


# Chapter 12

## Planning Methodological Framework for Humanitarian Aid System in Colombia

**Feizar Javier Rueda-Velasco**

 <https://orcid.org/0000-0002-0109-9204>

*Universidad Distrital “Francisco José de Caldas”, Colombia*

**Karol Moreno-Valbuena**

*Universidad Católica de Colombia, Colombia*

**Leonardo Gonzalez-Rodriguez**

*Universidad de la Sabana, Colombia*

### ABSTRACT

*This chapter proposes a planning methodological framework for humanitarian aid. The proposal combines project management tools and system dynamics to evaluate the effect of different operational strategies on the total system response time. System dynamics allows identifying humanitarian aid sub-systems and the feedback loops between them. The project management approach enables to recognize the response activities in each sub-system, to estimate the response time for each activity and the resources requirements. Also, the system dynamics tools enable the response times simulation under variability conditions. The proposal is tested in a retrospective way on the 1999 “Eje Cafetero” earthquake in Colombia. Additionally, the methodology framework provides a novelty approach to represent humanitarian logistics operations as a project. Finally, the integration of project representation, strategies selection, and system dynamic simulation is not enough studied in the humanitarian logistics field.*

DOI: 10.4018/978-1-5225-8160-4.ch012

## **METHODOLOGICAL FRAMEWORK FOR HUMANITARIAN AID SYSTEM APPROACH**

### **Humanitarian Logistics: The Disaster Relief System as a Logistic System**

Kalenatic, González, & Arias (2009), define the logistic system as a set of support systems, commonly organized in functional groups. Regardless of whether these systems are part of one or several firms, or are grouped or dispersed geographically. Support systems commonly handle specialized flows, but they share infrastructure.

Thus, this set of support systems, called the logistic system, is in charge of providing the personnel, resources and information that the central system requires to fulfill the organization's mission. The central system is the one directly responsible for fulfilling the mission of the organization; hence, it is the main client of the logistic system. However, it is necessary that the support systems carry out exchanges of personnel, resources and information, within the logistics system, in order to maintain their viability and support operations (Rueda-Velasco, et al., 2013).

Accordingly, the interactions of support systems are commonly performed internally, however, they also have interactions with their environment locally, regionally and/or globally. These interactions are regulated by the different logistic processes, which can be grouped and organized in a set of stages, in what is known as a logistic cycle (Kalenatic, Méndez, Valbuena, & Rodríguez, 2011).

The logistic cycle includes the minimum steps that a support system must fulfill in order to fulfill its task of support and/or generation of advantage. They include: the determination of needs or requirements, procurement of resources, delivery of resources (Tejada, 2008), maintenance of the asset or resource obtained and reverse logistics (Kalenatic et al., 2009).

As a characteristic of the logistic systems it is also possible to observe that, internally, one of the transversal support systems takes on the role of coordinator. Coordination role means ensuring cohesion as well as regulate and optimize the performance of the system.

In this context (González, Kalenatic, Rueda, & Sarmiento, 2013), based on the concepts of (Thomas, 2005) from the Frizt Institute and from (Van Wassenhove, 2006), the following definition of humanitarian logistics is proposed: The management of the support systems that make up the humanitarian logistic system throughout the logistic cycle considering their internal interactions as well as the political, social and economic environment. Regardless of whether the origin of the disaster is human or natural, or whether it is of slow evolution or sudden onset, focus should be mainly on the exchanges of materials, resources, information, skills and knowledge necessary to support the operations of prevention and relief of vulnerable population and/or population affected by the disasters. In this way a rapid response of the system can be guaranteed, tending to maintain or restore the well-being of the population that is at risk or is affected.

In this conceptual framework, the supply chain is the part of the logistic system in charge of managing the physical, human and information flow to and from the affected area. Thus, while the supply chain concentrates on the flows directly associated with the fulfillment of the mission, the rest of the logistic system is focused on the flows and processes that allow the organization, operation and value generation of the chain of supply.

Like the logistic system of which it is part, the supply chain is organized functionally, and each functional set of the chain is known as a link. As evidenced in the literature each of these links can be made up of one or multiple actors, and be associated with its own or shared infrastructure (Blecken, 2009).

16 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

[www.igi-global.com/chapter/planning-methodological-framework-for-humanitarian-aid-system-in-colombia/231975](http://www.igi-global.com/chapter/planning-methodological-framework-for-humanitarian-aid-system-in-colombia/231975)

## Related Content

---

### Challenges Facing Humanitarian Logistics in a Nonprofit Organization

Neeta Baporikarand Liina Bibi Shangheta (2018). *International Journal of Applied Logistics* (pp. 35-56).

[www.irma-international.org/article/challenges-facing-humanitarian-logistics-in-a-nonprofit-organization/196576](http://www.irma-international.org/article/challenges-facing-humanitarian-logistics-in-a-nonprofit-organization/196576)

### Sustainable Green Supply Chain Management for Organizational Performance and Carbon Reduction

Amitab Bhattacharjeeand Abhijit Ghosh (2024). *Strategies for Environmentally Responsible Supply Chain and Production Management* (pp. 128-155).

[www.irma-international.org/chapter/sustainable-green-supply-chain-management-for-organizational-performance-and-carbon-reduction/341519](http://www.irma-international.org/chapter/sustainable-green-supply-chain-management-for-organizational-performance-and-carbon-reduction/341519)

### Advancing Towards Sustainable Supply Chain Management Using IoT and Blockchain Technology

Kamalendu Pal (2023). *Handbook of Research on Designing Sustainable Supply Chains to Achieve a Circular Economy* (pp. 224-246).

[www.irma-international.org/chapter/advancing-towards-sustainable-supply-chain-management-using-iot-and-blockchain-technology/322245](http://www.irma-international.org/chapter/advancing-towards-sustainable-supply-chain-management-using-iot-and-blockchain-technology/322245)

### Investigating Adoption of E-Procurement Systems: An Empirical Study

Ozden Bayazit (2014). *International Journal of Information Systems and Supply Chain Management* (pp. 47-66).

[www.irma-international.org/article/investigating-adoption-of-e-procurement-systems/117467](http://www.irma-international.org/article/investigating-adoption-of-e-procurement-systems/117467)

### Inventory Cost Share for Supply Chain Coordination by Means of Contracts

Alejandra Gomez-Padilla (2012). *Customer-Oriented Global Supply Chains: Concepts for Effective Management* (pp. 258-275).

[www.irma-international.org/chapter/inventory-cost-share-supply-chain/63785](http://www.irma-international.org/chapter/inventory-cost-share-supply-chain/63785)