



04 - Agriculture Sector

A. Agrarian Sub-sector

Organization Responsible

Level of Responsibility	Name of Ministry/Agency/Institution*
Ministry	Ministry of Agriculture Ministry of Primary Industries
Department	Department of Agrarian Development Department of Agriculture Agricultural and Agrarian Insurance Board Department of Export Agriculture
District	Department of Agrarian Development District Offices (25 Nos) District Agriculture Office /Research & Development Institutes & Centers District Office of Agriculture Insurance Board District Export Agriculture Office
DS Division	Agrarian Services Centers in each DS divisions (559 Nos) Agriculture Instructors Range (AI) Extension Office
GN Division	Agricultural Research Productivity Assistants (ARPA) (11400 Nos)

*For verification of focal agencies

Concepts and Definitions

Agriculture Sector

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

- a. **Seasonal Crops** like rice, vegetables, root crops, etc.
- b. **Permanent Crops** like plantations of coffee, coconuts, fruit trees, etc.
- c. **Livestock and Poultry** like cattle, chicken, etc.
- d. **Fisheries** which may be open sea, river fishing or inland aquaculture
- e. **Forestry** which will include timber and other forest products
- f. **Other Primary Agricultural Products** like honey and unprocessed milk
- g. **Agriculture-related Assets** like irrigation, storage, agricultural inputs, etc.

This Guidance Notes will apply to seasonal crops, permanent crops, forestry and other agricultural products in Sri Lanka.

Damages

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

1. **Structures or buildings.** Agricultural buildings like storage, animal shelters, irrigation, research laboratories and other structures which function as part of the sector. They should be assessed in coordination with the local authorities.
2. **Equipment and other machinery/equipment.** There are various instruments used for agricultural purposes like tractors, mechanical harvesters, farm tools, etc. The types of equipment, machinery and other important assets should be considered.
3. **Agricultural products, inputs, materials and supplies.** Farmers normally have stocks such as harvested rice, corn etc., seed stocks, seedlings, fertilizers, pesticides, veterinary medicines, etc. Their value can be sufficiently high to warrant individual assessment.
4. **Plantation which were fully destroyed (uprooted).** The totally destroyed permanent crops plantations like oil palm, coconuts, coffee, tea, cacao, etc. are considered agricultural assets and are valued at their replacement costs (replanting and maintenance cost until again in full production). Their production is considered as a loss and accounted under this for all the years until the crops is again fully productive.

Damages in this 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 for which the monetary repair or replacement value is subsequently estimated.

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. Losses in the agriculture sector will include:

- 1. Loss or reduction in output (production) or income.** The reduction in income will occur when planted crops, livestock, fisheries, forestry, etc. are partially damaged by disasters. This can be estimated by considering the pre-disaster expected income less post-disaster expected income. Totally destroyed seasonal crops like rice, corn and vegetables which are ready to be harvested are valued at farm gate prices.
- 2. Reduction in future output or income.** Long-term income losses from harvests can be due to:
 - a.** The degradation of land by floods, landslides, prolonged droughts, etc. This will happen if agricultural lands are rendered less productive after a disaster which can extend years after a disaster. This can be estimated by considering the pre-disaster expected income less post-disaster expected income spread through the years until production levels normalize.
 - b.** The production from totally destroyed permanent crops and trees. This can be estimated by considering the pre-disaster expected income spread through the years until the permanent crops and trees are productive again to the same level.
- 3. Investment losses.** In agriculture, an important type of loss is the investment loss of farmers when the standing crops are totally destroyed by a disaster. If these happen and the farmers (or growers) are not able to replant within the year, the value of investment put into the destroyed crops will be considered as loss. Otherwise, losses are estimated as the value of the reduction of the expected production.
- 4. Higher or added production cost.** The added cost of production will occur if the farmers replant in time to harvest within the year. This will mean that the farmers (or growers) will incur a higher production cost to produce the same volume of harvest within the year. The added cost of production will be the value of lost investment by the farmers (or growers).
- 5. Additional expenses** to clean up the debris of destruction, retrieval of buried assets, etc.

Losses of the sector 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 agriculture sector, the following steps should be followed for every disaster-affected District.

Steps in Undertaking Post-Disaster Damage and Loss Assessment for the Agrarian Sub-sector of the Agriculture Sector

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 agrarian sub-sector.

A. Activities and People in Agriculture

The agricultural activities and the number of people engaged in them will provide a general picture of the sector and will be useful in undertaking the social impact assessment.

Table 1. Baseline information on areas cultivated and number of people in agrarian activities

District					
Sub-sector	Areas Cultivated (Acre)	Average Value of Land (LKR/Acre)	Number of Farmers/Growers		
			Families	Male	Female
Seasonal Crops					
Rice					
Maize					
Vegetables					
Floriculture crops					
Other seasonal crops					
Plantation Crops					
Coconut					
Tea					
Rubber					
Other plantation crops					
Export Crops					
Coffee					
Fruit trees					
Cinnamon					
Others					
Forestry					
Timber					
Others					
Others Products					
Honey					
Others					

B. Seasonal Crops, Permanent Crops, Forestry, Structures and Other Assets

The values in the baseline tables below will be used in estimating damages and losses.

Table 2. Baseline information on agricultural crops, forest products and related other assets

District:						
Sub-Sector	Average Value Per Unit (LKR/Unit)	Total Value of Production Per Year (LKR/Year)		Production Cost Per Acre Per Stage of Growth (LKR/Acre)		
Crops		Public	Private	Newly Planted	Middle Stage	Harvest Stage (Fully Matured)
Seasonal Crops						
<i>Rice</i>						
<i>Maize</i>						
<i>Vegetables</i>						
<i>Floriculture crops</i>						
<i>Other seasonal crops</i>						
Plantation Crops						
<i>Coconut</i>						

<i>Tea</i>						
<i>Rubber</i>						
<i>Other plantation crops</i>						
Export Crops						
<i>Coffee</i>						
<i>Fruit trees</i>						
<i>Cinnamon</i>						
<i>Others</i>						
Forestry						
<i>Timber</i>						
<i>Others</i>						
Others Products						
<i>Honey</i>						
<i>Others</i>						
Assets	Average Replacement Cost (LKR/Unit)			Average Repair Cost (LKR/Unit)		
Farm Equipment						
<i>Tractor</i>						

<i>Others (Enumerate)</i>		
Stocks	Average Value Per Unit (LKR/Unit)	
<i>Seeds</i>		
<i>Fertilizer</i>		
<i>Pesticides</i>		
<i>Others</i>		
	Average Replanting Cost Per Unit (LKR/Unit)	
Plantation Crops		
<i>Coconut</i>		
<i>Tea</i>		
<i>Rubber</i>		
<i>Other plantation crops</i>		
Export Crops		
<i>Coffee</i>		
<i>Fruit trees</i>		
<i>Cinnamon</i>		
<i>Others</i>		

Forestry	
Timber	
Others	

Notes in filling out Table 2.

- The stages of growth are broken down into newly planted, flowering stage and ready to harvest stage for ease of estimation of the losses in farming.
- The 'average value per unit' refers to the value of harvested crops and stocks.
- The unit of measure per type of crop and asset must be expressed. The unit of measure can be per weight (kilogram, MT), volume (liter) or per piece of equipment.
- The 'average replanting cost' refers to the cost of replanting totally destroyed plantation crops, export crops and forestry (also known as permanent crops) per unit.

Table 3. Baseline information on structures, office equipment and related other assets

District:				
Asset	Average Replacement Cost (LKR/sqm)	Average Repair Cost (LKR/sqm)		
		Roof	Wall	Flooring
Structure				
1 floor structure				
2.3 floors structure				
More than 3 floors				
Office Equipment	Average Replacement Cost (LKR/Unit)	Average Repair Cost (LKR/Unit)		
Computers				
Furniture				
Others (Enumerate)				
Machinery				
Vehicles				
Generators				
Elevators				
Others (Enumerate)				

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.

✓ Step 2.1. Estimate the damages and losses

A. Damages and Losses to Crops, Permanent Crops and Forest Products

The damage assessment must be able to account for all the crops that have been destroyed or uprooted and their corresponding losses. If plantations with a single crop is under assessment, only the appropriate information should be filled in. Based on the field assessment of the whole district, the tables below which summarizes the damages and losses of the sub-sector in the district, should be filled out in the online system.

Table 4. Damages to Crops, Permanent Crops, Forest Products and Related Assets

District						
Assets	Number of Totally		Number of		Damages (LKR)	
	Public	Private	Public	Private	Public	Private
Farm Equipment						
<i>Tractor</i>						
<i>Others</i>						
Total						
Harvested Products						
Seasonal Crops						
<i>Rice</i>						
<i>Maize</i>						
<i>Vegetables</i>						
<i>Floriculture crops</i>						
<i>Other seasonal crops</i>						
Total						
Plantation Crops						
<i>Coconut</i>						
<i>Tea</i>						
<i>Rubber</i>						
<i>Other plantation crops</i>						
Total						

Export Crops						
<i>Coffee</i>						
<i>Fruit trees</i>						
<i>Cinnamon</i>						
<i>Others</i>						
Total						
Forestry						
<i>Timber</i>						
<i>Others</i>						
Total						
Others Products						
<i>Honey</i>						
<i>Others</i>						
Total						
Stocks						
<i>Seeds</i>						
<i>Fertilizers</i>						
<i>Pesticides</i>						
<i>Others</i>						
Total						
Replanting						
Plantation Crops						
<i>Coconut</i>						

Tea						
Rubber						
Other plantation crops						
Total						
Export Crops						
Coffee						
Fruit trees						
Cinnamon						
Others						
Total						
Forestry						
Timber						
Others						
Total						
GRAND TOTAL						

Notes in filling out Table 4:

- The table only requires the number of units of assets that were a) totally destroyed assets; and b) partially damaged.
- The “Total Damages” will be automatically estimated by multiplying the number of affected assets by their respective replacement or repair costs which are in the baseline information table.

- 'Harvested Products', 'Stocks' and 'Trees' are normally totally destroyed, hence, no need to fill out the 'partially damaged' part.

Damages to Structures, Equipment and Other Related Assets

The damages to structures, equipment and other related assets will be estimated using the table below.

Table 5. Damages to Structures and Other Related Assets

Name of District						
Totally Destroyed						
Assets	Number of Destroyed Structures		Total Square Meters Destroyed		Damages (LKR)	
Structures	Public	Private	Public	Private	Public	Private
1 floor structure						
2-3 floors structure						
More than 3 floors						
Total						
Partially Damaged						
Assets	Number of Partially Damaged		Total Square Meters Damaged			Damages (LKR)
Public Sector			Roof	Walls	Floors	
Structure						
1 floor structure						
2-3 floors structure						
More than 3 floors						
Total						
Private Sector						
Structure						
1 floor structure						
2-3 floors structure						
More than 3 floors						
Total						
Assets	Number of Totally Destroyed		Number of Partially Damaged		Damages (LKR)	
Office Equipment	Public	Private	Public	Private	Public	Private
Computers						
Furniture						
Others						
Total						
Machinery						
Vehicles						
Generators						
Elevators						
Others						
Total						
GRAND TOTAL						

Notes in filling out Table 5:

- ‘Structures’ are those that are related to the sub-sector. They can be office buildings, warehouses and other similar structures.
- The table only requires the number of a) totally destroyed assets; and b) partially damaged assets. For structures, the total area (in square meters) of affected part or parts that was/were totally destroyed or partially damaged has/have to be identified.
- The “Total Damages” will be automatically estimated by multiplying the areas in square meters or the number of affected assets by their respective replacement or repair costs which are in the baseline information table.

B. Investment Losses

Investment losses will be the amount of investment put into crops which were totally destroyed by the disaster which will be estimated by the following table.

Table 6. Investment Losses

LOSSES FOR THE DISASTER YEAR 1								
Sub-Sector	Investment Losses							
	Totally Destroyed by Stage of Growth							
	Newly Planted (Acre)		Middle Stage (Acre)		Harvest Stage (Acre)		Investment Losses (LKR)	
	Public	Private	Public	Private	Public	Private	Public	Private
Seasonal Crops								
<i>Rice</i>								
<i>Maize</i>								
<i>Vegetables</i>								
<i>Floriculture crops</i>								
<i>Other seasonal crops</i>								
Total								
Plantation Crops								

Coconut								
Tea								
Rubber								
Other plantation crops								
Total								
Export Crops								
Coffee								
Fruit trees								
Cinnamon								
Others								
Total								
Forestry								
Timber								
Others								
Total								
GRAND TOTAL								

C. Production Losses and Other Losses

Production losses are the estimated reduction in production due to the disaster. The following table will estimate the value of production losses

Table 7. Production Losses

LOSSES FOR THE DISASTER YEAR 1 AND YEAR 2										
Sub-Sector	Production Losses Partially Damaged								TOTAL PRODUCTION LOSSES	
	Reduction in Yield (%)				Production Losses (LKR)					
	Year 1		Year 2		Year 1		Year 2		LKR	
	Public	Private	Public	Private	Public	Private	Public	Private	Public	Private
Seasonal Crops										
Rice										
Maize										
Vegetables										
Floriculture crops										
Other seasonal crops										
Total										
Plantation Crops										
Coconut										
Tea										
Rubber										

<i>Other plantation crops</i>										
Total										
Export Crops										
<i>Coffee</i>										
<i>Fruit trees</i>										
<i>Cinnamon</i>										
<i>Others</i>										
Total										
Forestry										
<i>Timber</i>										
<i>Others</i>										
Total										
Others Products										
<i>Honey</i>										

Others										
Total										
TOTAL										
Other losses					Year 1		Year 2		Total	
					Public	Private	Public	Private	Public	Private
Clearing of Debris										
Higher production cost										
Other unexpected expenses										
TOTAL										

Notes in filling out Table 7:

- Only the estimated percentage (%) reduction in output is required in the table. The value of “Losses” will be automatically estimated by multiplying the percentage reduction to the estimated production in the baseline information.
- ‘Other Losses’ will be the total amount spent in the district, segregated as public and private sectors.

✓ 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 sub-sector.

Table 8. Summary of damages and losses to agrarian sub-sector in the District

District			
Assets	Damages (LKR)		
	Public	Private	Total Damages
Structures			
Office Equipment			
Machinery			
Farm Equipment			
Stocks			
Replanting			
Total			
Harvested Products			
Seasonal Crops			
Plantation Crops			
Export Crops			

Forestry								
Others Products								
Total								
TOTAL								
Type of Crops	Losses (LKR)							
	Types of Losses						Total Losses (LKR)	
	Year 1				Year 2			
	Investment Losses		Production Losses		Production Losses			
	Public	Private	Public	Private	Public	Private	Public	Private
Seasonal Crops								
Plantation Crops								
Export Crops								
Forestry								
Others Products								
Total								
			Year 1		Year 2		Total Losses	
			Public	Private	Public	Private	Public	Private
Other Losses								
GRAND TOTAL								

✓ Step 2.3. Summarize the Estimated Damages and Losses in 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 9. Summary of damages and losses in the agrarian sub-sector in the Province

Name of 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 N								
GRAND								

TOTAL								
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✓ Step 2.4. Summarize damages and losses of the sector 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 10. Summary of damages and losses in the agrarian 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 N								
GRAND 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 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 of 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:

1. **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.
2. **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.
3. **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.
4. **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.

5. **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.
 6. **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 11. 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.