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MARKETS AND FOREST:

Regulatory Opportunities in the Amazon

Report 3:

CATTLE RANCHING

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Introduction

Regulating sectors that impact forests is essential to prevent, reduce, and combat environmental crimes in the Amazon. Illegality does not lie in natural resources themselves, but in how they are extracted, processed, transported, and traded. When markets for gold, timber, cattle, and land operate without effective regulation, illicit practices make their way into legitimate supply chains and often face little consequence. Strengthening the regulatory framework is a concrete way to address criminal activities driving forest loss.

This report draws on the study *Markets and Forest* (Instituto Igarapé, 2025), which analyzed how eight countries in the Amazon Basin—**Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname, and Venezuela**—regulate these markets. Countries in the basin are not starting from scratch. In each, there are rules, registries, and practices that, with adjustments, resources, or better coordination, can strengthen regulation. Many of these tools are little known beyond their national contexts; others are recent and not yet documented. This report compiles these initiatives and presents them as regulatory opportunities, drawing on concrete experiences across the region.

This analysis does not assess the effectiveness of these tools or how they operate in practice, which would require dedicated field studies in each country. Its value lies in bringing together what exists but remains scattered, showing how different countries address similar challenges, and offering options that can be adapted, combined, or strengthened to fit each national context. Rather than judging what works, it invites exploration of what is already available.

The report is organized into three parts: an overview of the cattle ranching sector in the Amazon, a set of regulatory opportunities illustrated by experiences from countries in the basin, and a final section synthesizing the patterns that emerge from this comparative review.

Context of Cattle Ranching in the Amazon Region

Cattle ranching is the main driver of forest conversion to pasture in the Amazon Basin. Globally, between 2001 and 2024, about 34% of tree cover loss has been linked to permanent land-use change, including agricultural expansion and other productive uses (Global Forest Watch / World Resources Institute, 2024). In the Amazon, each head of cattle requires roughly one hectare of pasture, meaning that every hectare cleared for cattle is a hectare of forest lost. This conversion occurs despite low profit margins for producers, as it is often tied to land speculation, securing land tenure, or other motivations beyond immediate financial gain.

The sector's economic weight makes regulation all the more complex. Brazil is the world's largest beef exporter, with a market valued at roughly USD 18 billion per year, and agribusiness accounting for close to 21% of national GDP. Bolivia and Colombia also show significant economic dependence on cattle production, which reduces their autonomy to adopt restrictive measures and exposes them to pressure from the sector for more flexible environmental policies.

Informality in the Amazon cattle sector far exceeds the global average of 60%: it reaches 80% in Bolivia and 85% in Colombia (*Markets and Forest*, Igarapé Institute, 2025). This informality is linked to low-skilled labor, the precarious nature of activities in remote areas, and limited state presence in the territories where expansion is most rapid. Cattle production, both around and within protected areas, is closely associated with road expansion and the transformation of forest cover.

The attempt to hide the connection between cattle and illegally deforested areas along the supply chain is a central challenge. In Brazil, for example, monitoring is limited to suppliers that sell directly to slaughterhouses, leaving intermediate links, where cattle from illegally deforested areas are "laundered," outside the reach of oversight. This limitation underscores the need to expand traceability across the entire chain and subject the activity to stricter controls.

Although most countries have fairly comprehensive agricultural and environmental regulatory frameworks, their capacities to ensure traceability, curb unauthorized expansion, and sustain enforcement remain uneven. Recordkeeping is fragmented, coordination between animal health and environmental systems is limited, and administrative systems often do not communicate effectively with one another, making it difficult to verify compliance and anticipate pressure from cattle ranching on the forest.

Opportunities to Strengthen Regulatory Framework

Regional experience shows that bringing order to the cattle sector — from basic regulations to voluntary commitments along the beef supply chain — requires a combination of instruments, interinstitutional coordination, and approaches tailored to the scale of cattle production in each territory. This report gathers these opportunities based on experiences from **Bolivia, Brazil, Colombia, Ecuador, Venezuela, and Suriname**.

1. Cattle Movement Control: Basic Records as a Starting Point

A first step to regulating cattle production in the Amazon is to establish effective controls over animal movements. In a sector with high levels of informality, having verifiable records of the origin and destination of cattle generates basic information, reduces risks such as smuggling or permit forgery, and lays the groundwork for more robust traceability mechanisms.

In Bolivia, control begins with the Animal Movement Guide (Guía de Movimiento Animal, GMA), an official document issued by the National Service for Agricultural Health and Food Safety (Servicio Nacional de Sanidad Agropecuaria e Inocuidad Alimentaria, Senasag) through the Gran Paititi digital system. The GMA is mandatory for the transport of cattle, buffalo, camelids, equines, sheep, goats, pigs, poultry, and bees, and it allows authorities to verify that transport has been duly authorized.

In practice, it primarily serves administrative and animal health purposes; its contribution to territorial and environmental control depends on integrating this information with property records, land-use data, and monitoring systems, otherwise the document risks functioning as little more than a formal transport requirement. Law No. 1333 of 1992 also incorporates general environmental criteria regulating land use and establishing restrictions in sensitive areas. However, translating these provisions into effective controls over extensive cattle production depends on specific regulations and land-use planning.

Colombia uses the Internal Sanitary Movement Guide (Guía Sanitaria de Movilización Interna, GSMI), issued by the Colombian Agricultural Institute (Instituto Colombiano Agropecuario, ICA), which documents and authorizes livestock movements for health and administrative control purposes. Its reach as a territorial control tool depends on the presence of verification posts and coordination with other official agencies, particularly remote frontier areas where agriculture is expanding.

In Ecuador, the Animal Movement Guide (Guía de Movilización Animal), managed by Customs (Aduanas) and the Ecuadorian Agency for Agricultural Health (Agrocalidad), serves an equivalent function, regulating animal transport with mandatory territorial oversight. While the regulatory framework requires this oversight, its application has largely focused on health aspects. Linking this instrument to environmental and land-use controls remains underdeveloped.

Although these instruments do not constitute full-chain traceability systems, they allow for the verification of declared origins and destinations, generate basic records, and establish minimum control points. Systematic verification, cross-referencing with territorial information, and advances in digital recordkeeping offer ways to expand their reach and progressively regulate the cattle supply chain, even in contexts of high rural informality.

2. Traceability in the Cattle Supply Chain: Controls and Verification at Critical Points

Forest conversion to pasture is one of the leading drivers of deforestation in the Amazon. Several countries have developed mechanisms to record cattle movements, verify suppliers, and limit the entry of animals from recently deforested areas.

In Venezuela, the mandatory animal transport permit and its digital version, implemented through the Integral Agricultural Health Information, Management, and Statistics System (Sistema de Información, Gestión y Estadística de la Salud Agrícola Integral, Sigesai), enable verification of animal movements and the issuance of authorization codes for transport within the national territory.

Producers must register in the system and obtain animal health permits before any movement, with the National Institute of Integral Agricultural Health (Instituto Nacional de Salud Agrícola Integral, Insai) serving as the issuing authority.

These documents are required for moving cattle, buffalo, sheep, goats, pigs, and poultry within the country and function primarily as sanitary and administrative controls, with their reach dependent on enforcement capacity on the ground. Additionally, a mobile application (Sigesai APP) facilitates verification of documents issued by Insai, improving access to permit data. Complementing this, the requirement for environmental licenses as a condition for access to production-related financing introduces incentives for compliance with environmental obligations, although this conditionality typically operates in parallel rather than being fully integrated with animal movement systems.

In Brazil, mandatory animal transport documents and formal checks at slaughterhouses and authorized facilities provide verifiable control over high-risk segments of the supply chain. These instruments are complemented by the integration of administrative records–including sanitary, environmental, and trade data–which helps identify risks and guide regulatory or credit decisions, although their reach is more limited outside the formalized segments of the chain.

In addition, there are voluntary systems for individual animal identification aimed at markets with higher traceability requirements, as well as mechanisms such as the Conduct Adjustment Agreement (TAC da Carne), which place the responsibility on slaughterhouses to audit suppliers and exclude properties linked to illegal deforestation, extending control primarily over the most visible and regulated links in the supply chain. However, the complexity of the supply chain makes it difficult to ensure that animals raised in deforested areas do not enter the formal market through intermediaries–after all, cattle spend most of their lives on farms that enter the supply chain as indirect suppliers.

The combination of mandatory administrative controls, checks at critical points, and conditions for access to credit and formal markets–supported by independent environmental information–provides a pathway for extending traceability beyond formalized segments and purely voluntary schemes.

3. Use of Technology and Data Integration to Monitor Cattle Expansion

Cattle expansion in the Amazon typically occurs in remote areas where state presence is limited. In this context, oversight relies on institutions' ability to combine reliable environmental information, local supervision, and administrative tools that enable on-the-ground intervention, even where institutional capacity is limited.

In Brazil, territorial surveillance relies on the satellite monitoring systems PRODES and DETER, operated by the National Institute for Space Research (Instituto Nacional de Pesquisas Espaciais, INPE), which detect, respectively, annual consolidated deforestation and near-real-time deforestation alerts. These alerts are used by the Brazilian Institute of Environment and Renewable Natural Resources (Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis, Ibama) and state authorities to target enforcement operations.

The data are cross-referenced with administrative records such as the Rural Environmental Registry (Cadastro Ambiental Rural, CAR), Animal Transit Guides (Guias de Trânsito Animal, GTA), and records of establishments under official inspection, allowing authorities to identify properties with recent deforestation that continue to move cattle or supply slaughterhouses.

This cross-referencing helps prioritize control actions and the application of sanctions in the formal segments of the supply chain. Its reach is limited in areas with poor compliance with registration requirements or weak field enforcement capacity.

In Ecuador, territorial oversight of cattle relies on Agrocalidad, responsible for animal health supervision and the issuance of mobilization guides, and on the National Agricultural Registry (Registro Nacional Agropecuario, Renagro), which consolidates self-reported information on producers, property locations, and means of production. In terms of territorial control, the reach of these instruments depends on keeping records current and coordinating with other authorities, as the registry alone does not serve tax or punitive purposes.

In Bolivia, under the coordination of the Ministry of Rural Development and Lands, digitized movement guides and GPS tracking mechanisms have been implemented for cattle transport vehicles along specific corridors. The reach of these tools is concentrated on registered routes and operators, with limited coverage beyond these circuits.

Although the systems in Ecuador and Bolivia are still being implemented, they lay the groundwork for building administrative inventories of actors, properties, and cattle flows, providing a basis for guiding enforcement on the ground.

Systematic cross-referencing of satellite, health, land registry, production, environmental, and financial data enables authorities to identify where forest is being converted into pasture and to target interventions in critical areas, reducing reliance on permanent physical presence.

4. Coordinating Fragmented Actors: Health, Environmental, Production, and Financial Systems

Cattle ranching in the Amazon operates through systems that generally function in isolation: health records, environmental data, production controls, financial mechanisms, and voluntary agreements between companies and suppliers. Where these systems do not connect, gaps emerge that facilitate the irregular movement of cattle, the conversion of forests to pasture, while undermining coordinated responses to deforestation.

In Colombia, the Roundtable on Sustainable Livestock (Mesa de Ganadería Sostenible) is a public-private coordination platform that brings together institutions, sector associations, companies, and environmental organizations to support the implementation of the Zero Deforestation Agreement. This agreement establishes voluntary commitments to exclude suppliers linked to recent deforestation and promotes the use of Monitoring, Reporting, and Verification (MRV) systems to track the supply chain. Because it is a voluntary commitment, it does not create direct legal obligations. Verification focuses on companies and suppliers already participating in formal markets, which limits its reach over the informal segments of the cattle supply chain.

In other countries in the basin, there are partial attempts to link administrative records, controls at specific points in the supply chain, and conditions for access to markets or financing. These arrangements do not constitute integrated oversight systems and vary in coverage, but they demonstrate how existing information and targeted institutional incentives can guide government action in highly fragmented contexts.

Connecting these systems–whether through formal coordination platforms or by cross-referencing records and existing incentives –offers a way to strengthen the capacity to respond to cattle ranching's expansion into the Amazon forest.

5. Organizing Small-Scale Operation: Cooperatives and Family Farming

In contexts dominated by small-scale cattle ranching and informality, cooperatives and producer associations do not function as regulatory instruments in the strict sense, but they play a meaningful role in the regulatory process. By reducing fragmentation among producers, facilitating communication with the state, and generating basic information on activities, these forms of organization lower the costs of public intervention and establish basic conditions for the gradual implementation of health, environmental, or production regulations. In several Latin American economies, similar mechanisms–cooperatives, local associations, or rural producer unions–perform equivalent functions, even where they lack full legal recognition or are absent from formal administrative records.

In Suriname, where cattle ranching is predominantly carried out through family-based systems with little or no formal registration, producer associations, voluntary registries, and basic technical assistance schemes have served as channels of communication with authorities and as basic sources of data on the activity. In Venezuela, cooperatives and associations that bring together small-scale ranchers– recognized under the 2001 Special Law on Cooperative Associations–help disseminate information and, in some cases, act as intermediaries in local marketing. In rural contexts with limited state presence, these structures help consolidate basic information about producers, reduce organizational fragmentation, and open channels of communication with animal health and agricultural authorities.

These mechanisms can contribute to partially organizing local circuits and reducing the institutional invisibility of the sector, although their effectiveness depends on internal organizational capacity, incentives for formalization, and the coherence and support of public policies.

Collective forms of organization constitute a basic territorial governance structure that can serve as an entry point for the gradual implementation of health, environmental, or production instruments in territories where formal control systems have limited reach.

Lessons for the Region

A comparative review of Amazonian experiences reveals consistent patterns that can guide more effective responses:

- **Controlling cattle movements is central to traceability and a starting point for organizing a highly informal sector.** Mandatory movement permits, checks at transit points, and the digitization of records generate basic information about the origin, destination, and movement of animals throughout their production cycle. The contribution of these instruments to reducing deforestation depends on integration with environmental and land registry data.

- **Key nodes in the supply chain–slaughterhouses and processing plants–are control points where verification can take place without requiring inspections at every individual property.** At these locations, document checks and cross-referencing with environmental data can be carried out. The reach of these mechanisms depends on the coverage of the formal system and the extent to which verification extends to indirect suppliers, where cattle spend most of their production cycle.

- **Voluntary agreements expand the scope of regulation through private commitments.** Instruments such as the Conduct Adjustment Agreement (TAC) or the Zero Deforestation Agreement hold private actors responsible for verifying suppliers and excluding properties associated with deforestation. They operate on formalized segments, create extrajudicially enforceable obligations, and verification focuses on direct suppliers. Extending these mechanisms to informal segments of the supply chain represents a significant opportunity to strengthen the regulatory framework.

- **Financial and market incentives complement direct regulation.** Requirements for environmental permits to access credit, the exclusion of suppliers linked to deforestation by financial institutions, and market access conditions that require guarantees of no deforestation raise the costs of irregular practices. Critically, they do so without requiring inspections at every individual property. These levers mainly target actors operating within formal economy.

- **Systematic data integration reduces reliance on constant physical presence.** Combining satellite monitoring, health, cadastral, production, environmental, and financial data helps address the institutional fragmentation exploited by irregular cattle ranching. Its reach depends on effective integration across databases, the ability to translate these data into actionable controls, and the sustained engagement of the relevant institutions and stakeholders.

- **In small-scale contexts, collective forms of organization–cooperatives and associations–reduce producer fragmentation and facilitate engagement with the state.** They do not replace enforcement or guarantee full traceability, but they provide entry points for interventions in territories where state presence is limited.

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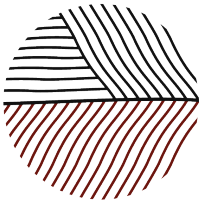

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