



Deforestation and Conversion-Free: How Argentine Beef Can Lead the Market — Faster and at Scale

Preface

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Markets Institute business cases aim to document innovative and creative ways that companies, governments, and other stakeholders are solving significant global problems that others are or will face. The goal is to elevate potential solutions to help other actors think differently about both problems and solutions with the resources they have at hand.

Through cases such as this, we strive to flatten the learning curve, to make the journey to more sustainable production easier and quicker. As the climate continues to change, urgent and chronic issues will add complexity to the planning, management, and production of raw materials. Fostering change in the food and renewable resources sectors (soft commodities) will become more difficult than ever.

If those who rely on renewable raw materials (e.g. for their livelihoods or the overall success and sustainability of their business) are to become more resilient, they will need to anticipate issues, not just lurch from crisis to crisis. And that requires learning from examples of what's working and what's not.

This case focuses on one example of what a government can do to reduce land use change and GHG emissions while positioning a country as a global market leader through beef exports that are free from deforestation and conversion (or DCF beef). There's growing demand:

the Chinese Meat Association has committed to DCF animal protein and feed and helped develop an industry-wide standard based on the Accountability Framework initiative's guidance. The EU and UK are putting in place legislation to halt and reverse global deforestation driven by their own consumption.

There has been much discussion of the value of jurisdictional approaches as tools to achieve sustainability commitments at more local government levels. But it is rare that local governments have the institutions to monitor and redress the key issues. Usually, national government do this; it's where change happens at scale and where there's more likely to be systems in place to monitor, regulate, and enforce necessary behavior changes.

If countries have invested in the systems needed to monitor livestock and/or deforestation issues it is likely at the national level. Enter Argentina. In response to food safety issues and environmental degradation, Argentina has established such national systems. Argentina adopted a Forest Law and a system to monitor and enforce them. It also has a traceability system to monitor the movement of cattle over their lifetimes to prevent the spread of disease and comply with international trade rules. What Argentina has not yet done, however, is combine the two.

These two systems could be used to do much more. For us, the first task was to see if they are interoperable — can the systems talk to each other? They can. The next was to understand whether animals could be kept

segregated through the slaughter at little to no extra cost. They can. Now the issue is to see if the approach can be scaled, credible, and leverage these emerging markets to meet growing demand. And, if it can be expanded to other commodities that are also traced through government systems, such as soy or wheat. That is the next phase of the work.

To mitigate the impacts of climate change, countries need to use existing systems to tackle more than they may have originally been intended for. Which government will be next to step up?

Foreword

Manuel Jaramillo, Director, Fundación Vida Silvestre Argentina

Increasing global food consumption and demand encourages the expansion or intensification of agriculture, which often leads to an increase in deforestation and conversion of natural habitats. It is

estimated that around 80% of global deforestation is driven by agricultural expansion. The current biodiversity crisis is also related to land use change.

One of the great challenges for countries is to resolve the conflict between food production and nature conservation and to obtain up-to-date and reliable information on ecosystems and production chains. Traceability is a fundamental tool to respond to the growing demands of consumers regarding food safety and quality, adding value to commercialized products that minimize social and environmental impacts.

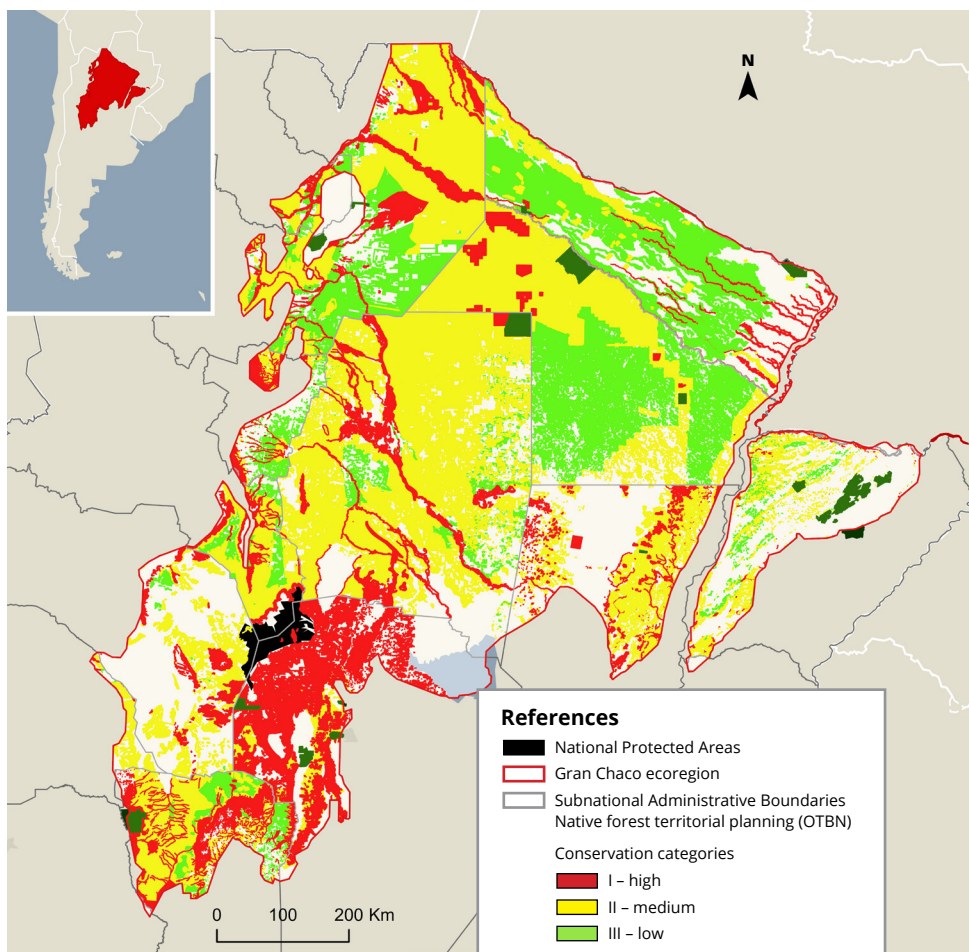
Argentina is one of the few countries that can count on reliable supply chain monitoring systems that effectively contribute to the conservation of forests and natural ecosystems, that allow the positioning of our products with differential attributes in terms of sustainability, and that respond satisfactorily to demands and commercial limitations, both local and international.

Today we are faced with the opportunity to provide Argentines and the world with deforestation- and conversion-free food; all that remains is to connect the existing information systems and promote health and environmental traceability as a state policy. Argentine beef is much more than tasty and tender, it can also be produced in a sustainable and climate-smart way, which can and should be put into value.

Introduction

Over the last two years, Fundación Vida Silvestre Argentina and WWF have been exploring a concept with the potential to disrupt markets while revolutionizing strategies for climate impact and biodiversity loss. Through an innovative model to reduce deforestation and conversion of critical ecosystems,

Figure 1. Argentina's Native Forest Territory (OTBN) Forest Law Map for Chaco Region



economic and environmental resiliency can be enhanced while enabling benefits for government, business, producers, and the environment. This concept explores the possibility for all exports in Argentina's beef commodity supply chain to be free of deforestation and other ecosystem conversion (DCF), thereby curbing harmful environmental impacts while transforming the global beef market.

In the past two decades, soy and beef production have been the main drivers of deforestation in Argentina's Chaco region. At this time, beef prices are rising, and projections show that beef and soy production will continue to drive deforestation in the region. As the potential for continued habitat loss in Argentina is high, an innovative approach to protect the Chaco and other habitats is a compelling opportunity. Argentina could position itself as a global leader in DCF beef by adapting its current traceability system, as well as leveraging its strong position in the beef market, to define and transform DCF beef exports. This could lead to a global market shift where DCF commodities transition from difficult-to-achieve company commitments to a new norm.

Argentina is uniquely positioned to take advantage of emerging market demand for DCF beef due to its superior product quality, existing traceability systems, and ability to respond quickly to clear market signals. Fundación Vida Silvestre Argentina and WWF explored the feasibility and potential economic impacts of a national approach for DCF beef in Argentina. This analysis examined demand, Argentina's market advantage, enabling factors, and challenges to demonstrate that Argentina is well-positioned to capitalize on this market opportunity while ensuring that key habitats can be conserved.

Demand

Despite the increasing media attention to plant-based protein, demand for beef has been steadily increasing worldwide, driven by rising incomes in Asia-Pacific as well as the Middle East and Africa. Between 2015 and 2020, global beef consumption increased by 7% due to rising incomes in China and other developing countries, as well as a growing global population.

Accountability Framework: Aligning Key Definitions

A key facet of implementing a DCF requirement entails aligning on what will or will not be included as prohibited deforestation and conversion. In some cases, limited legal deforestation and conversion may be allowed, or even appropriate, if it leads to restoration of degraded lands or sustainable grazing practices with the potential to improve landscapes.

For the purposes of this analysis, the DCF definition assumed is that proposed by the Accountability Framework initiative, a collaborative effort to build and scale up ethical supply chains for agricultural and forestry products. By working to align on key definitions, core principles, and operational guidance, the Accountability Framework is applied by companies and governments to move towards more sustainable and ethical supply chains.

Defining Conversion

Change of a natural ecosystem to another land use or profound change in a natural ecosystem's species composition, structure, or function.

- Deforestation is one form of conversion (conversion of natural forests)
- Conversion includes severe degradation or the introduction of management practices that result in substantial and sustained change in the ecosystem's former species composition, structure, or function
- Change to natural ecosystems that meets this definition is considered to be conversion regardless of whether or not it is legal

China: Driving Global Beef Demand

Demand for beef grew by nearly 30% in the Asia-Pacific region from 2010 to 2020, largely driven by China, where demand grew by 5% annually from 2012 to 2020.¹ As disposable income for Chinese consumers has increased, meat consumption has grown, and beef along with it.

In 2017, the China Meat Association (CMA) signed the Chinese Sustainable Meat Declaration, which committed to deforestation and conversion-free animal protein and feed. While this commitment is

¹Argentinian Ministry of Agriculture, Livestock, and Fisheries and The Argentinian Beef Promotion Institute (IPCVA)

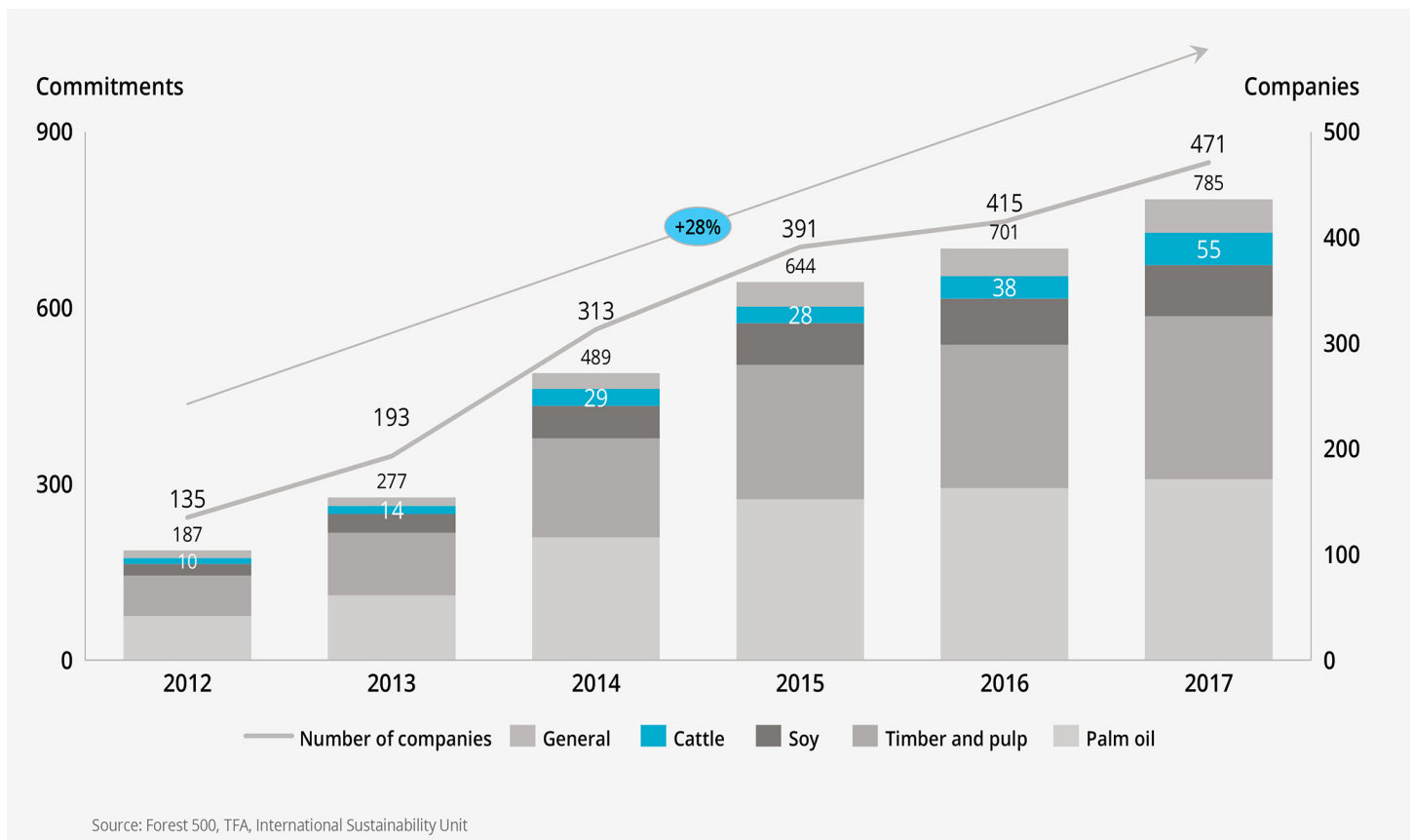
not yet timebound and does not have specific targets to help achieve it, it represents an important and symbolic step for the growing Chinese market. In 2020, WWF China, in collaboration with the CMA, led the development of an industry-wide standard based on the Accountability Framework initiative's (AFi) guidance. The standard, which will be published May 2021, includes recommended guidelines for Chinese meat companies on the DCF transition. This is particularly significant given that Argentina is the second largest beef exporter to China. Additionally, the major players in the Chinese market are required to participate in the CMA, making progress within it particularly meaningful for its potential impact at scale to drive the Chinese market.

The Chinese Sustainable Meat Declaration is a promising commitment; however, other factors enhance its significance. For a few years, the African Swine Fever (ASF) and avian flu have severely impacted China's pork and poultry production. This not only affects China's progress on sustainability goals; it also represents a national security issue as pork is the most consumed animal protein in China. Additionally, the US/China

trade war reduced pork exports to China from its largest exporter. As China has struggled to keep up with demand for pork, it has attempted to fill the gap with other animal proteins. As a result, China's imports of animal proteins, including beef, have soared.

To illustrate the importance of the Chinese market to Argentina today, while they exported no beef to China in 2013, 75% of Argentina's beef exports went to China in 2020. Given the long-term impact of pork and poultry diseases in China, this is a trend that could continue for ten years or more. Furthermore, Argentina's management of the COVID-19 pandemic has resulted in far fewer interruptions in exports and supply chain challenges than many other countries, enabling it to continue to grow its vital trade relationship with China and maintain both trust and service. In addition to simply buying more volume, China has increased longer-term contracts (in the 3-year range), and sales of whole cows when traditionally certain cuts were purchased, as the country seeks to ensure a stable meat supply into the future.

Figure 2. Commitments in agricultural supply chains have increased in recent years



Deforestation-free Legislation in Europe

In 2020, the European Parliament adopted a report “calling on the Commission to present an EU legal framework to halt and reverse EU-driven global deforestation.”² The UK is making similar moves to reduce products associated with illegal deforestation from entering the country with a proposed law, which may go beyond illegal deforestation to more transparent reporting about commodity sourcing with potential fines for noncompliance, among other measures.³ While neither of these initiatives has yet been backed by legal measures, they offer a clear signal that Europe is moving towards codifying that commodities be dissociated from illegal deforestation.

In addition to these proposed measures, France passed the French Corporate Duty of Vigilance Law in 2017.⁴ While not explicitly calling out illegal deforestation, the law requires large French companies to address adverse planetary impacts of their businesses, which can include deforestation. As this law is already in place, affected companies, including large retailers such as Carrefour and car manufacturers (for the leather industry), are seeking to address deforestation and other environmental concerns within their supply chains. Given the premium market status from Europe that typically confers higher prices, these initiatives are a strong enticement to get ahead of the curve on ensuring exports are DCF.

While Europe is often a first mover on climate and other environmental action, this legislation represents a critical market signal for future commodity sourcing requirements. But most countries are poorly positioned to respond to these demands in the near term. Argentina has the potential to move quickly on this opportunity, which would likely lead to growth in European market share and the potential to draw funding from multilateral banks for implementation, thereby injecting some much-needed capital into a country long troubled by economic instability. Although ASF and other factors have led to strong growth for

Argentine beef in China in recent years, markets are not always predictable, and charting a path to DCF production will enable Argentina to add a layer of credibility and increase demand from the European market. This would allow for future stability should market forces prove less advantageous for its beef products than recent years have shown.

Commitments to Deforestation and Conversion-Free Sourcing: Lagging Behind

Increasingly, large companies are committing to more sustainable sourcing, including zero deforestation and conversion in their supply chains. Commitments to DCF products — including animal protein and feed — increased by 28% from 2012 to 2017 and continue to grow. This isn't surprising: an assessment by CDP found that companies sourcing global commodities could lose \$53 billion due to deforestation, while addressing forest loss would cost \$6.6 billion.⁵ However, given the complexities and opacity involved in sourcing, meeting these commitments is proving difficult. It is costly, and there is little to no readily available product. The sale and resale of livestock before animals from many producers are co-mingled in common slaughterhouses in particular limits traceability, making it difficult for companies to understand their indirect supply chains. However, not meeting their commitments poses reputational risks. Despite this, the 2020 Forest 500 report assessed that only 57% of the top 500 companies with forest-related supply chain risk have deforestation-related commitments, and 34% of companies with at least one commitment have not reported on progress in the last two years.⁶ While commitments are increasing, implementation of them throughout supply chains remains slow and cumbersome, demonstrating the need for a national approach such as the one proposed here.

In addition to DCF-specific commitments, many companies have committed to reducing greenhouse gas emissions in their supply chains. As deforestation and conversion are among the most significant contributors

²<https://www.europarl.europa.eu/news/en/press-room/20201016IPR89560/legislation-with-binding-measures-needed-to-stop-eu-driven-global-deforestation>

³<https://www.bbc.com/news/science-environment-53891421>

⁴<https://respect.international/french-corporate-duty-of-vigilance-law-english-translation/>

⁵<https://www.bloomberg.com/news/articles/2021-03-22/global-business-seen-facing-53-billion-hit-from-deforestation>

⁶Ahomson, E., 2020, Time for change: delivering deforestation-free supply chains, Global Canopy, Oxford, UK. <https://forest500.org/publications/time-change-delivering-deforestation-free-supply-chains>

to GHG emissions globally, reducing these practices to help achieve more sustainable production is a key long-term strategy for governments and businesses that could also help meet climate commitments such as Nationally Determined Contributions (NDCs) to the Paris Agreement and Science Based Targets. Furthermore, as natural habitats are lost due to agricultural expansion, vital ecosystem services — that also help mitigate climatic impacts — will be lost. Over time, this will reduce the productivity of biological systems, including those that allow us to produce food.

At the same time, most companies will not pay more for DCF products, but they can offer some incentives for producers who meet the criteria for their commitments. Assistance will vary by company but could include long-term contracts or off-take agreements, preferred supplier status, access to finance, or other innovative options. Such incentives are vital to making DCF production successful by not placing undue burden on producers who may be least able to afford additional costs related to compliance. In the future, companies might even be willing to buy sequestered or avoided carbon from producers who did not deforest land that they legally could have, or from those who set land aside for carbon sequestration.

Based on analysis undertaken by the Boston Consulting Group (BCG) in 2019 as part of this initiative, demand for beef from companies with DCF commitments is around 2.7M tons, or 5.7% of the global beef trade. This would be the equivalent of 86% of Argentina's production and a significant economic opportunity if its production can meet DCF requirements. Currently this demand is driven by a few key global players, but it is unlikely that this trend will reverse, and, in fact, more companies are expected to make commitments as they look to mitigate the long-term business, reputational, and climate risks associated with sourcing products from converted habitats. Furthermore, large companies are also pushing their suppliers towards DCF goals, which has the potential for cascading impacts across supply chains.

Many companies saw 2020 come and go without meeting commitments they made for that year, which were challenging even before COVID-19 began to impact

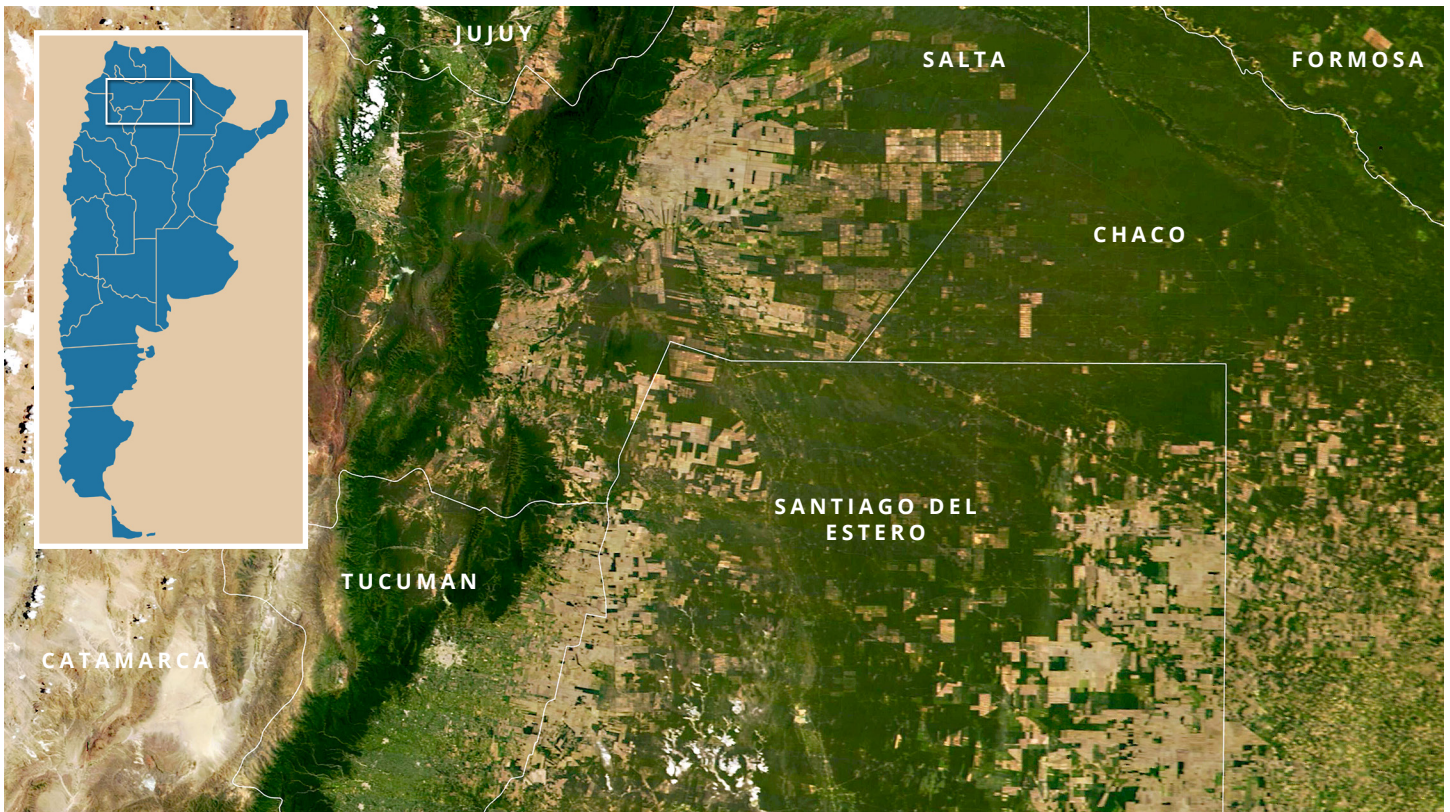
global markets. As the demand for DCF beef increases, competition for product from areas or producers that have low deforestation and conversion risk may prove too much for the current available product to meet these needs. Broader, more scalable solutions are required to make meaningful progress to increase availability of DCF products.

Supply

Argentina is well known for high quality beef and strong genetic stock (dominated largely by Angus and Hereford breeds). Its beef exports command high prices globally along with New Zealand, Uruguay, Australia, and the US. It is also among the top beef producers in the world in terms of volume. Additionally, due to strong biosecurity measures put in place from previous exposure to hoof-and-mouth disease, beef exports were not strongly impacted from the COVID-19 pandemic compared to supply chain disruptions seen elsewhere. When compared with its neighbors, Argentina stacks up well, as Uruguay's and Paraguay's production are much lower due to their respective sizes, and Brazil lacks Argentina's traceability strengths and potential for government interest to undertake such an endeavor. Furthermore, Argentina was the first major exporter of frozen beef globally and exporting DCF beef presents a new opportunity to redefine global beef exports.

Domestic Consumption

Argentina is second only to Uruguay in domestic per capita beef consumption, making beef an important staple across the country. As a result, domestic affordability is a critical market factor that has WWresulted in government policies to reduce exports and keep prices low for domestic consumption. These protectionist measures, along with hoof-and-mouth disease, depressed beef exports and global market share. This situation began to shift in 2016, which led to slow increases in exports up to 2018, now halted again by the pandemic. At that point, demand from China for more animal protein caused beef exports to increase rapidly. Beef exports will continue to play a key role in Argentina as long as the importance of beef in the local diet and



Satellite imagery reveals the extent of deforestation in the Chaco region.

© NASA Earth Observatory, 2019

concerns about inflation allow beef to remain affordable for domestic consumption.

Additionally, the European market prefers certain cuts of beef, while the remaining portions are typically sold in Argentina. This could create an opportunity to market and sell DCF beef domestically, which would be attractive to global brands that need to meet commitments locally and then drive further adoption. Despite the rapid growth in exports in recent years, Argentina's excess production capacity has enabled a stable domestic market while also meeting external demand.

Traceability

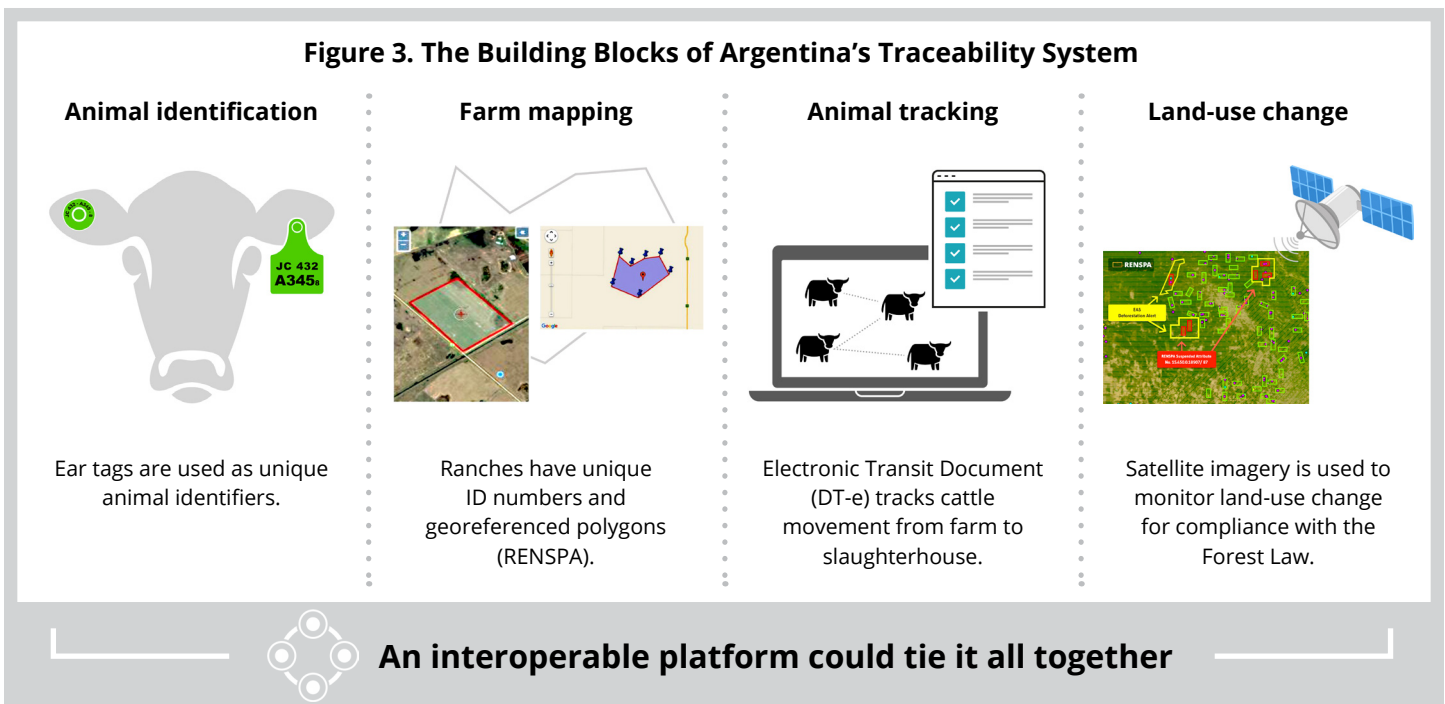
An outbreak of hoof-and-mouth disease in the 1990s led Argentina to establish a traceability system to provide individual animal identification and monitoring from cradle to slaughterhouse, with farms also georeferenced by coordinates. In 2007, Argentina also put in place a Forest Law to stop deforestation in medium and high conservation value areas, which resulted in further traceability capabilities, including an Early Warning

System to alert the government of violations against the Forest law that enabled the country to identify land use change via satellite monitoring. However, the Forest Law does not currently limit habitat conversion more generally, and conversion of grasslands is a key concern in Argentina, particularly in the Pampas and Humid Chaco regions.

According to the BCG study, approximately 32% of land with high cattle production potential has already been converted, but another 39% is at high risk of conversion since it lacks legal protection. In 2020, the Early Warning System worked overtime due to a proliferation of both deforestation and forest fires, demonstrating that the system is effective and able to identify land use changes well, whether illegal or accidental. The Forest Law and desire to protect this at-risk area is one of the reasons Argentina's traceability capacity is well poised to support DCF beef requirements.

Given the possibility of future disruptions, it is pivotal that Argentina's traceability system was developed with an eye for biosecurity to prevent the chaos that ensued after exports were harmed due to their hoof-and-

Figure 3. The Building Blocks of Argentina's Traceability System



mouth disease outbreak. As the potential success of a commodity-wide DCF approach hinges on government as well as industry, the Argentine experience has demonstrated the ability to act in response to crisis and implement measures to prevent future biosecurity issues in one of their most important commodities.

However, a challenge of the current traceability system is that the information generated is not publicly accessible (although it is available to provincial and national governments), making further government collaboration and goal alignment critical to the success of this approach. But while the traceability system will require some updates and enhancements to monitor conversion in addition to deforestation, and other potential buyer requirements, the current system is adequate to achieve export ready DCF beef, adding to the appeal for external buyers.

In 2020, Fundación Vida Silvestre Argentina contracted local Argentine consulting firm Genesis to assess the traceability system and ensure that it would be able to handle the demands required by buyers and importers of DCF beef to prove that the products would be free from deforestation and conversion. The study found that all the necessary components exist within current systems and protocols to ensure product is DCF, contemplating animal (via ear tags), producer

The Forest Law categorizes native forests according to conservation value and determines what activities can occur in each.

Forests are categorized as:

- **Low value** (green): Land use change allowed
- **Medium value** (yellow): Sustainable management with no land use change
- **High value** (red): Conservation with no land use change

(via geospatial coordinates on-farm), and land-use change components (via satellite imagery), but that an overarching platform would need to be developed ensure interoperability.

Individual animal traceability is possible from birth to slaughterhouse. For the concept to succeed, slaughterhouses will also need to commit to only accept DCF animals as, once in the slaughterhouse, it becomes cost prohibitive to trace individual animals. As a result, the slaughterhouses need to either be wholly DCF or traceability would be done via lots or delivery days to the facility within a given slaughterhouse, as is currently done with Kosher and Halal meat.

Benefits for Argentina

Primary among the advantages to moving towards DCF beef is the potential to unlock finance for the transition. For a country that has been fraught with economic crises and volatile financial markets for decades, the chance to find new ways to bring dollars into the country is compelling. Traditional commercial banking lacks the appetite to do so. However, direct funding from import companies, particularly in the critical Chinese and European markets, via trade finance, or in partnership with multilateral banks, represent pathways to vital financing needs for key commodities such as beef in Argentina. And long-term contracts or off-take agreements also provide assets that can be used to borrow against to obtain the working capital or even longer-term investment capital to make the transition possible.

Public international markets and domestic finance are all invested in seeing Argentina's economy stabilize. They can aid in this effort through facilitating the DCF transition via direct investment and de-risking approaches, such as long-term contracts and blended finance support, among other strategies. This could then serve as a catalyst for domestic banks and investors,

who are beginning to organize themselves via initiatives such as the [Sustainable Finance Protocol \(SFP\)](#).

Additionally, with the EU and UK on the verge of passing legislation requiring products sold within their borders to be free from illegal deforestation, Argentina could secure an advantageous position with key premium markets. Instead of a reactionary approach, the country can proactively set an example for how DCF products can be achieved and unlock not only funding, but also more advantageous relationships with buyers.

Collaboration

As part of this analysis, WWF and BCG interviewed leading companies to understand their sourcing needs and commitments for DCF beef. A key takeaway was that, given the complexity of supply chains, transitioning to DCF is a bigger challenge than individual companies can take on alone, even those with considerable influence. Pre-competitive collaboration by companies, and national initiatives such as the one proposed here, are critical to making DCF sourcing a reality at scale.

Initiatives such as the Amazon Soy Moratorium in Brazil and various roundtables on sustainable beef (country-specific and global), including Argentina's, are



Cordoba Province — Argentine gauchos on horseback riding among herd of Aberdeen Angus cattle.

© JohnnyGreig / Getty

⁷ <https://www.gov.uk/government/news/cop26-brings-countries-together-to-protect-worlds-forests#:~:text=The%20FACT%20Dialogue%20aims%20to,while%20promoting%20development%20and%20trade.>

demonstrating that through collaboration, progress on environmental issues can be achieved. These initiatives do not solely tackle deforestation and conversion, which does not affect all beef production globally, but can provide some key lessons on bringing stakeholders to the table to set common goals and work towards them.

Furthermore, the [Accountability Framework initiative \(AFi\)](#), of which WWF is a member, has developed a vital framework to define deforestation and conversion in supply chains. WWF also created an implementation toolkit for how to implement and monitor commitments related to deforestation and conversion. In addition to AFi's general framework, there is regional guidance for the Chaco, which is already being implemented by Danone Argentina and considered by other companies. The Accountability Framework is a critical framework in the DCF approach to align companies and the Argentine government on key definitions and parameters. Additionally, in February 2021, the UK launched the Forest, Agriculture and Commodity Trade (FACT) Dialogue⁷, to bring together both commodity exporting and consuming countries to work towards more sustainable production.

Finally, it is important to note that in beef production, the entire carcass is used; nothing is wasted. As a result, when considering markets for DCF beef, it is crucial to engage buyers for every part of the carcass, from premium high-quality steak to ground beef, leather, and gelatin. To make the transition to DCF beef viable, various stakeholders throughout the supply chain need to buy in and see the value of DCF for their portion of the market. By leveraging market opportunities across the various supply chains related to beef, the likelihood of successful adoption increases considerably.

Jurisdictional Approaches: Driving Change across Stakeholders

Strong demand and robust supply are necessary to transform market dynamics, but alone are not enough without both buy-in and action from relevant stakeholders. Jurisdictional approaches, especially those at the national level, can represent a robust form of public/private partnership that brings together

government, business, and communities to achieve a common goal.⁸ As many companies reach back in their supply chains to tackle environmental challenges, individual company action is not enough. Governments can also benefit from company partnerships that will help them tangibly enforce (i.e., financial benefits via long term contracts or relationships with producers) the laws and regulations that protect habitats. In addition to government actors, other stakeholders within a given jurisdiction must be involved in the design and implementation of the approach. In the approach outlined in this case for deforestation and conversion-free beef, producers must take part and be key partners to achieve success.

Additionally, credible systems are needed in the jurisdiction both to enforce regulations and monitor impacts. In the case of beef, systems must also monitor leakage from other jurisdictions to the jurisdiction in question. For example, slaughterhouses often purchase animals from more than one jurisdiction. As important, animals are often bought and sold and transported prior to slaughter. Many cow-calf producers sell weaned calves to other producers who fatten them for slaughter. Setting up credible systems to track animals from birth to slaughter under these conditions is complicated, which gives Argentina a unique advantage, as traceability systems are already in place there at the national jurisdictional level.

While no roadmap exists for a country to produce DCF beef, or any other commodity for that matter, programs being implemented elsewhere offer key lessons about the path to becoming DCF. Ireland's Origin Green program through Bord Bia, its national food board, is one such program. Origin Green is a nationwide traceability program in which food exporters are required to participate. It also collects information from each exporter on some critical impact areas for more sustainable production, animal welfare, and other metrics. And it lets producers see how others achieve better performance. The program includes on-farm assessments built onto existing Quality Assurance infrastructure already in place for food health and safety.

⁸ https://c402277.ssl.cf1.rackcdn.com/publications/1145/files/original/wwf_jurisdictional_approaches_fullpaper_web_1.pdf?152045447



Horses on the landscape of the El Cachapé ranch and wildlife refuge — Gran Chaco region, Northern Argentina.

© Jason Houston / WWF-US

While not specific to DCF beef production (though it includes beef), Origin Green represents a successful country-wide program that incorporates sustainability principles and standard setting at a national level. Additionally, Bord Bia has invested considerably in marketing the program's traceability and origin attributes, which has led to significant brand recognition and export opportunities. Ireland focuses primarily on the quality of the meat, which could also prove a successful strategy for Argentina. During research for this case, WWF and BCG interviewed various companies that have made DCF commitments, and there was a high level of brand recognition for and interest in Origin Green, particularly among European companies. Furthermore, since launching Bord Bia, Ireland's beef exports grew 24% over 5 years.

Another example of a jurisdictional approach is Brazil's Mato Grosso region's "Produce, Preserve, Include (PCI)" initiative, which has implemented a pilot for sustainable beef through the Novo Campo program. The pilot has shown promising results not only in terms of sustainable practices, but also in terms of improved product quality and quantity of beef. However, the Brazilian government's environmentally detrimental policies have led to an increase in deforestation throughout

the country, making progress difficult for initiatives such as PCI. It appears deforestation in Mato Grosso is lower relative to other regions without jurisdictional DCF approaches, but rates have still been elevated given the lack of high-level governmental support for conservation, demonstrating that, while the potential for impact of jurisdictional approaches is tremendous, the need for strong support across various stakeholders can represent a key challenge. Even with local support for the initiative, national signals working against PCI's goals make them difficult to achieve.

Most DCF jurisdictional approaches are too nascent to demonstrate strong results; however, the concept of bringing together communities, government, and private sector to co-design solutions, including appropriate incentives and disincentives, represents a promising pathway towards meaningful change. Getting the right actors to the table to discuss and agree on goals and forge a path forward together is no small task, and the vast potential for co-benefits merits further investment into the concept.

Status of At-risk Areas

Within Argentina, most beef production takes place in areas that have either been converted long ago or are at

low risk for conversion. Around 18% of beef-producing farms and 13% of animals (SENASA, 2020) are in the four main Chaco provinces (Chaco, Formosa, Salta, Santiago del Estero).

There is still a significant and relevant portion of the country that is at risk for deforestation (19%) and conversion (45%) that needs to be protected (INDEC. Censo Nacional Agropecuario 2018. Preliminary results). However, relative to other beef-producing countries, the overall footprint of at-risk land is not as high of a proportion within the country. This makes Argentina an excellent test case given that there is a high-risk but lower landmass area that needs protection, making design and control for this initiative less cumbersome than it would be in a country such as Brazil, for example.

Challenges

Transitioning to a DCF beef export market will not be easy. And, despite the possibility of long-term economic and environmental benefits, the transition will require up-front investments. One of the findings of this research was that, although there is a high level of interest from global companies in DCF beef, it is unlikely that they would pay a premium for DCF products. As a result, it is essential to identify other incentives for producers and innovative strategies to cover the costs of transitioning to DCF beef. Alternatives such as market access, competitive financing, and long-term contracts are examples of potential benefits that may reduce the economic weight of transition. Government-led incentives during the transition could also ease the burden as producers begin to see the medium and long-term benefits.

While some consumers care about sustainable products, decision-making based on DCF products like beef is still nascent to non-existent. Consumers are not well-informed about the meaning of DCF, complex supply chain issues, company commitments, or where companies stand in relation to meeting their commitments. Consumer education regarding the importance of DCF sourcing to the protection of habitats and species, as well as the mitigation of climate change, could increase pressure on companies to make progress

on DCF sourcing commitments. Coupling the benefits of DCF with other consumer concerns, such as ethical or sustainable production, may increase the level of interest and success in promoting DCF production. If, as alluded to above, the tie between DCF and reducing carbon emissions can be drawn more strongly, consumer education and interest can likely be advanced more quickly.

The DCF beef concept proposed here involves full compliance with Argentina's Forest Law, as well as the addition of another law(s) to incorporate protection of other at-risk habitats such as grasslands, and relies, in part, on legal repercussions for failure to comply. However, legal measures are only truly effective when laws are enforced. Therefore, enforcement and a strong, or at least adequate, legal system are key to enacting DCF beef as a country-wide export condition.

While this opportunity represents many possibilities for the country, some producers with land in or adjacent to higher-risk habitats will be more impacted than those in areas already heavily deforested or in areas with land of low conservation value. The design of appropriate incentives and safeguards to support producers where the opportunity costs of complying with the program are high will be critical to the success of this program. Additionally, training to support and encourage sustainable intensification of production in existing or degraded pastures is essential to ensure the country can meet growing demand without converting additional forests.

Conclusion

The COVID-19 pandemic has highlighted the urgency of adaptability. Old business models will not ensure future success, and there are more disruptions to come. Transforming commodity markets to remove deforestation and conversion from supply chains represents a way to see commodities in a new light, that of enabling environmental and economic benefit rather than exploiting them.

There are many factors that would allow Argentina to position its beef exports as DCF with minimal

investments, setting the country up to be a pioneer in this space. Argentina has significant forested area at risk of conversion, as well as high quality beef, legal systems to monitor and reduce deforestation, and an existing traceability system that could help turn this opportunity into a reality. Taking advantage of existing systems and infrastructure and re-using or repurposing to solve other complex challenges is something we will all need to do more of as the climate changes.

Argentina has demonstrated adaptability to meeting both market demands and needs for biosecurity through overcoming past challenges and continuing to grow exports during the COVID-19 pandemic. With imminent EU legislation banning products from deforested habitat, and the potential to make an argument for a DCF product, the time to act is now. To take this national level jurisdictional approach forward, convening the right stakeholders — government, producers, industry, and NGOs — to discuss how to make it happen is critical. The opportunity is not without risk, but the climate and biodiversity loss crises demand bold solutions to confront these challenges.

By leading with beef, Argentina can position itself as an innovator, improving market share of global beef exports while credibly addressing sustainability issues like deforestation. This would allow Argentina to meet some of its commitments to the Paris Climate

Agreement while also creating market opportunities. Furthermore, Argentina could later expand the program to other commodities, gaining first mover advantage and pushing other countries to move in the same direction, e.g., meet buyer expectations to shift towards more sustainable sourcing.

If Argentina presents a compelling country level example of how to transition supply chains to DCF beef, what could that mean for other countries? By viewing DCF beef as a market opportunity and supporting producers in steps to achieve it, governments can leverage critical infrastructure and precious resources to affect change at a meaningful scale. Companies are clamoring for support in achieving ambitious DCF commitments, yet there is a considerable disconnect between government realities and corporate-led initiatives. National approaches such as the one proposed here demonstrate that the two need not be mutually exclusive: governments can work towards climate goals while strengthening economies through market-based solutions like DCF beef exports.

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Celebratory toast with family at the traditional midday meal in Buenos Aires.

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