# 4. [GLOBAL PROCUREMENT AND MATERIALS MANAGEMENT (RS257-1)](https://www.construction-institute.org/an-analysis-of-global-procurement-and-materials-management-practices-in-the-construction-industry)

**Report Summary:** Given the increasing size, variety, and complexity of global projects, materials management must maintain and expand its role in the early phases of capital project planning. Recommendations include the following:

* Conduct comprehensive market studies early to identify cost-effective sources of equipment and materials, considering logistics complexity.
* Integrate sustainability considerations into project planning to meet owners' requirements and to develop contractors' capabilities in the area of sustainability.
* Streamline IT system interfaces by influencing selection and integration during pre-project planning and ensuring continuous improvement through training programs.
* Proactively address quality issues in global sourcing by importing materials from qualified suppliers or developing the local supply base before a project begins.

Core function for Materials Management Process:

* Materials requirements planning
* Project acquisition strategies
* Purchasing and subcontracting
* Expediting
* Supplier quality management
* Transportation and logistics
* Site materials management
* Planning for operations and maintenance turnover

Support function for Materials Management Process:

* Corporate strategy
* Personnel and organization
* IT systems
* Materials Requirements Planning

**Key Takeaways:**

## (1) Conduct comprehensive market studies early to identify cost-effective sources of equipment and materials, considering logistics complexity.

## (Project Phase: Prefeasibility through Construction)

* Identify potential suppliers of equipment and materials through online research, industry associations, and trade shows.
* Analyze supplier profiles to determine their reputation, capacity, and pricing strategies.
* Request quotes from multiple suppliers to compare prices, delivery times, and logistics options.
* Evaluate shipping costs, insurance requirements, and customs regulations for each supplier's proposal.
* Verify the authenticity of suppliers' certifications, licenses, and compliance with industry standards.

## (2) Integrate sustainability considerations into project planning to meet owners' requirements and develop contractors' capabilities in this area.

## (Project Phase: Prefeasibility through Construction)

* Develop a comprehensive sustainability plan that aligns with the owner’s requirements and industry best practices.
* Engage stakeholders to identify key environmental, social, and governance (ESG) issues that may affect the project.
* Integrate ESG metrics into project performance monitoring and reporting systems.
* Collaborate with contractors to develop their capabilities in sustainable construction methods and materials.
* Establish a sustainability management system that tracks progress and ensures compliance with regulatory requirements.

## (3) Streamline IT system interfaces by carefully selecting and integrating the optimal IT system(s) during pre-project planning and ensure continuous improvement via training programs.

## (Project Phase: Concept through Construction)

* Collaborate with project stakeholders to identify key IT systems that are the most appropriate for project success.
* Ensure the best choice of IT systems during pre-project planning by evaluating vendors’ capabilities and compatibility.
* Ensure the seamless integration of the new IT system into existing infrastructure through thorough testing and training programs.
* Develop a comprehensive training program for construction personnel to use the integrated IT system effectively.
* Continuously monitor and evaluate the performance of the integrated IT system, making adjustments as needed to ensure optimal functionality.

## (4) Proactively address quality issues in global sourcing by importing from qualified suppliers or developing a local supply base before a project begins.

## (Project Phase: Detailed Design and Procurement through Construction)

* Identify qualified suppliers via thorough research and evaluation before the project begins.
* Develop a local supply base by partnering with regional vendors to ensure the timely delivery of high-quality materials.
* Conduct regular audits of selected suppliers to verify their compliance with quality standards and regulations.
* Establish clear communication channels with suppliers to address any quality concerns or issues promptly.
* Implement a robust tracking system to monitor supplier performance, thereby ensuring accountability for quality deliverables.

## (5) Core function: Materials requirements planning

## (Project Phase: Feasibility through Detailed Design and Procurement)

* Establish project-specific procedures to align materials acquisition strategies with project requirements.
* Gather specifications and define standard material requirements to streamline procurement negotiations.
* Develop a comprehensive materials and equipment list, prioritizing long-lead and mission-critical items.
* Determine preliminary material quantifications, sizing, and cost estimates to support procurement planning.
* Implement a tracking and monitoring plan to ensure seamless material flow and timely procurement.

## (6) Core function: Project acquisition strategy

## (Project Phase: Feasibility through Detailed Design and Procurement)

* Define sourcing strategies by determining domestic or international procurement process and assessing modularization needs.
* Identify and evaluate potential suppliers based on the project’s requirements and quality standards and the suppliers’ past performance.
* Conduct supplier assessments, including qualification checks, audits, and compliance verification.
* Establish procurement responsibilities across project stakeholders and ensure clear roles for owners, contractors, and suppliers.
* Analyze and mitigate risks by developing contingency plans for critical materials and equipment procurement.

## (7) Core function: Purchasing and subcontracting

## (Project Phase: Detailed Design and Procurement through Construction)

* Develop a procurement plan that outlines purchasing strategies, supplier selection criteria, and contract requirements.
* Prepare and issue inquiry packages to potential suppliers and subcontractors to ensure clarity regarding project specifications.
* Evaluate and shortlist suppliers and subcontractors based on technical, commercial, and compliance assessments.
* Negotiate and finalize contracts, ensuring alignment with project timelines, budget, and quality standards.
* Monitor supplier and subcontractor performance and enforce compliance with contractual obligations and project milestones.

## (8) Core function: Expediting

## (Project Phase: Detailed Design and Procurement through Construction)

* Review purchase orders and establish expediting strategies to ensure timely material delivery.
* Communicate with suppliers to confirm production schedules and identify potential delays.
* Conduct regular progress checks, inspections, and site visits to verify supplier performance.
* Develop and implement recovery plans for delayed materials to mitigate project disruptions and schedule delays.
* Perform final inspections and issue expediting reports to document supplier compliance and delivery performance.

## (9) Core function: Supplier quality management

## (Project Phase: Feasibility through Construction)

* Conduct supplier capability evaluations to ensure the supplier’s compliance with quality, capacity, and financial stability requirements.
* Define and communicate quality assurance requirements, including inspection plans and performance expectations.
* Implement supplier surveillance plans to monitor the supplier’s quality performance and adherence to project specifications.
* Perform inspections and quality audits before shipment to verify the supplier’s compliance and identify potential material defects.
* Address nonconformance by enforcing corrective actions and tracking supplier quality performance over time.

## (10) Core function: Transportation and logistics

## (Project Phase: Detailed Design and Procurement through Construction)

* Develop a transportation and logistics plan that addresses cargo origin, shipping terms, and site delivery requirements.
* Procure logistics service providers, including freight forwarders, export packers, and customs clearance agents.
* Manage import/export compliance by identifying regulatory requirements and coordinating customs procedures.
* Monitor shipment progress and update schedules based on the supplier’s production status and transportation timelines.
* Inspect received materials for completeness and damage, ensuring proper handling and documentation.

## (11) Core function: Site materials management

## (Project Phase: Construction)

* Establish materials control systems, storage facilities, and handling procedures to ensure efficient site operations.
* Receive and inspect materials upon arrival and verify content accuracy against purchase orders and contracts.
* Maintain real-time inventory tracking to monitor material availability and prevent shortages.
* Implement material preservation and maintenance measures to prevent damage and ensure usability.
* Manage surplus materials by identifying reuse opportunities, resale options, or proper disposal methods.

## (12) Core function: Planning for operations and maintenance turnover

## (Project Phase: Construction through Commissioning and Start-Up)

* Define roles and responsibilities for the operations and maintenance teams during the commissioning and start-up phases.
* Identify and procure necessary spare parts to ensure long-term equipment reliability and maintenance readiness.
* Develop warehousing and inventory management plans for efficient storage and accessibility of critical materials.
* Implement a spares delivery strategy, including vendor support agreements and transportation planning.
* Conduct final reconciliation and handover of materials, documenting surplus inventory and providing operational guidelines.

## (13) Support function: Corporate strategy

## (Project Phase: Prefeasibility through Detailed Design and Procurement)

* Establish company-wide policies and standards for materials management, procurement, and supplier relationships.
* Align corporate procurement strategies with project execution goals and global market conditions.
* Develop strategic sourcing agreements to optimize costs, quality, and supplier reliability.
* Integrate materials management planning into the overall corporate strategy for enhanced efficiency and risk mitigation.
* Promote continuous improvement by adopting emerging technologies and best practices in procurement and logistics operations.

## (14) Support function: Personnel and organization

## (Project Phase: Prefeasibility through Detailed Design and Procurement)

* Define clear roles and responsibilities for materials management personnel within the project structure.
* Recruit and train qualified personnel to ensure expertise in procurement, logistics, and supplier management.
* Establish communication channels to enhance collaboration among the materials management, engineering, and construction teams.
* Implement continuous training programs to improve personnel competencies in materials management systems and technologies.
* Foster a proactive culture that emphasizes efficiency, accountability, and alignment with corporate materials management strategies.

## (15) Support function: IT systems

## (Project Phase: Prefeasibility through Detailed Design and Procurement)

* Implement an integrated IT system to streamline materials management, procurement, and logistics operations.
* Ensure interoperability between materials management platforms and external systems for seamless data exchange.
* Develop user training programs to maximize IT system efficiency and adoption.
* Enhance real-time tracking and reporting capabilities for improved decision-making and project control.
* Continuously update and refine the IT system to incorporate emerging technologies and industry best practices.

## (16) Support function: Materials requirements planning

## (Project Phase: Prefeasibility through Detailed Design and Procurement)

* Establish project-specific procedures to align materials acquisition with project needs and schedules.
* Identify, quantify, and prioritize materials and equipment based on project specifications and criticality.
* Develop procurement schedules to ensure the timely ordering and delivery of materials.
* Implement tracking systems to monitor material status, availability, and lead times.
* Coordinate with the engineering and procurement teams to adjust materials plans based on project changes.

## [(17) Tool: Global Procurement & Materials Management: An e-Guide to Effective Project Execution (IR257-2)](https://www.construction-institute.org/global-procurement-materials-management-an-eguide-to-effective-project-execution)

## (Project Phase: Detailed Scope through Construction)

* This tool is designed to enhance effective construction project execution. It helps manage procurement, logistics, supplier quality, and materials tracking for improved efficiency and cost savings.
* Suppliers must submit documentation in a prescribed format that matches the purchase order line items.
* Submitted documents must include descriptions, item numbers, and part numbers from the purchase orders.
* The supplier-submitted documents must align with the line item sequences on the purchase orders.
* Accurate records of received materials must be maintained to facilitate inventory management.
* Material quantities must be verified against purchase order totals for accuracy.

## [(18) Tool: Materials Management Planning Guide (IR257-3)](https://www.construction-institute.org/materials-management-planning-guide)

## (Project Phase: Concept through Construction)

* This tool is a guide for developing a materials management plan for a construction project. It helps to ensure the efficient procurement, logistics, inventory, and site management to optimize costs, minimize delays, and improve project execution.
* This guide is intentionally general, but requires project-specific planning to address each project’s unique needs.
* Stakeholders must consider owner/contractor responsibilities, site location, existing facilities, and contracting methods in materials management planning.
* A tailored plan will reflect these factors and ensure effective materials management for the project.
* Successful implementation requires coordination among the stakeholders to achieve desired outcomes.
* This guide serves as a foundation for implementing a comprehensive materials management strategy that meets project requirements.