

# Chapter 23

## Humanitarian Logistics Budget Model: Case of the North Coast of Peru

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### **ABSTRACT**

*In the chapter, the optimal budget was assigned to prevention projects in the northern regions, through an analysis that took into account criteria such as the degree of vulnerability, the level of poverty, the population, and the level of expenditure execution (capacity management of each regional government) in 2015 and 2016. AHP (multicriteria analysis) was used to estimate the degree of vulnerability of each region, since to determine this it is necessary to take into account several criteria and fuzzy logic in order to obtain the budget for each region. The regions to be analyzed were Ica, Lima, Ancash, La Libertad, Lambayeque, Piura, and Tumbes, the most affected by El Niño Costero in 2017.*

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## INTRODUCTION

Natural disasters are increasing in the Latin American region, both in frequency and intensity, which affects people, infrastructure, agricultural fields, the economy and the development of the countries. In the 1960s, 19 disasters were registered per year, while in the decade of 2000, 68 were registered per year (INDECI, 2018a). In Peru, this trend is also observed, during the year 2017 there were 7 thousand 382 emergencies, 85.9% was caused by natural phenomena and 14.1% by phenomena induced by human action, observing an increase in the number of emergencies nationwide in 42.9% compared to 2016; likewise, an increase of 59.4% in emergencies caused by natural phenomena. The risk of these dangers is intensified by climate change and the processes of high climate variability that cause new types of hazards such as the El Niño Costero Phenomenon (INEI, 2018).

At the beginning of 2017, the phenomenon of El Niño Costero in Peru was presented, mainly affecting the north coast, with the occurrence of heavy rains which caused mudslides, floods, landslides, and storms, as well as other events associated with the emergency such as pests and epidemics; All this caused damage to the life and health of the people who lived in the affected areas as material damages (INDECI, 2018b).

El Niño Costero left a total of 285,955 victims, 1 559 487 people affected, 169 dead people, 500 injured people and 19 people disappeared. Regarding material damage, 37 409 collapsed homes, 28 533 uninhabitable homes and 381 076 affected homes were registered. Regarding road infrastructure, 4 030 kilometers of road were destroyed and 10 251 kilometers of road were affected; there were also 112 748 hectares of affected crops and 51 851 hectares lost (INDECI, 2018b).

Items such as clothing, shelter, cleaning supplies, non-perishable food, water and household goods were donated by the population and national companies to alleviate the suffering of those affected by a total of 2378 tons. Likewise, the international community also made donations for a total of 232.88 tons, which were transferred mainly to the departments of Piura, Lambayeque and La Libertad (INDECI, 2017).

Given the situation generated by the phenomenon, the Peruvian Government declared 14 regions in emergency and a constitutional province to guarantee the welfare of the affected population, deploying immediate response actions directed from the Presidency of the Council of Ministers and the National Emergency Operations Center COEN MINDEF (INDECI, 2018a). The Government mobilized significant financial resources for immediate response and rehabilitation, and others for reconstruction during the following three years. The national government mobilized the Armed Forces, the sectors and the institutions of the State with the purpose of saving lives and evacuating the population in risk areas (INDECI, 2018a). In addition, it provided financial support for around US \$ 3 135 million, launching a rescue and evacuation operation, humanitarian aid, operation of pumping systems, implementation of shelters, health, fumigation, education, repair of water systems and roads Communication. Likewise, it established a “Reconstruction with Changes” program with a budget of approximately 6.4 billion dollars for three years following the event (INDECI, 2018a).

Due to its geographical location, Peru is a country that is exposed to natural phenomena such as the Niño Costero (INDECI, 2005), which is why it is necessary for the population to have adequate knowledge and develop prevention and attention capabilities in the face of emergencies and disasters. that may occur as the recent El Niño Costero phenomenon. Given this, the allocation of budget for disaster prevention is a fundamental task of the government, carried out through the Strategy of the Financial Management of Disaster Risk which consists of the set of actions established to ensure an adequate financial management in the processes of disaster risk management and better coverage of the risks that

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