

Chapter 4

Sustainable Humanitarian Logistics Research—A Conceptualization

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Abstract Sustainability in its long-term perspective is agreeably sometimes hard to imagine and implement in short-lived crisis situations. But nevertheless, the future demand regarding research as well as practical implementation for sustainability principles in humanitarian logistics is huge. This chapter therefore provides a basic definition drawn from existing sources as well as a draft structure with interesting research questions for this new field of sustainability in humanitarian supply chains. Furthermore, limitations as well as a case study regarding Syria as a large and long-lasting humanitarian crisis are outlined. For the case a new principle in international aid and political answers is suggested as one possible input from research regarding sustainability principles in humanitarian situations.

4.1 Introduction

Research in humanitarian logistics has been driven by two main thrusts in the past, (i) the urge for *operational optimization* in order “to save lives and alleviate suffering” and (ii) the comparison and adaption towards as well as from *commercial logistics*. Examples for the first strive are e.g. research publication such as Falasca and Zobel (2012) regarding personnel planning and optimization, Balcik et al. (2010) discussing the optimization of operational coordination among actors, Martinez et al. (2011) regarding fleet management improvements, Holguín-Veras et al. (2012b) informing about alternative logistics concepts in crisis situations as well as Liberatore et al. (2014) describing the optimization of good distribution schemes in emergency situations. Research publications addressing the second basic approach comparing to commercial logistics are i.e. Bagchi et al. (2011) regarding the application of game theory towards humanitarian procurement processes, Li et al. (2013) discussing the application of open source software

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development in humanitarian logistics, Heaslip et al. (2012) explaining the possible transfer potential from military logistics systems, Yang et al. (2011) describing the use of RFID systems in disaster situations and also Fadiya et al. (2014) providing details regarding the use of bi date in humanitarian logistics.

Altogether, these endeavors have led to a situation, where *long-term* and therefore *sustainable thinking* and concepts within humanitarian logistics are on many accounts absent. And the few exceptions are not known and numerous enough to establish a further research alley for an active interaction of research and practical implementation in humanitarian organizations. This contribution—as well as the whole book—aims for a solution to this problem by outlining some basic thoughts about long-term and sustainable research in humanitarian logistics.

A basic concept approach regarding research for sustainability in humanitarian logistics would have to touch the following “bases” as outlined in this chapter: First, the definitions and concepts of the involved word have to be outlined, namely “logistics”, “sustainability” and “humanitarian”—which is described in this section. Second, one may think about possible concepts and research streams and questions in order to integrate different actions according to an overarching framework for sustainable humanitarian logistics research (Sect. 4.2). Third, limitations and borders for research regarding sustainable humanitarian logistics may be relevant as outlined in Sect. 4.3. A holistic case analysis may complement these conceptualization efforts, herewith exemplified with the Syrian humanitarian crisis and “sustainability options” (Sect. 4.4). Finally, an outlook regarding further research endeavors regarding this question is added in Sect. 4.5.

Regarding a *definition of sustainability* the commonly used description is the basic explanation from the Brundlandt Report: “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts: (a) the concept of needs, in particular the essential needs of the world’s poor, to which overriding priority should be given; and (b) the idea of limitations imposed by the state of technology and social organization on the environment’s ability to meet present and future needs” (WCED 1987: 43).

In terms of a *definition of logistics* it can be referred to the US council of supply chain professionals (CSCP): “Logistics is that part of the supply chain process that plans, implements, and controls the efficient, effective forward and reverse flow and storage of goods, services and related information between the point of origin and the point of consumption in order to meet customers’ requirements” (CSCP 2013).

Regarding a *definition of humanitarian* things are less clear and a byline explanation has to be used e.g. by the UN Charta of Human Rights (Article 25): “Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control” (UN 2013).

To outline a little bit more in detail the ambiguous question of humanitarian actions, a reference can be taken to the example of the UN OCHA objective system,

outlining the overall setup and corridors of global humanitarian management support (Fig. 4.1). The concept is construed by the three basic goals “A more enabling environment for humanitarian action (1)”, “A more effective humanitarian coordination system (2)”, “Strengthened OCHA management and administration (3)”.

An interesting example from the further detailed objectives in connection with the concept of sustainable humanitarian logistics may be No 1.4 “Humanitarian response and response preparedness are underpinned by integrated analysis and rigorous learning”. This indicates that improvements and long-term perspectives are important for such a concept—which in itself would lead to a sustainable approach by improvements and long-term developments in order to safeguard quality and efficiency at the same time, leading to less resource consumption as well as a positive development of several aspects of human life and social interaction.

From these background definitions and concepts a *general definition* for sustainable humanitarian logistics may be proposed to guide research endeavors and connect research question in this field among themselves and with other research fields.

Sustainable humanitarian logistics has the objective to assure every human being—especially in situations of disasters and emergencies—a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services by planning, implementing, and controlling the efficient, effective forward and reverse flow and



Fig. 4.1 UN OCHA strategic framework goals and objectives

storage of goods, services and related information throughout the whole supply chain in a manner that meets the needs of the present without compromising the ability of future generations to meet their own needs.

4.2 Research Streams and Research Questions

In order to identify possible research streams and research questions in the field of sustainable humanitarian logistics research a triangular analysis can be conducted between the three constituting topical fields as outlined in Fig. 4.2. The basic field (A) representing the interaction of humanitarian and logistics concepts has been established in the humanitarian logistics research during the past two decades with topics such as operations and optimization, transport concepts, performance management and application of information management systems (i.e. like described by Gösling and Geldermann 2014 or also summarized by Zary et al. 2014). The second field (B) would be directed towards the application of sustainable and green logistics measures and concepts in the humanitarian sector—transferring existing green concepts like e.g. modal shift, recycling and energy conservation as well as renewable resource use to the humanitarian sector (see for example Franceschi et al. 2014).

A third field for interesting research questions (C) could be the question of sustainable humanitarian management—in short to establish long-term and inter-generational thinking for humanitarian aid (i.e. as exemplified by Curran et al. 2014 as well as Zissman et al. 2014 for evaluation). The simple question what disaster relief measures today are implying for future generations and their social and economic well-being cannot be answered immediately and requires in-depth research and analysis methods (Table 4.1).

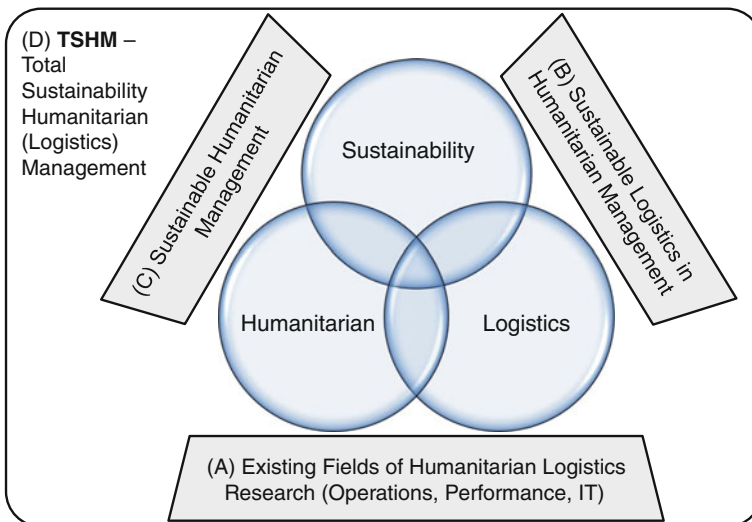


Fig. 4.2 Research streams and connected questions

Table 4.1 Exemplified research questions and methods

Topic	Research question	Methods (examples)	Contributions
(B) Sustainable logistics in humanitarian man	How to organize sustainable transport?	–Concept transfer from green logistics –Operations research –Technology enhancement	Less energy, less emissions, less costs, less work
	How to organize sustainable warehousing?	–Location optimization –Technology improvement –Renewable energy use	Less energy consumption, less emissions, less costs
	How to implement sustainable procurement?	–Auditing and evaluation, certification schemes (ISO 14001 etc.)	
	How to implement sustainable reverse logistics?		
	How to organize sustainable ICT and transparency?		
(C) Sustainable humanitarian management	Social evaluation	–Social integration and labor conditions analysis (ILO standards) –Fairness/justice evaluation	Acceptance and social improvement contribution
	Generations evaluation	–Evaluation of generation fairness and long-term consequences of HumLog	Intergenerational fairness, long-term prevention
	Ecological evaluation	–Auditing and evaluation, carbon footprint of HumLog concepts –Resource efficiency evaluation	Prevention of ecological disasters
	Global evaluation	–Global distribution evaluation of humanitarian activities	Global balance of humanitarian operations
	Participation evaluation	–Participation rates –Gender analysis	Equal participation in humanitarian SC

(continued)

Table 4.1 (continued)

Topic	Research question	Methods (examples)	Contributions
(D) Total sustainability humanitarian (logistics) man	Total fairness evaluation	I.e. inclusive fairness evaluation along different supply chain steps and also in short- and long-term perspectives	Comprehensive fair humanitarian supply chains
	Total efficiency evaluation	I.e. efficiency evaluation along several supply chain steps and also in short- and long-term perspectives	Long-term efficient humanitarian supply chains
	Total human development evaluation	I.e. human evaluation along different supply chain steps and also in short- and long-term perspectives	Humanitarian supply chains contributing to long-term humanitarian development
	Total ecological evaluation	I.e. ecological evaluation along different supply chain steps and also in short- and long-term perspectives	Long-term ecological humanitarian supply chains
	Total feasibility evaluation	I.e. feasibility evaluation along different supply chain steps and also in short- and long-term perspectives	Long-term humanitarian supply chains

Finally, a fourth area (D) can be identified in combining all aspects in the given picture as concepts regarding a *Total Sustainability Humanitarian Logistics Management* (similar to Total Quality Management)—where for example the question of trade-offs between green humanitarian measures today and the economic situation of future generations may be discussed; similar questions are for example discussed by Pateman et al. (2013), taking into account the *specifics* of humanitarian logistics (Holguín-Veras et al. 2012a, b). The further details and outline of these approaches can be recognized in the table above too.

4.3 Research Limitations

The outlined research streams may be limited in various ways, four major restriction areas are outlined in this section: (i) An ethics perspective may limit the research endeavors regarding sustainable humanitarian logistics research i.e. with the core question of how to evaluate a human life—not only one against another nowadays but also in an inter-temporal perspective: If for example not undertaking a specific measure today (i.e. not to send expensive equipment and humanitarian goods into a crisis region) may possibly save more lives in the future as with the same amount of money in other regions with other crisis situations—what shall research and humanitarian practice do about such evaluation problems?

Second, a further limitation area (ii) may be the question of existing research disciplines: Within a sustainable perspective even more as already today in humanitarian logistics such disciplinary borders i.e. between economics, management, political and social sciences, medicine, engineering and geography, sustainability and biology research as well as the national sciences may obstruct important research questions and projects in this field. The first important step therefore to overcome this possible limitation is the unequivocal recognition, that especially sustainable humanitarian logistics research is a very inter-disciplinary research field. The described limitation areas are also interconnected as depicted in Fig. 4.3 as ethics problems for example may multiply facing different science disciplines: Whereas i.e. medical researchers may have found concepts and solutions regarding the dilemma situations of saving lives, these aspects may be evaluated very differently in neighboring fields of political and social science.

A third limiting area maybe (iii) the available technology as due to funding, awareness and specialization restrictions research could be severely impeded. This implies that many research and analysis processes have to rely on limited and old technology—so in case for example the use of GPS localization technology in this setting. In many cases, humanitarian logistics research technology is lagging behind business application by many years like with RFID or GPS. And as logistics is usually largely determined by the available technology applications, therefore results for the humanitarian logistics area are also restricted by this.

Finally, in a fourth restricting area (iv) the available budget for research into sustainable humanitarian logistics may be small as a new field usually has no “standing” in science and has large “legitimization” problems compared to

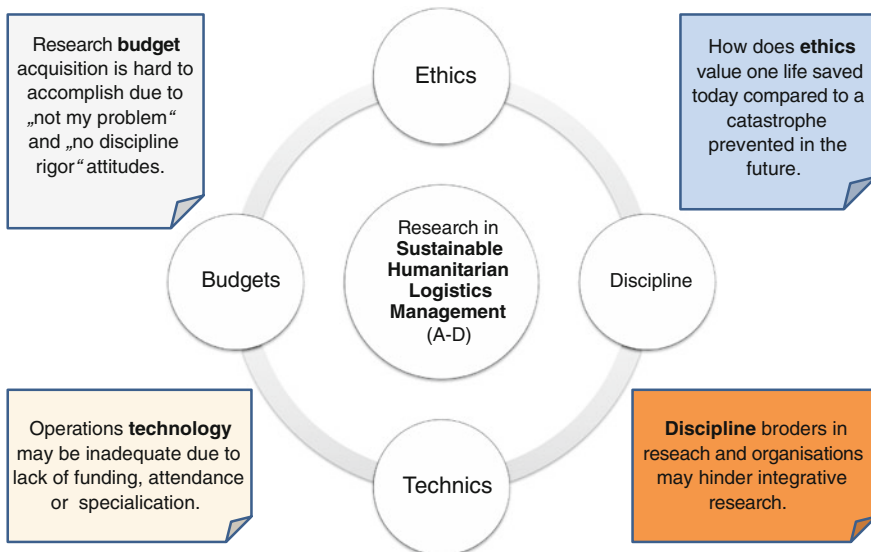


Fig. 4.3 Research limitations overview

established research fields. For example existing research programs (i.e. EU Horizon 2020) have major avenues and budget lines for many fields such as innovation from natural and engineering sciences as well as social sciences—but no direct applicable budget line for global humanitarian logistics (only “disaster management” within Europe for example).

4.4 Case Study: How to Apply Sustainability Principles to Humanitarian Work

In general there are two types of disasters that trigger humanitarian aid: natural events on the one hand and man-made crisis events on the other hand. For both cases it can be established, that the most sustainable strategy to tackle these events is first to prevent them and second—if not possible—to mitigate their effects as soon and completely as possible. For the latter the general objective may be termed as ‘*establishing* civil society and *basic human functions* with security, economic well-being (food, housing, medical support, education, employment and economic development perspectives) for as large a share of the population as possible.’ This general description can be applied to all kinds of disasters, man-made wars (Yugoslavia/Kosovo, Sudan, Syria) as well as natural disasters (Haiti, Pakistan, Philippines).

Sustainable answers to major humanitarian crisis developments as for example regarding Syria are hampered by the restrictions of international state law and politics. This also diminishes the reach and possible positive engagement of several UN institutions, foremost the UNHCR which can only passively react even to major refugee situations. Long-lasting refugee situations like today in Syria and the neighboring states—i.e. Lebanon and Turkey with more than a million refugees each—are severely undermining international support for humanitarian affairs and the affected people in the long run by draining resources into long-lasting refugee situations. Therefore, innovative concepts are necessary in order to put the UN system as well as the international humanitarian community in a position to strategically live up to their expectations. The current crisis hot spots in international politics—namely Ukraine, Syria and others—are all hinting to a major flaw in international law: Whereas *within* states, the UN system acknowledges rights of individual people (“universal human rights”) and promotes values as democracy, the rule of law and free market systems in order to further human life as perceived from an individual’s point of view, *in-between* states these objectives are trumped by the basic principle of non-involvement in internal affairs of specific states (Aalbertsa and Gammeltoft-Hansen 2014; Berga and Mölder 2014). This can be labeled a basic “paradox of international law” regarding the rule and prosperity of the people—an oxymoron which is sadly present in all major international conflicts in the last three decades. As within these days around the 9th of November 2014—the fall of the Berlin wall is celebrated for the 25th year since 1989—this event may possibly inspire a new principle of international law, guided by the basic objective

of “people’s rule” in combination with the “voting-by-feet” approach applied and experienced in those times when the iron curtain fell, especially within Germany.

This sustainable *new principle* for international state law and politics, to be administered by the UN organizations, can be suggested in the face of the described problem areas and recent crisis experiences in order to allow for a long-term humanitarian aid concept:

- (i) If the number of misplaced persons (refugees) can be established for one UN member country to exceed 20 % of the total population (at least 2 million people), 10 % thereof *outside* the borders of the specific country (at least 1 million people), as reported by the relevant UN organization (i.e. UNHCR), the UN security council declares with at least 75 % of all votes (*without* any veto rights from the P5 members) an international “state of refugee emergency” regarding the specific country addressed.
- (ii) After this declaration, the addressed state is granted a guaranteed “correction time period” of 9 months, during which time all actions shall be undertaken with UN support to alleviate the position of the refugees as well as the internal state of the country. Immediately after the nine-month period, the UN receives a further report from the UN agency in charge (regularly UNHCR).
- (iii) If the report after these 9 months states that the refugee status still exceeds the above mentioned limits, the UN security council (again *without* any veto rights) decrees with at least 75 % of all votes a *UN refugee estate mission*, to be implemented by a multi-national military force under the directive of the UN, to begin earliest 3 months after the declared mission.
- (iv) In the remaining 3 months before implementation, a joint council of the UN (lead), the nations taking part by order from the UN as well as officials from the specific state (advisory role) are drafting a UN refugee control zone plan, defining a specific part of the territory of the specific state to fall under the UN control zone. The size of this zone is to be tailored towards the proportion of the misplaced share of the total country population. Access and transportation (i.e. airports and seaports, transport routes) are equally guaranteed for the UN control zone as well as the residual state territory of the specific state.
- (v) The sole actor and institution implementing state power (security, military and otherwise) in the UN refugee control zone is the UN and the institutional bodies and nations directed by the UN on their behalf. Especially the specific state from which the state territory is requested has no sovereignty rights, including the right regarding the airspace above the declared UN refugee control zone.
- (vi) The UN and the institutions acting on their behalf establish this refugee control zone and promote its own political and economic self-reliance in order to create a sustainable long-lasting societal organization.
- (vii) After 2 years in existence, the people in the refugee control zone—where people are let into at any request and without discrimination—are asked in a popular vote if they want to re-merge with the former state territory or if they prefer to be established long-term as an independent state.

This principle is as *case study* applied to the situation in Syria: *Syria* is by the complexity of the political, humanitarian and military development since the crisis outbreak in January 2011 one of the saddest and most tragic international crisis situations. The UNHCR even labels it “The biggest humanitarian emergency of our era” (UNHCR 2014a). The civil war situation between the state of Syria and also in-fighting several other groups within the state area of Syria is constantly changing and very diverse, rendering many international initiatives against violence as well as in humanitarian aid for the people of Syria invalid as conflict areas and parties change constantly. The UN estimate for *incurred deaths* was 190.000 persons as of April 2014; the number of *misplaced persons* has reached 4.5 million people (UN 2014). As in many conflicts worldwide, the cruelest burdens of the crisis are faced by the weakest, women and children, as about.

An example for this is the following map depicting the conflict zones and controlled areas by different groups (status October 2014, Fig. 4.4).

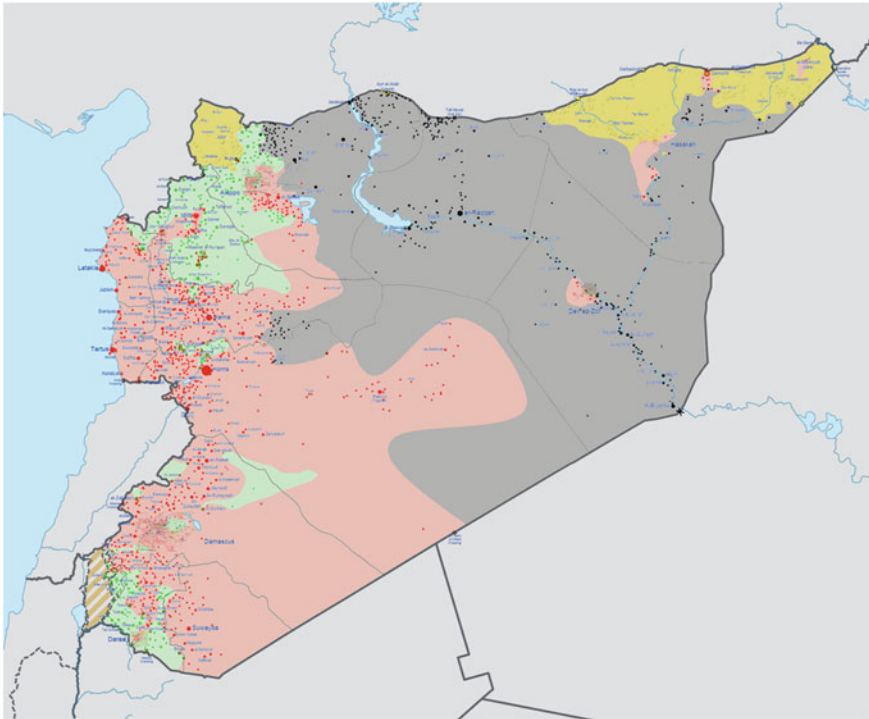


Fig. 4.4 Conflict parties and control zones within Syria (November 2014, Wikipedia 2014); *red* government forces; *green* opposition forces; *yellow* kurdish forces; *black* terror forces

When applied to the case of Syria, the following guidelines and results may arise in the current situation (November 2014) regarding Syria, following the suggested principle of “voting-by-feet”-intervention and state-building:

- (i) The number of refugees registered officially with the UNHCR *outside* Syria and within the neighboring states has reached *3.2 million people* by 1st of November 2014 (Fig. 4.5). It can be assumed that the unofficial number is even higher. The percentage of the total Syrian population of 23 million people has therefore reached 13.9 % regarding outside refugees. This would legitimate an establishment of a special UN refugee control zone *within* the state territory of Syria according to the suggested “voting-by-feet”-principle.
- (ii) The *timeline* for the case of Syria could be suggested as follows: In January 2015, the UN security council could state the “emergency” situation regarding refugees from Syria based on these numbers. Following up, the second milestone would be a re-evaluation by UNHCR in October 2015. In case the refugee numbers have not diminished significantly (below the 4.6 million refugee/2.3 million external refugee threshold in relation to the total population of Syria), the following enacting of a Syrian UN refugee control zone would be decreed by the UN security council, including a military no-fly zone over the whole country of Syria for the implementation period of November 2015 until April 2016. The official start of the establishment of the UN zone within Syria could be dated 31st of March, 2016.

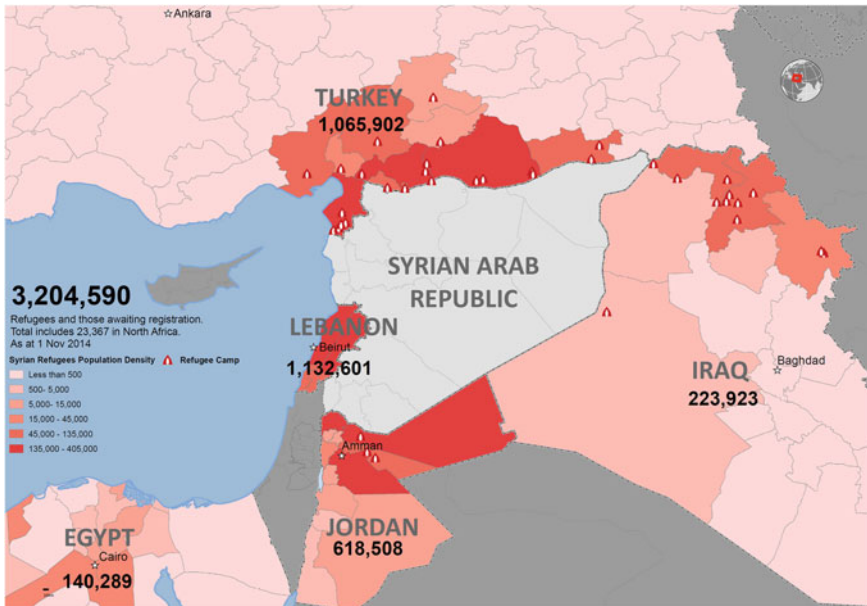


Fig. 4.5 Refugees statistics from Syria outside the country (November 2014, UNHCR 2014a, b, c)

- (iii) The acting institutions and nations on behalf of the UN could be the EU-NATO Eurocorps force, established in 1989 and experienced with UN and other peacekeeping missions in Bosnia, Kosovo and Afghanistan; the command and control structures of this military unit are enabled to steer a total security force of up to 65,000 troops (EUROCORPS 2014). This number should be sufficient to establish the specific UN refugee control zone within Syria and the personnel could be seconded from all willing EU states. An initial force of about 20,000 troops could be deployed in order to guarantee the safekeeping of all private and aid personnel as well as refugees in the UN zone (avoiding possible “Srebrenica Scenarios”). The air cover and control of the established no-fly zone could be secure jointly i.e. by Turkey, the US, China and Saudi-Arabia as a “Joint UN Air Command” in the area. Such co-operations are formerly “unthinkable” but with the new strategic challenge of IS terror regimes suddenly feasible.
- (iv) The refugee zone within Syria could initially encompass the north-western province of Latakia (*muhafazah latakia*), which is easily accessible by sea (i.e. port of Latakia) and on the land route via Turkey. Military and humanitarian logistics for this zone should therefore be no major concern. If the number of refugees is still rising over passing months, the further provinces of *Idlib* and *Aleppo* could be added to this geographical area.

This procedure would not only provide a perspective and securing basic human rights for the people of Syria, but also lay down basic guidelines for the involvement of the international community (namely the UN organizations) as well as the existing state of Syria, namely in specific new state areas. Furthermore, it would also enable regional actors (neighboring states, humanitarian organizations) to improve their humanitarian support for the people of Syria. Finally, it would also prevent possible future conflicts and human tragedies—as for example the 1.1 million Syrian refugees living currently in Lebanon and Turkey *each*—are unavoidably in the verge of creating further internal conflicts within the neighboring states and the region. A major population group of such sizes without official status (work permits, basic societal integration and perspective, participation in public life and also individual rights to vote etc.) will always and under any circumstances create potential for future conflict and humanitarian crisis. The UNHCR for example lobbies in order to reduce the number of stateless people (worldwide currently about 10 million, UNHCR 2014b)—but the Syrian refugees in neighboring states alone have added 50.000 *stateless newborns* to these number since the start of the crisis in 2011 (UNHCR 2014c). Again, an example that humanitarian crises are mostly carried by the backs of the most helpless ones: In this case *newborns* who have definitively neither guilt nor any interest in the raging civil war within Syria—but pay the highest price possible by a very disadvantageous start into life as a *stateless refugee* (“Unregistered children are especially at risk of becoming stateless, as without birth certificates they lack a key means of proving their nationality. They may also be denied access to health care and education, and face an increased risk of exploitation, such as trafficking for commercial sex work, illegal adoption, or child labour”, UNHCR 2014c: 1). Therefore, the

international community has not only a duty towards the people of Syria, the many involved but seriously overstretched governmental and non-governmental humanitarian aid organizations, but also towards the people i.e. of Lebanon and Turkey, who extended the unwavering support and welcome to refugees from Syria since the start of the conflict in 2011. Such long-term refugee situations in large numbers themselves embroil future conflicts and humanitarian problems and should therefore be curtailed as soon as possible in a sustainable, long-term humanitarian aid concept.

This new suggestion may also bring about major risks and ruptures in international state law and international politics. Among these risks there may be:

- (a) The basic principle of a rule of the people by introducing the international imperative of a newly created state in the UN community and system according to a “voting-by-feet”-approach can possibly not be implemented against the will of major states and powers (e.g. states armed with nuclear weapons due to their retaliation potential, Brown 2014, Morriss and Wheeler 2007). This may be executed through the UN Security Council or other political measures such as blockades, embargos and threatenings.
- (b) The principle is also possibly endangered of being misused and hijacked by ill-willing groups of individuals who might use the rule and the international UN community by requesting assistance on the basis of this principle but with worse intentions compared to the original “left” state (Reus-Smit 2007).
- (c) It may be feared that a “dam break” can be following the implementation of such a principle as the basic rule of “non-interference” with internal state affairs is disrupted at least partially (Collins 2014). This may enable further initiatives along these lines and therefore be feared by many states as well as peoples, whose well-being and human development today also relies in large parts on the successful application of this basic rule as many international conflicts and wars are prevented by this.

Anyhow, many chances and positive developments can be connected to this suggestion of a new “voting-by-feet”-rule for sustainable large-scale humanitarian aid in crisis situations; among the chances and advantages may be:

- (a) The people in states with insufficient state authority and rule of law (e.g. “failed states” Buegera and Bethke 2014) as well as the international community would have a clear route for large-scale refugee situations in different regions and states.
- (b) The humanitarian organizations as well as their personnel and the refugees themselves would have a secure base for economic and social development—instead of increasingly endangering the “welcome” gestures of neighboring states.
- (c) Most important the economic bases of the refugee zone and potentially a new state can be used to *sustain* more humanitarian support by the refugees and within the area themselves, enabling international aid to diminish over time and concentrate on more pressing incidents in other regions.

This “out of the box thinking” suggestion may therefore not be applied immediately, but still enlighten the way forward i.e. for interdisciplinary research towards

a more human international state law and humanitarian aid concepts, supporting instead of forbidding the rule of the people within the international state community. Also, this may further the idea of strategic humanitarian concepts, enacting long-term thinking and development rather than sole reaction and care for refugees in a crisis situation. This is closely linked to the assumption that NGO's have severe limitations in helping in humanitarian crisis situations in a long-term perspective as e.g. Banks et al. (2015) argue—and therefore possible government organizations' roles and political solutions have to be found.

4.5 Conclusion

As shown with the concepts of research fields in sustainable humanitarian logistics as well as the specific case study on Syria, many new thoughts, concepts and ways are to be explored in order to improve the basic ideas and principles stated here. This can be seen as a task for a new “generation” of researchers, problem-oriented and interdisciplinary as well as internationally connected. This is a sort of new vision for such research from this chapter and book.

Finally, as this may prove hard to tackle, it also may bear important rewards in alleviating the suffering of millions of people world-wide if applied professionally and in an increasingly aware global community towards long-term and sustainable humanitarian activities. Sustainability in humanitarian logistics may therefore require research to look out for the complex, global and long-term consequences of humanitarian crisis situations—as we are all currently forced to recognize for example regarding the case of Syria with the increasing refugee problems in neighboring countries as well as all over Europe. Obviously the former decision not to intervene or act has not been the most sustainable and effective answer to this ongoing crisis, still a severe and tragic dent in the conscience of the whole world.

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