How Large Companies in Latin America and the Caribbean Can Influence Natural Resource Use and Environmental Impact Management in Their Value Chains

TECHNICAL STUDY

GREENING VALUE CHAINS

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About the Multilateral Investment Fund

The Multilateral Investment Fund is the innovation lab for the Inter-American Development Bank Group. It conducts high-risk experiments to test new models for engaging and inspiring the private sector to solve economic development problems in Latin America and the Caribbean. The MIF addresses poverty and vulnerability by focusing on emerging businesses and smallholder farmers with the capacity to grow and create economic opportunities.

About Trucost

Trucost provides data and insight to help its clients understand the economic consequences of natural capital dependency to manage risk from volatile commodity prices and increasing environmental costs - and ultimately build more sustainable business models, products and brand. Trucost offers expert advice and research to institutional investors, major corporations, both public and private, and to Government departments and associated agencies. Coverage includes the S&P 500, ASX 200, FTSE All-Share, Russell 1000, Nikkei 225, DJ STOXX and MSCI AWD and S&P/IFCI Large Cap indices.

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EXECUTIVE SUMMARY

Managing value chain environmental impacts and natural resource use has become an important consideration in the purchasing decisions of large publicly traded companies. Suppliers, including micro, small, and medium enterprises (MSMEs) in the Latin American and Caribbean (LAC) region, can increase their competiveness by using best practices in natural resource management and reducing their environmental impacts.

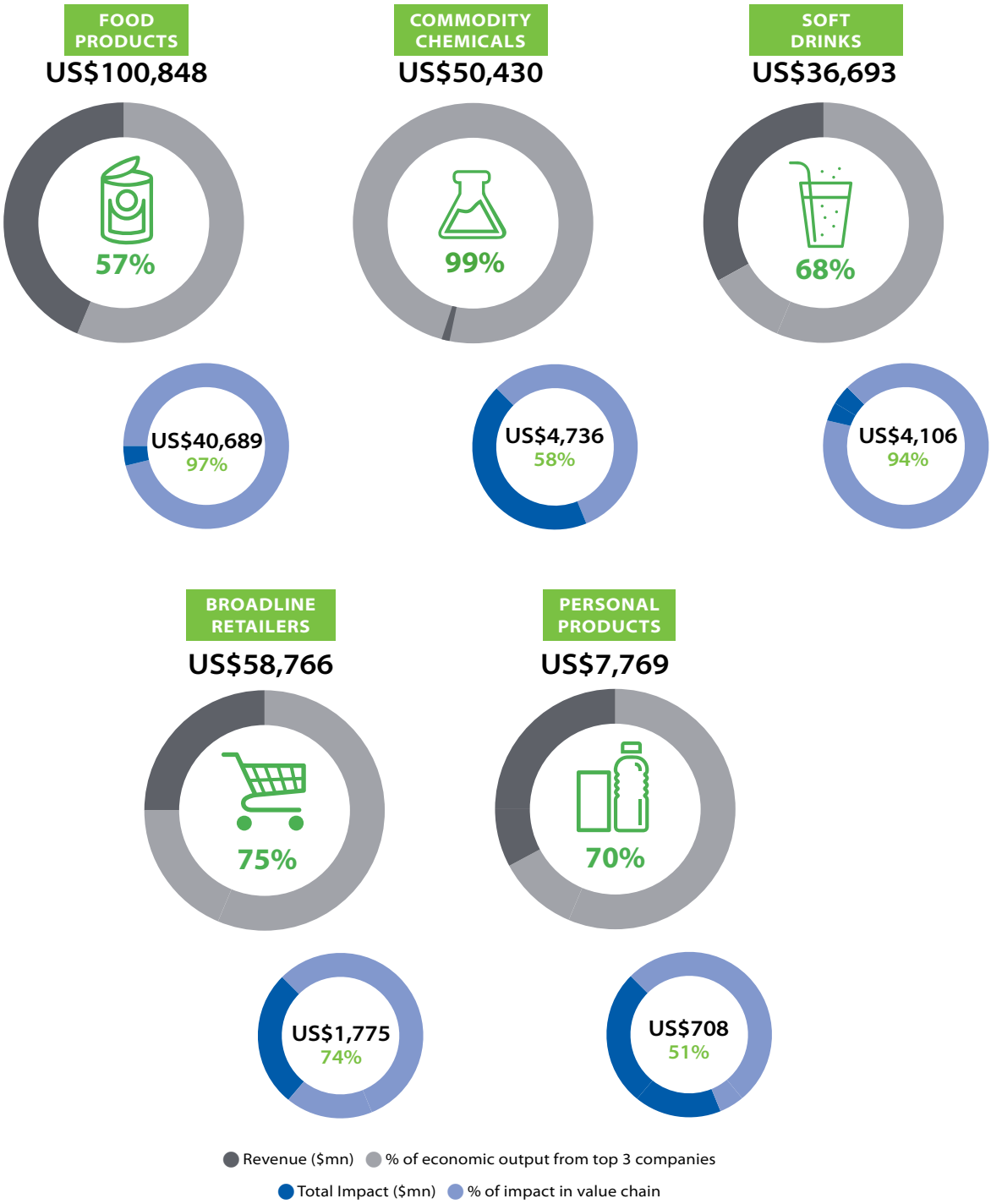
In order to assess how value chain environmental management can improve MSME competitiveness, this study identifies best practices among companies in key economic sectors in LAC with the largest value chain environmental inputs (e.g. water use, commodities) and outputs (e.g. greenhouse gas emissions, waste). Tools and incentive mechanisms that support adoption of best practices were identified and assessed for usefulness.

This study provides valuable guidance to various actors along the value chains of multinational companies that operate in LAC, including suppliers (MSMEs), financial institutions, and other entities (international development organizations, industry associations, research organizations, government agencies, and non-governmental organizations (NGOs)) interested in fostering the development of greener value chains. The identification of key sectors, considering both economic and environmental impact significance, provides interested entities with a ranked list of sectors to work with. The identification of key environmental inputs and outputs is a valuable reference point for prioritizing key issues for LAC companies in each sector. Finally, this study's review of value chain environmental management best practices, tools, and incentive mechanisms supports knowledge sharing, development of greener value chains, improved environmental management of MSMEs, and key areas for supporting investment.

Key economic sectors, key environmental impacts, and common suppliers

The key economic sectors included in this study were selected based on their economic size, total environmental impact, and percentage of impacts associated with the value chain. This information is summarized for the key sectors in the infographic below.

TOP FIVE SECTORS IN LATIN AMERICA AND THE CARIBBEAN WITH SIGNIFICANT VALUE CHAIN IMPACTS



ECONOMIC AND ENVIRONMENTAL DATA FROM 185 PUBLICLY LISTED LATIN AMERICA AND THE CARIBBEAN COMPANIES

Definition of metrics (all from TER data on LAC companies): **'total revenue':** total sector revenue, **'% of economic output from top 3 companies':** as a % of total revenue from the sector, **'total impact':** total direct and indirect environmental impact cost, **'% of impact in value chain':** % of total direct and indirect impact costs associated with the sectors' value chain

Water use and greenhouse gas emissions, respectively, were identified as the most material environmental input and output across all of the sectors. Acid rain, eutrophication and smog precursors emissions (e.g. SOx), and dust and particles were identified as the next two most material environmental output categories across the studied sectors, while agricultural products (e.g. grains, fruit, etc.) and fossil fuel-based energy sources were identified as the next two most material environmental input categories.

The value chains of companies operating within the sectors studied vary according to their specific business activities. The key value drivers in the companies' value chains, where there is the greatest opportunity for MSMEs to add value, are therefore sector-dependent. However, similarities exist across the sectors analyzed. These similarities include key common value chain sectors like credit intermediation and insurance, transportation and logistics, marketing and advertising, packaging materials, and management and legal services. Apart from packaging materials, all the common key sectors are service-based.

Value chain environmental management tools

The **tools reviewed** in this study **provide assistance in one of three key areas:**

- Traceability/transparency of value chain
- Reporting of sustainability
- Implementation of action

Tools such as Historic Futures' "String" and Trucost's "Natural Capital Analyzer Tool – Value Chain Analysis" help companies identify their full value chain from cradle to gate, highlight suppliers or sectors that are the most environmentally intensive, and provide information to support further engagement with or education of suppliers.

Several tools, including EcoVadis and GRI, help companies to report in a strategic and standardized manner, reducing the burden on reporting companies, and also enabling buyers to handle comparable data and widely adopted indicators.

Finally, once the value chain impacts are well understood, companies can engage with suppliers on focus "'hotspot" areas, where impacts are most material. Tools to assist with implementation include certification labels, such as RSPO (Roundtable on Sustainable Palm Oil), RSB (Roundtable on Sustainable Biomaterials), and BCI (Better Cotton Initiative).

Incentive mechanisms

Key incentive mechanisms available to support MSME environmental management include environmental preferred purchasing (EPP) programs, supplier codes of conduct, financial mechanisms, government interventions and policies, and civil sector projects and activities.

Access to financial resources is one of the key challenges MSMEs face when seeking to improve their environmental performance. While the business case exists for many sustainability

practices, such as resource efficiency and energy or water management, they often require initial investment, in clean technology or increased awareness programs, for example. An important mechanism for enabling change is providing the required finance, which can also occur through developing financial instruments. Governments can be a key player in promoting environmental performance in MSMEs through regulation or incentives rewarding best practices.[1] Finally, civil society organizations (CSOs) in the LAC region can be strong advocates for adopting sustainability programs, policies and practices. A fundamental role of CSOs within the LAC region is to inform, train, and enable individuals and companies to better manage natural capital resources [1].

'The business case for energy or water management often exists, but access to financial resources is one of the key challenges MSMEs face when seeking to improve their environmental performance'

1 For example, the Small Business Act (SBA) in Europe, through which several European countries have provided energy efficiency funding, either through subsidies or encouraging loan conditions and also cost-free consultancy support to MSMEs.

Best practices in value chain environmental management

There are several **common themes** that are shared by leading companies **in value chain environmental management:**

- Strong understanding of the company's organizational value chain. This helps the company identify focus areas and materials, and promotes selection of projects that are likely to create material improvements.
- Development and deployment of criteria or supplier codes of conduct to meet company standards.
- Provision of support to suppliers to help them achieve certification or meet code of conduct criteria. This is especially important for MSMEs, which may not have access to financial resources or have the technical capabilities to improve practices independently.

Based on this review of best practices and supporting research, the following steps were identified as **best practices for a corporation to improve companies' value chain environmental impacts:**

- Map the value chain in order to gain better visibility of its physical and geographical framework.
- Develop an understanding of key risks and opportunities which may affect value chain resilience.
- Assess and prioritize required actions.
- Develop an action plan based on key risks and opportunities.
- Implement the action plan, integrated into suppliers' contracts where necessary.

Best practices for MSME supplier environmental management were also identified:

- Identify material impacts of own operations.
- Collaborate with customers, with own value chain and other suppliers, to share knowledge and help facilitate improvement across the value chain.
- Seek involvement in projects and sustainability initiatives with NGOs, governments, and major purchasing companies.

Key stakeholder groups

This study also **identified key stakeholder groups** that are **involved in** various aspects of **developing and promoting greener value chains.** The identified groups **include:**

- Industry networks/research organizations, including the UN Global Compact, Ecovadis, CentraRSE, IARSE, and Trucost. Each of these organizations offers tools, scorecards, and/or reports that support environmental value chain initiatives.
- Conservation International, which has a number of initiatives that support MSMEs to improve their environmental management practices.
- Development banks, as they are in a key position to support improved environmental management practices of MSMEs as they often offer finance and training to MSMEs.

Key MSME opportunities

This study identified five key opportunities for LAC MSMEs to improve their competitive advantage by reducing environmental impacts and improving natural resource management.

Responsibly managing water use

As a cross-cutting issue, water risks and the need to optimize the use of this natural resource apply to all of the key sectors studied. Suppliers operating in areas of water stress or physical risk should conduct analyses on water scarcity and demonstrate responsible water management to protect against this risk and help secure water supply.

Optimizing logistics across the value chain

MSMEs can establish competitive advantage over other suppliers of similar products by highlighting ways in which their logistics systems are more efficient. This can be achieved in a number of ways, including, selecting the best available transportation mode, designing lightweight products and packaging, optimizing transportation routes, and seeking alternatives for temperature-sensitive shipments.

Reducing the impact of packaging materials

Packaging is a significant contributor to many companies' value-chain impacts. A few ways companies can reduce the impact of their packaging materials include optimizing packaging design, sourcing sustainable packaging materials, and designing packaging materials with recycling in mind.

Offering green products

Many large retailers prefer to engage with suppliers that can both prove that their operations are eco-efficient, and can offer green products to their existing product portfolio. Green trade still represents only a small percentage of the global market, but trade in certified products and in environmental goods and services is expected to reach US$2.2 trillion by 2020. Opportunities to take advantage of this trend are particularly strong in the agriculture, fisheries, forests (i.e. packaging), manufacturing, renewable energy, and tourism sectors [2].

Reducing chemical inputs

Chemical products are important inputs to the value chains of many of the key sectors identified in this research. Some key areas where chemical input reduction could provide MSMEs with an opportunity to differentiate themselves and achieve competitive advantage include chemical use in the agricultural sector, chemical use in consumer goods, and production and commercialization of chemicals that have benefits relative to their alternatives.

Key MSME competitiveness indicators

This study also identified five key areas of potential value generation for LAC MSMEs that could be achieved by reducing environmental impacts and improving natural resource management.

Sales growth

All of the MSME opportunities identified above offer the potential for sales growth through company sustainable procurement programs; however this may vary by sector. Reducing chemical inputs, for example, is likely to have the highest sales growth opportunity in sectors where products come in direct contact with people – children's products, clothing, food and beverage, etc.

Employment generation

The potential to generate additional employment opportunities for the local population will be greatest for those opportunities where innovation is required. The greatest need for research or innovation occurs in areas such as optimizing chemical and packaging inputs or applying for green certifications on existing or new products.

Cost reduction

The potential for reducing operating costs varies across the types of MSME opportunities. Where improved resource efficiency is achieved it is likely to result in cost savings. For example, reducing absolute chemical and packaging requirements and minimizing the distance traveled by logistics will reduce the costs of chemical, packaging and fuel inputs, and vehicle maintenance.

Risk reduction

Risk reduction potential varies significantly depending on the type of risk considered. All five of the MSME opportunities identified, for example, are likely to reduce MSMEs' environmental risk and the risk associated with natural capital dependency. If implemented successfully and well-communicated to stakeholders, purchasing companies, and the general public, they could also greatly reduce a company's reputational risk by demonstrating that they are being pro-active in the area of natural resource use and environmental impact management.

Potential to scale/replicate

The initiatives described in this section have been pulled together as recommendations for where technical assistance-providing entities can help MSMEs improve environmental management, with the intention that they apply across sectors and regions in LAC. As such, they are highly scalable and replicable across MSMEs.

How to structure technical assistance support

In order for technical assistance-providing entities to assist MSMEs in implementing the actions outlined above and to achieve competitive advantage as suppliers within company value chains, the following **three consecutive steps are recommended to maximize the impact of support.**

- **A** Build the business case for value chain environmental management with large purchasing companies as well as MSMEs.
- **B** Conduct training and capacity building activities among MSMEs focused on natural resource use and environmental management.
- **C** Provide avenues for MSMEs to access the finance needed to implement environmental management activities.

These findings are examined further in the body of this report.

1

INTRODUCTION

Context

The management of environmental impacts and natural resource use is becoming standard practice among large publicly traded companies. Many of these companies are extending their management practices beyond their own operations into their value chains, including micro, small, and medium enterprise (MSME) suppliers. Previous research has shown that MSMEs are major sources of environmental impacts, including natural resource consumption (inputs into production processes) and environmental impacts, such as greenhouse gas (GHG) emissions (outputs from production processes).

Aligning their business strategy with best practices for natural resource management and environmental impact reduction improves the competitiveness of MSMEs in the Latin American and Caribbean (LAC) region.

Objective

The objective of this study is to identify and analyze the key economic sectors in LAC with the highest environmental impact in the context of private sector value chains, as well as best practices, tools, and incentive mechanisms in natural resource management and environmental impact reduction to foster the development of green value chains, thereby improving the competitiveness of MSMEs in the region.

Scope

The geographic scope of this analysis was limited to Latin American and Caribbean countries. Direct (operational) and indirect (value chain) impacts were assessed across 700 environmental inputs (e.g. water use, commodities) and outputs (e.g. GHG emissions, waste). All environmental impacts were assessed from cradle to gate, meaning from the raw material extraction phase to the factory gate before transportation to the end consumer.

Approach

To achieve the study's objectives, an extensive desk-based analysis was conducted, supported by the Trucost Environmental Register (TER) database of corporate environmental impact and natural capital valuation data. The TER includes research on over 4,800 corporations, including 185 companies within LAC countries. The analysis was also supported by a selected number of structured telephone interviews.

This study has been subdivided into three sections as outlined below.

- Identification of key economic sectors and relevant value chains in LAC, in terms of the highest environmental impacts due to natural resource use or pollution, emphasizing GHG emissions. Mapping of multinational companies' value chains to understand where the greatest opportunities for MSMEs lie within large company value chains.
- Identification of best practices in natural resource and environmental impact management. Identification of the incentive mechanisms in private sector value chains that have successfully encouraged the application of these best practice activities.
- Identification of opportunities for MSMEs and key stakeholders to improve environmental management in private sector value chains.

Target audience

This study targets stakeholders along the value chain of LAC companies, mainly MSME suppliers, multinational companies, financial institutions, and institutions providing technical assistance in the fields of natural resource management and environmental impact reduction.

2

IDENTIFICATION AND ANALYSIS OF KEY SECTORS

Figure 1 below summarizes the **three-step process** that was **used to identify the key economic sectors in LAC with the highest environmental impact in the context of private sector value chains.**

STEP 1

- **Industry Classification Benchmark (ICB) Super Sector Selection**
- The TER database was used to identify the ICB Super Sectors with the greatest proportion of environmental impact associated with the value chain.
- The TER's LAC library includes 185 companies across nine countries: Argentina, Bermuda, Brazil, Cayman Islands, Chile, Colombia, Mexico, Panama and Peru.
- ICB Super Sectors determined to have immaterial environmental impacts were excluded (e.g. insurance, consulting, and other desk-based service companies that do not sell physical products).

STEP 2

- **ICB Sub Sector Selection**
- All ICB Sub Sectors were identified within the ICB Super Sectors selected in Step 1.
- ICB Sub Sectors were selected based on economic size, total environmental impact, environmental materiality, and percentage of impacts associated with the value chain.

STEP 3

- **Cross-check: ICB Sub Sectors selected versus LAC priority countries**
- To ensure regional relevance in LAC, the most significant LAC economic sectors were identified and the top 5 economic sectors that were also identified in the ICB Sub Sector Selection (Step 2), were used as the focus of this research (see table 1 below).
- Economic sectors were determined using Factset data on public and private companies. This list consists of 36,697 companies across 12 LAC countries: Brazil, Chile and Uruguay in the Southern Cone; Colombia, Peru and Bolivia in the Andean States; Jamaica, Dominican Republic and Trinidad & Tobago in the Caribbean; and Mexico, Costa Rica and Panama in Central America and Mexico.

The table below summarizes the results of this analysis, including each sector's top three environmental inputs (natural resources) and outputs (environmental impacts).

Table 1/ Key economic sectors and their environmental inputs and outputs

ICB Sub Sector	Key environmental inputs	Key environmental outputs
Food products	Water consumption Agricultural products (e.g. fruit) Fossil fuel-based energy	Greenhouse gases Acid rain, eutrophication, smog precursors (SOx emissions, etc.) Nutrients and organic pollutants (e.g. nitrogen runoff)
Soft drinks	Water consumption Fossil fuel-based energy Agricultural products (e.g. fruit)	Greenhouse gases Acid rain, eutrophication, smog precursors (SOx emissions, etc.) Dust and particles
Personal products	Water consumption Fossil fuel-based energy Aggregates (e.g. mining materials)	Greenhouse gases Dust and particles Waste (landfill, incinerated, and recycled)
Broadline retailers	Water consumption Fossil fuel-based energy Aggregates (e.g. mining materials)	Greenhouse gases Acid ain, eutrophication, smog precursors (SOx emissions,etc.) Dust and particles
Commodity chemicals	Water consumption Fossil fuel-based energy Aggregates (e.g. mining materials)	Greenhouse gases Dust and particles Acid rain, eutrophication, smog precursors (SOx emissions, etc.)

Infographic 1 below provides a summary of the researched sectors, their significance within the LAC economy, and the scale of their environmental impact. Economic significance is represented by total revenue generated from each sector. This is split to show the concentration of economic activity by highlighting the percentage of revenue generated by the largest three companies in each sector. Food products and broadline retailers are the two most significant sectors by revenue generation.

Similarly, the total environmental impact, presented in millions of US dollars of environmental cost, is split to show how much of the environmental cost is generated in the value chains of companies operating in each sector. For example, the food products sector generates the largest amount of environmental cost of the sectors analyzed at over US$40 billion; this is almost ten times greater than commodity chemicals, the second most environmentally impactful sector. Over 97% of food product companies' total environmental cost comes from activities that occur in their value chains, which is the largest proportion of the sectors that were researched.

TOP FIVE SECTORS IN LATIN AMERICA AND THE CARIBBEAN WITH SIGNIFICANT VALUE CHAIN IMPACTS

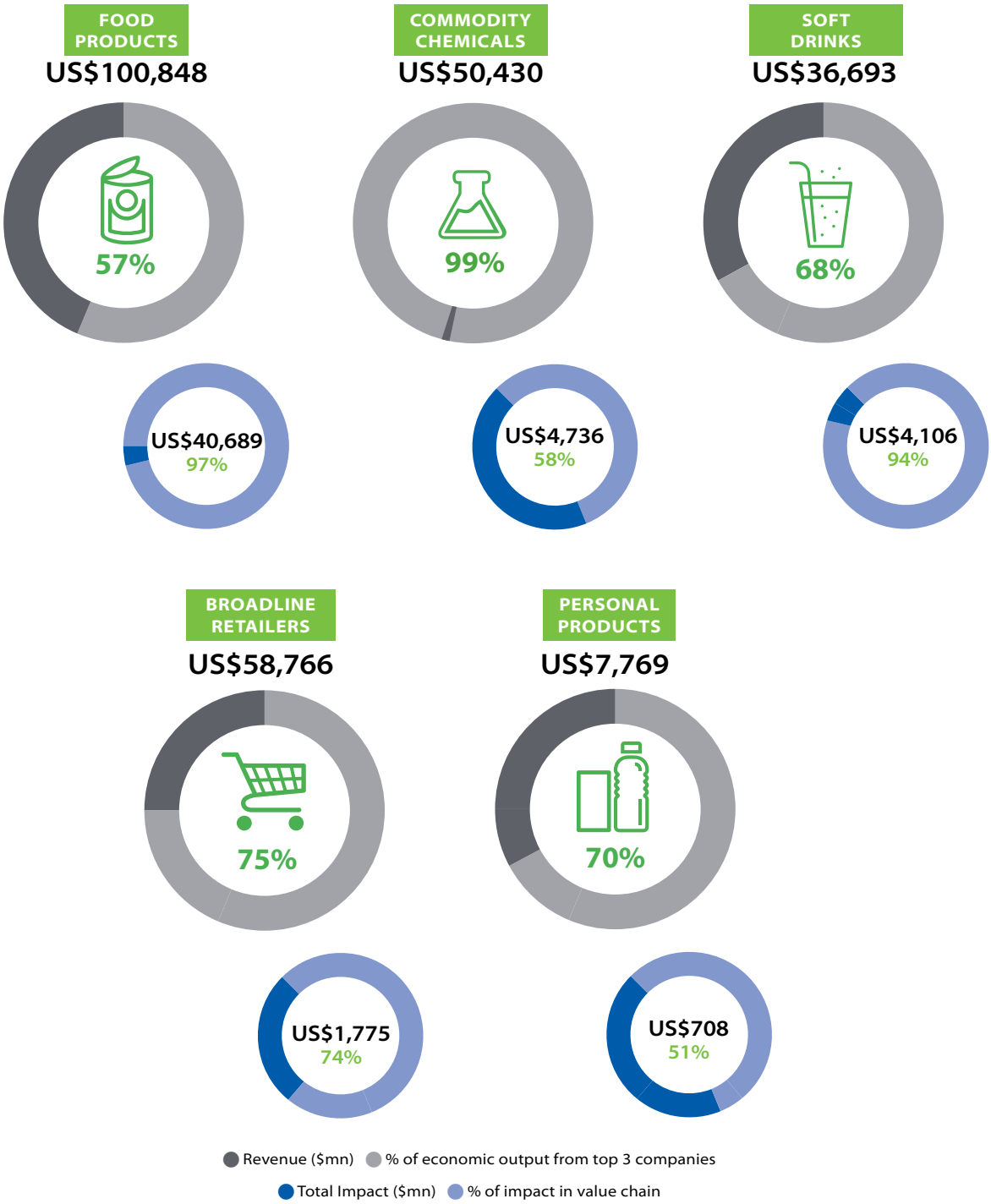


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Table 2 summarizes the top value chain drivers of three large key companies[2] for each of the key sectors from the library of 185 companies across nine LAC countries held within the TER.

Table 2/ Value chain drivers at the key sector level

ICB Sub Sector	Value chain drivers (% of total procurement spending)[3]
Broadline retailers	Real estate (up to 15%) Motor vehicle parts manufacturing (up to 5%) Management of companies and enterprises (up to 4%) Monetary authorities and depository credit intermediation (up to 3%) Warehousing and storage (up to 3%)
Food products	Cattle ranching and farming (up to 39%) Animal (except poultry) slaughtering, rendering and processing (up to 20%) Poultry and egg production (up to 16%) Animal production, except cattle and poultry and eggs (up to 14%) Management of companies and enterprises (up to 11%) Fruit/grain farming (up to 5%) Dairy cattle and milk production (up to 5%) Poultry processing (up to 4%) Soap and cleaning compound manufacturing (up to 4%) Paperboard container manufacturing (up to 4%) Truck transportation (up to 3%)
Personal products	Management of companies and enterprises (up to 24%) Paper mills (up to 18%) Pulp mills (up to 11%) Other plastics product and basic organic chemical manufacturing (up to 6%) Scientific research and development services (up to 6%) Nonwoven fabric mills (up to 6%) Plastics material and resin manufacturing (up to 4%) Plastics bottle manufacturing (up to 3%)
Soft drinks	Flavoring syrup and concentrate manufacturing (up to 24%) Aluminum product manufacturing from purchased aluminum (up to 13%) Plastics bottle manufacturing (up to 11%) Management of companies and enterprises (up to 8%) Paperboard container manufacturing (up to 6%)
Commodity chemicals	Fertilizer manufacturing (up to 7%) Natural gas distribution (up to 6%) Truck transportation (up to 6%) Management of companies and enterprises (up to 6%) Lessors of nonfinancial intangible assets (up to 4%)

The majority of value chain value drivers common across the key economic sectors are service-based..

2 Three large key companies were selected for each sector based on their economic output, total environmental impact, percentage of environmental impact coming from value chains, value chain environmental management practices, and MSME procurement.

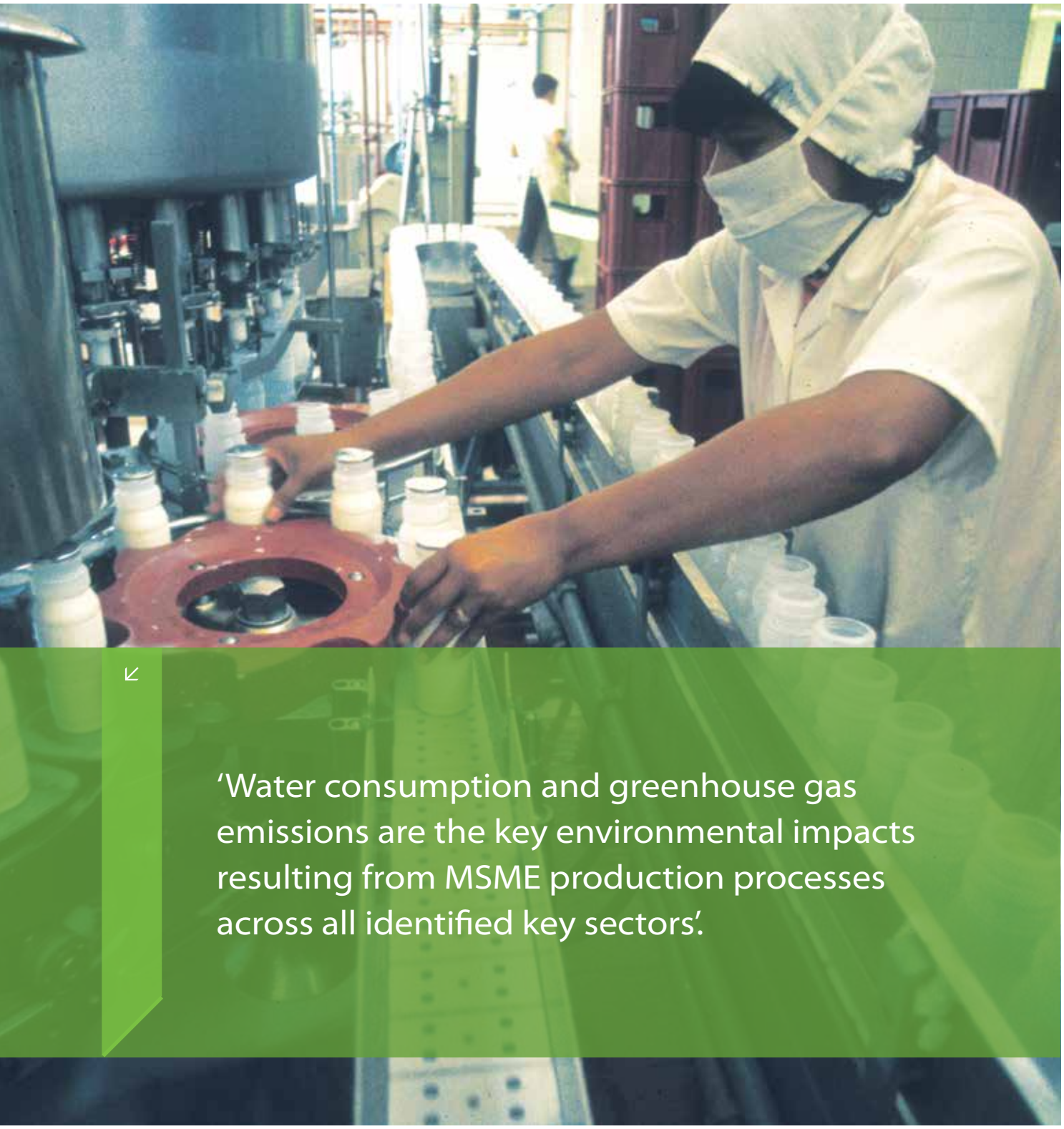
3 Percentages indicate relative shares of total procurement spending across selected key companies within each identified sub sector. Percentages do not add up to 100%.

Table 3 describes existing value chain environmental management and/or MSME engagement initiatives – both from a cross-sectorial, as well as from sector-specific perspectives.

Table 3/ Examples of value chain sustainability and MSME initiatives at the key sector level

ICB Sub Sector	Examples of value chain sustainability and MSME initiatives
Cross-sectorial	• Development and implementation of sustainable value chain strategies to identify good management practices and opportunities for improvement among suppliers, including prioritization of community relationship building and local economic development, particularly in sourcing regions. • Selection of suppliers according to sustainability criteria, including certification and promotion of improvement of environmental performance. • Implementation of programs to train and assist suppliers, including MSMEs, in the development of environmentally, socially, and financially sustainable projects in their operations and processes – often in partnership with governments, financial institutions, and NGOs. • Implementation of value chain monitoring programs to identify and minimize environmental impacts and disseminate sustainability guidelines. • Partnerships with research institutions to minimize environmental impact in the production chain. • Promotion of MSME procurement.
Broadline retailers	• Encouragement of the commercialization of environmentally friendly produce from local suppliers near retail stores. • Development and implementation of initiatives with significant improvement potential regarding the sustainability of distribution channels.
Food products	• Provision to small farmer suppliers of access to seeds and fertilizers and capacity building among suppliers to implement agricultural best practices; replacement of conventional refrigerant gases, and promotion of fuel efficient vehicles amongst logistics suppliers. • Procurement of cardboard boxes with recycled content.
Personal products	• Procurement of production process inputs such as fiber, fabric, cartons, plastics, and packaging from post-consumer recycled materials. Where such materials are from virgin sources, recognized sustainable forest certifications are required. • Community relationship building and development in areas from which ingredients are sourced.
Soft drinks	• Reduction of water consumption through the implementation of water efficiency initiatives. • Reduction of GHG emissions through energy efficiency gains and appropriate disposal of Chlorofluorocarbon (CFC) refrigerants.
Commodity chemicals	• Reduction of purchased energy through the implementation of energy efficiency initiatives. • Reduction of greenhouse gas emissions through the purchase and use of alternative feedstocks (e.g. biomass or solid waste). These processes are also known as "green chemistry."

All sectors demonstrate existing or planned actions to reduce organizational environmental impacts. The extent to which these actions extend beyond the companies' own operations to their suppliers varies by sector. Companies at least mention supplier selection or engagement on environmental issues, with transportation and packaging being common focus areas in the broadline retailers, food products, personal products, and soft drinks sectors.



'Water consumption and greenhouse gas emissions are the key environmental impacts resulting from MSME production processes across all identified key sectors'.

3

BEST PRACTICES AND INCENTIVE MECHANISMS

Past research identifies clear and practical advice to manufacturers on understanding and improving value chain sustainability [3]. While these steps are focused on the food and drink manufacturing sector, they provide useful guidance that can be used to help shape best practices and suitable practices for all sectors. **The steps are** adapted below to be **appropriate for all identified focus sectors:**

- Map the value chain in order to gain better visibility of its physical and geographical framework
- Develop an understanding of key risks and opportunities that may affect value chain resilience
- Assess and prioritize required actions
- Develop an action plan based on key risks and opportunities
- Implement action plan, integrated into suppliers' contracts where necessary

The tools and guidance to assist environmental improvement within the value chain reviewed varied in suitability for use within LAC. These tools can largely be considered in the context of the steps above, each performing one or more of the recommended steps, as shown by Table 4.

Table 4/ Best practice tools

Tool	Relevance for sector	Relevance for MSMEs	Primary tool use
String	Medium	Low	Value chain visibility
InVEST	Low	Low	Understanding key risks
Responsibilidad Integral	Low	Low	Understanding key risks
Fieldprint calculator	Medium	Low	Understanding key risks
EcoVadis	Medium	Low	Understanding key risks
GRI	High	High	Assess and prioritize required actions
IndiCARSE	High	High	Assess and prioritize required actions
IARSE	High	High	Assess and prioritize required actions
RSPO	Low	Low	Implement action plan
RSB	Low	Low	Implement action plan
BCI	Low	Low	Implement action plan
AWS	Medium	Low	Understanding key risks
Trucost's Natural Capital Analyzer Tool	High	High	Assess and prioritize required actions

The first requirement is to understand and map the value chain, potentially a challenging task. The Historic Futures "String" tool provides assistance to companies wishing to provide full transparency of supply, and hence understand their own value chain better.

Several tools, such as InVEST, had limited benefit for value chain management specifically, but could be used by members of the value chain to help understand their own impacts on the environment, which in turn enables them to report down to their customers.

Reporting tools and guidance that assist in standardizing reporting and monitoring of impacts, for example the EcoVadis and the GRI Framework, appear to be some of the most frequently and widely used. Both these tools are used by many companies globally and offer the benefit to both suppliers and buyers that reporting is carried out in a uniform and accepted manner.

Initiatives that provide best practices involve assisting companies to manage environmental risks associated with value chain through certification systems such as the Roundtable on Sustainable Biomaterials (RSB), Roundtable on Sustainable Palm Oil (RSPO), and the Better Cotton Initiative (BCI). Companies selecting inputs that are certified by a third party can be assured of compliance with a particular level of sustainability, without having to monitor and control the standards themselves.

Because it monitors an organization in the different implementation phases of a tool, external auditing is certainly one of the most intensive and expensive options, but it provides an objective view of the situation [4].

These themes are approached in various ways, through tools, initiatives, as well as NGOs and industry groups. The table below summarizes these tools and certification systems, indicates whether a tool can be used by companies within the selected sectors to engage their suppliers to improve environmental management, and ranks its usefulness based on the methodology described. It should be noted that the usefulness of tools and guidelines, with respect to the specific tool functionality, usefulness of output, and other criteria relating to the tool and guidelines themselves are not considered within this ranking. As such, a ranking does not represent or reflect value - a 'low'-usefulness tool may still be very valuable. The ranking represents the likelihood that an MSME operating in a particular sector would find the tool useful. Where boxes are marked with an (S), this relates to tools that could be used by suppliers to companies in the sector, but they are not designed to report to buyers or external parties directly. Please refer to the Appendix for complete descriptions of each of the tools.

Table 5/ Best practice tools and their suitability to the key sectors

Tool	Broadline retailers	Food products	Personal products	Commodity chemicals	Soft drinks	MSME-specific relevance	
TOOLS							
FIELDPRINT CALCULATOR Helps farmers determine their "fieldprint" or level of natural resources needed to generate agricultural production	✔ (LOW)	✔ (MEDIUM)			✔ (MEDIUM)	✔ (MEDIUM)	
STRING Designed to trace any product back to the beginning of the value chain.	✔ (MEDIUM)	✔ (MEDIUM)	✔ (MEDIUM)	✔ (LOW)	✔ (MEDIUM)	✔ (MEDIUM)	
INVEST Used to map and value the provision of ecosystem services.	✔ S (LOW)	✔ S (MEDIUM)	✔ S (LOW)	✔ S (LOW)	✔ S (MEDIUM)		
ECOVADIS Uses scorecards to assess suppliers	✔ (MEDIUM)	✔ (MEDIUM)	✔ (MEDIUM)	✔ (MEDIUM)	✔ (MEDIUM)		
GRI Public reporting guidelines	✔ (HIGH)	✔ (HIGH)	✔ (HIGH)	✔ (HIGH)	✔ (HIGH)	✔	

	Tool	MSME challenge addressed by tool	Challenges to utilization
	TOOLS		
	FIELDPRINT CALCULATOR Helps farmers determine their "fieldprint" or level of natural resources needed to generate agricultural production	Lack of understanding of the environmental impacts (particularly in agricultural sectors feeding into broadline retailers, food products, and drinks products). The tool assists farmers in understanding environmental impacts such as soil loss and land use. This is then put into context by benchmarking against different criteria, such as local and national averages.	Challenges exist in capturing all relevant indicators for all farm systems [5].
	STRING Designed to trace any product back to the beginning of the value chain.	MSMEs often have limited resources for monitoring and reporting environmental impacts. Duplication of indicators to buyers, in different formats, can be a waste of resources and further limit time available for improvements in operations. The String tool provides a shared platform for use by multiple buyers to reduce burden on suppliers and improve collaboration across the value chain.	The tool relies on the Internet, which may not everywhere be readily available at an adequate bandwidth. As is often the case with disclosure, suppliers may have initial skepticism in publicly disclosing data on metrics when they have not done so in the past.
	INVEST Used to map and value the provision of ecosystem services.	Lack of understanding of the environmental impacts of operations and land development (particularly in agricultural sectors feeding into broadline retailers, food products, and drinks products). Through using InVEST, MSMEs can quantify the impacts their operations have on ecosystem services.	The tool requires mapping software such as QGIS or ArcGIS to view results, which is available at additional cost. Challenges can also be faced by users due to the difficulty in gathering required data. The tool does not relate services to business risk in financial terms, so suppliers may not immediately understand the value of the analysis.
	ECOVADIS Uses scorecards to assess suppliers	Lack of understanding of the environmental impacts. The tool provides the ability to self-diagnose and benchmark performance against competitors to identify strengths and weaknesses.	For optimal success, EcoVadis requires supplier buy-in. The tool also partly relies on self-diagnosis by supplier – which may be challenging to verify.
	GRI Public reporting guidelines	MSMEs often have limited resources for monitoring and reporting environmental impacts. Duplication of indicators to buyers, in different formats, can be a waste of resources and further limit time available for improvements in operations. The GRI helps to standardize reporting indicators to reduce the burden on suppliers.	Challenges have been identified for companies in understanding how to identify, select, engage, and determine the extent to which stakeholders should be involved in the various decisions made in reporting [6]

Tool	Broadline retailers	Food products	Personal products	Commodity chemicals	Soft drinks	MSME-specific relevance	
TOOLS							
INDICARSE Promotes competitive business that may lead to sustainable practices	✔ S **(HIGH)**	✔ S **(HIGH)**	✔ S **(HIGH)**	✔ S **(HIGH)**	✔ S **(HIGH)**	✔	
RESPONSI-BILIDAD INTEGRAL Helps plastics and chemical companies improve operations	✔ S **(LOW)**			✔ S **(HIGH)**			
TRUCOST'S NATURAL CAPITAL ANALYZER TOOL Rapidly identifies suppliers posing greatest risk	✔ **(HIGH)**	✔ **(HIGH)**	✔ **(HIGH)**	✔ **(HIGH)**	✔ **(HIGH)**	✔	
INITIATIVES AND CERTIFICATIONS							
RSPO Promotes growth and use of sustainable palm oil	✔ **(LOW)**	✔ **(LOW)**					

	Tool	MSME challenge addressed by tool	Challenges to utilization
	TOOLS		
	INDICARSE Promotes competitive business that may lead to sustainable practices	Limited resources and knowledge of how to improve environmental impacts. IndiCARSE provides MSMEs with a corporate social responsibility (CSR) assessment of operations, based on a completed survey. This allows for tracking progress, benchmarking, and development of a strategy for improvement.	No obvious challenges identified.
	RESPONSI-BILIDAD INTEGRAL Helps plastics and chemical companies improve operations	Limited understanding of environmental impacts of operations. The RI tool is not specifically targeted to MSMEs and is only relevant for suppliers of plastics and chemicals; however, it is useful to help MSMEs in these sectors develop best practices in monitoring and reporting of environmental impacts.	Literature identified the lack of good metrics as a barrier to use of the tool. There were also sensitivities identified with the sharing of company data [7].
	TRUCOST'S NATURAL CAPITAL ANALYZER TOOL Rapidly identifies suppliers posing greatest risk	Lack of understanding of the environmental impacts. The tool helps to highlight the material impacts in a value chain and can therefore be used by the buyer to engage with the suppliers with the greatest opportunity for improvement.	Robustness of analysis depends on the level of data available for analysis - best performance involves engagement with suppliers and direct data gathering.
	INITIATIVES AND CERTIFICATIONS		
	RSPO Promotes growth and use of sustainable palm oil	Limited knowledge of best practice in palm oil production, and minimal access to funds to help achieve best practice. The RSPO assists smallholders to achieve best practices and certification. The organization also is involved in initiatives to help drive finance to support smallholders in the transition to becoming certified sites.	Certification requires a high level of engagement. Data gathering from multiple stakeholders is required, including indigenous people, statutory bodies, local communities, smallholders, workers' organizations, and local and national NGOs. Where land was previously operated by different owners, evidence is needed to show responsible land transfers/ land use agreements are in place.

Tool	Broadline retailers	Food products	Personal products	Commodity chemicals	Soft drinks	MSME-specific relevance	
INITIATIVES AND CERTIFICATIONS							
RSB Ensures sustainable production of biomaterial	✓ S **(LOW)**	✓ S **(LOW)**	✓ S **(LOW)**	✓ S **(LOW)**	✓ S **(LOW)**		
BCI Works with farmers and stakeholders to improve environmental management of cotton farming	✓ S **(LOW)**						
AWS Developing an international framework for responding to freshwater challenges	✓ **(MEDIUM)**	✓ **(MEDIUM)**	✓ **(MEDIUM)**	✓ **(MEDIUM)**	✓ **(MEDIUM)**		

	Tool	MSME challenge addressed by tool	Challenges to utilization
	INITIATIVES AND CERTIFICATIONS		
	RSB Ensures sustainable production of biomaterial	Lack of incentive to improve operation. Through certification and promotion of a global standard, the RSB potentially offers a competitive advantage to certified producers. This helps drive MSMEs to improve practice and receive rewards for doing so.	Difficulties may exist for smallholders to understand system requirements or to have the technical capacity to comply with requirements – however, the RSB is in the process of developing a system to help smallholders gain better access to certification [8].
	BCI Works with farmers and stakeholders to improve environmental management of cotton farming	Limited resources and knowledge of how to improve environmental impacts. Lack of incentive/reward for improving practice. Through certification, the BCI potentially offers a competitive advantage to certified producers. This helps drive MSMEs to improve practices and receive rewards for doing so. The organization works with farmers to help improve agricultural practices, as well as assist cross-sector collaboration.	Challenges were faced during the cotton crisis with reflection on demand for cotton, and falling prices impacting resource availability. Best practice is achieved through evolving seed technologies – with farmers needing to change seed every 2-3 seasons. This is only possible with strong seed breeding programs – however, these are not always available.
	AWS Developing an international framework for responding to freshwater challenges	Challenge: Lack of understanding of the environmental impacts due to water management, and how to improve operations. Though not yet fully developed, the AWS aims to raise awareness of best practices through water stewardship principles.	Challenges are not yet apparent.

Several mechanisms, such as policies, programs, and projects that provide incentives for engaging in sustainable consumption and production practices, were also identified. These are summarized below.

Table 6/ Incentive mechanisms and examples of each

Mechanism	Examples	Description
SUSTAINABLE CONSUMPTION AND PRODUCTION POLICY Policy is a strong mechanism for encouraging change, and several examples exist	Colombian Sustainable Consumption and Production Policy	A policy to ensure adherence to a number of sustainable production and consumption principles, including "Assistance for the enforcement of environmental regulations." It also provides guidance for changes in business operations to achieve ethical and environmental practices.
SUSTAINABLE CONSUMPTION AND PRODUCTION PROGRAMS Help encourage preferred behavior and are effective when government and other stakeholders collaborate	Brazilian National Program on Energy Efficiency	Provides building ratings by selecting building materials, considering choices in lighting and air conditioning
	Ecovide program	Promotes demand for sustainable farming through a participatory guarantee system for organic crops. Farmers commit to improving processes and Ecovide helps them improve their businesses and overcome barriers to commercialization.
CLEAN PRODUCTION CENTERS Offer an opportunity for MSMEs to access efficient technologies otherwise difficult to obtain	National Cleaner Production Centres (NCPCs)	Promote the investment, development and transfer of clean production technologies and equip MSMEs with the necessary tools to respond to the demands of regional and global markets for environmentally sound products. There are 16 NCPCs located in LAC.
FINANCIAL MECHANISMS Help MSMEs overcome financial barriers to implementing environmentally preferable processes	First loss risk scheme	MSMEs in a sector join a group portfolio in which a group of private investors may invest, with the understanding that a public sector/development finance institution (less risk-averse) acts as a first loss risk, providing a buffer between individual investors and MSME failure.
CIVIL SOCIETY/NGOS Inform, train and enable better natural capital resource management	Various	Provide technical assistance and advice to companies implementing sustainable consumption and production (SCP) projects. Promote environmental education in the public and private sectors and throughout society through the provision of research and dissemination of knowledge. Provide advice to small entrepreneurs and producer cooperatives to support their access to international markets through sustainability standard compliance.

Several **barriers** exist **for MSMEs wishing to adopt better environmental practices.** These **include:**

- Lack of awareness and incentive
- Limited access to financial capital
- Lack of opportunities to collaborate
- Challenges related to data management and reporting

The tools and guidelines reviewed have identified best practice solutions to these challenges.

Companies were also reviewed for examples of best practices in value chain environmental management.

All of the companies reviewed, including large companies and companies that use global best practices, follow several themes indicating advanced practice in value chain management. Critical to best practice is the understanding of the value chain, which helps identify focus areas and materials, and promotes selection of targets that are likely to create material improvements. Unilever, for example, has many hundreds of suppliers and a large number of varying impacts, and therefore initial focus is given to its top ten agricultural inputs before rolling out initiatives for other raw materials.

Development of criteria, or supplier codes of conduct for meeting company standards, is another key step in assisting suppliers in improving their operations, in terms of both inputs (sustainable consumption of resources, such as efficient use of water), and outputs (such as waste management and GHG emissions). These can be alongside ethical social standards to avoid duplication and over-burdening of suppliers to complete numerous self-audits or complete different paperwork requirements. Through use of global systems such as the UN Global Compact and GRI indicators, suppliers can report in the same format to multiple customers, further reducing the burden of numerous supplier requirement documents. Auditing companies is also important to ensure that activity is reported accurately, and it may be necessary to exclude suppliers that consistently fail to meet demands should the effort to do so not be considered adequate. Where possible, companies should aim to assist suppliers in meeting these criteria, rather than exclude suppliers that may be unable to achieve steps on their own.

A theme of the best practice examples cited is further engagement with suppliers to achieve certification or code of conduct criteria, which may otherwise be challenging to meet. This is especially important for MSMEs, which may not have access to liquid funds, or have the technical capabilities to improve practices independently.

4

OPPORTUNITIES FOR MSMES IN VALUE CHAINS

There are many environmental management practices that MSMEs could adopt that may increase their advantage over competitors or that may be attractive in the value chains of large companies in the LAC region. Many of the recommendations outlined below could also be relevant for large companies' own operations, depending on their level of vertical integration.

The table below summarizes the opportunities identified, and highlights which of the key sectors they relate to. Each of these opportunities relates to the implemention of action by MSMEs. They should therefore be preceded by activities to encourage both large companies and MSMEs to understand and trace their value chains and their impacts, and to report on sustainability. The text that follows describes each of these opportunites at a high level.

Table 7/ MSME opportunities and relevance to key sectors

MSME Opportunity	Broadline retailers	Chemicals	Food products	Personal products	Soft drinks
Responsibly managing water use	x	x	x	x	x
Optimizing logistics across the value chain	x	x	x	x	x
Reducing the impact of packaging materials	x		x	x	x
Offering green products	x	x	x	x	x
Reducing chemical inputs	x	x	x	x	x

Responsibly managing water use

Water was identified as the most material environmental input for all of the key sectors. **Water constraints** therefore **pose** a significant **risk to businesses that may be faced with a variety of challenges, including:**

- Increased prices as water availability declines
- Reputational risk resulting from competition with the local community over water resources
- Financial risks as investors and buyers engage with companies demonstrating sound water management

Water is a critical input for many sectors, and interrupted water supply as a result of physical stress or drought frequently affects production and/or yields. Many areas of LAC are subject to various levels of risk relating to the physical quantity of water available.

Suppliers operating in areas of water stress or physical risk could conduct analyses of water scarcity and demonstrate responsible water management to protect against this risk and help secure water supply, in turn securing supply of their products. Making use of desalinated water where possible would help insulate these companies from the effects of drought. Embrapa, the Brazilian Agricultural Research Corporation, has initiated a Freshwater Program, providing information for installing desalination systems in rural semi-arid areas to provide water for irrigation without stressing local water resources [9]. Lessons could be drawn from this project and applied to other areas exposed to greater water scarcity.

Optimizing logistics in the value chain

Logistics is a material value chain activity for all key sectors identified in this research. The transport sector largely relies on non-renewable fossil fuels, which emit greenhouse gases and other air pollutants, generates waste such as tires and oil which are challenging to dispose of, and destroys ecosystems as transportation routes and infrastructure are built through natural environments. **MSMEs can establish a competitive advantage** over other suppliers of similar products **by highlighting ways in which their logistics systems are more efficient. This can be achieved in a number of ways, including by:**

- Selecting the best available transportation mode, i.e. making use of rail freight and upgrading fleets regularly to meet emission standard requirements. Within urban centers, using freight bikes to carry small loads can reduce emissions.
- Designing lighter-weight products and packaging to reduce the fuel required to transport them, i.e. by selecting lighter alternate product and packaging materials and adjusting the size of packaging.
- Optimizing transportation routes, i.e. by re-routing deliveries and pick-ups in such a way that vehicles are full to capacity for both inbound and outbound journeys, and/or by scheduling routes at off-peak hours to avoid idling.
- Seeking alternatives for temperature-sensitive shipments, i.e. using electrically charged cold plate technology rather than diesel generators to keep food and beverages chilled during transport.

Reducing the impact of packaging materials

Packaging is a significant contributor to the value chain impacts of many companies. Manufacturers must choose packaging materials that are sufficient to protect goods during shipment and, in the case of food, avoid spoilage. The cost and environmental impact of spoiled goods can be worse than a small amount of additional packaging and so a balance must be struck – often referred to as "rightweighting". **Ways companies can reduce the impact of their packaging materials include:**

- Optimizing packaging design, i.e. by using lightweight packaging materials and trimming unnecessary packaging. Reformulating products with the ultimate goal of reducing packaging requirements has also gained traction in the food, drink, and personal products sectors, where concentrated formulations that require smaller bottles can be sold. Partnering with retailers to implement In-Store Dispensing Systems (ISDS) is another option.
- Sourcing sustainable packaging materials, i.e. maximizing use of sustainable and/or certified packaging materials.
- Closing the loop, i.e. by desigining packaging materials with reuse and recycling in mind and initiating take-back programs for materials such as plastic and glass bottles where net benefit of doing so is worthwhile.

Optimized packaging design, sustainably sourced packaging materials and reuse and recycling are key to reducing the impact of packaging materials.

Offering green products

Many large retailers prefer to engage with suppliers that can both prove that their operations are eco-efficient, and that can offer green products to their existing product portfolio. Capitalizing on the global trend toward low-carbon and energy-efficient, or green products, could also be a source of competitive advantage for MSMEs in LAC. Green trade still represents only a small percentage of the global market, but trade in certified products and in environmental goods and services is expected to reach US$2.2 trillion by 2020. Opportunities to take advantage of this trend are particularly strong in the agriculture, fisheries, forests (i.e. packaging), manufacturing, renewable energy, and tourism sectors [2]. This presents opportunities for MSMEs supplying to the majority of the key sectors identified in this research, which may be looking to boost revenues off the back of this trend. Assisting MSMEs in adjusting their product portfolios to include certified green products could help boost existing revenues as well as identify additional revenue streams.

Reducing chemical inputs and their impacts

Chemical products are important inputs to the value chains of many of the key sectors identified in this research. Irresponsible chemical use can have serious consequences for both human health and the environment. Below are some **key areas where chemical input reduction could provide MSMEs with an opportunity to** differentiate themselves and **achieve competitive advantage:**

- Chemical use in the agricultural sector – nutrient and organic pollutants from runoff of fertilizers and pesticides are a material environmental output for a number of key sectors identified. MSMEs could achieve a competitive advantage by establishing policies and principles that guarantee banned chemicals are not used, and exploring biological alternatives to chemical use such as biological pest control and use of organic and/or bio fertilizers.
- Chemical use in consumer goods – many consumer goods manufacturers and retailers are continuing to identify and phase out hazardous chemicals from the consumer products they make and sell. MSMEs can gain a competitive advantage by conducting assessments of their chemical inputs, by following certification methodologies, and by developing and implementing phase-out strategies.
- Production and commercialization of chemicals that have net benefits relative to alternatives – the chemical sector is not only reducing its own operational and value chain environmental impacts, but also developing innovative products that reduce emissions when used downstream by other industries. MSMEs should look to incorporate these as inputs to minimize their impact.

The table below estimates the potential impact that interventions might have on MSMEs' competitiveness indicators through providing support or technical assistance in the opportunity areas identified above.

Table 8/ Value generation potential across MSME competitiveness indicators

MSME competitiveness indicators	Value generation potential
Sales growth	All of the opportunities identified above offer the potential for sales growth through sustainable procurement by large companies; however, this may vary by sector. Reducing chemical inputs, for example, is likely to have the highest sales growth opportunity in sectors where products come in direct contact with people – children's products, clothing, food and beverage, etc. Logistics optimization may offer opportunities for sales growth where suppliers can secure additional contracts or access additional markets for backhauling services – particularly relevant where packaging is a material value chain impact. Diversifying product offerings to include green products also clearly has a direct link to sales as demand for such products increases.
Employment generation	The potential to generate additional employment opportunities for the local population will be greatest for those opportunities where innovation is required. The greatest need for research or innovation is in areas like optimizing chemical and packaging inputs or applying for green certifications on existing or new products. However, where the opportunities encourage improved resource efficiency there is a risk of job losses. For example, if transportation and logistics are optimized such that fewer number of journeys is required, fewer drivers may be needed to deliver the same quantity of product.
Cost reduction	The potential for reducing operating costs varies across opportunities. Where improved resource efficiency is achieved this is likely to result in cost savings. Reducing absolute chemical and packaging requirements and minimizing the distance traveled by logistics will undoubtedly reduce the costs of chemical, packaging, and fuel inputs and vehicle maintenance. However, replacing current chemicals with less hazardous or biological alternatives or procuring sustainably certified packaging materials may potentially increase operating costs, as these inputs may be more expensive, depending on the specific product in question. Improving water management is also likely to result in cost savings, although the per-unit cost of water is very low in some areas and so may be minimal on a short-term basis. However, it has been proven that water is not priced according to its availability – it tends to be cheapest where it is most scarce – and so factoring in the true cost of water would increase savings and can be used as an excellent proxy for water-related risks over time, as prices are likely to increase. The research and development required to achieve these envronmental gains, as well as to develop green products, may also incur costs in the short- to medium-term.

MSME competitiveness indicators	Value generation potential
Risk reduction	Risk reduction potential varies significantly depending on the type of risk considered. All of the opportunities identified, for example, are likely to reduce MSMEs' environmental risks and the risks associated with natural capital dependency. If implemented successfully and well-communicated to stakeholders, large companies, and the general public, they could also greatly reduce a company's reputational risk by demonstrating that they are being pro-active in the areas of natural resource use and environmental impact management. Some opportunities, particularly water management, are likely to reduce the risk of supply disruption. This applies to large companies engaging with MSMEs to improve performance, but relates equally to MSMEs that may be more able to continue to operate during times of water stress or drought.
Potential to scale/replicate	The initiatives described in this section have been pulled together as recommendations for how stakeholders can help MSMEs improve environmental management, with the intention that they apply across sectors and regions in LAC. As such, they are highly scalable and replicable across MSMEs. It is recommended to build sectoral and regional working groups to encourage MSMEs to partner in implementing innovative solutions to natural resource and environmental risks, in order to extend the reach of relevant interventions, and achieve shared value across companies, sectors, and countries.

5

RECOMMENDATIONS

This section summarizes recommendations on how technical assistance can best be structured to improve the competitiveness of MSMEs in the LAC region through the promotion of best practices in natural resource management and environmental impact reduction. In order to assist MSMEs in implementing the actions outlined above and to achieve competitive advantage as suppliers within large company value chains, three consecutive steps are recommended that can be taken in order to maximize impact, described below.

A. Build the business case for value chain environmental management with large companies as well as MSMEs

This study found that while some large companies in LAC countries are actively monitoring and managing their value chains' environmental impacts, this is the exception rather than the rule. In order to encourage MSMEs to implement environmental management initiatives, technical assistance-providing development entities should simultaneously work with large companies, encouraging them to gain a better understanding of their value chains. Doing so will help build the business case both for large companies to engage MSMEs on environmental matters, and for MSMEs to understand how managing their natural resource use and environmental impacts can improve their competitive advantage.

This report also highlights a number of tools that large companies as well as suppliers could be encouraged to use to gain a better understanding of value chain environmental impacts, as a first step toward managing them.

Four tools are of particular relevance in this context:

- **ECOVADIS:** Online platform to diagnose, benchmark, and monitor the environmental and social sustainability performance of suppliers.
- **STRING:** Online platform to trace and share information across the value chain at the product and process level.

- **NATURAL CAPITAL ANALYZER:** Tool to identify and assess environmental risks embedded in the value chain at the company level.
- **INDICARSE:** Tool to assess seven areas of companies' CSR, including value chain-related aspects.

These tools allow for supplier engagement that can be used to increase awareness of large companies' environmental performance-based preferential purchasing practices among suppliers. These tools also allow suppliers to provide data to allow them to proactively highlight their environmental performance and establish competitive advantage with large companies that have preferential purchasing policies in place.

As large companies gain a better understanding of their value chains and the environmental risks embedded in their procurement processes, and communicate such concerns to MSME suppliers, the knowledge, awareness and business case for action will trickle through the value chain.

To further solidify the business case, technical assistance-providing development entities can leverage existing research that demonstrates the environmental and financial benefits of adopting environmentally preferable processes. For example, research conducted on soybean and palm oil crop production in Brazil underscored the environmental value of agroforestry cultivation and conservation of natural land on farmland, as opposed to monoculture. The environmental value of agroforestry was three times higher than monoculture for palm oil production and 11% higher for soybean production [10]. Examples like these can be used to help large companies communicate the benefit of transitioning to environmentally preferable practices, and help build the business case for MSMEs.

B. Conduct training and capacity-building activities among MSMEs focused on natural resource use and environmental management

One of the key challenges identified through this study that prevents MSMEs from implementing robust environmental programs is a lack of understanding of how or where to begin. Training sessions should be conducted to build MSMEs' internal capacity to analyze, measure, and manage their natural resource use and environmental impacts.

In this context, in addition to understanding environmental impacts as a first step toward managing and reducing them, companies must also report environmental impacts in line with international guidelines.

The Global Reporting Intitiative (GRI), a sustainability reporting framework and guidance for buyers and suppliers, asks reporting companies to conduct a comprehensive materiality assessment and stakeholder engagement process which helps companies to identify potential areas of environmental risk. MSMEs that follow the GRI reporting framework are likely to have a greater understanding of their environmental performance, will be better placed to communicate it with large companies and will be better equipped to manage and reduce impacts going forward. The review process a company must undertake before signing on to the UN Global Compact Principles achieves a similar result as companies identify the risks and opportunities they face and begin to think about their business through a sustainability lens.

By partnering with industry trade associations or building sectoral/regional working groups,

technical assistance-providing development entities could deliver effective workshops tailored to the specific companies' needs.

Relationships built in step 1 described above can be leveraged to simultaneously engage large companies and MSME suppliers in capacity building activities. By working together in this way, both sets of actors would develop capabilities to be better able to communicate goals and challenges, and to identify areas where shared value can be realized. This shared value may be identified between large companies and MSMEs, or between the MSMEs themselves. Technical assistance-providing development entities can then leverage the relationships and progress made in the educational working groups to encourage the various actors to share best practice, share resources, and collaborate in implementing the reduction and efficiency intiatives described in step 2. Such efficient cross-cutting engagement has been identified as a best practice throughout this study. By collaborating, MSMEs may be better able to utilize economies of scale and realize mutual benefit, for example through sharing facilities or assets. This in turn can reduce costs, increase efficiency and improve environmental performance.

C. Provide avenues for MSMEs to access the finance needed to implement environmental management activities

Another significant barrier preventing MSMEs from managing their natural resource use and environmental impacts is access to the financial resources required. Development finance institutions (DFIs) offer grants, loans and/or equity, directing its assistance toward helping MSMEs move up the value chain to capture additional market value. DFIs also partner with other development entities, climate funds, microfinance institutions and other financial institutions. Financial institutions are increasingly interested in making green loans to small businesses. A challenge preventing private financial institutions from investing in MSMEs is a relatively low payback when compared to the high transaction costs, due diligence required and perceived risk associated with such investments. DFIs could help mainstream financial institutions overcome this challenge by offering a group portfolio for investment. Private investors can allocate funds to the portfolio with guarantees that DFIs can absorb the first loss risk, providing a buffer between MSME failure and potential investor losses. By grouping a number of MSME initiatives into one investment opportunity, risk is further diluted since losses experienced by one project are likely to be outweighed by other successes within the portfolio. DFIs could leverage relationships from the working groups of step 2 above in building such funds. Offering a variety of diversified, sector-specific and regionally-specific funds would help attract a variety of investors with specific mandates or interests.

Information assymetry is another barrier to MSMEs' access to finance. Financial institutions require robust accounting records and business plans in order to assess a potential investment. MSMEs often lack the accounting records, financial statements and business plans that investors require. DFIs could help investors and MSMEs overcome this problem by offering credit scores to their funds or individual MSME investments, providing investors with MSME risk self-assessments, etc. [11]. DFIs could also help close the information gap on sustainability reporting by completing the training sessions described in step 2. In order for green investments to be successful, lenders or investors need to see measured benefits. For example, the recipient must be able to clearly communicate what the funds were used for and what the outcome was

in quantitive terms – kWh of energy saved or tons of $CO2_e$ emissiones reduced, for example. Building sustainability measurement and reporting capacity will help equip MSMEs with the necessary skills and frameworks to satisfy these information requests.

The results of this multi-phase research study show that the food products sector presents the greatest opportunities for engagement of technical assistance-providing development entities to positively influence value chain management practice toward lowering environmental impact, followed closely by broadline retailers. Due to the scale of impacts, established best practices, relevant tools and clear stakeholders, these are also the sectors where the development entities are likely to achieve maximum results.

Key steps to maximize impact include building the business case, conducting capacity-building activities and providing access to finance.

6

APPENDIX

OVERVIEW OF TOOLS AND INCENTIVE MECHANISMS

Table A1.1

Fieldprint Calculator

Name of tool/ initiative	**Fieldprint Calculator**
Purpose	Determines sustainability at a farm level.
Description	The calculator was designed as an educational instrument to help farmers incorporate environmental considerations in their operations. In particular, the tool determines a farmer's 'fieldprint', which represents the level of natural resources needed to generate agricultural production, thus measuring efficiency.
Value	The tool is particularly relevant to the value chain of food and beverage sectors. Some of the companies that have used the 'fieldprint' calculator are Syngenta, General Mills and Kellogg's. In the case of Kellogg's, this tool was employed to determine the carbon and water footprint of producing corn. In addition, Field to Market is part of a partnership which includes among others The Coca-Cola Company and World Wildlife Fund (WWF). This partnership has been designed to support corn growers integrate sustainable farming practices in the Paw Paw River Watershed.
Limitations	Not relevant to non-agricultural based sectors.
Web link	**https://www.fieldtomarket.org/fieldprint-calculator/**

Table A1.2

String tool

Name of tool/ initiative	**Historic Futures 'String' tool**
Purpose	Mapping of value chain: an online business platform to share product and process information.
Description	The String tool is designed to trace any product all the way to the beginning of the value chain. Each company that uses the String platform records information about their product, including the suppliers they use, the processes they run and the finished products they make. String links all of these pieces of data together to form a comprehensive product history.
Value	Data can be uploaded in real time and can help value chain management and efficiency. The tool can also be used for non-environmental performance information by informing financial management and decision making.
Limitations	Does not assess sustainability.
Web link	**http://historicfutures.com/**

Table A1.3

InVEST

Name of tool/ initiative	**InVEST**
Purpose	Localized mapping of impacts to ecosystem services.
Description	The tool comprises a suite of software models, used to map and value the ecosystem goods and services that sustain human life, enabling the users to quantify, visualize and compare the provisioning of ecosystem services under different scenarios of land, water, and marine uses. For instance, users develop future scenarios (i.e. converting agricultural land to residential developments) and the tool evaluates how the value of services will change.
Value	The tool enables decision makers to assess quantified trade-offs associated with alternative management choices and to identify areas where investment in natural capital can enhance human development and conservation.
Limitations	Not relevant to companies wishing to understand or monitor value chains though can be used by companies within value chains.
Web link	**http://www.naturalcapitalproject.org/InVEST.html**

Table A1.4

EcoVadis

Name of tool/ initiative	**EcoVadis**
Purpose	EcoVadis operates the first collaborative platform enabling companies to monitor the sustainability performance of their suppliers.
Description	The EcoVadis platform is used by several thousand global companies to assess the environmental and social performance of their suppliers using simple and reliable supplier scorecards covering numerous purchasing categories and 21 CSR criteria.
Value	EcoVadis adds value for both buyers and suppliers. **BUYERS:** EcoVadis provides a scorecard with CSR criteria (environmental, and other performance) that allows suppliers to be benchmarked to each other within purchasing categories or countries. It also informs Action Plans to start a dialogue between buyers and suppliers on CSR solutions by suppliers. It is used for risk management purposes as well as supplier adoption, cost reduction and identifying supplier best practice. **SUPPLIERS:** EcoVadis provides the ability to self-diagnose and benchmark performance against competitors in order to identify CSR strengths and weaknesses. Through the EcoVadis third party verification, the tool is also valuable in communicating CSR work to customers.
Limitations	No specific MSME focus.
Web link	**http://www.ecovadis.com/**

Table A1.5

Global Reporting Initiative

Name of tool/ initiative	**Global Reporting Initiative (GRI) Guidelines**
Purpose	Guidance for sustainability reporting in a standardized manner.
Description	GRI promotes the use of sustainability reporting as a way for organizations to become more sustainable and contribute to sustainable development, and its comprehensive Sustainability Reporting Framework has been widely adopted.
Value	Effective sustainability reporting can add value for small businesses and the large companies that depend on them by helping to protect against risks, identify opportunities, and build the sustainability profile of a business. GRI reporting standards are adopted by numerous companies globally and suppliers can report consistently to many clients without requiring duplication of work in various formats.
Limitations	Global guidelines and indicators are not LAC specific.
Web link	**https://www.globalreporting.org/Pages/default.aspx**

Table A1.6

IndiCARSE

Name of tool/ initiative	**IndiCARSE**
Purpose	IndiCARSE assesses companies' CSR in line with international standards such as GRI and ISO 26000. It can be used by a broad spectrum of companies. The main objective of the tool is to promote competitive business that could ultimately lead to sustainable development of LAC.
Description	The tool is based on a survey with 480 questions grouped in 7 areas or "axes of CSR": Governance, Labor rights, Suppliers, Marketing, Environment, Local communities and Public politics.
Value	IndiCARSE is a tool that can be applied to MSMEs operating in different sectors and one of the key aspects of the tool is to assess the sustainability of the company's value chain. Moreover, IndiCARSE is aware of the special challenges that MSMEs have to face to integrate CSR practices, and thus has created an adapted tool for MSMES, which is called IndiCARSE PyMES (SMEs acronym in Spanish). It is used by approximately 250 companies in Central America.
Limitations	No sector specialization.
Web link	**http://centrarse.org/, http://www.indicarse-pymes.com, http://www.indicarse.org/, http://www.integrarse.org/documentos**

Table A1.7

UN Global Compact

Name of tool/ initiative	**UN Global Compact**
Purpose	Guidance document and an online tool, which can assess the implementation of sustainable practices and provide related training to users.
Description	Practical guidance for companies to implement sustainable management practices among its value chain in line with the 10 principles of the UN Global Compact. The principles are grouped in 4 areas: human rights, labor, environment and anti-corruption. The study emphasizes that sustainable value chain practices provide value to both companies and society, and leads to inclusive markets as social and environmental risks are taken into account [12].
Value	Provides value for MSMEs through guidance to improve sustainable behavior, and by adhering to the principles, companies can evidence their sustainable practice. Buyers can use the principles as criteria for selecting suppliers, and help to encourage improved environmental practices.
Limitations	Does not enforce practice and is considered to lack traction by some organizations [13].
Web link	**https://www.unglobalcompact.org/**

Table A1.8

Responsabilidad Integral®

Name of tool/ initiative	**Responsabilidad Integral® - RI (Total Responsibility)**
Purpose	A set of tools to help member (plastics and chemicals) companies implement their Guiding Principles and Codes of Management Practices together with the remaining core elements of the initiative: Continuous Follow-up and Progress Self-assessment, Performance Indicators, Assurance, Mutual Help and Community Relations, in a coherent and harmonious way with other management systems such as ISO 9000, ISO 14000, OHSAS 18000, BASC, and SA 8000.
Description	The tools include guiding principles, management guides for structuring and managing the company's activities and operations, performance indicators and assurance tools, to help companies to set out, implement and continuously improve on their performance, including social and environmental performance.
Value	The tools can be used by companies to help them achieve systematic, standardized and integrated corporate sustainability reporting.
Limitations	Plastics and chemicals industries only, though literature highlighted that broadline retailers are becoming more discerning in use of criteria for these. Limited specific reference to MSMEs.
Web link	**http://www.responsabilidadintegral.org/que_es.php**

Table A1.9

Instituto Argentino Responsabilidad Social Empresaria

Name of tool/ initiative	**Instituto Argentino Responsabilidad Social Empresaria - IARSE**
Purpose	Aiming to encourage and support CSR incorporation by MSMEs
Description	Self-assessment and planning tool for MSMEs. Comprises a set of management tools that enable the micro and small entrepreneur to diagnose and implement corporate and social responsibility practice in their daily routine. An initial questionnaire determines the level of CSR understanding, before a more complex questionnaire is used to determine activity by the company and value chain. This follows on to action planning for improvement.
Value	The tool helps MSMEs to understand their own impacts and develop action plans to address issues and impact areas of concern.
Limitations	Availability of tool online, as well as limitations are unclear.
Web link	**http://www.iarse.org/**

Table A1.10

Trucost Natural Capital Analyzer Tool

Name of tool/ initiative	**Trucost Natural Capital Analyzer Tool – Value Chain Analysis**
Purpose	Supports the rapid identification of suppliers (including MSMEs) and sectors with the greatest environmental risk (intensity) and opportunities (efficiency)
Description	Trucost's Environmental Dashboard (TED) is an online platform that allows users to quantify and value natural capital impacts and opportunities across corporate value chains. Embedded within TED are Trucost models and databases that assess the environmental impacts of suppliers in traditional sustainability metrics (metric tons of carbon and other pollutants, cubic meters of water, hectares of land use, etc) and also provides these impacts in customizable financial metrics. In this way, Trucost enables organizations to manage risk and opportunity from regional value chain sustainability issues such as carbon taxes, water availability and ecosystem services provided by land. The tool is made available on a subscription basis, or is also available on a project basis. The results identify environmental 'hot spots' by utilizing validated company reported data from the Trucost Environmental Register (covering the largest 5,000 public companies globally), and then using environmental input-output modelling to fill data gaps. This tool provides the user with a complete value chain footprint. The results are commonly used to identify key suppliers for engagement and education on environmental management best practice. Supplier engagement and education also is supported via the tool.
Value	This tool can quickly identify an organization's suppliers and purchased commodities with the greatest environmental risk. This supports targeted engagement and education programs to improve environmental management practices of supplier companies (including MSMEs) where they are most needed. In addition, this tool supports the identification of the most financially material environmental impacts for the purchasing organization, or each supplier, out of a comprehensive set of impact categories including greenhouse gas emissions, water, waste, and natural resource consumption.
Limitations	Privately owned and licensed to users (contact NorthAmerica@trucost.com).
Web link	**www.trucost.com**

Table A1.11

Roundtable on Sustainable Palm Oil

Name of tool/ initiative	**Roundtable on Sustainable Palm Oil (RSPO)**
Purpose	RSPO was established in 2004 to promote the growth and use of sustainable palm oil.
Description	Devised the Principles and Criteria on Sustainable Palm Oil Production, a list of requirements to help ensure that palm oil production is economically viable, environmentally appropriate and socially beneficial. Members are required to comply with the Principles.
Value	Helps ensure the responsible expansion of plantations by palm oil producers. RSPO is committed to smallholders, with successful certification of smallholders around the world. The Smallholders Task Force was set up at the 3rd Roundtable of the RSPO with a mandate to promote smallholder participation in the RSPO.
Limitations	Very narrow focus, relevant only for suppliers and buyers of palm oil.
Web link	**http://www.rspo.org/**

Table A1.12

Roundtable on Sustainable Biomaterials

Name of tool/ initiative	**Roundtable on Sustainable Biomaterials (RSB)**
Purpose	To ensure sustainable production of biomaterials.
Description	An international stakeholders' initiative developed to ensure the sustainability of biomaterials and biofuels. Biofuel and biomaterial producers and processors who certify their operation against the RSB standard prove their understanding and acceptance of the Roundtable on Sustainable Biomaterials to stakeholders and customers. The certification incorporates a broad range of considerations including legality, human and labor rights, local food security, effects on rural and social development, planning, monitoring and improving biomaterials operations, conservation, use of technology and waste management, and the effects on water, soil and air.
Value	The RSB standard is designed to be easily adopted by large and small organizations, producing or processing any type of biofuel crop. A Roundtable Sustainable Biomaterials Certificate demonstrates responsible biomaterials production certified by third party, and potentially offers competitive advantage.
Limitations	Very narrow focus, relevant only to supply of biomaterials.
Web link	**http://rsb.org/**

Table A1.13

Better Cotton Initiative

Name of tool/ initiative	**Better Cotton Initiative (BCI)**
Purpose	The Initiative's aims include reducing the environmental impacts of cotton production, improving the livelihoods and economic development in cotton producing areas, improving the commitment to and flow of better cotton throughout the value chain, and ensuring the credibility and sustainability of the Better Cotton Initiative.
Description	The BCI work with farmers and cotton sector stakeholders to improve environmental management of cotton farming. This includes social and environmental aspects, focusing on soil management, agrochemical use and water consumption.
Value	In LAC, BCI only operates in Brazil. BCI helps both smallholder and large-scale farmers grow cotton in a way that reduces stress on the local environment.
Limitations	Cotton-specific. Only operational in Brazil, no other LAC regions.
Web link	**http://bettercotton.org/**

Table A1.14

Alliance for Water Stewardship

Name of tool/ initiative	**Alliance for Water Stewardship (AWS)**
Purpose	AWS was formed because of a need for an international framework for responding to freshwater challenges – their work has culminated in the International Water Stewardship Standard.
Description	The Water Stewardship Standard's application is based around successful local partnerships through which decision-making on watershed-level actions are developed by those with a stake in water management.
Value	AWS works in LAC (ASW-LAC) through a partnership between the Nature Conservancy and FEMSA Foundation, and with technical support from the WaterCenter for Latin America and the Caribbean and Fundacion Chile. For all sectors previously identified, water use is the most material input, highlighting the importance of responsible stewardship.
Limitations	Does not capture wider environmental impacts of operation. Limited experience, so limitations of the framework are unclear.
Web link	**http://www.allianceforwaterstewardship.org/**

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