

Compensation Valuation for Disasters in Sri Lanka with Reference to Explosion at Salawa Armory in Avissawella

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Abstract

Disasters can be classified under three main groups such as natural, man-made, and technological. The classification of disasters as per the literature review is related to meteorological, geotectonic, and biological events like floods, droughts, hurricanes, earthquakes, volcanic eruptions, pest attacks, mudslides, and landslides. The prompt payment of compensation calculation becomes a must in any disaster that destroys or harmfully affects to the man-made assets, human and social capital. Sri Lanka had past experiences on different kinds of disasters and massive time slots including human resources were wasted in calculating compensation due to absence of a proper systematic pathway. This paper mainly focuses to identify a comprehensive methodology for disaster damage and loss assessment for compensation in Sri Lanka. A random sample of 45 residents those who faced to the explosion living in the immediate vicinity of Salawa Armory and 15 professional valuation officers from Government Valuation Department of Sri Lanka were interviewed using a structured questionnaire, in addition observations were carried out at the inspection of damaged properties. The study identified that economic, environmental and social losses should be added in calculating the compensation other than the value for physical damages. While suggesting a method to calculate the loss of income as an indicator a comprehensive model including pathway guidelines for disaster valuation was developed. It is recommended that a base line information system should be maintained at GN level immediately covering the whole country.

Keywords: Disaster, Damages, Losses, Valuation, Compensation

Introduction

Disaster valuation is a critical activity and is highly time consuming. Moreover, resources have to be allocated in assessing the damages. Here, the purpose of the valuation is to get back the people to the pre-disaster position. The only way which helps to the process is the compensation.

However, disasters can be assessed in many ways considering number of deaths, number of buildings collapsed, kilometers of roads destroyed, loss of revenue due to the disruption of economic activities, etc. Ideally, all these elements should be incorporated in a total cost assessment, but practically only direct and tangible costs are considered to estimate the economic losses. When it comes to Sri Lankan context only physical factors are considered for the calculation of compensation. In order to avoid the agitation of people affected, a stepwise reasonable pathway with more accurate information is required.

The objectives of the study are two folds as to identify some specific factors affecting the payable value for the assessment of compensation and to develop a comprehensive pathway to assess the compensation value in Sri Lanka.

Literature Review

The term "disaster" has many different views and are generally considered violent or unexpected occurrences, often accompanied by loss of life, material damages, and difficulties for the functioning of society and the economy (Dosi, 2001). In the disaster valuation following physical factors have been considered by different authors such as structure, size, structural improvements, materials used, age, condition of structure, the nature of the building, accommodation, accessibility of the property, location of the property, nature of the construction, floor area of the building, type of the building, type of floor, (Owusu-Ansah, 2012; Stefano, 2013; Wasantha, Wickramaarachchi, & Weerakon, 2006). In addition, Economic factors such as Business losses and Production losses in disaster valuation were also considered (Dosi, 2001). Moreover, (Owusu-Ansah, 2012; Stefano, 2013) discuss neighborhood qualities, accessibility, mental illness, loss of life and loss of job as social factors that should be considered in disaster valuation. As discussed by Radoslaw, 2012; Stefano, 2013; Guynhanh, 2015; Hanemann, 2003), the environmental factors which should be considered in disaster valuation are clean air, forest cover, surface water, land escape, Scenic beauty and soil fertility.

The past literature, shows that replacement cost method is mostly used for disaster valuation and some factors are added to the replacement cost value in order to find the payable value for compensation. The replacement method in literal sense is as follows (Premathilaka, 2016; Wyatt, 2013).

Value of Land	XXXX
(+) Current cost of existing improvement	
Replacement Cost of improvement	XXXX
(-) Depreciation allowances due to age and/ or obsolescence	<u>(XXX)</u>
	<u>XXXX</u>
Value of the property	<u>XXXXX</u>

Methodology

Both primary and secondary data were used in this study. Primary data were collected using a structured questionnaire from two random samples, comprised of 45 respondents from the residents of the affected area, covering all types of characteristics of the properties and 15 valuation officers of Government Valuation Department. In addition to the questionnaire, the observations carried out to verify the details of physical aspects. Maps and reports from census data, satellite imaginaries were used as secondary data. The gathered data were tabulated to excel database and analyzed using Statistical Package for the Social Science (SPSS). A comprehensive model based on replacement cost method was formulated to calculate the fair and reasonable quantum of compensation.

Model Analysis

The basic model for this calculation is as follows.

$$V = V_a - V_b + V_g + V_l + V_e + V_s$$

Where,

V = estimated amount to be paid as compensation.

V_a = the value of properties with their initial condition.

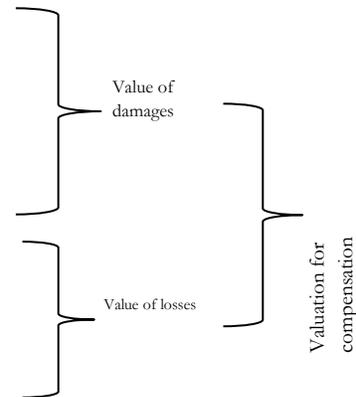
V_b = the value of discounted effect of the disaster (%).

V_g = the value of damaged goods

V_l = the Value of economic losses.

V_e = the value for the environmental quality reduction.

V_s = the value for the social well-being



The above model for the calculation of compensation is predominantly based on a combination of cost approach and comparison method. Building value was calculated on the basis of the replacement cost of the building. In addition to that, payable value for the compensation was calculated by adjusting the percentage of the damages occurred by the disaster and adding values of damaged goods and additional payments for economic losses and social and environmental impacts. The values were adjusted in accordance with the collected information. Rate per Square foot value is taken as per the rates adapted by the Government Valuation Department, Sri Lanka. The social and environment loss should be calculated by using willing to pay and willing to accept method with well-structured questionnaire.

Results & Discussions

The factors considered are, the extent of the land, accessibility of the property, location of the property, distance from the city center, legal interest, condition of the building, floor area of the building, accommodation, age of the building, construction materials, type of the floor, type of wall, type of ceiling, type of roof, design of the building, type of the building, renovations, conveniences, loss of goods, type of residence, monthly income, displaced period etc.

As this is disaster valuation the effective floor area is the total floor area of the building as no deductions made for building lines, street line etc. Moreover, deductions are not made for the age of the building as people could have recovered to their previous position and compensation calculated on replacement cost value.

The most difficult task is to calculate value of damaged goods due to inaccuracy of identification of the components as these evidences can be extracted only from householders. In this study also, value of damaged goods was collected from requested values by householders. However, the most accurate method for assessing the value of damaged goods is the method of item by item calculation. Total value of physical damages was calculated by merging the values loss of land, damaged building and loss of goods.

As a new indicator, the value of loss of income was based on the average monthly income of the affected families to generalize everyone in a disaster loss. In this regard, the following values for monthly income were calculated using the collected. Median (Rs.60,000/=), Mode (Rs.30,000/=), Mean (Rs.59,200/=), Minimum (Rs.15,000/=) and Maximum (Rs.150,000/=). Above indicators show that there is a big difference of income distribution in this area. According to the sample analysis, average monthly income of each family should be separately identified and added to the compensation value as loss of income.

In that way, following example describe the application of this model for the disaster valuation process for the compensation purposes. A property near to the Salawa army camp is used to this calculation and that property fully affected from the explosion.

Example: At the free disaster situation this property comprised with a 19-perch land and permanently fully completed single storied building used for the residential purpose. It's completed with Asbestos sheet roofing and exposed rafter ceiling, partly brick work and partly cement block walls plastered and colour washed, Floor is cement rendered, timber framed glazed windows and timber doors. This building had a total floor area of 3000 square foot. Building has been fair condition and age of the building is 15 years. According to the recent land sales in this proximity vary from Rs. 100,000/= to Rs. 350,000/= and according to the adapted rate per square foot of valuation department for this type of building is Rs. 2,500. After the disaster value of the damaged goods are estimated as 2,000,000/=. Average monthly income is Rs. 70,000/= and it is assumed that value for the social and environment losses is Rs. 50,000/=.

Valuation for the Compensation (Replacement cost method)

Step 01 – Value of Land

Total extent of land	00 A 00 R 19.00 P
Less – For reservations	00 A 00 R 00 P
Extent to be valued	00 A 00 R 19.00 P
Rate per perch (Rs.)	<u>200,000</u>
Value of land (Rs.)	<u>3,800,000</u>

Note: There is no land losses in Salawa armory explosion, in this context compensation is not paid for the land.

Step 02 – Value of Building

Total floor area in Sq. Ft.	3000 Sq. Ft.
Rate Xadapted (Rs.)	<u>2500</u> per Sq. Ft.
Estimated value/Replacement value (Rs.)	<u>7,500,000</u>

Note: This building is fully destroyed. Therefore, total value of the building is allowed for the compensation.

Step 03 – Value of goods

Value of damaged goods (Rs.)	2,000,000
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Step 04 – Value of Physical damages

Value for the loss of land (Rs.)	0
Value for damaged building 100% (Rs.)	7,500,000
Value for the loss of goods (Rs.)	<u>2,000,000</u>
Total value of physical damages (Rs.)	<u>9,500,000</u>

Step 05 – Value of losses

Loss of income for 5 months @ Rs. 70,000 per month	350,000
Value for the social and environment effect (Rs.)	<u>50,000</u>
Total value of the losses (Rs.)	<u>400,000</u>

Note: Income losses are calculated by using average monthly income for the displaced period. The value for social and environment losses should be calculated based on willing to accept and willing to pay method.

Step 06 – Total value for the compensation

Total value of physical damages (Rs.)	9,500,000
Total value of losses (Rs.)	<u>400,000</u>
Total value of compensation (Rs.)	<u>9,900,000</u>

Values adding to the formula,

$$V = V_a - V_b + V_g + V_i + V_e + V_s$$

$$V = (3800,000+7,500,000) - 3,800,000 + 2,000,000 + 350,000+50,000$$

$$V = \underline{\underline{9,900,000}}$$

Pathway Analysis

The process starts with (1.) the request of the government and continues as, (2.) Preparation and planning, (3.) Data collection and verification and validation, (4.) Consolidation & analysis, (5.) formulating valuations, (6.) appeal and (7.) final valuation.

A sample of the formulated time frame based on the above steps is given below. This can be used for any disaster valuation process after making the necessary alterations according to the scale of the disaster.

Activities	Weeks							
	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th
1. Emergency State								
2. Analysis on damages & Losses								
Preparation & planning								
Baseline data collection								
Field survey for primary data collection								
Verifications & valuation								
Consolidation & analysis								
3. Computation of valuation								
Prepared draft of Valuation								
Appeal on valuation								
Write final valuation report								

Table 1 Sample time frame for disaster valuation process for compensation

Conclusion

Numerous factors such as physical factors, economic factors, social and environmental factors and legal factors affecting the disaster valuation process for the payment of compensation were identified in this study. However, it was observed that some factors such as business losses, social cultural and environmental losses are not taken into account at present disaster valuation system in Sri Lanka. Moreover, in the meantime it can be seen that those factors are considered in disaster valuations in some of the countries around the world. With referencing to those adopted valuation measures and considering values of those omitted factors, a comprehensive model is formulated and a guidance pathway for the process of disaster valuation is also developed. On other hand, lack of information is identified as another significant issue leading to complexities in the process of compensation valuation for disasters.

Recommendations

It is observed that not only values of physical damages but also values of economic, social and environmental impacts should be considered in disaster valuation. At the same time, a baseline information system should be formulated to be use as a secondary source or an information database and immediate actions should be

taken to build the system. Moreover, it can be recommended that a policy should be developed by considering all factors as physical factors, economic factors, social and environmental factors and legal factors identified in this study for the disaster valuation.

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