

# Optional Sectoral Module

## LOGISTICS AND SUPPLY CHAIN



In a resilient city, the logistics and supply chains system provides efficient and effective movement of goods ensuring continuous and profitable operation of companies. It has the ability to track, monitor and adjust supply chain patterns to avoid potential problems (*reflective*). In case of disruptions, the logistics system is able to recover the movement of freight rapidly (*robust*). Assessments of vulnerabilities and needs of urban logistics are performed in consultation with the private sector (*coordinated*). The assessments are integrated into city planning and inform investments in the city’s transport, freight and communication infrastructure (*coordinated and redundant*). In a resilient city, the business develops and shares continuity plans that recognize known shocks and respond potential climate related risks (*inclusive and robust*).

TOPIC	GUIDING QUESTION	APPLICABLE RESILIENCE QUALITY	RELATIONSHIP TO RESILIENCE QUALITY
Institutional Capacity	Who manages the freight transport infrastructure, nodes and services in the city, including roads, highways, rail, intermodal facilities, ports, and airports? Are they well-coordinated in terms of management, development planning, and emergency response?	Coordinated	Close coordination among freight transportation providers facilitates planning for future demand, and accelerates re-routing during disruptions and informs security improvements.
Planning	Does the city have a freight plan? Is freight planning integrated with other urban development plans?	Coordinated	City freight plans are the prerequisite for successful, large-scale urban freight solutions. Integration of freight planning into overall urban planning facilitates collaborative and strategic urban development that is compatible with the logistics needs of the city.

Planning	How has the urban logistics system (e.g., general physical and specific freight infrastructure) been impacted by past disasters? Were the impacts concentrated in specific locations? Have these disruptions informed improvements and substantial changes in the logistics system?	Reflective	Monitoring of physical and freight infrastructure disruption during previous disasters helps identify vulnerable locations and operational weaknesses within the logistics system. Keeping track of such vulnerabilities helps a city make strategic (maintenance) investments for improving the reliability of city infrastructure used for movement of freight.
Planning	Has the city conducted a vulnerability assessment of the freight transportation network and evaluated how potential failures may impact supply chain users? Have alternative freight paths been identified for each type of hazard?	Reflective; Redundant	Vulnerability assessment of the freight transportation network and projections of disruption impacts can provide the city the economic basis for evaluating the profitability of investing in new freight transportation network.
Planning	Does the city have an overview of the major supply chain users that rely on the city's logistics system? Are the supply chain users classified based on their role in the supply chain (e.g. importers, exporters, local, regional)? Is there an understanding on how the major players use the city's transport networks and specific freight infrastructure?	Inclusive; Coordinated	A mapping of major supply chain users and their preferred supply routes allows the city to prioritize maintenance/investments in freight corridors according to the needs of users and their impact on the local economy.
Planning	Is there a freight origin & destination matrix? Who is responsible of keeping it up to date? How often is updated?	Reflective	A freight origin & destination matrix allows for planning of optimal logistics flows. Sound logistics planning depends on reliable and updated information on local, regional and international freight and should be performed by agencies best positioned to acquire and analyze freight information.

Finance	Is there a budget to develop multi-stakeholder collaborations on logistics continuity planning? Does this budget include conducting large scale multi-stakeholder simulations of the urban freight system?	Robust	Growth of supply lines, stiffer competition, customer demands for lower costs and political instability make companies vulnerable to high impact/low probability events. Availability of financial resources for multi-stakeholder collaboration and joint simulations of the urban freight system allows for improved risk-information sharing and logistics continuity planning.
Communication	Are there regular meetings with the private sector to review the performance of the city's logistics system? Is the private sector consulted during the development a city freight plan/strategy?	Reflective; Inclusive	Regular evaluation of the performance of the city's logistics system allows the city to determine the extent to which infrastructure upgrades and investments are needed to improve their efficiency. For the purpose of being responsive to the needs of major supply chain users, the city freight plans should be developed in consultation with the private sector.
Communication	Is there regular communication with the operators of critical freight nodes that support the import/export to the city major economic sectors?	Coordinated	Cities that are in regular communication with critical freight nodes are able to assess threats to these nodes and re-route their export/imports channels. Cities that regularly experience disruptions in their supply chain routes suffer from large logistics costs and potential disinvestment.
Communication	How are private logistics operators notified of changing conditions in the logistics system? How often are critical information and communication systems tested?	Reflective; Robust	Regular freight system updates allows private logistics operators to adjust their operations and avoid instability in logistic flows.

<p><b>Communication</b></p>	<p><b>Communication:</b> Does the city support the development of emergency communication protocols and mechanisms for sharing information about disruptions between transport sector and freight infrastructure operators? Can supply chain users quickly access information on the status of the logistic system?</p>	<p><b>Coordinated</b></p>	<p>Emergency communication protocols and pre-established mechanisms for sharing information during a disruption facilitates a coordinated response and recovery among freight transport and infrastructure operators. Timely information about disruptions to the logistic system helps supply chain users to quickly respond and adapt to the new situation.</p>
<p><b>Response Capabilities</b></p>	<p>Are there metrics used to monitor the capacity of critical freight nodes and links of the freight system (e.g. containers moved per day)? Are there target metrics or goals that need to be achieved after a disruption (e.g. 80% of container movements after three days)</p>	<p><b>Reflective</b></p>	<p>Ability to monitor freight system capacity allows logistics operators to adjust capacity in each freight network according to real demand. Setting target metrics or goals for recovery of freight system after disruptions can help regain confidence in the logistics operators.</p>
<p><b>Response Capabilities</b></p>	<p>Are there priorities on how to give access to critical freight nodes to various supply chains on the event of a disruption? Is there a chain of command clearly established to enforce these priorities on the critical freight corridors?</p>	<p><b>Robust; Coordinated</b></p>	<p>Assessment of the importance of various supply chains allows for a pre-defined prioritization that can be executed during limited flow of logistics. A clear identification of roles and responsibilities for enforcing prioritization of freight transportation allows for maintenance of vital economic functions.</p>
<p><b>Response Capabilities</b></p>	<p>Does the city have enough authority to temporarily change freight regulations or control freight infrastructure? Are city officials properly trained on these capabilities?</p>	<p><b>Robust</b></p>	<p>Authority to temporarily adjust freight regulations or control freight infrastructure enables the city to keep vital freight flowing despite disruptions in the freight system. City officials must be capable to exercise this authority in a responsible and targeted manner to gain stability in critical supply chains.</p>