

Researcher project: HUMLOG-NET - Humanitarian Logistics Networks

*BI Norwegian School of Management in cooperation with Norwegian Defence Command and Staff College
Project leader: Research professor Marianne Jahre, Department of Strategy and Logistics, BI NSM*

1. Relevance

The goal of the HUMLOG-NET project is to create knowledge on logistics related to humanitarian aid operations, spanning from emergency relief in response to natural and man-made complex crises to the recovery phase. The project aims at: a) exploring alternative ways of planning and organizing logistics and logistics resources in the preparedness phase prior to humanitarian crises, b) gaining knowledge about the transition from preparedness to response by understanding how the resources are mobilized and taken into use, c) understanding mechanisms influencing logistics effectiveness in response and recovery phases and d) accumulating and disseminating knowledge about logistics in humanitarian operations.

International humanitarian aid operations are complex in nature, connecting several different sectors, actors, and spheres of activity. Logistics is a crucial area in preparing for, and responding to, unwanted events and encompass purchasing, transport, distribution and storing of food, water, shelter, energy, etc. A multitude of different organizations participate within a framework of heterogeneous interests and priorities from donors, aid agencies, local and national authorities and the international society. In addition to donors, authorities, NGOs and organizations under the UN-umbrella, the humanitarian logistics network include military forces, commercial logistics service providers (e.g. TNT and DHL) as well as the recipients themselves (e.g. in the Tsunami much of the immediate help was provided by the local population).

As stated in the SAMRISK program, Norwegian authorities and non-governmental organisations have long-standing traditions of involvement in complex crises through activities such as humanitarian relief efforts, peace mediation, and contribution of military forces, and should thus have a special interest in, and commitment to, carrying out research on complex crises and international coordination. As a large provider of development aid and emergency relief, Norway has a responsibility for the security and safety of people outside its borders. As ever more Norwegians travel and work abroad, using a nation's boundaries to define safety and security measures seems overly restricted. Further, it is well recognized, e.g. as basis for the term "Integrated operations" within the defence sector, that sustainable peace cannot be obtained by military forces alone. A population's needs for security and safety at many levels must be addressed and humanitarian operations should be regarded a means of reducing the risks for further unrest and international terrorism. Hence, even if other research tools than in traditional risk research are used, the expected outcomes of the HUMLOG-NET project, i.e. knowledge about coordination and organization of logistics in relation to preparing for and responding to unwanted events, are well in line with the primary objective of the SAMRISK program in 'enhancing knowledge about threats and hazards, vulnerability and risk management'.

2. Background, purpose, research problems and methodology

2.1. Background and state of the art of research issue

Humanitarian logistics, also called relief supply chain management, have gained attention due to a number of natural and man-made disasters and the recognition of the central role of logistics in responding to these. The needs are continuously increasing: '... disaster relief is and will continue to be a growth market... are expected to increase another five-fold over the next fifty years' (Thomas and Kopczak 2005). Disaster relief alone needs to cover more than 500 disasters annually that result in the loss of 75 000 lives and affect another 200 million people (van Wassenhove 2006). As logistics costs (from purchasing to the last-mile delivery of items) account for over 80% in any

disaster relief operation (van Wassenhove 2006), increasing the efficiency of logistics is of great importance to the overall goal of alleviating the suffering of vulnerable people.

Defined as ‘the process of planning, implementing and controlling the efficient, cost-effective flow and storage of goods and materials, as well as related information, from point of origin to point of consumption for the purpose of meeting the end beneficiary's requirements’ (Thomas 2005), humanitarian logistics is to ‘design the transportation of first aid material, food, equipment, and rescue personnel from supply points to a large number of destination nodes geographically scattered over the disaster region and the evacuation and transfer of people affected by the disaster to the health care centers safely and very rapidly’ (Barbarosoğlu *et al.* 2002, p.118). Humanitarian aid operations are characterized by a myriad of different actors, from the public sector to non-governmental agencies, donors and third party logistics providers, the armed forces, and beneficiaries (Kovács and Spens 2006¹). Recognising the importance of logistical operations, international aid agencies have recently formed partnerships with commercial logistics providers. Logistics service providers such as TNT and DHL have thus entered the field of humanitarian logistics, taking over activities in e.g. materials handling and customs clearance. Also, such operations are under constant media surveillance and scrutiny from donors.

One major challenge identified (e.g. <http://www.evalueringssutvalget.no>, UN A/61/699-E/2007/8, Oloruntoba 2005, Kovács and Spens 2006) is the need for better coordination between those involved in the humanitarian logistics network. As the OECD (2005) points out, disaster relief efforts need to improve in speed and co-ordination. Ultimately, the speed of humanitarian aid depends ‘on the ability of logisticians to procure, transport, and receive supplies at the site of a humanitarian relief effort’ (Thomas 2003) and the logisticians’ abilities to coordinate their efforts.

Humanitarian logistics concerns aid after natural and man-made disasters as well as in complex emergencies including war and conflict situations, and is ‘clearly unpredictable, turbulent, and requiring flexibility’ (Oloruntoba and Gray 2006). Especially in sudden-onset disasters², relief supply chains have to be deployed in situations with destabilized infrastructure and with very limited knowledge about the situation at hand (Beamon 2004, Long and Wood 1995, Tomasini and van Wassenhove 2004). Hence, the vulnerability of the humanitarian logistics systems is extensive with systems being set up for operation under very different conditions compared to traditional commercial logistics that are characterized by relatively more stable and predictable demand and supply with known and well-developed infrastructures. Logistics in humanitarian aid operations are seen as highly dynamic, innovative and agile and characterized by complexity of operational conditions and often politically volatile climate, high level of uncertainties in terms of demand, supplies and assessment, pressure of time and high staff turnover (Oloruntoba and Gray 2006, van Wassenhove 2006).

Whereas the literature traditionally has focused on improving efficiency and reducing costs, i.e. on the leanness of supply chains (Lee 2004), the current trend is towards more innovative and responsive, i.e. agile supply chains that operate in highly dynamic environments (e.g. Towill and Christopher 2002). Research on ‘event’ or ‘project’ logistics such as humanitarian logistics is attracting attention, but is still scant. A major question is whether traditional models work for such temporary solutions, typical topics ranging from supply chain modelling and optimisation (Lee *et al.* 2004, Svensson 2003) to performance measurement (Bagchi *et al.* 2005, Beamon 1999), supply chain processes (Croxtton *et al.* 2001, Lambert *et al.* 1998), portfolio models (Fisher 1997), and collaboration and integration within and across company boundaries (Barratt 2004, Fawcett and Magnan 2002, Min *et al.* 2005). Concerning coordination and integration the question of centralized

¹ This article received the Schenker best paper award from the Nordic logistics research network (NOFOMA) conference in 2006, and has subsequently been selected for publication in the *International Journal of Physical Distribution and Logistics Management*.

² Disasters can be categorized according to the speed of their onset (into sudden-onset and slow-onset disasters) and according to their cause (being natural or man-made) (van Wassenhove 2006).

versus decentralized structures and decision making has been of particular interest in prior research, for example regarding sourcing and procurement (e.g. Stock and Lambert 2001, Gutierrez *et al.* 2003). Coordination and linkages within and between temporary solutions and more permanent networks have been discussed in research on logistics in the construction sector in particular (see e.g. Dubois and Gadde 2002).

The global societal impact of humanitarian aid is undisputed; humanitarian logistics, however, remains a largely underestimated area in research and practice. ‘Similar to logistics in the corporate sector in the 1980s, the logistics function in the humanitarian sector is under-recognized, under-utilized and under-resourced. With increasing numbers of natural and man-made disasters, organizations face challenges due to the limited number of available experienced and trained logisticians and a lack of up-to-date technology systems. Organizations recognize that failure to effectively manage the movement of supplies and services causes the supply and logistics chain to stagnate. Despite the exceptional work of humanitarian organizations, disruptions and bottlenecks in the receipt, warehousing transportation, tracking and delivery of relief remain common occurrences.’ (<http://www.fritzinstitute.org>). Thomas and Kopczak (2005) conclude that only a handful of aid agencies have prioritized the creation of high-performing logistics and supply chain operations. For many aid agencies the relief operations are not as efficient and effective as they could be, among others due to lack of recognition of the importance of logistics, lack of professional staff, inadequate use of technology, lack of institutional learning and limited collaboration. Further, even though practitioner journals have published on the topic of humanitarian logistics and media attention emphasizes the importance of the field, comprehensive literature reviews on the topic reveal very few academic research articles in any of the areas of humanitarian logistics and relief supply chains (cf. Kovács and Spens 2006). ‘From the many challenging problems arising within humanitarian security area, there is an emerging need to develop new methodologies or new variants of old ones, such as emergency logistics, conflict management and resolution, security assessment, strategic management of crises....’ (<http://www.euro-online.org>).

It can be concluded that more research is needed in different areas of humanitarian logistics, and that research needs to take uncertainties of the operational environment of humanitarian aid into account. Coupling the theoretical field of logistics and the empirical field of humanitarian aid operations will contribute to both. This is the area of focus in this project.

2.2. Purpose and goals

As pointed out in the SAMRISK program document, much of the knowledge relating to how humanitarian crises progress, coordination in the field, human reactions and organisation has been developed empirically. More systematic research is needed to understand how the dynamics of complex crises work, to find effective means of managing such crises in the field, to determine how coordination takes place between various actors and decision-making levels in large-scale organisations, and to interpret the interplay between political, humanitarian and military arenas. The goal of HUMLOG-NET is to contribute to systematic knowledge and understanding of the management of dynamic and complex crises with a particular focus on coordination of logistics efforts. Traditional logistics planning and coordination models will be challenged on three main characteristics of humanitarian logistics pointed out in prior research:

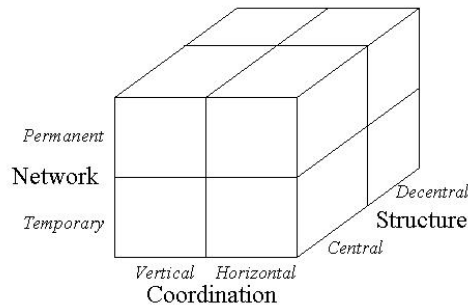
- (1) *A myriad of actors involved in each operation and the overall humanitarian sector.*
- (2) *Unpredictable demands and supplies – uncertainties about where, what and when.*
- (3) *Destabilized physical and ICT infrastructures and local governmental authorities*

Our goal, as researchers, is to create knowledge about logistical dimensions making communities more robust to major unwanted events. A first step in this direction is to enhance theoretical understanding of coordination and organization issues involved in humanitarian aid operations,

more specifically possible combinations and linkages within and between three pairs of concepts including

1) Vertical - and horizontal coordination

2) Permanent and temporary networks



3) Centralized and de-centralized structures

and how they affect the humanitarian logistics network's ability to be prepared for and respond to disasters. Preparedness and responsiveness are not disconnected, as concluded in the Tsunami disaster 2004 (<http://www.evalueringstutvalget.no>) and in prior logistics research (van Wassenhove 2006). The interplay between the permanent network in the planning/preparedness stage, the temporary network of each operation and the recovery stage (i.e. the transition phases between the stages) is in focus. Questions concern coordination mechanisms, e.g. planning models, standards and organizational structures and processes, to employ in different stages to improve the logistics.

2.3. Research problems and methods

By focusing on humanitarian crises, the setting of HUMLOG-NET is quite different from those described and analyzed in most logistics textbooks and theories. Consequently, the project is of a relatively explorative nature, confronting traditional logistics theory with this empirical setting for the purpose of understanding practical changes in light of logistics theory, how logistics concepts may be applied in humanitarian practice followed by developing propositions concerning possible moderations of/in the models. Grounded in the overall research issues, we will focus on two main research problems. The first relates to organizational structures and cooperation models, whereas the other relates to planning.

2.3.1 Research problem 1

The international humanitarian community has repeatedly called for an increase in the co-ordination in delivery of aid in disaster relief, i.e. in response as well as in recovery and development. Relief supply chains have been criticized for duplication of efforts and it is crucial both for donors and aid recipients that such duplication is eliminated by improvements in communication, coordination and collaboration (van Wassenhove, 2006, Oloruntoba and Gray, 2006). For example will often military and civilian actors operate in the same geographical area at the same time and with parallel activities impinging on each other. Even if perspectives and priorities are different, it is necessary that actors clarify their roles, agree on common goals and coordinate their logistics activities for efficient and effective use of the resources available. Military presence is often a prerequisite to secure the stability necessary for positive political and economical development, and there will be situations where military missions, in limited periods of time, contain elements and objectives of civilian or humanitarian character (Forsvarsdepartementet, St.prp 42, 2004). However, as articulated by Morin & DiNardo (2006), integration, even simple coordination, between the military and NGOs is difficult due to radical differences in organizational culture, methodology, and purpose. The same challenge has been put forward concerning cooperation between NGOs and commercial logistics service providers (Thomas and Fritz 2006). Still, cooperation and coordination have to, and do take place, although in an ad hoc manner, during operations. However, there is need for more systematic approaches to this, e.g. in terms of choice of coordination mechanisms, their advantages and disadvantages in specific situations, and their implications for resource utilisation in terms of efficient and effective delivery of services and relief items.

With basis in logistics-, network- and organization theories, focusing on the three pairs of constructs described above, we will use empirical examples to do case studies and develop propositions. One such example is the regional approach in terms of decentralised sourcing and storage now being piloted by NGOs (Thomas and Kopczak 2005). This approach would translate to a well-known strategic option in logistics and distribution theory, i.e. the principle of postponement vs. speculation (Alderson 1954, Bucklin 1965). Theoretically, one rationale behind speculation strategies is to be more responsive and thus reduce lead times in situations of sudden increase in demand, whereas an argument behind postponement is to avoid unnecessary costs stemming from excess of stocks and allocation of wrong items to the wrong decentralised locations. Decentralizing logistics activities and resources exemplify speculation, whereas centralizing indicates a postponement strategy. The regionalisation, i.e. decentralisation, approach has consequences for how vertical and horizontal coordination will and can take place. It also has consequences for transitions between planning, response and recovery, i.e. the interplay between the temporary and permanent network. In RP1 we will undertake studies of such examples with the purpose of exploring 1) the prerequisites and consequences for vertical and horizontal coordination of logistics activities and utilization of logistics resources³ in the permanent network, 2) how this impact on the efficiency of setting up the temporary networks, i.e. mobilizing resources from the permanent network, and 3) getting back to 'normal' state, i.e. the permanent network for recovery.

Research problem 2

The literature in the area of humanitarian logistics is largely focused on handbooks and general procedures (Beamon and Kotleba, 2006). Atlay and Green (2006) have made a literature review on disaster operations management, resulting in only 109 academic articles published in operations management related journals, indicating needs for more research on the subject. The analytical techniques used in the field of operations research and management include mainly simulation, optimization and statistics. It is concluded that more research is needed to develop new models or new variants of old ones, and to focus on theory development especially in preparedness, response and recovery stages of the disaster management (Atlay and Green 2006). The planning problems in disaster management consider both operational and strategic decisions. For example, Barbarosoglu et al (2002) have addressed crew assignment, routing and transportation operational issues during the response phase of helicopter logistics planning, whereas Beamon and Kotleba (2006) have examined different inventory management strategies to determine order quantities and re-order points for pre-positioned stocks supporting the long-term emergency relief response in South Sudan. In line with call for future research suggested by Van Wassenhove (2006), RP2 will address the following areas in disaster operations management:

- Systems and technologies (improvement of information accountability in disaster management information systems, process standardization and control)
- Supply chain design and management (with focus on supply chain robustness)

In particular, we intend to study information exchange needs for more rationalized decision-making and for ensuring information reliability in planning and decision-making in the United Nations Joint Logistics Center (UNJLC). As an inter-agency facility, the mandate of UNJLC is to co-ordinate and optimize the logistics capabilities of humanitarian organizations in large-scale emergencies. This pre-study will help to identify a path for increasing information visibility and accountability for the UNJLC's network members, which can lead to improved vertical and horizontal coordination both during preparedness (in permanent network) and response (in temporary network). Information accountability is an important issue for making decisions related to supply chain design and planning. We intend to study how uncertainties in terms of demand, supplies and assessment, pressure of time and high staff turnover (Van Wassenhove, 2006) can be taken into account when

³ Physical, e.g. facilities and equipment, as well as organizational, e.g. coordination centers and relationships between NGOs and logistics service providers (this constitutes a particular approach to logistics networks and is presented in Jahre et al 2002).

modeling a robust supply chain network. In particular, we will analyze and build an optimization model for locating regional warehouses for storage of emergency aid items (centralized vs. decentralized network structure). The model will be analyzed in terms of costs, robustness (i.e. perform well with respect to uncertainties in the data, such as demand, supply, etc.) and reliability (i.e. perform well when parts of the system fail), taking into consideration service level criteria (response time and demand coverage). The issues described above can be further developed and used as a basis for future research in larger research projects on operational and strategic logistics planning in humanitarian aid organizations.

2.3.3 *Research methods*

Our research starts with a literature review of humanitarian logistics and general logistics (and other organization) theories concerning the three pairs of concepts. Reports and other information on experiences and lessons identified from humanitarian aid and military peace support operations constitute the other half of our set of secondary data. The explorative nature of this project and the complexity of the research problems as well as our research objects demand a holistic perspective and suggests empirical case studies, which are especially well suited for obtaining necessary depth of exploring and developing understanding for under-researched areas (Ellram, 1996, Yin, 2003). Based on systematic combining (Dubois & Gadde, 2002), our case studies develop through an interplay between the real world and a model world. A preliminary theoretical framework is confronted with reality in order to identify new questions and needs for other concepts from the model world. The work in the model world then gives another set of questions to reality, leading to new theoretical questions. Providing a starting point both for research problems and a common knowledge base for all project participants, our cases have been chosen in a systematic way in order to cover variability of the dimensions of interest. We will undertake three single case studies (Yin 2003) that vary with regards to degree of centralization, type of disasters and coordination, e.g. in terms of civilian/military cooperation, and use of coordination mechanisms⁴.

- a) *IFRC regional logistics concept* for handling sudden-onset natural disasters⁵. This case gives opportunities for studying how decentralization of physical structures affect horizontal and vertical coordination in an operation and how the efficiency of the temporary network is linked to the set-up of the permanent structure.
- b) *United Nations Joint Logistics Centre (UNJLC)*⁶. Set up as temporary coordination centers, the UNJLC is to serve as a mechanism for inter-agency logistics coordination in large-scale emergencies. This case gives opportunities for studying particular coordination mechanisms for slow-onset disasters, e.g. in South Sudan, in temporary networks and how they complement general coordination structures in the permanent networks. In particular we are interested in information exchange – the needs and possibilities (as well as disadvantages) with one appointed coordinator.
- c) *Military Peace Support Operations (PSO)*. These are multifunctional operations in which military activities are designed to create a secure environment and to facilitate the efforts of the civilian elements of the mission to create a self sustaining peace. PSO may include Peacekeeping (PK) and Peace Enforcement (PE) as well as conflict prevention, peacemaking, peace building and humanitarian operations. This case gives opportunities for studying vertical coordination in different permanent logistics networks (NGOs, military, IOS) and horizontal coordination between these actors in temporary networks when deploying into an area, both in the perspectives of the civilian and the military actors.

With regards to data collection, each case study will be based on a multitude of sources, including technical artefacts (i.e. physical structures and ICT systems), systematic interviews, documents and archival material, possibly cross sectional data and time series data. In order to ensure reliability, a

⁴ Humanitarian logistics in complex crises is a challenging research setting. Hence, our cooperation with IFRC, UN and the defence sector (see section 2.6 for more detail) is very important and gives us access to (1) Secondary information, i.e. reports and studies undertaken concerning the cases in question and (2) Primary information, i.e. contacts for interviews and surveys directed towards those involved in specific operations (temporary networks) as well as in charge of operating and developing more permanent networks. On a more long-term basis, there are also opportunities for participating in operations, i.e. doing action research (Näslund 2002).

⁵ Heigh, I. (2006) and Kuckow, J. (2006)

⁶ INSEAD (2003)

case study protocol including a semi-structured interview guide will be developed. A case study database for inclusion of notes from each interview, detailed write-up of each case and other documentation, will be developed. Multiple data sources will be used to ensure construct validity, as will a pre-structured case outline for data analysis (Ellram 1996, Yin 2003).

The second step of our approach will differ for the two research problems. For RP1, we will continue with the cases, expanding numbers of informants and cases through snowball sampling (Simon and Burnstein 1985, Patton 1990). Based on the findings from the initial three case studies, an embedded multiple-case design⁷, including these three and other relevant cases brought up through the snowball sampling, will be developed. With theoretical predictions related to the three pairs of constructs and knowledge acquired in the single-case studies, the aim is to develop a theoretical framework, stating conditions regarding the applicability of the three theoretical constructs, i.e., both literal and theoretical replication (Yin 2003). The theoretical framework will then be used for testing in further qualitative and quantitative research as well as piloted in practical applications, e.g. against current doctrines and concepts within humanitarian logistics networks. The applicability of the findings related to Crisis Respond and Peace Support Operations, as well as Integrated operations will be studied in-depth in the PhD-scholarships to be defined and funded by the Norwegian Defence Academy (see further details in section 2.4).

In RP2 we intend to apply mathematical modeling. Most of the research conducted in the field of operations management generally employs quantitative methodologies such as optimization and mathematical modeling (Voss et al., 2002). The object of study in operations management is scientific modeling, i.e., describing the statics and dynamics of operational processes. At the same time, the case-studies resulting in analysis of managerial practices can give a better understanding of the problem in order to formulate a mathematical model, and ‘...the explanation of quantitative findings ...has to be based on qualitative understanding’ (Meredith, 1998). According to Bertrand and Fransoo (2002) operations management research can be classified into *empirical quantitative* and *axiomatic quantitative* modeling research. The first class is driven by empirical findings and measurements with typical examples such as studies of “Just-in-time” production or the Forrester effect. The second class is primarily driven by the idealized model itself and produces knowledge about the behavior of certain variables in the model based on assumptions about behavior of other variables in the model. Formal methods used here are borrowed from mathematics, statistics and computer science. Axiomatic research is mainly normative (such as allocation and inventory theories), although descriptive research is also present (such as queuing and game theories). RP2 will primarily be based on axiomatic quantitative modeling, possibly in combination with empirical.

2.4. Project plan

The ultimate goal of HUMLOG-NET is to form a starting point for further research and funding applications. The project plan is worked out on this basis. The project is linked to the overall international HUMLOG project (see section 2.6), as well as separate research initiated and funded by the Norwegian Defence Command and Staff College, focusing on the areas of Integrated operations and comparative studies between humanitarian and military operations. Tasks differ for these three groups, as do the time perspectives. The overall HUMLOG project spans the period 2007 – 2011, the HUMLOG-NET the period 2007 – 08, and military Ph.D-scholarships the period 2008 – 2011. Internal coordination in HUMLOG-NET is based on common case studies with one case coordinator each, co-authored and single-authored papers, meetings and seminars, some of which will be part of the international project. Deadlines for the four main parts of HUMLOG-NET including (1) literature reviews, (2) case studies, (3) In-depth case studies (RP1) and model development (RP2) and (4) Applications for further research, are shown in the application form.

⁷ i.e. that we will study both the networks and the parts of the networks and comparing the three cases as representatives of three different, but interrelated networks.

2.5. Budget

A main purpose of HUMLOG-NET is to start a long-term development and formation of research groups and teaching programs within the area of humanitarian aid linked to BI NSM. As such funding from SAMRISK will be used for research as described here, but at the same time give the opportunity of developing applications for more long-term funding from other sources, e.g. NORDFORSK, POVPEACE, EU and ESF. More resources than what are presently available at our two institutions is needed to undertake the project. Hence, the budget is based on two 50% positions as researchers for two years in addition to coverage of project coordination and traveling expenses. Details are given in the application form.

2.6. Project management, organization and cooperation

Considering the Nordic countries' financial and practical contribution to the field of humanitarian aid, it may be natural that an initiative for an international research program on humanitarian logistics comes from here. The international project HUMLOG is coordinated by Swedish School of Economics and Business Administration (HANKEN) in Finland and has partners from different universities, research institutions, and aid agencies in the Nordic countries as well as a few other countries. The overall aim of the project is to *research the area of humanitarian logistics in disaster preparedness, response and recovery with the intention of influencing future activities in a way that will provide measurable benefit to persons requiring assistance*. Members of the international HUMLOG project come from universities, defence colleges, and relief agencies. University members include Cranfield University (UK), Jönköping International Business School (Sweden), the Kwame Nkrumah University of Science and Technology (Ghana), the Norwegian School of Management (Norway), and the University of Southern Denmark (Denmark). Participant defence colleges are the National Defence College in Finland and the Norwegian Defence Command and Staff College. Relief agency members are NGOs related to the United Nations Joint Logistics Centre (UNJLC) as well as UNJLC itself. Appendix A lists the representatives of these institutions. The international HUMLOG project had its first kick-off meeting at Swedish School of Economics and Business Administration (HANKEN) in December 2006. HUMLOG-NET is to be a part of this larger project and contribute to the overall aim. Whereas funding from one source, e.g. EU, for the total HUMLOG-project is the goal, each country is now in the process of applying for funding in order to cover costs of their own national groups and projects, both with regards to post doc positions, PhD scholarships, as well as seed money for developing funding applications.

The Norwegian HUMLOG project group consists of researchers Andreas Brekke and Erna Engebretsen, post doc Lena Bygballe, research professor Marianne Jahre, associate professors Lars Huemer and Carl Brønn and professor Stein-Erik Grønland, all at the Department of Strategy and Logistics at BI NSM, and assistant professor Tore Listou from the Norwegian Defence Command and Staff College, section of Logistics and Management. In addition to taking part in the research, he will also be responsible for coordination between the researchers at BI NSM and the Norwegian Defence network. The project leader of HUMLOG-NET is Marianne Jahre who has considerable experience from NFR-funded research projects since 1995, e.g. as a project leader of NETLOG (2001-2005). The BI NSM group is part of a larger research group at BI working with development and utilization of tangible and intangible resources. The project will also be affiliated with a new research centre for development studies and professor Anne Welle-Strand who has major experience within humanitarian aid. Within the auspices of the international HUMLOG project, the Norwegian researchers will contribute within the particular areas of expertise developed over years in the logistics faculty group at BI NSM. Our research has during the past 10 years been concerned with management, coordination and design of logistics systems and networks in different settings including logistics services (e.g. Persson and Virum 2001, Håkansson and Persson 2005, Huemer 2006, Engebretsen and Monnet 2005), recycling (e.g. Jahre 1995, Flygansvær 2006), packaging (e.g. Jahre and Hatteland 2004, Fabbe-Costes *et al.* 2006), construction (e.g. Huemer 2004, Håkansson and Jahre 2005) and the maritime sector (e.g. Bygballe 2006).

3. Perspectives and relations to the research institution' s strategy

3.1. Strategic embedding in the organizations

BI NSM has about 330 faculty members and is one of Norway's largest educational institutions with more than 18000 students, mostly Norwegians and other Scandinavians, but with a growing number of international students from all corners of the world. Over 80 of Norway's major enterprises within industry, trade and services are linked with BI through various co-operation agreements. In addition to traditional areas of business research and teaching, BI also develops more non-traditional areas such as competence for dealing with corporate challenges in relation to economic, ethical, social and ecological sustainability through its Centre for Corporate Citizenship and promoting knowledge transfer and competence development to underdeveloped and developing countries such as Lithuania, Ethiopia, China through its research, evaluation and development activities in Centre for Education Management Research. BI NSM is now establishing Center for Development Studies and Microfinance (MICRO) which is to 'produce and utilize knowledge related to management and business studies with developing economies, focusing on development, environmental issues, microfinance, economics, leadership and learning'. Within the Department of Strategy and Logistics a number of research projects and teaching programs are concerned with ethical and environmental issues. The HUMLOG-NET project will provide further development of such activities, providing competence within management and economics to the humanitarian community on the one hand, and substantiating the importance of and responsibility for such issues in the business school community on the other.

The objective of the Norwegian Defence is to support Norwegian safety and security policy divided into national tasks, tasks to be solved in cooperation with allied and others, and other tasks. Cooperation with others encompass the collective defence of Norway and other NATO members and contributions to multinational crisis management, including multinational peace operations. Participating in multinational, UN mandated crisis response and peace support operations is thus an important element of the safety and security policy. Being a part of the Norwegian Defence Academy, the Norwegian Defence Command and Staff College is responsible for higher military education in Norway, and offers the MSc in Military Studies. Having instructors with bountiful experiences from UN and NATO logistics operations and NATO headquarters gives access to ample competencies within logistics in complex crises. Research within military and security related issues is vital for the further development of our studies, and also for developing relevant competence within the Norwegian Defence. The Defence Academy administers allocation of scholarships at master- and PhD level, and at present we are in the process of defining PhD scholarships related to integrated operations and comparative studies of humanitarian and military operations. These positions will be aligned with the HUMLOG-NET project

3.2. Societal relevance

The expected outcomes of the HUMLOG-NET project include better use of available resources and elimination of duplicated efforts. Within humanitarian logistics networks, this translates to saving more lives and enhancing the quality of life of those affected. A contribution to donors and donating governments of the project consists of improving the visibility of relief operations in terms of the use of donations. By focusing on the logistical dimensions the research will contribute to increased understanding of different societies' needs in relation to safety and security. Ultimately the project should be able to define the links between what people need to prepare for, and respond to, in the case of unwanted events.

3.3. Environmental perspectives

Most disaster responses disregard environmental issues. The focus is on getting the right items to the right place in as short time as possible, leading to extensive use of air transport and ad-hoc infrastructural solutions with potentially detrimental environmental impacts. Our project aims at understanding the route from a disaster response back to a "normal" society and can contribute to

increased awareness of environmental issues in humanitarian aid operations. There are no explicitly stated environmental research issues within the project so far, but considering the relatively large number of researchers with a large portion of their research within environmental issues, it is highly likely that such issues will become part of the project.

3.4. Ethical aspects

The project may be deemed ethical from the outset, with a stated purpose of contributing to better humanitarian aid operations. This does not free the researchers from reflecting on their roles and the possible contribution of the output. This is especially important for the military part of the research network, since military actors tend to be perceived as not neutral in man-made war-like disasters.

3.5. Equality and gender perspective

The project group in itself has an almost equal distribution of women and men. As such it contributes to both sexes gaining more research competence. The research issues are connected to problems that most likely are evenly distributed between women and men. The feeling of risk may be unequal between the sexes, and as such differences in logistics systems in humanitarian aid operations may have different consequences for men and women.

4. Communication with users and utilization of results

4.1 Communication with users

Users/stakeholders connected to this project include NGOs, UN, military services, logistics service providers, governments and universities and other teaching/research institutions. The knowledge developed in the project is to be used for more research, pilot projects in NGOs and TPLs as well as teaching programs. Results will be presented and discussed in various forums with stakeholder groups, internationally as well as on a national basis, e.g. at seminars hosted by MICRO.

4.2. Plan for dissemination of results

The HUMLOG-NET project is expected to yield different outputs in research, teaching and practice. *Research outputs* will include MSc theses both at BI NSM and the Defence Staff College, conference papers, special tracks at upcoming conferences, academic articles, dedicated special issues in journals, and an anthology on humanitarian logistics. Research based teaching, use of guest lectures within logistics courses, as well as dedicated courses on humanitarian logistics at BI NSM is part of the long-term plan. Dedicated courses, as well as common seminars and doctoral courses will be arranged in co-operation with the international HUMLOG group. *Further outputs* will include publications in practitioner journals, and workshops with NGOs and aid agencies. This aids the dissemination of results from the project also within the practitioner community. The *applicability and feasibility* of the results is enhanced by the co-operation of the project with important relief agencies such as the UNJLC and its related NGOs via the international HUMLOG project. At the same time, initial contacts have been established and discussions conducted with a range of national NGOs in the field of disaster relief. Further, results will be presented at military workshops and conferences, and also work as inputs for developing military doctrines, concepts and operating principles. Further details are presented in the application form.

5. References

- Alderson, W. (1954) Factors Governing the Development of Marketing Channels. In Clewett, R. (ed). *Marketing Channels for Manufactured Products*, pp. 5-43, Richard D. Irwin, Homewood, Ill.
- Altay, N. and Green, G. (2006) OR/MS research in disaster operations management, *European Journal of Operational Research*, Vol. 175 No. 1, pp. 475-493
- Bagchi, P.K., Ha, B.C., Skjoett-Larsen, T. and Soerensen, L. B. (2005) Supply chain integration: a European survey, *International Journal of Logistics Management*, Vol.16 No.2, pp.275-294.
- Barbarosoğlu, G., Özdamar, L. and Çevik, A. (2002) An interactive approach for hierarchical analysis of helicopter logistics in disaster relief operations, *European Journal of Operational Research*, Vol.140, pp.118-133.
- Barratt, M. (2004) Understanding the meaning of collaboration in the supply chain. *Supply Chain Management: An International Journal*, Vol.9 No.1, pp.30-42.
- Beamon, B.M. (1999) Measuring supply chain performance, *International Journal of Operations and Production Management*, Vol.19 No.3, pp.275-292.
- Beamon, B.M. (2004) Humanitarian relief chains: issues and challenges, *Proceedings of the 34th International Conference on Computers and Industrial Engineering*, San Francisco, CA, USA.
- Beamon, B.M. and Kotleba, S.A. (2006) Inventory management support systems for emergency humanitarian relief operations in South Sudan, *International Journal of Logistics Management*, Vol.17 No.2, pp.187-212.
- Bertrand W. and Fransoo J. (2002) Operations management research methodologies using quantitative modelling, *International Journal of Operations & Production Management*, Vol. 22 No. 2, p.241
- Bucklin, L. (1965) Postponement, Speculation and the Structure of Distribution Channels, *Journal of Marketing Research*, Vol.2, February
- Brekke, A, Heigh, I, Jahre, M., Kovács, G., Listou, T., Spens, K. and Tatham, P. (2007) *Humanitarian Supply Network Management - linking Beneficiary needs and Donor resources*, will be submitted to NOFOMA 2007, Iceland.
- Bygballe, L. (2006) Learning across firm boundaries: the role of organisational routines. *Doctoral thesis*, Department of Strategy and Logistics, BI Norwegian School of Management
- Croxtton, K.L. García-Dastugue, S.J. Lambert, D.M. and Rogers, D.S. (2001) The supply chain management processes, *International Journal of Logistics Management*, Vol.12 No.2, pp.13-36.
- Dubois, A and Gadde, L-E (2002) The construction industry as a loosely coupled system: implications for productivity and innovation, *Construction Management and Economics*, Vol. 20, pp. 621-631.
- Ellram, L.M. (1996) The use of the case study method in logistics research. *Journal of Business Logistics*, Vol.17 No.2, pp.93-137.
- Engebretsen, E. and Monnet M. (2005) The Intermediating Role of Logistics Service Providers” in *Innovation in Global Supply Chain Networks*, Proceedings of the 10th International Symposium on Logistics, pp.505-510.
- Fabbe-Costes, N., Jahre, M. and Rouquet, A. (2006) Interacting Standards – a basic element in logistics networks, *International Journal of Physical Distribution and Logistics Management*, Vol. 36 No. 2, pp. 93-111.
- Fawcett, S.E. and Magnan, G.E. (2002) The rhetoric and reality of supply chain integration. *International Journal of Physical Distribution and Logistics Management*, Vol.32 No.5, pp.339-361.
- Fisher, M.L. (1997) What is the right supply chain for your product? *Harvard Business Review*, March-April 1997, pp.105-116.
- Flygansvær, B.M. (2006) Coordinated action in reverse distribution systems, *Doctoral thesis*, Norwegian School of Economics and Business Administration.
- Forsvarsdepartementet (2004) Stortingsproposisjon nr 42 Den videre moderniseringen av Forsvaret i perioden 2005 – 2008.
- Gadde, L-E, Håkansson, H., Jahre, M. and Persson, G. (2002) ‘More instead of less’ – strategies for use of logistics resources, *Journal of Chain and Network Science*, Vol.2 No.2, pp. 81-93

- Gutiérrez, J., Abdul-Jalbar, B. and Puerto, J. (2003) Policies for inventory/distribution systems: The effect of centralization vs. decentralization, *International Journal of Production Economics*, Vol. 81/82, Jan. p.281.
- Håkansson, H. and Jahre, M.(2005) Economic logics in the construction industry, *ARCOM-proceedings*, London.
- Håkansson, H. and Persson, G. (2004) Supply Chain Management: The logic of supply chains and networks, *International Journal of Logistics Management*, Vol.13 No.1, pp. 11-26.
- Heigh, I. (2006) *Case Study Terms of Reference*, International Federation of the Red Cross and Red Crescent Societies Logistics Department (IFRC Logistics), Geneva, Switzerland.
- <http://www.evalueringssutvalget.no>, accessed Feb 7, 2007.
- Huemer L. (2006) Supply Management: Value creation, coordination and positioning in supply relationships. *Long Range Planning*, Vol.39 No.2, pp. 133-153.
- Huemer, L. (2004) Activating trust: The redefinition of roles and relationships in an international construction project. *International Marketing Review*, Vol.21 No.2, pp. 187-202.
- INSEAD (2003) The United Nations Joint Logistics Centre (UNJLC): The Genesis of a Humanitarian Relief Coordination Platform, INSEAD, Fontainebleau, France
- Jahre, M. (1995) *Logistics Systems for Recycling - Efficient Collection of Household Waste*, Doctoral Dissertation for the degree of Doctor of Philosophy, Chalmers University of Technology, Department of Transportation and Logistics.
- Jahre, M. and Hatteland, C-J. (2004) Packages and Physical Distribution - implications for integration and standardization, *International Journal of Physical Distribution and Logistics Management*, Vol. 34 No. 2, pp. 123-139
- Jahre, M., Gadde, L-E., Håkansson, H., Harrison, D. and Persson, G. (eds.) (2006) *Resourcing in Business Logistics – The art of systematic combining*, Liber AB, Sweden.
- Kovács, G. and Spens, K.M. (2006) Humanitarian logistics in disaster relief operations. In Jahre, Marianne (ed.): *Logistics in the New Valley. CD-ROM Proceedings of the 18th Annual Conference for Nordic Researchers in Logistics*, NOFOMA 2006, Oslo, Norway.
- Kuckow, J. (2006) *Case study report: The effect of the IFRC regional logistics concept on the efficiency of relief item delivery for the population affected by the Yogyakarta earthquake*, International Federation of the Red Cross and Red Crescent Societies Logistics Department (IFRC Logistics), Geneva, Switzerland.
- Lambert, D.M., Cooper, M.C. and Pagh, J.D. (1998) Supply chain management: implementation issues and research opportunities, *International Journal of Logistics Management*, Vol.9 No.2, pp.1-19.
- Lee, H.L. (2004) The triple-A supply chain, *Harvard Business Review*, Vol.82 No.10, pp.102-112.
- Lee, H.L. Padmanabhan, V. and Whang, S. (2004) Information distortion in the supply chain: the bullwhip effect, *Management Science*, Vol.50 No.12, pp.1875-1886.
- Long, D.C. and Wood, D.F. (1995) The logistics of famine relief, *Journal of Business Logistics*, Vol.16 No.1, pp.213-229.
- Min, S., Roath, A.S., Daugherty, P.J., Genchev, S.E., Chen, H., Arndt, A.D. and Richey, R.G. (2005) Supply chain collaboration: what's happening? *International Journal of Logistics Management*, Vol.16 No.2, pp.237-256.
- Meredith J.(1998) Building operations management theory through case and field research, *Journal of Operations Management*, Vol.16, pp. 441-454.
- Morin, R.L. and DiNardo, R.L. (2006) *Joint Forces Quarterly*, Issue 41, 2nd Quarter
- Näslund, D. (2002) Logistics needs qualitative research – especially action research. *International Journal of Physical Distribution & Logistics Management*, Vol. 32, No. 5, pp. 321-338.
- OECD (2005) *OECD tracks tsunami aid*, Dec 8, 2005, available from www.oecd.org/dac, accessed Aug 23, 2006.
- Oloruntoba, R. and Gray, R. (2006) Humanitarian aid: an agile supply chain? *Supply Chain Management: An International Journal*, Vol.11 No.2, pp.115-120.
- Patton, M. (1990) *Qualitative evaluation and research methods*, Sage Publications, CA

- Persson, G., Virum, H.(2001) Growth Strategies for Logistics Service Providers, *The International Journal of Logistics Management*, Vol. 12 No.1.
- Stock, J. R. and Lambert, D.M. (2001) *Strategic Logistics Management*, McGraw-Hill Companies, Inc., New York
- Svensson, G. (2003) The bullwhip effect in intra-organisational echelons, *International Journal of Physical Distribution and Logistics Management*, Vol.33 No.2, pp.103-131.
- Thomas, A. (2003) Why logistics? *Forced Migration Review*, Vol. 18, Sep 2003, p.4.
- Thomas, A. (2005) Logistics training: necessity or luxury? *Forced Migration Review*, No.22, Jan 2005.
- Thomas, A. and Fritz. L. (2006) Disaster Relief Inc., *Harvard Business Review*, November.
- Thomas, A. and Kopczak, L. (2005) From logistics to supply chain management. The path forward in the humanitarian sector, *Fritz Institute*, at: <http://www.fritzinstitute.org/PDFs/WhitePaper/FromLogisticsto.pdf> accessed Mar 4, 2006.
- Tomasini, R.M. and van Wassenhove, L.N. (2004) Pan-American health organization's humanitarian supply management system: De-politicization of the humanitarian supply chain by creating accountability, *Journal of Public Procurement*, Vol.4 No.3, pp.437-449.
- Towill, D. and Christopher, M. (2002) The supply chain strategy conundrum: to be lean *or* agile or to be lean and agile? *International Journal of Logistics: Research and Applications*, Vol.5 No.3, pp.299-309.
- UN A/61/699-E/2007/8 (2007) Towards a United Nations Humanitarian Assistance Programme for Disaster Response and Reduction: Lessons learned from the Indian Ocean tsunami disaster, Note by the Secretary-General, Geneva.
- Van Wassenhove, Luk N. (2006) Humanitarian Aid Logistics: supply chain management in high gear, *Journal of the Operational Research Society*, Vol. 57, pp.475-589.
- Voss, C. Tsikriktsis, N., and Frohlich, M. (2002) Case research in operations management, *International Journal of Operations & Production Management*, Vol. 22, Issue 2, p. 195.
- Yin, R.K. (2003) *Case Study Research. Design and Methods*, 3rd ed., Thousand Oaks, CA, Sage Publications.

Appendix A – the international HUMLOG group

Cranfield University (Swindon campus, UK)

- Peter Tatham, Commodore (Royal Navy), MSc.(Defence Logistics Management), Dept. of Defence Management and Security Analysis

HANKEN (Helsinki, Finland)

- Gyöngyi Kovács, Assistant Professor (acting) in Supply Chain Management and Corporate Geography, PhD, Dept. of Marketing
- Karen Spens, Professor (acting) in Supply Chain Management and Corporate Geography, PhD, Dept. of Marketing

International Federation of the Red Cross and Red Crescent Societies (IFRC)

- Ian Heigh, Consultant – Logistics Strategy and Operations to IFRC, MSc.(SCM)

Jönköping International Business School (Jönköping, Sweden)

- Per Skoglund, doctoral student, MSc.(Eng.), Center of Logistics and Supply Chain Management (CeLS); Dept. of Entrepreneurship, Marketing and Management / Swedish Defence Materiel Administration
- Susanne Hertz, Professor, PhD, Center of Logistics and Supply Chain Management (CeLS); Dept. of Entrepreneurship, Marketing and Management, Programme Manager of ILSCM - International Logistics and Supply Chain Management

Kwame Nkrumah University of Science and Technology (Kumasi, Ghana)

- Ebo Hammond, MSc(Logistics & SCM), Deputy Director, Transport Management Dept., Ghana Health Service (GHS) / Lecturer, Dept. of Information Systems and Decision Sciences, KNUST School of Business, College of Art and Social Sciences
- Emmanuel Turkson, MSc (Logistics & SCM), Lecturer / doctoral student, Dept. of Information Systems and Decision Sciences, KNUST School of Business, College of Art and Social Sciences
- Francis T. Oduro, PhD, Senior Lecturer, Dept. of Information Systems and Decision Sciences, KNUST School of Business, College of Art and Social Sciences
- Jonathan Annan, MBA(Operations Management), Lecturer / doctoral student, Dept. of Information Systems and Decision Sciences, KNUST School of Business, College of Art and Social Sciences
- Seth N. Buatsi, Professor, PhD, Dean of KNUST School of Business, College of Art and Social Sciences

National Defence College of Finland (Helsinki, Finland)

- Juha Kilpi, Lieutenant Commander, Logistics Dept. J4
- Vesa Autere, Major G.S., Dept. of Leadership Studies

Norwegian Defence Command and Staff College (Oslo, Norway)

- Tore Listou, Assistant Professor, cand.merc.(~MSc.Econ.)

Norwegian School of Management (Oslo, Norway)

- Andreas Brekke, doctoral student, Siv.Ing.(~MSc.Eng.), Dept. of Strategy and Logistics
- Anne Welle Strand, professor, Center for Development Studies and Microfinance
- Carl Brønn, associate professor, Dept. of Strategy and Logistics
- Erna Engebretsen, doctoral student, MSc.(Econ.), Dept. of Strategy and Logistics
- Lars Huemer, associate professor, Dept. of Strategy and Logistics
- Lena Bygballe, post doc, PhD, Dept. of Strategy and Logistics
- Marianne Jahre, Research Professor, PhD, Dept. of Strategy and Logistics
- Stein-Erik Grønland, professor II, Dept. of Strategy and Logistics

United Nations Joint Logistics Centre (UNJLC)

- Arnt Breivik, Chief UNJLC
- Olivier Cottray, GIS coordination officer, MPhil

University of Southern Denmark (Kolding, Denmark)

- Jan Stentoft Arlbjørn, Research Professor, PhD, Dept. of Entrepreneurship and Relationship Management
- Kent Wickstrøm Jensen, Assistant Professor, PhD, Dept. of Entrepreneurship and Relationship Management