



TOWARDS ZERO DEFORESTATION CATTLE IN COLOMBIA

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Aim of the brief

This brief provides an overview of voluntary zero deforestation commitments (ZDCs) recently signed by a set of actors in Colombia's cattle sector. We outline how the ZDCs define zero deforestation and make recommendations for systems necessary to monitor implementation and compliance with the agreements. Lastly, we highlight the potential and challenges of beef and dairy ZDCs in Colombia.

Deforestation and cattle

Colombia has the third largest forest extent in Latin America (59 million hectares (ha)),¹ and hosts 14% of global biodiversity.² The country has strong national environmental policies and has set goals to:

- Protect nearly 17 million ha of forest in national parks and reserves
- Halve deforestation in all natural forests by 2020 and halt it by 2030 in alignment with the New York Declaration on Forests^a
- Under United Nations Framework Convention on Climate Change (UNFCCC):
 - o Implement 10 Reducing Emissions from Deforestation and forest Degradation (REDD+) projects
 - o Reach zero net deforestation in the Amazon by 2020 and 20% reduction in emissions
 - o Develop Nationally Appropriate Mitigation Action (NAMA) plans

Despite these goals, forest loss and fragmentation continue, and have been increasing since the 2016 peace accord with the Revolutionary Armed Forces of Colombia (FARC). The 52 year long conflict with the FARC provided a measure of de facto protection to half of Colombia's territory, and the post-conflict period has been one of rapid change.³ According to national forest monitoring, deforestation rates increased by 123% to 219,973 ha in 2016, following the signing of the peace accord, and an additional 197,159 ha were lost in 2017-2018.⁴ Sixty-seven percent of that forest conversion took place in the Amazon Biome (Figure 1). Conversion of forest to pasture for both beef and dairy cattle is one of the most significant drivers of land use and land cover change in Colombia, directly responsible for a third of deforestation.^{4,5} These increases in deforestation emit greenhouse gases, threaten habitats, and reduce the size of an important carbon sink. As such, there are urgent calls for post-conflict conservation planning,^{6,7} especially around cattle-driven deforestation.⁸

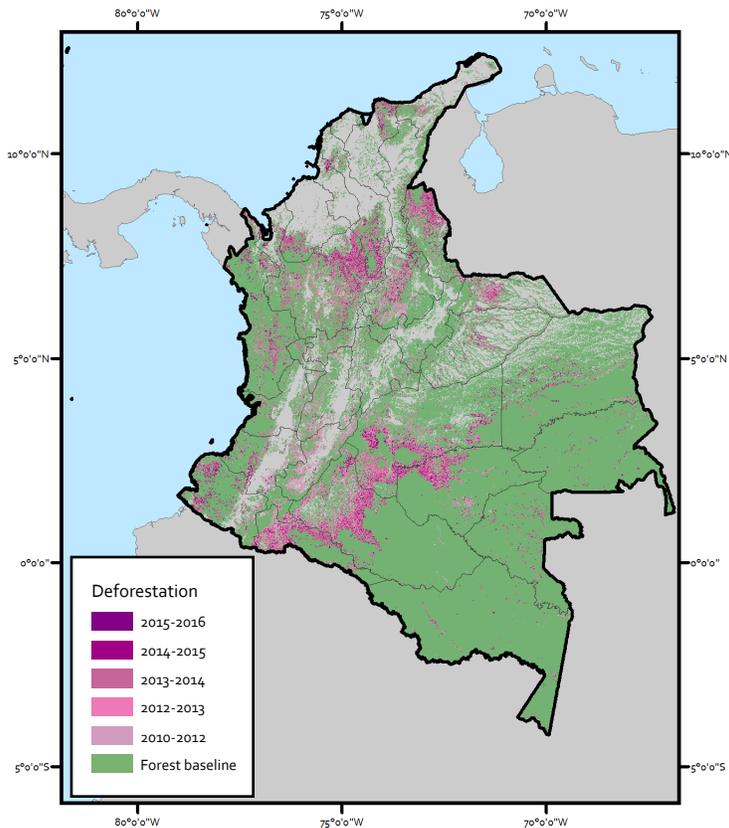


Figure 1. Deforestation extent from 2011-2016⁴

^a The New York Declaration on Forests was announced in advance of the United Nations Climate Summit in 2014. There are now 190 signatories from governments to civil society and the private sector.

Towards zero deforestation beef and dairy

Globally, hundreds of companies have made public pledges to eliminate deforestation from their supply chains.⁹ These Zero Deforestation Commitments (ZDCs), are a form of supply chain governance that has led to promising changes in Brazil (see Box 1). These came about in response to pressure on companies from consumers and non-government organizations regarding deforestation in their supply chains.¹⁰

In Colombia, a multi-stakeholder group led by the Ministry of the Environment and the Roundtable on Sustainable Livestock Production, and consisting of supermarkets, restaurants, dairies, ranchers' unions, scientists, and policy-makers, developed the ZDCs for the beef and dairy sectors in Colombia). Public-private partnerships like these are a new approach to achieving conservation objectives and the involvement of many stakeholders may help to foster transparency and ensure that they incorporate the needs of different actors.⁹ These sectors primarily serve local and national markets. In the first trimester of 2019, national beef sales were divided between small butchers and markets (76%) supermarkets (23%), and institutions like restaurants (1%).¹¹ Colombia currently exports only 3% of its beef production; processed dairy exports, which include powdered and sweetened condensed milk, yogurt, and cheese were valued at \$15 million U.S. Dollars in 2017.¹² There are hopes to expand beef and dairy exports.

Box 1. Lessons learned from similar commitments in Brazil

ZDCs in the Brazilian Amazon have demonstrated their potential to encourage rapid changes in behavior,^{9,10} and may be able to change land management on a faster timeline than the government actions alone. The Soy Moratorium has reduced deforestation in areas suited for soy production¹³ but results are more limited in the cattle sector^{14,15}, where expanded monitoring to include all properties in the supply chain will be needed to strengthen forest conservation outcomes. The achievements of these Brazilian ZDCs were facilitated by the creation of the Rural Environmental Registry, a database of georeferenced property boundaries and commitments by companies to monitor for deforestation within supplying properties.



Photo 1. Dairy and beef cattle

Characterizing Colombia's Zero Deforestation Commitments

What sectors are covered?

- Both the dairy and beef sectors.

Who can participate?

- All producers of beef and dairy products, associations of producers or wholesalers, private companies (e.g. restaurants, hotels, supermarkets, dairies), consumers, public entities (e.g. Corpoica, UMATA) and government agencies, providers of technical assistance, and non-governmental organizations.

Who is participating?

- The first private sector actors signed the ZDCs on the 6th of May 2019. In the beef sector, they are Asobrangus-Angus Azul, FEDEGAN, Grupo Takami, Prestige Colombia and in the dairy sector, they are Alquería, FEDEGAN, Grupo Takami, Comité Departamental de Ganaderos del Caquetá and Hermanos Rausch.
- Market coverage is critical to the success of ZDCs. Current participants tend towards smaller actors and higher end markets. In the beef sector, there is no participation by any of the top 100 market actors. In the dairy sector, Alquería has the third largest market share. Comité Departamental de Ganaderos del Caquetá represents beef and dairy ranchers in the department of Caquetá, which has Colombia's highest loss of forest area since 2011.

What ecosystems are covered?

- The beef ZDC focuses on forests, the dairy on both forests and páramos, which are tropical alpine ecosystems rich in carbon and endemic species and important for water production. Páramos are included in the dairy agreement because they are highly threatened and fragmented ecosystem and desirable as pasture in high elevation dairy systems.

What is considered a forest and a páramo?

- The definition of forest aligns with the national forest cover monitoring system led by the Institute of Hydrology, Meteorology, and Environmental Studies (IDEAM)⁴, which provides annual maps of forest cover based on satellite imagery with 30 meters (m) spatial resolution. A forest must have 30% canopy cover, a minimum average height



Photo 2. Forest and páramo

of 5m and a minimum area of 1ha. Commercial plantations, which have a total extent of 498,570ha, are excluded.¹⁶

- There are close to 3 million ha of páramos. Defining how these will be protected is challenging due to the nearly 100,000 formal property boundaries and informal land use rights that intersect these ecosystems.¹⁷

What is considered deforestation?

- Deforestation is measured by IDEAM as change from forest cover to another land use for any contiguous area greater than 1ha. Consequently, the agreement mandates zero “gross deforestation,” or any forest loss, rather than net deforestation, which would allow counting regrowing forests to reduce losses. However, the ZDCs will have a baseline date of January 1, 2011, which creates a class called “past deforestation,” forest loss between that date and the signing date. Past deforestation (2010-2016) totals to 949,968ha and is distributed across 101,116 properties.

What if a product or farm is not compliant?

- The ZDCs are voluntary and do not include sanctions for non-compliance, but producers who deforest could be excluded from markets.
- Products from non-compliant properties with past deforestation cannot be sold as deforestation free until appropriate mitigation actions have been taken, such as tree planting or forest restoration.

What are the incentives to participate?

- Deforestation represents a financial and reputational risk. While there are no guaranteed price incentives for compliant products, complying with national forest laws is necessary for access to government programs and credit, and marketing products as deforestation-free may appeal to specialty markets, concerned consumers or open new market opportunities. Consumers locally and globally are increasingly demanding that companies be responsible environmental actors.

Is this a certification program?

- No, and there is not a plan for an official label or certification associated with zero deforestation products. However, the ZDCs include standards for competitive and sustainable production systems in alignment with the guidelines of the Good Livestock Practices certification led by the Federación Colombiana de Ganaderos (FEDEGAN).

Implementation of deforestation monitoring for Colombia’s ZDCs

Creating a deforestation monitoring system that covers dairy and beef supply chains is achievable. The most basic aim of the ZDC’s is to link beef and dairy products back to the land on which they were produced in order to monitor deforestation on this land. This linking requires traceability, or the maintenance of information about a product, from its origin through each movement along its supply chain. In 2019, there were 27,234,027 heads of cattle distributed across 623,794 properties.¹⁸ Cattle supply chains in Colombia can have many links, especially for beef markets. Cattle may spend time on multiple properties, as they are often sold several times, sometimes through intermediaries, or moved by ranchers from one property that they own to another. Dairy supply chains, at least those that serve national markets, tend to be simpler as companies visit the same farms to collect milk as frequently as once or twice a day.

Colombia’s ZDCs will assess deforestation associated with any land on which an animal lived, but they do not clearly define how this would be done, who would be responsible and what combination of data would be used. Each signatory to the ZDC that purchases beef or dairy products will need to ask for the information required for traceability, either to input into a central system or in the absence of that, to implement their own system to manage this data. A pilot by ZDC participants will have ranchers volunteer spatial information about their properties in order to monitor them for forest change.

Colombia has several national data systems (Box 2) designed for other purposes that could cover all of the basic elements needed to monitor deforestation. With a mandate to share information across responsible agencies, these existing systems could be leveraged to create a common traceability system for the ZDCs.



Box 2. Potential components of a public deforestation monitoring system

National data systems that could form the basis of a monitoring system include:

1. Digital Cadaster – The Augustín Codazzi Geography Institute (IGAC). Manages a registry of land holdings from the national digital cadaster.¹⁹ There are currently property boundaries for 3 million rural properties. There are long term plans to update and improve this system so that it is up to date and better connected to agencies that manage land titles, and current ownership.
2. Registry of cattle - All ranches with more than ten animals must register with the Colombian Livestock Institute (ICA). They report basic property characteristics and total inventories for censuses and vaccination planning. Some location information is provided but these properties are not georeferenced. FEDEGAN manages a similar inventory of properties with spatial coordinates (SAGARI). ICA also runs an individual animal identification program (Identifica) with official ear tags that covers 11% of the national herd. Coverage is highest in High Vigilance Zones along the national boundaries.
3. Cattle transactions (SIGMA) – A form (“el guia sanitaria de movilizacion interna”) is filed for all legal cattle sales and movements. The majority of these are filed for groups (known as lots) of cattle, which may mix animals that have come from different properties. The main purpose of these systems is to verify animal health and sanitation, so there is no current mandate to link animals back to properties or to link animals from one guia to another.

Colombia’s ZDCs have high potential to conserve forests

- ZDCs can encourage rapid changes in behavior,^{9,10} and may be able to change land management on a faster timeline than the government actions alone. A quick response is necessary to conserve Colombia's forests given the recent surge in deforestation.
- Improving traceability to monitor the ZDCs could complement efforts to improve traceability for sanitation and animal health goals. These sanitation goals (including increasing formalization of the sector, consolidation and modernization of slaughterhouses, transparent vaccination records, etc.) are being promoted by the government and are required for companies to export products.
- Deforestation monitoring could occur with minimal changes to existing systems. Most ranchers, distributors, dairies, and meatpackers already use the existing national livestock data systems, so deforestation monitoring could be added with little effort if data from these systems is modified to include improved geospatial information or shared so that it could be integrated into a separate ZDC monitoring system.
- Internal company level traceability systems are already strong in the dairy sector and national level traceability systems are being strengthened in the beef sector.
- Colombia has well-developed technical capacity for monitoring of forests and could establish beef and dairy zero deforestation monitoring rapidly. The ZDCs use clear, ecologically-meaningful definitions of forests, and forest change, which avoids weakness of ZDCs in other countries and covering other commodities.¹⁰ By using gross deforestation rather than net deforestation, they avoid making an equivalency between the ecological value of a native forest and a newly planted one,²⁰ and between processes of forest loss (sudden, abrupt) and gain (slow, variable).²¹

Challenges for Colombia's ZDCs

- The cattle sector has a high level of informality, or economic activities that happen outside of state control. Informal activities are difficult to quantify, but is estimated to be around 40%. Some of this is sales or movements of cattle to facilitate illicit activities and some of it is sales, trades or slaughters that are arranged in locations without much presence by government livestock and sanitation agencies. Livestock inventory systems (SINIGAN) have a good presence in the Amazon, where much deforestation is occurring, but the livestock transaction data system (SIGMA) has less coverage in this biome as many cattle movements are for local markets and there are few state certified slaughterhouses.¹⁹
- Many beef and dairy producers will have land with past deforestation (deforestation between 2011-2019) included in the ZDC. Helping them come back into compliance with a large-scale afforestation program will be complex.
- The ZDCs are being implemented within individual supply chains and low and selective adoption limits their conservation potential.¹⁰ Participation by companies and other stakeholders will need to increase in order for them to reduce deforestation.
- About half of farmers have only 10 head of cattle,²² and may be more subsistence than market-oriented. These farmers will be harder to incorporate into the ZDCs and will require other interventions such as REDD+ in order to stop deforestation associated with their land management.
- The ZDCs will not protect high conservation value ecosystems with low tree cover, such as Colombia's eastern savannahs and grasslands.

Conclusions

ZDCs are a promising approach for aligning public policies and private sector action to address the role of the cattle sector as a significant driver of deforestation. Given the rapid increase in deforestation during the post-conflict period, solutions are needed that induce rapid changes in land management. Systems to monitor the implementation (and compliance with) the ZDCs should build on recent advances in national agriculture, environment and sanitation monitoring systems, which can be linked together in order to determine whether beef and dairy products were produced on deforested land. Complementary public policies tailored to the local context must support (and coordinate with) the ZDCs by enhancing enforcement of existing laws, including actors who are less market-oriented through programs like REDD+, and protecting areas of high conservation value and low forest cover.

References

1. Food and Agriculture Organization of the United Nations (FAO) (2015). Global forest resources assessment. Rome: Food and Agriculture Organization.
2. Convention on Biological Diversity Secretariat (CBD) (2013). CBD overview: Colombia. Retrieved November 19, 2018, from CBD Secretariat website, <https://www.cbd.int/countries/?country=co>
3. Sabater, S, González-Trujillo, J.D., Elosegi, A. and Donato Rondón, J.C. (2017) Colombian ecosystems at the crossroad after the new peace deal. *Biodiversity and Conservation*, 45:4–6.
4. Instituto de Hidrología, Meteorología, y Estudios Ambientales (IDEAM) (2018). Sistema de monitoreo de bosque y carbono. Retrieved November 19, 2018, from IDEAM website, <http://www.ideam.gov.co/web/ecosistemas/deforestacion-colombia>, Ministry of the Environment (2018).
5. Armenteras, D., Rudas, G., Rodriguez, N., Sua, S., Romero, M. (2006). Patterns and causes of deforestation in the Colombian Amazon. *Ecological Indicators* 6: 353–6.
6. Clerici, N., Richardson, J. E., Escobedo, F. J., Posada, J. M., Linares, M., Sanchez, A., & Vargas, J. F. (2016). Colombia: Dealing in conservation. *Science*, 354: 190-190.
7. Negret, P. J., Allan, J., Braczkowski, A., Maron, M., & Watson, J. E. (2017). Need for conservation planning in post-conflict Colombia. *Conservation Biology*, 31: 499-500.
8. Lerner, A. M., Zuluaga, A. F., Chará, J., Etter, A., & Searchinger, T. (2017). Sustainable cattle ranching in practice: Moving from theory to planning in Colombia's livestock sector. *Environmental Management*, 60: 76-184.
9. Lambin, E.F., Gibbs, H.K., Heilmayr, R., Carlson, K.M., Fleck, L.C., Garrett, R.D., de Waroux, Y.L.P., McDermott, C.L., McLaughlin, D., Newton, P. and Nolte, C. (2018). The role of supply-chain initiatives in reducing deforestation. *Nature Climate Change* 8:109–116.
10. Gibbs, H. K., Munger, J., L'Roe, J., Barreto, P., Pereira, R., Christie, M., Amaral, T. & Walker, N. F. (2016). Did ranchers and slaughterhouses respond to zero-deforestation agreements in the Brazilian Amazon? *Conservation Letters* 9:32–42.
11. Dirección Nacional de Estadística (DANE) (2019). Encuesta de Sacrificio de Ganado Censo. Retrieved November 19, 2018, from DANE website: <https://www.dane.gov.co/index.php/estadisticas-por-tema/agropecuario/encuesta-de-sacrificio-de-ganado>
12. Food and Agriculture Organization (FAO) (2018). FAOSTAT: Production data. Retrieved November 19, 2018, from FAOSTAT website, <http://www.fao.org/faostat/en/#data/TP>
13. Heilmayr, R., L. Rausch, J. Munger, H. K. Gibbs. 2019. Avoided deforestation from the Soy Moratorium. (in review, *Nature Sustainability*).
14. Gibbs, H.K., F. Moffette, J. Munger, P. Vale, L. Rausch, J. L'Roe, P. Barreto, T. Amaral, S. Hall, N. Walker.. 2019. Strategic Response to Zero-Deforestation Cattle Agreements Limits Impacts Across the Brazilian Amazon. *Environmental Research Letters* (in press).
15. Alix-Garcia, J. and H. K. Gibbs. 2017. Forest conservation effects of Brazil's zero deforestation agreements undermined by leakage. *Global Environmental Change*.
16. Transparent World (2019). Colombian Tree Plantations. From Global Forest Watch: http://data.globalforestwatch.org/datasets/baae47df61ed4a73a6f54f00cb4207e0_5
17. Morales-Rivas, M., Otero Garcia, J., Hammen, T.V.D., Torres Perdigón, A., Cadena Vargas, C.E., Pedraza Peñaloza, C.A., & Posada Gilede, E. (2019). Atlas de páramos de Colombia. Instituto Von Humboldt, Bogotá, Colombia.
18. Instituto Colombiano Agropecuario (ICA) (2018). ICA website, Retrieved November 19, 2018, <https://www.ica.gov.co>
19. Instituto Geográfico Augustin Condazzi (IGAC) (2018). Geoportal. Retrieved November 19, 2018, from IGAC website, <https://geoportal.igac.gov.co/>
20. Brown, S. and Zarin, D., 2013. What does zero deforestation mean?. *Science*, 342(6160), pp.805-807.
21. Chazdon, R.L., Brancalion, P.H., Laestadius, L., Bennett-Curry, A., Buckingham, K., Kumar, C., Moll-Rocek, J., Vieira, I.C.G. and Wilson, S.J. (2016). When is a forest a forest? Forest concepts and definitions in the era of forest and landscape restoration. *Ambio* 45:538-550.
22. Federacion de Ganaderos Colombianos (FEDEGAN) (2017) Inventario Ganadero. Retrieved November 19, 2018, <https://www.fedegan.org.co/estadisticas/inventario-ganadero>