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NATRA CASE STUDY:
MEASURING THE FINANCIAL RETURN ON SUSTAINABILITY INVESTMENT

September 2022

A BETTER WORLD THROUGH BETTER BUSINESS

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INTRODUCTION

As the year 2022 began, Joaquín Muñoz was proud that his employer, Natra, had signed the Climate Pledge, a commitment to achieve net zero carbon emissions by 2040, ten years ahead of the goal set by the 2015 Paris Climate Agreement.[1] Muñoz was Natra's Head of Sustainability, responsible for understanding the social and environmental impacts of the company's activities, identifying sustainable operating methods, and making the business case for sustainability.

Muñoz had championed the view that organizing the company's operations to produce positive social and environmental impacts was more than an ethical choice. It would also improve the company's competitive position and deliver long-term financial gains. Quantifying the financial gains was a real challenge, though. To do it convincingly, he had to demonstrate how the impact of Natra's activities on people and the environment affected the company's financial performance. This required a new approach to quantifying and monetizing factors that were traditionally treated as externalities, outside the scope of the company's financial reporting.

[1] The Paris Agreement is an international treaty adopted by 196 countries in Paris on December 12, 2015. Its goal is to limit global warming to less than 2 degrees Celsius compared to pre-industrial levels.

[2] 1 metric tonne = 1,000 kilograms, or 2,204.6 pounds (approximately 1.1 U.S. ton)

NATRA AND THE CHOCOLATE INDUSTRY

Natra was a Madrid-based processor and wholesaler of chocolate that supplied leading retail and consumer brands, primarily in Europe, but increasingly around the world as well. Natra participated in the midstream portion of the chocolate value chain **(Figure 1)**. The company purchased raw cocoa beans from exporters in the West African nations of Cote d'Ivoire and Cameroon, and imported them to its preliminary processing facility in Valencia, Spain. It then manufactured a variety of intermediate and finished chocolate products – many of which it packaged for sale by retailers – in five plants in Spain, France, Belgium, and Canada.

Natra was one of the smaller competitors in the industry. It was dwarfed by firms such as Cargill, Olam, and Barry Callebaut. The largest of Natra's direct competitors specializing in chocolate was Barry Callebaut, a publicly held Swiss firm with revenues more than ten times greater than Natra's. Barry Callebaut processed roughly one million metric tonnes[2] of cocoa beans annually, more than 20% of the global cocoa crop, producing sales of over 7.2 billion Swiss francs (US $7.7B – see **Appendix 1** for key financial statement metrics). It operated 60 production facilities around the world and produced chocolate for many leading mass market and gourmet brands.

Figure 1: Natra's Role in the Chocolate Value Chain

Source: [Figure 1] Food and Agriculture Organization of the United Nations and Bureau d'analyse sociétale pour une information citoyenne, "Comparative study on the distribution of value in European chocolate chains," 2020, https://www.cocoainitiative.org/knowledge-hub/resources/comparative-study-distribution-value-european-chocolate-chains, accessed 22 June 2022.

SUSTAINABILITY ISSUES IN THE CHOCOLATE INDUSTRY

The chocolate industry faced social and environmental sustainability issues with profound local and global impacts – from the standard of living in cocoa farming communities to global climate change.

Social Issues

The most dramatic social challenges faced by the chocolate industry were found on cocoa farms, which were plagued by issues that many Westerners believed had been resolved in the 19th century – most notably, the widespread use of child labor, and even forced labor. A related issue was the inability of five million cocoa farmers worldwide to earn a living wage and work their way out of extreme poverty.

Child Labor: In Cote d'Ivoire and Ghana – countries that produced over 60% of the global cocoa bean crop – more than 1.5 million children regularly worked on cocoa farms either full-time or enough to interfere with school attendance. Two-thirds to three-quarters of them regularly performed hazardous tasks, including clearing forest, felling trees, and removing tree stumps; carrying heavy loads; using agrochemicals; using sharp tools such as machetes; working at night between 7 p.m. and 7 a.m.; and using motorized farm machinery.[3]

Extreme Poverty: A study of cocoa farm households in Ghana found that less than 10% earned a living income – defined as the net annual income required in a particular place to afford a decent standard of living, including food, water, housing, education, health care, transportation, clothing, and other essentials **(Figure 2)**.[4] Similar conditions prevailed throughout the West African cocoa farming industry. Not only were living conditions dire, but farmers did not have the financial, technical, or educational means to improve their farms' productivity and earning potential.

Environmental Issues

Cocoa farming often contributes to large-scale deforestation. Farmers cleared forests to cultivate more land, either because existing farm soils were depleted or simply to expand farm output and income. Mature forests are a kind of "carbon sink," which over centuries have accumulated carbon through photosynthesis and stored it in the soil and in tree and vegetation biomass. Clearing the trees, often burning them, and tilling the soil for planting releases this carbon into the atmosphere – contributing to global warming and climate change. Deforested areas then become much less able to remove carbon dioxide from the atmosphere and store it, reducing the environment's on-going ability to mitigate carbon-driven climate change.

The impact of deforestation on climate change remains an urgent global concern. It has been estimated that deforestation is responsible for 14% to 21% of worldwide carbon dioxide emissions,[5] making the preservation of forests an essential part of any climate change solution. Since cocoa farming was responsible for an estimated 25% of deforestation in Cote d'Ivoire and 33% of deforestation in Ghana from 2001 through 2015,[6] the chocolate industry's climate impact was significant on a global scale.

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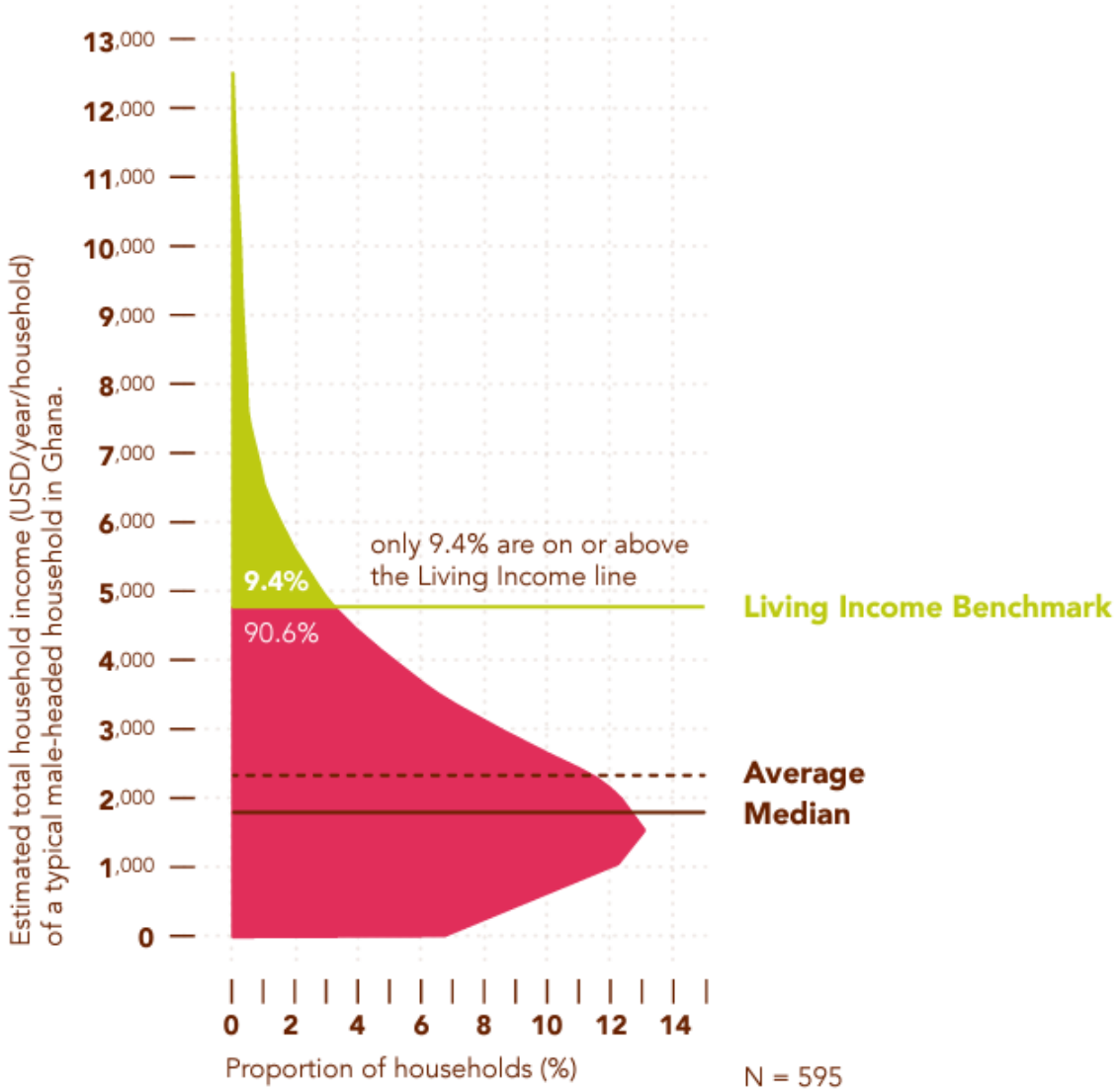
3 Fountain, A.C., Huetz-Adams, F., "Cocoa Barometer 2020," International Cocoa Initiative, 2020, https://www.cocoainitiative.org/knowledge-hub/resources/2020-cocoa-barometer, accessed 17 May 2022

4 Ibid.

5 Drawdown.org, "Forest Protection," https://www.drawdown.org/solutions/forest-protection, accessed 28 June 2022.

6 Boysen, O., Ferrari, E., Nechifor, N., Tillie, P., "Impacts of the Cocoa Living Income Differential Policy in Ghana and Côte d'Ivoire," European Joint Research Commission Science for Policy Report, Sept 2021, https://op.europa.eu/en/publication-detail/-/publication/bd4ad048-0ebc-11ec-b771-01aa75ed71a1/language-en, accessed 22 June 2022

Figure 2: Distribution of Cocoa Farmer Household Incomes



Source: Fountain, A.C., Huetz-Adams, F., "Cocoa Barometer 2020," International Cocoa Initiative, 2020, https://www.cocoainitiative.org/knowledge-hub/resources/2020-cocoa-barometer, accessed 17 May 2022.

The Real Value Chain

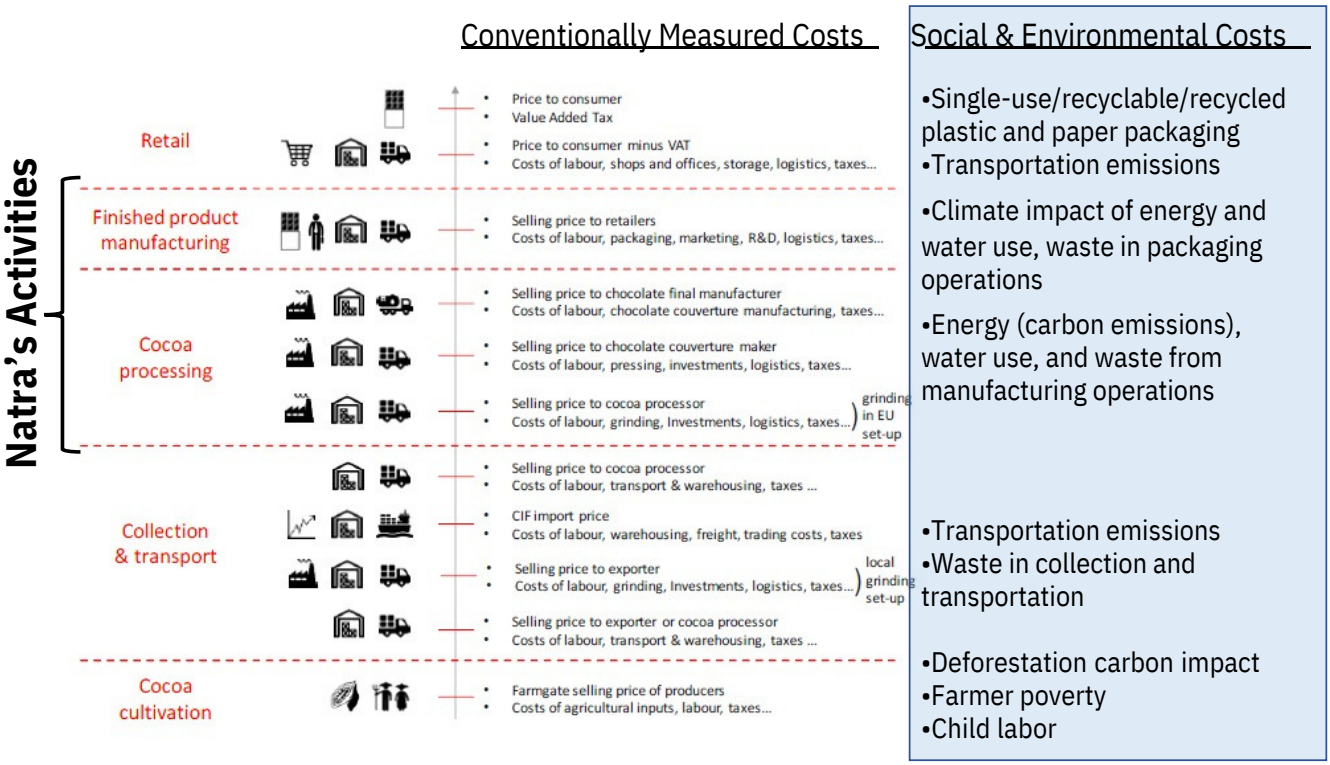
It is ironic that chocolate, one of the everyday luxuries casually enjoyed by consumers in wealthy nations, comes with substantial social and environmental costs. And yet, as real as these costs were, they were not reflected in the traditional view of the industry value chain **(Figure 1)**. In a perfect market, the price of chocolate to the end consumer should compensate for all of the costs in its value chain. In practice, though, these social and environmental costs never appeared on a financial statement – not Natra's, its upstream suppliers', or downstream retail brands'. From a financial reporting and analysis perspective, these impacts did not exist. At least, they were not considered costs of producing chocolate. They were 'externalities' – unquantified and unaccounted-for impacts borne by entities outside the company and outside the industry. In this case, they were borne by cocoa farming households, their national economies, and the global environment.

Neither Natra nor its competitors owned a single farm, yet deforestation and child labor were embedded in the industry's real value chain **(Figure 3)**. The social and environmental impacts resulting from chocolate production were real, but not quantified or monetized, and not attributed to the industry's activities. If, as Peter Drucker famously said, "What gets measured, gets managed,"[7] then Natra and the chocolate industry would have to find a way to measure their heretofore-unaccounted impacts.

The Upstream Value Chain

An estimated 70% of cocoa beans were produced on small farms that averaged 5 hectares (12.5 acres).[8] Small cocoa farmers used traditional, inefficient farming methods and relatively unskilled manual labor. Five million cocoa farmers worldwide supplied a handful of large chocolate manufacturers and consumer brands.

Figure 3: Another View: The Real Cocoa Value Chain



Based on: Food and Agriculture Organization of the United Nations and Bureau d'analyse sociétale pour une information citoyenne, "Comparative study on the distribution of value in European chocolate chains," 2020, https://www.cocoainitiative.org/knowledge-hub/resources/comparative-study-distribution-value-european-chocolate chains, accessed 22 June 2022.

If the industry served all of its participants' economic needs, farmers should have been able to sell their crop at a price that would (a) provide them and their laborers a living wage, (b) ensure that their children could escape farmwork enough to attend school, and (c) allow them to acquire the tools and training that would improve their farms' productivity, earning power, and sustainability. However, competition from farmers willing to forgo these benefits would inevitably make this impossible. A small farmer had no pricing power in the global commodity markets, which were controlled by large chocolate makers and commodity traders in distant countries.

[7] Drucker, P., The Practice of Management, Harper Business (Reissue edition), 2006

[8] International Institute for Sustainable Development, "Global Market Report: Cocoa," IISD.org, 20 Nov 2019, https://www.iisd.org/publications/report/global-market-report-cocoa, accessed 14 May 2022

Regulatory Response

As a regulatory attempt to improve the cocoa farmers' situation, the governments of Cote d'Ivoire and Ghana – representing 45% and 17% of global cocoa bean production, respectively – instituted a Living Income Differential (LID), beginning with the 2020/2021 harvest. The LID added US $400/metric tonne to the price of cocoa beans exported from these countries – roughly a 20% increase. The governments allocated 70% of the LID directly to farmers.[9] Unfortunately, the impact of this additional revenue on living standards was not yet clear. The LID was intended to put more money in farmers' pockets and contribute to reducing child labor, forced labor, and deforestation. Its actual impact had not yet been measured.

THE INDUSTRY TAKES ACTION

In the major chocolate-consuming markets, changes in consumer attitudes, regulation, and the competitive environment were bringing change to the industry. Retail chocolate brands – Natra's customers – increasingly specified chocolate made from sustainably sourced cocoa. This shift opened new avenues of sales growth for midstream manufacturers, like Natra, if they could serve this growing demand. Gross margins on sustainably produced chocolate were 50% higher than margins on conventional chocolate. Together, the financial benefits of potential sales growth and higher profitability made sustainable sourcing a strategy that required little additional justification – as long as competition did not erode those margins or that growth opportunity.

Many of Natra's competitors were adopting significant sustainability strategies. Companies representing more than 60% of global chocolate production had committed to operate fully sustainable chocolate value chains by 2025, and they were already making significant progress toward meeting that goal. Barry Callebaut, for example, reported that in the 2019-2020 fiscal year, products containing 100% sustainable cocoa accounted for 37% of its production volume.[10]

Natra had recently adopted a new Sustainability Strategy 2026 **(Appendix 2)**. Going beyond the company's commitment to net-zero carbon emissions, the strategy focused on transforming Natra's activities in areas that included both responsible sourcing and environmental concerns – issues central to the sustainable sourcing of cocoa beans.

With such broad ambitions, Natra's sustainability work touched almost every aspect of the company's activities. Muñoz was responsible for making the business case and planning the execution of sustainability initiatives. However, he could make little progress until he was able to demonstrate clearly the financial returns of the investments under consideration.

9 Boysen, O., Ferrari, E., Nechifor, N., Tillie, P., "Impacts of the Cocoa Living Income Differential Policy in Ghana and Côte d'Ivoire," European Joint Research Commission Science for Policy Report, Sept 2021, https://op.europa.eu/en/publication-detail/-/publication/bd4ad048-0ebc-11ec-b771-01aa75ed71a1/language-en, accessed 22 June 2022

10 Barry Callebaut Group, "Forever Chocolate Progress 2019/20," https://www.barry-callebaut.com/en/group/forever-chocolate/sustainability-reporting/progress-report-201920, accessed 19 May 2022

ROSI: MEASURING THE FINANCIAL IMPACT OF A SUSTAINABLE VALUE CHAIN

Sustainability advocates made the case that traditional profit and loss analyses failed to identify and quantify fully the benefits (and risks) associated with doing business in a more planet- and people-friendly way. Because these impacts were not quantified, they were difficult to integrate into a company's strategic decision-making process – and so they were not managed. As Natra embraced the sustainable business ethic and evaluated specific new practices and programs, it needed a systematic way to quantify their financial value. To that end, Natra engaged the Center for Sustainable Business (CSB) at New York University's Stern School of Business. CSB applied an original methodology called Return on Sustainability Investment, or ROSI **(Appendix 3)**, to estimate the financial impacts of environmentally and socially sustainable practices on business operations.[11]

ROSI provided a systematic method for identifying, quantifying, and attributing a monetary value to sustainability initiatives. It began by analyzing a company's activities through a framework of nine general "Mediating Factors" whose impact on financial performance was easy to understand. These were:

1. Risk management
2. Stakeholder engagement
3. Operational efficiency
4. Talent management
5. Supplier relations
6. Media coverage
7. Customer loyalty
8. Sales and marketing
9. Innovation

ROSI then systematically led the analysis through quantifying each benefit and then estimating its financial value. Muñoz and the CSB team produced a detailed framework for calculating the ROSI for shifting from conventional to sustainable chocolate at Natra (Table 1).

[11] Atz, U., Van Holt, T., Douglas, E., Whelan, T., "The Return on Sustainability Investment (ROSI): Monetizing Financial Benefits of Sustainability Actions in Companies." In: Bali Swain, R., Sweet, S. (eds) Sustainable Consumption and Production, Volume II. Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-030-55285-5_14, accessed 21 June 2022

SUSTAINABLE SOURCING: ENSURING REAL IMPACT

For some consumer brands, simply putting a sustainability certification label, such as "organic" or "fair trade," on their product packaging was their goal; they wanted to project a socially and environmentally friendly brand persona to enhance their appeal to certain consumers. Others were more deeply committed to changing the industry's impact, and were willing to 'get their hands dirty' implementing sustainability action plans. Indeed, some of Natra's largest competitors, like Barry Callebaut and Cadbury, believed that real sustainability was not assured by simply purchasing sustainability-certified cocoa beans. Studies in Ghana, for example, had shown that among farmers growing sustainable cocoa beans, the percentage earning more than the Living Income benchmark barely rose, increasing from 9.4% to just 12%.[12] Other studies found it difficult to track the sustainability of beans that were aggregated from numerous small, rural farmers. To achieve their sustainability goals, these chocolate manufacturers believed that they would have to take action directly leading to improved outcomes that could be quantified.

At one end of the value chain, consumer brands were willing to pay a premium for sustainable chocolate. Since cocoa beans represented only about 5% of the retail price of most chocolate products, increasing the cost of beans by 20%, as the LID did, would increase the cost of the final product by just 1% of sales (20% x 5%). At the other end of the value chain, converting conventional cocoa farms to sustainable production would impose costs and risks on small farmers that they were not able to assess or manage. They simply did not have the necessary expertise, labor force, or financial resources. For example:

- Fair trade certification required farms to eliminate child labor. This meant incurring higher labor costs when children were replaced by paid adult laborers, and it required farmers to accept these higher costs during the growing season in the hope of realizing substantially higher prices after harvest. However, cocoa bean prices fluctuated significantly from year to year and small farmers were not equipped to accept or mitigate these risks. Employing their children on the farm was the less financially risky option.
- As cocoa farms age, they require replanting and soil regeneration to maintain their productivity. Small farmers often found it less expensive to clear virgin forest – contributing directly to deforestation. In contrast, state-of-the-art agricultural methods could teach farmers how to plant their farms more intensively, regenerate their soil, and maintain their cocoa trees using methods that boosted productivity, but this knowledge was not readily accessible to most small farmers, and implementation might not be affordable. Modern productivity 'best practices' also sometimes clashed with traditional beliefs. For example, many farmers believed that aggressive pruning of cocoa trees would reduce yields by removing branches, whereas proper pruning methods actually increased yield. Without training, small farmers continued using traditional, inefficient methods.
- Organic certification required farms to eliminate all use of chemical herbicides, pesticides, and fertilizers for a period of three years before they could be certified. During this period, crop yields often declined as farmers learned new methods of controlling pests and fertilizing crops. Therefore, farmers converting to organic methods had to be willing to accept lower income in the short term for the promise of higher income later. But farmers who typically earned less than US $1.90/day could not accept less income for a three-year period. Furthermore, they had no guarantee that their income would rise in the long term.

[12] Fountain, A.C., Huetz-Adams, F., "Cocoa Barometer 2020," International Cocoa Initiative, 2020, https://www.cocoainitiative.org/knowledge-hub/resources/2020-cocoa-barometer, accessed 17 May 2022

Table 1: ROSI Framework for Transitioning to Sustainable Cocoa Supply: Quantifying and Monetizing Potential Benefits

Mediating Factors	Benefits and Risks	Quantification Metrics	Monetization
Risk Management	Risk avoided: Potential sales declines and reputational risk as demand for non-sustainable products declines	• Declining price received and profits realized as market share of conventional (non-sustainable) chocolate falls	• (Declining revenue as conventional market shrinks) x (Declining margins as operational utilization drops and efficiency declines)
	Risk avoided: Engagement with environmental activists and regulators reduces risk of boycotts, negative publicity	• Potential business loss Requests for Proposal (RFPs)* lost due to negative publicity	• (% decline in RFP* wins) x (average RFP* value)
Stakeholder Engagement	Benefit: Stronger engagement with sustainability-focused brands and retailers (customers)	• Improved retention rate for established customers	• (Annual profit of retained customers) x (improvement in customer retention rate)
		• Increase in successful new customer sales pitches	• (Sales leads) x (potential profitability) x (probability of closing deal)
	Benefit: Engagement with farmers, exporters	• Reliable supply relationshps	• (Reduced risk of supply disruption costs) x (Probability of supply disruptions)
	Benefit: Engagement with owners / stockholders / financial markets	• Increased willingness to invest in R&D, business development • Better access to, and reduced cost of, capital	• Capital costs – present value of lower bond interest rates or higher equity valuation
	Benefit: Engagement with employees	See *Talent Management*	
	Benefit: Engagement with environmental activists, government regulaors	See *Risk Management*	
Ops. Efficiency	Benefit: Closer coordination with farmers re: desired crop characteristics, quality, timing	• Reduction in operational down time	• (Lower operational costs per unit of production) x (Production volume)
Talent Management	Benefit: Employee engagement driving stronger learning/expertise motivation, innovation, social/environmental impacts	• Reduced employee turnover rate	• (Reduced turnover) x (recruiting/training costs)
		• Improved operational efficiency	• (Lower operational costs per unit of production) x (Production volume)
		• Improved innovation impact	• (Potential margin value of innovations) x (probability of developing innovations)

Table 1 (continued): ROSI Framework for Transitioning to Sustainable Cocoa Supply: Quantifying and Monetizing Potential Benefits

Mediating Factors	Benefits and Risks	Quantification Metrics	Monetization
Supplier Relations	Benefit: Improved farmer relationships create better supply and contracting terms	• Natra: Increased ability to bid on new business due to secure supply and contractual terms	• (% increase in RFP* wins) x (average RFP* value)
Earned Media	Benefit: Positive media for combatting child labor, raising living standards, fighting deforestation	• Number and reach of stories where (a) Natra avoids negative or (b) gains positive mention in trade media	• Imputed value of audience impressions • (Sales leads generated as a result) x (potential profitability) x (probability of closing deal
Customer Loyalty	Benefit: Positions Natra as trusted source for both conventionally sourced AND sustainable chocolate – reducing risks to established customer relationships	• Customer retention rate	• (Change in customer retention rate) x (profitability of retained customers)
		• Incremental sales volume with established customers	• (Potential volume growth) x (profitability)
		• Improved efficiencies with larger sales volumes to established customers	• Potential reduction in operational costs
Sales & Marketing	Benefit: Establishes Natra as trusted, expert supplier in important new, sustainable market segment	• Increased access and ability to close deals through stronger supplier relationships and customer confidence	• (Number of potential new RFPs) x (probability of closing deal) x (projected volume) x (profitability)
	Benefit: Builds in-house expertise and relatedly builds industry network as innovator, expert	• Other new business opportunities identified via reputation and networking – e.g., new products, methods, sources	• Value of potential new products • (Potential operational cost reductions via new methods) x (production volume)
Innovation	Benefit: Improves relationships all along the value chain by promoting innovation all along value chain: farming methods, cocoa bean processing, chocolate manufacture	• Potential value of new methods, new products, new business	• Potential cost savings • Potential value of new products and new business relationships

**The RFP manufacturers and wholesalers in the middle of the value chain sell to consumer-facing brands at the end of the value chain. One way that these supplier relationships are established is via Requests for Proposal (RFPs) from consumer-facing clients. The RFP outlines the client's specifications for specific chocolate characteristics (e.g. milk or dark chocolate, packaging characteristics, and sustainability attributes), as well as the client's needs for volume and timing of delivery. Several suppliers can then bid on the same 'piece of new business' and the client can compare their bids on an 'apples-to-apples' basis.*

BEYOND CERTIFICATION

For these reasons, chocolate manufacturers that were convinced of the long-term benefits of sustainable sourcing had begun to look beyond simply buying sustainably certified cocoa beans. They wanted to ensure that they achieved the social and environmental goals that would both contribute to a thriving chocolate industry in the long term and appeal to chocolate consumers. Through initiatives that were often referred to as Beyond Certified, some chocolate manufacturers worked directly with farmers organizations to introduce sustainable methods, improve productivity, and measure the results. Barry Callebaut, for example, in its Beyond Certified initiative dubbed 'Forever Chocolate,'[13] had committed to achieve four environmental and social milestones by 2025:

1. Lifting over 500,000 cocoa farmers out of poverty;
2. Eliminating all child labor from its supply chain;
3. Operating in a carbon-positive and forest-positive way (that is, regenerating both the atmosphere and global forest cover); and
4. Using 100% sustainable ingredients in all of the company's products.

In one example of a program with a significant impact, Barry Callebaut reported that its productivity programs – which provided coaching, tools, and financial services to farmers – were delivering a 23% improvement in productivity on Cote d'Ivoire cocoa farms.[14] This improvement contributed to all four of Barry Callebaut's 2025 goals: (1) improving living standards by raising revenue per cultivated hectare; (2) reducing the pressure to use child labor by improving the farmer's ability to hire adult laborers; (3) reducing the pressure to clear forests by improving the productivity of existing farms; and (4) ensuring that cocoa beans were grown sustainably by getting directly involved in farmers' agricultural practices.

As industry giants like Barry Callebaut and Cadbury scaled up their Beyond Certified initiatives, Muñoz was evaluating his own program. His team at Natra had analyzed the operational requirements and estimated the costs and potential revenue gains such an initiative would produce. The most likely scenario showed the initiative reaching a maximum net investment (negative contribution) of about €170,750 in Year 2, with cumulative payback not occurring until Year 5 (Table 2, row i). Unfortunately, he did not expect this outcome to be embraced by senior management.

[13] Barry Callebaut Group, "Forever Chocolate Progress 2019/20," https://www.barry-callebaut.com/en/group/forever-chocolate/sustainability-reporting/progress-report-201920, accessed 19 May 2022

[14] Barry Callebaut Group, "Progress Report 2016/2017: Ever Thought About Where Your Chocolate Comes From?", https://www.barry-callebaut.com/en/group/media/news-stories/barry-callebaut-publishes-progress-report-forever-chocolate-201617, accessed 31 May 2022

Table 2: Payback Analysis: Natra "Beyond Certified" Program

			Year 1	Year 2	Year 3	Year 4	Year 5
Program Enrollment and Production							
(a)	Number of farmer cooperatives		4	5	6	8	10
(b)	Number of families		1,860	2,140	2,420	2,980	4,280
(c)	Volume of "Beyond Certified" beans	metric tonnes	2,400	3,100	3,800	5,200	7,000
Incremental Profit Opportunity for Natra via Premium Pricing							
(d)	Premium revenue, Beyond Certified	= € 240 x (c)	€ 576,000	€ 744,000	€ 912,000	€ 1,248,000	€ 1,680,000
(e)	Incremental Variable Costs *	= € 176.5 x (c)	(423,600)	(547,150)	(670,700)	(917,800)	(1,235,500)
(f)	**Incremental Gross Profit**	**= (d) – (e)**	**€ 152,400**	**€ 196,850**	**€ 241,300**	**€ 330,200**	**€ 444,500**
(g)	Incremental Fixed Costs *		(288,000)	(232,000)	(232,000)	(232,000)	(232,000)
(h)	**Net Incremental Profit**	**= (f) – (g)**	(135,600)	(35,150)	9,300	98,200	212,500
Payback							
(i)	**Cumulative Incremental Profit**		**€ (135,600)**	**€ (170,750)**	**€ (161,450)**	**€ (63,250)**	**€ 149,250**

** NOTES*

- *Incremental variable costs include: Rainforest Alliance premium, agronomic & deforestation support, community investment*
- *Incremental fixed costs include: initial diagnostic and start-up costs, on-going audits, local staff and travel • Years 2 through 5 data not adjusted for inflation*
- *This table is modeled on more detailed company estimates, but modified to serve instructional goals*

Muñoz worried that Natra risked being marginalized by its much larger competitors if it did not pursue its Beyond Certified initiative. As its competitors developed expertise, partnerships, and operating methods to compete in this new market, they might leave Natra behind, where it could compete only for a dwindling share of the chocolate market at lower profit margins.

QUANTIFYING AND MONETIZING THE IMPACTS OF A BEYOND CERTIFIED PROGRAM

Muñoz believed that the conventional payback analysis in Table 2 did not fully reflect the program's potential benefits to Natra. To demonstrate the financial value of these additional benefits, he asked his team to review all the possible ways that sustainable sourcing initiatives might produce quantifiable and monetizable benefits, using the ROSI framework outlined in Table 1.

Specifically, Muñoz asked his team to answer these questions:

ROSI Benefit #1: Can the Beyond Certified Program Grow Natra's Sales Funnel? If So, What Is the Financial Value of This New Market Segment to Natra?

The most easily estimated benefits were uncovered through the Sales and Marketing 'mediating factor.' Whereas the traditional payback period analysis (Table 2) had estimated the value of higher margins for Beyond Certified chocolate, Beyond Certified also had the potential to give Natra access to new clients – consumer-facing brands participating in a growing market segment. Beyond Certified attributes would qualify Natra to pitch new business with consumer brands and retailers that required high-quality chocolate with specific social and environmental benefits beyond just a sustainable logo.

Chocolate that could claim to be fighting poverty, deforestation, and child labor was a powerful value proposition. It was currently a small segment of the market, but it was growing. Muñoz believed that the segment would become much more important as the impacts of climate change became clear to a growing number of consumers. A Beyond Certified program would open up this market segment to Natra's participation. To develop the ROSI estimate of the new business value of this segment to Natra, the Sales and Marketing department was asked for its outlook. They provided the following data and assumptions:

Incremental Requests for Proposal (RFPs)

Beyond Certified would qualify Natra to bid on a small – but hopefully growing – number of Requests for Proposal (RFPs) for chocolate that would appeal to a socially and environmentally conscious customer base. Natra was not currently included in the set of suppliers qualified to lead with this value proposition. Barry Callebaut, among others, had already made substantial progress in this area, and its dominant market share cemented its advantage. Sales and Marketing determined that:

- Natra would have access to just a handful of RFPs in the first few years. However, Muñoz expected this number to grow more rapidly in 3 to 5 years.
- Natra's RFP 'win rate' (number of new contracts awarded for Beyond Certified chocolate) would be low at first, as its new Beyond Certified capabilities became known, but would grow along with its reputation and the pull from consumer demand.
- The specialty nature of this sub-market meant that the value of the RFPs themselves would be small as well, with more valuable RFPs becoming available in later years.
- Having already accounted for the costs of the program in the conventional payback analysis (Table 2), Natra would incur no additional cost to bid on these RFPs.

The Sales team presented Table 3 as its 'most likely' scenario.

Table 3: ROSI Analysis: Sales & Marketing Value of Beyond Certified Program

- PLEASE COMPLETE CALCULATIONS IN ROWS (g) AND (h) BELOW:

Estimates Provided by Sales Team							
			Year 1	Year 2	Year 3	Year 4	Year 5
(a)	Incremental RFPs open to Natra bid per year		1	2	3	3	4
(b)	Avg. Natra win rate on incremental business		10%	15%	20%	22.5%	25%
(c)	Avg. RFP revenue value/year		€ 1,000,000	€ 1,100,000	€ 1,150,000	€ 1,200,000	€ 1,250,000
(d)	Estimated incremental sales	(a) x (b) x (c)	€ 100,000	€ 330,000	€ 690,000	€ 810,000	€ 1,250,000
(e)	**Est. incremental operating profit @ 7.5% x sales ***	(d) x 7.5%	**€ 7,500**	**€ 24,750**	**€ 51,750**	**€ 60,750**	**€ 93,750**
Revised Payback Period Analysis – *PLEASE CALCULATE*							
(f)	Baseline from Table 2, row (h): Annual incremental profit/(loss)		(135,600)	(35,150)	9,300	98,200	212,500
(g)	**Annual profit/(loss) impact of Beyond Certified business segment**						
(h)	**Cumulative Profit/(Loss) (€ 000)**						

** 7.5% = 5-year average operating profit (EBIT) at Natra, similar to that reported by Barry Callebaut (Appendix 1). This is almost certainly too conservative – Muñoz believes there would be no incremental fixed costs for additional orders of this size, but decided to use this figure for the sake of credibility with senior management.*

Additional questions that Muñoz needed to answer included:

- Is the estimated value above purely incremental or does it overlap or change some element(s) of the payback analysis in Table 2?
- How speculative, or risky, are these projections?
  - What is the risk if Natra achieved no new business wins?
  - What is the potential believable upside if any assumptions in Table 3 are improved?
- How can the team improve the credibility of its estimates in the eyes of senior management?

ROSI Benefit #2: Estimate the Financial Value TO NATRA of Increasing Farm Productivity

Muñoz noted that Barry Callebaut had published claims that its Forever Chocolate program delivered a 23% average improvement in farm productivity.[15] A simple, back-of-the-envelope calculation showed that this outcome was extraordinarily beneficial to farmers (Table 4). It produced a 47.6% increase in annual farm profits as (1) volume improved with productivity gains and (2) crop value increased due to the higher value of sustainably produced cocoa beans. This benefit contributed to Barry Callebaut's sustainability goals, as previously noted.

Table Table 4: Value of 23% Productivity Improvement TO FARMERS

			Without Program	With Program	Change	Change %
(a)	Average farm size		5 hectares (12.5 acres)	5 hectares	--	
(b)	Avg. crop yield		380 kg/hectare	467.4 kg/hectare	87.4 kg/hectare	23.0%
(c)	Avg. farmer revenue per kg		€ 1.375/kg	€ 1.65/kg *	€ 0.275/kg *	20.0%
(d)	Avg. annual farm revenue	= (a) x (b) x (c)	€ 2,612.50	€ 3,856.05	€ 1,243.55	47.6%
(e)	Avg annual farm profit (@ 62% **)	= (d) x 62%	€ 1,619.75	€ 2,390.75	€ 771.00	47.6%

** Revenue estimate assumes a 20% premium for Beyond Certified crops compared to conventional cocoa bean pricing for simplicity.*
*** Farm profit margin estimates based on published studies of Indonesian cocoa farms, applied to Beyond Certified crops as well for simplicity.* [16]
Note: Financial data is modeled on company estimates, but modified to serve instructional goals.

However, the 47.6% increase in the value of farmers' crops that was estimated above (Table 4) was intended to benefit the farmers – lifting them out of poverty – not Barry Callebaut. While this was very nice, Muñoz believed that his large competitor must have also identified financial benefits to Barry Callebaut itself. Despite its leadership in the sustainability initiatives, it was still a profit-making venture!

[15] Ibid.

[16] Jumiyati, S., et al, 2021, IOP Conf. Ser.: Earth Environ. Sci. 800 (2021) 012049 "Economic and Ecological Adaptation to Changes in Agricultural Land Use to Increase Sustainable Economic Resilience," https://doi.org/10.1088/1755-1315/800/1/012049

◆ PLEASE ANSWER THE FOLLOWING QUESTIONS

- Name at least two ways that a ROSI analysis could help a chocolate manufacturer identify benefits to itself from better productivity upstream on small cocoa farms? *(Use the framework in Table 1)*
- How can we quantify this value in a way that will satisfy Natra's Chief Financial Officer?

Additional ROSI Benefits

Using the framework in Table 1 – but without producing specific estimates – how would the ROSI concepts help Muñoz identify additional benefits of his proposed Beyond Certified program?

◆ PLEASE ANSWER THE FOLLOWING QUESTIONS

- List additional benefits that a ROSI analysis might identify, using the framework in Table 1.
- Which <u>one</u> of these benefits would you expect to have the greatest profit impact?
- For this one benefit:
    1. How would you approach quantifying and monetizing this benefit?
    2. How easily and persuasively can the monetary value of this benefit be estimated?
    3. Will the CFO be convinced?
    4. How much of this benefit will flow through to Natra's standard financial statements?

APPENDIX I

5- Year Financial Statement Summary: Barry Callebaut

Key figures Barry Callebaut Group[1]

		CAGR (%)	2020/21	2019/20	2018/19	2017/18	2016/17 restated
Consolidated Income Statement							
Sales volume	Tonnes	3.4%	2,191,572	2,095,982	2,139,758	2,035,857	1,914,311
Sales revenue	CHF m	1.4%	7,207.6	6,893.1	7,309.0	6,948.4	6,805.2
Gross profit	CHF m	4.6%	1,147.2	1,063.7	1,197.2	1,157.1	958.8
EBITDA (recurring)	CHF m	7.7%	795.2	711.9	775.0	728.3	592.1
Operating profit (EBIT)	CHF m	5.3%	566.7	483.2	601.2	554.0	460.2
Operating profit (EBIT, recurring)	CHF m	6.4%	566.7	491.0	601.2	554.0	442.1
EBIT (recurring) / sales revenue	%		7.9%	7.1%	8.2%	8.0%	6.5%
EBIT (recurring) per tonne	CHF	2.9%	258.6	234.2	281.0	272.1	230.9
Net profit for the year	CHF m	8.1%	384.5	311.5	368.7	357.4	281.1
Net profit for the year (recurring)	CHF m	10.0%	384.5	319.3	394.7	357.4	263.0
Free cash flow	CHF m		355.0	317.0	289.7	311.9	475.6
Adjusted Free cash flow[2]	CHF m		314.9	403.8	256.8	316.6	n/a
Consolidated Balance Sheet							
Net working capital	CHF m	4.5%	1,241.8	1,192.0	1,363.2	1,074.4	1,042.5
Non-current assets	CHF m	4.7%	2,977.9	2,800.1	2,650.0	2,505.5	2,477.7
Capital expenditure	CHF m	5.7%	275.2	280.9	279.6	217.9	220.4
Total assets	CHF m	7.3%	7,244.0	7,141.1	6,508.1	5,832.0	5,466.5
Net debt	CHF m	3.6%	1,281.3	1,365.9	1,304.7	1,074.3	1,110.9
Shareholders' equity	CHF m	6.2%	2,682.9	2,353.5	2,399.3	2,269.8	2,111.2
Ratios							
Return on invested capital (ROIC)[3]	%		12.2%	10.3%	12.5%	12.2%	11.0%
Return on equity (ROE)[3]	%		14.3%	13.2%	15.2%	15.7%	12.5%
Debt to equity ratio	%		47.8%	58.0%	54.4%	47.3%	52.6%
Interest coverage ratio			7.8	6.9	5.2	7.2	4.9
Net debt / EBITDA (recurring)			1.7	1.9	1.5	1.5	1.9
Capital expenditure / sales revenue	%		3.8%	4.1%	3.8%	3.1%	3.2%
Shares							
Share price at fiscal year-end	CHF	14.0%	2,334	2,000	2,024	1,728	1,380
Number of shares issued			5,488,858	5,488,858	5,488,858	5,488,858	5,488,858
Market capitalization at year-end	CHF m	14.0%	12,811.0	10,977.7	11,109.4	9,484.7	7,574.6
EBIT (recurring) per share	CHF	6.4%	103.4	89.6	109.7	101.0	80.6
Basic earnings per share	CHF	10.0%	70.0	57.7	67.6	64.9	47.8
Cash earnings per share	CHF		64.8	57.8	52.9	56.9	86.7
Payout per share	CHF	8.8%	28.0	22.0	26.0	24.0	20.0
Payout ratio	%		40%	39%	39%	37%	39%
Price-earnings ratio at year-end			33.3	34.7	30.0	26.6	28.9
Other							
Employees		5.0%	12,783	12,335	12,257	11,570	10,528
Beans processed	Tonnes	1.6%	987,991	982,725	1,002,025	956,440	925,544

1 Financial performance measures, not defined by IFRS, are defined on page 182.
2 From fiscal year 2017/18 onwards, Adjusted Free cash flow is adjusted for the cash flow impact of cocoa bean inventories regarded by the Group as readily marketable inventories.
3 From fiscal year 2018/19 onwards calculated based on Pro-forma (IFRS 16) and from fiscal year 2017/18 onwards calculated based on Pro-forma (IFRS 15).

Barry Callebaut Group, Annual Report 2020-2021, https://www.barry-callebaut.com/en/group/investors/annual-report-202021, accessed 19 May 2022

APPENDIX II

Natra Sustainability Strategy 2022-2026

APPENDIX III

NYU CSB's ROSI™ Methodology

ENDNOTES

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Barry Callebaut Group, "Progress Report 2016/2017: Ever Thought About Where Your Chocolate Comes From?", https://www.barry-callebaut.com/en/group/media/news-stories/barry-callebaut-publishes-progress-report-forever-chocolate-201617, accessed 31 May 2022

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