



# 01 - Transportation Sector

## D. Rail Transportation Sub-sector

### Organization Responsible

Level of Responsibility	Name of Ministry/Agency/Institution
Ministry	Transport and Civil Aviation
Department	Sri Lanka Railways
District	
DS Division	
GN Division	

## Concepts and Definitions

### Transportation Sector

The transportation sector is composed of the following sub-sectors:

- a) **Land transportation** covering roads, bridges and other related structures like culverts, drainages, etc.;
- b) **Air transportation** which will include airports, aircrafts and other structures and assets like warehouses, navigational equipment, spare parts, etc.;
- c) **Water transportation** to include ports, water crafts and other structures and assets like warehouses, navigational equipment, stocks, etc.; and
- d) **Rail transportation** which will include trains, stations or terminal and other related structures and equipment. It should be noted that boats used for fisheries are not included in this sector. They should be assessed in the agriculture sector.

This Guidance Notes will apply to the rail transportation sub-sector in Sri Lanka.

### Damages

In the transportation sector, damages are cost of: a) repair of partially damaged assets and/or b) replacement of totally destroyed assets and infrastructure such as:

- a. For land transport – all types of roads, bridges and other similar structures like culverts, dikes, which are part of the land transportation system.
- b. For water transport - Ports, inland waterways, ferries and other assets.
- c. For air transport – Airports, aircrafts, structures and equipment.
- d. For railroads – Trains, structures and equipment.
- e. Transportation infrastructures like bus terminals, offices, warehouses, etc.
- f. Materials and supplies other stocks such as computers, tools, books, furniture, research works and other collections must also be included under this heading.

Damages in transport sector will occur at the time of, or shortly after the disaster although some damages may become obvious only after a longer period. Damages are measured in physical terms (such as kilometers of roads, number of equipment) for which the monetary repair or replacement value is subsequently estimated at pre-disaster level.

### Losses

Losses are the values of foregone revenues or income due to the change in economic flows (income and expenditures) during the period of recovery and reconstruction following the disaster. They are the current value of goods and services that were not and/or will not be produced over a time span due to the

disaster until full recovery is attained. In the transport sector, losses will include the following:

- Urgent expenditures to re-establish traffic flows after transport assets have been affected like the cost of temporary Bailey-type bridges, detours, etc.;
- Higher cost of transport due to the use of alternative, longer and lower quality roads over the recovery and reconstruction period;
- Losses in revenue of the enterprises – public and private – that operate the transport services like bus companies, airlines, shipping lines, trains as well as airports and ports, among others.
- The cost of dredging river channels to enable vessels to dock; and
- Other unexpected expenditures that may arise due to the disaster like clearing of debris.

Losses will take place during the entire period of recovery and reconstruction of the sector and may stretch even beyond the year that the disaster occurred. It is expressed in monetary value at current prices.

In conducting a post-disaster damage and loss assessment in the transport sector, the following steps are normally followed for every disaster-affected district.

## Steps in Undertaking Post-Disaster Damage and Loss Assessment

### ***Step 1. Collect and/or validate the baseline data for each of the disaster-affected district***

Baseline information must be compiled and validated at the national, provincial or district levels before the field assessment or, if possible, prior to the occurrence of disaster. It is assumed that rail transportation in Sri Lanka is public in ownership. The table below shows the general types of assets of the railroad company.

**Table 1. Income and assets of the rail transportation company**

<b>Name of Railroad Company</b>			
<b>Average Annual Income of Rail Company (LKR/Year)</b>			
<b>Total Number of Employees of Rail Companies</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>
<b>Rail Transportation Assets</b>	<b>Average Replacement Cost (LKR/Unit)</b>		<b>Average Repair Cost (LKR/Unit)</b>
<b>Moving Assets</b>			
<i>Wagon</i>			

Engine		
Others		
<b>Equipment and machinery</b>	<b>(LKR/Unit)</b>	<b>(LKR/Unit)</b>
Signal equipment		
Track machinery		
Vehicles		
Computers		
Furniture		
Others		
<b>Materials and supplies</b>	<b>(LKR/Unit)</b>	<b>(LKR/Unit)</b>
Fuel (per Liter)		
Others		
<b>Structures (in Meter)</b>	<b>(LKR/Meter)</b>	<b>(LKR/Meter)</b>
Tracks		
Tunnels		
Bridges		
Culverts		
<b>Buildings</b>	<b>Average Replacement Cost (LKR/sqm)</b>	<b>Average Repair Cost (LKR/sqm)</b>
		<b>Roof      Wall      Floor</b>
1 floor		
2-3 floors		
More than 3 floors		

Notes in filling out Table 1.

- The replacement and repair costs for buildings are in Rupees per square meter (LKR/sqm) which can include office buildings, train terminals, etc.
- Bridges, culverts and other similar infrastructure should not include those that are under the Ministry of Public Works.

## Step 2. Estimate damages and losses

With the baseline information, field assessment should be undertaken in the affected districts after a disaster. The following should be noted:

- Only the assets of the rail sector should be assessed by District.
- Income losses should be considered for the whole railroad company without specific location, thus losses will be included in the nationwide summary.

Direct interviews with officials involved in the construction and repair of facilities should be conducted during the field visit in order to validate unit costs of repair and reconstruction. Alternatively, the management of the railroad transportation system can be given the data entry sheets of the online reporting system to enable them to provide the information required for the assessment. The assessment team will input the information provided by the firm into the data entry sheet of the online system.

### ✓ Step 2.1. Estimate the damages

The damages of the railroad sub-sector can be assessed using the table below.

**Table 2. Damages to the rail transportation company in a District**

District							
Type of Assets	Number of Totally Destroyed		Number of Partially Damaged			Total Damages (LKR)	
<b>Rolling Stock</b>							
Wagon							
Engine							
Others							
<b>Total</b>							
<b>Equipment and machinery</b>							
Signal equipment							
Track machinery							
Vehicles							
Computers							
Furniture							
Others							
<b>Total</b>							
<b>Materials and supplies</b>							
Fuel (Liters)							
Others							
<b>Total</b>							
<b>Structures (in meters)</b>							
Tracks							
Tunnels							
Bridges							
Culverts							
<b>Total</b>							
<b>Buildings</b>	<b>Totally Destroyed</b>		<b>Partially Damaged</b>				<b>Total Damages (LKR)</b>
	<b>Number</b>	<b>Total Square Meters</b>	<b>Number</b>	<b>Roof (sq m)</b>	<b>Wall (sq m)</b>	<b>Floor (sqm)</b>	
1 floor							
2-3 floors							
More than 3 floors							
<b>Total</b>							
<b>TOTAL DAMAGES</b>							

Notes in filling out Table 2.

- The 'rolling stock' refers to the moving assets of the rail company. They should include those that were damaged in the district where the assessment was undertaken.

✓ Step 2.2. Summarize the damages in the province

Based on the information gathered in the previous tables, the summary table below can show the magnitude and scope of damages and losses to the sector.

**Table 3. Summary of damages in the rail transportation in a Province**

Province	
Name of District	Total Damage (LKR)
<i>District 1</i>	
<i>District 2</i>	
<i>District N</i>	
<b>TOTAL</b>	

✓ Step 2.3. Summarize the damages and losses nationwide

Based on the information on damages in the previous table, a summary table should show the estimated damages and losses to the sector. Since the railroad company generates income from its operations across the country, the losses of the company should be assessed at the company level. This will mean that the losses will be the overall nationwide losses of the company not on a district or province levels. The information on losses can be gathered directly from responsible officials of the rail company.

**Table 4. Summary of damages and losses in the rail transportation nationwide**

Name of Railroad Company			
Name of Province	Total Damages (LKR)		
<i>Province 1</i>			
<i>Province 2</i>			
<i>Province N</i>			
<b>TOTAL</b>			
Type of Losses	Year 1	Year2	Total Losses (LKR)
<i>Foregone income of rail company</i>			
<i>Cleaning up of debris</i>			
<i>Higher operating costs</i>			
<i>Other unexpected expenses</i>			
<b>TOTAL LOSSES</b>			

**Step 3. Analyze the impacts of the damages and losses to the economy and affected population**

The assessment team must be able to analyze potential impacts to the people and the economy, among others, if the sector is not restored immediately. The following are some of the issues that should be assessed, among others:

- **The possible impacts on the welfare of the people.** Living conditions, housing, health, education, access to services and resources.
- **Economic impacts.** Business productivity (decline in output and income); reduction in employment; increase in prices; food supply; etc.

- **Government services.** Reduction in provision of services in education; health; security; administrative matters; etc.
- **Added risks.** The additional hazards and risks brought about by the disaster like the creation on new landslide-prone areas; epidemics; etc.
- **Environment.** The potential environmental risks like oil spills, destruction of watershed areas; etc.
- **Gender and other cross-cutting issues and concerns.** The potential impacts to vulnerable groups like women, children, elderly, indigenous peoples, etc.

#### ***Step 4. Identify the recovery strategies and estimate the recovery and reconstruction needs***

The post-disaster needs must be based on a framework where policies and strategies are coherent and integrated. After analyzing the potential effects and impacts if no assistance will be provided to the sector, the aggregate needs of the sector must be estimated.

##### *✓ Step 4.1. Identify recovery and reconstruction strategies*

After the consolidation of the field assessment, the assessment team must identify or recommend the policies and strategies for the recovery and reconstruction for the sector. The following are some of the general policies and strategies that could be considered, among others.

- **Tax breaks to business firms.** Exempting firms from paying certain taxes for a certain period, like temporary reduction in the collection of value-added tax, building permits and other related fees; temporary elimination of import duties on essential items required as inputs to recovery operations; etc.
- **Credit.** A credit scheme with soft terms, like low interest rate with longer repayment periods, which can provide firms the resources to buy machinery and equipment that will normalize operations.
- **Equity.** In some special cases, the government may opt to provide equity in private firms instead of subsidy or credit or tax exemptions.

The following strategies can be adopted for the post-disaster recovery and reconstruction activities:

- **Building Back Better (BBB).** Recovery activities based on BBB principles will promote longer-term disaster risk reduction and management. BBB principle should look at the how to make infrastructure and facilities safer

from future disasters like stronger engineering design, the advantages of resettlement of facilities in disaster-safe areas instead of rebuilding in the same disaster-prone areas, etc.

- ***Focus on the most vulnerable and socially disadvantaged groups such as children, women, and the disabled.*** Recovery programming should give priority to those that will benefit the most vulnerable groups, including women, female-headed households, children, the poor, and take into account those with special needs.
  - ***Community Participation and Use of Local Knowledge and Skills.*** The participation of the community in all process (identification, planning, design and implementation) of recovery activities will help ensure the acceptability of projects and optimize the use of local initiatives, resources and capacities.
  - ***Coordinated and coherent approaches to recovery.*** The effective coordination among all involved agencies should be established based on uniformity of policies, flexibility in administrative procedures, etc. In some instances, a special new agency may be needed to oversee, coordinate and monitor complex disaster recovery programs.
  - ***Efficient use of financial resources.*** Fund sources from the national budget and the international donor partners that are suited for the recovery activities should be identified. Assistance to the recovery of the private sector, if any, should be clearly outlined.
  - ***Transparency and accountability.*** The overall plan and implementation of projects for recovery must be transparent, especially to those affected, through open and wide dissemination of information on all aspects of the recovery process. An effective monitoring system must be established.
- ✓ *Step 4.2. Identify, estimate and prioritize recovery and reconstruction needs*

Recovery needs are intended to bring back normalcy to all affected areas and sectors as soon as possible while reconstruction needs are generally long-term in nature (3 years or more) and are intended to 'build back better' from the ruins of a disaster. The sector assessment team must identify and prioritize their recovery and reconstruction projects based on their impact assessment.

- ✓ *Step 4.3. Summarize the estimated needs and draft the implementation schedule*

Based on the prioritized recovery and reconstruction needs, a summary should be created by the assessment team enumerating the post-disaster projects for the recovery and reconstruction with a rough general schedule of implementation



outlining at the very least the activities, timing and budget required. The following table can be used.

**Table 5. Summary of needs**

Name of Project	Estimated Budgetary Requirement (LKR)			Total (LKR)
	Year 1	Year 2	Year N	

***Step 5. Draft the post-disaster damages, losses and needs (PDNA) report of the sector***

With all the information gathered using the previous steps, a report can be drafted by the assessment team which will be the inputs of the sector in the overall recovery and reconstruction plan. The draft sector report should be submitted to the DMC for consolidation.