Green Supply Chain Management

Retail Chains & Consumer Product Goods –
A Canadian Perspective

SCL CAL
Supply Chain & Logistics Association Canada / Association chaîne d'approvisionnement et logistique Canada

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Retail Council of Canada

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Canada

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lu44-74/1-2009E
978-1-100-13638-7

Aussi offert en français sous le titre

Gestion de la chaîne d'approvisionnement verte :
Perspective canadienne du commerce de détail
et des produits de consommation

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Highlights

With increased consumer interest in environmental impacts, green supply chain management (GSCM) is becoming increasingly important for Canadian retail chains and consumer product goods (CPG) business partners. While the value of integrating environmental thinking into distribution practices is rarely disputed, literature to-date has been sparse in conveying tangible evidence regarding performance and business benefits. For this reason, the Supply Chain & Logistics Association Canada (SCL) and the Retail Council of Canada (RCC) have partnered with Industry Canada to review the important service business function of GSCM. This resulting report provides unique insights to help Canadian retail and consumer products supply chain executives understand the current trends and to recognize the benefits of adopting GSCM practices in distribution activities.

Key findings:

- **Retail chain* GSCM mandates bring business and environmental benefits to the entire consumer products supply chain.**
- **Best-in-Class (BiC)† firms report improvements in distribution efficiency, service differentiation, cost reduction, and customer retention as a result of adopting GSCM practices in distribution activities.**
- **GSCM practices are strategically important for retail chains and CPG manufacturers, with implementation mainly driven by high transportation and energy cost coupled with the need to differentiate distribution services.**
- **Many retail chains and CPG manufacturers are seeing improvements in energy usage, waste reduction, packaging reduction, and greenhouse gas (GHG) emissions reduction in distribution activities.**

Approach and methodology

This report is based on a collaborative undertaking by SCL's research committee, RCC, and Industry Canada's Service Industries and Consumer Products Branch. The SCL research committee and the RCC defined industry needs, drivers, and metrics and offered valuable insights from an industry perspective. By using SCL's 2008 Green Supply Chain Survey (1165 business entities which included more than 170 Canadian retail chains, 220 CPG manufacturers, and over 170 logistics and transportation service providers that serve CPG customers)[1], and by applying unique economic models developed in-house, Industry Canada provided the overall analysis and brought together all the components needed to produce a Green Supply Chain Management report for Canada's Retail and Consumer Products sector.

This report is one of a series of three GSCM reports:

- ***GSCM: Manufacturing – A Canadian Perspective;***
- ***GSCM: Logistics & Transportation Services – A Canadian Perspective; and***
- ***GSCM: Retail Chains & Consumer Products Goods – A Canadian Perspective.***

* Retail chains refer to the aggregate of retail outlets that share a brand and central management.

† Best-in-Class (BiC) businesses are defined as businesses that achieve positive environmental benefits in the two main sector-specific GSCM practices.

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Background

Canadian consumer products supply chain firms must continuously introduce new and improved processes and technologies to remain internationally and domestically competitive. To differentiate themselves, Canadian retail chains, along with consumer product goods (CPG) manufacturers[‡] and logistics and transportation service providers, are developing green supply chain management (GSCM) solutions within their organizations and/or through mandates[§] with their customers and suppliers.

GSCM integrates environmental thinking into supply chain management (SCM). For the purpose of this report, this includes introducing technical and innovative processes into materials sourcing and selection, delivery of the final product to consumers, and end-of-life product management. The intended result is to improve a business' environmental impact while increasing efficiency and growth within its own supply chain.

GSCM practices that are being implemented in distribution activities include:

- Energy efficiency;
- Reduction of greenhouse gas (GHG) emissions;
- Water conservation or processing;
- Waste reduction;
- Reduced packaging/increased use of biodegradable packaging;
- Product and packaging recycling/re-use; and
- Green procurement practices.

In general, investments in new business processes such as GSCM should be supported by a business plan that outlines a demonstrable return on investment. However, current literature is relatively devoid of citing GSCM's quantifiable business and environmental benefits. For this reason, the Supply Chain & Logistics Association Canada (SCL)[2] and the Retail Council of Canada (RCC) have partnered with Industry Canada to research GSCM practices and their business benefits. Business benefits can include greater distribution service differentiation, successful compliance processes, increased sales, new access to foreign markets, better customer retention, decreased distribution cost, enhanced risk management, and improved distribution efficiency.

This research report identifies industry perspectives, issues, and drivers for GSCM practices and thus helps inform decision makers of current and future industry needs.

This report provides insights on the:

- Internal and external pressures involved in adopting GSCM practices for Canadian retail chains, CPG manufacturers, and CPG logistics and transportation service providers;
- Importance of GSCM practices and their use by retail chains, CPG manufacturers, and CPG logistics and transportation service providers;
- Environmental benefits gained by implementing GSCM practices; and
- Business benefits gained by Best-in-Class (BiC) businesses and the GSCM technologies and processes used to achieve them.

GSCM Practices: Drivers and Adoption

In a global economy, pressure to adopt environmental practices within distribution activities is gradually increasing. As a result, focus is being shifted to how Canadian retail chains, CPG manufacturers, and CPG logistics and transportation service providers are using their supply chain activities to drive business results while enhancing their impact on the environment.[2] In other words, businesses are looking to adopt GSCM practices that confer both a positive Net Present Value (NPV) and environmental benefits.

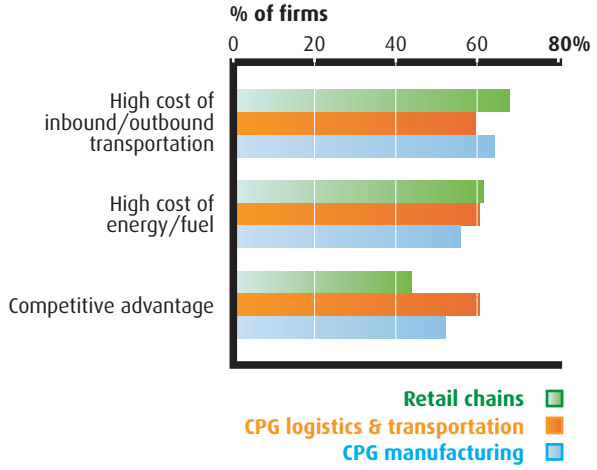
High transportation and energy cost, coupled with the need to gain competitive advantages, are the main drivers in all three sectors, and each driver has similar importance in affecting a company's decision to implement GSCM practices *(Figure 1)*.

[‡] CPG manufacturers are companies that design, manufacture, and market apparel, food, jewellery, dolls, toys, games, cleaning products, hand and power tools, home furniture, housewares, sporting goods, linens, and consumer electronics and appliances.

[§] Supply chain compliance mandate (SCCM) refers to systems or departments within corporations that ensure supply chain participants are aware of and take steps to comply with a clearly defined specification and/or a standard.

FIGURE 1

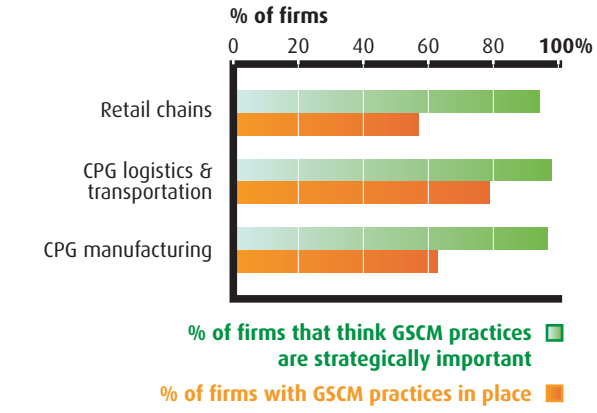
Main drivers for implementing GSCM practices in distribution activities[1]



The majority of Canadian retail chains, CPG manufacturers, and CPG logistics and transportation service providers consider GSCM practices to be of strategic importance to their businesses. However, fewer companies have actually implemented GSCM practices *(Figure 2)*. For retail chains, the reluctance to adopt GSCM practices could be attributed to the higher costs associated with monitoring and managing GSCM practices in multiple store locations. Moreover, since the majority of retail chains operate on a franchise ownership business model where decision making is split between the franchisor and franchisees, obtaining support for global initiatives such as GSCM may present a more complex process.[2]

FIGURE 2

Perspectives on and use of GSCM practices in distribution activities[1]

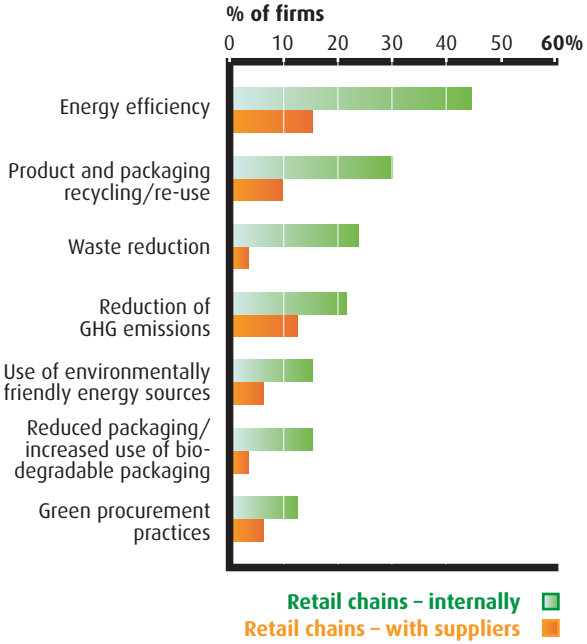


A larger proportion of CPG logistics and transportation service providers are implementing GSCM practices due to the fact that they own more transportation assets (compared with retail chains and CPG manufacturing firms) and thus have more options and opportunities to adopt GSCM practices.

Most retail chains implementing GSCM practices are doing so within their organizations. The most common practices focus on improving energy efficiency, reducing and recycling packaging, decreasing waste, and lowering GHG emissions in distribution activities. Some retail chains are initiating GSCM practices with their suppliers as well. The mandates of these retailers encourage suppliers to improve energy use, reduce GHG emissions and waste, and recycle packaging *(Figure 3)*.

FIGURE 3

Main GSCM practices implemented in distribution activities[1]

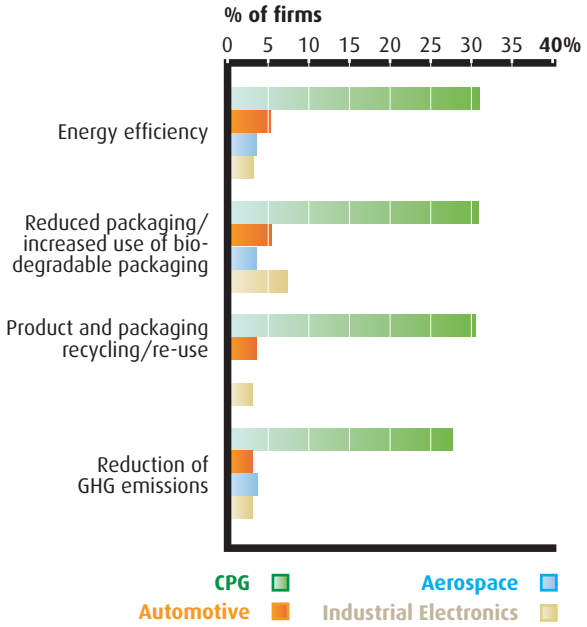


As a result of retail chain GSCM mandates, many CPG manufacturers have implemented GSCM practices with their customers. Consequently, when compared with automotive, aerospace and industrial electronics firms, close to six times more CPG manufacturers are engaging in energy efficiency, product and packaging

recycling, or the reduction of GHG emissions in distribution activities *(Figure 4)*.

FIGURE 4

Main GSCM practices implemented with customers in distribution activities[1]



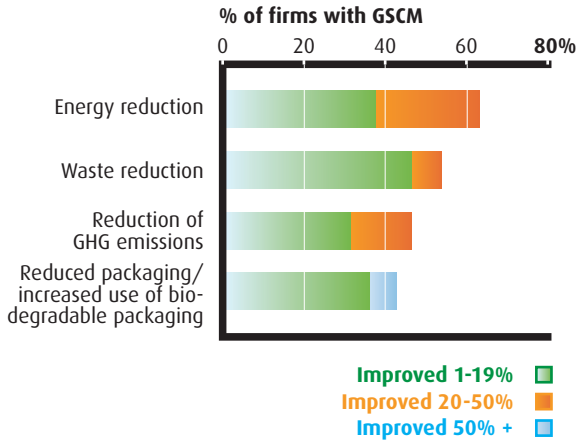
Environmental Benefits of GSCM Practices

GSCM practices result in multiple environmental benefits for Canadian retail chains, CPG manufacturers, and CPG logistics and transportation service providers. For Canadian retail chains, these benefits include improvements in energy and waste reduction, decreased GHG emissions, and less packaging in distribution activities *(Figure 5)*.

Retail chains have the opportunity to decrease GHG emissions and waste by retrofitting their distribution centres (DCs) to be more environmentally friendly, such as investing in LEED-certified green buildings.[##] This process involves sorting building materials and maximizing recycling processes, which enables retail chains to access carbon credits. Carbon credits are granted according to the amount of GHG a business emits in its operations; unused credits can be sold to other companies worldwide.

FIGURE 5

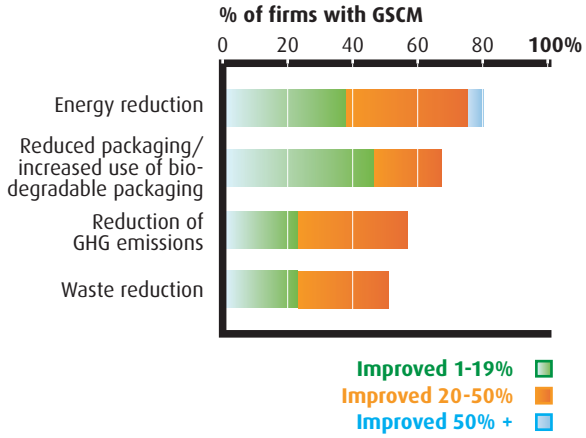
Environmental improvements stemming from GSCM practices in distribution activities - Retail chains[1]



In responding to retail chain GSCM mandates, CPG manufacturers gain numerous environmental advantages. The most common improvements include energy reduction, decreased packaging and lowered GHG emissions in distribution activities *(Figure 6)*.

FIGURE 6

Environmental improvements stemming from GSCM practices in distribution activities - CPG manufacturers[1]



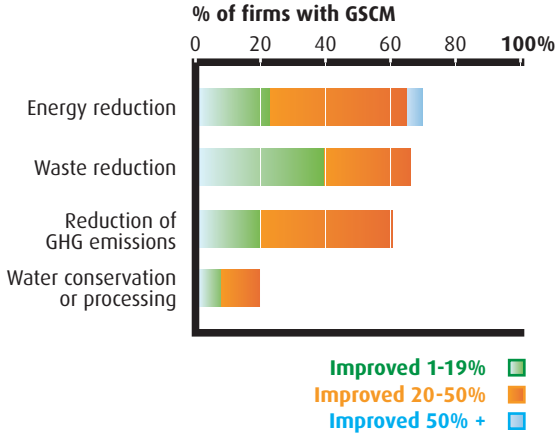
In addition, CPG logistics and transportation service providers generate similar environmental benefits compared with Canadian retail chains — such as energy, GHG emissions, and waste reduction in their distribution activities *(Figure 7)*. However, CPG logistics and transportation service providers are the only firms that report some improvement in water conservation in distribution activities. This improvement stems from CPG logistics and transportation service providers

[##] LEED provides benchmarks for the design, construction and operation of a property and covers site makeup, building materials, water and energy efficiency as well as indoor environmental quality. It also provides certification for people who demonstrate an understanding of green building practices.

reducing their environmental impact through water conservation or improved processing. During normal vehicle repair and maintenance activities, vehicle fluids may drip or spill or otherwise enter floor drains or sinks in service areas, potentially introducing various toxic chemicals into sources of drinking water. To mitigate this, companies put processes in place to recover vehicle chemicals and fluids for re-use.[2]

FIGURE 7

Environmental improvements stemming from GSCM practices in distribution activities - CPG logistics & transportation service providers[1]



To achieve environmental benefits, some global logistics and transportation service providers are using route planning software and Internet matching systems in their logistics service processes, while others are beginning to use transportation vehicles with hybrid technology, thus integrating environmental management into their bottom-line results.[2]

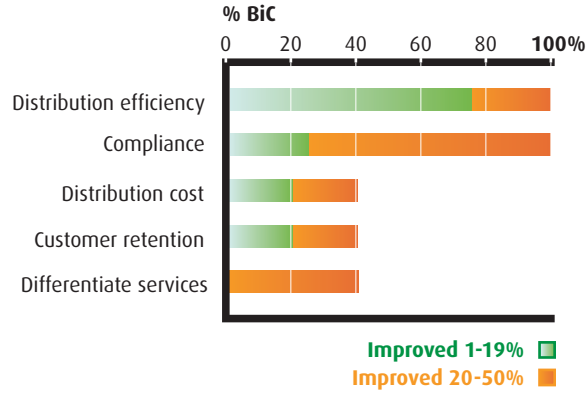
Business Benefits of GSCM Practices

Best-in-Class (BiC) firms are defined as businesses that achieve positive environmental improvements in the two main GSCM practices specific to the firms' sector. For retail chains and CPG logistics and transportation service providers, these two main improvements are reduced energy consumption and decreased waste in distribution activities. For CPG manufacturers, the main improvements are energy reduction and decreased packaging in distribution activities.[1]

BiC retail chains are increasingly more efficient in their distribution activities and have enhanced compliance processes. Compliance of retail chains refers to their conformity to recycling and packaging regulations as well as to how they meet and respond to corporate objectives.[2] Seventy-five percent of BiC retail chains report an improvement in compliance of 20–50%. Forty percent have improved customer retention, reduced distribution cost, and increased service differentiation *(Figure 8)*. It is also important to note that those retail chains that have implemented GSCM mandates with their suppliers are achieving a performance that is at least 20% higher than those without GSCM mandates (improving in terms of distribution cost reduction, compliance and distribution efficiency).[1]

FIGURE 8

Business benefits - BiC retail chains[1]

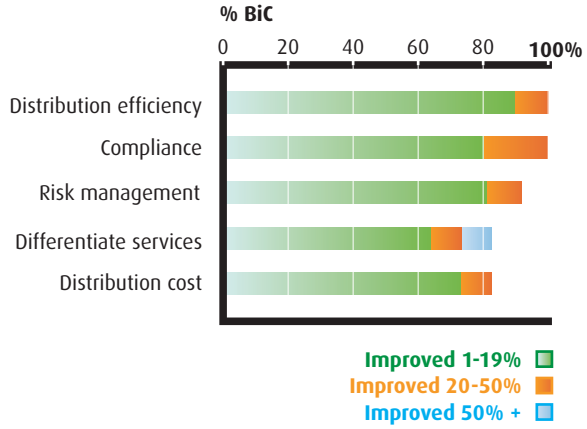


As in the case of retail chains, BiC CPG manufacturers are also gaining business benefits through improved compliance processes and greater distribution efficiency. Distribution efficiency is defined as having the right product distributed to the right place, at the right

time, and at the right cost. Also, at least 80% of BiC CPG manufacturers are experiencing a 1–19% improvement in risk management, distribution cost, and product differentiation *(Figure 9)*.

FIGURE 9

Business benefits - BiC CPG manufacturers

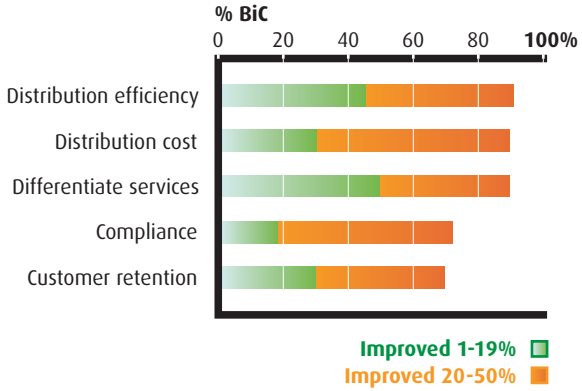


Many CPG manufacturers take responsibility for product quality/reliability throughout the entire service life of a product, including product distribution and reverse logistics. Reverse logistics refers to all operations related to reusing products and materials. It is the process of planning, implementing, and controlling the efficient and cost-effective flow of raw materials, in-process inventory, finished goods, and related information from the point of consumption to the point of origin for the purpose of recapturing value or properly disposing of a product. By reducing uncertainties related to the distribution of goods, CPG manufacturers have opportunities to contain distribution cost and lessen their global risks and environmental footprint at the same time.[2]

Over 80% of BiC CPG logistics and transportation service providers have gained significantly in terms of improved distribution efficiency, reduced distribution cost, and increased service differentiation. Also, over 40% of them have experienced 20–50% improvements in compliance processes and customer retention *(Figure 10)*.

FIGURE 10

Business benefits - BiC CPG logistics & transportation service providers[1]



BiC GSCM Processes and Technologies

To achieve the aforementioned business and environmental benefits of GSCM, BiC retail chains, CPG manufacturers, and CPG logistics and transportation service providers are using many highly advanced processes and technologies — both at the corporate level and within their DC and transportation operations (see Annex 1 for detailed BiC processes).

At the corporate level, BiC firms are implementing several processes and technologies. The three most commonly implemented processes by BiC retail chains are: training on green processes, investing in green initiatives in the community, and making joint process improvements.[1] Training is intended for all levels of employees within an organization (from corporate to technology and operations departments) and focuses on green benefits, implementation, and integration. Investing in green initiatives involves, among other things, offering grants for a wide range of green projects (ranging from tree planting to trail development) to community-based organizations across the country.[2] Joint process improvement is a strategy that involves the collaboration of supply chain partners to implement GSCM processes.

In the case of BiC CPG logistics and transportation service providers, implementing training on GSCM processes and executing joint process improvements are both common. In addition, some BiC CPG logis-

tics and transportation service providers are adopting an internationally recognized reporting framework for performance on green parameters and rewarding their suppliers for green practices *(Figure 11)*.

CPG logistics and transportation service providers are devoting resources to elicit improvements in many facets of their operations. These improvements include implementing online control panels that monitor environmental activities in buildings (e.g., energy and water usage), using real-time GPS tracking of transportation systems, improving the fuel efficiency of trucking fleets, and reducing over-packaging of goods.[2]

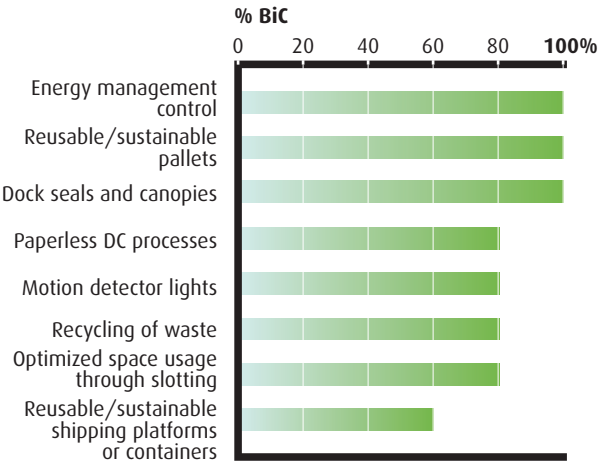
FIGURE 11

BiC – Processes for implementing GSCM practices in distribution activities[1]

BiC companies that gain benefits from their GSCM practices require some level of investment in technology or in an innovative way of managing their processes. In terms of DC activities, the most common innovative processes employed by BiC retail chains involve controlling the use of energy, reusing pallets, and using dock seals and canopies *(Figure 12)*. Although reusable/sustainable pallets and shipping containers are often made from recyclable materials, they can be durable enough for multiple uses within the distribution process.[2]

FIGURE 12

Distribution centre processes – BiC retail chains[1]



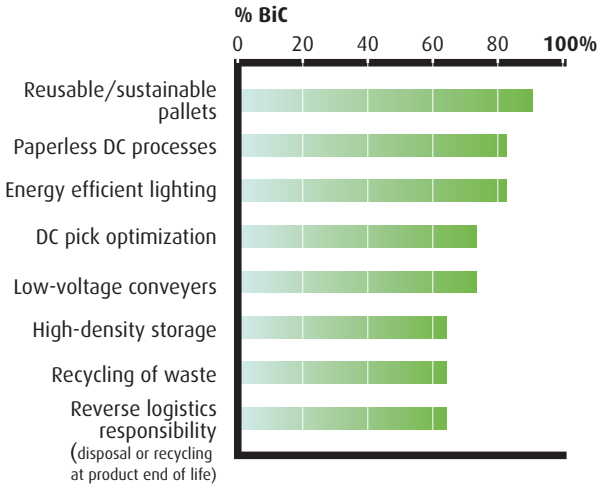
BiC retail chains also require their suppliers to flow their goods through their DCs rather than direct store delivery (DSD).** This can lower operational cost while shrinking the company's environmental footprint. Some exceptions may apply for large-scale delivery or for areas with limited access or capacity, such as shopping malls and large downtown urban centres.[2]

** Direct store delivery is a method of delivering products from a distributor directly to the retail store, bypassing a retail chain's distribution centre.

BiC CPG manufacturers are currently implementing innovative DC processes that suit their specific distribution activities. Contrary to retail chains that optimize their processes through complex product sorting, slotting, and picking methods and by creating customized pallets of mixed products using a Just-in-Time process, CPG manufacturers usually ship single-product pallets to retail chains' DCs.[2] Specific strategies used by BiC CPG manufacturers include using high-density storage combined with low-voltage conveyors and reverse logistics DCs *(Figure 13)*.

FIGURE 13

Distribution centre processes - BiC CPG manufacturers[1]

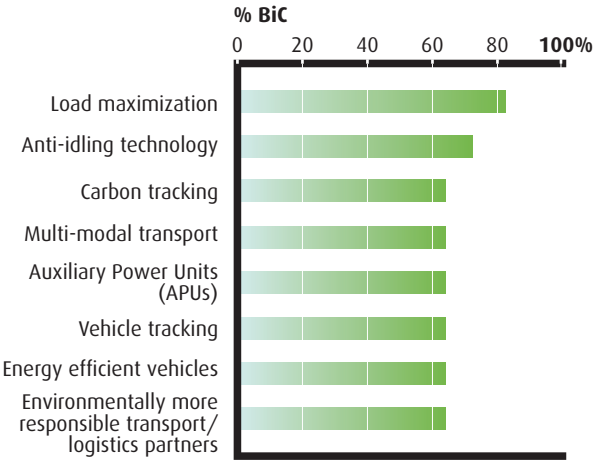


CPG logistics and transportation service providers can also benefit from innovative GSCM processes and technologies implemented in their transportation management processes. Load maximization is the most common process currently used by BiC CPG logistics and transportation service providers. This involves optimizing freight carrying capacity by changing the product combination used in the delivery process. Other GSCM technologies and processes being implemented by BiC businesses include using multi-modal transportation,[‡] which incorporates the use of rail among other transportation modes and thus reduces distribution cost and GHG emissions while maintaining or increasing levels of service.

Anti-idling technology and auxiliary power units (APUs) are other main GSCM practices used in this sector's transportation management. APUs can assist in engine ignition or in powering internal heating or cooling systems through an external source. Also, some BiC CPG logistic and transportation service providers track their carbon emissions using advanced carbon measurement tools *(Figure 14)*.

FIGURE 14

Transportation processes - BiC CPG logistics & transportation service providers[1]



[‡] Multi-modal transportation refers to multiple means of transporting goods under a single contract.

Final Remarks

GSCM presents a valuable set of activities for Canadian retail chains, CPG manufacturers, and CPG logistics and transportation service providers. Businesses that have adopted GSCM practices successfully have improved their commercial and environmental performance on many levels.

To maximize benefits from productive GSCM practices, individual businesses should develop their own business cases tailored to their specific context. Canadian companies should not only make the business benefits of GSCM clear to their supply chain partners, shareholders, employees and senior management, but they should also make the environmental benefits of GSCM clear by developing metrics that are universally understood — for example, expressing carbon emission reductions as equivalent to "x" number of cars taken off the road or "y" number of trees saved. Each business case should include recommendations and a roadmap for implementing the proposed GSCM action plan. The roadmap exercise consists of documenting the long-term vision and classifying its components into specific actions linked to deliverables, performance indicators, objectives, return on investment, and the project time frame.

For some businesses, an initial roadmap action item could be to internally evaluate distribution activities and potential environmental improvements by participating in associations and networks. For others, the first step might be to implement a pilot project with a customer and a supplier, such as implementing a green energy and carbon emission reduction mandate, a recycling process, or a GSCM scorecard system. In all cases, a well-documented roadmap allows businesses to gain the support and involvement of all stakeholders for the implementation of their GSCM action plan.

For policy makers, the findings presented in this report draw important linkages between the drivers for adopting GSCM practices, firm activities and resulting business benefits. These connections can help inform a continued dialogue across government and with stakeholders. This report also sets the stage for those interested in GSCM trends to pursue new research opportunities and projects.

References

1. Supply Chain & Logistics Association Canada, Green Supply Chain Survey, 2008
2. Supply Chain & Logistics Association Canada Research Committee, 2009

Annex I[‡]

Best-in-Class Retail Chain Analysis — % of BiC

BiC CPG — Methods for Implementing GSCM Practices

	Retail Chains	CPG Manufacturers	CPG Logistics & Transportation Service Providers
Training on green processes	100%	80%	100%
Investment in green initiatives in the community	100%	55%	35%
Joint process improvement	80%	90%	90%
Requirement of third-party certification for major suppliers	40%	30%	20%
Rewarding of supplier practices	20%	45%	30%
Purchase of renewable energy	25%	45%	45%
Adoption of an internationally recognized reporting framework for performance on green parameters	25%	55%	35%

BiC CPG — Green Transportation/Logistics Management Strategies

	Retail Chains	CPG Manufacturers	CPG Logistics & Transportation Service Providers
Increased use of marine transportation	80%	70%	45%
Load maximization	80%	35%	80%
Use of environmentally responsible transportation/logistics partners	65%	80%	65%
Decreased use of air transportation	45%	75%	55%
Use of multi-modal transportation	40%	65%	65%
Tandem trailers (where permitted)	40%	20%	55%
Aerodynamic trailers	35%	10%	45%
Decreased use of transportation tracking	25%	55%	45%
Anti-idling technology	25%	20%	75%
Carbon tracking	25%	35%	65%
Speed governors	20%	10%	45%
Compliant engines	20%	10%	55%
Single-tire drive axles	20%	20%	45%
Fleet management system	20%	10%	55%
Electric/hybrid vehicles	20%	-	30%
Route optimization	20%	30%	40%
Vehicle tracking	20%	10%	65%
Green dashboards	-	10%	55%

[‡] Supply Chain & Logistics Association Canada, Green Supply Chain Survey, 2008
(-) = No result

Carbon footprint modeling	-	30%	55%
"Responsible" transportation system certification	-	20%	30%
Auxiliary Power Units (APUs)	-	30%	65%
Truck stop electrification	-	-	55%
Alternative fuels	-	-	35%
Advanced lubricants	-	10%	45%
Diesel/hybrid vehicles	-	10%	40%
Energy-efficient vehicles	-	-	65%

BiC CPG — Green DC Management Strategy

	Retail Chains	CPG Manufacturers	CPG Logistics & Transportation Service Providers
Reusable/sustainable pallets	100%	90%	80%
Energy management control	100%	45%	75%
Dock seals and canopies	100%	45%	65%
Paperless DC processes	85%	80%	70%
Motion detector lights	80%	50%	30%
Recycling of waste	80%	65%	65%
Optimized use of space through slotting	80%	55%	65%
Reusable/sustainable shipping platforms or containers	65%	55%	80%
Conveyer belt speed controls	60%	55%	45%
Low-volt conveyers	60%	75%	40%
Alternative cooling systems	65%	40%	30%
Reduced packaging	60%	55%	45%
Energy-efficient lighting	60%	80%	65%
Responsible reverse logistics (disposal or recycling at product's end of life)	60%	65%	45%
High-density storage	60%	65%	65%
DC pick optimization	60%	75%	65%
Optimized use of natural light	45%	45%	35%
Cartonization (pallet configuration optimization)	40%	60%	45%
Solar power	25%	30%	20%
Wind power	25%	35%	30%
Hydrogen fuel cell technology	25%	35%	30%
Recycled water	20%	40%	45%
Energy credits	20%	45%	35%
Alternative/efficient assets	20%	20%	35%
LEED-certified facilities	20%	35%	30%
Energy-efficient cooling	-	65%	60%

(-) = No result