

BAIN & COMPANY:

Carlos Libera Rosemburg Neto

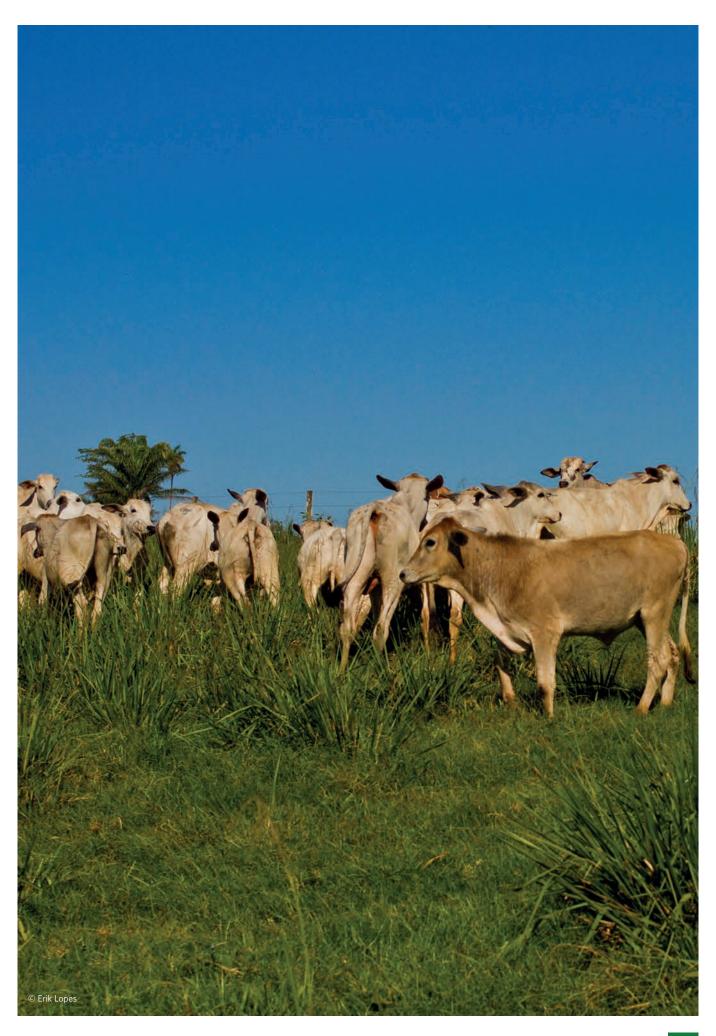
THE NATURE CONSERVANCY:

Fábio Medeiros
Francelle Oliveira Maciel
Francisco Fonseca
Giovanni M. Mallmann
José Otávio Passos
Marina Aragão
Melissa Brito
Ricardo Nissen
Rodrigo Freire
Wandreia Baitz

We thank Beatriz Senciales, Elis Cotosky, and Pablo Majer for their contributions

This pro bono collaboration with Bain & Company allowed The Nature Conservancy to receive strategic support to advance its goals of environmental conservation

Copyright © 2024 Bain & Company, Inc., and The Nature Conservancy. All rights reserved.







he 2020 study "Brazil's Path to Sustainable Cattle Farming" by The Nature Conservancy and Bain & Company identified the necessity for a deforestation and conversion-free business model in Brazil's cattle industry, emphasizing transparency throughout the value chain.

The study highlighted the prevalent low productivity in the country's cattle production. With an average animal stocking density of approximately 1 animal unit per hectare (AU/ha), there is potential to increase this to up to 4 AU/ha by intensifying production. This can be achieved through the adoption of sustainable practices, proper stewardship, genetic and soil improvement, and animal welfare, leading to higher quality meat, greater profits for producers, and reduced carbon dioxide emissions.

Pará State, which encompasses 14.6% of Brazil's territory and has the second-largest cattle herd in the country with 26 million head, faces significant environmental challenges such as illegal deforestation and land grabbing. To combat these issues, the state introduced the Pará Sustainable Cattle Program at the end of 2023. This program mandates an individual cattle traceability system to enhance transparency and foster sustainable development in the cattle industry.

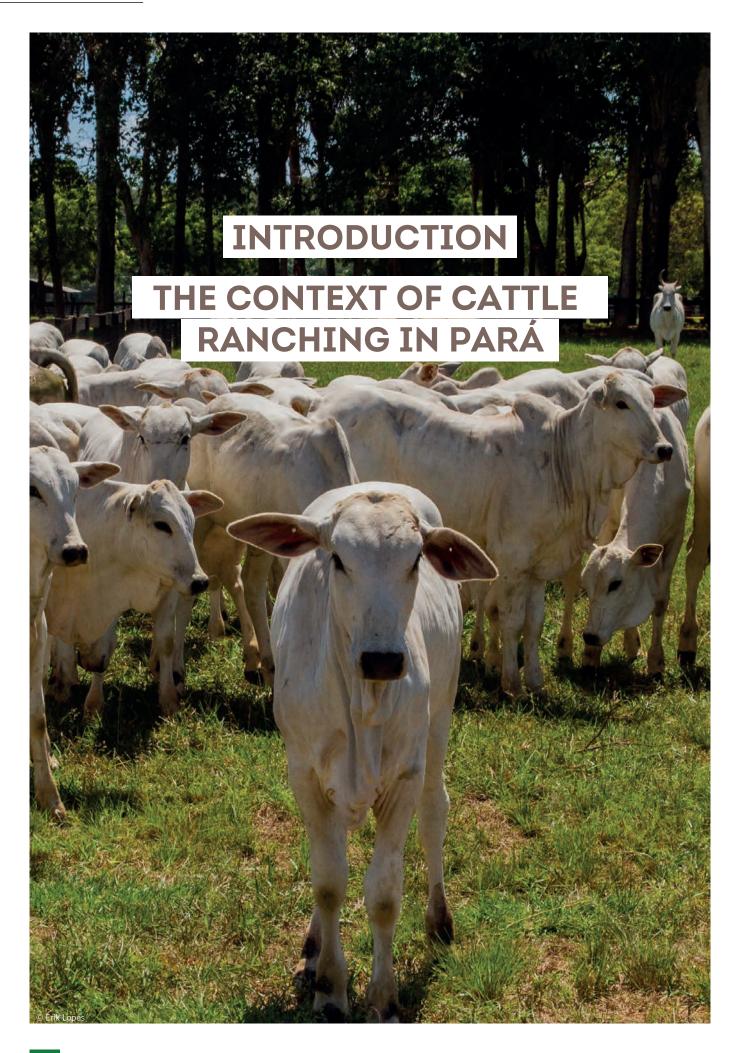
Bain & Company and The Nature Conservancy analyzed several possible mechanisms to support and accelerate the adoption of individual cattle traceability in Pará, including a direct payment to producers mechanism, which is highlighted in this study and refers to a bonus per head of tracked cattle. According to estimates, this mechanism would require up to \$58 million in annual investments.

This investment, potentially coming from market and public mechanisms leveraged by philanthropy, and the additional costs incorporated into the cattle ranching chain, from ear tagging to new operational procedures, have the potential to yield a positive return. The Pará program's full mandatory individual traceability could increase the value of annual cattle ranching production in the state by up to USD\$1 billion over the next three to five years. The main growth drivers include increased exports, higher domestic demand, reduced informality, and enhanced productivity.

Major producers tend to adopt traceability more easily, as they see direct benefits in management and market access. In contrast, small producers and those on illegal deforested properties (which account for 40% of the herd in Pará) face greater barriers to adherence, mainly due to the high cost of environmental compliance and the fear of losing access to the formal market.

Given these complexities, well-structured enabling mechanisms and cooperation between the government, private industry, and cattle ranchers will be crucial to the Pará program's success.

¹ Available at: https://www.bain.com/insights/brazils-path-to-sustainable-cattle-farming/



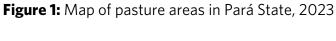
ará, covering 14.6% of Brazil's territory and being the country's second-largest state, spans a total area of 1.24 million square kilometers.

The state includes public protected areas under both state and national jurisdiction, collective territories inhabited by dozens of Indigenous ethnic groups, riverside dwellers, quilombolas (ethno-racial groups of descendants of enslaved Africans), and traditional communities. Additionally, land was allocated for family farming (small producers) through official land colonization and settlement programs.

Pará also faces illegal land occupation, illegal land grabbing, and illegal deforestation. Products produced through these illegal means can enter the supply chain. Pará has pioneered the implementation of numerous strategies derived from the State Climate Policy (Law No. 9.048 of 2020) and the Amazonia Now State Plan (Decree 941 of 2020) to tackle climate change, promote sustainable development, combat deforestation, and enhance environmental education.

From the mid-1960s to the 1980s, the federal government encouraged the development of agriculture and cattle ranching as part of a centralized policy for increasing the population in the Amazon, particularly in southeastern Pará. This policy implemented tax incentives and credit subsidies for ranchers without establishing measures for controlling deforestation. It was only in the 1990s that the conflict between development policies for the Amazon and preserving its forests became more evident. At this time, international protection projects, as well as laws and provisional measures, were launched to protect the intact habitat.

Additionally, a large part of the pasture areas has experienced some level of soil degradation due to extensive cattle ranching, lack of technical assistance, and nutrient extraction without adequate replacement. The degraded pasture is concentrated Pará's southeastern region (see Figure 1), where most of the state's meatpacking plants are also located.





Source: Mapbiomas

- High vigor pasture (low degradation)
- Medium vigor pasture (medium degradation)
- Low vigor pasture (high degradation)

Figure 2: Pasture area expansion in Pará, 2001 to 2023

Pasture area in Pará, 2002-2023 in milion hectares



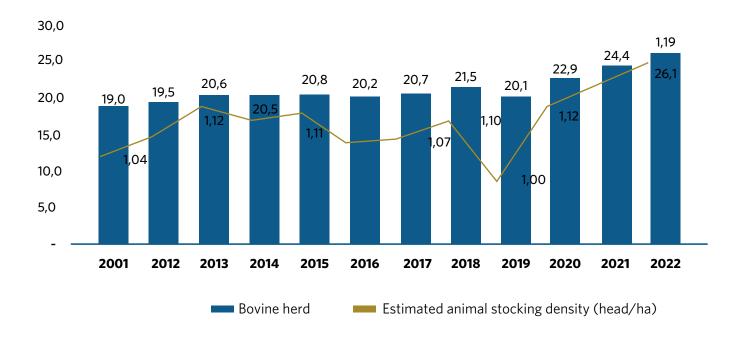
Source: Mapbiomas

Pará is on a growth trajectory in terms of agricultural production, with pasture areas growing 1.5 times over the past 20 years (see Figure 2). The state currently has the second-largest cattle herd in Brazil, with around 26 million head of cattle in 2023, and has seen reductions in deforestation rates over the last year.

Pará has the potential to lead cattle production without expanding pasture areas by preserving its forests and protected areas through sustainable development, intensified production, and technological advances. These efforts, along with industry formalization and increased transparency, can leverage the state's growth potential and expand markets.

The Nature Conservancy and Bain & Company's 2020 study, "Brazil's Path to Sustainable Cattle Farming," had already noted the low productivity in the country's cattle ranching industry. The average animal stocking density (a measure of productivity) of approximately 1 animal unit per hectare (AU/ha) had the potential to increase to up to 4 AU/ha by intensifying production, adopting sustainable practices, proper stewardship, genetic improvement, soil improvement, and improved animal welfare. This transition would make it possible to generate higher quality meat, greater returns for producers, and fewer carbon dioxide emissions. In Pará, the average stocking density is also close to the country average of 1 AU/ha, despite a slight increase in recent years (see Figure 3).

Figure 3: Expansion of the bovine herd and number of head of cattle per hectare of pasture in Pará State



Source: Mapbiomas

THE PARÁ SUSTAINABLE CATTLE PROGRAM

The Pará Sustainable Cattle Program and Individual Cattle Traceability System were established on November 27, 2023, by Decree No. 3.533. The Pará Program is structured around three pillars: traceability, integrity, and adding value. The traceability axis has a set of actions for the beef supply chain's transparency, such as the individual identification of cattle and controlling animal transit. The integrity axis seeks to support environmental compliance and land tenure legalization. The value-adding axis seeks to increase support for producers, facilitating greater adherence to the Program through incentives and productive development.

Individual traceability will be compulsory but implemented gradually using electronic ear tags and buttons.

This measure brings benefits such as greater health security, access to new markets, increased transparency, increased tax collection, productive inclusion, as well as improvements in property management and stewardship.

SOCIO-ECONOMIC CONTEXT: PROFILE OF RURAL PRODUCERS IN PARÁ AND THEIR IMPACT ON DESIGNING PRODUCTIVE TRANSITION MECHANISMS



In Pará, it is estimated that more than 90% of rural properties engaged in cattle ranching belong to small producers with up to four fiscal² modules or settlements (also known as family farming). These 260,000 properties are home to almost half of the cattle herd mapped in CAR properties³. The remaining 10% of registered cattle ranching properties are divided into medium-sized (between 4 and 15 fiscal modules)⁴ and large (over 15 fiscal modules), totaling more than 14,000 properties and 7,000 properties respectively.

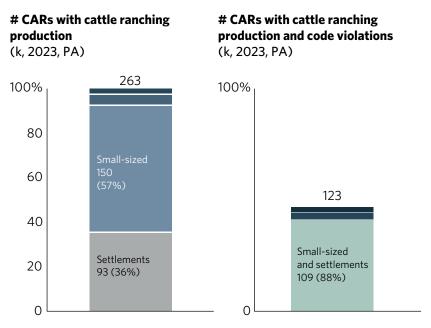
A large portion of rural properties in Pará are in violation of Brazil's Forest Code due to illegal deforestation. It is estimated that at least 50% of the cattle in the state are on non-compliant properties, with violations related to deforestation. Approximately 88% of non-compliant properties engaged in cattle ranching are small rural properties and settlements, totaling more than 100,000 properties that house almost 6 million cattle. Meanwhile, non-compliant medium and large properties house nearly 8 million cattle across more than 14,000 properties (see Figures 4 and 5).

² Using the approximation that a rural property is equivalent to a CAR and removing overlapping areas.

³ A fiscal module is a unit of measurement in hectares for rural properties, the value of which is set by INCRA for each municipality, considering the type of exploitation in the municipality, the income obtained from the exploitation, and the concept of family property. The size of a fiscal module in the municipalities of Pará varies from 5 hectares, as in the capital Belém, to 75 hectares.

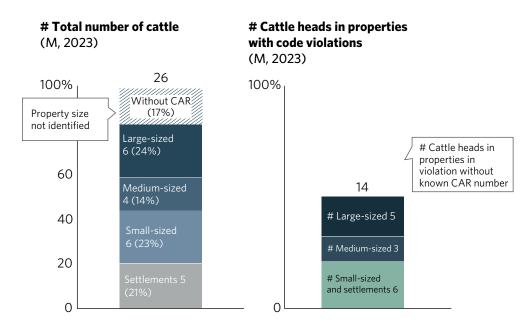
⁴The CAR (Rural Environmental Registry) is the mandatory national electronic public registry for all rural properties, forming the database for environmental and economic control, monitoring, and planning. It is a self-declaratory document that operationalizes the implementation of Brazil's Forest Code and needs to be analyzed and validated by state environmental agencies.

Figure 4: Distribution of CARs with cattle ranching production in Pará: total and environmentally irregular



Source: Bain analysis, TNC, Mapbiomas, SICAR

Figure 5: The size of Para's herd: total and in non-compliant properties



Source: Bain analysis, TNC, Mapbiomas, SICAR



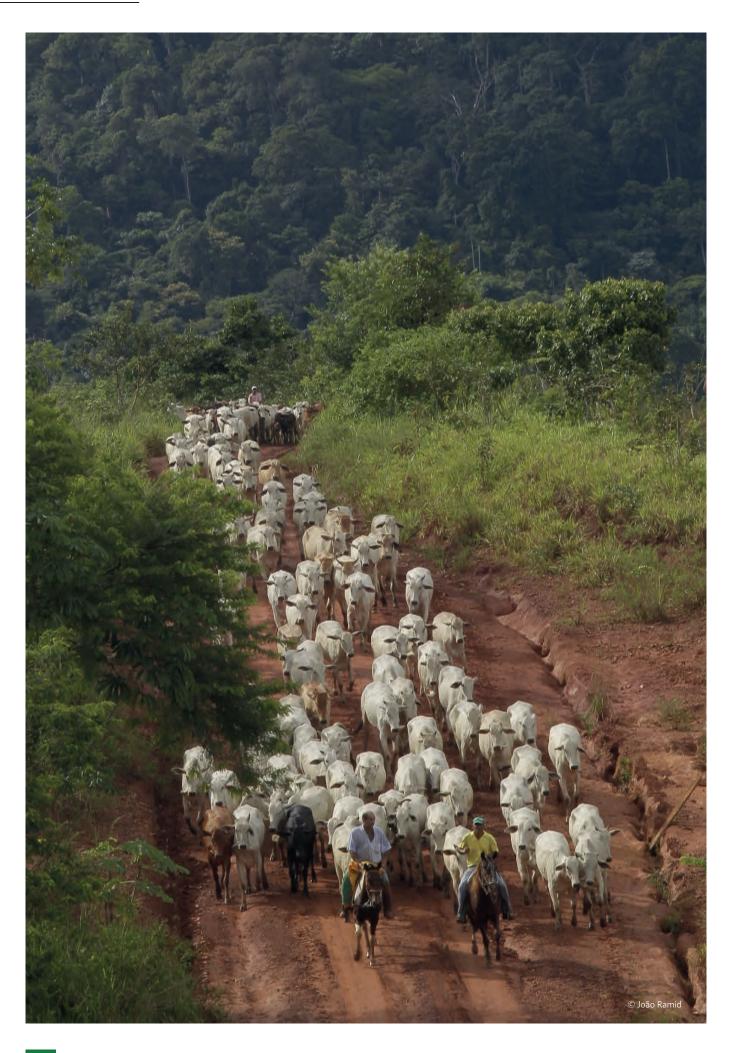
Overcoming barriers to widespread traceability

Rural producers' likelihood of adhering to traceability will vary according to their environmental situation, as rural properties with deforestation violations may be blocked from the formal meat market due to the Meat Conduct Adjustment Terms (TAC).

The Meat Conduct Adjustment Terms (TAC) are agreements signed since 2009 between meatpackers in Pará and the Federal Public Prosecutor's Office, aimed at preventing the purchase of cattle from properties with social and environmental issues, including illegal deforestation. Cattle traceability could be a major step towards increasing the effectiveness of these terms, as it will enhance transparency in the supply chain. However, while the market will be able to implement the terms more efficiently, producers in violation may face barriers in adapting to this new context.

Family farmers see individual traceability as an additional barrier to production, primarily due to the cost of ear tags and the lack of infrastructure for placing them. They believe it is too expensive without government aid, and they also face financial barriers to securing environmental compliance and commercial requalification. There is also a fear of losing market access, as the demand for traced animals that do not meet environmental requirements is likely to decrease. Mechanisms for enabling traceability for smaller producers, as well as mechanisms for helping ranchers reach environmental compliance and commercial requalification, are included in the Pará Sustainable Cattle Program. Making these aspects operational is essential to ensure the Program's success.

Large producers, who have more sophisticated production systems, see direct advantages in individual traceability, such as assistance with stewardship, increased productivity, potential market expansion, higher meat value, and greater control over suppliers. Some of them already use traceability systems to manage their own farms, but they believe that financial mechanisms would be key to accelerating mass adoption by producers.



INTERVENTIONS IN THE CATTLE RANCHING VALUE CHAIN

Successful implementation of interventions in the cattle ranching value chain is generally linked to increased health security, improved product quality, and the adoption of sustainable practices and animal traceability. Such success often depends on support and enabling mechanisms for adopting better production practices, especially by the most vulnerable links in the supply chain.

These interventions usually have the potential to generate a positive impact on the final value of a state or country's production, using levers such as increasing exports, growing domestic demand, reducing informality, and increasing productivity. In Brazil, the state of Santa Catarina has had a Bovine and Bubaline Individual Identification System since 2008, which has increased the value of Santa Catarina beef and helped the state become one of the country's major beef exporters.

To encourage adherence to these interventions across all links in the chain, such as mandatory individual traceability in the state of Pará, it is common to create mechanisms that offer financial and non-financial benefits, aimed at boosting rural producers and farmers, to ensure a smooth transition to new social, productive, and environmental requirements.

Financial incentives can come from public funding (such as tax breaks and subsidies), the private market, industrial players, and corporate funds (by adding value to the product, for example, or access to exclusive financial products), as well as philanthropy and international aid. Non-financial incentives can include technical assistance for production and financial support for the environmental compliance process, for example.

By analyzing international literature and government plans, five guidelines were identified for building enabling mechanisms for productive transition. It is recommended that these mechanisms be:

- Simple, to facilitate understanding and adherence;
- Transformative, addressing the main pain points and causing a lasting change in behavior;
- Scalable, to maximize reach;
- Compatible with other existing policies and initiatives; and
- Cost-effective, being conscious of financial resources and effort (public, private, and/or philanthropic).

Historically, the government has been the main funder of environmental and biodiversity initiatives in Brazil. However, large companies in the agricultural industry are making increasing commitments to reducing deforestation and greenhouse gas emissions.

Meatpackers, retailers, and other industries linked to the cattle supply chain or its derivatives are more likely to financially support these incentive mechanisms due to the commitments they have made regarding the environment. In addition, international commitments to the Amazon region have increased and could reach more than US\$ 3 billion in the coming years (see APPENDIX 2).

ECONOMIC MECHANISMS ENABLING PRODUCTION TRANSITION: ENCOURAGING PRODUCERS IN PARÁ TO ADHERE TO INDIVIDUAL CATTLE TRACEABILITY

Pará faces significant challenges in cattle ranching production, as it lags behind the domestic average in terms of technology and sustainable stewardship. Issues such as degraded pastures and lack of technical assistance limit the industry's productivity and competitiveness. However, the state has enormous growth potential. Implementing traceability systems can be a crucial means of supporting this growth, as it ensures product quality and safety, facilitates access to demanding markets, and increases consumer confidence.

OPPORTUNITY FOR ECONOMIC GROWTH IN PARÁ

It is estimated that adopting traceability in Pará could generate an impact of up to US\$ 1 billion on the value of the state's cattle ranching production over the next three to five years, as well as reducing losses due to sanitary disruptions (see Figure 6).

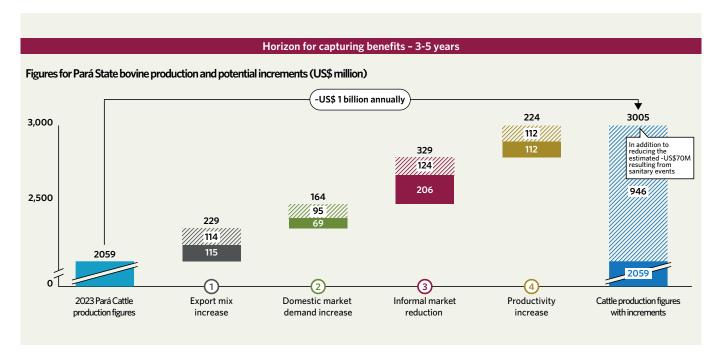
Several growth levers were analyzed:

1. Increased exports of traceable beef from Pará: An increase in the beef export mix (a conservative estimate of a 4% increase, and up to the national average with a 10% increase) could raise the value of cattle ranching production in the state by US\$ 115 million to approximately US\$ 230 million.

- **2. Increased demand and price for Pará beef on the Brazilian domestic market:** The resulting increase in the selling price of the 15-kilogram arroba (a 3% increase in a scenario that corresponds to the Brazilian average, up to an 8% increase in a scenario that corresponds to states with above-average prices) could increase the value of cattle production in the state by approximately US\$ 70 million to US\$ 160 million.
- **3. Reduction in the informal beef market:** A 50% to 80% drop in the share of beef sold to the informal market could increase the value of cattle production by approximately US\$ 200 million to US\$ 330 million.
- **4. Increased productivity:** A 5% to 10% increase in productivity due to better stewardship of traced cattle (still below Brazil's average productivity) could increase the value of production by US\$ 112 million to US\$ 224 million.

It is important to note that in order to capture the potential increase in production value, in addition to increased external demand (in existing and new markets) and domestic demand, the correct functioning of public policies is crucial. Producers will need to adhere to traceability, access technical assistance and inputs, as well as receive support and means of acceleration for rural properties' environmental compliance. The goals of the Pará Sustainable Cattle Program are highly interconnected.

Figure 6: Potential increases in cattle production value in Pará State over the next 3-5 years by implementing traceability



Source: Bain Analysis, using IBGE & ABIEC data

In addition to mechanisms for accelerating farmers' adherence to the program through financial and non-financial benefits, some components are crucial for the success of a traceability program:



Dedicated governance, i.e., a decision-making structure that listens to all the ecosystem's stakeholders;



Legislative and regulatory support;



Administrative support for normalizing the links in the production chain;



Mechanisms for monitoring and controlling the chain;



Effective connection of databases and platforms for simplified information flows; and



Effective engagement of rural producers, with a plan for communicating the program's requirements and benefits to them.



REDISTRIBUTING ADDED VALUE ALONG THE CHAIN - DIRECT PAYMENT FOR TRACEABILITY

Bain & Company and The Nature Conservancy analyzed 18 possible mechanisms for supporting and accelerating the adoption of individual cattle traceability in Pará (see Appendix 1). One of these mechanisms, highlighted in this study, is the direct payment to producers, which refers to a bonus per head of traced cattle. According to estimates, this mechanism would require up to US\$ 58 million in annual investments. Although the economic benefits of traceability impact rural producers and family farmers in different ways over time, direct payment mechanisms represent a more immediate and tangible benefit and can be implemented to accelerate producers' trust and adherence to individual cattle identification in the short term.

Several regions around the world and in Brazil already use direct payments to bring about changes in cattle ranching and agriculture, such as market or public funding bonuses (see *Table 1*). This type of approach can be adapted to the environmental and development context of the Pará program.

Table 1: Financial mechanism benchmarks for productive transition in Brazil and around the world

Description	Data
The Market+ Source program is an example of a market bonus combined with a non-financial mechanism. It includes the payment	Bonus: ~US\$ 9-18/hectareMore than 29,000 hectares have
of a premium by grain buyers for sustainably produced commodities. In addition to the product premium, technical assistance is also part of the program and is offered free of charge to producers. Indigo, an agritech company, centralizes the payments and monitors the results through	received the benefit • More than US\$ 1.6 million in payments since the beginning of the program
	The Market+ Source program is an example of a market bonus combined with a non-financial mechanism. It includes the payment of a premium by grain buyers for sustainably produced commodities. In addition to the product premium, technical assistance is also part of the program and is offered free of charge to producers. Indigo, an agritech company, centralizes the

Program	Description	Data
Soil and Water Outcomes Fund Location: United States of America	The Soil and Water Outcomes Fund is an example of financial and non-financial incentives coming from public and philanthropic resources. The fund is managed by the Iowa Soybean Association and funded by the United States Department of Agriculture, the State of Iowa, and philanthropic donations. It monetizes interventions for sustainable agriculture (such as carbon sequestration, water quality, and nitrous oxide mitigation), consolidates outcomes, and sells them to private companies in the sector. The fund also finances MRV5 projects and provides technical assistance to participating producers.	 Bonus: ~US\$ 13/hectare More than 218,000 hectares received the benefit Over US\$ 17 million in payments since the start of the program 462,000 tons of greenhouse gases captured
PRIMI (Projeto de Rastreabilidade Individual e Monitoramento dos Indiretos) Location: Brazil	In Brazil, PRIMI (Individual Traceability and Indirect Monitoring Project) was developed by the Rio Maria meatpacker in partnership with Durlicouros, the second largest company in the country's leather industry, as well as the Niceplanet consultancy, the SBCert certification company, the Green Level Environment Strategy consultancy, Banco Itaú, and ABIEC. In the project, interested producers receive a financial bonus to breed their herd and a certification for the future sale of their animals to the industry. This allows the industry to show the consumer market the origin of its cattle and offer consignments of animals raised outside deforested areas or those without any other type of socio-environmental violation, receiving a market incentive.	 Bonus: US\$ 5, US\$ 3 to cover the costs of the program (ear tag, certifier, evaluation and audit) and US\$ 2 net to producers Since June 2023, almost 200,000 animals have been ear-tagged and are being traced, driven by the project.
Novilho Precoce, Precoce MS Location: Brazil	Novilho Precoce, an ongoing bonus system in the states of Mato Grosso do Sul and Santa Catarina, is one of the main bonus programs for improving beef quality in Brazil. Meatpackers receive ICMS tax incentives, which are passed on to their farmer suppliers based on criteria of productivity, carcass quality, and social and environmental aspects of the production systems used.	 In 2023, 40% of the slaughter in the state of Mato Grosso do Sul was slaughtered under the program and US\$ 23 million was paid out in incentives. Bonus: US\$ 16/head general average The amount actually received depends on the score according to the different criteria for good agricultural practices.

⁵ Monitoring, Reporting and Verification

PROPOSED BONUS SYSTEM FOR PARÁ

A chain bonus program (see Figure 7) can be defined based on four main structuring factors:

- Fundraising
- Bonus amount
- Eligibility criteria, and
- Implementation.

In addition, joint and phased actions of a bonus program can accelerate implementation of the mechanism and expand producer uptake over time.

SOURCES OF FUNDS

For fundraising, there are market solutions and corporate funds, as well as public and/or philanthropic sources. A combination of private market sources and public sources creates a market mechanism that is sustainable in the long term, while philanthropic sources can catalyze the implementation of the incentive in the short term.

The first phase of the chain bonus incentive consists of a philanthropic incentive program, which would work in the short term, for 2 to 3 years, and serve as a bridge until the market incentive is implemented. Philanthropy does not seem to have a high appetite for subsidizing medium and large producers, who already use individual identification for managing the herd on their property, so this phase would be focused on family farmers who are suppliers to the chain as a whole.

Several ways for the industry to raise funds can be considered. Currently, ABIEC (the Brazilian Association of Meat Exporters) is negotiating with the Chinese government to implement the so-called "China Premium," which consists of an additional amount in the sale price of cattle exported to the country. With this bonus, around 10% of slaughtered head, corresponding to the portion exported to China, would receive the premium.

Another alternative is a leather chain premium, an incentive that could be offered by the fashion and automotive industries for high-quality, traced leather, based on industry benchmarks. Initially, it was estimated that only 10% of slaughtered head will produce quality leather, but there is potential for growth as cattle breeding evolves to prioritize leather quality. The leather industry is interested in developing a higher value-added market, demanding certifications that meet international standards and encouraging the involvement of the entire production chain in this bonus process. Currently, 52% of the leather exported from Pará goes to China (9 percentage points more than the Brazilian average), 17% to Italy, and 7% to Vietnam.

However, the export and leather chain premiums alone would not reach the scale expected to generate effective incentives and would take time to implement. For this reason, the state government can speed up this change through tax changes. In a similar way to Mato Grosso do Sul's Novilho Precoce program, the Pará government could offer tax incentives, passing on the benefits to producers. The government could extend the tax waiver to the industry, which in return would contribute to a bonus fund. Alternatively, the state could demand a fund matching model from the industry, where for every real invested by the government, the industry would contribute another real to the bonus fund.

BONUS AMOUNTS

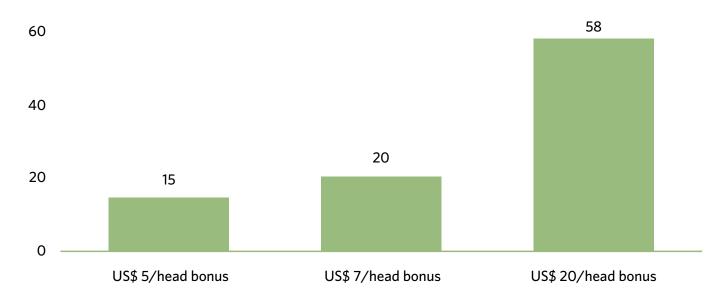
The bonus amounts per head and the criteria for establishing which producers will be eligible must be defined according to the availability of financial resources.

In the PRIMI program, the amount per head is US\$ 5, of which US\$ 3 is to cover the costs of the program (ear tag, certification, audit) and US\$ 2 net for producers.

Leather industry benchmarks indicate the possibility of a 1% premium on the sale value per head, resulting in around US\$ 7. With a bonus per head varying between US\$ 5 and US\$ 20, and considering 100% or 2.9 million slaughtered head subsidized (total annual slaughter in Pará), the annual budget could vary from US\$ 15 million to US\$ 58 million (see Figure 6).

Figure 7: Annual bonus budget for the entire herd slaughtered in Pará with variation in the amount of the premium per head within incentive model

Annual bonus budget per head of cattle: in US\$ million



ELIGIBILITY CRITERIA

When defining the criteria for producers to be eligible for the bonus, the fashion and automobile industries see the bonus criteria linked to international market demands and not solely to traceability.

In addition, Pará's cattle herd is older than Mato Grosso do Sul's, indicating that there is room to encourage early slaughter. Therefore, in the long term, the bonus for reducing the age of the herd can be applied.

Defining the model for distributing the benefit is equally important. The bonus can be based on the length of time the head of cattle remains on each property or paid directly for taking part in the program, regardless of the length of time, as in the PRIMI model.

A phased implementation model, in which traceability is the initial criterion for the incentive, followed by the gradual introduction of criteria related to meat and leather quality, can be effective in ensuring that the incentive achieves the objectives of the Pará Sustainable Cattle Program.

IMPLEMENTATION

For implementing the bonus incentive, it is essential to name those in charge of the program's operational and financial management, as well as the certifying entities (if necessary, according to the eligibility criteria) and specialized technical professionals. Financial management can be centralized through tendered funds or banks.

One of the biggest challenges is ensuring that the incentive reaches all links in the production chain. Although there are discussions about using smart contracts for distributing the benefit, the initial perception is that a simplified, lower-cost model, which distributes payments based on information provided by the meatpackers and the health agency (ADEPARÁ), may be sufficient. A simplified model for distributing bonuses in the chain is shown in Figure 8.

⁶ According to data from Semadesc (State Secretariat for Environment, Development, Science, Technology and Innovation), Sefaz (State Secretariat for Finance and Planning), Embrapa (Brazilian Agricultural Research Corporation) and the Ministry of Agriculture and Cattle raising.

ADEPARÁ

Managing fund

SEFA

Tendered bank

Rearing

(\$)

Meatpackers

Finishing

Figure 8: Summarized model for distributing bonuses to links in the chain

Breeding

Source: Bain Analysis

A simplified model of bonus distribution in the supply chain is shown in Figure 8. Bonus resources are passed on to all suppliers in the chain (breeding, rearing, and finishing producers). ADEPARÁ (Agricultural Defense Agency of the State of Pará) holds the traceability information, such as tagging and herd movement, while slaughterhouses hold the slaughter data, events that can trigger incentives and bonuses. The bonuses are distributed through a bank, originating from a financial resource management mechanism, such as a management fund, coming from the industry interested in deforestation-free chains and government productive transition incentives, catalyzed by philanthropy.

PUBLIC POLICIES AND STRUCTURING INITIATIVES

There are a number of opportunities that depend on public and private actions that can be addressed to ensure that the Pará Sustainable Cattle Program reaches its full potential and enables the productive transition.

With more than 11 million head of cattle on non-compliant properties in the state, speeding up and strengthening environmental compliance and commercial requalification processes is essential for cattle ranchers to join the program. In addition, some of the costs of these processes would have to be subsidized for family farmers, who are unable to absorb additional costs in their production.

The land legalization process needs to be optimized and work in the right way and at the right speed, and the land agencies in charge of the settlements need to work together with the state government to solve the specific challenges faced by this audience. Table 2 contains more details of the recommendations for public policies and other structuring initiatives.

Table 2: Recommended public policies and structuring initiatives for a productive transition to the Sustainable Cattle Ranching Program of Pará.

Recommendation

Context e Rationale

Producer support for commercial requalification - cost subsidies and technical assistance

A property with illegal deforestation can trade on the formal market again in Pará and regain environmental compliance by joining the PRA (Environmental Compliance Program), a process run by the Environment and Sustainability Secretariat (SEMAS) that enables producers to commit to becoming compliant with the Brazilian Forest Code. However, the process is complex and time-consuming. Even large producers report that it takes between 2 and 3 years to regain their status, with adequate financial resources and legal support.

In August 2024, SEMAS in Pará announced the availability of a new specific methodology for the commercial requalification of producers, which offers a simplified administrative procedure so that they can return to the formal meat market faster while continuing the traditional environmental compliance process. To this end, SEMAS published a call for tenders for accrediting private tools for commercial requalification, with SIRFLOR⁷ being the only accredited tool to date.

The costs of joining SIRFLOR can be a significant challenge, especially for family farmers. Although the commercial requalification process through SIRFLOR means that producers can rejoin the market in less time compared to the traditional process, it requires a considerable investment from producers. In the traditional process via SEMAS' PRA, the final deadline for implementing the physical actions to restore vegetation can be up to 20 years. In the SIRFLOR process, on the other hand, producers need to fence off the areas to be restored (required in most cases) and bear other costs before being authorized to operate in the formal market. In addition to the fencing costs, there are expenses for hiring technicians, the rehabilitation system, and the payment of fines to the Federal Public Prosecutor's Office, which are proportional to the deforested area.

Pará has a total perimeter of 390,000 kilometers of deforested area and the estimated cost of fencing is an average of US\$ 2,500 per kilometer. Therefore, the cost of fencing the total deforested area in Pará would be approximately US\$ 1 billion, excluding the costs of technicians, the rehabilitation system, and fines. Financial incentives aimed at supporting rural producers, especially settlers and small properties, could help cover the costs associated with joining a commercial requalification platform, with a special focus on fencing deforested areas. As the focus of incentives could be directed towards small producers and settlers, this value could be even less.

The free consultancy and technical support offered by some meatpackers to producers in their chain and partners interested in legalizing their property, or other similar structures, is another way of supporting environmental compliance.

⁷ SIRFLOR (Forest Restoration System) was created from an agreement between ACRIPARÁ (Pará Breeders Association), the company Niceplanet Geotecnologia, the Federal Public Ministry of the State and Semas, and ensures the determined criterias in the TACs of the Federal Public Ministry.

Recommendation

Context e Rationale

Technical assistance and access to rural credit for increasing productivity and intensifying production, environmental compliance, and/or commercial requalification

Many producers have properties with large areas of illegal deforestation in comparison to the total area. In addition to the even greater cost of fencing off these areas, the loss of productive area on the property would be very significant, damaging these producers' profitability.

Cattle intensification is one of the most attractive production technologies for producers who need to become environmentally compliant, as it allows them to increase production and income in a smaller production area. Because of this, additional public policies and market solutions will be necessary to support non-compliant producers, especially access to productive technical assistance and rural credit that can allow producers to capitalize while making changes on the farm.

The possibility of increasing the rural credit limit and access to rural investment credit (whose terms and amounts are more attractive than rural costing credit) is a promising opportunity for producers to meet the costs of developing the supply chain. The use of alternative collateral, such as the tracked cattle themselves, can be supported by the advancement of traceability and the technological development of data integration. For producers with illegal deforestation who are becoming environmentally compliant and especially for family farms, there is a market opportunity to create specific financial products that cover the commercial requalification and restoration costs. New initiatives such as those of the financial entity SICREDI with its CPR Regulariza product can be scaled up in Pará as an opportunity to overcome the environmental compliance challenges.

Technical assistance to support the producer for the CAR and PRA

The process of registration and validation of the CAR faces some challenges, requiring public support. Regarding CAR registration, some producers do not see the need for regularization as they access the market indirectly and informally. There is an even greater difficulty for settlement producers, where the process of preparing the CAR for each property is still in its early stages and could be accelerated by land agencies (INCRA for federal domain lands and ITERPA for state domain lands). The INCRA CAR Lote program is a promising tool in this regard.

The environmental regularization process by SEMAS, through the PRA, is usually lengthy, from the analysis of the property's CAR to the preparation, approval of the PRADA (Project for the Recovery of Degraded or Altered Areas), and the signing of the commitment term. In this context, the support and preparation of the producer for the PRA, who often does not know the process, by an accredited technical responsible and the automation of part of the process, such as the use of PRADA templates, would be of great help in speeding up the process.

Support for rural producers for land legalization

Although it does not access to the formal market and therefore does not directly affect adherence to traceability, the lack of land-title legalization limits access to rural credit. This is a critical problem especially for producers in settlements, as it increases the cost of both land ownership and environmental compliance, as well as limiting investments in increasing productivity.

The main challenges in the land legalization process include lack of financial resources for titling due to the high cost of georeferencing, shortage of qualified manpower to support the process (both in the relevant agencies and in hiring external professionals for georeferencing and technical inspection services), and producers' lack of knowledge about the stages and documentation required for legalization.

Recommendation	Context e Rationale
Interest subsidy for Plano Safra for traceability in Pará	The Safra Plan is a means of incentive via public funding through credit subsidies. The federal government's program aims to provide resources for financing agriculture and cattle ranching in Brazil and encourages strengthening environmentally sustainable production systems via interest rate reduction premium. Some environmentally sustainable practices already have a 0.5% rate reduction subsidy on costing credit, such as rural producers who are compliant with the Forest Code. Thus, there is an opportunity for the federal government, through the Agriculture and Livestock Ministry, to regulate Pará's traceability system as a good agricultural practice, so that it can also have valid certification to receive a 0.5 percentage point reduction in the interest rate on funding. Once regulated, the subsidy requires a system that shares information between the ADEPARÁ health agency and financial institutions. This will enable the subsidy to be made operational at bank branches based on the state's traceability data. The Sustainable Territories Platform is promising for playing this role, as it aims to integrate the publić, private, and third sectors to advance low-carbon socio-economic development in Pará.
Subsidy for ear tags and technical assistance for individual identification	Subsidizing ear tags and technical assistance for placing the tags provided by the government and partners is also essential. Many producers and especially family farms raised the extra cost of the program and lack of structure on farms as one of their main concerns.
Information systems Integration	It is crucial that traceability information is fully integrated with territorial and environmental data on rural properties. This will enable effective verification and monitoring throughout the program, as well as making the use of a bonus incentive possible. It is also important to consider legal models for data sharing, and for the state to choose a system that facilitates access and integration between public and bank data so that it is it possible to grant rural credit incentives. The Territorial Intelligence Module (the Pará government's territorial intelligence platform) and the Sustainable Territories Platform could play an important role in sharing information.
Capitalizing small and mediumsized meat-packing plants	Capitalizing small and medium-sized meatpackers to invest in development, infrastructure, and technical qualification generates the means for them to support their suppliers in the production transition, as well as supports the movement towards decentralizing the industry in the state.
Program communication plan	The program's communication plan is also an aspect that will influence the results. A communication program via associations and unions, and government support for more small meatpackers to join the cattle ranching TAC, are potential solutions. Given the importance of the topic, communication, mobilizing, and engaging is one of the Program's cross-cutting axes and is being planned by a workgroup comprising representatives from several institutes.

FINAL CONSIDERATIONS



As discussed, cattle ranching in Pará has a very specific and challenging context. Cattle ranching was encouraged by the government in past decades as a land occupation and control policy, with no guidelines focusing on forest preservation. Recently, the state has been investing in sustainable development policies and achieving reducing deforestation rates. Pará's situation is unique and complex due to the size of its territory and herd. The large number of public areas protected by the state and federal governments and land settlements where family farmers live, most of which have not yet achieved certification with the rural environmental registry, creates additional complexity.

Mechanisms that can make the productive transition possible involve associations, public institutions, government agencies, and the private sector, with funding coming from the market, industry, corporate funds, philanthropy, and public funding such as tax breaks and subsidies. These mechanisms will have to cover all the links in the cattle value chain, including cattle ranching producers who have less interaction with meatpackers and direct marketing for slaughter. They must also address those in violation of the forest code to reduce the pressure on these producers to operate in illegal markets.

Coordinated efforts between several actors, led by the Pará State Government and the Pará Sustainable Cattle Program, significantly increase the program's chances of success. This effort will result in important advances for the state's economic development, more returns for producers, and rural development in line with international environmental standards.

APPENDIX 1

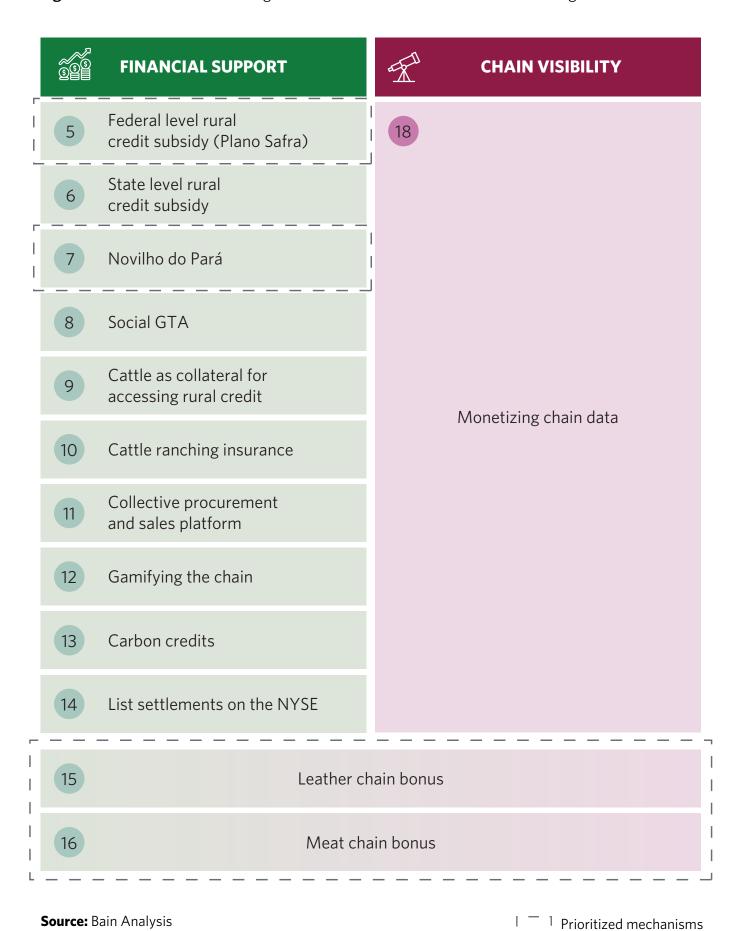
GENERAL SURVEY OF THE MECHANISMS: THE 18 SURVEYED INCENTIVES

Bain & Company and The Nature Conservancy analyzed 18 possible mechanisms for the Sustainable Cattle Ranching Program of Pará to accelerate the adoption of individual cattle traceability. The 18 mechanisms are presented below (see Figures 1 & 2).

Figure 1: Mechanisms for supporting property legalization and compliance under Brazilian law and accessing productive technical assistance

	LEGALIZATION	TECHNICAL ASSISTANCE AND INCLUSION
1	Forestry Restoration via corporate partnerships	5
2	Land title priority	Technical assistance for intensified production
3	Support for land title	
4	Commercial	requalification

Figure 2: Mechanisms for enabling more efficient and sustainable cattle ranching



Incentives selected for further study have already been discussed throughout the study. In prioritizing them, previously mentioned factors were taken into account, such as mechanisms that are simple, transformative, scalable, compatible with other existing policies and initiatives, and cost-effective. These mechanisms were chosen because they were the most attractive ones for meeting producers' needs and were suitable for implementation within the Pará Sustainable Cattle Program timeframe.

The breakdown of the mechanisms chosen for accelerating adoption of individual traceability is shown below (see *Tables 1 to 18*).

Table 1: Forest restoration via corporate partnerships

Proposed mechanism	Technical assistance, support for purchasing seeds and inputs for family farmers to perform restoration work
Suggested actors for providing, investing in, and managing the mechanism	Companies operating in Pará with resources for investing in environmental impact contract local technical assistance companies for engaging producers and implementing restoration.

Source: Bain Analysis

Table 2: Land legalization priority

Proposed Mechanism	Prioritization of producers with tracked herds in the land title process
How the mechanism works	The land agencies: INCRA (National Institute for Colonization and Agrarian Reform) for public lands that belong to the Union, and ITERPA (Pará Land Institute), for public lands that belong to the Pará State, deliver land legalization to producers with tracked herds in a shorter time than the current process.
Suggested actors for providing, investing in, and managing the mechanism	Land agencies: INCRA (National Institute for Colonization and Agrarian Reform) for public lands that belong to the Union, and ITERPA (Pará Land Institute), for public lands that belong to the Pará State, deliver land legalization for producers with a tracked herd and a reduced time compared to the current process. ADEPARÁ: Provides ear tag validation data

Table 3: Support for state land legalization

Proposed Mechanism	Documentation consultancy via accredited partners in the Sustainable Territories Platform (PTS) with technical assistance for documentation consultancy and financial and technical support for georeferencing rural properties without land legalization in state territories.
How the mechanism works	Partial subsidy of the documentation and georeferencing consultancy costs via PTS partners.
Suggested actors for providing, investing in, and managing the mechanism	PTS: Provides centralized platform that connects partners and providers Industry, Philanthropy and/or Government: Provide funds for the mechanism ADEPARÁ: Provides ear tag validation data PTS partners: Accredited providers who provide advice and georeferencing support

Table 4: Commercial requalification

Proposed Mechanism	Financial support package for commercial requalification for producers with 100% traceable herds. Different incentive packages could be created to subsidize the costs necessary for commercial requalification (fencing costs, technical assistance, fines, requalification platform costs). Ex:
	■ Basic Package: Payment of 100% of the requalification platform, 100% of the technical assistance costs ,and 50% of the fencing costs.
	• Full Package: Base Package + 50% of the Civil Indemnity amount
Suggested actors for providing, investing in, and managing the mechanism	Reinstatement Platforms: Guide producers to pay fines, support the reinstatement process and environmental compliance IBAMA & SEMAS: waive fines for family farmers ADEPARÁ: Provides validation data for ear tags Technicians: Support technical studies for reinstatement Small Producers (up to 4 MF) with PRODES, who go through the commercial reconduction process via an accredited platform for reducing the fine
Benchmark	PREM (Reintegration and Monitoring Program) is a similar initiative in Mato Grosso, Brazil that is already up and running

Table 5: Technical assistance for production intensification and support for purchasing inputs

Proposed Mechanism	Free technical assistance for increased productivity and discounts on input purchases Producers with "ear-tagged" cattle will be able to sign up for technical assistance and discounts on purchasing products for soil management, pasture renovation, etc. Priority will be given to the first small and medium-sized producers to have their cattle tagged
Suggested actors for providing, investing in, and managing the mechanism	SEBRAE/SENAR and EMATER: Offer technical assistance (each actor participating according to their capacity) State Finance Secretariat: ICMS waiver for companies supplying fertilizers and soil products (4% rate) Input companies: Providing a discount for producers with ear-tagged herds ADEPARÁ: Provides validation data for ear tagging
Benchmark	SEBRAE/SENAR already has a subsidized technical assistance program for producers

Table 6: Rural credit subsidy at federal level ("Plano Safra")

Proposed Mechanism	Discount (0.5 percentage points) on interest on rural credit for Plano Safra for producers who adhere to individual traceability.
Suggested actors for providing, investing in, and managing the mechanism	ADEPARÁ: Provides ear tag validation data and herd data Financial institutions: Provide facilitated rural credit with traced cattle as collateral (BASA, BB and Banpará etc.) Pará State Government: communicates and disseminates information to producers.
Benchmark	The Federal Government is already providing credit subsidies for sustainable farming practices through "Plano Safra" (Harvest Plan).

Table 7: Rural credit subsidy at state level for family farming

Proposed Mechanism	Discount (0.5 pp) on interest on rural credit for funding and investments for small family farming producers. The discount is offered to producers upon proof of adherence to the individual traceability program by ADEPARÁ.
Suggested actors for providing, investing in, and managing the mechanism	ADEPARÁ: ADEPARÁ supports producers in proving their balance and ear-tagging SEMAS: Coordinates and communicates the program to the financial institutions Financial institutions: Distribute the funds (BASA, Banco do Brasil, Banpará, etc.) and help subsidize the discounted amount. SEFA-PA: Supports the amount of the subsidy
Benchmark	The Federal Government is already providing credit subsidies through Plano Safra for sustainable farming practices.

Table 8: Novilho do Pará

Proposed Mechanism	Bonus for direct payment to producers and family farmers. The funds would be an incentive from the state government, with a partial or total rebate of up to 67% of the 1.8% ICMS tax rate*, according to property and carcass classification, herd age, individual traceability, and others.
Suggested actors for providing, investing in, and managing the mechanism	State Finance Secretariat: Waiver of ICMS payments Meatpacker: Receives a reduction in ICMS according to producers' performance and passes it on through a more favorable purchase price ADEPARÁ: Provides veterinarians to validate quality criteria and accredits outsourced professionals. Producers with animals slaughtered on property and carcasses that meet the program's criteria, and have a 90% traceable herd.
Benchmark	Bonus programs for early herd age (Novilho Precoce) in Mato Grosso do Sul and Santa Catarina

Table 9 Guia de Trânsito Animal (GTA) social

Proposed Mechanism	Exemption from GTA issuance fees for producers with up to 100 head of cattle.
Suggested actors for providing, investing in, and managing the mechanism	ADEPARÁ: Certifies property size and ear-tagging status and approves Exemption from fees on the SIATEC-PA platform for any cattle purpose Philanthropy / ADEPARÁ / others: They pay for the exemption
Benchmark	There are already Social GTA programs in Brazil aimed at family farming, in the following states: Paraná, Santa Catarina, Rio Grande do Sul, Goiás, and São Paulo.

Table 10: Cattle as collateral for access to rural credit

Proposed Mechanism	Using traced cattle as collateral in rural credit operations. The Bank would offer credit using traced cattle as the sole guarantee for the credit or as additional collateral, to enable small producers to access better rates on the formal banking market, increase their financing limit and overcome land legalization difficulties.
Suggested actors for providing, investing in, and managing the mechanism	ADEPARÁ: ADEPARÁ supports producers in proving their balance and ear-tagging SEMAS: Coordinates and communicates the program to banks Banks: Distribute the funds (BASA, BB and Banpará) Producers of up to 4 Fiscal Modules, with individual traceability.
Benchmark	IIDARON (Rondônia's Agrosilvopastoral Health Defense Agency) provides a platform to support financial institutions with traced cattle as collateral.

Table 11: Cattle ranching insurance

Proposed Mechanism	Offering insurance with specific coverage conditions for farm animals that have been individually tracked, providing more security against climatic events, diseases, and even price variations
Specific reason for deprioritizing	Developing a product for this purpose is time-consuming, as is the implementation period. In addition, cattle ranching insurance has very low penetration in Pará. Therefore, it would not be an incentive that would be very effective in influencing greater producer adherence to traceability.

Source: Bain Analysis

Table 12: Collective procurement & Sale Platform

Proposed Mechanism	Creating and making available a platform for small producers to buy inputs and sell cattle collectively in order to gain scale
Specific reason for deprioritizing	Developing a system for this purpose would be complex and would require extra guarantees for purchases to be honored. In addition, producers would need to change their traditional process of buying inputs and selling cattle, which is a time-consuming process. Therefore, it would not be an incentive that would be very effective in influencing producers to adhere to traceability.
Source: Bain Analysis	

Table 13: Gamifying the chain

Proposed Mechanism	Creating a gamification platform in the chain that rewards producers with traced cattle, through incentives such as discounts and cashbacks on products from their production process, or using an existing platform on the market.
Specific reason for deprioritizing	Developing a system for this purpose is complex and would require the participation of several entities in the chain, which could take time to engage. In addition, producers would have to centralize input procurement decisions via the Platform, requiring a cultural change.

Table 14: Carbon credits

Proposed Mechanism	Remuneration of cattle ranching producers for forest restoration and/or other environmental services
Specific reason for deprioritizing	High Complexity: Certifying credits on the voluntary market and through private mechanisms is complex, and the market is not yet mature enough to ensure predictable and stable remuneration for the scale of the Pará Program.
Source: Bain Analysis	

Table 15: List Pará settlements on the NYSE

Proposed Mechanism	Listing Pará settlements on the NYSE (New York Stock Exchange) as a Natural Asset Class and paying for sustainable performance
Specific reason for deprioritizing	High Complexity: NYSE recently aborted a plan to list a natural asset class on the exchange due to criticism from regulators
Source: Bain Analysis	

Table 16: Leather chain bonus

Proposed Mechanism	Ear-tagged and regular cattle, when slaughtered by a federally inspected slaughterhouse, have quality leather, and are exported, receive a premium that is distributed down the chain.
Suggested actors for providing, investing in, and managing the mechanism	Meat industry: Checks for ear-tagging at slaughter time Leather industry: Checks the quality of the leather, exports it and deposits the premium in a fund ABIEC + CICB: Manage fund and bonus system and supports monitoring producers with animals slaughtered with high quality leather Primi, who belongs to Rio Maria slaughterhouse and Durlicouros, slaughtered 113k animals, surpassing the initial 20k target. The project bonuses producers with 25 reais, covering the cost of ear-tagging. The new target is to reach 200,000 animals by the end of the year

Table 17: Meat chain bonus

Proposed Mechanism	Reward per head of cattle for participation in the state's traceability program, financed through philanthropy and international support. Tagged and regularized cattle, when slaughtered by a federally inspected slaughterhouse, receive a premium that is distributed throughout the chain.
Suggested actors for providing, investing in, and managing the mechanism	Meatpacking plant: Checks ear-tagging and begins distribution. Philanthropy and International Support: Donations to the bonus fund. ABIEC: Manages fund, bonus and monitoring. Producers with animals to be slaughtered during the year.
Reference	ABIEC is already designing a bonus system for the chain based on traceability.

Source: Bain Analysis

Table 18: Monetizing the chain's data

Proposed Mechanism	Generation of premium paid by the value chain (including meatpackers and retailers)
Specific reason for deprioritizing	According to our interviews, market entities do not yet foresee an additional payment for data from their entire chain in the short term, so the timeframe for implementing this incentive would be longer than the Pará Program needs.

APPENDIX 2

International commitments of philanthropic funds to the Amazon region will reach more than U\$ 3 billion in the next few years (*Table 1*).

Table 1: Commitments to the Amazon in recent years

Organization	Amounts of undertaken commitments
Gordon and Betty Moore Foundation	More than US\$ 300 million to invest in conserving and managing historic tropical forests
Bezos Earth Fund	Over US\$ 1 billion in new commitments
Protecting Our Planet Challenge	US\$ 200 million in new commitments
Global Environment Facility - GEF (Global Environment Fund)	Over U\$ 90 million in new commitments to Brazil
IDB Invest (Interamerican Development Bank)	More than U\$ 1 billion to be invested in projects related to the sustainable economy, the local population, and conservation
EMBRAPII & BNDES	More than US\$ 68 million to be invested in innovation projects1, including projects aimed at sustainability in the Amazon
Amazon Fund	More than US\$ 820 million to invest in a sustainable economy and prevent deforestation

Sources: News from O Globo, G1, MMA, Valor Econômico; Uol

In addition, the BNDES, in partnership with the Green Coalition, plans to invest US\$ 20 billion in the Amazon by 2030. This investment is part of an initiative involving 17 development banks from the Amazon basin countries, as well as the Inter-American Development Bank (IDB), the World Bank, and the Andean Development Corporation (CAF). The aim is to foster sustainable businesses and initiatives in the region by combining grants, loans, capital markets, and mixed financing schemes. These financial resources will be directed to projects aimed at environmental preservation, sustainable socio-economic development, and mitigating the impacts of climate change in the Amazon¹.

News from BNDES, World Bank Group



BAIN & COMPANY

