BUSINESS GUIDE TO

Green Supply Chain Management

IN THIS GUIDE

What is Green Supply Chain Management (GSCM)?

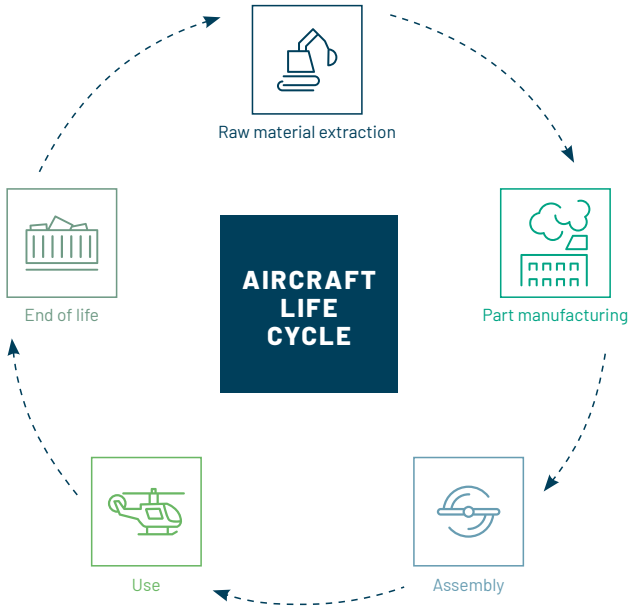
GSCM is the integration of environmental thinking into supply chain management to reduce the environmental impacts of a product during its **life cycle**.

THE THREE PILLARS OF GSCM

GREEN SOURCING
Purchase environmentally responsible materials and parts

GREEN DESIGN
Include environmental criteria in product design

GREEN MANUFACTURING
Reduce resources/energy/material consumption, pollution and waste



DID YOU KNOW?

60% of companies in the Canadian aerospace sector:

~ Are **currently engaging or planning to engage their suppliers** toward environmental management.

~ Think that GSCM can help the industry **becoming more competitive.** This number goes up to **75%** for companies with over 500 employees.*

* Survey on the state of green practices, products, processes, technologies, and innovations in the Canadian aerospace industry conducted by Groupe AGÉCO and GARDN, 2017

Why should you implement Green Supply Chain Management?

Implementing GSCM in an organization will not only generate environmental benefits, but also economic value for businesses in the aerospace sector, as it creates **cost savings** and **reduces risks** related to **the reputation, environmental compliance,** and **major shifts** in the market.

COST SAVINGS

Did you know that 47% of companies in the Canadian aerospace sector consider **operation and production cost reductions** as main drivers for implementing GSCM?

REPUTATIONAL RISKS

In this **era of transparency,** GSCM allows organizations to engage in a collaborative **relationship** with suppliers and contributes to managing reputational risk across the supply chain.

INCREASE IN ENVIRONMENTAL REGULATIONS

Market access represents a serious incentive for organizations to adopt GSCM. Did you know that 58% of companies in the Canadian aerospace sector already manufacture products or use processes that are **REACH** compliant?

MAJOR SHIFTS IN THE MARKET

Changes in the **availability and cost** of non-renewable resources (aluminum, fossil-based materials, lithium, cobalt) due to climate change or political instability directly impact the way companies in the aerospace sector rethink their sourcing strategy.

Understanding the three pillars of Green Supply Chain Management

GREEN SOURCING

Manufacturers can reduce the environmental impacts of their products' life cycle by including in their sourcing strategy:

The selection of suppliers based on specific environmental criteria, such as complying with the highest environmental standards and best practices

Green product specifications require purchases to meet specific environmental performance levels or other environmental requirements, such as recycled content, free of hazardous substances, recyclable or certified by a recognized environmental scheme

The purchase of **custom parts** when green product specifications are not available as off-the-shelf parts

GREEN DESIGN

Also known as Design for the Environment (DfE), it revolves around modifying the product to reduce its environmental impact throughout its entire life cycle, and may include the following measures:

- Selection of conflict-free minerals
- Selection of non-hazardous materials
- Use of LCA and life cycle-based metrics
- Design for material circularity
- Design for additive manufacturing and raw material demand reduction

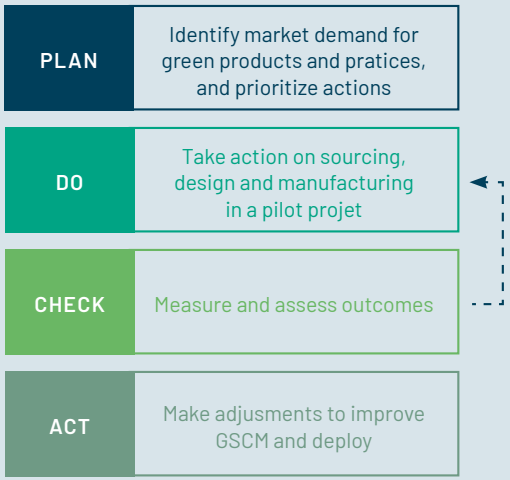
GREEN MANUFACTURING

Reducing the environmental impacts of plant operations is the core of many companies' sustainability plan and has beneficial consequences on the supply chain's environmental footprint. Here are a few examples:

- Improving production yield and resource efficiency
- Increasing energy efficiency
- Implementing water recycling
- Increasing production waste recycling
- Minimizing hazardous substances in manufacturing

How to implement Green Supply Chain Management?

Applying the plan-do-check-act-framework is a good way to implement GSCM in a business:



The **PLAN, DO and CHECK steps** may include the following items:

GREEN SOURCING FOR PURCHASERS

1 ~ Look for existing GSCM commitments
2 ~ Discuss procurement needs with the requestor
3 ~ Identify green specifications
4 ~ Seek supplier feedback on selected green specifications
5 ~ Request for proposals and select suppliers
6 ~ Track green purchases and savings

GREEN DESIGN FOR ENGINEERS

1 ~ Gather environmental data on product
2 ~ Define green design requirements and develop green designs
3 ~ Prototype and test selected green designs with a developed analysis method
4 ~ Improve designs based on test results

GREEN MANUFACTURING FOR PLANT MANAGERS

1 ~ Identify the plant's environmental hot spots
2 ~ Develop an action plan with key performance indicators (KPIs)
3 ~ Implement the action plan
4 ~ Review results and identify next steps

What are the key success factors to implement Green Supply Chain Management?

For a successful implementation, an organization must understand the GSCM drivers and enablers.

Drivers are internal and external pressures that will induce changes toward GSCM in your organization, while **enablers** act as levers to facilitate and optimize the implementation of GSCM.

The following GSCM drivers and enablers are described based on ISO 14001, ISO 20400 and BS 8903.

GSCM DRIVERS	KEY SUCCESS FACTORS
LEGISLATION AND REGULATION A growing number of environmental legislations are likely to affect your supply chain.	Ensure constant legislative watch over your actual and potential markets.
CUSTOMER DEMANDS Customer demands are a crucial driver for changes in any business. Therefore an increase in demand for a greener aerospace industry will have a direct impact on the value chain.	Implement an effective customer relationship management (CRM) system to gain momentum and be proactive. It helps understand your customers' needs and demands.
ORGANIZATIONAL STRUCTURE AND POLICIES Organizational structures and policies are fundamental for driving change within a business.	Implement a supplier code of conduct to structure changes in the entire value chain.

GSCM ENABLERS	KEY SUCCESS FACTORS
SUPPLIER ENGAGEMENT Suppliers are key stakeholders in GSCM, their involvement is essential.	Enhance collaboration with your suppliers as well as other peers in the industry by developing a community of practice to share and create knowledge.
LEADERSHIP Strong leadership from management and stakeholders is fundamental for the transition to GSCM.	Seek alignment with the business's strategy, goals, and vision to obtain top management or stakeholders buy-in and commitment.
PEOPLE People are at the forefront of the application of GSCM principles in operational processes.	Provide adequate training and identify a GSCM champion or subject matter expert who will help build the team's skills over time.
BUSINESS CASE The business case for GSCM justifies the allocation of resources to its implementation.	Build a strong business case internally and identify cost-saving opportunities through assessment tools, such as total costs of ownership.
TECHNOLOGY Data management is an important aspect of GSCM. Information technologies can help optimize data collection and communication.	Use efficient data collection tools that integrate sustainability modules.

Green Supply Chain Management in action

Many businesses have already implemented GSCM in their operations. Here are a few examples of practices and tools. Refer to GARDN's Best practices guide for a greener aerospace supply chain, for more information on best practices and on how to implement GSCM in your organization.

DID YOU KNOW?

25% of companies in the Canadian aerospace sector use ecodesign or GSCM tools?

~ This number goes up to **50%** for companies with over 500 employees.

SUPPLIER CODE OF CONDUCT

United Technologies implemented a supplier code of conduct in order to define the expectations for its product and service providers.

The Code of Conduct includes themes such as:

~ Compliance with laws

~ Quality & Environmental Health and Safety

~ Accuracy of Records and Submissions

~ Ethics & Compliance Program

Source: United Technologies Corporation Supplier code of conduct

SUSTAINABLE PROCUREMENT GUIDE

The Thales Sustainable Procurement Guide 2017 provides detailed information to help suppliers understand the principles, trends, and issues related to a responsible supply chain.

According to the guide, manufacturers should address—with their suppliers—impacts, risks, and opportunities related to themes such as:

~ Climate Change
~ Conflict Minerals
~ Emissions
~ Energy
~ Natural Resources
~ Packaging
~ REACH
~ Logistics
~ Waste
~ Water

Source: Thales Sustainable Procurement Guide 2017

DATA MANAGEMENT TOOLS

The use of relevant sustainability assessment and data management tools will enable your organization to address issues, such as transparency, traceability, compliance, reporting, etc.

Data management tools examples :

~ Verisk 3E
~ Enablon
~ Granta
~ ecoVadis