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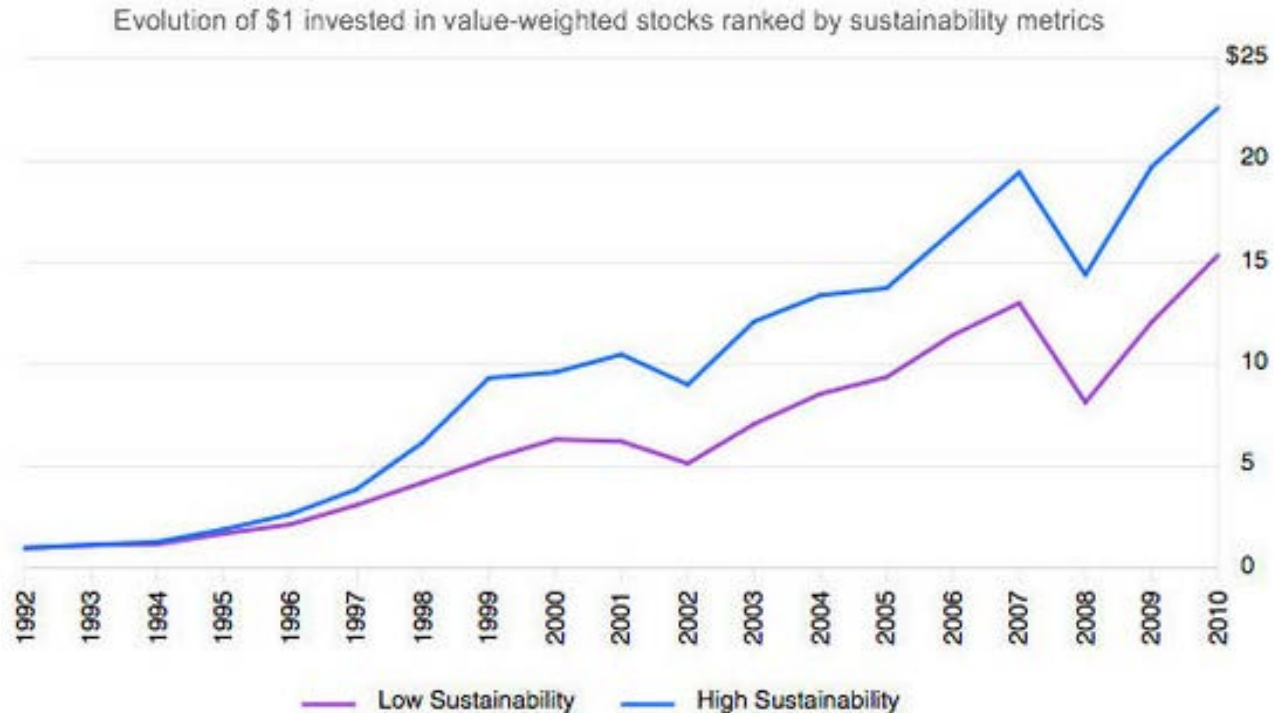
A methodology for monetizing the benefits of integrating sustainability into core business strategy

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Sustainability Correlated with Better Performance

Stock values of more sustainable companies outperform less sustainable peers



University of Oxford and Arabesque: A meta-analysis of more than 200 academic studies:

- 90% of studies: Good ESG performance lowers cost of capital
- 88%: Good ESG results in better operational performance
- 80%: Stock price performance positively correlated with good ESG practices

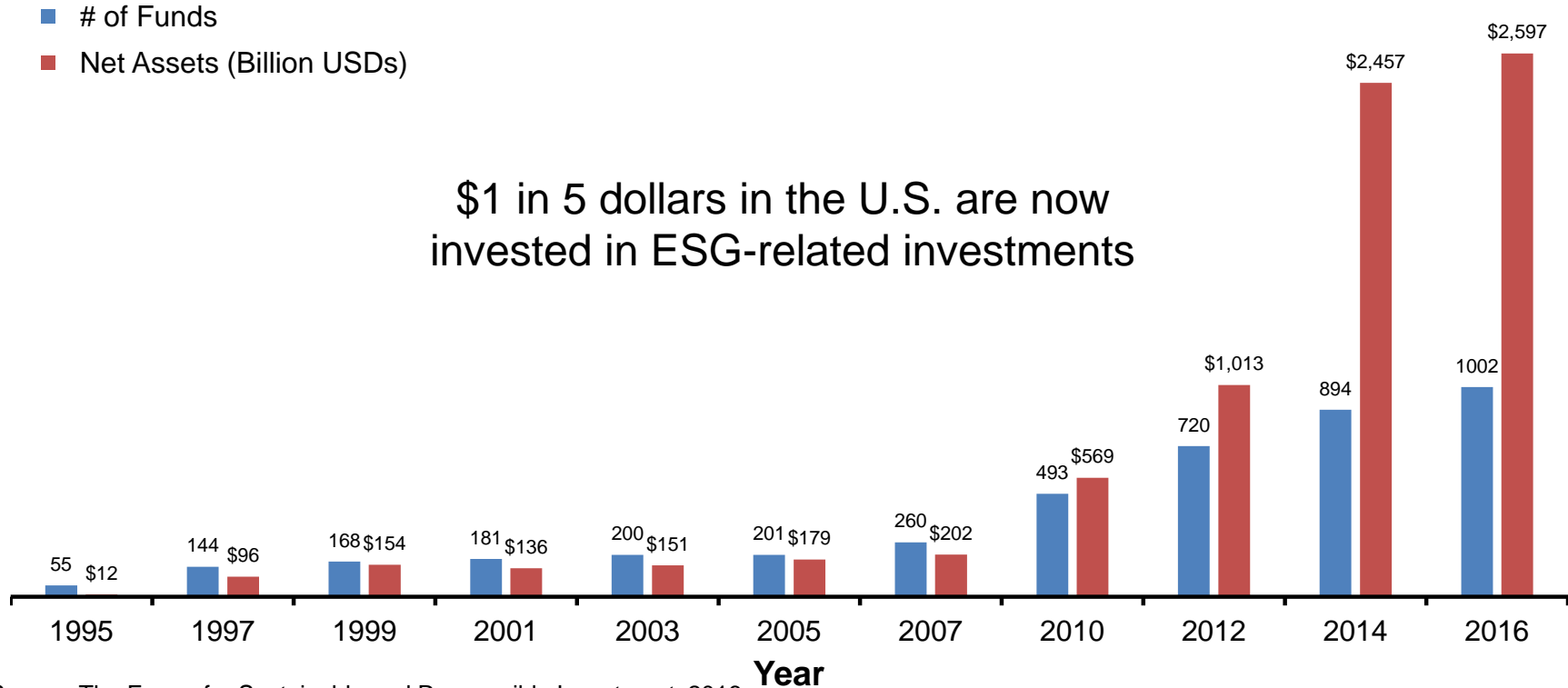


Source: Arabesque/Oxford Study (2016)

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ESG Investments Exploding

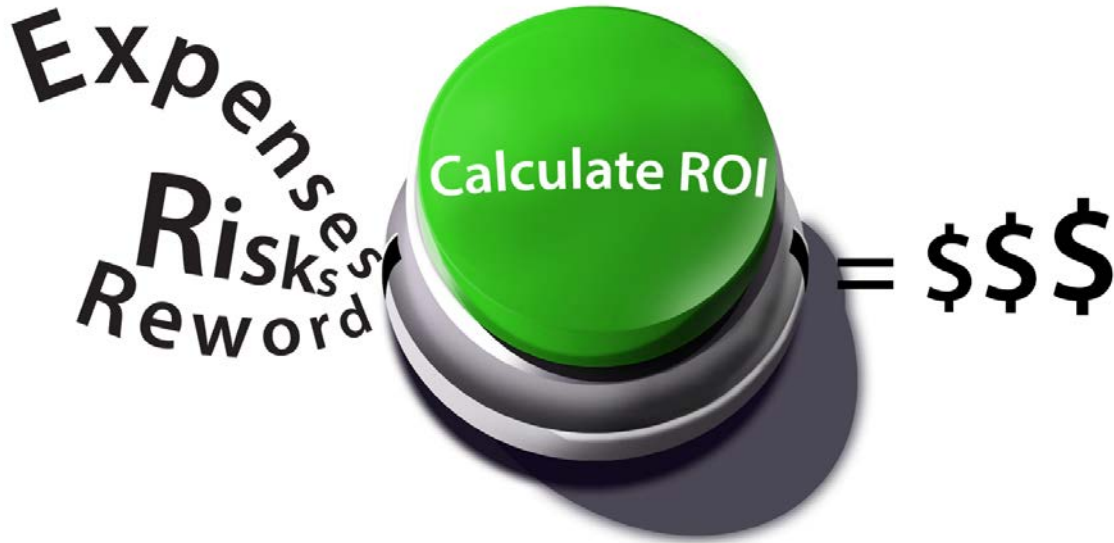
Growth of Investment Funds incorporating ESG Factors*



Source: The Forum for Sustainable and Responsible Investment, 2016

Why No Causality?

Companies are not tracking the ROI on their sustainability initiatives



Drivers of Financial Performance in Sustainability

When players in a value chain embed sustainability in their core strategy and practices, they consistently drive:

More Innovation

Better Risk Management

Higher Operational Efficiency

Greater Customer Loyalty

Improved Supplier Relations

Better Employee Relations

Improved Sales and Marketing

Better Media Coverage

Lower Cost of Capital

Greater Profitability

Higher Corporate Valuation

Greater Value to Society

Monetizing Deforestation-free Supply Chain Commitments

Methodology and Research Partner: **ATKearney**

Lead Supply Chain Research Partner:

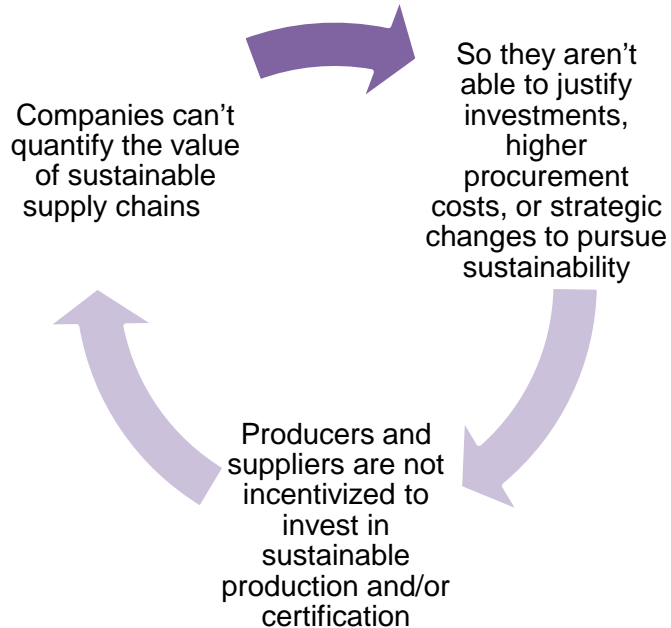


Funder:

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One of the main reasons for supply scarcity is uncertainty around the benefits of embracing sustainability



- Typical approach to sustainability **fails to assign a monetary value** to benefits
- If companies could **monetize** direct and indirect benefits of sustainable supply chains, then they would be able to build the business case for investing in sustainability, **triggering a positive reaction across the value chain**

Case Study Detail

The selected case studies: FSM and Novo Campo ranches, Mato Grasso State (agricultural frontier)

	Fazendas São Marcelo	Novo Campo
Sustainability history	First ranch to receive Rainforest Alliance certification	Project focuses on intensification as a way to increase productivity & reduce pressure for deforestation
Certifier/Supporter	Imaflora	Instituto Centro de Vida
Commercial Partners	Marfrig, Carrefour	McDonald's, JBS
Focus	Sustainable Ranching Broadly	Intensification (deforestation-free)
Size	28,000 animals per year, 12,000ha of land	12,000 animals per year, 7,700ha of land (10 producers)
Year of Certification	2012	2012 (pilot ran from 2012 – 2014)
Sustainability Reference	Rainforest Alliance SAN Standard	GAP (Embrapa's ¹ Good Agricultural Practices)

1. Brazilian Agricultural Research Corporation, a governmental agency for Agriculture and Environment development
Source: A.T. Kearney

Case study downstream value chain

Brazil operations only

Company	Sector	Revenues	Number of Plants/Stores	Number of Employees	Has Committed to Deforestation-free Beef ¹	Sustainability Commitments and Initiatives
	Restaurant	~\$1.8B	1,070 ²	54,000+	✓	<ul style="list-style-type: none"> • Coffee sourcing from Rainforest Alliance Certified Farms • Sustainable fiber-based packaging sourcing
	Supermarket	~\$10B	288	78,000	✓	<ul style="list-style-type: none"> • 40% reduction in emissions by 2025 • 50% reduction in food waste by 2025 • Increasing local sourcing
	Slaughterhouse	\$6.3B	42	127,000	✓	<ul style="list-style-type: none"> • Sustainable water use initiative • Increased sustainable material sourcing
	Slaughterhouse	\$2.47B	17	13,800	✓	<ul style="list-style-type: none"> • Reduction of water consumption • Partnerships with 7 environmental NGOs

1. Slaughterhouses have signed *Conduct Adjustment Term* (TAC) with government

2. 870 own stores and 200 franchisees

Source: Companies' 2015 Financial Statements and Sustainability reports. A.T. Kearney

Methodology – how to use it

The methodology identifies potential benefits and aims to translate their impact into a business case

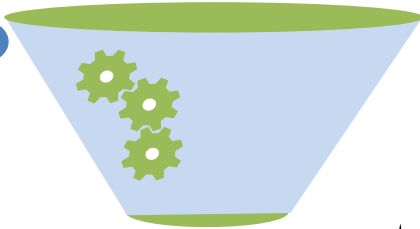
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	Description
Benefit 1	Cost Savings Through Improved Operational Efficiencies
Benefit 2	Better Positioned to Manage and Mitigate Risk
Benefit 3	Innovation Through Design

List of overarching benefits¹

- Identification of overarching common benefits from sustainability
- The tool has a comprehensive list from which to select from

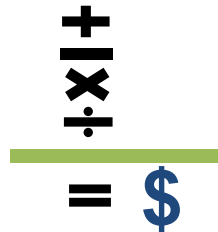
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Customization and Detailing

- Customize and detail potential specific benefits that apply to the company, under each of the overarching benefits

3



Quantification and Monetization

- Include company's data and assumptions into the tool
- Adjustments may be required according to available data, and or differences of sector/business

1. List of broad sustainability benefits developed by CSB
Source: A.T. Kearney

CSB Methodology Identified 19 Benefits

Benefit Group	Name of Benefit	Applicability to link:		
		Ranch	Slaughterhouse	Retailer
Cost reduction	1.1 Better cost management	✓		
	1.2 Innovation and better agricultural techniques	✓		
	1.3 Higher land productivity (smaller area required)	✓		
Revenue increase	2.1 Price premiums (niche market)	✓	✓	✓
	2.2 Preferred supplier (selling at full price, no discounts)	✓		
	2.3 Increase overall demand for sustainability (mass market)	✓	✓	✓
	2.4 New Revenue Streams available	✓		
Risk Avoidance	3.1 Operational Risk Avoidance	✓	✓	✓
	3.2 Market Risk Avoidance	✓	✓	✓
	3.3 Regulatory Risk Avoidance	✓	✓	✓
	3.4 Reputational Risk Avoidance	✓	✓	✓
Financial & Valuation	4.1 Cost of Capital Reduction		✓	✓
	4.2 Asset appreciation	✓		
Other	5.1 Talent Attraction	✓	✓	✓
	5.2 Talent Retention	✓	✓	✓
	5.3 Improvement in corporate ecosystem (reduced volatility)	✓	✓	✓
	5.4 GhG Emissions Reduction	✓		

Ranches - Findings

Ranches experience drastic improvements in productivity, and gain access to new market opportunities

- It is common for cattle ranches in Brazil to have low productivity resulting from obsolete practices, which creates pressure to expand pastures into fragile biomes
- Sustainable practices, however, offer an alternative to increase productivity while protecting biodiversity and respecting social and environmental issues
- Our data for the ranches was greatly aided by the research work of ICV and Imaflora.

Examples of Practices

- Implementation of better management
- Rural infrastructure improvement:
 - Pasture recuperation
 - Water distribution system
 - Fencing and rotation of fields
- Implementation of conservation areas – especially near water
- Commercial agreements with brands (food and fashion)

Results

- Increase in productivity of up to 2.3x in pounds of beef per area
- Reduced GhG emissions of up to 20%, ton of CO2 per hectare per year
- Increase in profitability up to 6.8x

Ranches Experience Cost Reductions and Revenue Increases

Source: A.T. Kearney

Benefit group		Novo Campo		Fazenda São Marcelo	
		Min	Max	Min	Max
Benefits	Cost Reduction	3.9	4.2	33.2	35.8
	Revenue Increase	0.6	1.1	0.9	2.3
	Risk Avoidance	0.5	1.5	2.1	7.6
	Financials ¹	1.1	2.0	0.0	0.0
	Other	0.1	0.9	0.5	3.7
Total Benefits		6.3	9.7	36.8	49.4
Costs and Investments	Infrastructure ² & Ongoing Costs ³	4.9		20.2	
Net Gain	Benefits – Costs	1.4	4.8	16.6	29.2
	% of Revenues	8.7%	30.2%	12%	22%

1. Corresponds to 'Asset Appreciation', land value increase by U\$1.1 2 Mn
 2. FSM investment in Infrastructure was not available. Used Novo Campo's values as proxy
 3. Incremental costs due to sustainability were not available, however costs per kg reduced (not increased)
 Source: A.T. Kearney

Calculation method

Cost calculations compared financial performance before and after interventions

Benefit Group	Name of Benefit	Ranch	
		Benefit Description	Monetization Method
Cost reduction	Better cost management	Cost reduction as a consequence of more control and better management practices: E.g. lower use of fertilizers and other inputs	Compared major input costs from before and after implementing initiatives, weighted per kg of beef produced, and applied to future expected forecasts, and calculated NPV
	Innovation and better agricultural techniques	Cost reduction as a consequence of innovation and better agricultural techniques, such as Pasture recuperation, water distribution system, fencing and rotation of pasture	Applied cost reduction per kg of beef produced to total production. Cost reduction is calculated by comparing average cost per kg before and after sustainable practices are deployed
	Higher land productivity	Typically, farms would rent out land to supplement own holdings. With higher productivity, farmers can produce at own land, avoiding costs of renting additional land	Calculate total rented area that no longer needs to be rented and multiply by cost of rental (equivalent to area available for rent - for cases where producer did not rent additional land)

Calculation method

Revenue increase benefits derive from higher prices, volumes and additional revenue streams

Benefit Group	Name of Benefit	Ranch	
		Benefit Description	Monetization Method
Revenue increase	Price premiums	Slaughterhouses value sustainability practice in ranches as it increases product quality and contributes to better commercial relations, so ranches can benefit from receiving price premiums for sustainable beef	Multiplied premium paid by slaughterhouse by total expected production (For ranches, we used the actual price premium that they are receiving (for quality, derived from sustainability practices), e.g. Novo Campo gets ~R\$0.20 per kg)..
	Selling at full price (no discounts)	A part of sales to slaughterhouses are made at discount, in periods of excess of supply. With sustainability, producers are prioritized and are able to sell at full price. Generating a benefit of higher revenues from selling all production at full price	Estimated what percentage of sales is sold at discount, estimated the discount and calculated total sales loss
	Increase in demand for sustainability	Consumer trends indicated that in the medium and long term, demand for sustainable products will rise, creating a potential benefit of increase in future sales volumes	Applied estimated increase in future sales to forecasted sales volumes
	New Revenue Streams available	New revenue streams: With greater productivity, ranches are able to dedicate former (or rotating) pastures to new uses (e.g. planting soy or corn)	Estimated % of area that can be reallocated to other activities (e.g. planting soy), estimated revenue from new activity per ha

Calculation method

Risk avoidance is based on the probability and magnitude of potential business risk

Benefit Group	Name of Benefit	Ranch	
		Benefit Description	Monetization Method
Risk Avoidance	Operational Risk Avoidance	Operational Risk: Revenue loss avoidance derived from operational complications that reduce production and sales. E.g.: Pasture exhaustion, water shortage, cattle diseases	Estimated probability of risk really occurring, estimated the impact in sales and calculated lost revenues
	Market Risk Avoidance	Market Risk: Revenue loss avoidance derived from changes in market demand, which in the future is expected to favor producers that are sustainable	Estimated probability of decrease in market demand for unsustainable beef occurring, and estimated the impact in sales
	Regulatory Risk Avoidance	Regulatory Risk: Avoiding revenue loss derived from future changes in regulation that disqualify ranch to produce and sell beef	Estimated probability of regulatory changes occurring, and estimated the impact in sales
	Reputational Risk Avoidance	Reputational Risk: Avoiding revenue loss derived from reputational damage (e.g. activist campaign, sustainability scandals)	Estimated probability of reputational damage occurring, and estimated the impact in sales

Calculation method

Other benefits include lower cost of capital, incremental revenues from talent, reduced training cost and GhG emissions

Benefit Group	Name of Benefit	Ranch	
		Benefit Description	Monetization Method
Financial and Valuation	Asset Appreciation	Increase in land value due to investments in sustainability infrastructure (CAPEX)	Add "sustainability increment" to current land value, estimate time to implement infrastructure improvements, calculate NPV
Other	Talent Attraction	Talent attraction: higher revenues per employee due to best talents	Estimate incremental revenue that top performing employees generate, and potential to attract top performing employees
	Talent Retention	Turnover costs avoidance derived from employees working longer due to sustainability practices	Estimate turnover reduction and costs associated with turnover (new employee training, operations only), weighted by probability: Hours of training required and cost per hour
	GhG Emissions Reduction	Environmental: GhG Emission avoidance generated by use additives to feed and other techniques	Estimate GhG reductions per ha, multiply for entire area and apply a cost per ton of GhG (estimated Carbon Tax based on Mexico's benchmark - assuming tax taking place in year 7)

Ranchers – Testimonials

While ranchers weren't always able to quantify the impact, anecdotal evidence supports the positive benefits



Pasture under rotation system, FSM



Confinement area, FSM



Ranch Manager, Leone Furlanetto, next to improved feed & infrastructure, FSM



Novo Campo producer, Francisco Militão, on river side vegetation recuperation

*“There is no price premium for sustainability alone, only for quality. **But when we implemented sustainable practices, our quality immediately increased. Now 70% of beef is sold with quality premium, up from 0% in 2 years**” - Novo Campo producer*

*“We might take loans in the future now that **we know it pays back**” – Novo Campo producer*

*“I used to pay **R\$7,000/month** to my neighbor to use his land” - Novo Campo producer*

*“**All initiatives** (e.g.: pasture recuperation, animal monitoring, water distribution), **must be carried together, in order to obtain gains in productivity.** And we can't say how much of productivity gains derive from each initiative” – ICV*

Slaughterhouses - Summary

Slaughterhouses were pressured into improving sustainability, but now see it as improving quality

- When Greenpeace identified the cattle sector in the Brazilian Amazon as the largest driver of deforestation in the world in 2009's "Slaughtering the Amazon" report, it created a turning point.
- Since then all major slaughterhouses have committed to deforestation-free beef.
- More recent results showed that sustainable practices are an effective way to increase quality

Examples of Practices

- Monitoring of suppliers with satellite imaging tools
- Selection of suppliers upon consultation of public lists that control for Environmental, Labor and Indigenous issues

Results

- Increased overall offer of high quality beef, resulting in larger supplier base and higher potential margins
- Guarantee of 'first level deforestation-free'
 - Full traceability is not yet possible
- Gradual reversion of reputational damage
 - New articles and reports have praised sustainability performance
- Identified potential economic net benefits of U\$19 – 119Mn with extrapolation¹

Slaughterhouses Improve Revenues, Reduce Risk

US\$ Mn, NPV	Benefit group	Marfrig		JBS	
		Min	Max	Min	Max
Benefits	Cost Reduction	0.0	0.0	0.0	0.0
	Revenue Increase	5.8	19.3	21.8	72.6
	Risk Avoidance	1.8	8.6	21.3	72.9
	Financials ¹	0.1	0.4	1.3	3.9
	Other	0.5	2.1	3.2	11.8
	Total Benefits	8.3	30.4	47.6	161.2
Costs and Investments	Infrastructure & Ongoing Costs ²	7.0	13.9	29.9	58.1
Net Gain	Benefits – Costs	1.3	16.5	17.8	103.1
	% of Revenues	0.01%	0.13%	0.02%	0.09%

1. Includes gains from increase in Market Cap (US\$92-277k and US\$780 -2,342k)

2. Cost information was not shared, internal estimates (tools subscription + increase in costs of beef by 0.5-1%)

Source: A.T. Kearney

Calculation method

Revenue increase derives from higher prices in niche markets, and projected increased demand for sustainable products

Benefit Group	Name of Benefit	Slaughterhouse	
		Benefit Description	Monetization Method
Revenue increase	Price premiums	Price premiums (niche): as seen in other regions, niche markets where consumers pay premiums for sustainability in goods and services, are rising in Brazil, creating the potential increase in revenues for Slaughterhouses that are equipped to meet that demand	Multiplied expected premium paid by niche markets for sustainable beef by expected future share of total beef sales, weighted for probability (estimated 10-20% premiums for niche markets)
	Increase in demand for sustainability	Increase in demand (mass): Consumer trends indicated that in the medium and long term, demand for sustainable products will rise, creating a potential benefit of overall increase in future sales volumes of products that are sustainable	Estimated increase in future sales of sustainable beef, multiplied by forecasted volumes of sustainable beef sold, calculated NPV, weighted by probability

Calculation method

Risk avoidance is based on the probability and magnitude of potential business risk

Benefit Group	Name of Benefit	Slaughterhouse	
		Benefit Description	Monetization Method
Risk Avoidance	Operational Risk Avoidance	Operational risk avoidance: By purchasing sustainable beef, slaughterhouses can protect their businesses from risk of reduced access to raw material, caused by operational issues in the supply chain (e.g.: country wide supply limitations, such as pasture exhaustion, water shortage and cattle diseases). Creating a benefit of potential future revenue loss avoidance	Estimated probability of risk occurring, estimated the impact in sales and calculated potential revenue loss
	Market Risk Avoidance	Market Risk: It is expected that some consumers and retailers opt not to buy from unsustainable sources. By commercializing sustainable beef, slaughterhouses avoid loss of market share and future revenues	Estimated probability of market demand for unsustainable beef decreasing, estimated potential impact on revenues
	Regulatory Risk Avoidance	Regulatory Risk: Slaughterhouses purchase beef from thousands of different suppliers, which makes it challenging to ascertain that all suppliers comply with regulation, but it is still their responsibility to purchase only beef that was produced in compliance with regulation. By commercializing sustainable beef, slaughterhouses avoid risks of being fined	Estimated value of fine, probability of being fined in the medium and long term for buying potentially non-sustainable beef (e.g. non-certified, or beef with uncertain origin)
	Reputational Risk Avoidance	Reputational Risk: Increasing transparency and societal pressure on corporations puts their reputation at risk if they do not perform well on sustainability. Damages to reputation can lead to sales loss. By commercializing sustainable beef, these companies reduce reputational risk and associated drop in sales.	Estimated probability of reputational damage occurring, and estimated the impact in sales

Slaughterhouses – Testimonials

While public pressure was the initial impetus for sustainability, better quality ensures the processors' commitment

*"Everything changed in 2009, with the report the spotlight was on the beef industry, and so **we had to change how we did business**" Leonel Almeida, Sustainability Director - Marfrig*

*"Our suppliers that are committed to sustainable practices have **better quality products**" Leonel Almeida, Sustainability Director - Marfrig*

*"We **prioritize sustainable beef producers over conventional**, it's better for the environment and for business" Leonel Almeida, Sustainability Director - Marfrig*

"It is in fact incredibly hard to know how much consumers value sustainability" Marcio Nappo, Sustainability Director - JBS

*"We supported Novo Campo project ensuring demand, **transmitting credibility to the project and connecting with other special buyers** – McD only buys 30% of the carcass" Marcio Nappo, Sustainability Director - JBS*

Retail – Key Findings

Retailers invest in sustainability to protect their reputation, and as a way to engage consumers

- Consumer-facing companies such as McDonalds and Carrefour have a direct opportunity to ‘sell’ sustainability as a product differentiator, and pressure to maintain their reputation
- Retailers also benefit from forging healthy relationships in the supply chain (ensuring supply quality and continuity), and may benefit from talent retention and lower cost of capital

Examples of Practices

- Monitoring of suppliers with satellite imaging tools
- Selection of suppliers upon consultation of public lists that control for Environmental, Labor and Indigenous issues
- Expose sustainable products and communicate attributes (e.g. certification logos)

Results

- Guarantee of ‘first level deforestation-free’
 - Full traceability is not yet possible
- Identified potential benefits of U\$13-62Mn with extrapolation¹
- Additional (differentiated and premium) product offering

1. Extrapolation refers to the scenario that assumes that 15% of purchased beef is sustainable, which is a tipping point where the business case becomes more relevant and attractive

Source: A.T. Kearney

Retailers Improve Revenues, Reduce Risk

US\$ Mn, NPV	Benefit group	Carrefour		McDonald's	
		Min	Max	Min	Max
Benefits	Cost Reduction	0.0	0.0	0.0	0.0
	Revenue Increase	5.7	17.0	3.4	10.2
	Risk Avoidance	6.4	27.2	2.5	10.6
	Financials ¹	0.3	1.0	0.3	1.0
	Other	1.3	7.0	0.4	2.2
	Total Benefits	13.6	52.2	6.6	24.0
Costs and Investments	Infrastructure & Ongoing Costs ²	6.7	12.2	0.9	1.7
Net Gain	Benefits – Costs	6.8	39.9	5.7	22.2
	% of Revenues	0.01%	0.07%	0.18%	0.68%

1. Includes gains from increase in Market Cap (US\$92-277k and US\$780 -2,342k)

2. Cost information was not shared, internal estimates (tools subscription + increase in costs of beef by 0.5-1%)

Source: A.T. Kearney

Retailers – Testimonials

Retailer sustainability commitments are shaped by consumer demand, as well as reputational and supply chain risk



Rainforest Alliance certified beef sold under Carrefour's private label "Garantia de Origem". RA logo shown on beef São Paulo – SP



Rainforest Alliance logo on beef, at Emporium Gourmet, Barretos – SP



Certified beef sold as 'premium beef' in specialized beef store, under private label created by certified producer, at Emporium Gourmet, Barretos – SP

*"McDonald's standards in beef sourcing are among the highest in the world, **even if our mass consumer is not willing to pay premiums for sustainability** we still have to maintain them"*
Daniel Boer, Director protein supply LATAM, McDonald's

*"**Turnover** at our business is by nature extremely high (80-100%) **so practices that reduce it, are clearly very welcome**"* Leonardo Lima, Sustainability Director, Arcos Dourados

*"**Beef** is one of the six supply chains that Carrefour considers critical, and where we must dedicate efforts to avoid impact"* Paulo Pianez, Sustainability Director - Carrefour

*"In 2009, after Greenpeace's report on beef and amazon deforestation, **we had to reduce our supply base to as few as six different suppliers**. Which is not a ideal position to be in in terms of price and volume negotiations"*
Paulo Pianez, Sustainability Director - Carrefour

*"**Sustainable and organic food is a big bet of the company**. We are opening a flagship store in São Paulo in which these two attributes will play a central role in visual communication and general messaging to clients"* Paulo Pianez, Sustainability Director - Carrefour

- Testing the methodology in the automotive industry: GM, VW, Aston Martin
- Exploring opportunities in fisheries and fashion
- Practitioners Summit at Stern in February
- Articles in academic journals and business journals
- Partnerships with industry and NGO associations