01 - Transportation Sector

B. Air Transportation Sub-sector

Organization Responsible

Level of Responsibility	Name of Ministry/Agency/Institution
Ministry	Ministry of Transport
Department	Civil Aviation Authority of Sri Lanka /Airport & Aviation Services (SL) Ltd.
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) ***Railroads*** 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 air 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 damager 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. The tables below must be completed to be used for the baseline information in the online system for the transportation sector.

Table 1. Baseline information on the assets in the air transportation sub-sector

Name of District:				
Assets	**Number**		**Average Replacement Cost (LKR/Unit)**	**Average Repair Cost (LKR/Unit)**
	Public	**Private**		
Aircrafts				

Airplanes						
Helicopters						
Others						
Equipment	**Average Replacement Cost (LKR/Unit)**			**Average Repair Cost (LKR/Unit)**		
Office equipment						
Baggage handling system						
Cargo handling system						
Aero bridges						
Security equipment						
Vehicles						
Others						
Materials and supplies	**(LKR/Unit)**			**(LKR/Unit)**		
Fuel (per Liter)						
Others						
Others	**(LKR/Meter)**			**(LKR/Meter)**		
Runway						
Apron Parking areas						
Piers						
Structures	**Replacement Cost (LKR/structure)**			**Repair Cost (LKR/sqm)**		
	1 floor	2-3 floors	More than 3 floors	Roof	Wall	Floor
Airport Terminal buildings						

Aircraft Hangars and associated buildings						
Administrative buildings						
Fire services buildings						
Airport Maintenance						
Sri Lankan Airlines office complex						
Navigation services complex						
Control tower						
Others						
Employment	**Male**		**Female**		**Total**	
Total Number of Employees of Air Transportation Companies						
Total Number of Other Employees in Air Transport						

Notes in filling out Table 1.

- *It is assumed that structures, equipment, and runways are owned by the government.*
- *The replacement costs for structures are in Rupees per structure.*
- *The repair costs for structures are in Rupees per square meter (LKR/sqm).*
- *The replacement cost of each structure should be placed under the appropriate column on the number of floors of the said structure.*

Step 2. Estimate damages and losses

With the baseline information, field assessment should be undertaken in the affected districts after a disaster. Direct interviews with officials involved in the construction and repair of facilities can also be conducted during the field visit in order to validate unit costs of repair and reconstruction. The agencies or firms that manage the airlines and the assets of the air sub-sector 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 firms in the data entry sheet of the online system. It should be noted, however, that since some of the assets (aircrafts and helicopters) of the air

transportation sub-sector are mobile in nature, the assessment team must ensure that there is no double counting. The district where the main office of the agency or firm is located can be used as the reference location.

✓ *Step 2.1. Estimate the damages and losses*

The assessment team must fill out the damages and losses for the air transportation sub-sector in the following table in the online system.

Table 2. Damages and losses to air transportation

Name of District:						
Damages						
Assets	**Number of Totally Destroyed**		**Number of Partially Damaged**		**Total Damages (LKR)**	
	Public	**Private**	**Public**	**Private**	**Public**	**Private**
Aircrafts						
Airplanes						
Helicopters						
Others						
Total						
Government Equipment	**Number of Totally Destroyed**		**Number of Partially Damaged**		**Total Damages (LKR)**	
					Public	**Private**
Office equipment						
Baggage handling system						
Cargo handling system						
Aero bridges						
Security equipment						
Vehicles						
Others						
Total						
Materials and	**Number of**		**Number of Partially**		**Total Damages**	

supplies	Totally Destroyed		Damaged		(LKR)	
	Public	Private	Public	Private	Public	Private
Fuel (Liters)						
Others						
Total						

Others	Totally Destroyed (in Meters)	Partially Damaged (in Meters)	Total Damages (LKR)	
			Public	Private
Runway				
Apron Parking areas				
Piers				
Total				

Government Structures	Number of Totally Destroyed Structures			Partially Damaged				Total Damages (LKR)	
	1 floor	2-3 floors	More than 3 floors	Number	Roof (sqm)	Wall (sqm)	Floor (sqm)	Public	Private
Airport Terminal buildings									
Aircraft Hangars and associated buildings									
Administrative buildings									
Fire services buildings									
Airport Maintenance									
Sri Lankan Airlines office complex									
Navigation services complex									
Control tower									
Others									
Total									
TOTAL DAMAGES									
Losses									

Type of Losses	Year 1		Year2		Total (LKR)	
	Public	Private	Public	Private	Public	Private
Foregone Income						
Income of airline companies						
Income of airports						
Total						
Higher operating costs						
Costs incurred in placing alternate arrangements						
Hiring costs						
Standards assessment costs						
Losses due to operational constraints						
Total						
Cleaning up of debris						
Other unexpected expenses						
TOTAL LOSSES						

Notes in filling out Table 2.

- *The totally destroyed or partially damaged structures are measured on a per square meter basis.*
- *Information on losses should be gathered from responsible officials of the air transportation sector facilities and businesses.*

✓ *Step 2.2. Summarize the damages and losses in the district*

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 and losses to air transportation in a district

Name of District:			
Assets	Damages (LKR)		
	Public	Private	Total (LKR)

Aircrafts				
Structures				
Equipment				
Materials and supplies				
Others				
TOTAL				

	Losses (LKR)					
Type of Losses	**Year 1**		**Year2**		**Total (LKR)**	
	Public	**Private**	**Public**	**Private**	**Public**	**Private**
Foregone Income						
Higher operating costs						
Cleaning up of debris						
Other unexpected expenses						
TOTAL						

✓ *Step 2.3. Summarize damages and losses of the sector at the province*

The total estimated effects of the disaster in the province can be summarized by combining the values of damages and losses in the Districts. The following table is used in the online system.

Table 4. Summary of damage and losses in the air transportation sub-sector in a province

Province								
Districts	**Year 1**				**Year 2**		**Total (LKR)**	
	Damages (LKR)		**Losses (LKR)**		**Losses (LKR)**			
	Public	**Private**	**Public**	**Private**	**Public**	**Private**	**Public**	**Private**
District 1								
District 2								
District N								
TOTAL								

✓ *Step 2.4. Summarize damages and losses at the national level*

A nationwide summary of the assessment will be created enumerating the damages and losses of the sector at each province. The data in the national summary should include all the information gathered by the various teams that assessed the different disaster-affected districts. The following table will be used for the national

summary.

Table 5. Summary of damage and losses in the air transportation sub-sector nationwide

Provinces	Year 1				Year 2		Total (LKR)	
	Damages (LKR)		Losses (LKR)		Losses (LKR)			
	Public	Private	Public	Private	Public	Private	Public	Private
Province 1								
Province 2								
Province N								
TOTAL								

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 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 6. 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.