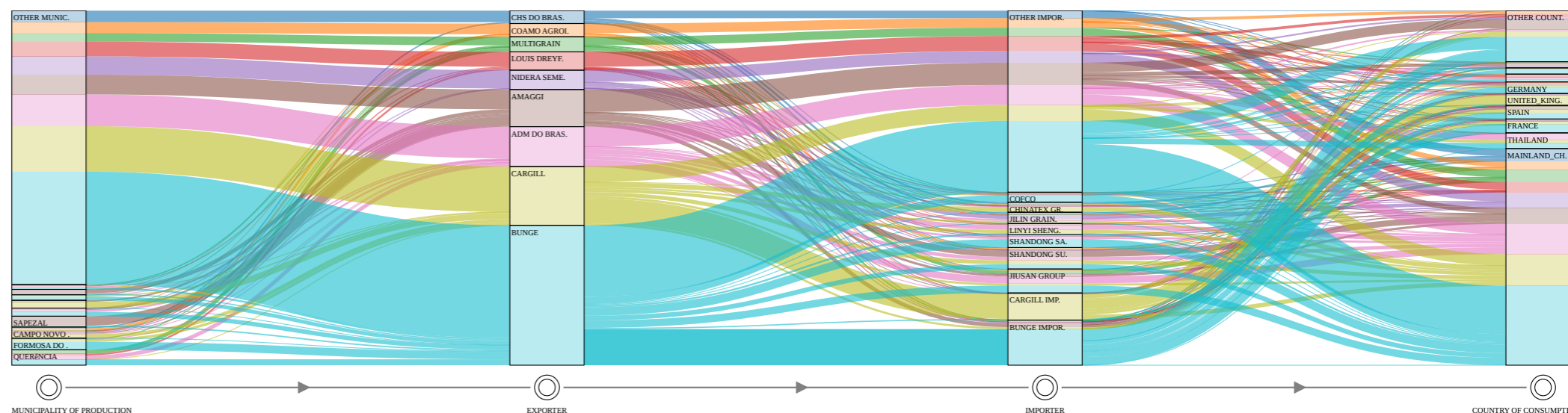

Figure 2. Soy trade flows from Brazil
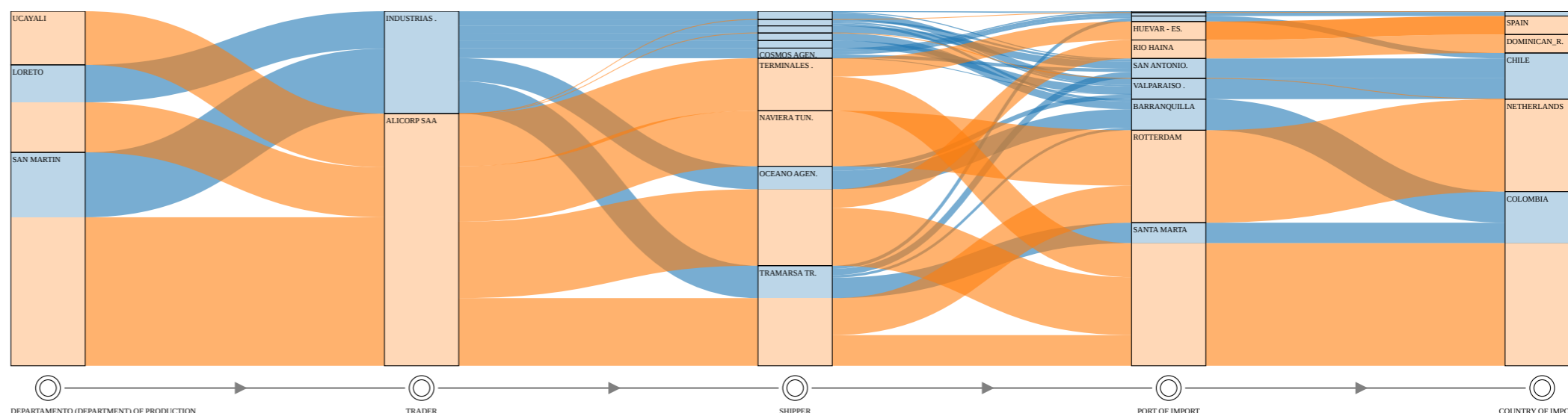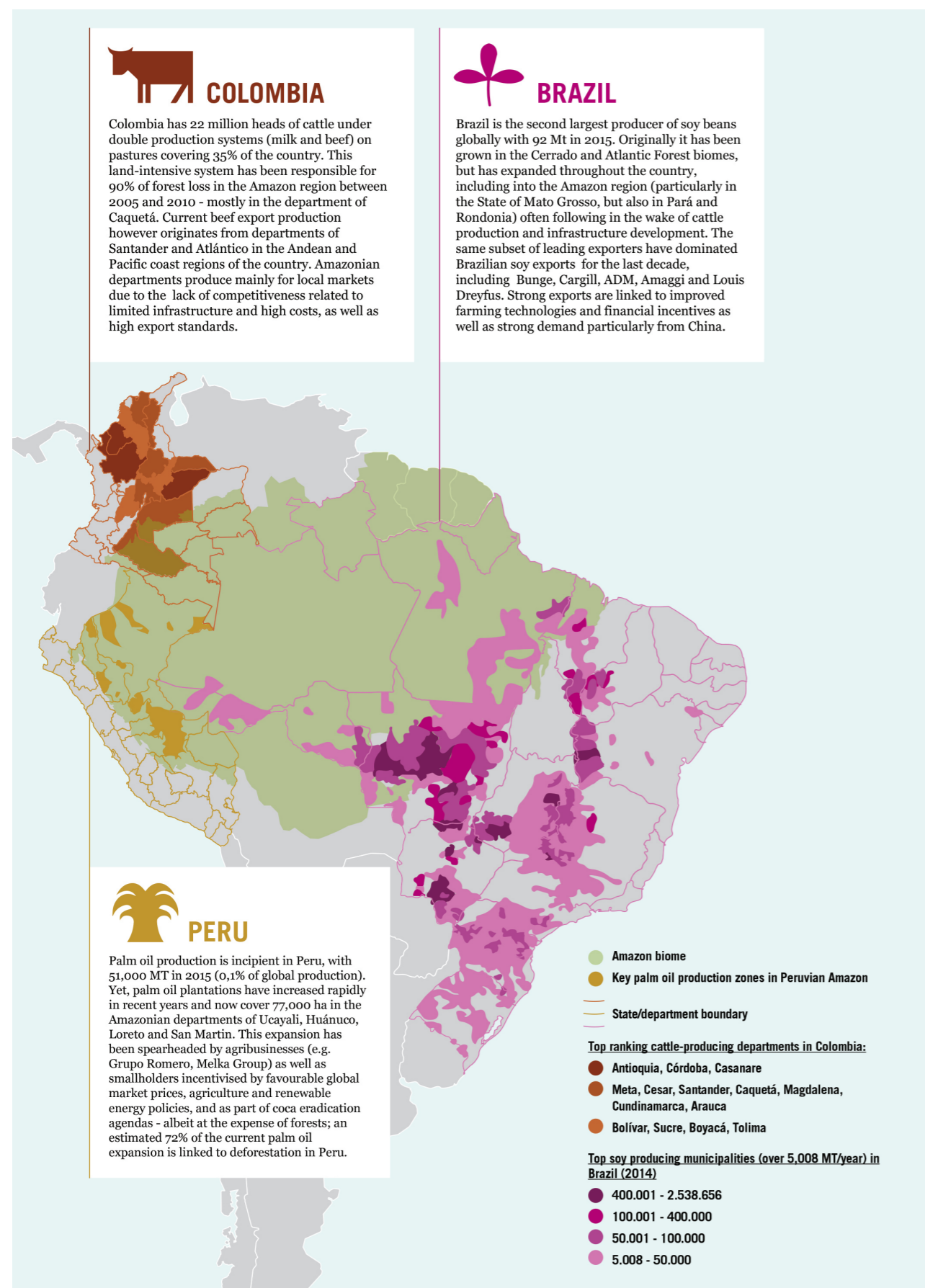

Figure 3. Palm oil trade flows from Peru

Figure 4. Map of key production areas for beef in Colombia, soy in Brazil and palm oil in Peru.

COLOMBIA

Colombia has 22 million heads of cattle under double production systems (milk and beef) on pastures covering 35% of the country. This land-intensive system has been responsible for 90% of forest loss in the Amazon region between 2005 and 2010 - mostly in the department of Caquetá. Current beef export production however originates from departments of Santander and Atlántico in the Andean and Pacific coast regions of the country. Amazonian departments produce mainly for local markets due to the lack of competitiveness related to limited infrastructure and high costs, as well as high export standards.

BRAZIL

Brazil is the second largest producer of soy beans globally with 92 Mt in 2015. Originally it has been grown in the Cerrado and Atlantic Forest biomes, but has expanded throughout the country, including into the Amazon region (particularly in the State of Mato Grosso, but also in Pará and Rondonia) often following in the wake of cattle production and infrastructure development. The same subset of leading exporters have dominated Brazilian soy exports for the last decade, including Bunge, Cargill, ADM, Amaggi and Louis Dreyfus. Strong exports are linked to improved farming technologies and financial incentives as well as strong demand particularly from China.

PERU

Palm oil production is incipient in Peru, with 51,000 MT in 2015 (0,1% of global production). Yet, palm oil plantations have increased rapidly in recent years and now cover 77,000 ha in the Amazonian departments of Ucayali, Huánuco, Loreto and San Martin. This expansion has been spearheaded by agribusinesses (e.g. Grupo Romero, Melka Group) as well as smallholders incentivised by favourable global market prices, agriculture and renewable energy policies, and as part of coca eradication agendas - albeit at the expense of forests; an estimated 72% of the current palm oil expansion is linked to deforestation in Peru.

Amazon biome

Key palm oil production zones in Peruvian Amazon

State/department boundary

Top ranking cattle-producing departments in Colombia:

Antioquia, Córdoba, Casanare

Meta, Cesar, Santander, Caquetá, Magdalena, Cundinamarca, Arauca

Bolívar, Sucre, Boyacá, Tolima

Top soy producing municipalities (over 5,008 MT/year) in Brazil (2014)

400.001 - 2.538.656

100.001 - 400.000

50.001 - 100.000

5.008 - 50.000

Sources:
Beef: Instituto Colombiano Agropecuario (ICA);
Palm Oil: Plan Nacional de Palma 2000-2010;
Soy: Companhia Nacional de Abastecimento (CONAB), Instituto Brasileño de Geografía y Estadística (IGBE)

Linking supply chain actors to Amazonia's production landscapes

By linking different actors to particular locations through these new approaches to supply chain transparency, it becomes possible to scan levels of risk exposure (e.g. reputational and operational risks related to forest loss) that face different supply chain actors across entire regions, and identify priority places and groups of actors where intervention is most urgently needed. Knowing these priorities can transform our understanding of where, and with whom, efforts to improve the sustainability of production landscapes should be focussed on, and which actors could form coalitions that are capable of making the desired changes possible.

However, models and trade data only show current dynamics and fail to truly understand the incentives and regulatory context of each country which only deeper analysis can offer. Further work is needed on multiple fronts to really unlock the potential of supply chain transparency and drive improvements in accountability for responsible governance of natural resources[8].

There are at least four main challenges that need to be overcome to operationalize at scale the kind of supply-chain mapping presented here[9]: the financial recourses and capacity required; the mapping of domestic supply chains for commodities that are increasingly consumed locally (e.g. Brazilian beef); the ability to track the potential displacement of deforestation (i.e. leakage) and indirect effects; and the coupling of supply chain mapping data with data on environmental and social impacts in regions of production.

Conclusion

Better transparency is merely a key pre-condition for improved supply chain governance. More sustainable agricultural commodity supply chains will require building a broad coalition of beneficiaries/actors in the same production landscapes; pitching growers, local governments, traders, buyers and investors as having a shared stake and role in the long-term sustainability of Amazonia.

Production systems require innovation, adaptability and resilience in the face of growing resource scarcity and climate change; blanket transparency will be fundamental to identify further risks and prioritise action across the board and build momentum towards sustainable development and environmental goals.

By building effective coalitions of supply chain actors who can work together alongside regional and national governments in producer nations it becomes possible to lower costs and distribute responsibilities more fairly and appropriately. The unprecedented opportunity presented by recent zero deforestation commitments from private and public actors in response to rapidly depleting tropical forests means that this work could not be more urgent.

Authors:

David Sabogal
Toby Gardner
Simone Bauch
Helen Bellfield
Javier Godar
Clement Suavet

References & comments

[1] SEI, GCP. 2015. Transformative Transparency: Harnessing the power of data for supply chain sustainability. Stockholm Enviornment Institute; Global Canopy Programme. Available at: https://www.sei-international.org/mediamanager/documents/Publications/NEW/SEi-GCP-DB-TransformativeTransparency.pdf

[2] Geist, H. and E. Lambin. 2002. Proximate Causes and Underlying Driving Forces of Tropical Deforestation. Bioscience, 52(2): pp.143–150; Kissinger, G. M. Herold & V. De Sy. 2002. Drivers of Deforestation and Forest Degradation: A Synthesis Report for REDD+ Policymakers. Lexeme Consulting, Vancouver Canada; Lawson, S., A. Blundell, B. Cabarle, N. Basik, M. Jenkins, & K. C. Consumer. 2004. Goods and Deforestation: An Analysis of the Extent and Nature of Illegality in Forest Conversion for Agriculture and Timber Plantations. Forest Trends. Available at: http://www.forest-trends.org/documents/files/doc_4718.pdf

[3] Mardas, N., Bellfield, H., Jarvis, A., Navarrete, C. & Comberti, C. 2013 Amazonia Security Agenda: Summary of Findings and Initial Recommendations. Global Canopy Programme and International Center for Tropical Agriculture http://segamazonia.org/sites/default/files/amazonia_security_agenda.pdf

[4] By 2050, worldwide demand for agricultural products is expected to increase by more than 50% . McFarland, W. S. Whitley and G. Kissinger. 2015. Subsidies to key commodities driving forest loss: Implications for private climate finance. Overseas Development Institute: London, UK. Available at: http://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/9577.pdf).

[5] Groupe Danone, Kao Corp., Nestlé S.A., Procter & Gamble, Reckitt Benckiser Group, and Unilever for example are leading private sector company efforts to address deforestation in their supply chains (Forest500.org).

[6] Godar, J., Persson, U.M., Tizado, E.J., Meyfroidt, P. 2015. Towards more accurate and policy relevant footprint analyses: Tracing finescale socio-environmental impacts of production to consumption. Ecological Economics 112: 25–35.

[7] Godar, J., C. Suavet, T.A. Gardner, E. Dawkins, P. Meyfroidt. 2016. Balancing detail and scale in assessing transparency to improve the governance of agricultural commodity supply chains. Environ. Res. Lett. 11, 35015. doi:10.1088/1748-9326/11/3/035015

[8] Data can also be expensive to obtain and patchy/incomplete and decentralised which pose further limitations. Also, while current model depicts export markets, a lot of consumption happens locally, demanding a finer scale of analysis still to be developed.

[9] Godar et al. 2016.

visit www.globalcanopy.org