

Climate Smart Cattle Ranching

LAB INSTRUMENT ANALYSIS

DATE

DESCRIPTION —

An initiative proposed by Naturevest and The Nature Conservancy that aims to increase the supply of deforestation-free beef from the Amazon by developing a prototype business entering into rural agreements with ranchers that comply with the Brazilian Forest Code¹, providing the financing and technical assistance necessary to implement Embrapa's Good Agriculture Practices (GAP).

GOAL —

The initiative aims to provide both the required financial resources and the technical assistance necessary to qualified ranchers willing to improve the sustainability and productivity of their cattle ranching practices, restoring pastures and reforesting land in order to comply with the Brazilian Forest Code. The business will have the flexibility to develop payment terms that share both risks and successes with ranchers under Rural Contracts and take livestock in lieu of land as guarantees for the funds invested in the ranch.

SECTOR —

Land Use

PRIVATE FINANCE TARGET —

Mid-sized ranchers (properties between 800 and 5000 hectares) initially in the Amazon region that have occupancy rights but are still pending land titles.

GEOGRAPHY —

For pilot phase: São Felix do Xingu - Pará

In the future: Other municipalities in the state of Pará that have significant herds and the rest of the country's cattle ranching regions.

¹ Legal Reserve and Riparian Forests Requirements under the Forest Code

ABOUT THE BRASIL LAB

Brazil aims to reduce Green House Gas emissions by 37% by 2025, mostly through changes in its land use and energy sectors. Like in many emerging economies however, funding to meet these targets remains a challenge. In October 2016, a group of public and private investors – the Brasil Innovation Lab for Climate Finance – was established to tackle this challenge. The Brasil Lab identifies, develops, and supports implementation of transformative climate finance instruments that can drive funds for Brazil's national climate priorities. The Brasil Lab is one of the initiatives that was initially launched under the auspices of the Brazil-U.S. Climate Change Working Group, led by the Brazilian Ministry of Foreign Affairs and the U.S. Department of State. Climate Policy Initiative serves as Secretariat.

AUTHORS AND ACKNOWLEDGEMENTS

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1. CONTEXT

Brazil is the world's largest beef producer and the world's second largest beef exporter. Unfortunately, this economic driver also has costs. The country's current cattle raising practices have been responsible for between 70% and 90% of overall deforestation, emitting approximately 75% of Brazil's total greenhouse gas emissions annually.

With a very low average productivity rate of around one head of cattle per hectare, 96% of all cattle in Brazil graze on degraded pastures. They therefore require more land for continuous grazing over time, which puts pressure on forests and on biomes including the Cerrado and the Amazon.

Better and more sustainable cattle ranching practices are possible; cultivating higher quality, permanent pasture in existing degraded areas can both eliminate pressure on deforestation while producing higher quality, higher yield beef – a benefit for both the environment and the economy.

However, lack of access to finance makes these improvements out of reach for most ranchers: Existing subsidized credit lines² do not meet ranchers' long-term funding needs and cannot accommodate the specificities of these activities' cash-flows. Moreover, existing credit products do not provide the necessary technical assistance that ranchers need to integrate sustainable and intensified livestock practices and generate the positive results. In addition, most financial institutions that provide these credit lines require formal land titles to use it as a guarantee for these loans, which is an impediment to loan access, particularly in the Amazon.

CONCEPT

2. INSTRUMENT MECHANICS

The New Climate Smart Cattle Ranching Company will provide the financial resources and technical services required to co-invest with cattle producers in more sustainable cattle production, and support them to adopt Embrapa's Good Agricultural Practices.

2.1 OVERVIEW & OBJECTIVES

The New Climate Smart Cattle Ranching Company (herein “the New Company” or the “CSCR New Company”) would provide long-term financing to producers to invest in the intensification of their livestock production, in accordance with Embrapa's Good Agricultural Practices, and comply with the Brazilian Forest Code, increasing the productivity of their land, thereby reducing GHG emissions from degraded pastures and from deforestation related to beef production.

The instrument will work in the following manner:

1. Ranchers that are interested in developing a co-investment partnership with the New Company will undergo a rigorous screening process³ to ensure compliance (see Annex V).
2. Once a rancher is qualified, the New Company will conduct a property assessment at the ranch level to determine the actions needed and related costs for improving sustainable cattle production practices in order to optimize revenues and resources, increase productivity over

² See Table - Annex II

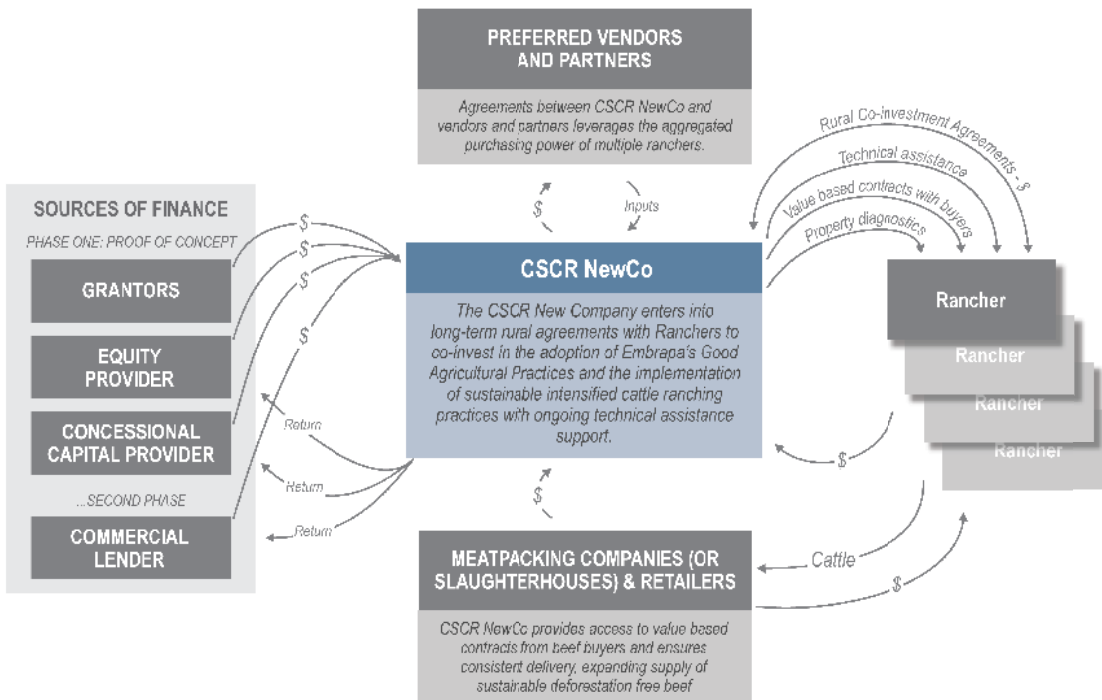
³ See Annex V for the set of criteria that will be utilized in the Screening Process

time, and achieve overall compliance with the Brazilian Forest Code. If the rancher has not yet done so, the New Company will also develop the Environmental Restoration Plan for Degraded Areas within that property (PRADA), that in essence, the “environmental action plan.” Both plans are called herein the “Land Improvement Plan” (LIP).

3. The New Company and the producer will sign a “Rural Partnership Agreement,⁴” which will outline: the terms and conditions for a co-investment, the necessary actions for the optimization of the property and the cattle intensification project, the overall investment and operational costs, and the ranchers’ commitment to Forest Code Compliance and other related laws
4. In addition to providing between 15% and 85% of the upfront capital and ongoing operations expenses needed for up to 10 years (the duration of the agreement), the New Company will provide continuous technical assistance for the implementation of sustainable cattle ranching practices and forest restoration throughout the duration of the agreement
5. The New Company will serve as an aggregator for producers by negotiating collectively on the ranchers’ behalf to secure:
 - a. Better prices for animal food supplements, fertilizers, and other input products
 - b. Off-take agreements with preferred meatpacking companies and retailers
6. Revenues from livestock sales within the framework of the “Rural Partnership Agreement” will be used to pay ongoing costs, while net profits are paid to the New Company and producers, likely in the form of dividends, proportional to the amount that each one provided, as stated in the agreement, over up to a 10-year period
7. The New Company’s dividends will pay back equity providers after Concessional Debt providers are paid in accordance with the agreed re-payment schedule
8. After operational adjustments and successful results, financing the expansion of the business model throughout the Amazon region, and expanding the deforestation-free supply of beef, the New Company will pledge receivables generated from these off-take agreements with preferred retailers to a Credits’ Rights Investment Fund (FIDC). The FIDC will be structured to provide a risk-return profile that will attract commercial investment.

⁴ See Annex III

Figure 1 Operational structure of the Climate Smart Cattle Ranching instrument



2.2 INVESTORS TARGETED AND STRATEGY TO PHASE OUT

During the “Proof of Concept” phase, i.e. Phase 1, a “Participations Investment Fund” (FIP)⁵ will be created and managed by a reputable investment management firm, and become the legal investment structure raising funds to finance cattle producers. The FIP will utilize blended finance, including: (1) grants from private foundations for legal, governance, business development and due diligence aspects to set up the New Company, and establishing initial Rural Partnership Agreements; (2) concessional and/or first loss capital from multilateral development banks, funds and governments for long term co-investments in the pipeline of Rural Partnership Agreements and; (3) equity funds from at least two impact investors including Naturevest, enabling the New Company to negotiate preferential conditions with input providers and develop a demand market for deforestation-free beef with meatpacking companies and retailers. An Operational Partner will be responsible for operating the New Company. The FIP will have sole participation in this “Agribusiness New Company” (the New Company).

After approximately 24 to 36 months of operational success in Phase 1, and a successful development of the deforestation-free beef market with retailers, investor risk will have been reduced by well-implemented projects and a steady pipeline of receivables from highly rated retailers. Such receivables could be further leveraged into a Credits Right Investment Fund (FIDC), in which commercial rate investors would provide the needed resources to finance such investments and scale up the model – at this stage, commercial rate investors would largely replace the initial impact investors and concessional debt providers.

⁵ A “Fundo de Investimentos em Participações or an “Investment Fund in Participations” (FIP) is the Brazilian terminology for Private Equity Fund regulated by the Brazilian Securities and Exchange Commission or “CVM”, that stands for “Corretora de Valores Mobiliários”

3. INNOVATION

The CSCR New Company will be the first company to co-invest in sustainable cattle ranching alongside with ranchers that are pending land titles, providing them with technical assistance and training so that they acquire the needed expertise to permanently change their production practices

3.1 BARRIERS ADDRESSED

Based on an individual assessment of each property, sustainable livestock production in Brazil requires some or all of the following activities: (a) pasture restoration and/or improvements in pasture management; (b) better management of animal grazing; (c) improvements in animal handling; (d) some food supplementation during the dry season; (e) improvements in animal genetics; (f) forest restoration to comply with Legal Reserve and Riparian Forests (APP) requirements within the Brazilian Forest Code, and potentially many others. In order to put in place some or all of the above practices, a producer would likely need to make some upfront capital investments and would also incur in greater annual operational expenses.

The New Company aims to address the three main barriers preventing ranchers to put in place some or all of such practices:

Table 1. The barriers addressed by the New Company

Barrier	Innovation Mechanism
Currently available financial products for low-carbon agriculture and sustainable livestock production do not meet the long term cash-flow needs of cattle ranchers and are restricted in the kinds of assets and activities they can finance.	The New Company will partner with ranchers and will co-invest in assets, including cattle, and activities to implement sustainable intensification practices through an up to 10-years rural contract that shares risks and successes with the rancher
Most commercial banks that finance improved livestock production activities at subsidized rates require the use of collateral, usually the land, as a loan guarantee, though most cattle ranchers in the Amazon region lack permanent land title.	In its early stage, the New Company will raise funds from concessional capital providers and thereafter from commercial investors to co-invest with ranchers and mitigating default risk through ongoing technical assistance and using ranches' land, or livestock, equipment, and/or cattle sales receivables
Cattle ranchers need ongoing technical support to implement correctly intensive production systems and maximize results of those investments. Existing subsidized lines of credit do not offer specific local technical assistance to support these practices.	As part of the total funds to be invested in each sustainable cattle ranching project, the New Company will provide continuous technical assistance for cattle intensification and property financial management.

As ranchers operate individually, they have lower bargaining power when negotiating sales with meatpackers and retailers. At the same time, slaughterhouses operate with idle capacity as they deal with non-standardized product quality and inconsistent delivery.

Acting as an aggregator, the New Company will work collectively with producers to deliver consistently deforestation-free delivery schedule with a standardized quality therefore obtaining better sales conditions (and potential additional price bonuses) to ranchers.

3.2 INNOVATION

There are several existing financial products offered by Brazilian commercial banks that support cattle intensification practices with subsidized rates over long periods – up to 12 years in some cases. There are also new approaches being tested by NGOs and development agencies in other states and municipalities in the Amazon and Cerrado region that combine finance with technical assistance and environmental compliance (see Annex 1 and 2 for comparable approaches and programs). However, the majority of these initiatives still have some key limitations that prevent their broad use for the majority of ranchers in the Amazon, that is, ranchers that do not have permanent land-titles and ranchers that are still in the process of obtaining permanent land titles:

1. Most subsidized financial products available through existing commercial banks do not offer ongoing technical assistance needed to correctly put in place such practices and generate the productivity and financial gains that allow for repayment of such loans
2. Moreover, such loans have fixed set up payment terms that do not take into consideration the unpredictable cash-flow fluctuations associated with the long-term investment needs that characterizes this activity
3. Many commercial banks do not accept other forms of collateral, except for permanent land titles, on the part of the ranchers, even for those that are actively working to obtain such permanent land titles, in order to finance sustainable intensified cattle ranching practices and environmental compliance
4. Some specific programs, which could even be targeting ranchers that are still working to obtain their permanent land titles, are philanthropic and therefore don't have a long-term plan for financial sustainability, which makes them dependent on ongoing fundraising
5. Some have specific features based on the location where they were developed, or they target a specific rancher profile, preventing replication in other regions
6. Others have specific control features that mitigate risk to investors but limit the capacity to scale up and replicate the model in regions with different rancher profile

Overall, the Climate Smart Cattle Ranching initiative is unique in that it addresses these main barriers to cattle intensification through multiple avenues, providing ranchers with long term investment capital, conditioning loans to continuous technical assistance and compliance with the Brazilian Forest Code, and supporting ranchers in the development of a market that aims to purchase higher quality deforestation-free beef.

3.3 CHALLENGES TO INSTRUMENT SUCCESS

There are also several “bigger picture” risks to successfully put in place this mechanism, which are listed in Table 2 below.

Table 2. Potential challenges to instrument success

Potential Challenges	Set of Mitigation Strategies
Brazilian Commercial Banks could develop alternative payment schedules and guarantee structures that would enable producers to access loans that	While competition is unavoidable, including from more established players, the CSCR structure tackles several barriers for the implementation of sustainable cattle ranching practices. It is a “one stop shop” mechanism with

<p>better meet their needs. In addition, the government could, at some point, provide systematic technical assistance associated with such loans, allowing them to guarantee productivity improvements. The need for this mechanism would then become less significant, or limited.</p>	<p>a lean structure that avoids bureaucracy and extensive processes, is flexible in terms of repayment structure following cattle sales, can be easily replicated as its financial structure will leverage more capital as it successfully grows, not depending on an annual budget that the government allocates to finance agricultural, livestock investments, and operational costs (“Plano Safra”).</p>
<p>Even once CSCR is established, ranchers may have limited interest in engaging with the New Company to adopt sustainable, intensified cattle ranching practices, or they could lose interest after signing a contract with the New Company and stop the implementation of intensified and/or forest restoration, characterizing a default.</p>	<p>The concept has been developed based on the Nature Conservancy’s on-going 5-year pilot program in São Felix do Xingu, Pará. Workshops with ranchers in the region for the last two years have identified the specific needs for this initiative. Also as it will be structured as a long term partnership with ongoing investments from ranchers and the New Company over time, incentives to quit are lower. However if, at some point, there is no compliance with the Rural Partnership Agreements characterizing a default, the New Company will have all the legal mechanisms in the agreement to accelerate the contract, take possession of the guarantees and so on.</p>
<p>There may be limited interest from investors to finance high risk projects that rely on the Rural Partnership Agreements securing the investments in the New Company.</p>	<p>This is, at this first stage, a development finance project, therefore investor focus will be on multilateral institutions, development agencies, and impact investors pursuing social and climate outcomes as well as financial returns. Given the importance of Brazil’s forests and cattle ranching sector, the proponent hopes to see interest from these development financiers.</p>
<p>Sustainable cattle ranching practices require producers to hire more labor force to implement such practices, as pastures potentially could need to be restored and better managed, and animals need to be better handled.</p>	<p>The New Company will work closely with the local and state government as well as with local agencies (e.g. Senar and Senai) to put in place programs that will closely work with producers to foster better working conditions and provide incentives to increase the supply of such labor. Providing additional training for sustainable intensification practices to cowboys will also work with labor unions in campaigns that value such a profession and attract interest of such work force.</p>
<p>Deforestation could stop in properties that have rural contracts, though deforestation activities could simply relocate to areas where there was previously no deforestation taking place.</p>	<p>The proponent is also working in parallel with the Pará State government and multilateral organizations, in which this New Company proof of concept will be launched, in an overall sustainable development plan for the state up to 2030. Such plan encompasses a number of related and complementary activities aimed at sustainable development and stopping deforestation through expanded enforcement.</p>
<p>There is a risk that the New Company co-invests in a given property that at some point, breaks the law.</p>	<p>In principle, the rancher/owner holds primary responsibility for complying with Brazilian laws. If a property breaks the law and it were attributable to the Rural Partnership, the New Company could also face liability issues. To mitigate such risk, the New Company will hire ongoing monitoring services to identify, as soon as possible, properties that break the law while the partnership is ongoing. If that happens, it will take the necessary actions foreseen in the Rural Agreement.</p>

PILOT AND BEYOND

4. IMPLEMENTATION PATHWAY AND REPLICATION

The New Company aims to co-invest in 30 rural properties in the São Felix do Xingu region in the next two years, covering a total of 75 thousand hectares with at least a 20% intensification area in the properties. The New Company plans to scale and include at least 100 properties by 2022, covering 250 thousand hectares in the southeast of Pará state

The New Company will be established in São Felix do Xingu in the southeast region of Pará state, a region where, like most of the Amazon, 80 to 90% of rural property owners are still actively working within the available Brazilian mechanisms for land regularization, to obtain their permanent land titles. São Felix do Xingu has the fifth largest municipality area in the world (84,213 square kilometers), as well as the largest cattle herd in Brazil (approximately 2.2 million heads in 2.3 million hectares). The municipality still has around 70% forest coverage⁶, but also has one of the greatest deforestation rates in Brazil. The Nature Conservancy (TNC) began working in the region with local producers to improve their ranching practices and achieve compliance with the Brazilian Forest Code in 2013, launching its “Field to Fork” program⁷, a precursor for CSCR.

The proponents aim to formally launch the New Company by March of 2018 and kick off operations by the second half of 2018. A number of Rural Partnership Agreements will be in place to begin operations prior to the formal launch. So far, the proponents have been working on five priorities: (a) the narrowing down of potential operational partners for the New Company, (b) putting in place a vetting process with a pool of ranchers who would benefit from CSCR (the first of two planned workshops with this goal took place on August 3rd, with approximately 70 producers and stakeholders strongly supporting the New Company concept), (c) beginning conversations with potential off-takers (retailers), and (d) ongoing discussions with impact investors and concessional capital providers.

Once formally launched, and during Phase 1, the New Company aims to engage with a minimum of 30 ranchers that meet its screening process, that is, that meet the set of criteria that would then qualify them for receiving investments in an intensification project within their property, each with approximately 1250 to 2500 hectares of available pastures, or 50% of their properties⁸. In this scenario, the New Company would cover approximately 150 thousand hectares, supporting better management practices in the entire property and intensification efforts covering approximately up to 20% of available pastures.

The initial amount required to establish the New Company and launch the program to engage with approximately 30-40 ranchers is estimated at USD 10 million from equity investors, which would include Naturevest and at least one additional investor to provide ongoing working capital to operate the New Company. Around USD 500 thousand would come in the form of grants to support the development of the legal structure and governance, due diligence, and establishing a handful of kick-off Rural Partnership Agreements to launch operations. Finally, USD 10 million would be first loss debt from concessional capital providers and additional USD30M would be long-term senior debt to finance intensification projects.

⁶ <http://www.funbio.org.br/wp-content/uploads/2013/10/fundo-para-redd-sao-felix-do-xingu.pdf>

⁷ <http://www.tnc.org.br/nossas-iniciativas/do-campo-a-mesa/index.htm>

⁸ In the region of São Felix do Xingu the Legal Reserve required is 50% of the entire property, therefore, in a property of 2500 hectares, ranchers can have up to 1250 hectares of pastures and initially could intensify 20% of the available pasture

In up to five years, the New Company expects to enter into Rural Partnership Agreements covering at least 100 properties or a total of 500 thousand hectares of sustainably and well-managed properties. This would be achieved by optimizing overall pasture usage and intensifying at least 100 thousand hectares of pastures, restoring riparian forests and legal reserves as required by the Brazilian Forest Code. When the New Company achieves the milestone of 100 properties, it would mobilize approximately USD 156 million in the São Felix do Xingu region and nearby municipalities⁹.

Once the model is proven successful in these municipalities in the São Felix do Xingu area in the State of Pará, the New Company would scale its impact through implementation of a franchisor/franchisee system in other critical regions of the Amazon, and could expand the model to the Cerrado region in Brazil. The New Company would select qualified individuals from the region where a new subsidiary/franchise could be established to train implementation leads to provide technical assistance and operate these subsidiaries.

The New Company would disclose its technical assistance methodology and training to the franchisee as well as to its vendors' network, as well as its operating and financial management systems among others. The primary role of the franchisee would be to develop the client market in the local area, negotiate and implement Rural Partnership Agreements with those clients by using all the systems developed by the original New Company.

On the demand side, as deforestation-free programs with retailers are brokered through the New Company and a pipeline of receivables with retailers is generated, a different kind of Fund Structure could be established, an "Investment Fund in Securitized Receivables" – an FIDC (Fundo de Investimento em Direitos Creditórios) structure, which could replace the FIP. In an FIDC, commercial investors with lower appetite for risk would buy shares from the FIDC as such receivables from retailers would be pledged into the FIDC.

Table 3. Implementation pathway

⁹ Banach, Ourilandia, Cumaru do Norte, Xinguara, Marabá, Banach

Implementation pathway							
	3Q17	4Q17	1Q18	2Q18	3Q18	4Q18	2019
Phase I							
Conclude Legal Structure & Business Model							
Establish operating partner & service providers							
Constitute New Company							
Define Rural Agreement Features							
Conclude characteristics of deforestation free beef supply program with off-takers							
Establish input providers (vendors) partnerships							
Identification and preliminary term sheet with investors (equity partners to the New Company and debt providers)							
Finalize Investment Structure, investors and governance documents							
New Company Launch							
Engage with ranchers and sign Rural Agreements							
Phase II							
FIDC Structure and Commercial Capital Raising							

5. IMPACT

The New Company could mobilize up to USD 65 million for the first two years of operation and up to USD 205 million in the next 3-5 years for sustainable and highly productive cattle ranching practices that would restore degraded pastures and stall deforestation, reducing the emissions intensity of up to 95% for each Kg of meat produced with such practices

5.1 QUANTITATIVE MODELLING

Extensive cattle ranching practices in Brazil have very low productivity rates, with an average ranging between 0.5 and 0.7 Animal Units (UA) per hectare across different areas in Brazil. In addition, the time it can take to raise a newborn calf to the point of selling the fully grown animal to meatpackers could take from 36 to 40 months. Moreover, cattle that rely only on degraded pastures for sustenance without intake of nutritious supplements generate a lower quality meat, which is reflected in lower per head pricing, lower carcass yields, and lower per hectare of use. Finally, the overall lack of knowledge and inability to implement intensification practices exacerbates this lower yield.

Given the above factors, and at current beef prices in Brazil - price per arroba (@) at R\$130, or US\$41.94¹⁰ (one @ is equal to 15kg of carcass weight), a rancher's business as usual (BAU) scenario generates an internal rate of return of 0.7%, and could be even lower, eventually dipping into negative levels, with small variations in price, small variations in weight gain associated with the time it takes from birth to slaughter, even lower reproduction rates (set at 70% for BAU), and an

¹⁰ Exchange rate at US\$1.00 equals to R\$3.10 on Sept 11, 2017

even lower ratio of heads per hectare (currently set at 0.5 UA¹¹/ha) . Many ranchers also face environmental liabilities that could result in a significant financial loss (see Table 4 below).

In order to model the results of more sustainable and productive cattle ranching practices from this baseline, our inputs are:

- The cattle herd (matrixes) needed for the intensification, 90% average reproduction rate
- Fertilizers and pasture formation inputs
- Animal feed supplements
- Fences and basic infrastructure to feed and rotate animals
- Increased labor at the farm level (from 1 employee to 2-3 employees per 500 hectares)
- Animal Tracking system
- Monthly Technical Assistance

The modeling also assumes, based on the best available data, that sustainable and intensified cattle ranching production would increase the productivity of each hectare by four times in the intensified area, to up to 4 UA per hectare. Improved practices under CSCR would also: decrease the time it takes to sell animals to the slaughterhouse from an initial 36 months since its birth to 27 months (but it could be even lower, of up to 24 months); increase the quality of the beef produced, thereby delivering higher prices per UA and hectare (1% premium was assumed in the @¹² related to the herd coming from the deforestation-free property); and increase the carcass yield from 53 to 56%.

These practices would generate on a project basis, a net internal rate of return of 13.4% for 4 heads per hectare. See Table IV below for comparative scenarios:

Table 4

	Animal Units (UA) per hectare	Price of @ (Aug '17)	Carcass Yield	Cost per hectare	IRR Project Level	IRR Equity New Co
Extensive Production: BAU – Case 1	1	130	53%	US\$461	0.7%	-
Intensive Production – Case 2	3.5	130	56%	US\$4,890	11.9%	15.2%
Intensive Production - Case 3	4	130	56%	US\$5,455	13.4%	16.4%

Note: Simulations are based on intensified project occupying 250 hectares, optimizing the remaining pastures

Assuming the cost of concessional capital in Phase 1 is 7% per year for a 10-year loan, the New Company’s Equity Share Internal Rate of Return would range between 14.2% and 15.5% using intensive production Case 2 or 3 plus Forest Code Compliance.

5.2 ENVIRONMENTAL AND SOCIAL IMPACT

¹¹ UA stands to Animal Unit, and is equivalent to an animal that weighs 450kg grazing.

¹² @ stands for arroba and it’s a unit of measure of the animal’s weight, equivalent to 15 kilograms

The New Company's aim is to scale the adoption of sustainable, intensified cattle ranching practices in Brazil. The adoption of these practices has the potential to mitigate significant amounts of GHG emissions in the years to come.¹³

Under Brazil's Nationally Determined Contributions, its 2030 GHG emission targets for the agricultural/livestock sector are projected to be equivalent to the year 2005 baseline: 490Mton CO₂e.¹³ However, Brazil's 2030 beef production projections are 30% higher than 2005. This emissions target will thus be met by greater soil carbon sequestration that will happen through the goals of restoring up to 15mn hectares of degraded pastures and expanding 5mn hectares that will integrate crop-livestock-forestry. Such actions that will restore soils' capacity to sequester carbon, and stall deforestation will more than offset the increase in emissions that will happen due to an increase in cattle emissions from enteric fermentation and increased emissions from agriculture from crop-livestock-forestry.

Also, as beef production in Brazil has grown at an average rate of 2.4% per year from 1990 to 2016¹⁴ to meet domestic and international demand from countries like China, the effort to finance sustainable intensified cattle ranching practices becomes even more important. Brazil's cattle production has a very high emissions intensity, with an average rate of 86.7kg of CO₂ equivalent per kg of beef (carcass weight) per year. This is higher than developed countries due to a number of factors: a lower feed digestibility, (leading to enteric and manure emissions), poorer animal handling practices, lower slaughter weights, a higher age at slaughter¹⁵ and a lower productivity of approximately 70 to 75kg of beef per hectare annually.

An improvement in cattle ranching practices, as proposed and financed by the New Company, could mitigate emissions from a key sector in the Brazilian economy. As the New Company signs Rural Partnership Agreements with ranchers, providing the financial resources (co-investments) and technical support for improved ranch and pasture management, better animal handling, increased reproduction rates, decreased the average time for slaughter, and sustainably increasing the number of animals per hectare, leading to an increase of beef (carcass weight) produced per hectare, it can potentially reduce emissions intensity by 90-95% per kg of beef (carcass weight), when focusing on livestock CO₂ balance before and after intensification. As previously stated current production rate yields an average 86.7 kg of CO₂e per Kg of beef carcass weight, while an intensified production system, based on current programs with similar approach in the Amazon, the Novo Campo Program¹⁶ has an emissions intensity that could go as low as 4.3Kg CO₂e per Kg of carcass weight.¹⁷

Intensification practices have socioeconomic benefits as well as environmental. The proponent's experience with the pilot project in the region, as well as feedback that the Brasil Lab team received from the workshop held in São Felix do Xingu on August 3rd 2017 presenting the New Company concept, estimates that for every 500 hectares of intensified pasture, at least an additional 2 to 3 farm jobs are created.

With that in mind, some producers raised concerns about the availability of the labor force, which represents an existing challenge to project implementation¹⁸. However, this labor force will be trained by the technical assistance that supports the broader projects, potentially expanding work opportunities over time, providing an additional indirect benefit to laborers.

¹³ https://www.c-agg.org/wp-content/uploads/Imaflora_report.pdf

¹⁴ Agricultural Economic Insights

¹⁵ Tackling Climate Change Through Livestock – A Global Assessment of Emissions and Mitigation Opportunities

¹⁶ https://www.c-agg.org/wp-content/uploads/Imaflora_report.pdf

¹⁷ See Annex 4 for more specific calculations

¹⁸ During a workshop that CPI-Brasil Lab held in São Felix do Xingu in August 2017, this issue came up as a concern by producers. However local municipal authorities as well as the proponent are aware of such difficulties and proposed the development of programs to work with producers and this labor force profile (cowboys) to develop incentives programs for them, workshops to encourage and value such professions, provide some training, support and so on.

Ultimately, sustainable cattle ranching practices have a key role in delivering Brazil's goals under the Paris Agreement – in which it pledged to restore up to 12 million hectares of forests and 15 million hectares of degraded pastures by 2030, as well as to stop illegal deforestation in the Amazon by the same year.

5.3 PRIVATE FINANCE MOBILIZATION AND REPLICATION POTENTIAL

The FIP together with the New Company aims to support 30 intensification projects in 30 different properties in up to two years. At an intensification rate of up to 4 AU per hectare, this would raise around USD 50 million in funding.

After three years of consistent improvements and building a successful track record, the franchise terms would be defined. An initial franchise-based expansion in the São Felix do Xingu region could take into consideration other nearby municipalities such as Agua Azul, Camaru do Norte, Banach, Ourilandia or Maraba. These franchisees would expand and finance sustainable cattle ranching practices with 100 or more additional ranchers, mobilizing an additional estimated USD 160 million.

Therefore, within the next decade, CSCR implementation in the state of Pará alone could mobilize a conservative estimate of around USD 470 million of co-investments in sustainable, deforestation-free livestock production in approximately 300 properties, provided that: (a) there is indeed the required labor to be trained and hired to implement intensification practices, and (b) that the average price of the @ stabilizes at R\$130, a conservative price.

6. KEY TAKEAWAYS

For ranchers across the Amazon seeking to adopt more sustainable, productive practices their greatest barrier is lack of access to financial products that meet upfront investment needs, have repayment flexibility, use alternative forms of guarantees as collateral, and enable continuous technical assistance. By creating a New Company that is a one-stop shop for financing and technical support for sustainable and intensive livestock production, the Climate Smart Cattle Ranching initiative could greatly mitigate GHG emissions from the beef sector in Brazil, while at the same time providing a cost-effective way to restrict and enforce laws that prohibits deforestation in Brazil.

The instrument meets Lab criteria for endorsement in the following manner:

- **Innovative:** The Climate Smart Cattle Ranching initiative is the only instrument that overcomes the three main obstacles to sustainable and intensified practices: lack of access to financing, a deficit of local technical assistance to ranchers, and a lack of aggregation among ranchers to jointly negotiate better costs for their inputs, as well as better prices when selling their higher quality, deforestation-free beef product
- **Financially Sustainable:** Once the New Company builds a track record of increased profitability per hectare that leads to Rural Partnership Agreement amortization repayments, concessional capital can be phased out and commercial rate investment can be brought in through a FIDC model.
- **Catalytic:** Once the New Company creates a robust process and track-record, up to USD 650 million would be leveraged through projects in the state of Pará within 10 years. A franchise replication strategy could further catalyze an improvement over business as usual in this sector and contribute to the restoration of degraded pastures throughout the Amazon and beyond
- **Actionable:** The proponent has been implementing sustainable livestock production practices with producers in São Felix do Xingu in the state of Pará for the last 8 years with promising results and has built trust with key stakeholders and producers in the region. The proponent

also has similar ongoing efforts in the state of Mato Grosso, another potential area for this instrument to operate through a franchise system. Moreover, the proponent's team in Brazil (and the US through its Impact Investment Fund) has been investing human and capital resources to make this New Company a reality by 2018

ANNEX I – COMPARABLE APPROACHES

Similar instruments	Description	Limitations
PECSA	Complete control of intensification cycle and socio-environmental compliance. A low percentage of profits goes to ranchers who don't get involved in the process	Land lease model completely controlled by PECSA, limited scale/replication, ranchers do not acquire knowledge which in turn does not guarantee continuity of process without PECSA's support
Aliança da Terra – Producing Right Platform	A platform that evaluates soy producing farms' socio-environmental compliance and provides an action plan for compliance. Once ranchers are in the platform and become certified, they have access to benefits from partners	The property assessment focuses on social-environmental compliance only and does not offer support for "action-plan" implementation. Moreover, farmers are required to have a land title. Not commercial, depends on grants
Projeto Terra Certa	Regional PPP certification system in Paragominas and Redenção, PA, to create a sustainable beef production chain and improve the management of the territory	Local government sponsored project, with little evidence of potential to become commercially viable or scale up beyond its municipality
Programa Novilho Precoce	State sponsored program in Mato Grosso do Sul that provides fiscal incentives for ranchers who implement intensification practices and become socio-environmentally compliant	State government plays important role in the program by enabling fiscal incentives. As such, only ranchers who have permanent land titles can participate, as well as each state's ability to defer/waive ICMS revenue

ANNEX II – COMPARABLE PROGRAMS

Credit Lines	Goal	Conditions
ABC (Low Carbon Agriculture)	Projects that may contribute to the reduction of greenhouse gas emissions from livestock and agriculture, to the creation of agricultural forests or recovery of degraded land	<ul style="list-style-type: none"> • Up to \$ 675 000 per beneficiary/agricultural year • Up to R\$ 1 536 000 for agricultural forests • Interest rate of 7.5% p.a. • Term of up to 15 years • Grace period up to 8 years

FCO Rural Investimento	Increase fixed and semi-fixed investment in the Central-West region	<ul style="list-style-type: none"> • Up to \$ 6 145 243 • Interest rate from 8.5% to 11% p.a. • Term of up to 20 years • Grace period of up to 12 years
Inovagro	Installation of technologies, adoption of good practices on management, livestock and agriculture, and access to new consumer markets	<ul style="list-style-type: none"> • Up to \$ 337 988 for individuals • Up to \$ 1 013 965 for cooperatives • Interest rate of 6.5% p.a. • Term of up to 10 years • Grace period of up to 3 years
Moderninfra	Irrigation projects or production in protected environment	<ul style="list-style-type: none"> • Up to \$ 675 000 for individual • Up to \$ 2 027 930 for cooperatives • Interest rate of 7.5% p.a. • Term of up to 10 years • Grace period of up to 3 years
Moderagro	Modernization of agriculture and conservation of natural resources, improve tracing systems and soil recovery	<ul style="list-style-type: none"> • Up to \$ 270 390 for individuals • Up to \$ 811 172 for cooperatives • Interest rate of 8,5% p.a. • Term of up to 10 years • Grace period of up to 3 years

ANNEX III – SUMMARY OF KEY TERMS FOR THE BASIC “RURAL PARTNERSHIP AGREEMENT”

Mutual Objective of Rural Contract:

- Improve the quantity and quality of beef produced on landowner’s land by restoring pastures and changing herd management practices
- Restore and/or offset APP and Legal Reserve liabilities under the Forest Code through implementation of a mutually agreed upon Land Improvement Plan (LIP)¹⁹ that will be attached to the actual Contract.

Parties:

- Landowner name and entity type
- Climate Smart Cattle Ranching New Company

Duration of the Contract: 10 years

Roles and Responsibilities of each Party:

- Landowner:

¹⁹ The Land Implementation Plan is the result from the property assessment and diagnostics and action plan, and associated budget for its implementation. This LIP includes the intensification plan and also the PRADA

- Contribute to a minimum 15% toward the costs reflected in the Land Improvement Plan budget in accordance with payment structure identified therein
- Implement the LIP under the guidance of New Company Technical Support professional
- Select vendors as required to provide the goods and services specified in the LIP
- Manage vendor performance in accordance with terms of New Company standard contracts
- Approve specification of cattle for initial acquisition, not to be unreasonably withheld
- Approve price and timing of annual sale of cattle to New Company buyers, not to be unreasonably withheld
- CSCR New Company:
 - Contribute 85% toward the costs reflected in the Land Improvement Plan in accordance with the payment structure identified therein.
 - Provide Technical Support Professional to oversee implementation of LIP
 - Provide access to discounted goods and services and execute standard contracts for service with selected vendors
 - Negotiate annual sale of cattle to qualified buyers
 - Establish and manage bank accounts and distributions associated with this Contract.
- The Parties shall review progress under the LIP quarterly and modify the LIP as and when appropriate to achieve the mutual objectives of the Contract stated above. In the event the Parties do not agree, the New Company shall have the right to modify the Plan as it sees fit

Allocation of Financial Benefits:

- Revenues from the annual sale of cattle projected in the LIP shall be received by the New Company for the benefit of the Parties under this Contract and distributed to the Parties in accordance with their contribution percentage.

Allocation of Risk:

- Both Parties share pro rata, in accordance with their contributions the risk of unanticipated acts of nature including drought or flood, acts of terrorism or war, financial risks associated with volatility in commodity prices, interest rates, inflation or foreign exchange rates or impacts from changes in government regulations.
- Both Parties share pro rata, in accordance with their contributions, the risk of implementation of the LIP including weight gain, carcass quality, commodity market volatility
- Landowner shall bear herd management risks such as disease or illness that reduce the herd size
- Landowner is responsible to maintain herd size throughout the term of this Contract
- The New Company shall bear the financial risk associated with business operations

Defaults and Remedies:

- For any monetary default, the defaulting party shall be given notice and 5 days to cure said default
- For any non-monetary default described below, the defaulting party shall be given notice and 90 subsequent days to cure the default
- In addition to other remedies, the New Company shall have the right to exercise self-help in the

implementation of the LIP. Such costs of self-help shall be deducted against the landowners pro rata share of annual revenues

- Landowner: Failure to provide its 15% contribution as required in the LIP or the sale of the cattle or equipment securing this contract without New Company express permission shall be monetary defaults. Failure to implement any Priority Action identified in the LIP shall be a nonmonetary default
- The New Company: Failure to provide its 85% contribution as required in the LIP or failure to distribute Landowner's pro rata share of revenues within 30 days of receipt shall be monetary defaults. Failure to provide Technical Support professional as indicated in the LIP shall be a non-monetary default

Assignment and/or Termination Provisions:

- The New Company reserves the right to assign this contract to a third party subject to 30-day notice given to landowner
- Landowner may not assign this contract without the express written approval of New Company
- Landowner may terminate this Contract with 90-days written notice and a cash payment sufficient to repay New Company's 85% contribution AND an amount of return equal to a XX% IRR for the period of time between execution of the Contract and its termination

Exhibits to Contract

- Legal Description and map of the land
- CAR registration and land occupancy documents
- Land Improvement Plan for intensification and restoration including budget and timeline and responsible parties (including the PRADA)
- Security documents that record liens on cattle and equipment

ANNEX IV – GHG EMISSION REDUCTIONS FROM BEEF PRODUCTION

The New Company aims to reduce emissions associated with beef production through the implementation of EMBRAPA's Good Agricultural Practices (GAP), and emissions associated with deforestation from extensive cattle production practices.

Based on EMBRAPA's GAP agricultural parameters, SEEG database and its methodology with Imaflora, based on WRI GHG protocols, such methodology resulted in the following calculations of emissions from cattle production practices:

Soil Emissions:

- Soils in degraded pastures lose carbon and emit 3.67 tCO₂ per hectare per year
- Soils in restored pastures sequester carbon and capture 3.67 tCO₂ per hectare per year (excluding any benefits associated with building soil biomass)

Production emissions:

Emissions estimates from Novo Campo Project in Mato Grosso, as proxy for the São Felix do Xingu region –

- BAU:
 - 1.8 female calves per hectare emit 2.40 tCO₂ (methane) per hectare per year
 - no fertilization related emissions
- Applying EMBRAPA's GAP:
 - 3.4 females per hectare emit 4.54 tCO₂ (methane) per hectare per year plus
 - Fertilization practices emit .67tCO₂e (CO₂ & N₂)

Therefore, EMBRAPA's GAP adoption may reduce emissions by a net 4.53 tCO₂ per hectare per year
(3.67+3.67) - (4.54+.67-2.40) = 4.53tCO₂

Emissions Intensity:

Emissions per kilogram of beef production (carcass weight)

- BAU: 6.07 tCO₂e per hectare (6070 kg) divided by 70 kg of beef (carcass weight) produced per hectare annually is 86.7 Kg of CO₂e per Kg of carcass weight.
- EMBRAPA's GAP: 1.54 tCO₂e per hectare (1540 kg) divided by 355 kg of beef (carcass weight) produced per hectare annually is 4.3 Kg CO₂e per Kg of carcass weight

Therefore, there is a 95% reduction in emissions' intensity.

ANNEX V – New-Company's set of pre-conditions that need to be met for potential co-investment with producers in their respective properties

1. No illegal deforestation since 2008
2. Commitment to meet Brazil's Forest Code requirements:
 - Registration in the Rural Environmental Registry (CAR - Cadastro Ambiental Rural)
 - Presentation of the Restoration Plan for Degraded Areas (PRADA) foreseen in the Environmental Compliance in up to 5 years.
 - In case the PRADA has not yet been developed, it will be done so in parallel with the Property' Sustainable Intensification Plan. They both will constitute the "Land Improvement Plan", previously mentioned
3. Commitment to follow Embrapa's set of Good Agricultural Practices (GAP)
4. Properties must not be within Indigenous Lands or Protected Areas
5. Producer and property must not be part of red list for child labor, slavery nor have any land conflict registered
6. Producers must be registered within the ABC Municipal Program for São Felix do Xingu, part of Para State efforts to support low carbon agricultural and livestock production
7. In case producers do not have yet permanent land titles, they must prove beforehand that they are actively working towards obtaining permanent land title for the property

- Must be registered at the Brazil's System for Land Titling Management (Sigef) and/or
- Must be registered within Brazil's Land Titling Program "Terra Legal", for properties of up to 2500 has