

Module 1: Sustainable Logistics Systems and SDG Trade-offs

Module Description:

Module 1 introduces logistics as a sustainability issue, not just a movement issue. Students examine how sourcing, inventory, warehousing, transport, distribution, and information flows shape environmental, social, and economic outcomes across a supply network. Rather than treating logistics as a neutral business function, this module positions it as a system that influences emissions, congestion, resilience, waste, access, cost, and resource use.

This module therefore starts with a simple but important shift in perspective: a logistics system should not be judged only by whether it is fast, cheap, and reliable. It should also be judged by what kinds of burdens and benefits it creates, and for whom. A supply network that delivers low-cost products very quickly may still generate high emissions, create urban congestion, intensify waste, or push risk and cost onto workers, suppliers, or communities. This is why sustainability needs to be built into logistics thinking from the beginning, rather than added on later.

The module is especially relevant for students in Vietnam and Southeast Asia, where logistics decisions are deeply tied to export manufacturing, e-commerce growth, urban delivery pressure, cold-chain development, infrastructure inequality, and climate vulnerability. Students will therefore look at logistics through both an operational lens and a sustainable development lens.

Key SDG links:

- **SDG 9** Industry, Innovation and Infrastructure
- **SDG 11** Sustainable Cities and Communities
- **SDG 12** Responsible Consumption and Production
- **SDG 13** Climate Action
- **SDG 17** Partnerships for the Goals

Learning

By the end of this module, students should be able to:

Objectives:

- Explain logistics systems as interconnected flows of materials, information, and decisions rather than isolated activities.
- Identify how logistics decisions influence sustainability outcomes across environmental, social, and economic dimensions.
- Apply core logistics concepts to map a supply network and identify hidden trade-offs between efficiency, resilience, service, and sustainability.
- Recognize where logistics systems advance particular SDGs and where they create tension between SDGs.

- Evaluate the role of coordination, infrastructure, and organizational decision-making in building more sustainable logistics systems.
- Communicate a clear and evidence-based explanation of why a logistics system may be operationally efficient but still unsustainable.

Module 1 Pre-class activities

Purpose: To prepare students to see logistics as both a business system and a sustainability system. The pre-class work asks students to trace a product journey, identify where logistics becomes visible, and begin noticing where SDG synergies and trade-offs appear.

Pre-class Activity 1: Choose one logistics case

Choose **one** product or service flow that is meaningful in the Vietnamese context. For example:

- seafood moving from the Mekong Delta to export or urban retail markets
- garments or footwear moving through export manufacturing networks
- e-commerce parcels moving through Ho Chi Minh City or Hanoi
- temperature-sensitive pharmaceuticals or food products moving through cold-chain systems
- imported consumer electronics moving from port to warehouse to retailer

Students should create a short journey sketch showing the likely logistics pathway from source to customer. This does not need to be perfect. The goal is to make the system visible.

Pre-class Activity 2: Short written response

Write 200–250 words total and post to the online class discussion forum before the session.

In your response, identify:

- where logistics is most visible in your case
- where logistics is most hidden
- one likely environmental issue, such as emissions, congestion, waste, spoilage, or energy use
- one likely social or development issue, such as access, labor pressure, infrastructure inequality, or urban burden
- two SDGs that seem most relevant to the case
- one possible tension between operational performance and sustainability

This task is intentionally introductory. Students are not expected to know the full supply chain in detail yet. The point is to begin identifying that logistics choices support some development outcomes while undermining others.

Module 1 In-class activities

Activity 1: Sustainable Logistics Network Reconstruction

Goal: Make the full logistics system visible and identify where sustainability pressures sit.

In groups, students combine their pre-class case ideas and select one supply network to reconstruct in more detail. Each group builds a large physical or digital network map showing:

- suppliers
- production or processing points
- warehouses or distribution centers
- transport legs
- retailers or customers
- information flows
- likely disruption points
- likely environmental or social pressure points

Groups then add SDG markers to the map. They must show where the system appears to support particular SDGs and where it creates tension.

Prompt questions:

- Which part of the system seems most efficient?
- Which part seems most resource-intensive?
- Which burden is easiest to ignore?
- Which SDG appears to benefit most?
- Which SDG seems hardest to uphold at the same time?

Output: A photographed or shared Sustainable Logistics Network Map with short annotations showing at least two SDG synergies and one SDG trade-off.

Activity 2: Sustainability Priorities and Consequence Sort

Goal: Help students identify what a logistics system is prioritizing, and what gets pushed into the background.

· Each group receives a set of priority cards:

- cost
- speed
- reliability
- resilience

- carbon reduction
- waste reduction
- customer service
- worker/community impact

Students choose the top three priorities for their logistics case. Then they choose the two priorities most likely to be neglected in the same case. After that, they discuss:

- Which SDG is most clearly supported?
- Which SDG may be weakened?
- Which stakeholder benefits most?
- Which stakeholder carries the burden?
- What small adjustment could reduce the negative consequence?

Output: A short priorities sheet showing:

- top three priorities
- two neglected priorities
- one trade-off the group thinks is most important
- two relevant SDGs

Activity 3: Boundary Shift Challenge

Goal: Help students see that a logistics system may look sustainable or efficient depending on where the analysis begins and ends.

Groups choose one logistics case and analyse it from three different boundaries:

1. Focal firm boundary
What looks efficient or successful from the company's point of view?
2. Supply network boundary
What costs, risks, emissions, or labour pressures appear when suppliers, warehouses, transport providers, and workers are included?
3. Community and environment boundary
What burdens appear when cities, roads, communities, climate, and waste systems are included?

Students answer:

- What looks like "good logistics" under the narrowest boundary?
- What problem becomes visible when the boundary expands?
- Which SDG synergy appears?
- Which SDG trade-off appears?

- Which stakeholder is easiest to ignore?
- What would need to change if the system were judged from the widest boundary?

Output: A short Boundary Shift Statement:

“This logistics system looks efficient when we focus on _____. However, when we expand the boundary to include _____, we see that _____. The most important SDG trade-off is _____.”

Post-class activities

Post-class Reflection: Students respond to the prompt:

“Why is a high-performing logistics system not always a sustainable logistics system?”

Students should write a short reflection that includes:

- one idea they previously associated with “good logistics” that now seems incomplete
- one SDG trade-off they found surprising
- one part of the logistics system they now think deserves more attention than students or managers usually give it

This reflection is important because it helps students consolidate the main lesson of the module: logistics should not be evaluated only through cost, speed, or service. A system can appear highly effective from the perspective of the focal firm while creating environmental pressure, social inequality, and unsustainable urban or network outcomes elsewhere.