A Graphic of a Humanitarian Supply Chain

Source: Emergency Relief Logistics (ERL), A.-J. Morrison, B. Forbes, and R. McPherson
Fighting Ebola in West Africa – Samaritan’s Purse

Click on underlined text for Samaritan’s Purse video

Image courtesy of BBC News

Note the logistical issues in the video.
According to Bayer (2017), while an experimental Ebola vaccine has been shown to be 100% effective in preliminary trials, the World Health Organization (WHO) has warned that it cannot be used as a preventative vaccine and it is unknown if it is safe for children, pregnant women, or some other populations. Also unknown is how long it lasts.

The new genetically engineered vaccine, which the WHO has been developing for 15 years, was recently tested on nearly 12,000 people in Guinea. None of those who had been vaccinated with the experimental vaccine contracted Ebola, although 23 other people in the area who were not vaccinated contracted the disease.

Another issue is that there are different strains of Ebola, which means that vaccines that work against one strain of Ebola may not work against another.
The Stakeholders in Humanitarian Logistics

The Stakeholders

## Snapshot of Select Humanitarian Organizations

<table>
<thead>
<tr>
<th>Name of Organization</th>
<th>Total Contributions 2000 (US$)¹</th>
<th>Total Contributions 2001 (US$)²</th>
<th>Countries of Operation³</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Red Cross⁴</td>
<td>$ 738.0</td>
<td>$ 763.0</td>
<td>38</td>
</tr>
<tr>
<td>CARE USA</td>
<td>446.3</td>
<td>421.0</td>
<td>60</td>
</tr>
<tr>
<td>Catholic Relief Services</td>
<td>373.2</td>
<td>334.4</td>
<td>92</td>
</tr>
<tr>
<td>International Committee of the Red Cross</td>
<td>557.5</td>
<td>553.1</td>
<td>80</td>
</tr>
<tr>
<td>International Federation of Red Cross and Red Crescent Societies</td>
<td>223.7</td>
<td>189.7</td>
<td>178</td>
</tr>
<tr>
<td>International Rescue Committee</td>
<td>148.4</td>
<td>147.7</td>
<td>28</td>
</tr>
<tr>
<td>Medecins San Frontiers - Belgium</td>
<td>313.8</td>
<td>322.0</td>
<td>42</td>
</tr>
<tr>
<td>Oxfam UK</td>
<td>294.6</td>
<td>298.1</td>
<td>75</td>
</tr>
<tr>
<td>Save the Children</td>
<td>140.3</td>
<td>171.8</td>
<td>45</td>
</tr>
<tr>
<td>UNICEF</td>
<td>1139.0</td>
<td>1225.0</td>
<td>126</td>
</tr>
<tr>
<td>World Food Programme⁵</td>
<td>1490.0</td>
<td>1873.1</td>
<td>82</td>
</tr>
<tr>
<td>World Vision International⁶</td>
<td>964.2</td>
<td>1036.0</td>
<td>96</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$ 6829.0</strong></td>
<td><strong>$ 7334.9</strong></td>
<td></td>
</tr>
</tbody>
</table>


**Notes:**

1. Shown in U.S. dollars. Exchange rates from US$ to Euros as of year-end for 2000 is $1 = 1.0747 Euros, and for 2001 is $1 = 1.1047 Euros. Source: IMF
2. Contributions refers to donations to humanitarian organizations by governments, foundations, other humanitarian organizations, individuals, and the private sector
3. As per most recent annual report
4. American Red Cross total contributions exclude revenue from products and services
5. World Food Programme receives 54% of food contributions in the form of GIK
6. World Vision International’s 2000 financial statements are not available online. WV USA's contributions for 2000 totaled $469.1M
Top 10 Donors in 2002

<table>
<thead>
<tr>
<th>Donor</th>
<th>Value (in Millions of US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>1387</td>
</tr>
<tr>
<td>Private / NGO / Int’l</td>
<td>811</td>
</tr>
<tr>
<td>EU</td>
<td>488</td>
</tr>
<tr>
<td>Japan</td>
<td>222</td>
</tr>
<tr>
<td>Netherlands</td>
<td>187</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>211</td>
</tr>
<tr>
<td>Germany</td>
<td>144</td>
</tr>
<tr>
<td>Sweden</td>
<td>126</td>
</tr>
<tr>
<td>Switzerland</td>
<td>106</td>
</tr>
<tr>
<td>Canada</td>
<td>94</td>
</tr>
<tr>
<td>Others</td>
<td>607</td>
</tr>
</tbody>
</table>

Source: Compiled by OCHA based on information provided by appealing agency

# Commercial versus Humanitarian Supply Chains

## Table: Characteristics of Commercial versus Humanitarian Supply Chains

<table>
<thead>
<tr>
<th></th>
<th>Commercial Supply Chain</th>
<th>Humanitarian Supply Chain</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What is “Demand?”</strong></td>
<td>Products</td>
<td>Supplies and People</td>
</tr>
<tr>
<td><strong>Demand Pattern</strong></td>
<td>Relatively stable, predictable. Demands occur at fixed locations in set quantities.</td>
<td>Demand generated from random events that are unpredictable in terms of timing, type, and size. Demands estimated after they are needed, based on assessment of disaster characteristics.</td>
</tr>
<tr>
<td><strong>Inventory Control</strong></td>
<td>Uses well-defined methods for determining inventory levels based on lead time, demand and target customer service levels.</td>
<td>Inventory control is challenging due to high variations in lead times, demands, and demand locations.</td>
</tr>
<tr>
<td><strong>Lead Time</strong></td>
<td>Lead time determined by the Supplier-Manufacturer-DC-Retailer-chain.</td>
<td>Zero time between the occurrence of the demand and the need for it.</td>
</tr>
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<td><strong>Network Configuration</strong></td>
<td>There exist methods for supply chain network design.</td>
<td>Challenging due to the nature of unknowns (locations, type and size of events, politics, culture) and “last mile” considerations.</td>
</tr>
<tr>
<td><strong>Information Systems</strong></td>
<td>Typically, well-defined, making use of advanced technology</td>
<td>Information is often unreliable, incomplete, or non-existent.</td>
</tr>
<tr>
<td><strong>Performance Measurement System</strong></td>
<td>Historically, focused on resource performance measures, such as maximizing profit or minimizing costs.</td>
<td>Primary focus on output performance measures, such as the time required to respond to a disaster or ability to meet the needs of the disaster victims.</td>
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<tr>
<td><strong>Strategic Goals</strong></td>
<td>Usually, to produce high quality products at low cost in order to maximize profitability and achieve customer satisfaction.</td>
<td>Minimize the loss of life and alleviate suffering.</td>
</tr>
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Disaster management can be depicted as a cycle with several phases:
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- During the Post-disaster phase we focus on the recovery.
Pre-Disaster Phase: Mitigation and Preparedness

Assessment:
• Identify risk factors.
• Assess vulnerabilities.
Pre-Disaster Phase: Mitigation and Preparedness

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**Planning:**
- Evaluate infrastructure.
- Pre-position resources.
- Conduct capacity building.
- Engage policy makers.
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Training and Education:
- Make sure that those who need to know – know.
Disaster Phase: Response

Relief Operations:

- **First Phase:** medicines, water, food, shelter
Disaster Phase: Response

Relief Operations:

• **First Phase:** medicines, water, food, shelter

• **Second Phase:** housing, restoring food supply chains, construction
Disaster Phase: Response

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Stages of Logistics Operations:

- Mobilization and procurement
- Long haul
- The last mile
Click on underlined text for disaster preparedness and response video.
Disaster Preparedness and Response Video UCTV
Post-Disaster Phase: Recovery

Reconstruction:

- Cleaning up of debris
- Rebuilding of infrastructure
- Re-establishing communities

Evaluation:

- Measuring the effects of disaster on planning, response, and infrastructure
- Identifying lessons learned: Providing feedback to planning and response authorities.
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The UN Cluster Approach organizes humanitarian relief into a number of specialist clusters with a predefined leadership to strengthen overall response capacity and to improve the overall effectiveness of the response by (United Nations OCHA, 2005):

1. Ensuring sufficient global capacity is built up and maintained in all the main sectors/areas of response, with a view to ensuring timely and effective responses in new crises.
2. Providing predictable leadership in all the main sectors/areas of response.
3. Developing/designing approaches around the concept of partnerships/clusters between UN agencies, international organizations and NGOs.
4. Strengthening accountability by making cluster leads answerable at the global level for building up a more predictable and effective response capacity and at the field level, for fulfilling agreed roles/responsibilities.
5. Improving strategic field-level coordination and prioritization in specific sectors/areas of response by placing responsibility for leadership and coordination with the competent operational agency.
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The cluster concept is designed to apply to all humanitarian UN bodies, as well as national and international NGOs involved in the provision of disaster relief. Essentially, any humanitarian organization which has the capacity can lead a cluster and organizations working in the field may find themselves contributing to a number of clusters.

The InterAgency Standing Committee (IASC), which is designated as the primary mechanism for interagency coordination of humanitarian assistance, has defined global clusters in eleven functional areas of humanitarian activity, with associated lead organizations.
Specific Challenges:

- Climate change
- Urbanization trends – now more than half of the world’s population lives in cities
- Diseases are spreading at increasing speeds because of global air travel and increased population densities
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Effects on Disasters

- Increasing severity
- Increasing frequency – It is estimated that over the next 50 years natural and man-made disasters will increase five-fold (Thomas and Kopczak (2007)).
- Complexity
Selected Significant Climate Anomalies and Events in 2015

- **ALASKA**: The year 2015 tied with 2002 as the second warmest year since statewide records began in 1935, behind 2014.

- **CANADA**: Parts of western Canada had their warmest summer on record. Moderate to extreme drought developed across parts of western Canada due to the unusual warmth and dryness.

- **EASTERN NORTH PACIFIC BASIN**: August 2015

- **CONTIGUOUS UNITED STATES**: The contiguous U.S. had its second warmest (behind 2012) and third wettest year since national records began in 1895. May 2015 was the wettest month of any month on record.

- **ATLANTIC HURRICANE SEASON**: Below average activity 63% of normal ACE 11 storms, 4 hurricanes

- **HURRICANE SANDRA**
  - November 23rd-26th, 2015
  - Maximum winds: 230 km/hr
  - Sandra was the latest major Hurricane observed in the Eastern North Pacific basin since reliable records began in 1971.

- **MEXICO**: Several storm systems brought heavy precipitation during March 2015, with the national average being over three times the monthly average. This was the wettest March since national records began in 1941.

- **CHILE**: Jan 2015 was the driest January in at least five decades.

- **SOUTH AMERICA**: Much-warmer-than-average conditions engulfed much of the region during the year, resulting in the warmest year since continental records began in 1910.

- **ARGENTINA**: Second warmest year, behind 2012, since national records began in 1961. The four warmest years on record have occurred since 2012.

- **ARCTIC SEA ICE EXTENT**: During its growth season, the Arctic had its smallest annual maximum extent. During its melt season, the Arctic reached its fourth smallest minimum extent on record.

- **ASIA**: Much-warmer-than-average conditions were present across much of the continent. 2015 was the warmest year since continental records began in 1910. Russia had its warmest Jan–Sep since national records began in 1936. China had its warmest Jan–Oct, with Hong Kong experiencing its warmest Jun–Aug period on record.

- **EUROPE**: Europe as a whole, experienced its second warmest year on record, behind 2014. Several countries had a top 5 year: Spain (warmest), Finland (warmest), Austria (2nd), Germany (2nd), France (3rd), and The Netherlands (5th).

- **INDIA**: A major heatwave affected India from 21 May–10 June. Average temperatures over 45°C were observed, with some locations reaching 48°C. Over 2000 fatalities were blamed on the excessive heat.

- **MOORE**: On Aug 8th, Malakal received over 13 times its monthly average in one hour.

- **AFRICA**: 2015 was the second warmest year, behind 2010, since continental records began in 1910.

- **NORTH INDIAN OCEAN CYCLONE SEASON**: Near average activity 5 storms, 2 cyclones

- **SOUTH INDIAN OCEAN CYCLONE SEASON**: Near average activity 9 storms, 7 cyclones

- **SOUTH AMERICAN CYCLONE SEASON**: Near average activity 6 storms, 2 cyclones

- **AUSTRALIAN CYCLONE SEASON**: Experienced its fifth warmest year since national records began in 1910. The month of October was exceptionally warm, recording the largest anomaly for any month on record.

- **SOUTH WEST PACIFIC CYCLONE SEASON**: Near average activity 6 storms, 2 cyclones

- **WESTERN PACIFIC OCEAN TYPHOON SEASON**: Above average activity 28 storms, 21 typhoons

- **CYCLONE CHAPALA**
  - October 28th–November 4th, 2015
  - Maximum winds: 250 km/hr
  - Chapala was the first hurricane-strength storm (Category 1 in the Saffir-Simpson scale) on record to make landfall in Yemen.

Please Note: Material provided in this map was compiled from NOAA's NCEI State of the Climate Reports and the WMO Provisional Status of the Climate in 2015.
For more information please visit: http://www.ncdc.noaa.gov/sotc/
Figure: Impacts of climate change on transportation infrastructure
Recent Billion Dollar US Weather Disasters

Billion Dollar Weather Disasters 1980 - 2010

Dollar amounts shown are approximate damages/costs in $ billions. Location shown is the general area for the regional event. Several hurricanes made multiple landfalls. Additional information for these events is available at NCDC WWW site www.ncdc.noaa.gov/ol/reports/billionz.html. The U.S. has sustained 99 weather related disasters over the last 30 years with overall damages/costs exceeding $1.0 billion for each event. Total costs for the 99 events exceed $725 billion using a GNP inflation index.

NOAA’s National Climatic Data Center
Video lecture by Dr. Yossi Sheffi and Dr. Jarrod Goenztel of MIT on the impact of the Fukushima triple disaster on commercial supply chains globally and also on the need for humanitarian relief.

Sheffi is the author of *The Resilient Enterprise*.
As reported in the *USA Today*, the U.S. had the world’s top two costliest natural disasters in 2012, according to a report released by global reinsurance firm Aon Benfield, based in London.

The largest global disasters of 2012 were Hurricane Sandy (with a cost of $65 billion) and the year-long Midwest/Plains drought ($35 billion), according to the company’s Annual Global Climate and Catastrophe Report, which was prepared by Aon Benfield’s Impact Forecasting division.
Sandy and the drought accounted for nearly half of the world’s economic losses but, owing to higher levels of insurance coverage in the U.S., 67% of insured losses globally, the report states. Total economic losses include the entire cost of an event, while insured losses are the amount of economic losses that are covered by insurance.

The U.S. alone accounted for nearly 90% of all the world’s insured losses in 2012. In addition to the drought and Sandy, several severe weather events and Hurricane Isaac contributed to this total.


