SUPPLY CHAIN EXPENDITURE AND PREPAREDNESS INVESTMENT OPPORTUNITIES

A COOPERATIVE STUDY BY HELP LOGISTICS AG, KUEHNE LOGISTICS UNIVERSITY AND THE INTERNATIONAL FEDERATION OF RED CROSS AND RED CRESCENT SOCIETIES

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EXECUTIVE SUMMARY

In view of the ever-increasing humanitarian needs and the growing funding gap (Figure 1), actors in the humanitarian space are asked to look into different and new ways of operating to ultimately achieve more with less.

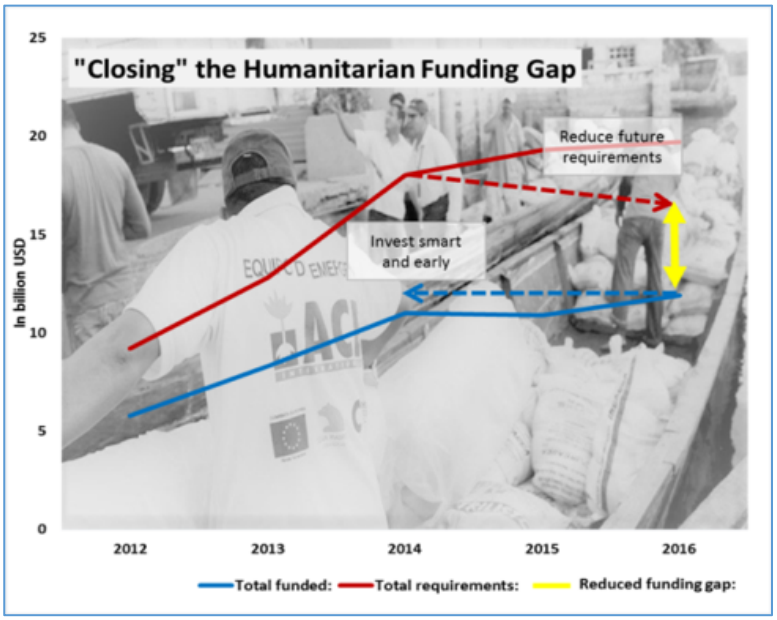

Figure 1: Funding gap

Recent studies carried out by HELP Logistics and the Kuehne Logistics University have analysed the expenditures of 5 organisations in 23 emergency operations of different kinds between 2005 and 2018. The studies revealed that an average of **73%** of the total expenditure was spent in the supply chain (Figure 2). It follows that efficiencies must be found here if the humanitarian community is to effectively meet the increasing needs with the available resources. A number of organisations such as Action Contre la Faim (ACF) France, the International Federation of Red Cross and Red Crescent Societies (IFRC) and Save the Children International (SCI) picked up on those findings and launched a second series of studies to identify potential triggers for cost and time savings in the supply chain.

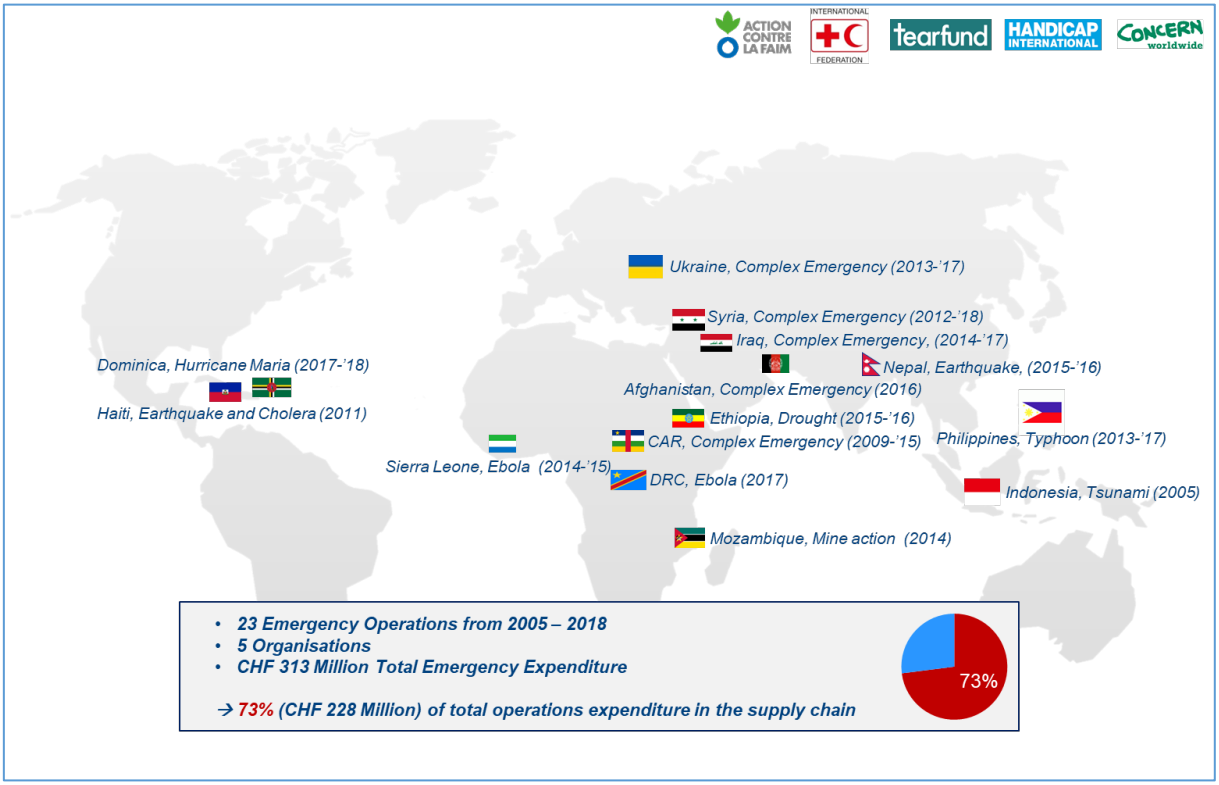

Figure 2: Worldwide expenditure analysis

Following the statement that every Swiss Franc (CHF) invested prior to a disaster can save up to 7 CHF in the response (United Nations Development Programme (UNDP), 2012) and based on a pre-existing preparedness framework (Wassenhove 2006), HELP Logistics and KLU developed a dynamic return on investment model to investigate the saving potential of supply chain preparedness investments.

The model analyses data from a real disaster context and compares scenarios without and with investments considering the available preparedness time until the disaster strikes. It takes into consideration the interdependencies across the different investments and the impact generated.

Despite of many best practices already implemented in the area of supply chain management and despite of its large experience and on-going initiatives in capacity strengthening, the IFRC was very motivated to participate in this study - seen as a practical example of humanitarian-private sector cooperation - under its vision of continuous improvement. Getting exposed to techniques from the private sector, like this study, was perceived a way of learning from others and at the same time willing to share knowledge extracted from the analysis with other organisations.

The IFRC, being an organisation that aims at preventing and alleviating human suffering, chose the disaster context of the Haiyan typhoon response in the Philippines, November 2013, and the distribution of Non-food Items (NFI), namely sleeping mats, to the affected population. The model showed that, by investing in key elements such as *Personnel, IT/Processes, Supplier Engagement, Prepositioning* as well as *Local Actors/Community*, significant time and cost savings are possible (Figure 3).

Figure 3: Scenario selected and study results

With an investment of around **CHF 148'000** to support the implementation of an array of the supply chain preparedness activities selected for this study over a period of **365 days,** cost savings of **CHF 1'195'000** and lead time reduction of **36 days could be generated – proving that the return on investment ratio of 1:7 can indeed be achieved.**

The results reassert the fact that supply chains are the backbone and key success factor of emergency operations. Critical stakeholders such as humanitarian organisations, commercial companies, governments and donors should feel encouraged to put more focus on the optimisation of supply chain processes by investing earlier and smarter to elevate humanitarian assistance to a more effective and efficient level.

CONTENTS

LIST OF FIGURES

LIST OF ABBREVIATIONS

ACF:	Action Contre la Faim
CHF:	Swiss Franc(s)
DRC:	Democratic Republic of Congo
DREF:	Disaster Response Emergency Fund
ERU:	Emergency Response Unit
FACT:	Field Assessment and Coordination Team
FOS:	Federation-owned Stocks
HNS:	(Red Cross or Red Crescent) Host National Society
IFRC:	International Federation of Red Cross and Red Crescent Societies
MSU:	Mobile Storage Unit
NDRT:	National Disaster Response Teams
NFI:	Non-food Item
NS:	(Red Cross or Red Crescent) National Society
PNS:	(Red Cross or Red Crescent) Partner National Society
RDRT:	Regional Disaster Response Teams
ROI:	Return on Investment
RoRo:	Roll-on-roll-off
RLU:	Regional Logistics Unit; now called Operational LPSCM Unit (Logistics, Procurement and Supply Chain Management)
SCI:	Save the Children International
UNDP:	United Nations Development Programme
VCI:	Vendor-consigned Inventory

1. INTRODUCTION

This report outlines the methodology of the Supply Chain Expenditure study as well as the Return on Investment (RoI) model and its application in the supply chain preparedness project with the IFRC conducted from May to September 2018. It furthermore presents and discusses the findings of the project and concludes on potential next steps to further enhance the response capacity of the IFRC (considering its Secretariat together with its members of the Red Cross Red Crescent National Societies) and other actors operating in the humanitarian space.

2. SUPPLY CHAIN EXPENDITURE

As a first step in the analysis, HELP Logistics, KLU and the IFRC investigated 7 disasters around the globe of different types with respect to their expenditures[1]. The approach and the findings are outlined in the following section.

2.1 Emergency Selection

In order to cover different geographical locations, types of disasters (natural, complex, medical, and population movement) and finance models (Disaster Response Emergency Fund (DREF) and Emergency Appeal)[2], a total of 7 emergency operations were selected:

- Natural disasters (Typhoon Haiyan in the Philippines, 2013-2017; Hurricane Maria in Dominica, 2017-2018; Drought in Ethiopia, 2015-2016)
- Complex emergencies (Syria, 2012-2018 and Ukraine, 2013-2017)
- Medical emergency (Ebola, Democratic Republic of Congo (DRC), 2017)
- Population movement response (Iraq, 2016-2017)

2.2 Data Collection and Analysis

Data on the expenses (total of CHF 235'661'426) of the selected operations was collected from IFRC's finance department and categorised as supply chain and non-supply chain related cost. Major components of the supply chain related costs were salaries, office space and supplies and travel of staff with functions related to supply chain, as well as procurement, transportation and storage of relief commodities. After several discussions with IFRC, it was decided to include the cash transfer

[1] Data used is publicly available via the IFRC Operational reports published in its website http://www.ifrc.org/appeals

[2] Disaster Response Emergency Fund (DREF) for small and medium scale of emergencies that allows the national societies of the IFRC to carry out their role as first responders to a disaster, as well as the Emergency Appeal for disasters that surpass National Societies' capacity to respond

programmes[3] in the supply chain expenditures as they can be seen as an outsourcing of the organisation's procurement activity. Figure 4 and 5 show the percentages of the supply chain expenses in regards to the total expenses across all operations analysed with an overall average of 75%.

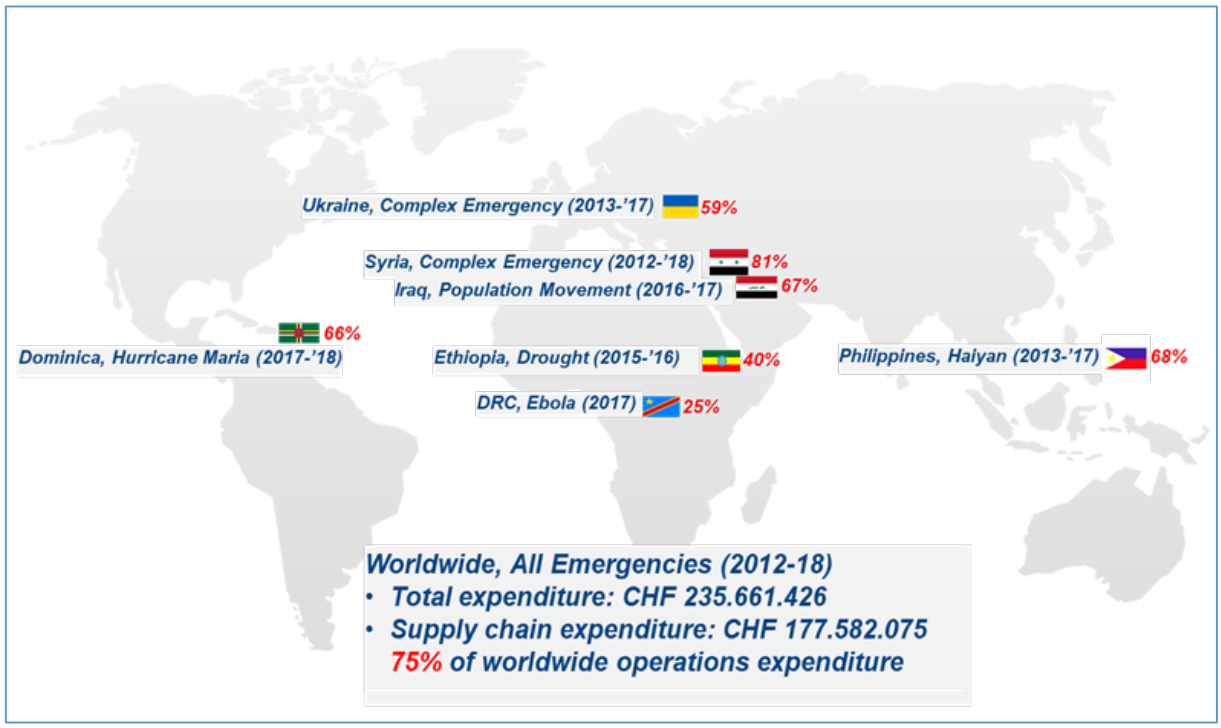

Figure 4: Supply chain expenditure of selected emergencies

Country (Emergency)	Operations Exp. (CHF)	S.C. Exp. (CHF)	Ratio in %
Syria (Complex)	144,032,840	116,668,979	81%
Philippines (Typhoon)	75,955,368	51,869,642	68%
Ukraine (Complex)	5,712,582	3,347,448	59%
Dominica (Hurricane)	4,580,837	3,006,010	66%
Ethiopia (Drought)	2,834,962	1,124,320	40%
Iraq (People Movement)	2,221,166	1,483,163	67%
DRC (Ebola (DREF))	324,241	82,513	25%

Figure 5: Supply chain expenditure of selected emergencies

[3] IFRC has gradually increased the implementation of emergency operations through cash based interventions during last decade. In 3 of the 7 analysed operations, cash programmes got successfully implemented (20% of total exp. in the Dominica, 16% in the Philippines and 22% in Ukraine). IFRC aims to consider cash-based interventions as by-default response option for its emergency response operations whenever and wherever feasible without compromising on its supply chain capacity to allow a fall back on the delivery of relief commodities if local markets cannot support the cash-based intervention or cannot absorb the cash distributed.

Across all 7 emergencies, the percentage varies between 59% to 81%, except for the drought response in Ethiopia (40%) and the Ebola response in DRC (25%). For Ethiopia, it should be noticed that the overheads for general and personnel costs were, data-wise, not possible to be broken into supply chain and non-supply chain related costs.

The IFRC counts with a specific tool to quickly provide an initial set of funds to start relief operations in the ground in response to a new humanitarian crisis, while the normal fund-raising mechanisms are launched to engage with funding partners: the Disaster Response Emergency Fund (DREF). It can be used for any type and any scale of disaster to enable kicking-off relief activities of the National Society. As explained in the 2.1 Emergency Selection, a wide range of different types of emergencies was selected, and one of them was a small-scale operation: the Ebola outbreak in DRC 2017 (where no Emergency Appeal was launched, and only DREF money was used). Due to the time limitations of the study, it was not possible to include other small/medium scale operations (funded only via DREF), where the ratio of supply chain related expenditures would have been similar to the other 6 operations analysed (between 59% to 81% of total expenditure). In the case of the selected Ebola operation implemented in DRC during 2017 (Glide number: EP-2017-000048-COD), it was a small scale operation where the Red Cross of the Democratic Republic of the Congo focused its work to contribute to the containment of the outbreak via community engagement and social mobilisation to prevent and control infections - while medical treatment was carried out by other organisations. For that reason, the IFRC project did not require a major supply chain set-up on the ground.

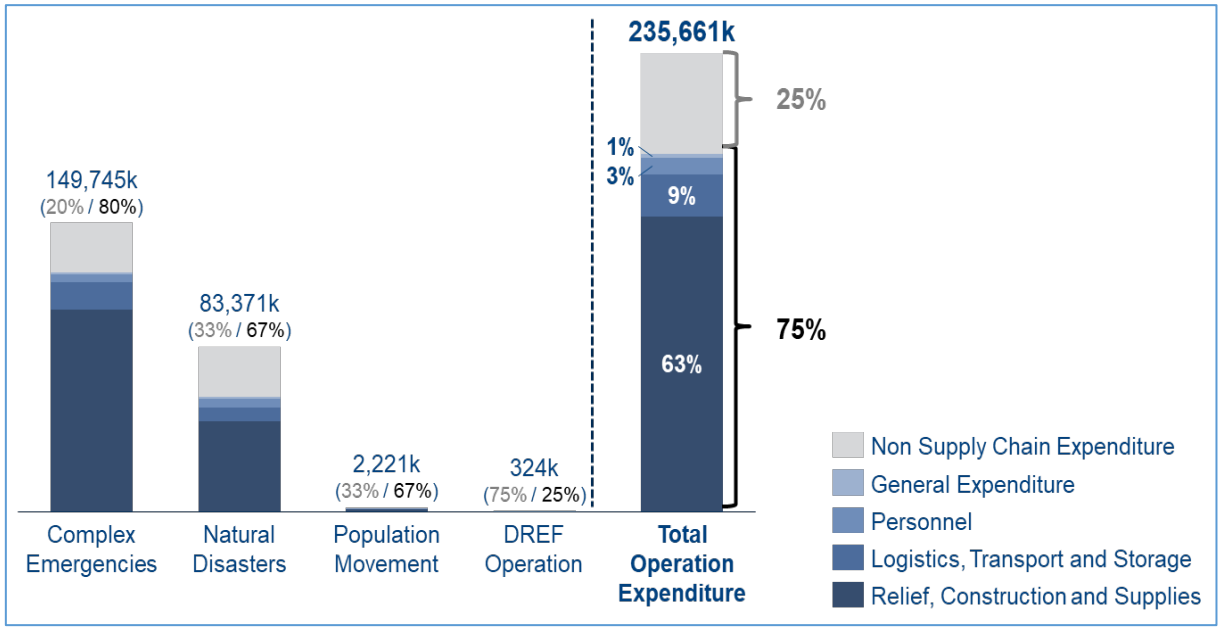

Figure 6: Breakdown by disaster type and expenditure category

Comparing the different types of emergencies, IFRC's complex emergencies have clearly the highest share of supply chain expenses (80%); caused by access restrictions due to security concerns. Within the total operation expenditure, the vast majority of supply chain related cost was on the Purchase of Supplies (63%), followed by Logistics, Transport and Storage (9%), Personnel with supply chain relevant functions (3%) and General Expenditure (1%).

3. RETURN ON INVESTMENT METHODOLOGY AND MODEL FRAMEWORK

In the aftermath of the World Humanitarian Summit 2016, HELP Logistics and KLU developed an analytical approach that equips humanitarian actors with an enhanced understanding of investment opportunities in the context of supply chain preparedness. The approach resulted in a dynamic model which outlines potential investment elements and evaluates their impact in terms of cost and time savings. The architecture of the model is based on Van Wassenhove's Preparedness Framework (2006) and is illustrated in Figure 7.

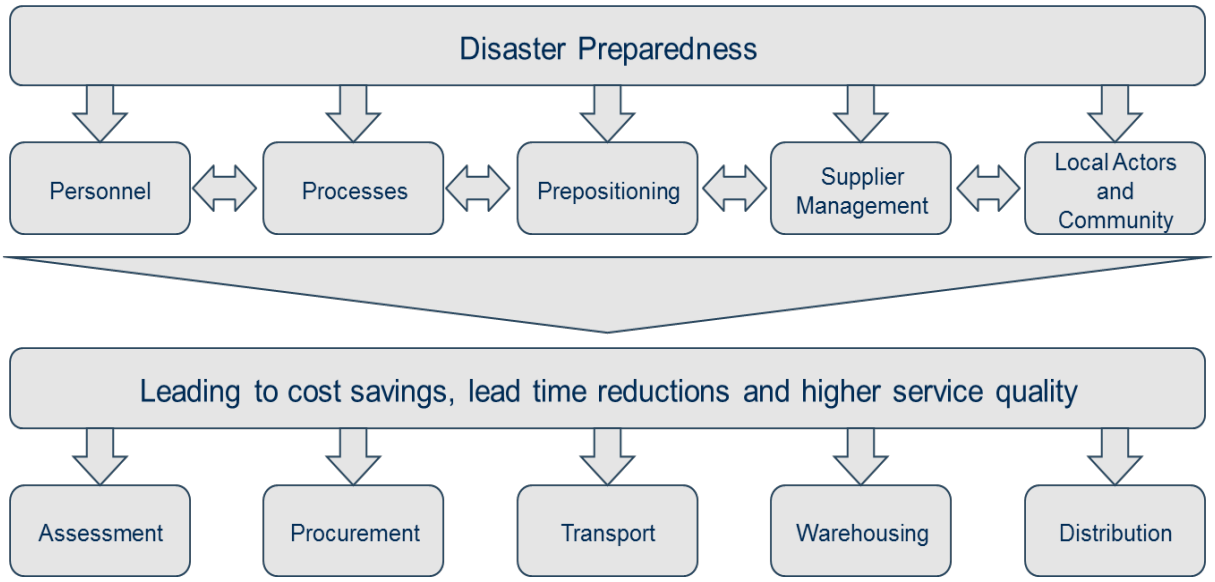

Figure 7: Architecture of the RoI model

The model operates under the following conditions and assumptions:

- As proven in several supply chain expenditure studies conducted by HELP Logistics and KLU the majority of the expenditure of a relief operation is in the supply chain

  Assumption: saving potentials should be found here
- Supply chains are complex systems with a great level of interconnectedness amongst actors involved

Assumption: supply chain investments cannot be looked at in isolation but from a holistic view point

- The RoI model has been designed to reflect and analyse a real operational environment

  Assumption: the successful set-up and application of the model depend heavily on a critical mass of data input provided by the participating organisation

- Preparedness investments take time until they fully unfold

  Assumption: the time between investment decision and disaster to happen has strong impact on the calculated return of investment

- Investments cost can be one-off (e.g. development of IT system) or continuous (e.g. holding cost for pre-positioned items)

To apply the model in practice as part of an analysis project the methodology in Figure 8 is followed.

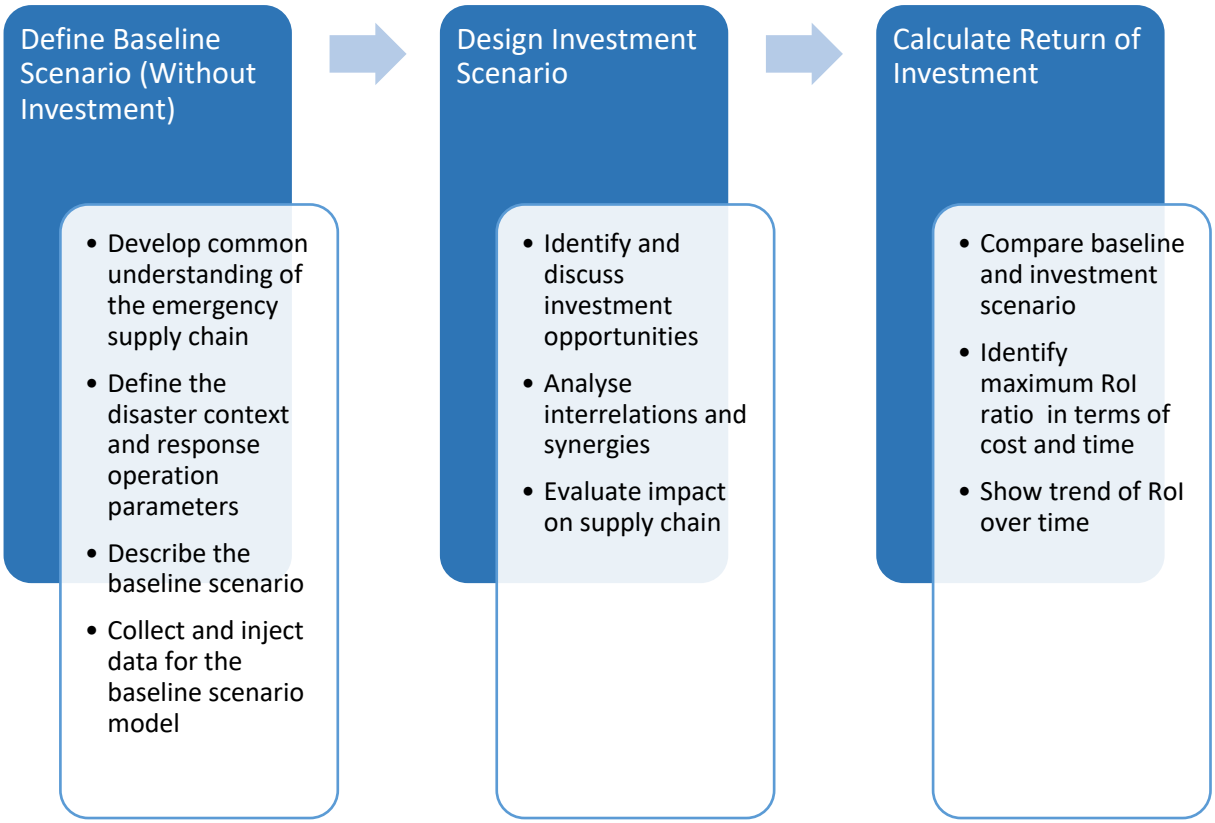

Figure 8: Methodology of the RoI model

3. APPLICATION OF THE MODEL

The baseline scenario forms the foundation of the subsequent modelling process as it frames the operational context and provides the first set of supply chain data. The following steps are essential elements of the design phase and were completed in close collaboration with IFRC staff from the Country Office in the Philippines, the Regional Office for Asia Pacific and the Headquarters.

3.1 Phase 1: Define Baseline Scenario

The IFRC is the world's largest humanitarian organisation carrying out relief operations to assist victims of disasters, and combines this with development work to strengthen the capacities of its member National Societies. When a major disaster such as the Haiyan typhoon strikes, the National Society of the country (ex. the Philippine Red Cross Society), via its National Disaster Response Teams (NDRT), immediately reacts under its auxiliary role to its government. If additional support is required, the IFRC is requested to activate its humanitarian crisis protocol to plan and design the response according to available resources and identified needs. It counts with a variety of mechanisms or tools at its disposal to support disaster response. They are designed to ensure that assistance is delivered fast and efficiently to people affected by disasters through the provision of funding, experienced and trained human resources and appropriate emergency services.

The Field Assessment and Coordination Team (FACT) is composed of experienced individuals in assessment and planning from IFRC and its NS. Few NS are able to maintain and deploy teams of trained technical specialists, so-called Emergency Response Units (ERU), who use pre-packed sets of standardised equipment in immediate disaster response. Regional Disaster Response Teams (RDRT) are rosters of technical specialists from NS and IFRC built in the different regions across the globe who are deployed individually to cover temporarily certain roles in a specific operation. Following an effort to strengthen local actors and in view of the growing skill levels within the regions, RDRT personnel is more and more deployed as part of the FACT and ERU teams.

A comprehensive 'Surge Optimisation' process started in 2017 to improve performance and accountability in emergency operations, looking into further options to mobilise first local, later regional and finally global resources as appropriate for each emergency event.

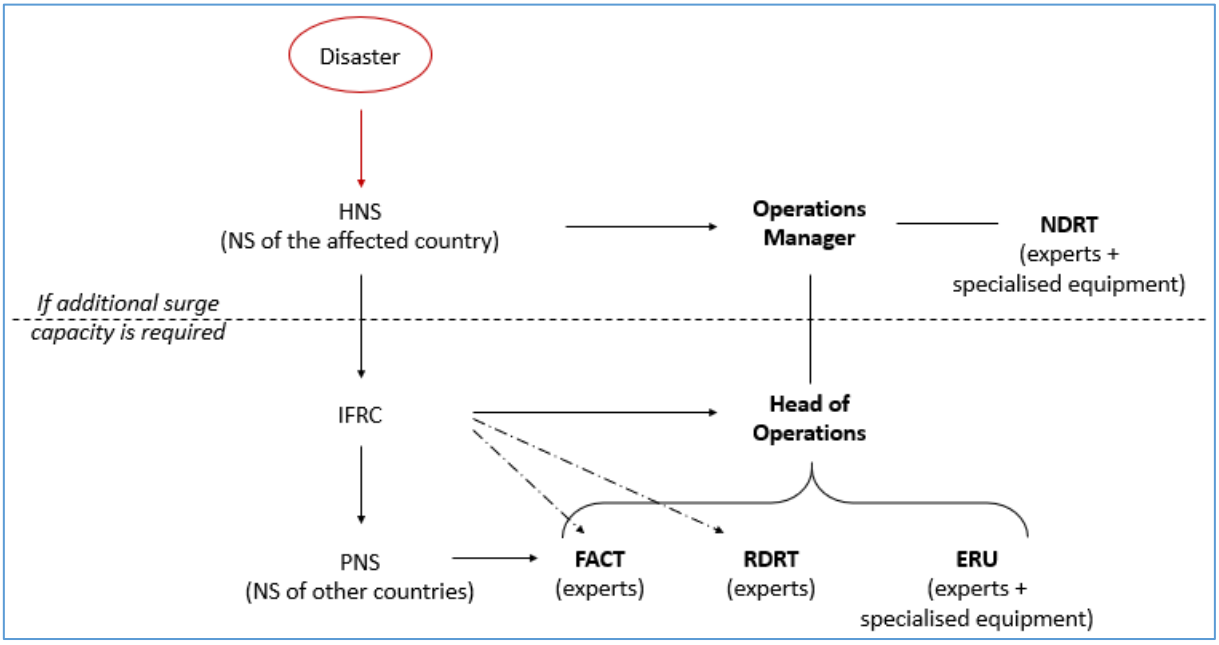

Figure 9: Flow of surge personnel deployed from the IFRC network in response to mega disasters

Depending on the scale of the disaster, the response might require a certain level of international support. To provide assistance to the affected population in a timely manner, a well-functioning supply chain is of utmost importance for the IFRC. Despite the fact that cash transfer programmes are on the rise, there is, in most cases, still large amounts of cargo (relief items as well as equipment) which have to be moved to the country and to the disaster zone. Critical supply chain processes encompass needs assessment, procurement and sourcing, transportation, storage and distribution. To source for the urgently needed relief goods, the IFRC can draw upon the following sourcing options:

- International suppliers
- Stockpiles prepositioned in regional hubs, traditionally called Regional Logistics Units (RLU), holding a mix of:
    - Federation-owned Stocks (FOS) that belong to the IFRC directly
    - Stocks owned by the PNS (exceptionally if the demand is so big, PNS can also ship relief items from their own country warehouses)
    - Vendor-consigned Inventory (VCI) belonging to the suppliers
- Local suppliers in the country
- In-kind donations

These items are then transported to the in-country warehouse at the Hosting National Society (HNS), either in the capital or one of the main cities, based on the optimal delivery and storage options. Within the country, road transport is the usual choice to move goods further to the

response areas and up to the final beneficiaries. However, in some countries, for example the Philippines, boats or ferries as well as smaller aircrafts or helicopters are needed to overcome access constraints (e.g. due to infrastructure damages). Figure 10 shows IFRC's general supply set up in the context of a major response in the Philippines.

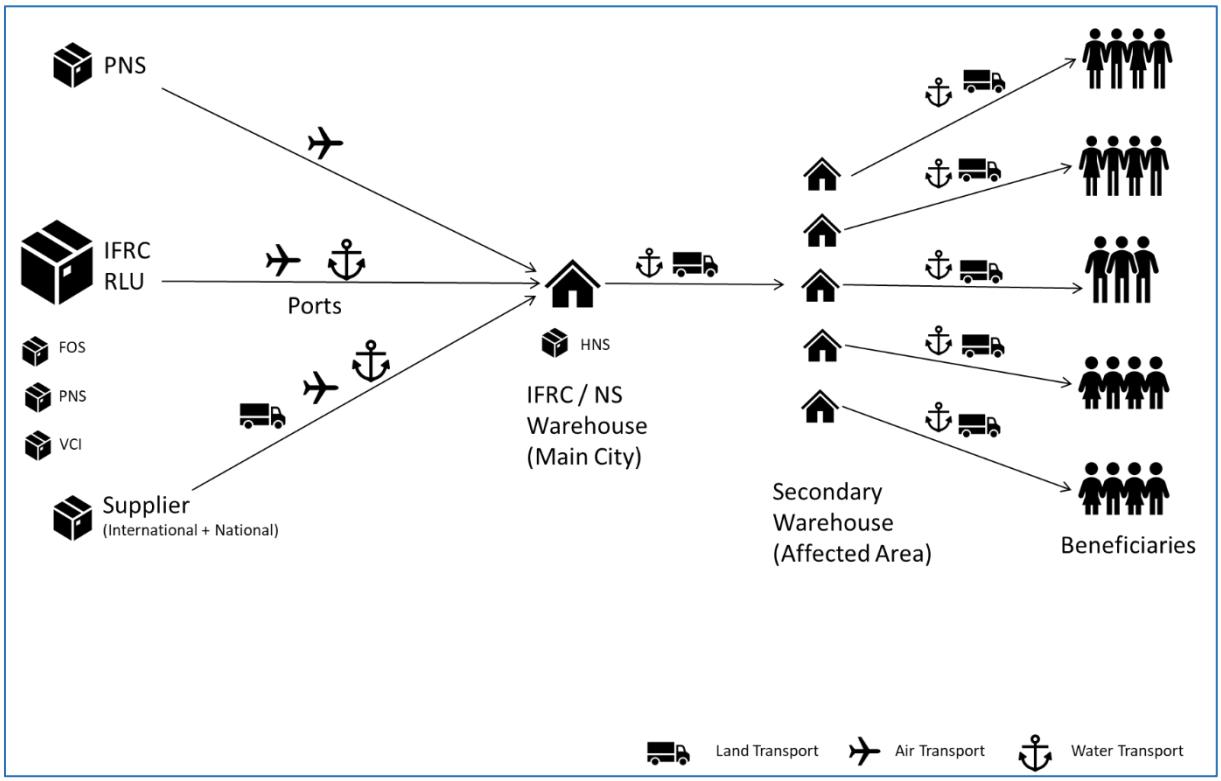

Figure 10: General IFRC supply chain in the context of the Philippines

3.1.1 Define the Disaster Context and Response Operation Parameters

The disaster which is to be analysed by the model should be an operation of significant size and relevance to the organisation, considering the effort required to collect and analyse the data. The duration of the response reflects the time the organisation is operating during the emergency phase (recovery and development phases are not considered in the model). The commodity selected is recommended to have a certain degree of standardisation, long shelf life, be distributed in large volume and to be available both locally and internationally. IFRC selected the context of the **typhoon Haiyan in the Philippines** (November 2013) due to its magnitude, available operational data and the advanced preparedness level the Philippine Red Cross Society has reached over recent years. The **response period was estimated at 120 days** which reflects the time IFRC operated in emergency mode after the typhoon made landfall. In regards the chosen commodity, **sleeping mats** met the criteria and were procured in large quantities (200'000) throughout the actual Haiyan response.

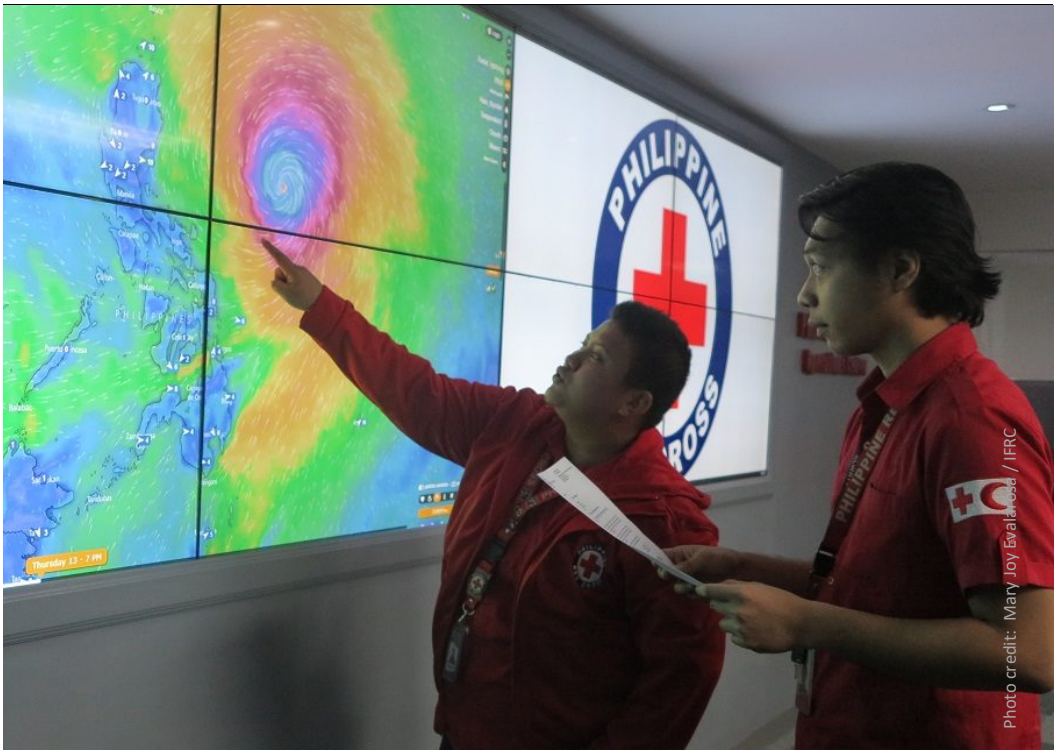

Figure 11: Monitoring the scale of the upcoming typhoon

3.1.2 Describe the Baseline Scenario

For the IFRC baseline scenario, the needed sleeping mats are anticipated to be neither pre-positioned at any of its logistics hubs, nor available locally (for the volume and specifications required) and are also not donated in-kind at the required amount. Therefore, international sourcing from a supplier in India is the only valid option for the baseline scenario. The sleeping mats are flown into Cebu which is, besides Manila, the main entry point for international humanitarian cargo in the Philippines. The onward transportation from Cebu to the affected locations is done through a combination of sea and road. Trucks are the predominant transport means using so-called roll-on-roll-off (RoRo) services or general ferry boats when crossing waters. The main warehouse of the baseline scenario is based in Cebu and serves as the critical transhipment point for large volumes arriving at the airport. Field warehouses or mobile storage units (MSU) are temporary depots in the disaster-hit regions. From these locations, items are distributed to the beneficiaries.

The Haiyan response, being a major response operation of the IFRC coordination and logistics technical activities were supported by a team of national and international staff. Overall, in addition to the remote support from the IFRC logistics unit (in the IFRC regional office for Asia Pacific located in Kuala Lumpur, Malaysia), during the first 4 months, 4 international supply chain experts were deployed to the Philippines to support the operation together with 22 local staff with supply chain relevant functions. Furthermore, National Societies from other countries contributed with 3 different ERU teams for Logistics, Cash Programmes and Distribution were deployed composed by an average

of 28 specialists per month. Moreover, 3 FACT specialists for Logistics and Relief activities were in place during the first two months.

Figure 12 shows IFRC's supply chain in the baseline scenario.

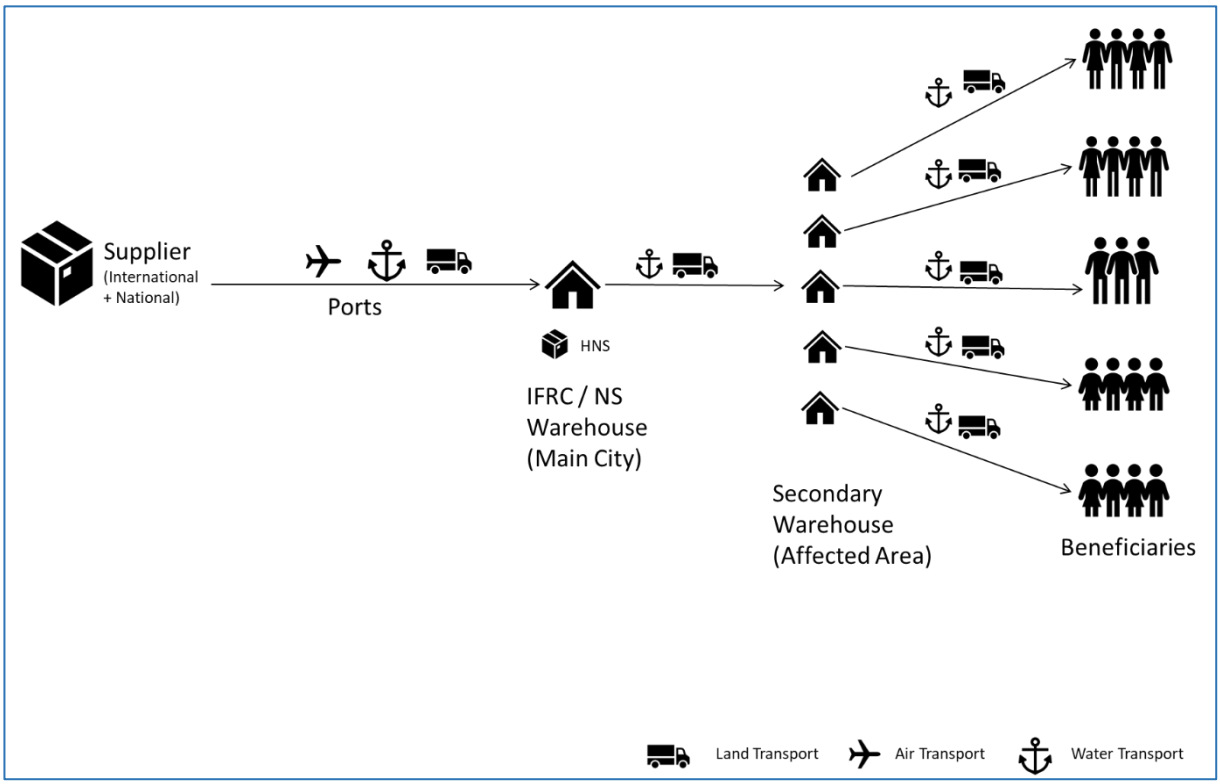

Figure 12: Flow of goods in IFRC's baseline scenario

3.1.3 Collect and Inject Data for the Baseline Scenario Model

Historical data on lead times, costs and capacities across all supply chain functions starting from assessment to final distribution were collected and injected in the baseline scenario model. Some data gaps where filled with assumptions based on other similar IFRC operations. Detailed data and information provided can be found in the Annex.

3.2 Phase 2 Design Investment Scenario

Based on the preparedness framework by Van Wassenhove (2006), 5 different investment elements (i.e. Personnel, IT/Processes, Prepositioning, Supplier Management and Local Actors/Communities) were discussed with the IFRC. Concrete investment opportunities were gathered from brainstorming sessions with different IFRC experts and put into the context of the Haiyan response. Quantitative and qualitative data was combined to estimate their impact in the baseline scenario. A mix of historical data, recent capacity assessments, on-going logistics development initiatives and some assumptions were used to model the chosen scenario.

Personnel	
Context	
The performance of IFRC's supply chain and, therefore, the overall response, depends heavily on the capacity, productivity and the skill set of its staff. At the same time, Personnel expenses represent a major cost component in the case that international experts are deployed as surge capacity to cover temporary gaps of resource availability in country due to the big magnitude of a disaster. Based on experienced, it is assumed that in the case of mega disasters like the Typhoon Haiyan, some additional international capacity from the IFRC network will be required to cover sudden picks of demand; i.e. no single country has unlimited immediate capacity ready to face extraordinary events.	
Investment Opportunity	***Investment Impact***
Trying to use as many local human resources as possible by enabling the option of mobilising more national and regional logisticians and reducing the use of global logistics experts. The possible areas identified in the case of the Philippines include: 1) continue strengthening the regional roster of RDRT logisticians (capacity kept and offered by other neighbouring National Societies); 2) deliver a comprehensive training programme for the national team of the Philippine Red Cross and the IFRC, 3) recruit additional local staff with special knowledge on particular supply chain functions such as warehousing, procurement or fleet management.	Cost reduction and increase of more contextual response, where local resources are empowered and used in the project design and implementation. In the model, those investments result in a reduced need for deployments of international staff from other regions (both IFRC staff, FACT and ERU teams) in the future. The cost of deploying an international expert it is always more costly than employing national experts. In some cases, it can be 10 times more expensive for a similar profile. To reach the maximal possible level of (local) staff capacity through investments related to Personnel, a time period of 730 days is anticipated to hire and train local resources. During that time period, the capacity is growing steadily which is reflected in the country readiness level in the model.
Synergies with other Investment Elements	
The increased staff capacity will facilitate the activities related to other investment elements such as Supplier Management and Local Actors. Likewise, investments in elements such as IT/Processes also increase the productivity and therefore complement the enhancement of staff capacity.	

IT/Processes	
Context	
The speed and quality of information flowing in a supply chain is determined by the establishment of streamlined processes, and the information technology and systems backing those processes up.	
Investment Opportunity	***Investment Impact***
This investment element encompasses both telecommunication equipment such as laptops or satellite phones as well as the development of new and/or upgrade of existing information systems. In regards to the information systems IFRC envisages to establish a new general unit server and exchange platform, to enrich the Enterprise Resource Planning (ERP) system modules for procurement and warehousing and enrich the fleet monitoring system.	Investing into this element would generate lead time savings in the supply chain (e.g. information on actual needs are shared swifter, approval processes are speeded up and visibility on the commodity flow is increased); it would enhance tracking of relief goods, supply chain overall visibility, reporting processes, decision making, compliance and transparency. Digital technology to support the beneficiary registration and distribution management (e.g.. data collection via smart phones, barcoded identification cards, barcode readers) would enable speeding up the arrival of assistance on the hands of people in need (compared to paper-based systems). Specifically for Cash-Based Interventions, which are not part of the chosen scenario, but which are rapidly scaling up globally, such technology has been identified as a prerequisite to distribute cash at scale during the emergency phase, complying with minimum data required by financial service providers and internal control mechanisms.
Synergies with other Investment Elements	
Investments in IT/Processes will increase the productivity of staff as they reduce the need for manual data input as well as lengthy authorisation processes and increase the visibility on available stock piles and suppliers.	

Prepositioning	
Context	
Having critical relief items readily available at strategically located warehouses before the emergency occurs, brings obvious advantages but needs to be managed carefully to avoid extreme over-stocking or stock-outs as well as wrongly chosen locations.	
Investment Opportunity	***Investment Impact***
In the model, a total of 50'000 sleeping mats are considered as contingency stocks to quickly respond in the Philippines by the Red Cross to humanitarian crisis to be pre-positioned at 3 hubs in Subic, Manila and Cebu. To fully build up that inventory, a time period of 100 days is anticipated. The investment comes with holding cost until the goods are distributed and requires significant funding being available to procure the goods prior to the disaster. The IFRC runs a regional depot in Kuala Lumpur which has storage space available for pre-positioning. One of the main advantages of pre-storing in Kuala Lumpur is the flexibility to use the commodities for emergencies in other countries (and re-fill the stocks shortly after). Since the focus of the study is only on the Philippines and the flexibility aspect needs to be analysed in future research, the regional hub in Kuala Lumpur is not considered as an option in the scenario modelled.	The pre-positioning takes out any procurement lead time during the response phase and also reduces procurement and transportation expenses. As time is not critical during the preparedness phase when the inventory is set up, slower but cheaper transport modes can be chosen, and better conditions can be negotiated with suppliers outside of the hectic response period. In case of international sourcing, the import of goods would be done before the emergency happens, thus the time required to release goods from customs would be avoided during the response phase.

Supplier Management	
Context	
Assessing local markets to identify and evaluate available suppliers and commodities, building relationships with selected suppliers and establishing framework agreements are the essence of professional procurement practices. Note that even if the model does not consider cash programmes, it should be mentioned that the market assessments carried out as part of this investment element can also serve as a foundation for the implementation of those.	
Investment Opportunity	***Investment Impact***
Setting up a long-term agreement for sleeping mats both at the national level for the Philippines (contract to be done by the Philippine Red Cross Society or the IFRC country office in the Philippines) and at regional/global level (contract to be done by the IFRC). IFRC acknowledges that these tasks require staff with the necessary competencies to conduct analyses and engage with the suppliers as well as transportation service providers. To reach that competency level, IFRC would train the national team to carry out these activities.	In-depth market knowledge on available goods and guaranteed quantities and prices through framework agreements result in savings of procurement cost and time in the model. IFRC assumes that it takes between 4 to 6 months to complete the assessments and establish the agreements.

Local Actors/Communities	
Context	
Two types of local actors are considered in this investment element. National governments play a critical role by coordinating the overall response and controlling in-flow of international organisations and commodities. Another important actor are the volunteers of the Philippine Red Cross, neighbours and communities in the disaster region that are typically the first responders and provider of assistance. Furthermore, they have great potential to support the following larger response phase through knowledge of local context as well as assets such as temporary storage in sports halls or community centres.	
Investment Opportunity	***Investment Impact***
The IFRC expects that building good and trustful relationships with government entities of the country as well as with local actors at municipality level will come with a number of advantages to IFRC's large scale relief operations. Similar to the supplier management investment element, the relationship management will be done through the recruitment of an additional expert and training of the Philippine Red Cross Society. A preparedness time of up to 1 year is anticipated until the return of the investment can be expected.	The improved collaboration with national government and municipalities will speed up the needs assessment (support from local actors at the municipality level) and the custom process (national government) and increase the distribution capacity (support from local actors at the municipality level). Establishing partnerships with private sector partners and other humanitarian organisations could facilitate in future emergency responses getting temporary free warehouse capacity in affected areas or benefiting from joint tendering or supplier market assessment.

3.3 Phase 3 Calculate the Return on Investment

Based on the pre-defined baseline scenario and the inputs provided on potential investments and their impact, the model calculates the maximum possible "RoI ratio" in terms of time and cost savings over time (i.e. number of days between investment decision and disaster to hit). Figure 13 shows the development of investments in relation to the generated savings whilst Figure 14 represents the trend of the actual cost RoI.

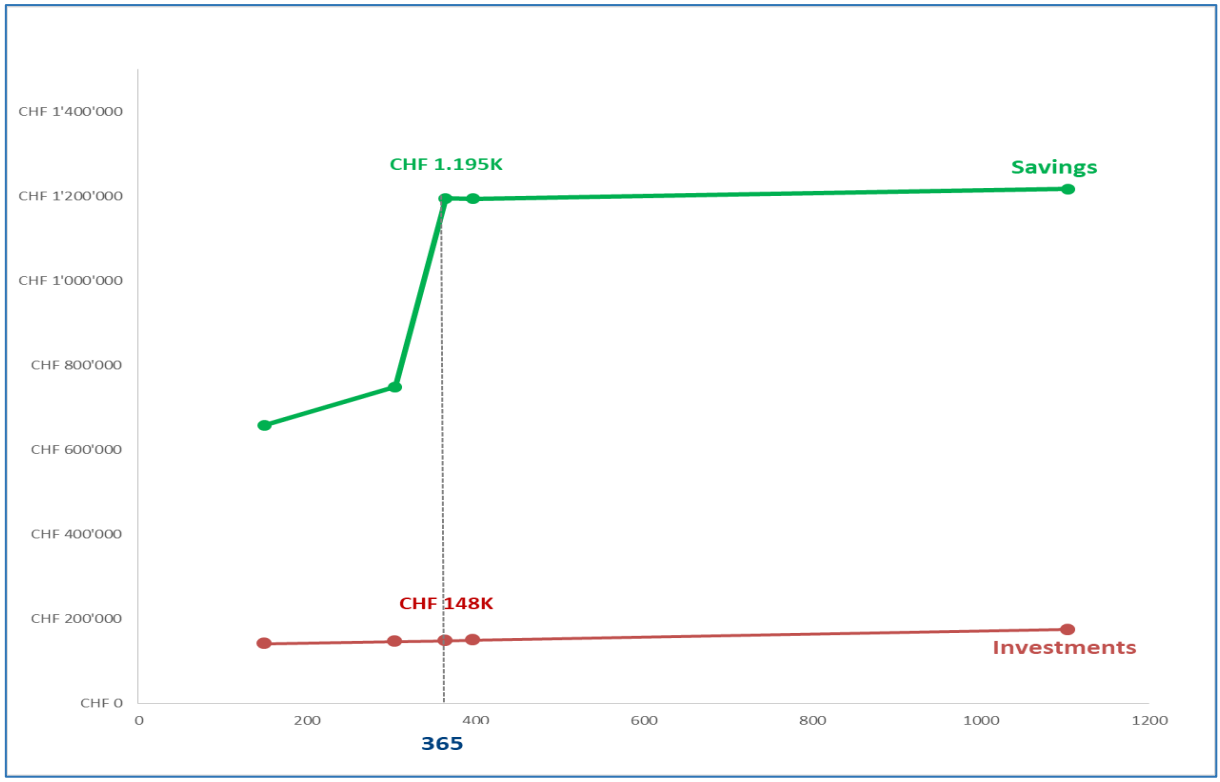

Figure 13: Investments and cost savings over time

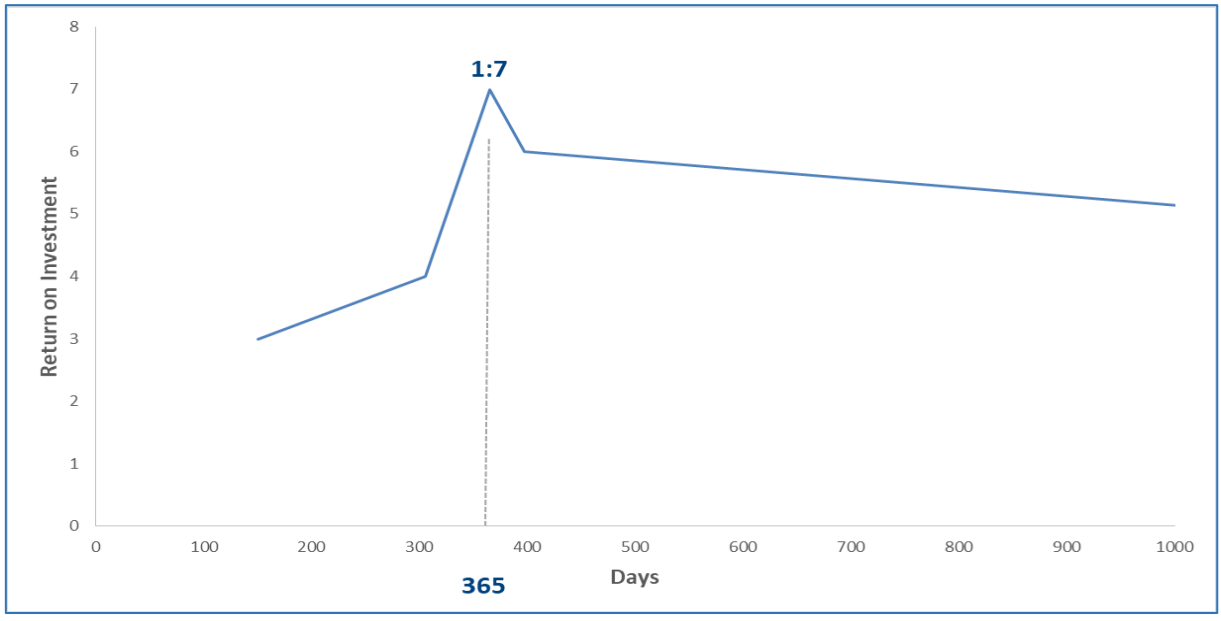

Figure 14: Trend of cost RoI

At day 365 (equal to 365 preparedness days), the optimal cost RoI ratio of 1:7 is reached. The investments made at that point in time across all elements, as per one possible scenario estimated with the IFRC team (Figure 15), add up to CHF 148'000 resulting in cost savings of CHF 1'195'000 and reduction of 36 days in lead time (Figure 16 and 17).

Investments		
Total Investments		**CHF 148'157.88**
HR / Personnel	Development programme (trainings)	CHF 11'324.00
IT & Processes	Development programme (IT, equipment, processes, SOP)	CHF 69'415.00
Supplier Management	Suggested training on local market assessment as well as FWA with suppliers and transporters	CHF 26'374.00
Prepositioning	Prepositioning strategy, warehouse manager	CHF 30'120.65
Local Actors	Para-legal consultant	CHF 10'924.23

Figure 15: Estimation of investments selected for the study

Results	
Type the day when the catastrophe is happening (between 1 to 911 days)	365
Investments	
Return on Investment ratio (RoI)	**1:7**
Country readiness level	**60%**
Investment made	CHF 148'157.88
Costs	
Total expenditure without investment	CHF 3'188'991.27
Total expenditure with investment	CHF 1'993'817.60
Costs savings	CHF 1'195'173.66
Costs savings percentage	**60%**
Time	
Total lead time without investment	45
Total lead time with investment	9 Days
Lead time savings	36 Days
Lead time savings percentage	**80%**

Figure 16: Overall results of the model at day 365

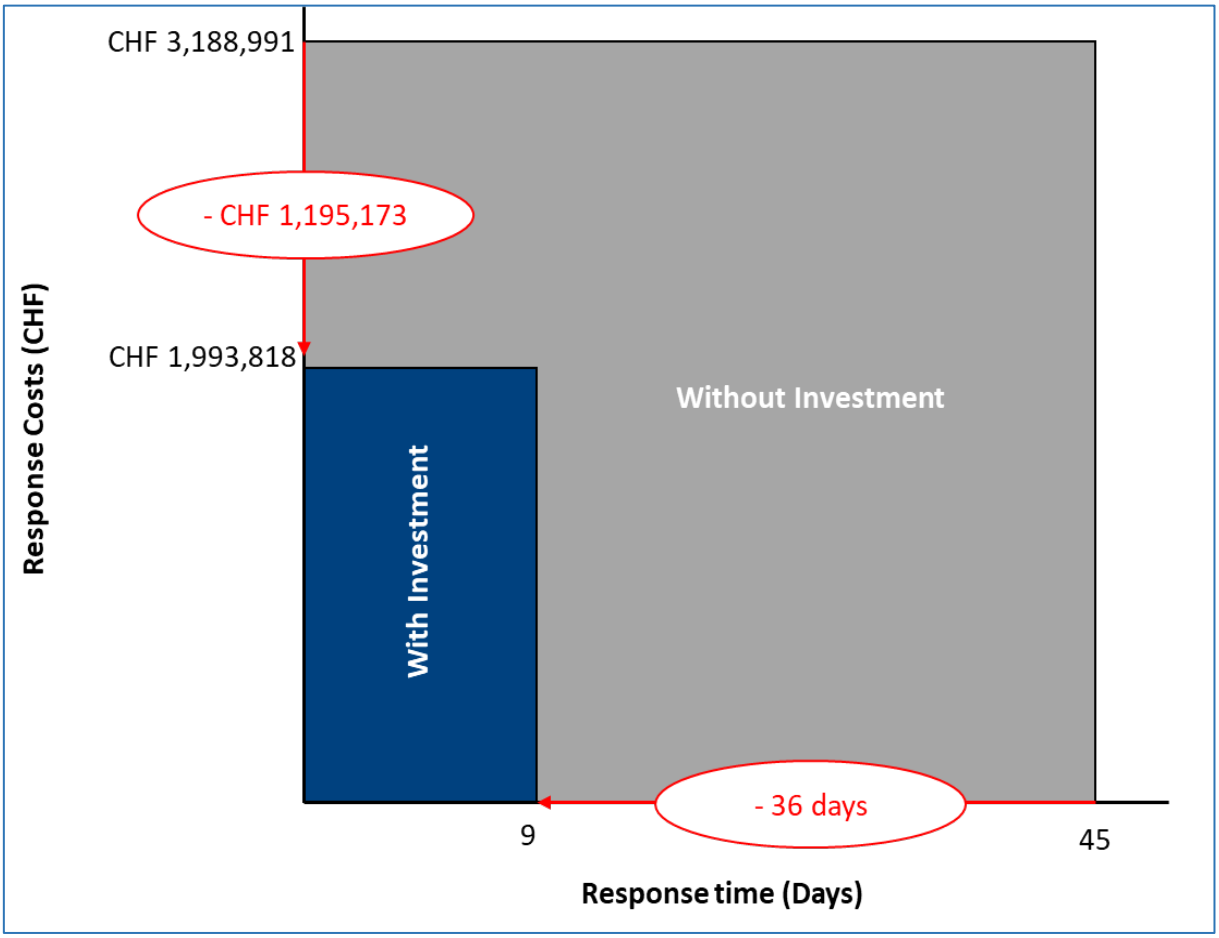

Figure 17: Reductions in cost and time at day 365

4. CONCLUSION

This project was conducted to analyse the supply chain share in IFRC's total operations expenditure in response to humanitarian crises and furthermore investigate whether the paradigm of 1 CHF being invested in preparedness measures prior to the emergency could save IFRC up to 7 CHF during the response. The results of the study provided indeed a clear picture that supply chain expenses are the highest cost factor in a response (75% on average) and that the 1:7 hypothesis can hold true in the chosen context.

It was found that, in the scenario of IFRC's sleeping mat supply chain in the Philippines Haiyan response, the ratio 1:7 can be reached and the lead time reduced by 36 days by investing in the 5 identified elements (i.e. Personnel, IT/Processes, Pre-positioning, Supplier Engagement and Local Actors) over a preparedness period of 1 year.

Interestingly, the model demonstrates that, even if the cost RoI ratio declines after the maximum of 1:7 has been reached, it then stabilises at a ratio of 1:6 and 1:5 for a long period of time. Nevertheless, it should be noted that keeping a readiness level does not involve only an initial investment, but it also requires a certain amount of running costs (staff, IT licences/support, warehouse buildings and equipment, etc.) and that is why the curve of savings decreases after a certain point (the more time between preparing for a disaster until a crisis response starts, the bigger the amount of running costs that will need to be covered). In alignment with the localisation agenda, investing in local supply chain capacity building reduces the need for more costly international experts and international air shipments, benefiting the organisation (in this case the Philippine Red Cross Society) over a long term basis, and empowers them for a stronger engagement and participation in the design and implementation of more contextualised, more efficient and more effective relief response operations. The combination of investment elements which complement each other reveals synergies and further optimisation could be expected over time. The investment in supply chain preparedness in the analysed context can therefore be considered as entirely beneficial with no risk of becoming disadvantageous to a situation when funding is only provided in the aftermath of a disaster.

The findings of the study have been presented to a number of institutional donors at the Humanitarian Liaison Working Group meeting in Geneva on 17 September 2018. The presentation, in particular the fact-based methodology, was very well received. The reaction showed the openness of donors to change their view on traditional funding streams and channel more funding towards supply chain preparedness.

Based on the lessons learnt from the 3 RoI studies (conducted with ACF France, IFRC and SCI), HELP Logistics and KLU suggest the next steps could be focused on 3 possibilities.

Firstly, despite the success of the studies and the attention gained, more advocacy on the donor side and also within humanitarian agencies is needed. The common understanding of the relevance and potential of supply chain and in particular in preparedness is not widely accepted yet and requires further efforts. This study proves the RoI can be quantified in supply chains in humanitarian context.

Secondly, the implementation of the identified investment shall be given utmost priority. As the model shows, investments take time to fully unfold their potential and the next disasters will not wait to happen. When implementing the investments, a comprehensive monitoring and evaluation approach is needed to go along to measure the impact and supports the advocacy efforts further.

Thirdly, whilst the current model is based on an established framework, requests have been received to expand the model. For example, it was suggested to add elements that represent the growing relevance of cash programmes and looking into other return aspects beyond time and cost savings such as environmental and social impact of supply chain preparedness investments.

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DISCLAIMER

The opinions and recommendations express in this study do not necessarily represent the official view/policy of the IFRC or of the individual National Red Cross and Red Crescent societies. The designation and maps used do not imply the expression of any opinion on the part of the IFRC concerning the legal status of a territory or of its authorities. Reference to all or part of the study may be made for non-commercial use, provided the source is acknowledged.

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